




# Table of contents

<b>Illustrated table of contents</b> .....	<b>1-1</b>	Take good care of the vehicle .....	3-12	<b>Controls and functions</b> .....	<b>6-1</b>
Meters .....	1-2	To prevent troubles.....	3-17	Levers .....	6-2
Indicators .....	1-3	Exhaust emission control system ...	3-24	SRS airbag system .....	6-12
Warnings and Indicators (on Multi-display and instrument panel) .....	1-4	<b>Getting in and out of the cab</b> .....	<b>4-1</b>	UDPC (UD Particulate Cleaning) ...	6-21
Other Indicators .....	1-13	Getting in and out of the cab .....	4-2	Hill start assist function♦ .....	6-35
Switches.....	1-19	Doors .....	4-3	Road grip (low friction road start assist system)♦ (CD series) ...	6-39
<b>Introduction</b> .....	<b>2-1</b>	Seats .....	4-8	Auto cruise♦ .....	6-41
Warranty .....	2-2	Tilt and telescopic steering wheel... 4-16	4-16	Driver support system♦ .....	6-46
Periodical inspection .....	2-4	Seat belts .....	4-16	Driver status monitor♦ .....	6-100
Handling a new vehicle .....	2-5	<b>Meters, indication lamps and switches</b> .....	<b>5-1</b>	UDSC and ASR .....	6-104
Handling of the logged vehicle data .....	2-6	Meters.....	5-2	Height control♦ (Air-suspension models) .....	6-112
Open source software .....	2-6	Multi-display.....	5-10	ESCOT VI System♦ .....	6-120
<b>For safe operation</b> .....	<b>3-1</b>	Warnings (Multi-display).....	5-28	Nenpi Coach♦ .....	6-137
Before driving .....	3-2	Indicators .....	5-48	Opening and closing the front lid .....	6-144
While driving .....	3-5	Switches .....	5-54	Cab tilt operation.....	6-145
When there is a problem.....	3-10			<b>Air conditioner</b> .....	<b>7-1</b>
				Ventilation .....	7-2
				Air conditioner.....	7-3

<b>Accessories</b> .....	<b>8-1</b>	<b>Inspection and maintenance</b> .....	<b>13-1</b>	Towing .....	15-5
Accessories .....	8-2	Air dryer.....	13-3	When a tire becomes flat .....	15-6
<b>Audio</b> .....	<b>9-1</b>	Air cleaner .....	13-4	Blown fuse .....	15-7
<b>Correct driving operation</b> .....	<b>10-1</b>	Air filter for air conditioner .....	13-5	Discharged battery.....	15-15
Before starting the engine.....	10-2	Engine oil filter.....	13-7	Overheat.....	15-16
How to start and stop the engine ...	10-2	Fuel filter.....	13-14	Emergency driving	
AdBlue® tank.....	10-9	Air bleeding of fuel system .....	13-33	by the ESCOT system .....	15-17
Operation of ESCOT .....	10-11	AdBlue filter .....	13-36	When the air suspension warning	
Operation of automatic		Transmission oil filter.....	13-36	appears.....	15-19
transmission.....	10-23	Battery .....	13-38	<b>Service data</b> .....	<b>16-1</b>
Operation precautions .....	10-29	Tires .....	13-42	Maintenance standard .....	16-2
Correct driving when pulling		Jack up .....	13-54	Capacities .....	16-3
a trailer .....	10-42	Lights.....	13-59	Performance of genuine	
Economical driving.....	10-46	Mirrors .....	13-66	lubricants .....	16-5
Driving under special		Coolant .....	13-68	Greasing points.....	16-8
conditions.....	10-49	Others.....	13-81	Certification for Australia and	
Washing the vehicle.....	10-53	Emission and external noise .....	13-90	New Zealand.....	16-11
<b>Trailer connection and disconnection</b> .....	<b>11-1</b>	Tools.....	13-94	<b>Index</b> .....	<b>17-1</b>
<b>Daily (pre-driving) inspection</b> .....	<b>12-1</b>	<b>Service of lubricants</b> .....	<b>14-1</b>		
Areas to inspect .....	12-2	Genuine lubricant .....	14-2		
Inspection instructions .....	12-5	Oils .....	14-3		
		Grease.....	14-14		
		<b>Emergency procedures</b> ...	<b>15-1</b>		
		When there is a problem .....	15-2		
		If collision occurs.....	15-2		
		Manual release of spring brake			
		(wheel parking brake).....	15-3		

## When reading the manual

In this manual, read very carefully those sections which have signs “**DANGER**”, “**WARNING**”, “**CAUTION**” and “**NOTE**”. They are particularly important.

 <b>DANGER</b>	Indicates a potentially hazardous situation that, unless avoided, will lead to death or serious personal injury.
 <b>WARNING</b>	Indicates a potentially dangerous situation that, unless avoided, may lead to fatal injury, serious personal injury or damage to the product.
 <b>CAUTION</b>	Indicates a potentially dangerous situation that, unless avoided, may lead to minor or moderate personal injury or damage to the product.
<b>NOTE</b>	Indicates good practice.

UD Trucks Corporation offers a variety of options, components and features on its vehicles. Therefore, the equipment described in this manual may or may not be identified as standard or optional and may not be applicable to your particular vehicle. (As a guideline, major optional equipment are generally marked with “◆”.) If you have any questions (including whether the information in this manual is applicable to your particular vehicle), consult your nearest authorized UD Trucks dealer.

This manual, and all information contained in this manual, is provided for informational purposes only. All information and specifications in this manual are based on the product information in effect at the time of printing. We reserve the right to discontinue models, or change information, specifications or designs set out in this manual without notice and without incurring any liability to you.

Diagrams and illustrations in this manual are for illustration purposes only, and are not drawn to scale. We recommend you to have your vehicle serviced at an authorized UD Trucks dealer.

Abbreviations used in this manual

CAN: Controller Area Network

ATM: Automatic Transmission

If you have any questions concerning this manual, you are welcome to contact your nearest authorized UD Trucks dealer.

AdBlue® is a registered trademark of the Verband der Automobilindustrie e.V. (VDA).

This manual describes the handling of the vehicles listed in the following table.

Vehicle series	Vehicle model		Engine type	Main brake type	Parking brake type
	With leaf suspension	With air suspension			
Truck: CD series	—	CDB4CA	GH8TA	Air brake	Wheel parking brake
	—	CDB5CA	GH11TB		
Truck: CW series	CWB4CL	CWB4CA	GH8TA		
	CWB5CL	CWB5CA	GH11TB, TC, TD		
Truck: CG series	CGB4CL	CGB4CA	GH8TA		
	CGB5CL	CGB5CA	GH11TB, TC, TD		
Tractor: GK series	GKB5CL	GKB5AA	GH11TC		
Tractor: GW series	GWB5CL	GWB5CA	GH11TC, TD		

# Foreword

Thank you for purchasing a UD Trucks vehicle. This manual has been prepared to provide the necessary information for the operation, inspection and maintenance of the UD Trucks vehicle.

Obtaining optimum performance from your new UD Trucks vehicle will depend largely upon the care exercised by you in the operation and maintenance of the vehicle. We strongly recommend that you read this manual thoroughly and familiarize yourself with the information and procedures contained within. Only in this way it is possible to ensure proper operation and maintenance, with a minimum of difficulty, and with the utmost safety.

This manual is based upon information which is applicable to the standard version of this series. Should you have any problem understanding the information, or should your vehicle require some servicing which is not included in this manual, contact the nearest authorized UD Trucks dealer for assistance.

We recommend to keep this owner's manual and the warranty manual in your vehicle.

# Contents

<b>1. Illustrated table of contents .....</b>	<b>1-1</b>
<b>2. Introduction .....</b>	<b>2-1</b>
<b>3. For safe operation.....</b>	<b>3-1</b>
<b>4. Getting in and out of the cab .....</b>	<b>4-1</b>
<b>5. Meters, indication lamps and switches .....</b>	<b>5-1</b>
<b>6. Controls and functions.....</b>	<b>6-1</b>
<b>7. Air conditioner.....</b>	<b>7-1</b>
<b>8. Accessories .....</b>	<b>8-1</b>
<b>9. Audio .....</b>	<b>9-1</b>
<b>10. Correct driving operations .....</b>	<b>10-1</b>
<b>11. Trailer connection and disconnection.....</b>	<b>11-1</b>
<b>12. Daily (pre-driving) inspection .....</b>	<b>12-1</b>
<b>13. Inspection and maintenance.....</b>	<b>13-1</b>
<b>14. Service of lubricants.....</b>	<b>14-1</b>
<b>15. Emergency procedures .....</b>	<b>15-1</b>
<b>16. Service data.....</b>	<b>16-1</b>
<b>17. Index.....</b>	<b>17-1</b>



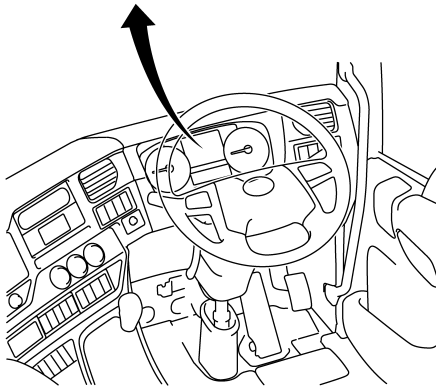
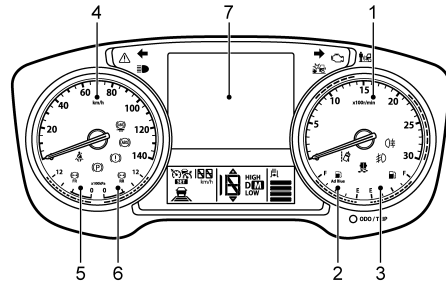
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# 1. Illustrated table of contents

---

Meters .....	1-2
Indicators.....	1-3
Warnings and Indicators (on Multi-display and instrument panel) .....	1-4
Other Indicators.....	1-13
Switches.....	1-19

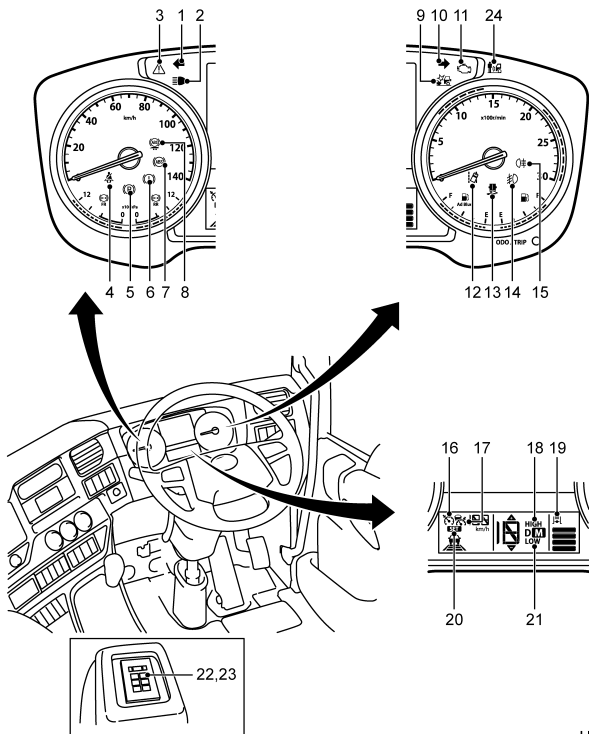
# Meters



1. Tachometer .....	5-3
2. AdBlue gauge .....	5-4
3. Fuel gauge .....	5-4
4. Speedometer .....	5-2
5. Air pressure gauge (Front brake) .....	5-3
6. Air pressure gauge (Rear brake) .....	5-3
7. Multi-display .....	5-10
Odo/trip meter .....	5-5
Coolant temperature gauge .....	5-6
Exhaust emission control system meter .....	5-8
Engine oil temperature gauge .....	5-7
Voltmeter .....	5-9
Transmission oil temperature gauge .....	5-8
Instantaneous fuel consumption gauge .....	5-8
DAS gauge .....	5-9
Digital speedometer .....	5-10

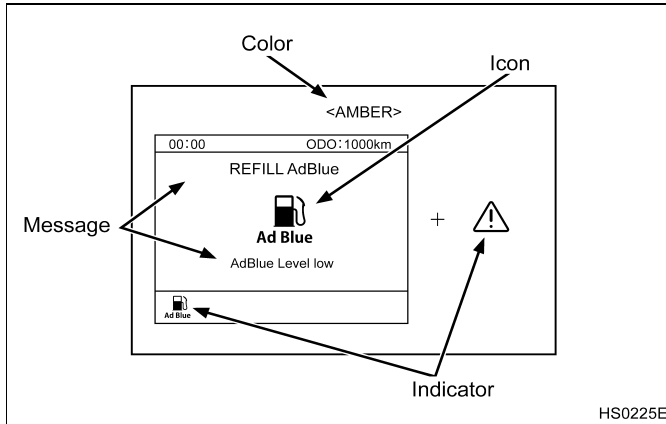


# Indicators



1. Left turn signal indicator.....	5-60
2. High beam indicator.....	5-61
3. Master warning indicator.....	5-53
4. Seat belt warning indicator.....	4-18
5. Parking brake warning indicator.....	6-7
6. Brake warning indicator.....	5-48
7. ABS warning indicator.....	5-51
8. ABS (trailer) warning indicator.....	5-51
9. Traffic Eye Brake (TEB) indicator.....	5-52
10. Right turn signal indicator.....	5-60
11. Engine control warning indicator.....	5-49
12. LDWS indicator.....	6-71
13. UDSC warning indicator.....	5-52
14. Front fog light indicator.....	5-69
15. Rear fog light indicator.....	5-69
16. Auto cruise ON indicator.....	6-42
17. ACC ON indicator.....	6-60
18. Splitter HIGH indicator.....	10-21
19. Exhaust brake indicator.....	5-64
20. Auto cruise/Traffic Eye Cruise SET indicator.....	6-42/6-60
21. Splitter LOW indicator.....	10-21
22. Power mode indicator light (ATM).....	5-53
23. Automatic transmission maintenance information light.....	10-29
24. MOIS warning indicator.....	6-88





# Warnings and Indicators (on Multi-display and instrument panel)



















HS0225E











Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Red	STOP VEHICLE Engine coolant temperature high	5-6 15-16
		Amber	DRIVE CAUTIOUSLY Engine coolant temperature high	5-6 15-16









Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Red	STOP VEHICLE Engine oil temperature high	5-30
		Amber	DRIVE CAUTIOUSLY Engine oil temperature high	5-30
		Amber	CHECK ENGINE OIL Low engine oil level	5-31
		Red	STOP VEHICLE Engine oil pressure low	5-29
		Red	REFILL AdBlue AdBlue empty Engine start inhibited	5-37
		Red	REFILL AdBlue AdBlue empty Engine start inhibited at next stop	5-37
		Amber	REFILL AdBlue AdBlue level low	5-37
		Amber	REFILL AdBlue Torque reduction is imminent	5-38
		Amber	REFILL AdBlue Torque reduction at next stop	5-38









Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
 	 	Amber	REFILL AdBlue Torque is reduced. Speed reduction is imminent.	5-38
		Amber	REFILL AdBlue Speed reduction to 20 km/h is imminent	5-38
		Amber	REFILL AdBlue Speed limited. Adblue tank empty.	5-38
		Amber	CONTACT WORKSHOP Emissions critical. Torque reduction in --- h.	5-39
		Amber	CONTACT WORKSHOP Emissions critical. Torque reduction at next stop.	5-39
		Amber	CONTACT WORKSHOP Emissions critical. Torque reduced. Speed limited in --- h.	5-39
		Amber	CONTACT WORKSHOP Emissions critical. Speed limited to 20 km/h is imminent.	5-39
		Amber	CONTACT WORKSHOP Emissions critical. Speed reduced.	5-39
		Amber	CONTACT WORKSHOP Incorrect AdBlue quality. Torque reduction in --- h.	5-43











Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
 	 	Amber	CONTACT WORKSHOP Incorrect AdBlue quality. Torque reduction at next stop.	5-43
		Amber	CONTACT WORKSHOP Incorrect AdBlue quality. Speed limited in --- h.	5-43
		Amber	CONTACT WORKSHOP Incorrect AdBlue quality. Speed reduction to 20 km/h imminent.	5-43
		Amber	CONTACT WORKSHOP Incorrect AdBlue quality. Speed reduced.	5-43
		Amber	CONTACT WORKSHOP No AdBlue dosing. Torque reduction in --- h.	5-45
		Amber	CONTACT WORKSHOP No AdBlue dosing. Torque reduction at standstill.	5-45
		Amber	CONTACT WORKSHOP No AdBlue dosing. Speed limited in --- h.	5-45
		Amber	CONTACT WORKSHOP No AdBlue dosing Speed reduction to 20 km/h imminent.	5-45














Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Amber	CONTACT WORKSHOP No AdBlue dosing. Speed reduced.	5-45
		Amber	DRIVE CAUTIOUSLY Brakes overheating	5-48
		Red	STOP VEHICLE Gearbox oil temperature high	5-33 6-132
		Amber	DRIVE CAUTIOUSLY Gearbox oil temperature high	5-33 6-132
		Amber	Clutch overheating	10-20
		Amber	REFUEL Fuel level low	5-4
		Amber	START WATER DRAINING Water in fuel filter	13-31
	-	Gray	CHECK HANDBOOK Conditions not fulfilled to perform water draining	13-31

Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Amber	CONTACT WORKSHOP Fuel Filter clogged	5-41
		Red	STOP VEHICLE Engine derated. Engine overspeed	5-28
		Red	STOP VEHICLE Engine system failure	5-35 6-33
		Amber	CONTACT WORKSHOP Engine system failure	5-35
		Amber	CONTACT WORKSHOP Transmission functionality reduced	6-132
		Red	STOP VEHICLE Engine coolant level low	5-31 13-76

Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Red	CORRECT AdBlue Incorrect AdBlue quality. Engine start inhibited.	5-42
		Red	CORRECT AdBlue Incorrect AdBlue quality. Engine start inhibited at next stop.	5-42
		Amber	CORRECT AdBlue Incorrect AdBlue quality. Engine start inhibited in -- km	5-42
		Amber	CONTACT WORKSHOP UDPC Regeneration switch malfunction	6-24
		Red	CONTACT WORKSHOP Emission system malfunction	5-45
		Amber	CONTACT WORKSHOP Emission system malfunction	5-45
		Amber	High exhaust temperature due to regeneration	6-25











Indications by the multi-display and indicators				Page	
Icon	Indicator(s)	Color	Message		
		Amber	CONTACT WORKSHOP IMMEDIATELY UDPC level critical	6-33	
		Amber	START UDPC REGENERATION Park vehicle safely	6-29	
	-	-	Gray	UDPC regeneration started.	6-30
			Gray	UDPC regeneration stopped	6-30
		-	Gray	UDPC maintenance is needed	6-33
	-	-	Black	UDPC regeneration ongoing.	6-30
		Red	STOP VEHICLE Park brake failure	5-47	
		Amber	ATTENTION Roller bench mode active. Turn off before driving	5-22	
		Amber	Park brake not applied	5-47	











Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Amber	CONTACT WORKSHOP Brake pads uneven wear	13-83
		Amber	REPLACE BRAKE PADS SOON Brake pads worn	13-84
		Amber	CONTACT WORKSHOP Truck ABS malfunction	6-110
		Amber	CONTACT WORKSHOP Truck ABS malfunction Check wheel bearing	6-110
		Amber	PUT AUXILIARY BRAKE STALK IN NEUTRAL Auxiliary brakes disabled	5-64
		Red	STOP VEHICLE Gearbox failure	6-132
		Amber	CONTACT WORKSHOP Transmission system malfunction	5-36 6-132 6-134 15-17
	-	Black	Limp home mode activated	6-135 15-18
		Red	ATTENTION Gearbox air pressure low	6-132 10-11








Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Red	STOP VEHICLE Clutch system malfunction	6-132
		Amber	CONTACT WORKSHOP Clutch malfunction	6-132
		Red	DECREASE VEHICLE SPEED Vehicle speed too high	5-2
		Amber	CONTACT WORKSHOP Airbag malfunction	6-15
		Amber	CONTACT WORKSHOP Airbag malfunction	6-15
		Amber	CONTACT WORKSHOP Seatbelt pre-tensioner malfunction	6-18
		Red	STOP VEHICLE Alternator failure	5-40
		Amber	REDISTRIBUTE LOAD Uneven load	10-40
	-	Gray	Key not valid	5-54











## Illustrated table of contents

1 - 9

Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Gray	Keyfob battery low	4-5
		Amber	CONTACT WORKSHOP Switch malfunction	5-54
		Red	STOP VEHICLE Electrical fault. Loss of functionality	5-36
		Amber	CONTACT WORKSHOP Electrical fault. Reduced functionality	5-36
		Amber	REPLACE LAMP Left brake light malfunction	5-40
		Amber	REPLACE LAMP Right brake light malfunction	5-40
		Amber	CONTACT WORKSHOP Trailer brake lights malfunction	5-40
		Amber	CONTACT WORKSHOP HLVA malfunction	5-46












Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Red	STOP VEHICLE Cab tilt unlocked	6-150
		Amber	WARNING! Cab tilt unlocked	6-150
		Amber	CONTACT WORKSHOP Steering wheel switches malfunction	5-68
		Gray	START NOT POSSIBLE PTO is active	10-2
			Black	PTO activated
	-	Gray	Hill start assist will soon be deactivated	6-38
		Black	Power grip activated	6-40
		Black	Power mode requested	6-40











Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
	-	Gray	Power mode deactivated	6-40
-	-	Black	Keep engine running. Adjusting to parked load distribution...	6-41
		Amber	CONTACT WORKSHOP Automatic level and bogie control malfunction	6-114 15-19
		Red	Drive level not selected	6-114
		Black	Ferry function active	6-119

















Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Amber	CONTACT WORKSHOP Inter axle diff-lock malfunction	5-73 5-75
		Amber	CONTACT WORKSHOP Inter wheel diff-lock malfunction	5-75 5-79
	-	Gray	FIRST PRESS LEFT DIFF-LOCK SWITCH Wrong operation selected	5-75
		Black	Differential lock activated	5-73 5-75 5-79
		Black	All differential locks activated	5-75
		Gray	TRAILER WITHOUT ABS Traffic Eye Brake not available	5-47
		Amber	CONTACT WORKSHOP Gear lever malfunction	6-131
N		Amber	PUT GEAR SELECTOR IN NEUTRAL Door open	6-131 10-19











## Illustrated table of contents

Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
	-	Gray	DEPRESS BRAKE PEDAL Before selecting gear	6-131 10-13
		Amber	FOCUS ON DRIVING Driver Alert Support	6-85
		Amber	TAKE A BREAK Driver Alert Support	6-85
		Amber	CONTACT WORKSHOP Driver Alert Support malfunction	6-86
		Amber	CONTACT WORKSHOP UDSC malfunction	6-110
		Gray	SLIPPERY ROAD Extra torque active	5-64
		Red	USE BRAKE IMMEDIATELY !	6-46
		Gray	Traffic Eye Brake was activated	6-46








Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
		Amber	ATTENTION TO KEEP BRAKE Traffic Eye Cruise deactivated Brake released	6-61
	-	Amber	USE BRAKES Dangerous distance to vehicle in front	6-65
		Gray	DECREASE SPEED Reduced brake capacity	6-65
		Amber	Traffic Eye Cruise deactivated	6-63
		Amber	TRFFIC EYE CRUISE MALFUNCTION Traffic Eye Cruise deactivated	6-66
	-	Gray	Auto Cruise deactivated	6-45
		Amber	Traffic Eye Brake disabled	6-51
		Amber	CHECK RADAR Driver Support Systems not available	6-52 6-66









Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
	 	Amber	CHECK CAMERA Driver Support functionality reduced	6-53 6-67 6-73 6-87
		Red	Attention left side !	6-76 6-77
		Red	Attention right side !	6-79 6-80
		Amber	CONTACT WORKSHOP BSIS/LCS system malfunction	6-81
		Amber	CHECK SIDE RADAR BSIS/LCS sensor blocked	6-82
		Amber	LOOK FORWARD Driver Monitor	6-101
		Amber	FOCUS ON DRIVING Driver Monitor	6-102
		Amber	CONTACT WORKSHOP Driver Monitor malfunction	6-102











Indications by the multi-display and indicators				Page
Icon	Indicator(s)	Color	Message	
<b>15 min</b>		Gray	WAIT TO START Starter overheated	10-2
		Gray	IDLE TIME EXCEEDED Engine shutdown	10-8
		Amber	CONTACT WORKSHOP Service required	5-17
		Gray	ATTENTION Upcoming service	5-17
		Amber	CONTACT WORKSHOP Remote control switch malfunction	6-113













# Other Indicators

















## Multi-display















Color	Icon	Indicator(s)	Message	Action
Red			STOP VEHICLE Accelerator pedal failure	Stop the vehicle and contact an authorized UD Trucks dealer for inspection.
Amber			PERFORM THROTTLE TEST Throttle sensor malfunction. Throttle inhibited during test	Stop the vehicle and operate the accelerator pedal in the sequence shown.
Gray		-	BRAKE PEDAL TEST Stop vehicle and release brake pedal fully	Release the brake pedal as instructed on the multi-function display.
			BRAKE PEDAL TEST Depress brake pedal fully	Depress the brake pedal fully as instructed on the multi-function display.
			BRAKE PEDAL TEST Release pedal fully	Release the brake pedal as instructed on the multi-function display.
			BRAKE PEDAL TEST Test correctly performed. Brakes working correctly	The brake pedal test has finished. Normal driving can be performed.
Gray		-	BRAKE PEDAL TEST Test correctly performed. Brake fault remains.	Stop the vehicle and contact an authorized UD Trucks dealer for inspection.
Gray		-	BRAKE PEDAL TEST Test cancelled. Incorrectly performed.	The brake test was performed incorrectly. Retry it from the first.

Color	Icon	Indicator(s)	Message	Action
Red			STOP VEHICLE Truck brake failure	Stop the vehicle and contact an authorized UD Trucks dealer for inspection.
			STAY PARKED Brake pressure low	Charge air at high idle.
			STOP VEHICLE Brake pressure low	Stop the vehicle and charge air at high idle.
Amber			ATTENTION Brake pressure	Stop the vehicle and charge air at high idle.
			CONTACT WORKSHOP Truck brake malfunction	Contact an authorized UD Trucks dealer for inspection.
			CONTACT WORKSHOP Trailer brakes reduced performance	Contact an authorized UD Trucks dealer for inspection.
			WARNING! Poor brake performance	Drop the speed and drive carefully.
Amber			CONTACT WORKSHOP Brake pad thickness cannot be measured	Contact an authorized UD Trucks dealer for inspection.
Red			STOP VEHICLE Air system failure	Stop the vehicle and contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Air system malfunction	Contact an authorized UD Trucks dealer for inspection.
			CONTACT WORKSHOP Air compressor overused	Contact an authorized UD Trucks dealer for inspection.
Amber			ATTENTION Reverse gear and manual mode not possible	Contact an authorized UD Trucks dealer for inspection.

Color	Icon	Indicator(s)	Message	Action
Amber			CONTACT WORKSHOP Clutch malfunction	Contact an authorized UD Trucks dealer for inspection.
			CONTACT WORKSHOP Worn clutch	Contact an authorized UD Trucks dealer for inspection.
Red			STOP VEHICLE Engine derated. Crankcase pressure critical.	Stop the vehicle and contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Boost pressure derated	Contact an authorized UD Trucks dealer for inspection.
			CONTACT WORKSHOP Injection malfunction	Contact an authorized UD Trucks dealer for inspection.
Gray		-	CHECK ACTIVATION CONDITIONS Idling control inactive	Check conditions for Idling control.
			APPLY PARK BRAKE Idling control inactive	Apply parking brake.
			PUT GEAR SELECTOR IN NEUTRAL Idling control inactive	Shift the gear lever or gear selector in neutral.
Gray		-	Engine stopped from chassis	Stop the equipment on chassis.
Amber			CONTACT WORKSHOP Engine lamp malfunction on instrument panel	Contact an UD Trucks dealer for inspection.
Amber			CONTACT VEHICLE PTO activation problem	Contact an authorized UD Trucks dealer for inspection.

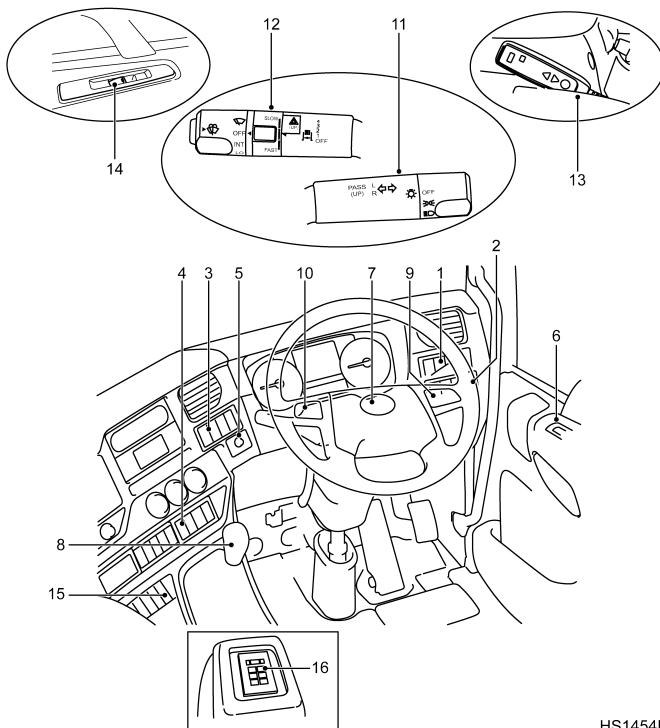
Color	Icon	Indicator(s)	Message	Action
Gray		-	PUT GEAR SELECTOR IN NEUTRAL PTO inactive	Shift the gear lever or gear selector into neutral.
			CHECK CONDITION PTO inactive	Check the operation conditions for PTO.
Amber			CONTACT WORKSHOP Start impossible	Contact an authorized UD Trucks dealer for inspection.
Gray		-	START NOT POSSIBLE Engine start inhibited by chassis	Stop the equipment on chassis.
Gray	N		START NOT POSSIBLE GEAR SELECTOR not in neutral	Shift the gear lever or gear selector into neutral.
Amber			CHECK EQUIPMENT Bodybuilder electrical fault.	Contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Active-Safety malfunction. Electrical fault.	Contact an authorized UD Trucks dealer for inspection.
			CONTACT WORKSHOP Do not use bodybuilder equipment.	Do not use equipment on chassis. Contact an authorized UD Trucks dealer for inspection.
Amber			MONITOR COOLANT LEVEL MANUALLY Sensor malfunction	Check the coolant level. Contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Fuel level cannot be measured	Contact an authorized UD Trucks dealer for inspection.

Color	Icon	Indicator(s)	Message	Action
Amber			AUTO CRUISE MALFUNCTION Auto Cruise deactivated	Contact an authorized UD Trucks dealer for inspection.
Red			Drive level not selected	Set the vehicle height to neutral position using the remote controller.
Gray			Truck not at drive level	Set the vehicle height to neutral position using the remote controller.
Gray			Loading level 1 could not be reached.	Contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP LDWS malfunction	Contact an authorized UD Trucks dealer for inspection.
Red			USE BRAKE IMMEDIATELY!	Use the brake to avoid a collision.
Gray		-	Traffic Eye Brake enabled	Traffic Eye Brake is activated
Amber			CONTACT WORKSHOP Driver Support Systems not available	Contact an authorized UD Trucks dealer for inspection.
			CHECK HANDBOOK Driver Support functionality reduced	Consult this manual to check the functions of the driver support system.
Gray		-	USE BRAKE Increased clutch life	Use brake to reduce clutch load.
Red			STOP VEHICLE Trailer EBS failure	Stop the vehicle and charge air.

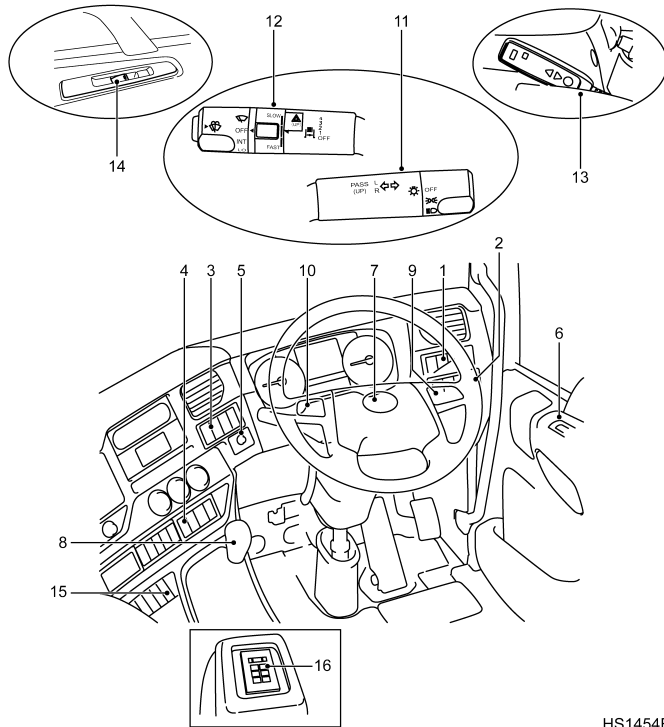
Color	Icon	Indicator(s)	Message	Action
Red			STOP VEHICLE	Use the brake to avoid a collision.
Amber			CONTACT WORKSHOP Trailer ABS malfunction	Contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Fifth wheel indication malfunction. Check if locked.	Contact an authorized UD Trucks dealer for inspection.
Gray		-	Fifth wheel not locked.	Coupler has not locked. Check the connecting condition.
Gray		-	CONFIRM CORRECT COUPLING Fifth wheel locked	Trailer has connected. Check the connecting condition.
Amber			CHECK CABLE HARNESS Trailer EBS electrical connection fault	If the jumper cables are connected securely, contact an authorized UD Trucks dealer for inspection.
Amber			CHECK ENGINE OIL LEVEL Engine oil level sensor malfunction	Contact an authorized UD Trucks dealer for inspection.
Amber			CONTACT WORKSHOP Transmission oil temperature faulty	Contact an authorized UD Trucks dealer for inspection.



# Switches



1.	Headlight levelizer switch .....	5-62
	Transmission PTO switch.....	5-72
	Working light switch .....	5-71
	Rear fog light switch.....	5-69
	Inter-wheel differential lock switch (CG, CW and GW models)....	5-75
	Inter-axle differential lock switch (CG, CW and GW models).....	5-73
2.	Idling control ON/OFF switch .....	5-56
	Idling control switch.....	5-57
	Idling control resume switch.....	5-57
	Front fog light switch .....	5-69
	Inter-wheel differential lock switch (CD and GK models).....	5-79
	Hill start assist OFF switch.....	6-37
3.	TEB OFF switch .....	6-50
	LDWS OFF switch.....	6-72
	UDSC OFF switch.....	6-106
	Manual regeneration switch .....	6-24
	Static trailer brake check switch.....	5-85
	Brake blending OFF switch .....	5-67
	Regeneration stop switch.....	6-24
4.	Off-road mode switch .....	6-109
	Quick warm-up switch .....	5-58
	Mirror heater switch.....	5-84
	ASR OFF switch.....	6-108
	Fluorescent light switch.....	5-71
5.	Power mirror switch.....	5-82
	Right/left selection switch.....	5-82
6.	Door window switch (Driver's side) .....	7-2
	Door window switch (Assistant's side) .....	7-3
	Window lock switch .....	7-3
7.	Horn switch .....	5-68



8.	+/- button .....	6-123
	Emergency switch .....	6-134
9.	Steering switch (Right side) .....	5-68
	OK button .....	5-11
	Back button .....	5-11
	Home button.....	5-11
	Cursor buttons.....	5-11
10.	Steering switch (Left side).....	5-68
	Following distance set switch .....	6-50/6-62
	ECO MODE switch.....	6-124/10-31
	TEC main switch .....	6-60
	Auto cruise main switch .....	6-42
	+/RES switch.....	6-43
	-/SET switch .....	6-43
	Cancel switch .....	6-45/6-64
11.	Stalk switch (Right side).....	5-59
	Lighting switch.....	5-59
	Turn signal switch.....	5-60
	Headlight position change switch .....	5-61
	Passing switch .....	5-61
12.	Stalk switch (Left side) .....	5-63
	Auxiliary brake switch.....	5-64
	ESCOT auto shift down switch .....	5-66
	Wiper and washer switch .....	5-63
	Hazard switch.....	5-64
13.	Remote controller.....	6-113
14.	Door window switch (Assistant's side) .....	7-3
15.	Power mirror retraction arm switch (For Singapore) .....	5-83
	Beacon lamp switch (For Singapore) .....	5-72
	Coolness storage bedroom cooler (For Singapore) .....	7-25
16.	Power mode switch (ATM) .....	5-85

HS1454E

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## 2. Introduction

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Warranty.....2-2  
Periodical inspection .....2-4  
Handling a new vehicle .....2-5  
Handling of the logged  
vehicle data .....2-6  
Open source software .....2-6

## Warranty

Your UD Trucks vehicle has been manufactured using the latest technology and under strict quality control to fulfill your expectations.

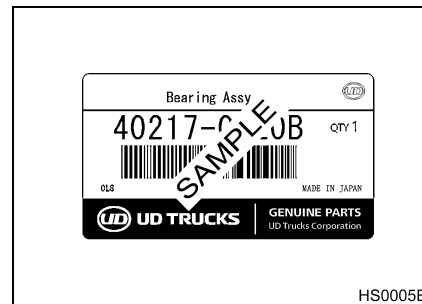
UD Trucks warrants defects in materials and faulty workmanship which exist in the product under the conditions specified in the separate “Warranty Manual”. Please contact your nearest authorized UD Trucks dealer.

## Terms and conditions

The UD Trucks warranty does not cover faults due to incorrect usage or faults which occur in a vehicle that has not undergone the specified periodical maintenance. For details, refer to the separate “Warranty Manual”.

## UD Trucks genuine parts

- The quality and performance of UD Trucks genuine parts is guaranteed by UD Trucks.
- Be sure to use UD Trucks genuine parts and lubricants.
- UD Trucks genuine parts are available from authorized UD Trucks dealers. Genuine parts can be identified by the labels or stickers on the package.



## Vehicle identification number (VIN) plate

The vehicle identification number plate is attached above the right step of the cab.

## Chassis number and engine number

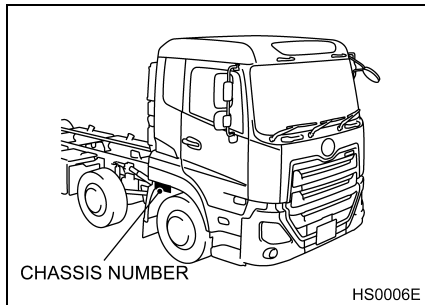
### NOTE

The chassis number and engine number are necessary when registering or inspecting the vehicle.

In addition, when ordering a part or when requesting repair work, informing these numbers will make the process smoother.

## Chassis number

The chassis number is stamped on the right frame near the front wheel.



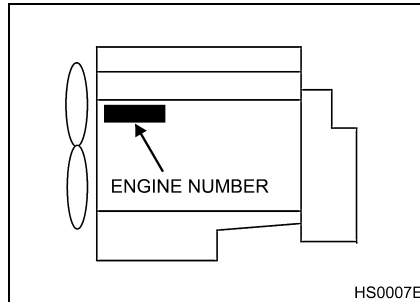
[Example]

JNCMCG0G1MU-000123

Serial number

## Engine number

The engine number is stamped on the left side of the cylinder block.



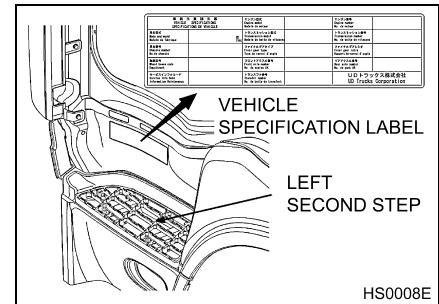
[Example]

GH11\*XXXXXX\*

Serial number  
Engine type

## Vehicle specification label

The vehicle specification label contains the vehicle type, chassis number, engine type, etc. It is attached above the left second step of the cab.



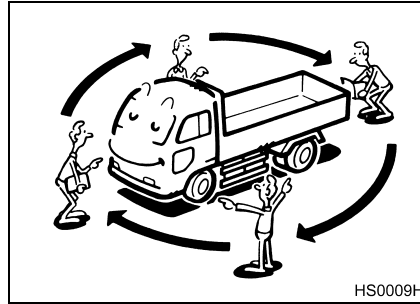
## Periodical inspection

- Periodical inspection and maintenance is necessary to ensure the safety and performance of the vehicle.
- Periodical inspections consist of the daily (pre-driving) inspection, periodical inspection and periodical replacement of parts.
- It is recommended to carry out the periodical inspection to ensure safe and comfortable vehicle operation and long service life.

## Daily (pre-driving) inspection

The daily (pre-driving) inspection should be performed by the user (driver) once a day before driving the vehicle to ensure safe and comfortable driving at all times. For details of the inspection procedure, refer to

“Daily (pre-driving) inspection” (page 12-1).

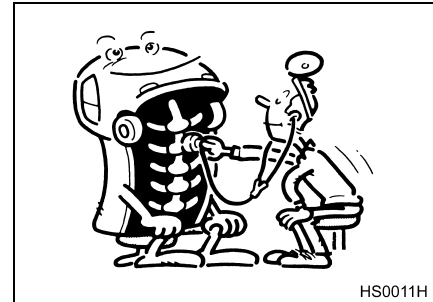


## New vehicle inspection

The new vehicle inspection at the first 5,000 km of operation is conducted without charging for labor (lubricants and parts will be charged). Prepare the warranty manual and contact your nearest authorized UD Trucks dealer.

## Periodical inspection

- To maintain your vehicle's performance and to drive safely and comfortably, conduct the specified periodical inspection and maintenance.
- There are two types of periodical maintenance: time-based and distance-based.



## Time-based periodical inspection

This type of inspection should be conducted at the time intervals specified for that part, such as every 6 months, every 12 months, etc.

## Distance-based periodical inspection

Lubricants and filter elements are mainly affected by the distance driven rather than the period of time used. Therefore, the inspection and replacement of such items should be conducted based on the distance driven, irrespective of the period of time used.

## Periodic replacement parts

To ensure safety, we recommend you to periodically replace the critical parts that are directly related to safety. Such parts will deteriorate if used beyond the replacement period and it is difficult to determine whether their service life has elapsed or not by the standard periodical inspection. Therefore, we recommend you to replace the periodic replacement parts with new ones at their replacement period even if no irregularity is found.

### NOTE

- **The periodic replacement is conducted at the customer's responsibility and expense. It is not a warranty item.**
- **If the inspection and replacement period for a part is indicated by both time period and distance driven, apply whichever comes first.**

## Handling a new vehicle

The service life and performance of a vehicle depend greatly on how it is handled during the initial break-in period. To extend the service life and get the best performance from your vehicle, observe the following recommendations.

## Break-in inspection

Be sure to conduct the break-in inspection. Prepare the warranty manual and contact your nearest authorized UD Trucks dealer.

## Break-in precautions

During the initial 5,000 km of operation, do not race or strain the engine. Operate the engine at about 70% of the maximum engine speed. After that, raise the allowable engine speed limit gradually.

## Handling of the logged vehicle data

Your UD Trucks vehicle is equipped with an electrical system that records various types of information about the truck and how it is being used. The information that is saved includes vehicle status (position, operation, control, and failure information), mileage, speed, fuel consumption, selected gear, and engine speed.

The information is used by UD Trucks for product development and quality assurance purposes. UD Trucks and its authorized dealers (workshops) will use the information. Questions regarding the use of the information can be directed to your nearest authorized UD Trucks dealer.

## Open source software

Your UD Trucks vehicle contains various software programs. Some of those programs are open source software, which means that, among other things, you may have the right to access the source code. This depends on the license terms for the respective software, as agreed between UD Trucks with its affiliated companies and the respective licensors.

For further information about UD Trucks' use of open source software and about where you can access the relevant source code, as well as the applicable copyright notices and developer credits, license terms and legal disclaimers, please visit [www.udtrucks.com/opensource](http://www.udtrucks.com/opensource).



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# 3. For safe operation

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Before driving ..... 3-2

While driving..... 3-5

When there is a problem ..... 3-10

Take good care of  
the vehicle ..... 3-12

To prevent troubles ..... 3-17

Exhaust emission control  
system..... 3-24

## Before driving

### Getting in and out of the cab

#### Checking the cab

- A GPS/telecommunication antenna is installed on the roof of the cab. If the roofs of the cab and the rear body are covered with snow, it may fall on the antenna when braked, causing damage to the antenna. Before getting in the cab, check for snow on the roof and remove if necessary.
- On some models equipped with an overrider on the front bumper, do not step on the overrider when checking the cab. If doing so, you may fall off from the overrider or the overrider may fall off.
- If lumps of dirt or snow on the harnesses or brake hoses around the engine or under the vehicle are not removed, they will become larger as the vehicle

travels. This may result in the harnesses or brake hoses becoming damaged due to vibration. Conduct checks and cleaning before and after driving.

#### When opening the door

##### (See page 4-3)

Check both front and rear of the vehicle to make sure that it is safe before opening the door. Suddenly opening the door without checking for safety is very dangerous because it could result in a collision with a vehicle coming from behind, striking a pedestrian, or other accident.

### Seat position and steering wheel position

(See page 4-8, 4-16)



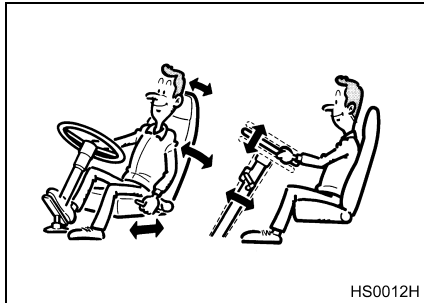
#### WARNING

**Make sure that the vehicle is stopped when adjusting the seat and the steering wheel to set the correct driving posture. Adjusting the seat or the steering wheel while driving could lead to an accident. Never do it.**

- Observe the following when adjusting the seat.
  - Sufficiently depress the pedals.
  - The steering wheel can be easily operated while your shoulders are against the seatback.
  - The seat belt can be worn correctly.

- Adjust the steering wheel to the position where it can be easily operated while gripping it with both hands.

Make sure that the steering wheel is securely locked in place after adjusting the steering wheel position.



## Obtaining the field of vision

**Do not hang accessories from the windshield or other areas.**

### ! WARNING

- Do not hang accessories or decorations from the windshield or attach seals, films, etc., on it. Doing so could block the forward field of vision and result in an accident.
- Do not attach accessories or seals on the windows. Doing so could not only block the field of vision but the suction cup could act as a lens and start a fire.

**Do not place items on the instrument panel or the dashboard.**

### ! WARNING

Do not drive while items are placed on the instrument panel or the dashboard. Doing so could impede the driving field of vision and items that fallen down or thrown could hinder driving and result in an accident.

**Do not use curtains while driving.**

### ! WARNING

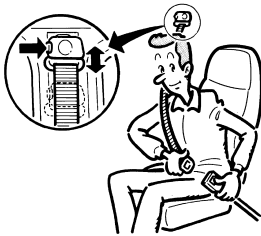
Do not drive with curtains in use. This may obstruct driving visibility and lead to an accident.

## Wearing and adjusting the seat belt

(See page 4-16)

### WARNING

- Always put on the seat belt before driving and do not take it off while driving. Place the shoulder belt across the shoulder and the lap belt across the pelvis.
- Putting on or taking off the seat belt while driving is very dangerous. Never do it.



HS0013H

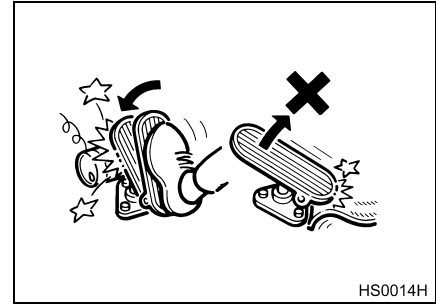
## Cleaning around the pedals

### Accelerator and brake pedal operation

(See page 12-17)

### WARNING

Be careful not to let mats, gravel, empty cans or bottles, or other items get underneath the accelerator pedal or brake pedal. Items getting stuck under the pedals could cause the brake not to work well, the accelerator pedal not to return well, or the brake to drag, all of which could lead to an accident.



HS0014H

## Floor mat

Before you start driving, make sure that the floor mat is properly secured.

(See page 13-81)

## Dangerous items

Do not carry fuel or aerosol cans in the cab.



### WARNING

Do not carry containers containing fuel, aerosol cans, or similar containers in the cab. Doing so is very dangerous because they may catch fire or the containers rupture in some cases.

## Flammables in the engine compartment

Make sure that no flammables or other foreign materials are left in the engine compartment.

(See page 12-2)

## While driving

### Starting the engine

When starting the engine

(See page 10-2)

Before starting the engine, make sure that the transmission is shifted to the neutral position and the parking brake is set to the PARK position.

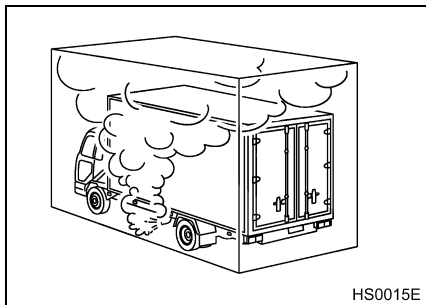
Be cautious of exhaust gas

(See page 10-2)



### WARNING

Starting the engine in insufficiently ventilated areas, such as a garage or warehouse, could result in inhalation of harmful exhaust gases, so be careful that this does not happen. Especially, do not leave the vehicle idling for a long period of time.



## When starting off

### Start-off precautions

(See page 10-29)

#### NOTE

- When starting off, look with your eyes to make sure that there are no people or obstacles around the vehicle.

- There are blind spots that cannot be checked by only using the vehicle's mirrors. When stopped at a traffic signal, etc., be conscious of the area around the vehicle and make sure that it is safe before starting off.

## While driving

### Maximum speed of vehicle - Speed limiter device

(See page 5-2)

Vehicles equipped with the speed limiter cannot be further accelerated by operating the accelerator pedal when the vehicle reaches a specified speed limit.

For speed limits, refer to the "Speed limiter device (SLD)◆" (page 5-2).

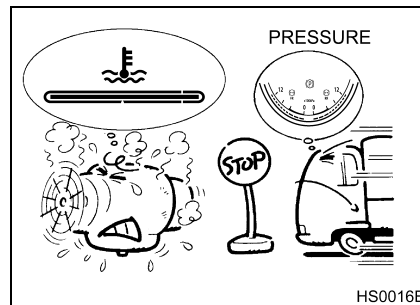
## Meter displays

(See page 5-2)



#### WARNING

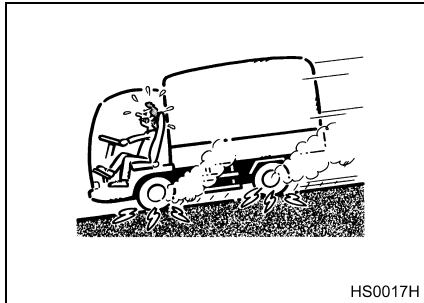
Be conscious of the meter displays and the warning indicators while driving. Ignoring the warnings and continuing to drive could lead to a malfunction or accident and is very dangerous. If critical warning appears, immediately stop the vehicle in a safe location and contact the nearest authorized UD Trucks dealer.



### Prolonged use of main brake

(See page 10-34)

Continuously using the main brake for a long period of time could decline the braking effect due to overheating. Do not leave your foot on the brake pedal while driving.

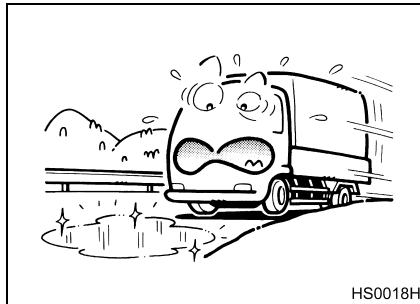


### How to use the auxiliary brakes

(See page 5-64)

**CAUTION**

Be careful when using them on slippery roads, such as wet road. Especially on icy roads, avoid operating the auxiliary brake because doing so may make the vehicle unstable.



### Parking brake lever operation

(See page 6-7)

**DANGER**

Be sure to apply parking brake when you leave your vehicle.

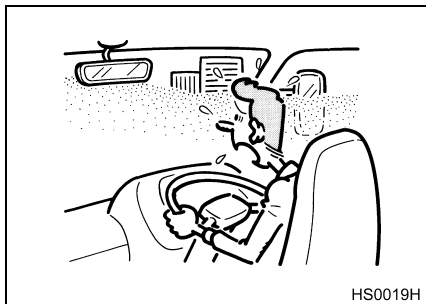
**WARNING**

Do not operate the parking brake lever while driving. Doing so makes driving unstable and is very dangerous.

## Air conditioner operation

(See page 7-3)

Leaving the air conditioner set to inside air recirculation for a long period of time will cause the windows to fog up and impair visibility. Switch to outside air introduction and drive after the fogging has cleared.



## Coasting

 **DANGER**

**Do not turn the ignition switch to the OFF position while driving. Coasting with the engine off is dangerous and absolutely should not be done. Compressed air will not be supplied to the brakes when the engine is off, so that the brakes will not work. The power steering system also will not work, so it will be difficult to turn the steering wheel, which will hinder steering operation.**

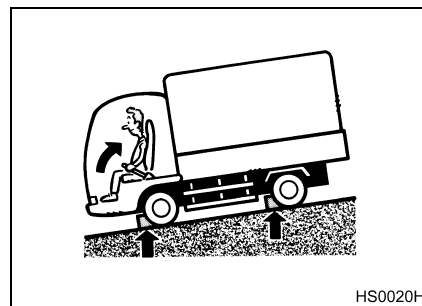
## Car navigation system operation

The car navigation system should not be operated by the driver while driving for safety. Furthermore, the driver should look at the navigation screen as short as possible while driving. Being distracted by the screen could lead to an accident.

## Parking

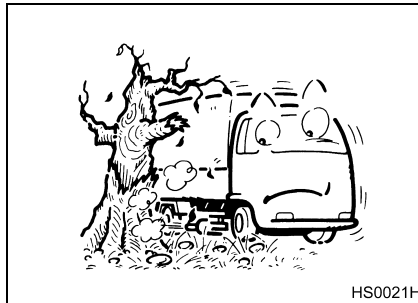
### When parking

- Select a flat place. Set the parking brake lever to the parking position to apply the parking brake, and make sure that the lever is locked in place. Also check to make sure that the vehicle is completely held in place. Chock the wheels when parked on a hill.





- If it is likely that the brake system will freeze when parked in a cold location, use wheel chocks in order to prevent the vehicle from moving. (Vehicles with ESCOT-VI cannot be parked with the gear engaged.)
- Do not take a nap in the driver's seat with the engine running. Always turn off the engine when taking a nap.
- If you nap while leaving the engine running, you could accidentally depress the accelerator pedal or move the gearshift lever or gear selector causing the vehicle to start off, which could result in an accident. In addition, the overheating of the engine exhaust pipe could cause a fire or exhaust gas could leak into the cabin and cause carbon monoxide poisoning.
- When parking the vehicle, select a location that is lawful, safe, and will not interfere with traffic.
- Just after driving, or when leaving the vehicle parked with the engine running for a long time, park the vehicle away from the easily combustible materials such as dry grass and paper. When just after driving, or when UDPC (UD Particulate Cleaning) is in the regeneration mode, temperature of the exhaust pipes, muffler, and exhaust gas is very high, which can be a cause of fire if flammables are around. In addition, you may be burnt by the high exhaust gas.



HS0021H

### Do not use the bed while driving



**If the bed is used while driving, the person could be thrown around during a collision or emergency braking, and thus, it is dangerous. Do not use the bed while driving.**

## When there is a problem

### If a tire becomes flat

### If a tire becomes flat while driving

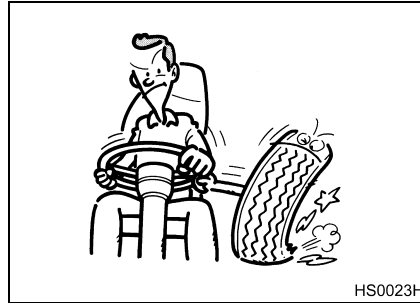
(See page 15-6)

If a tire becomes flat or bursts while driving, calmly grip the steering wheel tightly, slowly brake to reduce speed, and stop the vehicle in a safe location. Abrupt braking could pull the steering wheel out of your hands.



### **DANGER**

Continuing to drive with a flat or burst tire will cause the tire to overheat and could cause a fire.



## Towing

### When towed

(See page 15-5)



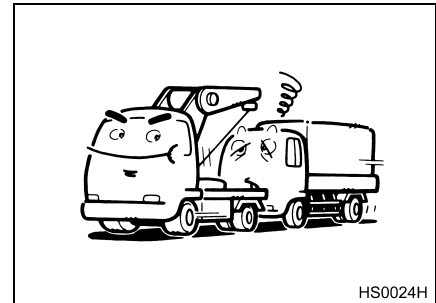
### **WARNING**

Not only will the brakes not work when the engine is stopped, but it will also be hard to turn the steering wheel, so only use a tow truck to tow the vehicle.




### **CAUTION**

- Disconnect the propeller shaft. Driving with the shaft connected will damage the transmission.
- Do not disconnect the axle shaft unless the axle is faulty.

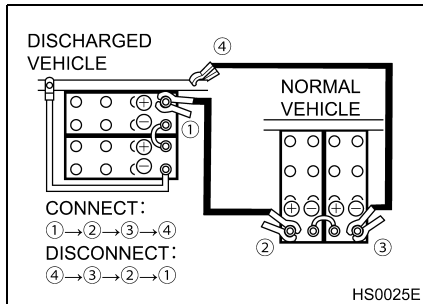


## Discharged battery

When using booster cables  
(See page 15-15)

 **DANGER**

- **Use heavy-duty booster cables for heavy-duty vehicles.**
- **Observe the connection order when drawing power from a vehicle with a normal battery. The generation of sparks during connection could cause a serious accident.**



## Overheating

Measures to take when the vehicle overheats

(See page 15-16)

- Suddenly turning off the engine when the vehicle overheats could cause the engine to seize up. Continue to run the engine at idle until the temperature drops.
- When supplying coolant, be careful not to be burnt. The coolant reserve tank cap is hot, and steam and hot water may gush out from the reserve tank as the cooling system is very hot and under high pressure.

## Operation of ESCOT

Emergency driving by the ESCOT system

(See page 15-17)

Make sure that the shift lever is in the “N” position when turning ON the emergency switch.

## Take good care of the vehicle

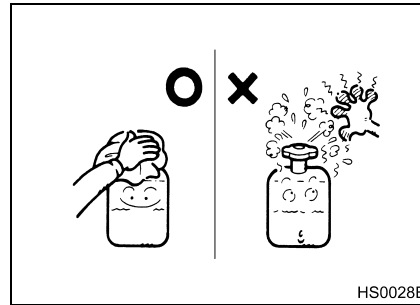
### Coolant inspection and supply

#### Handling the coolant reserve tank cap

(See page 13-69, 13-76)

#### WARNING

Do not carelessly touch the coolant reserve tank cap when the engine is hot, such as when it has overheated or immediately after driving. The cap is hot and if opened, steam or hot water could spray out and burn you.



HS0028E

### Long Life Coolant (UD Trucks Genuine LLC) (See page 13-74, 13-80)

Always use UD Trucks genuine Long Life Coolant VCS2 to prevent engine and radiator damage from coolant freezing.

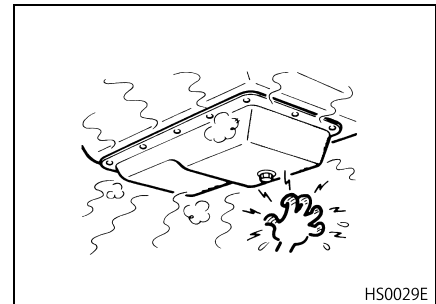
### Inspection and supply of lubricants

#### Inspection, supply, and change of lubricants

(See page 14-3)

#### WARNING

Do not inspect, supply, or change engine, transmission, or differential gear oil immediately after driving because they are hot. You could be burned by the hot oil.



HS0029E

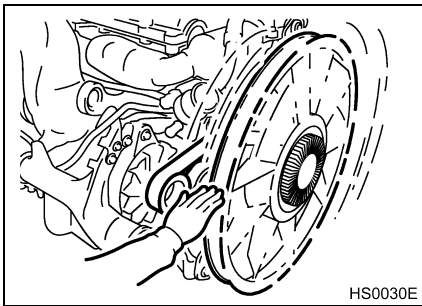
## Drive belt

### Drive belt tension inspection

(See page 12-12)

**⚠ DANGER**

- Stay clear from the drive belt and rotating parts when the engine is operating.
- Perform drive belt inspection after the engine is stopped and has cooled down.



HS0030E

## Handling the fuel filter

### When replacing the fuel filter

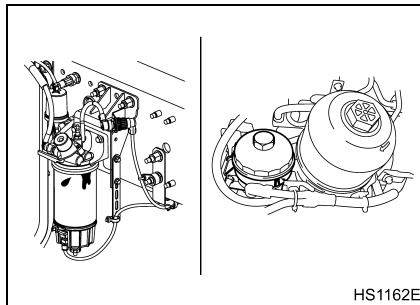
(GH8 Engine: See page 13-14)

(GH11 Engine: See page 13-21, 13-27)

**⚠ WARNING**

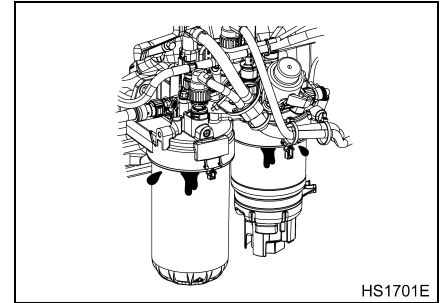
Make sure that the fuel filter is installed correctly. If it is not installed correctly, fuel could leak and cause a fire.

### GH8 Engine



HS1162E

### GH11 Engine



HS1701E

### Water draining of fuel filter

(GH8 Engine: See page 13-20)

(GH11 Engine: See page 13-31)

**⚠ CAUTION**

If water enters into the fuel system, it could cause operational malfunctions and other problems. When the message “Water in fuel filter” is displayed, immediately drain out the water.

## Fuel tank

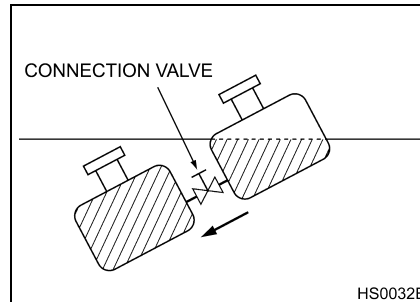
Use the specified fuel  
(See page 10-51)

### CAUTION

- Be sure to use the low sulphur diesel fuel (S10: Sulphur constituents 10 ppm or less).
- Do not use gasoline, kerosene, fuel oil, etc. Using a fuel other than diesel fuel could result in a fire, malfunction of the exhaust emission control system, or damage to the engine.

If your vehicle has additional fuel tank(s)  
(See page 10-39)

- Always close the connection valve during and immediately after fueling.
- If the connection valve is open when the tank is nearly full of fuel, the fuel will flow to one of the tanks when driving or parking on a hill, which could cause fuel to spill from the filler port, which could cause a fire.



Amount of fuel  
(See page 5-4)

Try to fuel early and always keep the tank nearly full. This prevents condensation in the fuel tank and the vehicle from running out of fuel. Also be careful to keep water and dust from getting in the tank when fueling.

**Air bleeding of fuel system**

(GH8 Engine: See page 13-33)

(GH11 Engine: See page 13-34)

### CAUTION

Air bleeding of the fuel system is required when the vehicle has run out of fuel. If the bleeding is insufficient, the engine will not start or will stop after a while.

## Refueling at self-service petrol station, etc.

When refueling at a self-service petrol station, etc., be sure to observe the following items to prevent an accident such as a fire caused by static electricity or spilling of the fuel.

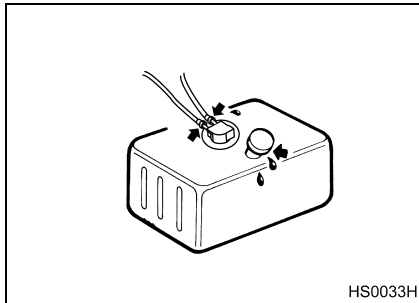
### WARNING

- Make sure that the engine is stopped.
- Before opening the fuel tank cap, be sure to touch a metal part to discharge static electricity.
- Always perform the fueling by one person.
- Securely insert the nozzle into the filler port. Lifting the nozzle to add more fuel after the auto stop activates is dangerous because the auto stop will not activate again and fuel may spill out.

- Please observe the precautions posted on the petrol station, etc. If the filling cannot be performed normally, call the station attendant and obey his/her instructions.

## Fuel piping

Check that there are no fuel leaks from the fuel tank and fuel piping. If there is a fuel leak, it could cause a fire.

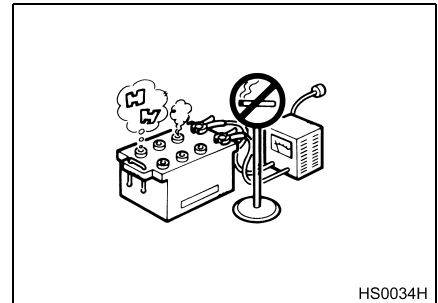


## Handling of the battery

When charging the battery  
(See page 13-38)

### WARNING

Keep flame and heat away from the battery during charging. The hydrogen gas generated during charging could ignite and explode.



## Battery terminals

(See page 13-38)

 **CAUTION**

Loose or corroded battery terminals could make it difficult to start the engine and to charge the battery, which will shorten the life of the battery. Securely connect the battery cables and coat the terminals with chassis grease.

## When disconnecting or connecting the battery cables

(See page 13-39)

 **WARNING**

Be sure to set the vehicle in the service mode before disconnecting or connecting the battery cables. Otherwise, a spark may occur between the battery terminal and the battery cable terminal, which may result in a serious accident. Moreover, it may ignite the hydrogen gas generated from the battery to explode the battery, causing a serious injury.

## In extremely cold climates

 **CAUTION**

Leaving the battery discharged will make it easier for the battery fluid to freeze, which could damage the battery. Keep the battery filled with battery fluid and charged.

## Windshield washer

### Windshield washer fluid

Be sure to use UD Trucks genuine windshield washer fluid.

Using antifreeze will interfere with the field of vision and could lead to an accident. Do not use antifreeze as washer fluid.



## Jacking up the vehicle

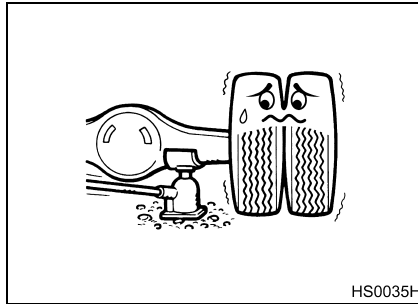
### When changing a tire

(See page 13-43, 13-54)

#### WARNING

- When jacking up the vehicle to change a tire, perform on a stable, hard, level ground where the jack can be used safely. Using the jack on sloped or soft surfaces could cause the jack to tip over and the vehicle to drop.
- On models with differential lock, do not jack up the vehicle with the differential lock engaged (differential lock switch in "ON" position). If a jacked-up wheel is turned in such a condition, the wheel which is on the opposite side of the locked differential and on the ground may turn, and the vehicle may fall off the jack.

- When using the jack, firmly apply the parking brake and chock the wheels.
- Make sure that the jack is firmly attached to the jack-up point before beginning to jack up the vehicle.
- Do not start the engine while the vehicle is jacked up. Also, do not go underneath the vehicle while it is jacked up.



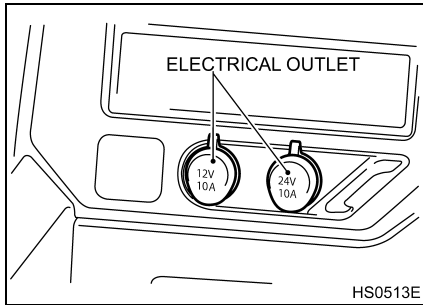
## To prevent troubles

### Electrical outlets in the cab<sup>♦</sup>

**Make sure that the device to be used does not exceed the electric capacity of the outlets.**

(See page 8-7)

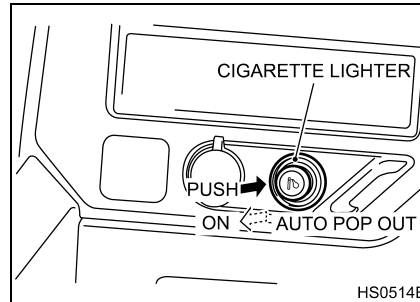
The allowable load of the electrical outlets in the cab are 10A (12V-120W) and 10A (24V-240W). The allowable load of each outlet is indicated on the cap of the outlet. Exceeding the allowable load or plugging the device to an incorrect outlet could result in a fire.



## Cigarette lighter<sup>†</sup>

### Cigarette lighter operation (See page 8-8)

The cigarette lighter is heated to a high temperature when used. Leaving the cigarette lighter pushed in or using it incorrectly could cause a malfunction of it or start a fire. Handle it with care.

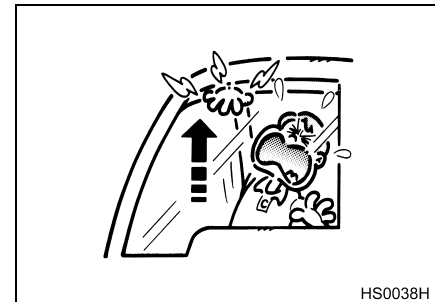


## Power window operation

### When closing the windows (See page 7-2)

#### WARNING

Make sure that no one has his/her head or hands extended outside the window before operating the switch. If the window is closed when a body part is extended outside the window, the person could be caught by the window and injured.



## Modification

**Do not make unauthorized modifications.**



### WARNING

**Installing parts that are unsuitable for the vehicle's performance and function could lead to a malfunction or an accident.**

- Contact the nearest authorized UD Trucks dealer for advice before installing accessories, etc.

## Installation of a wireless device

- Do not install a wireless device which is not approved by regulations.
- Before installation, consult the nearest authorized UD Trucks dealer. If the wireless device is installed incorrectly, the function of the electronic control system may be adversely affected by radio noise, resulting in a vehicle breakdown or malfunction.

**Do not add additional pneumatic units.**



### CAUTION

**Never add additional pneumatic units to air-suspension vehicles. Doing so is dangerous because the pneumatic system uses high system pressure.**

## Adding electrical devices

**Do not perform wiring on your own.**



### WARNING

**Do not perform any wiring or changing of fuses on your own to install after-market electrical devices. Doing so could result in electrical component malfunctions or wiring overheating that could result in a fire.**

## A diagnostic tool used by our workshops is supposed to be connected to this vehicle

Do not connect an accessory to the data link connector. Doing so may cause a failure to the vehicle or a malfunction, which would not be covered under the warranty.

UD Trucks is not responsible for the results caused by connecting equipment other than a diagnostic tool used by our workshops.

## Replacement of fuses

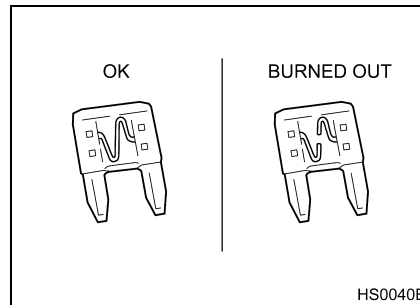
(See page 15-7)

### DANGER

Use fuses of the specified capacity. Using fuses other than those of the specified capacity could cause circuit overheating that could result in a fire.

### CAUTION

Do not use a fuse of a different circuit as a temporary fix. Doing so may cause a malfunction to the circuit of the removed fuse.

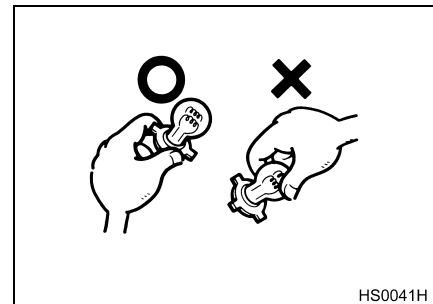


## Replacement of light bulbs

(See page 13-61)

### CAUTION

- Use UD Trucks genuine parts when replacing light bulbs. Using non-genuine parts or bulbs other than those of the specified capacity could result in a malfunction or device damage.
- Do not touch the glass part of halogen light (headlight) bulbs. Doing so will markedly shorten the useful life of the halogen light.



- Contact the nearest authorized UD Trucks dealer for replacement of the headlight LED unit.

## Electrical welding precautions

Observe the following when conducting electrical welding work.



### CAUTION

When performing electrical welding, the current of the welder could flow back into the ground circuit and damage the electronic control unit, preventing it from functioning normally. Be sure to observe the following items.

- Turn the ignition switch to the OFF position.
- Disconnect the battery's negative (-) terminal. Refer to "When disconnecting the battery cables" on page 13-39.
- Be sure to ground the welder close to the weld contact area.
- When the work is completed, check to make sure that all units are functioning normally.

- Contact the nearest authorized UD Trucks dealer for advice before performing an electrical welding work.

## Washing the vehicle

When washing the vehicle  
(See page 10-53)



### CAUTION

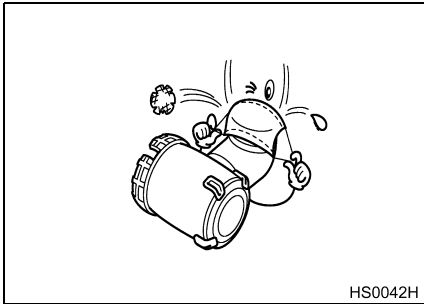
Take measures when washing your vehicle to ensure that no water will be splashed on electrical components (starter motor, generator, sensors, relays, electronic units, lamps, EGR valve, turbocharger, actuators, etc.).

Avoid high pressure washing (steam cleaning) of the electrical components, wiring connectors, electrical wires, etc., on the chassis.

- Some electrical components contain electronic circuits which, if they become wet, could render the vehicle out of order or cause malfunctions. The engine and cabin in particular contain many electrical

components, so do not directly wash these areas with water.

- When washing the vehicle, cover the engine air intake to prevent water and foreign materials from entering the engine.

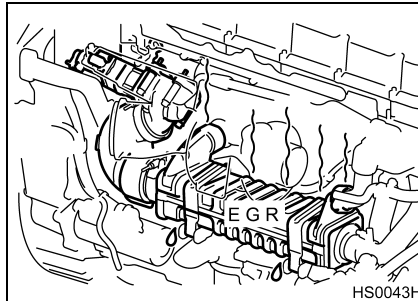


- When washing the vehicle's undercarriage, do not directly apply the steam or water from a pressure washer on the steering shaft joint, front axle drag link, tie rod dust covers, or, on vehicles with air suspensions, the rear axle stabilizer anchor rubber dust cover. Doing so could cause a malfunction.

## EGR system

### WARNING

**Be careful not to touch any of the components of the EGR system (EGR valve, EGR piping, EGR cooler, coolant piping, and turbocharger actuator.) while the engine is running or immediately after the engine stops. These components are extremely hot and can cause a burn injury.**



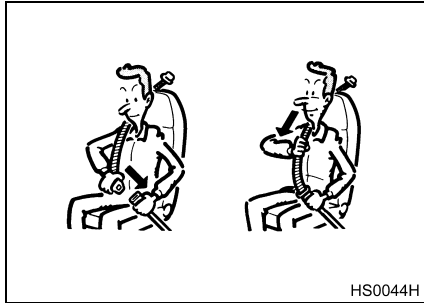
- To avoid possible damage, do not step on or otherwise apply a load to any of the EGR system components.

- Engine overheating can lead to the failure of EGR system components. If the engine overheats, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

## SRS airbag system

(See page 6-12)

- Ensure correct use of the SRS airbag system by following the information in this manual. Failure to follow the information can lead to system failures or malfunctions, possibly resulting in serious injuries.
- The seatbelt must be worn at all times. The airbag is not a substitute for the seatbelt. An airbag alone cannot restrain the occupant from flying off the seat.



## When children are riding in the vehicle

### Method for loading children in the vehicle

- Do not hold a child while riding in the vehicle. It might not be possible to hold a child if there is sudden braking or a collision from behind, which could result in injury.
- The seat belts are for adults. When a child are riding in the vehicle, use an appropriate child seat or booster seat.

## Do not allow children to play with the controls in the vehicle.

- Allowing children to operate the window could result in a hand or head trapped by the window, causing an injury. For safety reasons, lock the window lock switch and allow operation from only the driver's seat.
- Absolutely do not allow children to touch the vehicle's driving controls or equipment. Doing so could result in an accident or vehicle malfunction.
- Do not allow children to put their arms or heads outside the vehicle windows. They could be struck by another vehicle or an obstacle or they could strike the window frame during sudden braking and suffer an injury.

## When leaving the vehicle

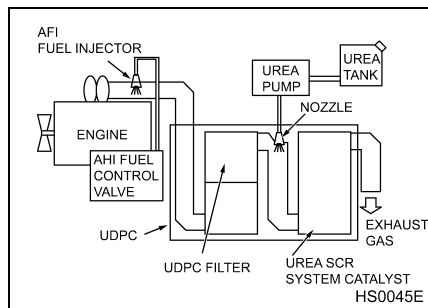
When leaving the vehicle, always take children with you and never leave them alone in the vehicle. Children could accidentally cause the vehicle to start off or could cause a fire or other accident. In addition, this is dangerous because the inside of the vehicle will become very hot during hot weather and the children could suffer heat stroke.

## Exhaust emission control system

- The exhaust emission control system uses a UDPC (UD particulate cleaning) filter to trap PM (particulate matter), and a urea SCR system catalyst to convert NOx into water and nitrogen. The result is reduced emissions of PM and NOx.
- When the amount of soot trapped in the UDPC filter reaches the limit, UDPC automatically goes into the cleaning (regeneration) mode in which the soot is burned off. How often it goes into the cleaning mode depends on how the vehicle is driven by the driver.
- The urea SCR system cuts NOx in the exhaust gas by injecting a urea water solution (AdBlue®\*) into the muffler to break down NOx into water and nitrogen.

\* AdBlue® is a registered trademark of the Verband der Automobilindustrie e.V. (VDA).

- Observe the following points to prevent system failures.



### UDPC (UD Particulate Cleaning)

When the amount of soot collected in the filter reaches the limit, UDPC automatically burns off the soot (a process called “regeneration”). This prevents excessive accumulation of soot in the filter, maintaining the UDPC’s cleaning performance at the optimum level.

**UDPC automatically burns off trapped soot. (Regeneration)**



#### WARNING

- The exhaust piping, the muffler, the areas around these components and the exhaust gas are hot while the regeneration mode is active and are still hot after the engine stops. Do not stop the vehicle near fallen leaves, waste paper or other flammables.
- Flammables near the vehicle can catch fire. Hot exhaust gas can cause burns.



**NOTE**

- Regeneration (burning off soot in the filter) may not be completed depending on how the vehicle is being driven. If the “Start regeneration immediately” message is displayed on the multi-display and the exhaust emission control system warning indicator flashes, manually burn off the soot by pressing the manual regeneration switch.
- AFI (After-treatment fuel injection) injects fuel into the exhaust piping to assist the regeneration.

- UDPC may raise the idling speed when the following conditions are met. This is to increase the exhaust gas temperature for regeneration of filter and is not a failure.
- Exhaust gas temperature is too low for too long period (such as when the engine has been running at idle for an extended period of time). Regeneration is suspended and the idling speed returns to normal upon driver input such as shifting the transmission into gear to start driving. If regeneration is suspended too early, it may restart after the vehicle is stopped.
- The regeneration mode starts automatically while driving.

**Perform manual regeneration when “Start regeneration immediately” message is displayed and the exhaust emission control system warning indicator flashes.**

**(See page 6-29)**

If “Start regeneration immediately” message is displayed on the multi-display and the exhaust emission control system warning indicator flashes, promptly carry out manual regeneration to burn off the soot trapped in the UDPC filter.

**WARNING**

- Do not carry out manual regeneration in closed or poorly ventilated places such as a garage or warehouse. There is a risk of carbon monoxide poisoning from the exhaust gas.
- Do not carry out manual regeneration near fallen leaves, waste paper or other flammables. The exhaust piping, the muffler, the areas around these components and the exhaust gas are hot while the cleaning mode is active, and may cause nearby flammables to catch on fire. To prevent possible burn injuries, do not touch the exhaust piping, the muffler, the areas around these components or the exhaust gas. Paved road surfaces on which the vehicle is parked may become discolored from the heat of regeneration.

**CAUTION**

Continuing to drive the vehicle with the “Start UDPC regeneration” message displayed and the exhaust emission control system warning indicator flashing can result in a clogged filter or system failure.

**NOTE**

- During manual regeneration, the engine speed will increase. This is to increase the exhaust gas temperature to burn off trapped soot (regeneration) and is not a failure.
- During manual regeneration after the vehicle has been washed or driven in the rain, white smoke may be generated around the muffler. This is water vapor from around the muffler and is not a problem.

- AFI (After-treatment fuel injection) injects fuel into the exhaust piping to assist the regeneration.

## Urea dosing system

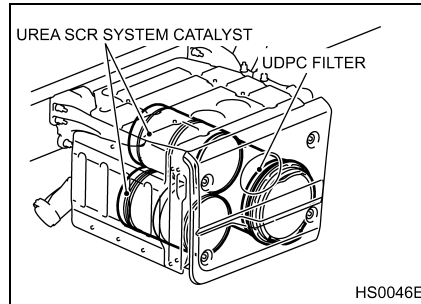
The urea dosing system (urea water pump and nozzle) continues to operate for few minutes after the ignition switch is turned off. Therefore, wait for at least 5 minutes before disconnecting the battery cable or electrical system connectors when servicing the vehicle, etc.

**NOTE**

A clicking sound may be heard from around the AdBlue tank when the engine is operating. This is an operating sound of the AdBlue pump and is not a malfunction. This sound may continue a maximum of 10 minutes when the engine is idling.

## Muffler

- To maintain its efficiency, the UDPC filter needs to be cleaned regularly to remove ash that accumulates in the filter since, unlike soot, it cannot be burned in the regeneration process. Contact the nearest authorized UD Trucks dealer regarding ash removal.
- To maintain its efficiency, the catalyst for urea SCR system needs to perform periodical UDPC maintenance regeneration. If not performed, a warning is displayed on the multi-display. Contact the nearest authorized UD Trucks dealer regarding the UDPC maintenance regeneration.
- Use UD Trucks genuine parts for any replacement needs that may arise due to damage or other reasons.



**Do not touch the water that comes from the muffler.**

**⚠ CAUTION**

**Do not touch the water that comes from the muffler. It is slightly acidic due to the action of the oxidizing catalyst in the muffler. If it gets on the skin, etc., flush well with water to wash it off.**

**Do not kick or strike the muffler.**

**⚠ CAUTION**

**The muffler contains a catalyst, so do not kick or strike the muffler. Doing so could damage the catalyst.**

The muffler of this vehicle has the following characteristics.

#### NOTE

- The exhaust emission control system cleans and then discharges the exhaust gas, so the exhaust gas smells differently than that of conventional diesel-powered vehicles.
- Some white smoke might come from the exhaust pipe when the engine is started, but this is just steam and is not a problem.
- Some white smoke might come from around the muffler when burning soot (regeneration). This is just steam arising from water around the muffler and is not a problem.

Do not modify the tailpipe.

#### ⚠ CAUTION

Changing the orientation or length of the tailpipe could degrade the exhaust gas cleaning effect, so do not modify the tailpipe. When the construction of the body requires that the tailpipe be modified, contact the nearest authorized UD Trucks dealer for advice.

## Urea water solution (AdBlue®)

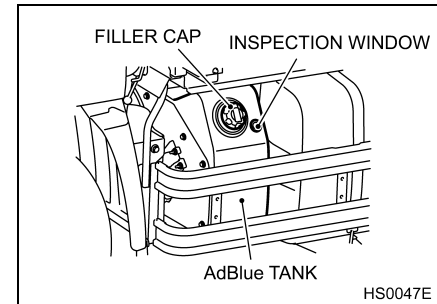
Fill the tank with the specified amount of urea water solution (AdBlue).

(See page 10-9)

- Only add urea water solution (AdBlue) specified by UD Trucks

that satisfies the ISO22241-1 to the AdBlue tank.

- The specified AdBlue is colorless and odorless (urea 32.5%, water 67.5%) and begins to freeze at  $-11^{\circ}\text{C}$ . When the outside air temperature is low and the vehicle has been exposed to cold temperatures for a long time, the AdBlue gauge might not show the correct solution level.



 **CAUTION**

- Be sure to use the specified AdBlue. If a substandard urea water or water is filled in the AdBlue tank, it may cause a malfunction of the urea dosing system. Furthermore, if diesel fuel, kerosene, petrol, etc. is mistakenly added to the AdBlue tank, it could cause a fire or damage. This could worsen the exhaust gas emissions and the engine may become unable to restart. If something other than the specified AdBlue is filled, have the tank inspected and serviced by the nearest authorized UD Trucks dealer.

- Do not drive the vehicle when the AdBlue tank is empty. This will not only worsen exhaust gas emissions, restarting of engine will be prevented in this condition. Always fill the tank ahead of time to leave plenty of leeway for driving.

**NOTE**

If AdBlue is spilled when filling the tank, quickly use a cloth, etc., to wipe it up and then flush the area with a large amount of water.

## Precautions for handling AdBlue

### Handling Precautions

- Urea water solution (AdBlue) is colorless and transparent, odorless, and harmless, and therefore is a safe substance even if it contacts the body. It is also used in

cosmetics. No personal qualifications are required for handling it.

- Use the UD Trucks genuine 5-liter portable tank or a special container recommended by the AdBlue dealer to hold AdBlue. General containers, containers that have been used for other applications, and dirty containers will not maintain the quality of AdBlue. Never use them.

### Temporary Measures

AdBlue is a very safe liquid, but it might cause very slight irritation for some people. If it is spilled on the body, wash it off with water, and if it is swallowed by mistake, drink 1 or 2 cups of water or milk. If milk is not available, drink water. In all case, consult physician.

### When Fires or Leaks Occur

- AdBlue is nonflammable, but quickly move it to a safe location if there is a fire.
- If AdBlue is spilled, wash it away with water. It can be disposed of by first diluting it with a large amount of water and then pouring it into the sewage system. However, it must be treated as industrial waste in areas with nitrogen restrictions.

### Storage Method

- Seal the container and store it in a covered area with good ventilation. Even if it freezes, there will be no change in its quality after it thaws and it can be used as is.
- There are no problems with deterioration, etc., of AdBlue as long as it does not lose water due to evaporation, etc. Therefore, store AdBlue in a sealed container.

### Fuel

**Only use the specified fuel.**



#### CAUTION

**Always use the low-sulphur diesel fuel (S10: Sulphur constituent 10 ppm or less) applicable for your area's ambient temperature. If fluids other than those specified are used, there is an adverse effect on the engine or the exhaust emission control system, etc., and generation of white smoke or a failure may occur.**

### FAME

FAME (Fatty Acid Methyl Esters), also known as “biodiesel”, is available in certain markets both in its pure state and as a mixture in diesel fuel. FAME is also known, for example, as rapeseed methyl ester (RME) and sunflower/soya methyl ester (SME). To be able to use this fuel in this truck it must satisfy the EN14214 standard.

### Engine oil

**Only use the specified engine oil.**



#### CAUTION

**Always use the specified engine oil to maintain the exhaust emission control system in good condition for a long time.**

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# 4. Getting in and out of the cab

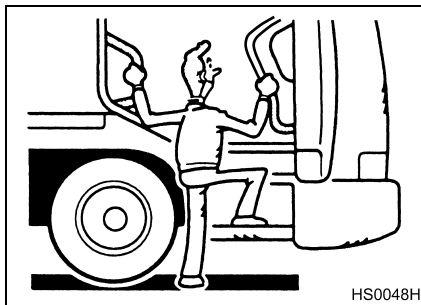
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Getting in and out of the cab ..... 4-2  
Doors..... 4-3  
Seats ..... 4-8  
Tilt and telescopic steering  
wheel..... 4-16  
Seat belts ..... 4-16

## Getting in and out of the cab

### When getting into the cab

- Make sure that the surrounding area is safe and then open the door.
- Firmly grip the front assist handle with your right hand and the rear assist handle with your left hand.
- Place your right foot on the first step and step up.
- Place your left foot on the second step.
- Place your right foot on the second step.
- Hold the steering wheel and sit in the driver's seat.



#### CAUTION

**If the steps are covered with snow or ice, clean them off and then climb carefully to avoid slipping.**

### When getting out

When getting out, use the reverse process used to get in.

#### CAUTION

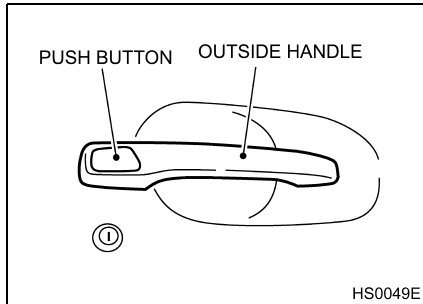
**When getting in and out of the cab, be sure to observe the three points of contact rule. Otherwise, you may fall off and be injured.**



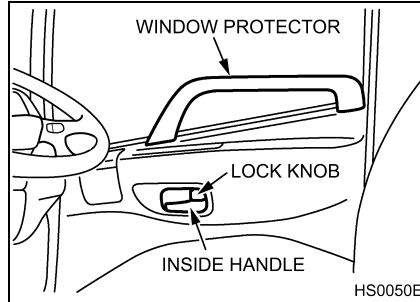
## Doors

### Opening and closing the doors

- When opening the door from the outside, pull the outside handle while pressing the push button. When closing the door, hold the handle and push the door closed.



- When opening the door from the inside, pull the inside handle toward you and push the door outward. When closing the door, hold the window protector and pull the door closed.



**! WARNING**

**Make sure that the door is closed completely before driving. The door could open if the vehicle is driven with the door ajar.**

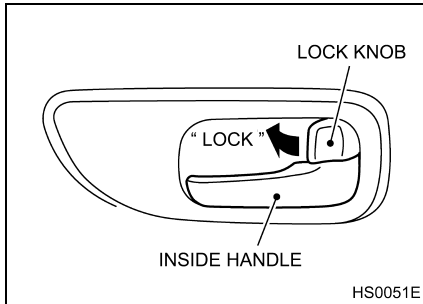
**! CAUTION**

**Be sure to check both behind and in front of the vehicle to make sure that it is safe before opening the door. Suddenly opening the door is very dangerous because it could be struck by a vehicle coming from behind, etc.**

## Locking and unlocking the door

### Inside door lock

From the inside



### Central door lock using the driver's seat lock knob

Operating the driver's door lock knob also locks and unlocks the passenger's door.

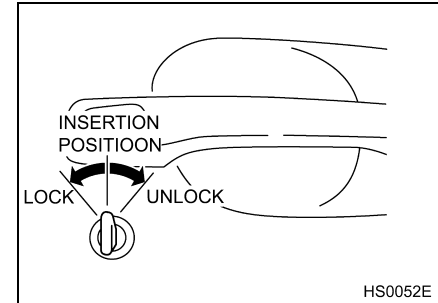
### Outside door lock

- Inserting the ignition key and turning it toward the rear will lock the door and turning it toward the front will unlock the door. Return the key to the insertion position and remove it.
- The door can also be locked by pushing in the lock knob and then closing the door while holding down the door handle push button.

#### NOTE

**Be sure not to leave the ignition key in the cab.**

From the outside



#### NOTE

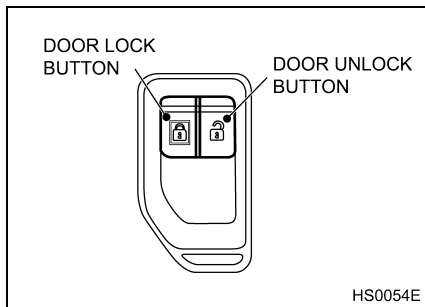
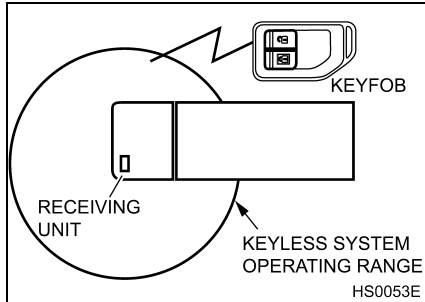
**The hazard lights might not flash if the lock and unlock operations are performed quickly in succession. Double-check the doors to make sure that they are locked.**

### Central door lock using the key

When the ignition key is used to lock or unlock the driver's door, it also locks or unlocks the passenger's doors at the same time.

## Keyless entry system

The keyless entry system enables you to lock/unlock all doors away from the vehicle (approximately 1 to 3 m) using a remote controller (keyfob).



## How to use keyfob

### Door lock button:

All doors will be locked by pushing this button, and the hazard lights will flash once.

### Door unlock button:

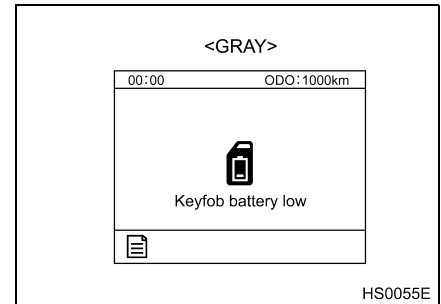
All doors will be unlocked by pushing this button, and the hazard lights will flash twice. If any door is not opened within approximately 30 seconds after pressing the UNLOCK button, all doors will be locked automatically.

The remote control will not function under the following conditions.

- Any door is not completely closed.
- The remote controller is too far away from the vehicle.
- The battery of the remote control is completely discharged.

## Low keyfob battery indication

If the battery power of the keyfob has lowered, "Keyfob battery low" message is displayed on the multi-display. Replace the battery quickly when this display appears. For replacement of the battery, refer to "Battery replacement of keyfob" (page 13-89) in "Inspection and maintenance". (One CR2032 lithium battery is used.)



**NOTE**

- The hazard lights might not flash as specified when locking and unlocking is repeatedly performed in quick succession, but this is not a malfunction. Double-check the doors to make sure that they are locked.
- After locking the door using the keyfob, make sure that the door is locked by trying to open the door with the door handle.
- The locking/unlocking by the keyfob may be performed within the range of approximately 20 m from the driver's seat.
- The operating range of the keyfob depends upon the conditions around the vehicle. Make sure that the keyfob is within 3 m from the door to make it surely function.

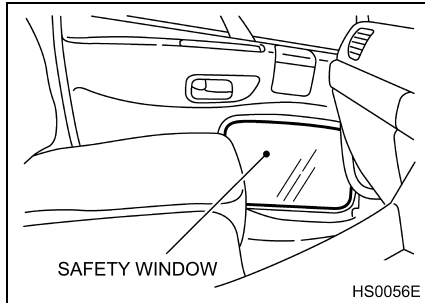
- Maximum 8 keyfobs can be used. Contact an authorized UD Trucks dealer for purchasing or how to start using additional keyfobs.
- The door lock knob and the remote controller may temporarily stop working if the doors are repeatedly unlocked and locked in quick succession. This is due to the protection function and is not a malfunction.
- Though the keyfob is waterproof, it may be damaged when it gets wet. If the keyfob gets wet, immediately wipe it off.  
Contact an authorized UD Trucks dealer if the keyfob was washed in a washing machine or if it was soaked in water for a long time.
- Do not drop or strike the keyfob.
- Do not leave the keyfob for a long time in a hot area.

- If you lose your keyfob, consult an authorized UD Trucks dealer about the theft-prevention measurement.

**Safety window<sup>♦</sup>**

- A safety window is provided in the left side door to check directly the left side of the vehicle. In addition to the reflected images in the rear view mirrors, the direct sight through the safety window makes it easier to check safety on the left side of the vehicle such as when making a left turn.
- The inner glass of the safety window can be opened to clean the window when it becomes cloudy or dirty. (Be careful of the parts to open and close the glass when cleaning.)

- Water that entered inside the safety window (inside the door) will be drained, however, wipe off any water droplets with a towel or the like after a car wash etc.

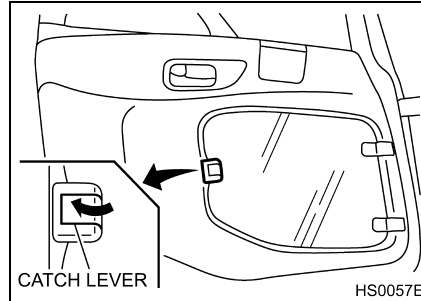


**⚠ CAUTION**

The safety window is provided to ensure safety such as when turning left. Never cover the safety window as this would narrow the view on the left side of the vehicle.

### How to open and close

- Open the passenger's door.
- Pull the catch lever and open the safety window.
- When closing the window, press the catch part while pulling the catch lever. Make sure the safety window is closed securely.

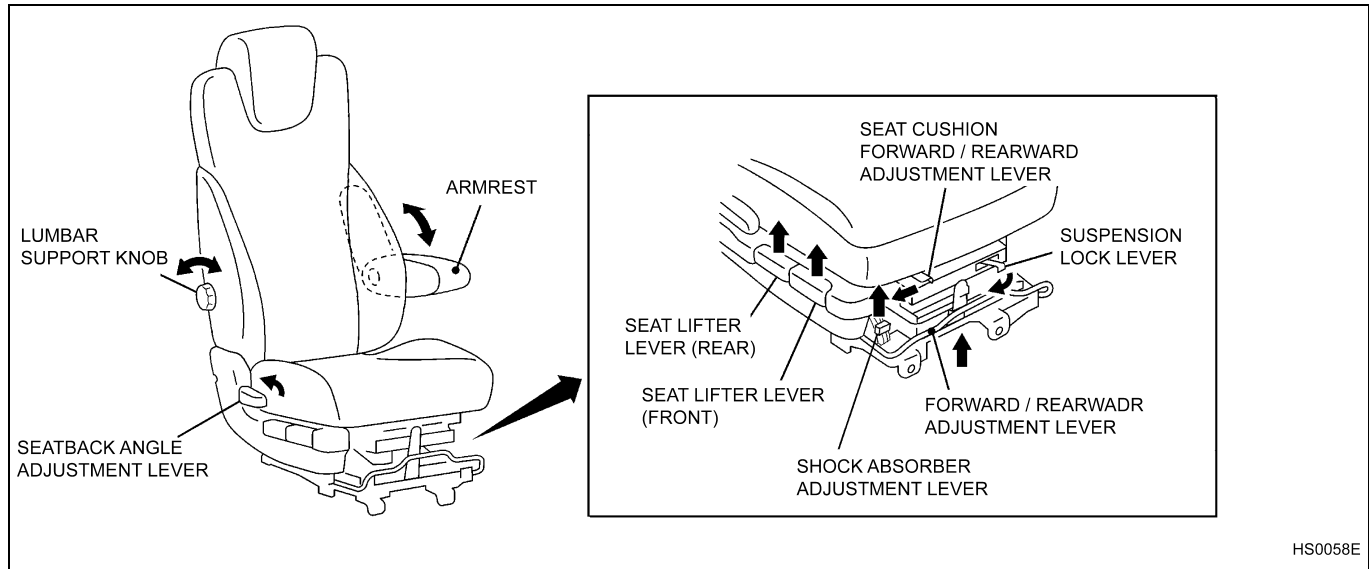


**⚠ CAUTION**

- Do not open or close the passenger's door window with the inner glass of the safety window opened. Your hand may be caught in the door glass when the window is opened.
- Do not open or close the passenger's door with the inner glass of the safety window opened.

# Seats

## Driver's seat



 **DANGER**

Never adjust the seat while driving. It could lead to an accident.

 **CAUTION**

- Only recline the seat when resting.
- Do not put your hands or feet into the movable portion of the seat suspension. They may be caught and injured.

**NOTE**

Adjust the driver's seat to a position where you can easily operate the switches and pedals. After completing adjustments, jiggle the seat to make sure that it is firmly locked in place.

**Forward/rearward adjustment**

Pull up the lever at the front of the seat and adjust the seat to the position where the pedals can be fully depressed. Release the lever and jiggle the seat until it locks in place.

**Seatback angle adjustment**

Pull up the lever on the right side of the seat and adjust the seat to the position where the top of the steering wheel can be grasped.

**Lumbar support**

Turn the knob on the right side of the seat to adjust the fit of the lower seatback. Using this is especially effective when driving long distances.

**Seat lifter**

There are two seat lifter levers on the right side of the seat. Pull up the front lifter lever to adjust the height of the front of the seat

cushion, and pull up the rear lifter lever to adjust the height of the rear of the seat cushion. Adjust the seat cushion to the desired position.

**Armrest adjustment**

The armrest can be moved by hand to adjust its angle.

First, lower it all the way to the bottom and then lift it up to the position that is comfortable for driving. To adjust to a lower position, fold it to the retract position, lower it fully, and readjust the position.

**Seat cushion forward/rearward adjustment**

While pushing the slide lever at the front of the seat to the right, adjust the seat cushion to the desired position. The seat cushion can be adjusted two positions forward from the standard position.

### **Seat suspension lock lever**

Push the seat suspension lock lever at the front of the seat to the right to lock the suspension's vertical movement (at the standard position).

Use this as needed to match the road conditions.

<b>NOTE</b>
<b>If the force of the air spring makes it difficult to release the suspension lock, operate the lock lever while pulling up the seat.</b>

### **Shock absorber adjustment lever**

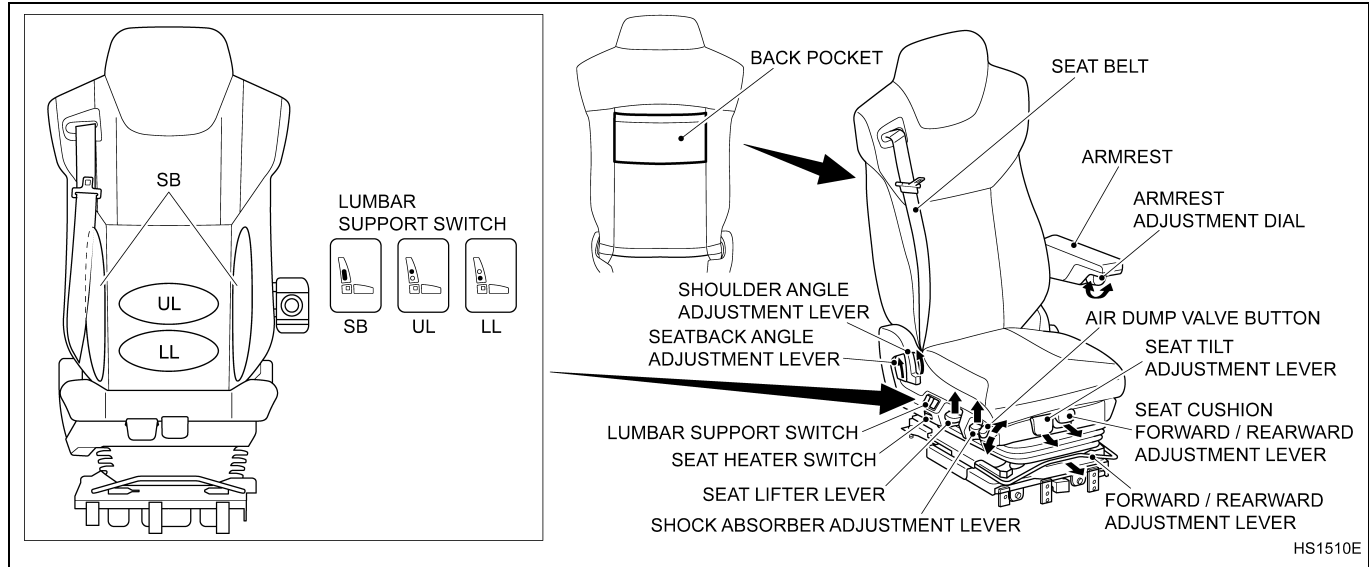
Pull up the adjustment lever on the right side of the seat makes the riding comfort softer.

Adjust the shock absorber to set your favorite riding comfort.



## Belt in seat

The seat is equipped with a three-point seat belt and air suspension.



**DANGER**

Never adjust the seat while driving. It could lead to an accident.

**CAUTION**

- Only recline the seat when resting.
- Do not put your hands or feet into the movable portion of the seat suspension. They may be caught and injured.
- Do not drive with the seat suspension air discharged. The seat suspension will not work and you will not be able to maintain the correct driving posture.

**NOTE**

- Adjust the driver's seat to a position where you can easily operate the switches and pedals. After completing adjustments, jiggle the seat to make sure that it is firmly locked in place.
- The suspension may be locked if sudden shaking is applied when driving on rough roads. If the lock is not released automatically, park the vehicle in a safe place and push the air dump valve on the right side of the seat to completely discharge the suspension air. Then recharge the air.

**Forward/rearward adjustment**

Pull up the lever at the front of the seat and adjust the seat to the position where the pedals can be fully depressed. Release the lever and jiggle the seat until it locks in place.

**Seatback angle adjustment**

Pull up the lever on the right side of the seat and adjust the seat to the position where the top of the steering wheel can be grasped.

**Shoulder adjustment**

Pull up the shoulder adjustment lever on the right side of the seat and adjust the center of the seatback to the desired position. The angle can be adjusted within 16° forward of the standard position. Release the lever to hold the seatback.

**Lumbar support**

Use the switches on the right side of the seat to adjust the support at the side bolsters (SB), upper lumbar (UL) and lower lumbar (LL). Using this is especially effective when driving long distances.

### Seat lifter

Pull up the seat lifter lever on the right side of the seat to raise the seat. Push down the lever to lower the seat. Adjust the seat cushion to the desired position.

### Shock absorber adjustment

Pulling up the adjustment lever on the right side of the seat makes the riding comfort softer. Adjust the shock absorber to set your favorite riding comfort. You can adjust in 10 steps.

### Air dump valve

Push the lower part of the button on the right side of the seat to quickly release the air and lower the seat. Push the upper part of the button to raise the seat and return it to its original position. This makes it easier to get on and off the vehicle.

### Armrest adjustment

Turn the dial at the lower side of the armrest front end to adjust the angle.

### Seat cushion forward/rearward adjustment

Pull up the lever at the front of the seat and adjust the seat cushion to the desired position. The seat cushion can be adjusted five positions forward from the standard position.

### Seat tilt adjustment

Pull up the lever at the front of the seat and adjust the seat tilt to the desired position with ELR (emergency locking retractor).

### Seat belt

The seat is equipped with a three-point seat belt. (See page 4-16.)

### Back pocket

A pocket is provided on the back side of the seat. This can be used when using the bed.

#### NOTE

- **The back pocket is intended to hold lightweight items such as tablet devices, smartphones, mobile phones and mini notebook PCs.**
- **Do not put anything over 500 grams. The pocket may be damaged.**

## Seat heater<sup>†</sup>

Push the heater switch on the right side of the seat to warm the seat cushion and the lower part of the seatback.

### WARNING

- Be careful when using highly heat-retaining items such as cushions and blankets, as overheating of the seat may cause low-temperature burns or malfunction.
- The following people should be careful when using the seat heater, as it may cause low-temperature burns.
  - Those with sensitive skin
  - Those who are very tired

### CAUTION

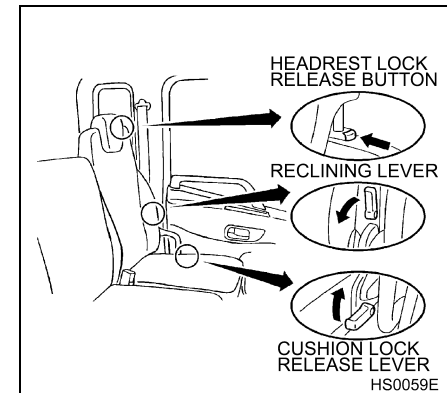
Do not place heavy objects on the seat or pierce the seat with sharp objects (such as wires) as it may cause a malfunction.

### NOTE

- The heater will not operate until its temperature drops, even if the switch is turned on.
- The heater may not operate when the temperature inside the cabin is high, but this is not a malfunction.
- Use the heater with the engine running. When the engine is off, the seat heater will not operate to prevent the battery from running down.

## Assistant seat

- The height of the headrest can be adjusted at 3 levels by moving the headrest by hand. Push the headrest lock release button to return the headrest to the standard position.
- In addition to being used as a regular assistant seat, it becomes a part of the bed by folding the seat forward (made fully flat). The seat cushion can also be be lifted up to form a work space for changing clothes, etc., or space for storage.



- To lift up the seat cushion, hold the front edge of the cushion and raise it until it locks.
- To lower the cushion, pull up the cushion lock release lever to release the lock and lower it by holding the front edge of the cushion. There is no lock to keep the cushion in the down position.
- The seatback is locked when it is folded forward. To raise the seatback, pull the reclining lever and lift up the seatback. Trying to forcefully pull up the seatback could result in an injury or it could damage the seat.

**⚠ CAUTION**

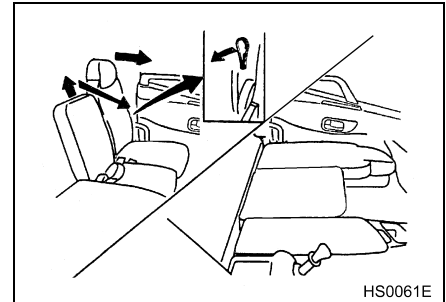
- **Make sure that the seat cushion is locked in place when it is raised. It is dangerous if the cushion is not locked because it could fall down. This could also damage the seat.**

- **Do not use it as a seat when the seat cushion is raised. Doing so could result in an injury or it could damage the seat.**
- **Before folding the seatback forward, return the headrest to its standard position. Otherwise, the headrest hits the instrument panel, being unable to make it flat.**
- **Do not rest on or put your weight on the headrest when the seatback is folded forward. Doing so could result in an injury or it could damage the seat.**
- **When lowering the seat cushion with an item placed on the floor, carefully lower the seat cushion while confirming that it does not interfere with the placed item.**

## Center seat<sup>♦</sup>

The center seat can be used as the ordinary passenger seat, and it also can be used as part of a bed by folding the seatback forward (full-flat).

### When using as a bed

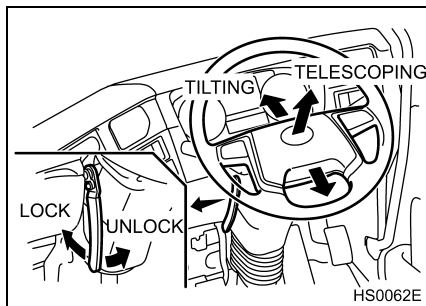


1. Apply the parking brake.
2. Pull up and fold the center seatback forward.
3. Operate the reclining lever and fold down the seatback of the assistant seat forward.

## Tilt and telescopic steering wheel

### Adjustment method

- First, adjust the seat position.
- Hold the steering wheel securely with a hand.
- Pull the lock lever toward you to release the lock.
- The telescopic adjustment allows the steering wheel to be moved up or down.
- The tilt adjustment allows the steering wheel to be moved forward or backward.
- After the steering wheel has been moved to a comfortable position, push the lock lever forward to lock the steering wheel in place.
- Finally, jiggle the steering wheel to make sure it is securely locked in place.



### DANGER

**Never adjust the steering wheel while driving because it could lead to an accident.**

## Seat belts

### DANGER

**Do not put on, take off, or adjust the seat belt while driving because it could lead to an accident.**

### WARNING

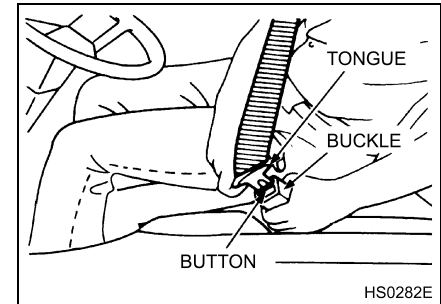
- **Always wear the seat belts for safety. Drivers and passengers are required to wear seat belts by law.**
- **Adjust the shoulder strap so that it crosses over the shoulder and not the neck. Wear the waist belt over the pelvis. Do not place the waist belt over the stomach. If doing so, the stomach will be subjected to strong force during a crash, etc., resulting in a serious injury.**

**CAUTION**

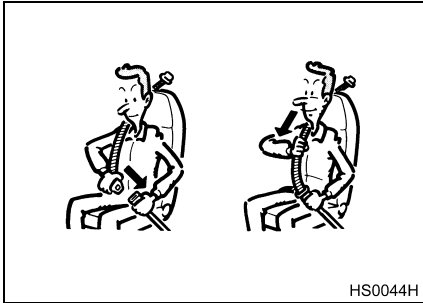
- Do not wear a seat belt over a child who are being held.
- In the case of a child, if the shoulder strap crosses the neck or the waist belt does not cross the pelvis, the child should be seated in a child seat or a booster seat. In addition, a child that cannot sit up on its own should be placed in a baby seat.
- Make sure that the baby seat, child seat, or child booster seat is installed correctly.
- For information about how to install these seats, refer to the instruction manual that came with the seat.

**Driver's seat and assistant's seat**

- The driver's and the assistant's seats are equipped with the three-point seat belt with ELR (emergency locking retractor).
- While taking care not to twist the belt, insert the tongue into the buckle until it clicks and locks in place. The degree of safety provided by the seat belt will decrease if the belt is twisted.
- To release the seat belt, press the red button at the end of the buckle. The belt will automatically wind up. Always hold the tongue while returning the belt to its retracted position.

**Tension reducer (driver's seat only)**

- The tension reducer is activated when the seat belt is worn with the ignition switch in the ON position.
- After wearing the seat belt, the ELR's retracting force is reduced, putting less stress on the chest and lower abdomen.
- To unbuckle the seat belt, press the red button on the buckle end. The tension reducer is disengaged and the belt is automatically retracted.



### NOTE

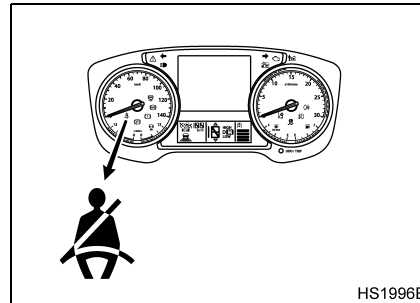
- Normally, the seat belt with ELR can be freely extended and contracted, but it automatically locks when the belt is pulled rapidly or the vehicle stops suddenly. Pull the belt out slowly.
- Replace the seat belt if it is damaged or inoperable.
- Replace all seat belts that were in use when an accident occurred.

### Precautions for wearing seat belts

If a driver is going to drive without wearing the seat belt, the warning indicator will illuminate to warn the driver. If the driver has started the vehicle and reaches approx. 15 km/h, the buzzer sounds.

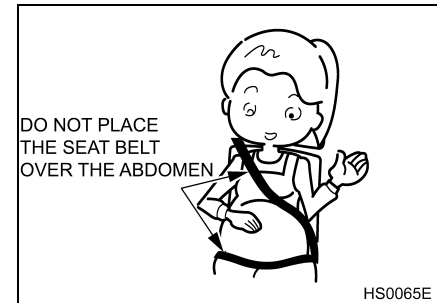
If the vehicle exceeds approx. 40km/h with the driver still not wearing the seat belt, the buzzer sounds louder again.

#### Seat belt warning indicator



### Wearing the seat belt when pregnant

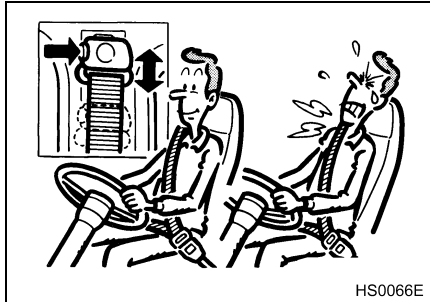
- A pregnant woman should also wear a seat belt to protect her during an accident.
- Place the waist belt below and off the abdomen.
- Place the shoulder strap across the shoulder but off of the abdomen.





### Belt adjustment button (driver's seat only)

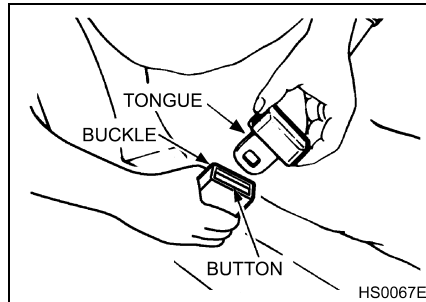
- Adjust the seat belt after adjusting the position of the seat.
- Move the shoulder strap anchor up and down while depressing the anchor button to position the shoulder strap to match the shoulder.
- Adjust the waist belt to match the pelvis position.



### Center seat\*

- While taking care not to twist the belt, insert the tongue into the buckle until it clicks and locks in place. The degree of safety provided by the seat belt will decrease if the belt is twisted.
- To release the seat belt, press the red button at the end of the buckle.

#### 2-point seat belt



- To prevent the tongue of the unused belt from flying around while driving, fasten it in the buckle and place it on the seat.

### WARNING

**A baby seat, child seat, or child booster seat cannot be installed correctly in the center seat. Do not install them in this seat.**



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# 5. Meters, indication lamps and switches

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Meters ..... 5-2  
Multi-display ..... 5-10  
Warnings (Multi-display)..... 5-28  
Indicators..... 5-48  
Switches..... 5-54

## Meters

### NOTE

The meter needles might move slightly when the ignition switch is turned to ON. This is to detect the zero position of the meter needles and is not a malfunction.

## Speedometer

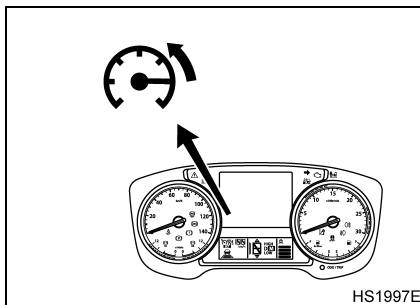
The needle indicates the vehicle speed in kilometers per hour. Observe the speed limit and drive safely.



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## Speed limiter device (SLD)♦

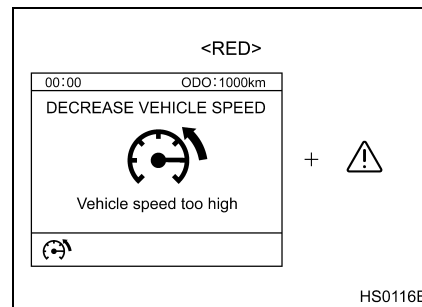
- Vehicles equipped with the speed limiter cannot be further accelerated by operating the accelerator pedal when the vehicle reaches 100 km/h (For Singapore: 60 km/h).



HS1997E

- On vehicles with SLD, the SLD indicator is displayed (green) when the ignition switch is turned ON.
- If the vehicle speed reaches 105 km/h or 120 km/h (depending on the specifications of your vehicle) when coasting on a downslope, the overspeed warning will be displayed on the multi-display and

buzzer will sound. (GH11 Engine only)



### NOTE

The speed limiter does not operate if the vehicle speed exceeds the limit when coasting down. When going downgrade, observe the speedometer and decelerate by applying brake as necessary.

## Tachometer

- The needle of the tachometer indicates the engine speed in revolutions per minute.
- The green zone is a guide for economical driving. Drive in the green zone as much as possible to conserve fuel.
- The red zone shows the overrun operation zone. Be careful that the needle does not enter the red zone.

### Green zone:

900 to 1,700 rpm

(GH8 Engine)

800 to 1,400 rpm

(GH11 Engine)

### Red zone:

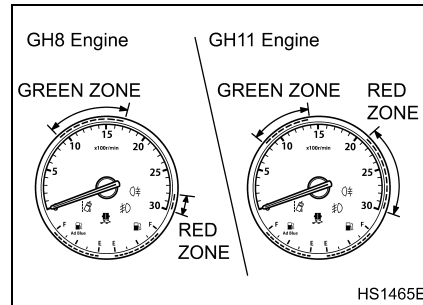
2,800 rpm and higher

(GH8 Engine)

2,100 rpm and higher

(GH11 Engine)

- For more information regarding overrun, refer to “Correct driving operation”.



### CAUTION

Do not exceed the maximum allowable rpm. Driving beyond this (in red zone) overstresses the engine components and could cause the engine to malfunction.

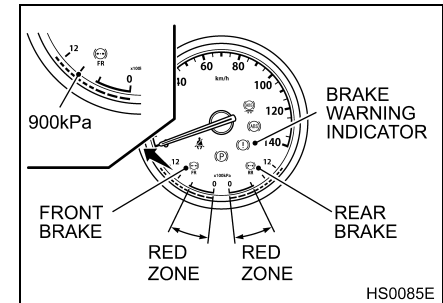
## Air pressure gauge

- These gauges show the air pressure in the air tanks.
- If the segments show the standard air pressure while driving, the air system is normal.

### Standard air pressure:

1100 – 1250 kPa

{11.2 – 12.7 kgf/cm<sup>2</sup>}



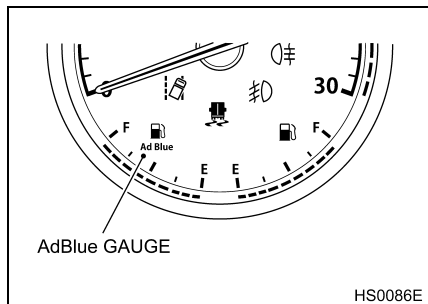
### WARNING

- If the air pressure gauge indication is in the red zone, and if the warning indicator illuminates and the warning buzzer sounds, stop driving the vehicle. The brakes will become inoperative.
- Do not drive until the air pressure gauge indication rises to the standard air pressure.

## AdBlue gauge

The AdBlue gauge indicates the approximate amount of urea water solution (AdBlue) in the AdBlue tank.

- F denotes FULL, and E denotes EMPTY.
- When the ignition switch is turned OFF, the indicator disappears.

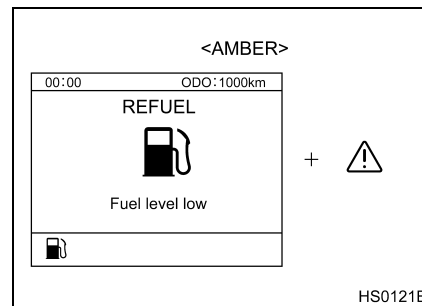
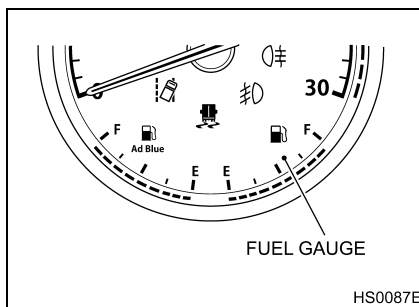


- When the level in the AdBlue tank is low, a warning message will be displayed to warn the driver. For how to fill the AdBlue, refer to “AdBlue low level warning (Except Hong Kong)” (page 5-37).

## Fuel gauge

The fuel gauge indicates the approximate amount of fuel in the fuel tank.

- F denotes FULL, and E denotes EMPTY.
- When the ignition switch is turned OFF, the indicator disappears.
- Refuel well in advance. Be sure to use the low sulphur diesel fuel (S10: Sulphur constituent 10PPM or less).
- When the fuel level becomes low, the Fuel level low warning appears. If this warning appears, refill the fuel in the earliest opportunity.



### NOTE

- If the vehicle is driven with the fuel almost empty, the engine system warning (amber) may appear. In this case, if the warning disappears when restarting the engine after refueling, there is no problem.
- If non-UD-genuine fuel tank is installed, indication of the fuel gauge may be inaccurate.

## Odo/trip meter

### Odo/trip changeover switch

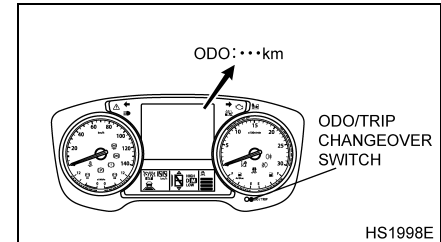
- Pushing the changeover switch (less than 1 second) changes the odometer and trip meter displays as follows:  
ODO → TRIP A → TRIP B → ODO → ...
- If the changeover switch is pushed for more than 1 second in the trip meter mode, only the displayed trip meter will be reset. (For example, if TRIP A is displayed, only Trip A will be reset.)

#### NOTE

- **To reset the trip meter, keep pushing the changeover switch until the meter displays "0.0". After resetting, release the switch to start measuring. The odometer and another trip meter continue measuring during resetting.**
- **As an example, you can measure the distance driven from the last refueling by Trip B, while measuring the distance from the starting point by Trip A.**

## Odometer

The odometer indicates the total distance the vehicle has been driven in km.



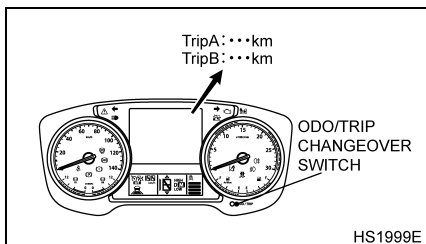
#### NOTE

**The maximum display is 9,999,999 km.**

## Trip meter

The trip meter indicates the distance of individual trips in km. (The figure shown at the first decimal place is in 100 m unit.)

The trip meter can register two different trip distances; Trip A and Trip B. The trip meter A and B display up to 9999.9 km. When the distance surpasses this amount, it returns to "0".

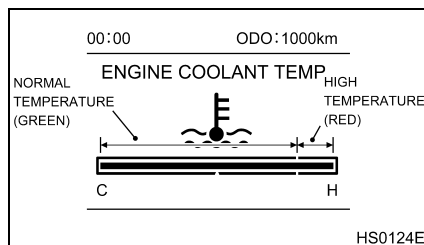


## Gauges

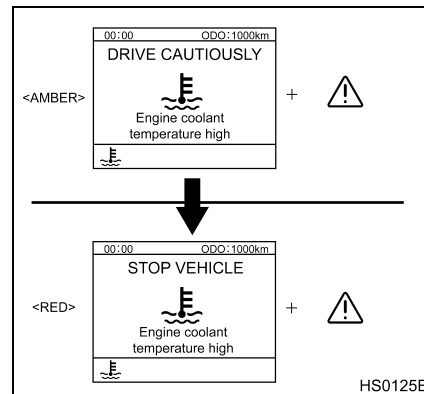
From "Gauges" screen under "MONITORING" screen of the multi-display, the following gauges can be displayed.

## Coolant temperature gauge

- This gauge indicates the engine coolant temperature.
- For how to display this gauge, refer to "Multi-display" (page 5-10).



- When the gauge indicates nothing, the engine coolant temperature is very cold.
- If the coolant temperature significantly rises, an overheat warning with a 2-phase indication (amber: moderate, red: severe), will appear.



- If the overheat warning appears, immediately stop the vehicle in a safe place and continue idling at a higher idling speed to cool down the engine coolant.
- After the coolant temperature drops, stop the engine and check the coolant level, and then inspect the cooling system for leaks.



**WARNING**

- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.

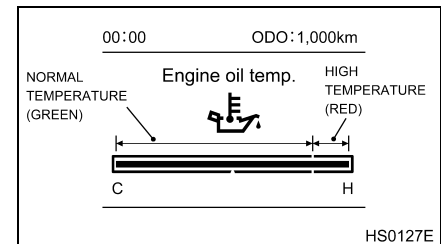
- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.

**CAUTION**

**Do not suddenly stop the engine when it has overheated. Doing so could cause the engine to seize up. Keep the engine idling until the coolant temperature drops before turning off the engine.**

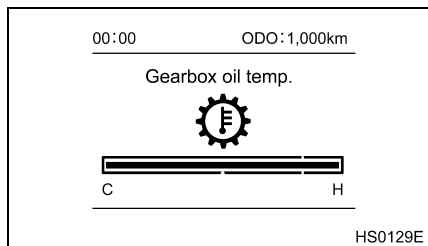
**Engine oil temperature gauge**

- This gauge shows the engine oil temperature.
- If the engine oil temperature exceeds the specified temperature, the oil temperature warning with a 2-phase indication (amber: moderate, red: severe) will be displayed to notify the driver.
- For more information regarding the warning, refer to “Warnings (Multi-display)” (page 5-28).



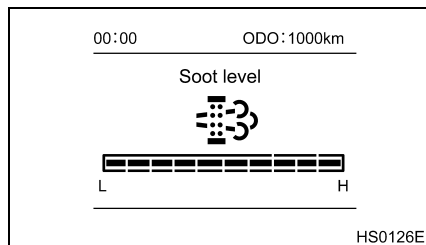
### Transmission oil temperature gauge

- This gauge indicates the transmission oil temperature.
- If the transmission oil temperature exceeds the specified temperature, the oil temperature warning with a 2-phase indication (amber: moderate, red: severe) will be displayed to notify the driver.
- For more information regarding the warning, refer to “Warnings (Multi-display)” (page 5-28).



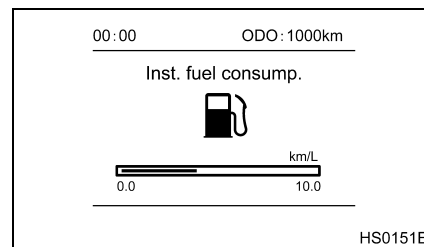
### Exhaust emission control system meter

- The meter shows the level of soot trapped by the filter in the muffler.
- For details on the exhaust emission control system meter, refer to “UDPC (UD Particulate Cleaning)” (page 6-21) in “Controls and functions”.



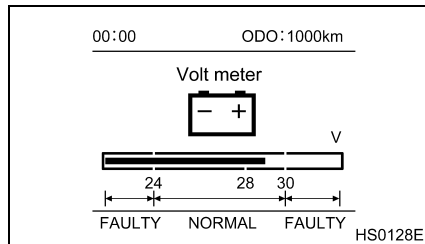
### Instantaneous fuel consumption gauge

- This gauge shows the instantaneous fuel consumption.
- When stopping at idle, the value is indicated by L/h (liters per hour).
- When running, the value is indicated by the unit specified on “Fuel unit” screen. When “km/h” is selected, better fuel economy is obtained when the bar is at the right side of the gauge, and when “L/100km” is selected, it is better when the bar is at the left side of the gauge.
- For details, refer to “Economical driving” (page 10-46) in “Correct driving operation”.



## Voltmeter

- This meter operates when the ignition switch is in the ON position, and it shows the battery voltage when the engine is stopped and the generator charge voltage when the engine is running. The normal value is 24V when the engine is stopped and 28V when it is running.
- If charging becomes impossible while the engine is running, the charge warning is displayed to notify the driver of the trouble.
- For more information regarding the warning, refer to “Warnings (Multi-display)” (page 5-28).

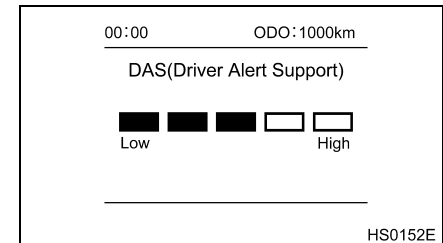


### NOTE

**The meter indication will not decline below the battery voltage while driving even if charging is insufficient or inoperative. Always be conscious of the meter indication and check the state of charging.**

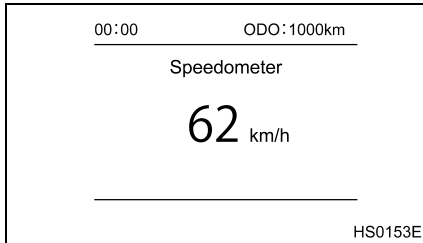
## DAS gauge

- This gauge shows the attention level of driver obtained from the driver alert support system.
- For details, refer to “Driver Alert Support (DAS)” (page 6-84) in “Controls and functions”.



## Digital speedometer

This meter digitally displays the current vehicle speed.



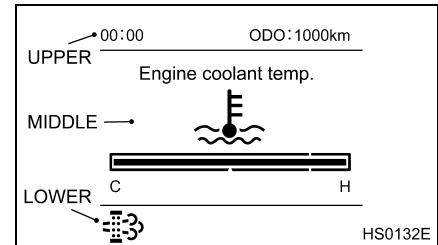
### NOTE

**Though there may be a difference between the readings of the normal speedometer and the digital speedometer, this is not a malfunction.**

## Multi-display

- The multi-display shows a wide range of information including a calendar, the coolant temperature meter, the exhaust emission control system meter, trip management data, service and inspection messages, instructions for ESCOT system operation and control modes for the Traffic Eye Brake systems. Whenever necessary, the monitor interrupts the current screen to show warnings and indicators to alert the driver.
- For the operation of each system, refer to “Controls and functions”.
- The multi-display shows a range of information in the corresponding areas on the screen.

Area on the screen	Information shown
Upper	Time, odo/trip meter and ECO mode
Middle	Warning messages and meter indications
Lower	Indicators

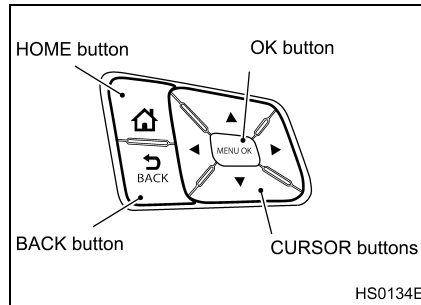


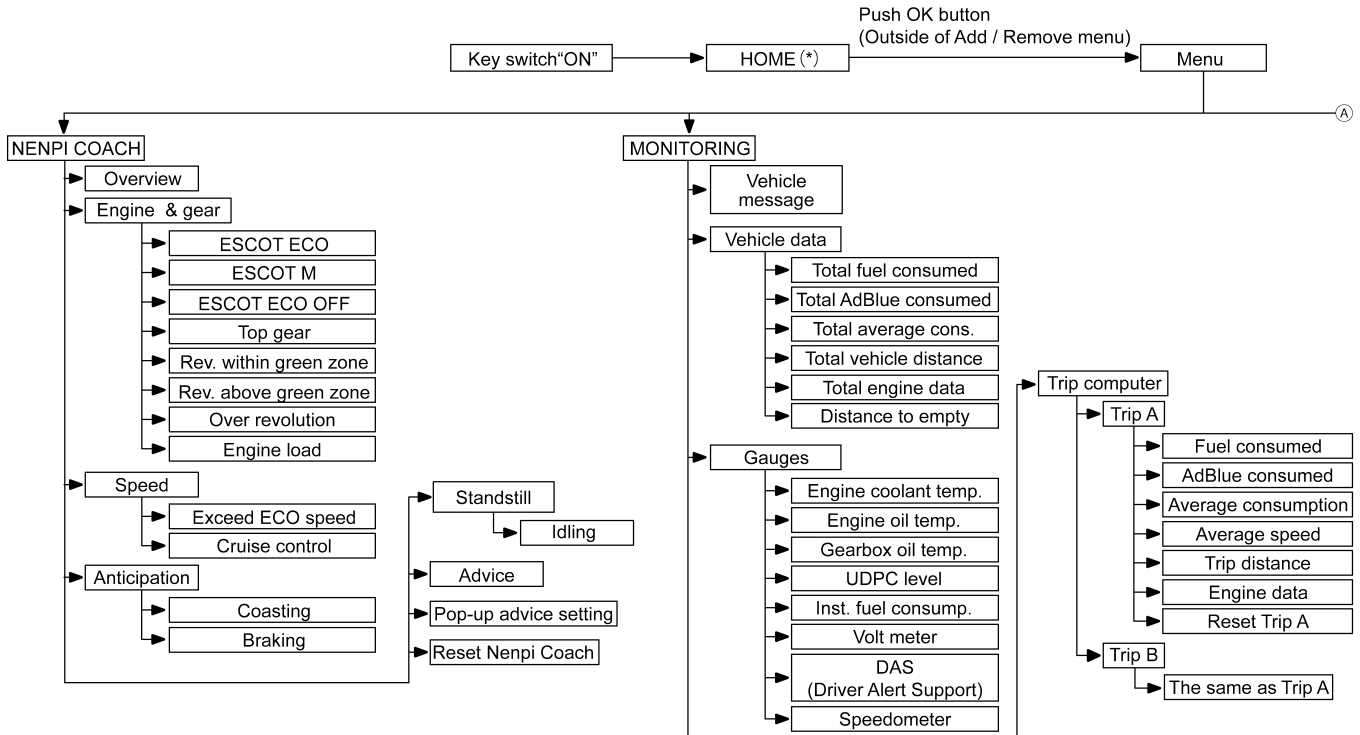
## Changing the screen of the multi-display

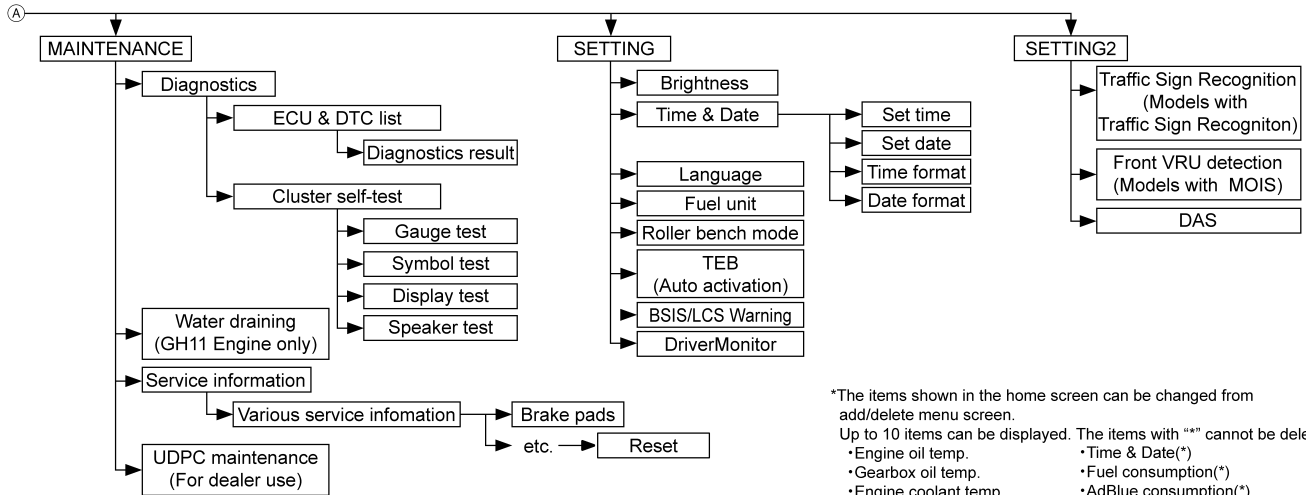
- The initial screen is displayed when the ignition switch is turned to the ON position.



- The initial screen changes to the "Home" screen after approx. 3 seconds.
- The multi-display can be controlled by the steering switches at the right spoke of the steering wheel.
  - OK: To select and set an item
  - Back: To return to the previous screen
  - Home: To return to the home screen
  - Cursor: To move the cursor on the screen





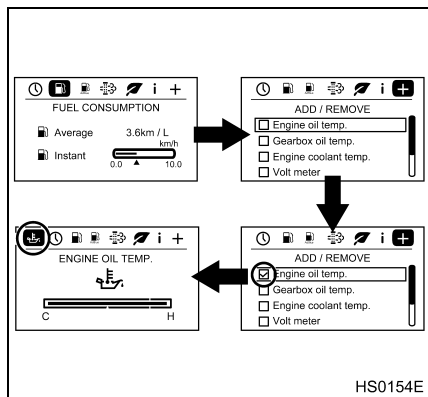


- The monitor screens can be changed by the switches on the steering wheel. The screen moves to the next screen by pressing the OK button, and moves to the previous screen by pressing the Return button. Pressing the Home button returns the screen to the home screen from any other screen.
- The maintenance, setting and setting2 screens can only be selected when the vehicle is stationary for safety.

- \*The items shown in the home screen can be changed from add/delete menu screen.  
Up to 10 items can be displayed. The items with "\*" cannot be deleted.
- Engine oil temp.
  - Gearbox oil temp.
  - Engine coolant temp.
  - Volt meter
  - Trip meter
  - Trip fuel consumption
  - DAS
  - Engine hours
  - Distance to empty
  - Speed meter
  - Time & Date(\*)
  - Fuel consumption(\*)
  - AdBlue consumption(\*)
  - UDPC level(\*)
  - Nenpi Coach(\*)
  - Nenpi Coach advice(\*)

## Home screen

- Up to 10 icons can be placed at the upper part of the screen.
- Select “+” (ADD/REMOVE) icon using the cursor buttons. From this screen select the item(s) to be added as icon(s).
- Move the cursor on the item to be added and press the OK button. The selected item is ticked and an icon is added on the screen.



## Menu screen

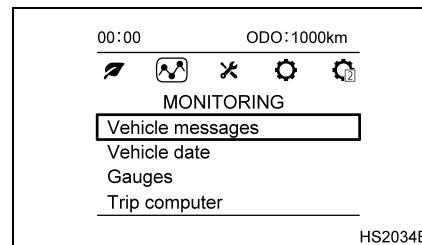
- Pressing the OK button on the Home screen (other than ADD/REMOVE menu screen) changes the screen to the MENU screen (NENPI COACH screen).
- From this screen, “MONITORING”, “MAINTENANCE” or “SETTING” screen can be selected using the cursor buttons (right and left).

## Nenpi coach screen

- For details, refer to “Nenpi Coach♦” (page 6-137) in “Controls and functions”.

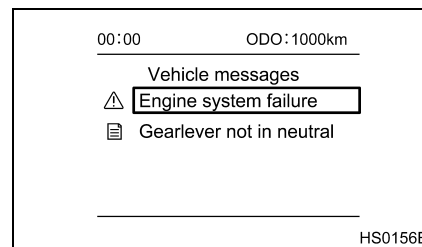
## Monitoring screen

The following vehicle information can be selected from this screen.



## Vehicle message

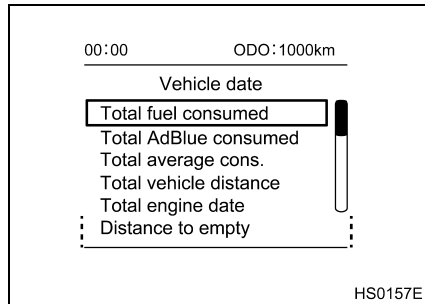
After cancelling a warning message, or when two or more warnings exists, you can check the current warning(s) from this screen.





## Vehicle data screen

- Various vehicle data can be checked from this screen.



- The following items can be selected.

### Total fuel consumed

The total fuel consumption and the total fuel consumption while idling from the shipment of the vehicle are displayed.

### Total AdBlue consumed

The total AdBlue consumption and the total AdBlue consumption while idling from the shipment of the vehicle are displayed.

### Total average consumption

The average consumption of fuel and AdBlue from the shipment of the vehicle are displayed.

### Total vehicle distance

The total distance driven (odometer value) is displayed.

### Total engine data (Hour meter)

The total engine operating time and the total engine idling time from the shipment of the vehicle are displayed.

### Distance to empty

The quantity of remaining fuel and the distance which can be covered by the remaining fuel are displayed.

## NOTE

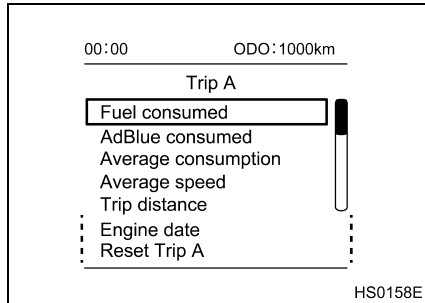
- If UD-genuine additional fuel tank is installed, the correct values are not displayed when the connecting valve is closed.
- If non-UD-genuine additional fuel tank is installed, the displayed values are inaccurate.
- The actual distance to empty may be shorter than the displayed value depending on the driving style and traffic condition.

## Gauges screen

For the gauges which can be selected from this screen, refer to "Gauges" (page 5-6).

## Trip computer screen

The following trip meter-related information can be selected from this screen.



### Fuel consumed

The fuel consumption and the fuel consumption while idling within the distance covered by the trip meter (A or B) are displayed.

### AdBlue consumed

The AdBlue consumption and the AdBlue consumption while idling within the distance covered by the trip meter (A or B) are displayed.

## Average consumption

The average consumption of fuel and AdBlue within the distance covered by the trip meter (A or B) are displayed.

## Average speed

The average vehicle speed within the distance covered by the trip meter (A or B) is displayed.

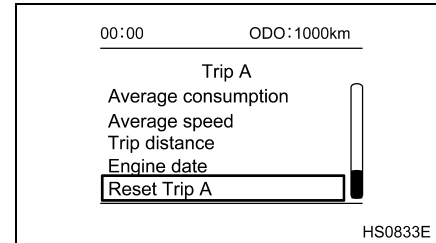
## Trip distance

The distance covered by the trip meter A (or B) (trip meter value) is displayed.

## Engine data (Trip hour meter)

- The engine operating time and the engine idling time within the distance covered by the trip meter (A or B) are displayed.
- The trip hour meter (A or B) displays up to 99,999 hours. When the time surpasses this amount, it returns to "0".
- To reset the trip meter (A or B), select "Reset Trip A (or B)" and press the OK button, or push and

hold the odo/trip changeover switch on the combination meter.

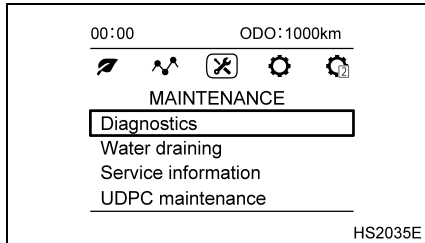


## NOTE

- **While resetting, the trip hour meter indicates "0".**
- **The trip hour meter does not count while resetting.**

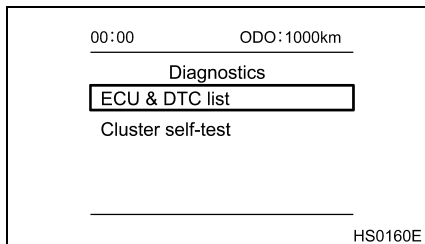
## Maintenance screen

The following maintenance items can be selected from this screen.



## Diagnostics

- The operating conditions of the various components can be checked from this screen.



- The following items can be selected from this screen.

## ECU & DTC list

Failure of the electronically-controlled parts such as ECU can be checked.

## Cluster self-test

The operations of the needles, indicators, multi-display and speaker of the combination meter can be checked.

## Water draining (GH11 Engine only)

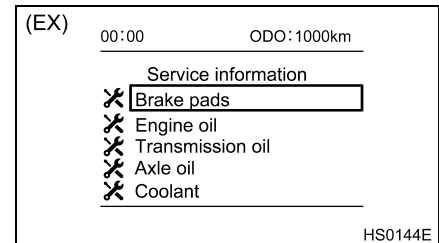
For details, refer to “Water draining of fuel filter” (page 13-31) in “Inspection and maintenance”.

## UDPC maintenance

This is for workshop use only.

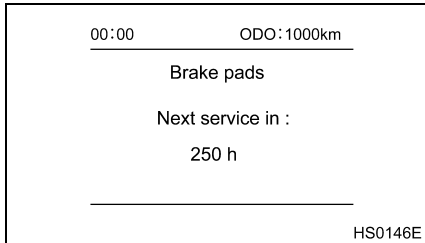
## Service information screen

- The service information of various components can be displayed on the multi-display. The information items to display or not to display the monitor are set at an authorized UD Trucks dealer.

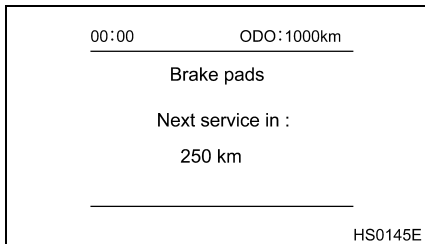


- On the service information screen, the “engine operating hours”, “driving distance” or “days” to the next inspection period, whichever is the shortest, is displayed.

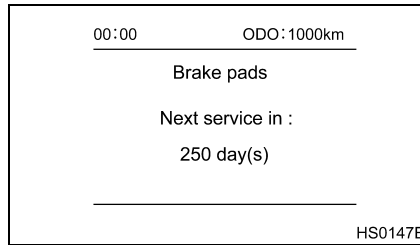
(Example) Engine operating hours



(Example) Driving distance

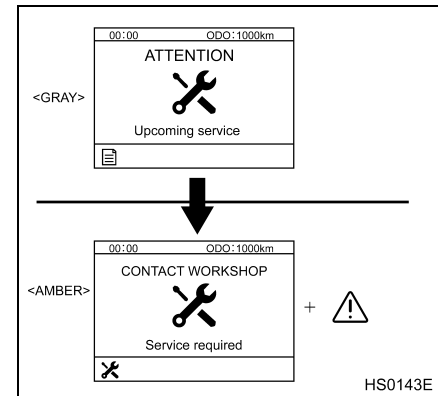


(Example) Days



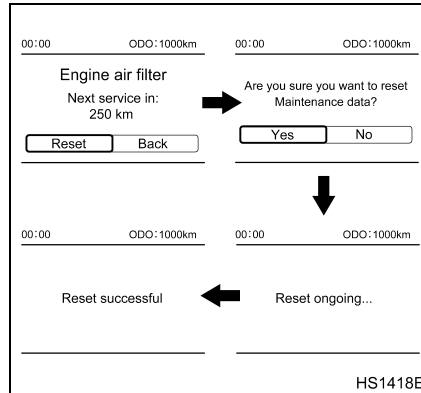
- When set to display inspection and maintenance information, a warning is displayed on the multi-display when the inspection period of each item is approaching.
- When the inspection period of any item is approaching, a gray warning appears on the multi-display. Then, when the inspection period is reached, an amber warning is displayed when the ignition switch is turned on.

- When the amber warning is displayed, check the service information screen to confirm the item which requires maintenance and contact the nearest authorized UD Trucks dealer for inspection and service.

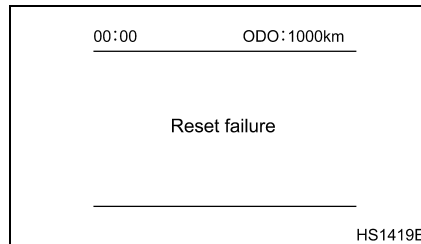


- The maintenance items to be displayed on the maintenance screen, and the remaining time/distance until the next inspection period of each item can be set and reset at an authorized UD Trucks dealer. It is also possible to enable the customer to reset the remaining time/distance until the next inspection period by operating the multi-display. For details, contact the nearest authorized UD Trucks dealer.
- If the system is set so that the duration to the next inspection period can be reset by operating the multi-display, “Reset” and “Back” will be displayed at the bottom of the screen below the inspection and maintenance information that can be reset by the customer.

(Example) Air filter

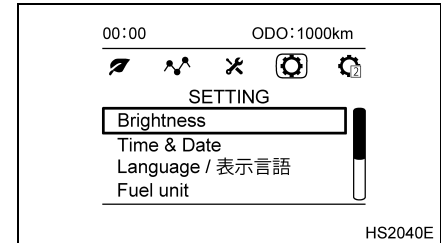


- If “Reset failure” is displayed, perform reset again.



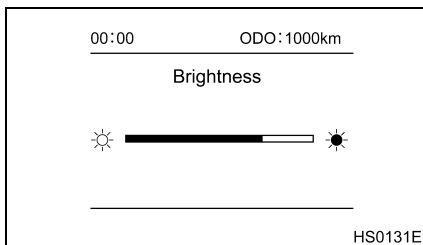
Setting screen

The following settings can be performed from this screen.

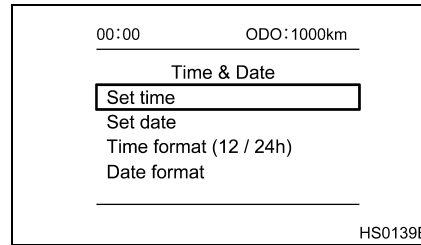


## Combination meter illumination

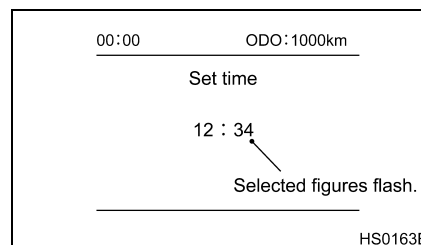
- The combination meter illumination illuminates at the set brightness when the lighting switch is set in the 1st or 2nd position or the front fog light switch is turned on.
- Brightness can be adjusted from the setting screen of the multi-display when the lighting switch is in the 1st or 2nd position.
- Changing the brightness of the combination meter will also change the brightness of the multi-display.



## Time and date



- The date and time on the display and their display format can be set from this screen.
- Select the item to be set on the time and date setting screen, and the editing screen of the selected item is displayed.

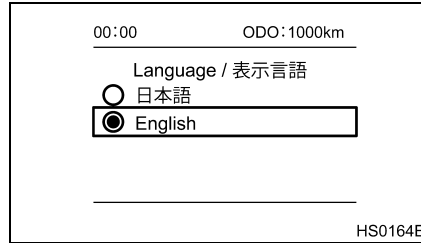


- Press the cursor button (up or down) while the number blinks to change the number. (Press and hold the cursor button to continuously increase/decrease the number.)
- Press the cursor button (right or left) to move the cursor.
- When the OK button is pressed in the clock setting mode, the second of the clock will be set to "00" and the display will return to the normal display screen.
  - When the second is in the 00 to 29 range, the second will be reset to "00".
  - When the second is in the 30 to 59 range, the minute will advance by 1 and the second will be reset to "00".
- If the Back button is pressed in the setting mode, the "Confirmation" screen appears to confirm if the edited content should be saved or not.

- The display format of the date and time can be changed from “Format” under “Time & Date” screen as follows.
  - Time: 12H or 24H
  - Date: Year - Month - Day  
Day - Month - Year  
Month - Day - Year

**NOTE**

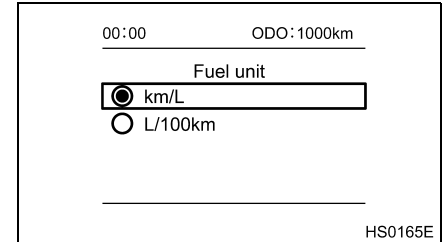
**Setting is not available while driving the vehicle.  
Park the vehicle in a safe location, and then input the time and date.**

**Language**

- To select language, select from the language setting screen.
- English or Japanese can be selected.
- The screen returns to the “Settings” screen when OK or Back button is pressed.

**NOTE**

**Setting is not available while driving the vehicle.  
Park the vehicle in a safe location, and then select a language.**

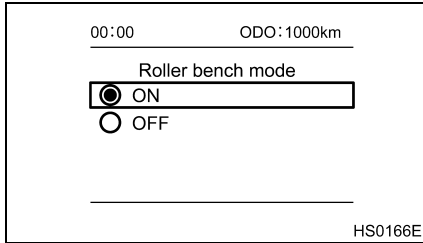
**Fuel consumption gauge unit**

- The unit of the fuel consumption gauge can be selected from this screen.
- The unit “km/h” or “L/100 km” can be selected.

**NOTE**

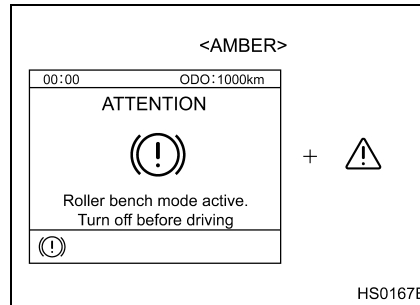
**Setting is not available while driving the vehicle.  
Park the vehicle in a safe location, and then select the unit.**

## Roller bench mode



- The roller bench mode is the mode which makes the traction control inoperative. This mode is used when spinning wheels during periodical inspection, etc.
- The roller bench mode can be turned ON/OFF on the roller bench mode setting screen.

- When the roller bench mode is turned ON, the “Roller bench mode active” warning is displayed. Be sure to turn this mode OFF after the inspection.



### CAUTION

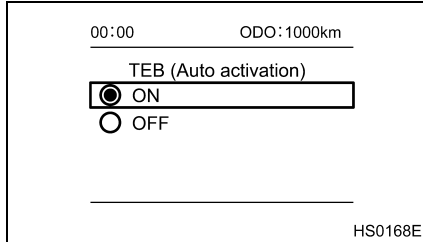
If the roller bench mode is turned ON, the traction control is inoperative. It is unsafe to drive the vehicle in this condition. Be sure to turn OFF this mode before starting normal driving.

### NOTE

- The roller bench mode cannot be turned ON/OFF during driving.
- The roller bench mode is cancelled when the ignition switch is turned off.
- Inspections using a chassis dynamometer or speedometer tester must be done with the roller bench mode turned on. Be sure to turn off the auxiliary brake switch at this time. For vehicles with ESCOT, put the gearshift lever in the “M” position, and shift gears with the +/ - button.



## Traffic Eye Brake automatic return<sup>◆</sup>



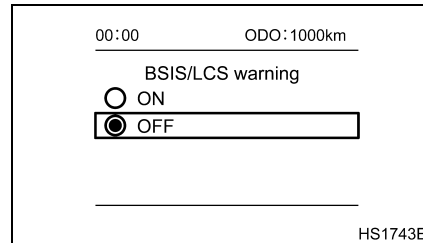
- The automatic return function of the Traffic Eye Brake can be turned ON/OFF on the Traffic Eye Brake automatic return setting screen.
- For detailed operation, refer to “Driver support system<sup>◆</sup>” (page 6-46) in “Controls and functions”.

### NOTE

This automatic return function cannot be turned ON/OFF during driving.

## BSIS/LCS warning

- On the BSIS/LCS warning switching screen, BSIS/LCS warnings can be switched off.
- Even if the alarm is canceled, the indicator illuminates when a moving object is detected on the side of the vehicle, and the alert to the driver is not canceled.



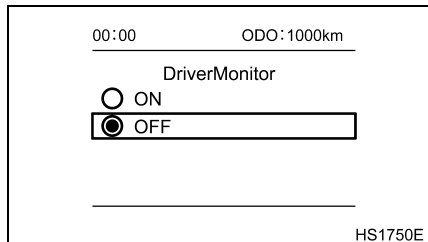
### NOTE

When the ignition switch is turned to the OFF position once and then returned to the ON position, the BSIS/LCS warning will return to ON.

- For detailed operation, refer to “Driver support system<sup>◆</sup>” (page 6-46) in “Controls and functions”.

## Driver Monitor

- On the Driver Monitor switching screen, driver status monitor can be switched off.



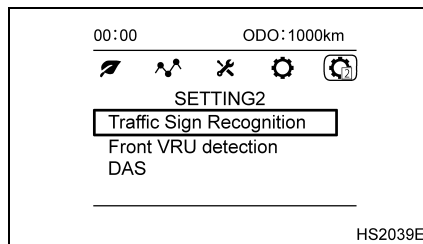
### NOTE

When the ignition switch is turned to the OFF position once and then returned to the ON position, the driver status monitor will return to ON.

- For detailed operation, refer to “Driver status monitor♦” (page 6-100) in “Controls and functions”.

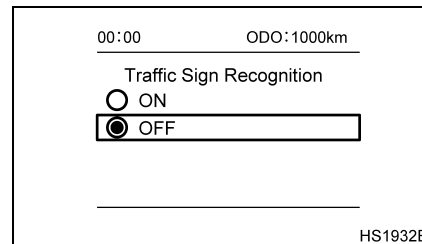
## Setting2 screen

The following settings can be performed from this screen.



## Traffic Sign Recognition♦

- On the Traffic Sign Recognition switching screen, Traffic Sign Recognition can be switched off.



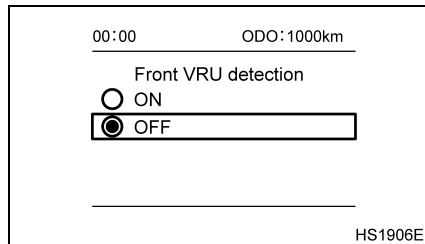
### NOTE

When the ignition switch is turned to the OFF position once and then returned to the ON position, the Traffic Sign Recognition will return to ON.

- For details of operation, refer to “Driver support system♦” (page 6-46) in “Controls and functions”.

## MOIS warning<sup>◆</sup>

- On the MOIS warning switching screen, MOIS warnings can be switched off.
- Only the blinking of the warning indicator, warning message on the multi-display, and warning buzzer when there is a possibility of a collision can be set to OFF on the frontal collision warning switching screen. Steady illumination of the warning indicator upon detection of a hazard cannot be set to OFF.



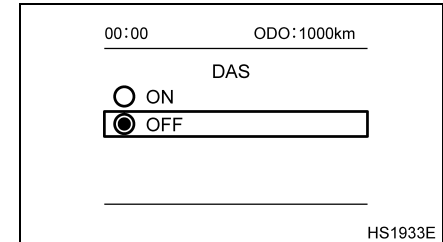
### NOTE

**When the ignition switch is turned to the OFF position once and then returned to the ON position, the MOIS will return to ON.**

- For detailed operation, refer to “Driver support system<sup>◆</sup>” (page 6-46) in “Controls and functions”.

## Driver Alert Support

- On the Driver Alert Support switching screen, Driver Alert Support can be switched off.



### NOTE

**When the ignition switch is turned to the OFF position once and then returned to the ON position, the Driver Alert Support will return to ON.**

- For details of operation, refer to “Driver support system<sup>◆</sup>” (page 6-46) in “Controls and functions”.

## Buzzers

In case if several warnings occur, only one type of buzzer with the highest priority sounds.

Buzzer	Operation condition
Red warning	Red warning is displayed
Amber warning	Amber warning is displayed
Information	Gray information or advice is displayed
Parking brake warning	Door is opened without applying the parking brake, etc.
Reverse buzzer	Shift lever or gear selector is set to "R" position
HSA release warning	HSA is automatically cancelled
Turn signal	Turn signal lights or hazard lights are operating
Light ON warning	Ignition key is set in OFF position while the light switch is in ON position
DAS warning (Level 1)	Low attention level of driver is detected
DAS warning (Level 2)	Low attention level of driver continues
Traffic Eye Brake pre warning	The Traffic Eye Brake is operated when the vehicle approaches to the foregoing vehicle exceeding the specified following distance limit.
Traffic Eye Brake warning	The Traffic Eye Brake is operated due to the danger of collision
Seat belt warning	The seat belt is not fastened.
UDSC operation warning	UDSC is in operation
LDWS warning	There is a danger of crossing over the lane dividing line.
BSIS/LCS warning	When the possibility of a collision with the detected vehicle increases and the turn signal switch is operated to the left
Driver status monitor warning (Level 1)	When the system determines that the driver is not facing the direction of travel or has a very bad driving posture
Driver status monitor warning (Level 2)	When the system determines that the driver has closed their eyes or seems to be sleepy
Gear change unable warning	When the gear position cannot be changed, such as when not depressing the brake pedal

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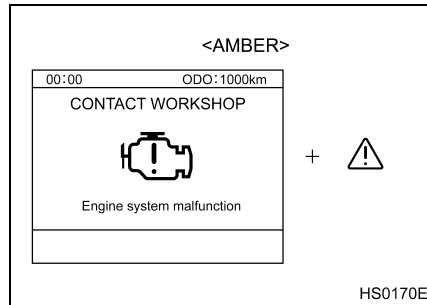
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Buzzer	Operation condition
MOIS (Level 2)	When there is a possibility of collision with a pedestrian or bicycle in front while driving at a low speed

- For required driver actions following the occurrence of a warning buzzer, refer to the explanation of that warning.

## Warnings (Multi-display)

- When necessary, the multi-display displays warning messages and/or indicators to warn the driver.
- The red (severe) warning will reappear in every 30 seconds even the driver cancels the display (by pressing OK, Back, or Home button) until the cause of the warning is removed.
- The amber (moderate) warning will not reappear if the driver has cancelled the display. The warnings once displayed can be checked on the “Vehicle message” under Monitoring menu of the Multi-display.
- The gray message will be displayed for 5 or 8 seconds, depending on the display condition.
- The basic pattern for the warning display contents is given below.

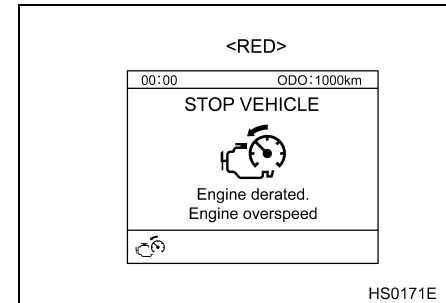


### NOTE

**The multi-display also displays warning messages, comments, a calendar, clock, trip management, inspection and servicing message, and ESCOT operation mode display in addition to warning displays.**

## Engine overrun warning

- When the engine rpm exceeds the maximum allowable rpm, a buzzer sounds and the warning is displayed.
- The tachometer's red zone shows the overrun speed range over the maximum allowable rpm, so make sure that the meter needle does not enter the red zone.

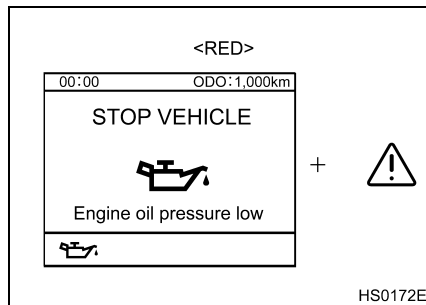


 **CAUTION**

Do not exceed the maximum allowable rpm. Driving beyond this range overstresses the engine components and could cause the engine to malfunction.

## Engine oil pressure warning

- If the engine oil pressure decreases below a specified pressure while the engine is running, a buzzer sounds and a warning is displayed.
- When the warning is displayed, immediately stop the vehicle in a safe location and contact the nearest authorized UD Trucks dealer.


 **WARNING**

Be careful not to get burned during inspections conducted immediately after driving because the engine is still very hot.

 **CAUTION**

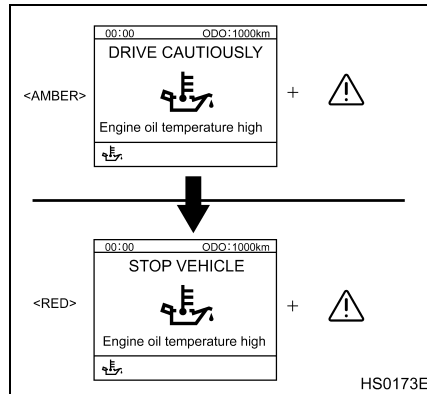
Never drive while this warning message is shown. A drop in the oil pressure could cause the engine to seize up.

**NOTE**

This vehicle is provided with the engine protection function which deters torque to prevent the engine from being damaged by abnormal oil pressure.

## Engine oil temperature warning

- When the engine oil temperature exceeds a specified temperature, a buzzer sounds and an amber warning (moderate) is displayed.
- If the engine oil temperature increases further, the color of the warning will turn red (severe), and at the same time a buzzer will sound to warn the driver.
- If the red warning is displayed, stop the vehicle in a safe location and continue fast idling until the oil temperature drops.
- After the oil temperature drops, stop the engine and check the oil level and oil leaks.
- If the engine oil temperature does not lower, have the system inspected and serviced by the nearest authorized UD Trucks dealer.



### ⚠️ WARNING

**Be careful not to get burned during inspections conducted immediately after driving because the engine is still very hot.**

### ⚠️ CAUTION

**Do not continue driving when the red warning is displayed and the buzzer sounds.**

### NOTE

**This vehicle is provided with the engine protection function which deters torque to prevent the engine from being damaged by abnormal engine oil temperature.**

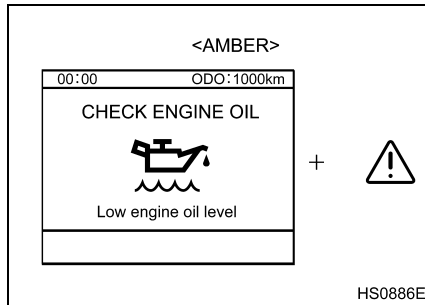


## Engine oil level warning

- This warning appears if the engine oil level is below the specified level when the engine is stopped and the ignition switch is in ON position.
- When this warning is displayed, check the engine oil level and oil leaks.

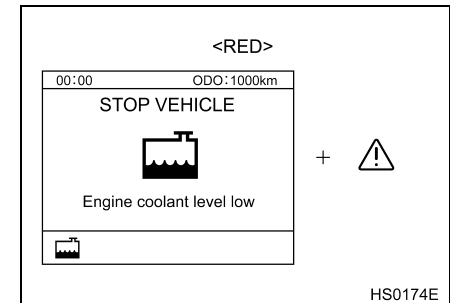
### NOTE

When the vehicle is parked on a slope, a warning may be displayed even if the amount of oil is appropriate. If this happens, check whether the oil level warning is displayed when the vehicle is on a level surface.



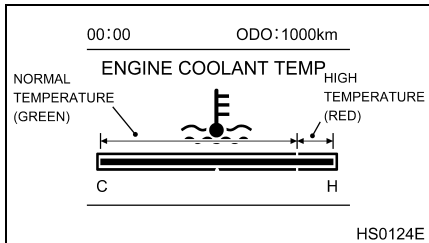
## Coolant level warning

- When the coolant level decreases below a specified level, a red warning is displayed, and at the same time a buzzer sounds to warn the driver.



- The coolant level should be checked when the coolant temperature is low.
- If the temperature gauge indicator is still within the normal zone, stop the vehicle in a safe location, stop the engine, and then add coolant. When supplying the coolant, also check the cooling system for leaks.

- If the temperature gauge indicator is in the high temperature zone, stop the vehicle in a safe location, and keep the engine idling until the coolant temperature drops to the normal range.



- The coolant reserve tank is a pressurized type. Carelessly opening the cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- Raise the lever in the center of the cap (until the sound of air escaping stops) to reduce the internal pressure.

- Wrap the cap with a thick cloth and gradually loosen the cap. If steam sprays out, immediately close the cap and reduce the pressure again.

**WARNING**

- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you.

Follow the handling instructions below.

- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.

- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.

**CAUTION**

- Do not continue driving when this warning is displayed.
- Continuing to drive with too little coolant should never be done because it could cause overheating.

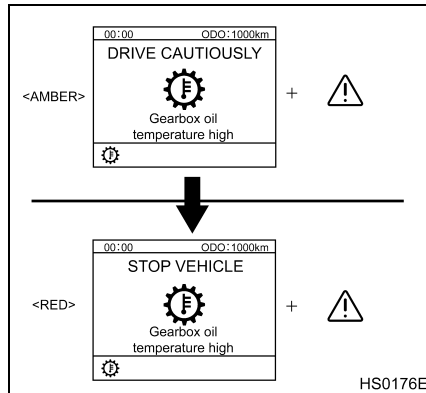
**NOTE**

This vehicle is provided with the engine protection function which deters torque to prevent the engine from being damaged by the abnormal coolant level.

## Transmission oil temperature warning

- When the transmission oil temperature exceeds the specified limit, an amber warning (moderate) is displayed to warn the driver.
- If the transmission oil temperature rises further, the warning will turn red (severe) and a buzzer sound.
- When the red warning is displayed, park the vehicle in a safe location and keep the engine running at a higher idling speed until the oil temperature decreases.

- Turn the engine off after the oil temperature has decreased, and then check for oil leakage.
- If the oil temperature does not decrease, contact the nearest authorized UD Trucks dealer for inspection and maintenance.

**WARNING**

**Be careful not to get burned during inspections conducted immediately after driving because the transmission is still very hot.**

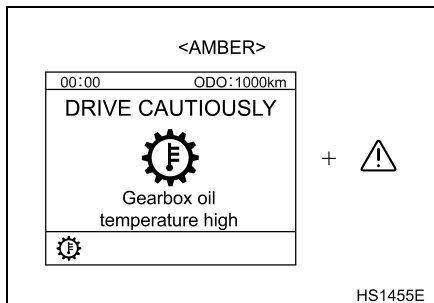
**CAUTION**

**Do not continue driving when the red warning is displayed and a buzzer sounds. Doing so could damage the transmission.**

## Automatic transmission fluid temperature warning

- When the transmission oil temperature exceeds the specified limit, an amber warning (moderate) is displayed to warn the driver.
- When the red warning is displayed, park the vehicle in a safe location and keep the engine running at a higher idling speed until the oil temperature decreases.
- Turn the engine off after the oil temperature has decreased, and then check for oil leakage.

- If the oil temperature does not decrease, contact the nearest authorized UD Trucks dealer for inspection and maintenance.



### WARNING

Be careful not to get burned during inspections conducted immediately after driving because the transmission is still very hot.

1. When the warnings are displayed, immediately move the vehicle to a safe place. Apply the parking brake and shift the transmission to the neutral position.

### CAUTION

Failure to take the following precautions may result in serious damage to the transmission:

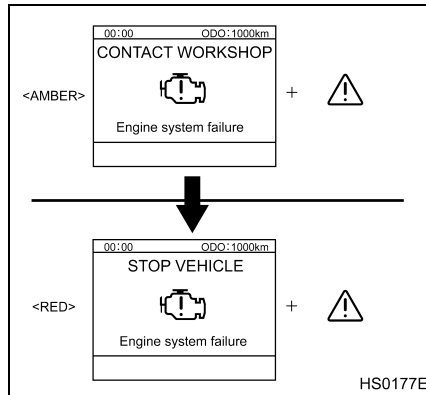
- When the warning is displayed, do not stop the engine until you have performed steps 2 to 5.
- Never drive the vehicle while the warnings are displayed.

2. Operate the engine at a fast idle with the idling control switch located to the right of the steering column.
3. Idle the engine until the coolant temperature gauge needle points to the middle of the gauge.
4. While idling the engine, check the fluid level. If the level is on the low side of the HOT band, add fluid through the filler tube. Do not overfill.
5. If the warning light still remains on, stop the engine. Have the transmission checked by an authorized UD Trucks dealer.

## Engine system warning

- When the engine system malfunctions due to the following causes, an amber warning (moderate) is displayed.
  - Faulty engine control system
  - Faulty UDPC system (clogged filter on system failure)
- When the amber (moderate) warning is displayed, contact the nearest authorized UD Trucks dealer for inspection and maintenance.
- If the malfunction becomes more severe, the warning will turn red (severe) and a buzzer sounds.

- When the red (severe) warning is displayed, immediately park the vehicle in a safe location and contact the nearest authorized UD Trucks dealer.



### CAUTION

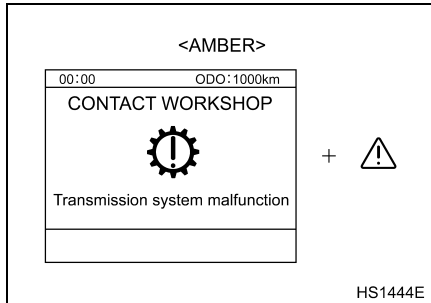
- Do not drive while the red warning is displayed. Doing so may damage the engine.
- If the engine stops or is clearly producing an abnormal noise or vibration, contact the nearest authorized UD Trucks dealer.

### NOTE

- This vehicle is provided with the engine protection function which deters torque to prevent the engine from being damaged by the engine system failure.
- If the vehicle is operated with low fuel level (all the segments disappeared), the amber warning may be displayed. If it goes off after refueling, there is no problem.

## Automatic transmission system warning

The automatic transmission system warning, warning message and comments will be displayed when the transmission control module (TCM) detects a malfunction.



- The automatic transmission system warnings will be displayed when the TCM detects a malfunction. At this time a diagnostic trouble code (DTC) is set in the TCM and transmission cannot be shifted. Depending on the malfunction, the TCM does not respond to gear shifting operation

and the gear becomes fixed in the current gear.

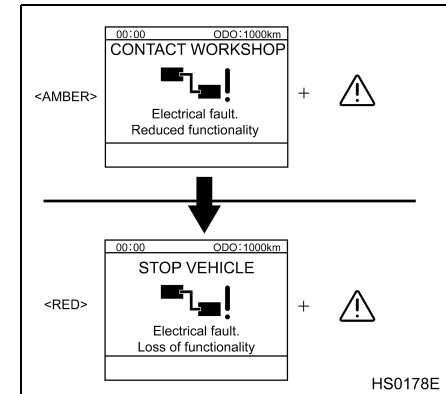
- When a malfunction occurs and shifting becomes impossible in the N position, turn the ignition switch to OFF position to stop the engine and restart it. If the malfunction is intermittent, the TCM will reset and driving will become possible.
- If the warnings still remain on, stop the engine. Have the transmission checked by an authorized UD Trucks dealer.

**⚠ CAUTION**

**When a vehicle is stopped and engine speed is raised for a long time with the gear shifted to other than the N position, the fluid temperature increases and the transmission will be damaged. Do not keep the engine in this condition for more than 30 seconds.**

## Vehicle electronic control system malfunction warning

- When a network system, sensor, or ECU of vehicle electronic control system malfunctions, an amber or red warning is displayed.

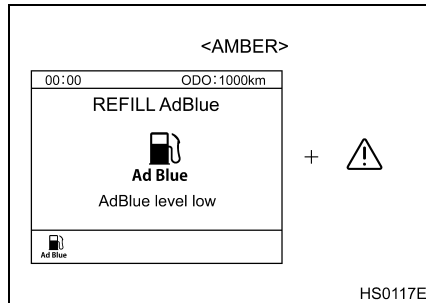


- If the amber (moderate) warning is displayed, have your vehicle checked at the nearest authorized UD Trucks dealer.

- If the red (severe) warning is displayed, immediately stop the vehicle in a safe location and contact the nearest authorized UD Trucks dealer.

## AdBlue low level warning (Except Hong Kong)

- When the level of AdBlue in the tank is low, the low AdBlue level warning indicator appears to warn the driver.

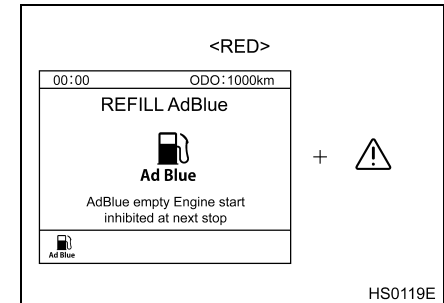


- When the AdBlue level becomes low, refill the specified AdBlue in the earliest opportunity.

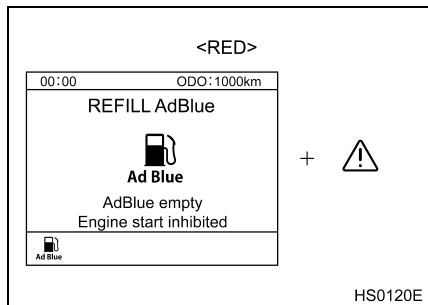
### NOTE

**Refill the AdBlue in the earliest opportunity to prevent AdBlue from becoming empty.**

- If the AdBlue level reaches empty, the "AdBlue TANK EMPTY" warning is displayed and the warning buzzer sounds. In this state, the engine will become unable to restart if it is stopped.



- If the AdBlue level has reached "Empty" and the engine cannot restart, refill the tank with the specified AdBlue with the ignition switch in ON position till the warning message disappears.

**CAUTION**

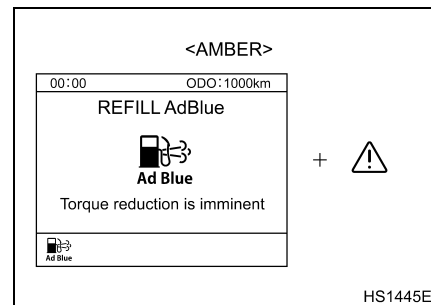
- If you continue to drive without adding AdBlue after the warning is displayed and the engine is stopped with the level of AdBlue being “Empty”, the engine will not restart.
- If the engine cannot be restarted, refill the AdBlue with the ignition switch in “ON” position.

**NOTE**

- Try to add AdBlue ahead of time so that the tank does not become empty.
- The warning may not disappear even the AdBlue is refilled sufficiently. In this case, turn OFF the ignition switch, wait for approx. 10 seconds, and then turn ON the ignition switch. If the warning disappears, there is no problem.

**AdBlue low level warning (For Hong Kong)**

- When the AdBlue level in the tank lowers, the low AdBlue level warning is displayed.



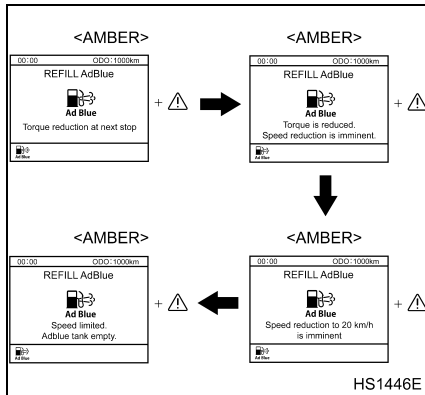
- When the AdBlue level becomes low, refill the specified AdBlue in the earliest opportunity.

**NOTE**

**Refill the AdBlue in the earliest opportunity to prevent AdBlue from becoming empty.**

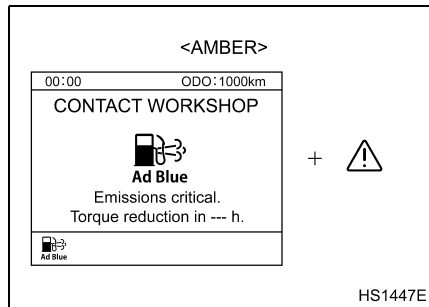


- If you continue to drive the vehicle with the AdBlue tank empty, warnings are displayed in the following order. The torque will be reduced, and the speed will be further limited.



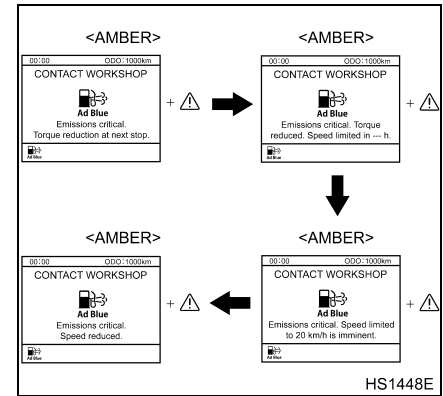
## Exhaust gas detection system warning (For Hong Kong)

- This warning is displayed when an abnormality occurs in the exhaust gas detection system and alerts that the engine torque or speed is reduced. If the warning is displayed, have your vehicle inspected and serviced at your nearest authorized UD Trucks dealer.



- If you continue to drive the vehicle with an abnormality in the detection system, warnings are displayed in the following order.

The torque will be reduced, and the speed will be further limited.



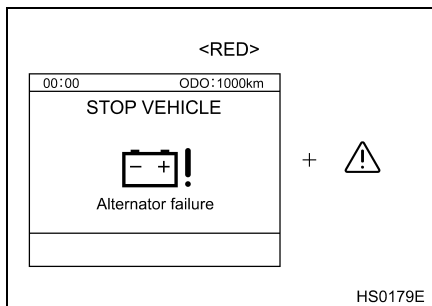
**CAUTION**


**Do not drive with this warning displayed. This condition worsens the exhaust emission condition, so have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.**

## Charge warning

If a problem occurs with the charging circuit or generator while driving, a warning is displayed and a buzzer sounds to warn the driver.

- Immediately stop the vehicle in a safe location, stop the engine, and check the generator drive belt.
- If the belt is normal, the charging system could be faulty, so contact the nearest authorized UD Trucks dealer. If the charging is insufficient, refer to “Discharged battery” (page 15-15) in “Emergency procedures”.



 **CAUTION**

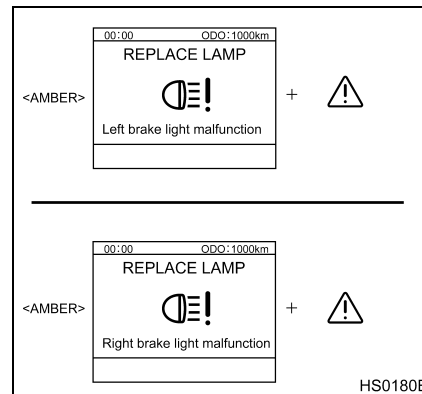
**Do not drive while the warning display is shown. Doing so could result in damage to the electronic components due to over-voltage, a discharged battery or overheated generator.**

## Stop lamp malfunction warning

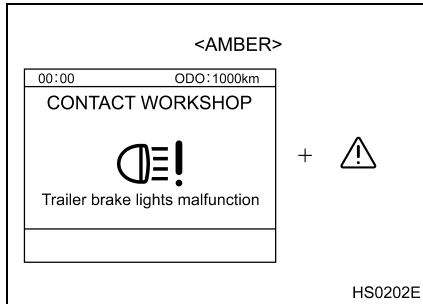
When a stop lamp does not illuminate due to burnout, short circuit, open circuit, connector disconnection or failure, a warning is displayed to alert the driver when the brake is applied.


### Stop lamp burnout, open circuit or failure

- In case of lamp burnout, open circuit or failure, a warning is displayed when the brake pedal is depressed.



- If a malfunction occurs on the trailer's stop lamp, “CONTACT WORKSHOP – Trailer brake lights malfunction” message is displayed. Have your vehicle inspected by the nearest authorized UD Trucks dealer.



 **CAUTION**

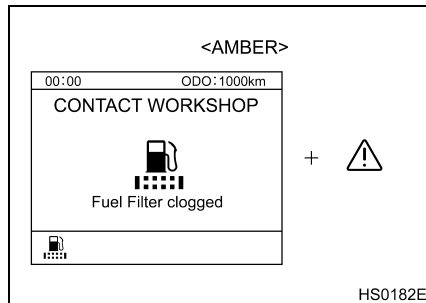
**Vehicles with burnt out tail lamps or stop lamps are at risk of rear-end collisions. Do not drive your vehicle if any of the lamps do not come on. A poorly maintained vehicle violates the law.**


**NOTE**

**Do not install additional lamps in the tail or stop lamp circuit. Doing so will alter the circuit capacity, preventing normal operation of the warning function.**

## Clogged fuel filter warning

If the fuel filter element becomes clogged, a warning is displayed to warn the driver.

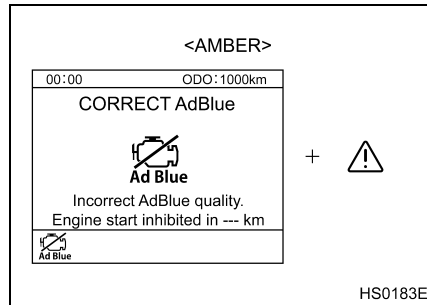


 **CAUTION**

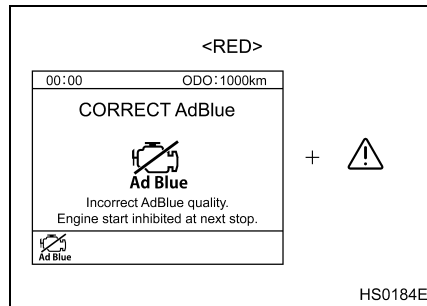
- Leaving the filter clogged could damage the element and allow dirty fuel to enter the fuel pump and nozzles, which could shorten the useful life of the engine.
- The fuel filter element is not supposed to be used until the warning message is displayed. Replace it regularly.
- This warning may be displayed before the replacement period depending on the operation condition. Replace the fuel filter when this warning is displayed irrespective of the replacement period.
- If the warning message is displayed occasionally even though the element has been replaced, have the system inspected and serviced by the nearest authorized UD Trucks dealer.

## AdBlue quality warning (Except Hong Kong)

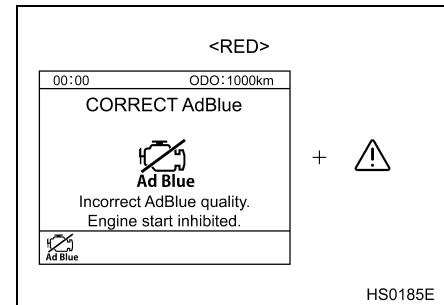
- If fluid other than the specified urea water (AdBlue), such as water, diesel fuel or kerosene, is filled in the AdBlue tank, a warning is displayed.
- In this state, remaining cruising distance (0 to 300 km) is indicated under the warning in the multi-display.
- When this amber warning showing the remaining cruising distance is displayed, stop the engine. With the ignition switch in ON position, empty the AdBlue tank, and fill the specified AdBlue until the AdBlue gauge indicates “F”.
- The warning will disappear when the vehicle is driven for a while. (It may take 1 hour or longer.) If the warning does not disappear, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



- If the vehicle is driven over the remaining cruising distance, the warning changes to red (“Engine start inhibited at next stop.”) and a buzzer sounds. In this condition, the engine cannot be restarted if it is stopped.



- If, under the above condition, the engine is stopped and cannot be restarted, a buzzer sounds and “Engine start inhibited” message is displayed.



- When “Engine start inhibited” message is displayed with the ignition switch in ON position, empty the AdBlue tank and add the specified AdBlue until the AdBlue gauge indicates “F”.
- If the red warning changes to the amber warning (“Engine start inhibited at next stop.”), start the engine. A buzzer continues to sound at this moment but it’s normal.

- The warning message will disappear when the vehicle is driven for a while. If not, contact the nearest authorized UD Trucks dealer for service.

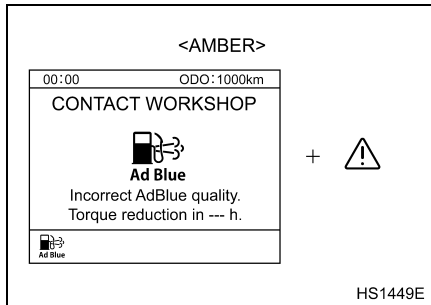
**CAUTION**

- **Be sure to fill the specified urea water (AdBlue) to the AdBlue tank. Filling the sub-standard urea water or water may result in a fault of the urea dosing system. In addition, filling the fluid other than the urea water such as diesel fuel, kerosene or petrol may cause a fire or system malfunction. If such a fluid is filled in the tank, contact the nearest authorized UD Trucks dealer for inspection and maintenance.**
- **The engine cannot be restarted if it is stopped after the “Engine start inhibited” warning is displayed.**

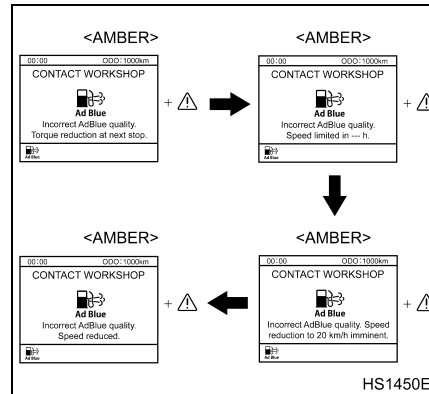
- **Be sure to set the ignition switch to “ON” position when filling the AdBlue after the AdBlue quality warning has been displayed.**

## AdBlue quality warning (For Hong Kong)

- If a fluid other than the specified urea water (AdBlue), such as water, diesel fuel or kerosene, is filled in the AdBlue tank, a warning is displayed and alerts that the engine torque or speed is reduced.
- If the warning is displayed, stop the engine and turn the ignition switch to the ON position. Empty the AdBlue tank, and fill the specified AdBlue until the AdBlue gauge indicates “F”.
- The warning will disappear when the vehicle is driven for a while. (It may take 1 hour or longer.) If the warning does not disappear, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



- If you continue to drive the vehicle with wrong urea water or water in the AdBlue tank, warnings are displayed in the following order. The torque will be reduced, and the speed will be further limited.

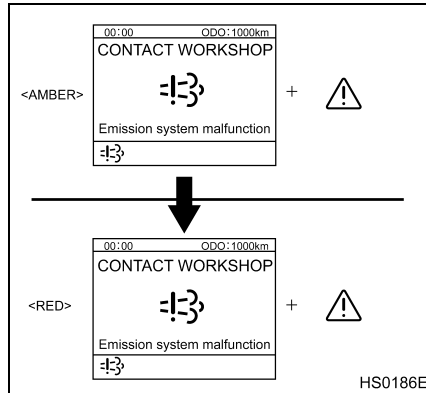


## CAUTION

- Be sure to fill the specified urea water (AdBlue) to the AdBlue tank. Filling the sub-standard urea water or water may result in a fault of the urea dosing system. In addition, filling the fluid other than the urea water such as diesel fuel, kerosene or petrol may cause a fire or system malfunction. If such a fluid is filled in the tank, contact the nearest authorized UD Trucks dealer for inspection and maintenance.
- Be sure to set the ignition switch to “ON” position when filling the AdBlue after the AdBlue quality warning has been displayed.

## Urea dosing system warning (Except Hong Kong)

- When the urea dosing system is faulty, this amber warning is displayed. If the warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.
- If the vehicle is driven for approx. 300 km after the amber (moderate) warning is displayed, a buzzer sounds and the display is changed to the red (severe) warning.  
If the red warning is displayed, immediately have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

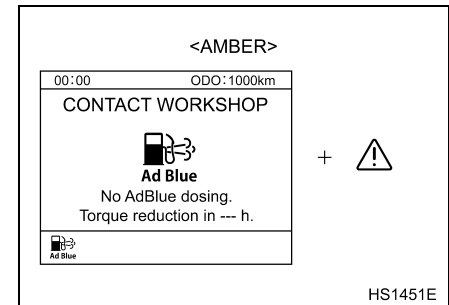


### CAUTION

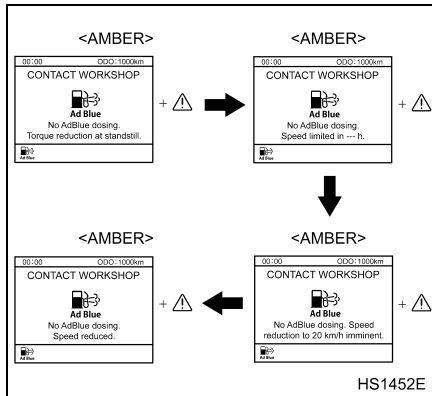
**Do not drive with this warning displayed. This condition worsens the exhaust emission condition, so have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.**

## Urea dosing system warning (For Hong Kong)

- If an abnormality occurs in the urea dosing system control, a urea dosing system warning corresponding to the situation is displayed and alerts that the engine torque or speed is reduced.
- If the warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

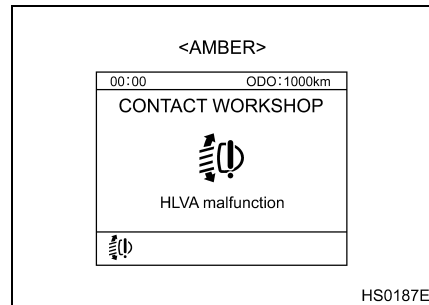


- If you continue to drive the vehicle with an abnormality in the urea dosing system control, warnings are displayed in the following order. The torque will be reduced, and the speed will be further limited.



## Auto levelizer warning (except for tractor)

- The auto levelizer automatically adjusts the headlight beam angle in accordance with the vehicle loading condition.
- If the auto levelizer fails when the headlights are on, a warning is displayed and the headlight beam angle is fixed to the current position.
- If the warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



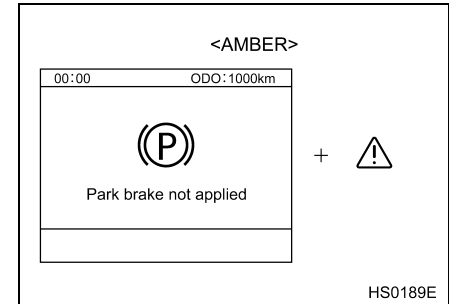
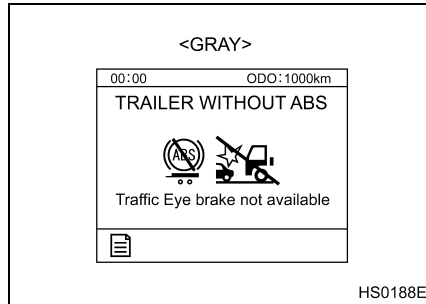
**NOTE**

**The freight shall be loaded evenly considering the balance of the axle weights.**



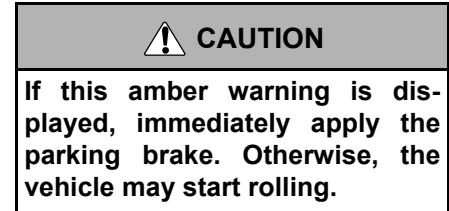
## Non-ABS (trailer) information (tractor)

- If a trailer without ABS is connected, this information is displayed and a buzzer sounds to alert the driver.
- When this message is displayed, it can be hidden by using a steering switch, depending on the market and the specifications of the vehicle. The warning buzzer does not sound on these vehicles.
- If a trailer without ABS is connected, the Traffic Eye Brake would not operate.
- This information does not appear when driving without connecting a trailer or when driving with a trailer with ABS connected.

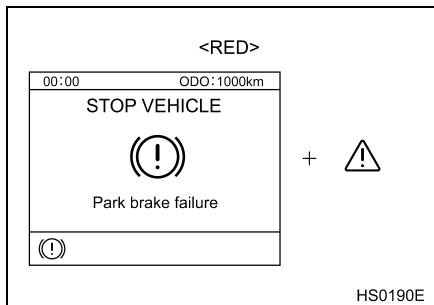


## Parking brake warning

- If a door is opened with the ignition switch in OFF position and the parking brake not applied, a warning is displayed and a buzzer sounds to warn the driver.
- If a door is opened with the ignition switch in ON position or with engine running, brake pedal and accelerator pedal released, and the parking brake not applied, a warning is displayed and a buzzer sounds to warn the driver.



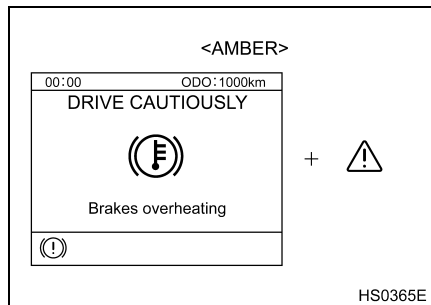
If a malfunction occurs in the parking brake system, the following red warning is displayed.

**CAUTION**

**If the red warning is displayed and a buzzer sounds, park the vehicle in a safe place and contact the nearest authorized UD Trucks dealer for inspection and service.**

**Brake fade warning**

- This warning appears when the brake pads become too high temperature due to frequent application of the main brake.
- When this warning is displayed, the stopping power of the main brake has lowered, therefore the brake pedal should be depressed harder than normal.

**CAUTION**

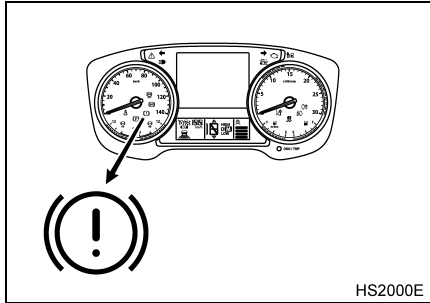
**If the warning is displayed, decelerate using the auxiliary brakes and stop at a safe place.**

**Indicators****Brake warning indicator**

If the air pressure drops and the meter indicator falls near the red zone, the warning indicator will illuminate and the buzzer will sound to warn the driver. The buzzer will stop when the vehicle stops.

**Red zone:****650 kPa (6.6 kgf/cm<sup>2</sup>) or less**

- If the warning indicator illuminates, immediately stop the vehicle in a safe location and leave the engine idling to increase the air pressure.
- If the warning indicator does not turn off even though idling is continued, contact the nearest authorized UD Trucks dealer.

**! WARNING**

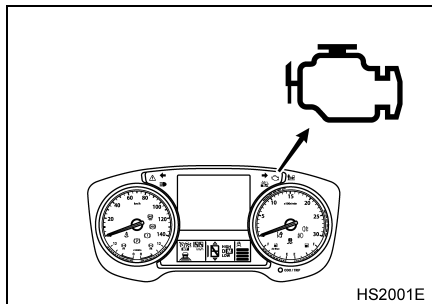
- **Immediately stop driving if the low air pressure warning indicator illuminates, the warning buzzer sounds, or the air pressure gauge indicator is in the red zone. Not doing so is very dangerous because the brakes, clutch, or gearshift may stop working.**
- **Immediately stop the vehicle in a safe location when this warning indicator illuminates. Continuing to drive in this condition could cause the parking brake to operate, which would make driving impossible.**

**Engine control warning indicator**

- This warning indicator illuminates when a problem occurs in the engine control system.
- This warning indicator blinks or illuminates when the ignition switch is turned ON. If there is no abnormality or the exhaust gas abnormal level is “medium”, the indicator goes out within 15 seconds after the engine starts.
- This warning indicator also illuminates when the urea dosing system is faulty or when AdBlue is empty. When this warning indicator illuminates, also check if the urea dosing system warning or low AdBlue level warning is displayed or not.

Indicator illuminating condition when the ignition switch is turned to the ON position

Operation status	When normal	When faulty	
		Exhaust gas at abnormal level (medium)	Exhaust gas at abnormal level (high)
Engine stopped	Blinks	Blinks	Blinks → ON
Engine running	OFF	ON → OFF	ON



- If the engine control warning indicator continues to illuminate or does not illuminate when the ignition switch is turned ON, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

**CAUTION**

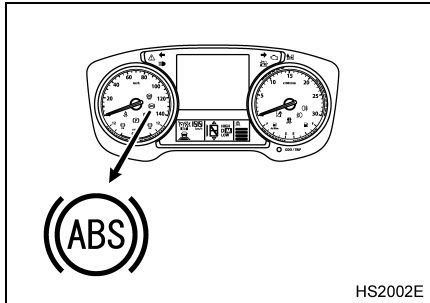
- **Do not drive while the engine control warning indicator is illuminated. This could cause decreased fuel economy or decreased power, so have your vehicle inspected and serviced by the nearest authorized UD Trucks dealer.**
- **If the engine stops or is clearly producing an abnormal noise or vibration, contact the nearest authorized UD Trucks dealer.**

**NOTE**

**When the engine control warning indicator has illuminated due to low AdBlue level (empty), the warning indicator may not go out by refilling the AdBlue. In this case, set the ignition switch to OFF position, wait for approx. 10 seconds and then restart the engine. If the indicator goes out, there is no problem.**

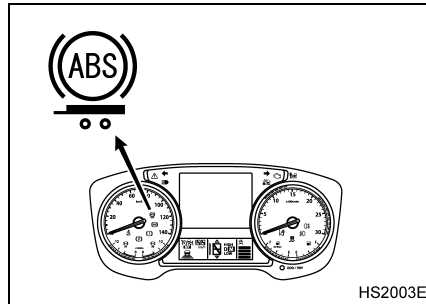
## ABS warning indicator

This warning indicator illuminates if there is an abnormality in the ABS (Anti-lock Brake System). Under normal operation, this warning indicator illuminates when the ignition switch is turned to the ON position to start the engine and it goes out after 3 seconds if there is no abnormality in the ABS.



## ABS (trailer) warning indicator (tractor)

When the trailer is equipped with ABS, this indicator illuminates to warn the driver when there is a problem in the trailer ABS system. This warning indicator will illuminate when the ignition switch is turned to the ON position, and it will go out a few seconds later or when the vehicle speed exceeds 7 km/h.



### ⚠ CAUTION

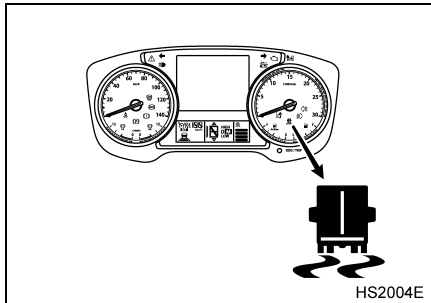
The braking will not be stable when this warning indicator illuminates while driving, so be cautious about operation of the brake pedal (avoid riding the brake pedal in particular) and have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

### NOTE

How the warning indicator illuminates and goes out after the ignition key is turned ON differs depending on the trailer's ABS system.

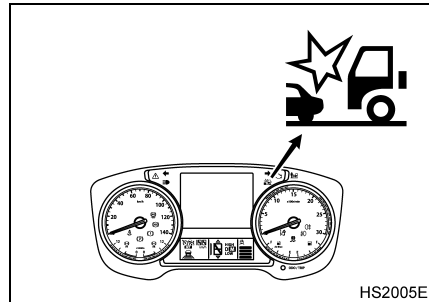
## UDSC warning indicator

The UDSC warning indicator flashes when the UDSC system is operating and illuminates when it is faulty. For details of the UDSC, refer to “UDSC and ASR” (page 6-104) in “Controls and functions”.



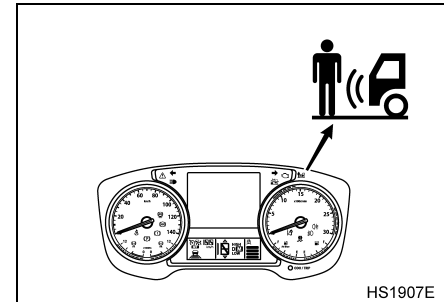
## TEB warning indicator

The TEB warning indicator flashes when the Traffic Eye Brake system is operating and illuminates when it is faulty. For details of the Traffic Eye Brake (Collision damage alleviating system)♦ (page 6-46) in “Controls and functions”.



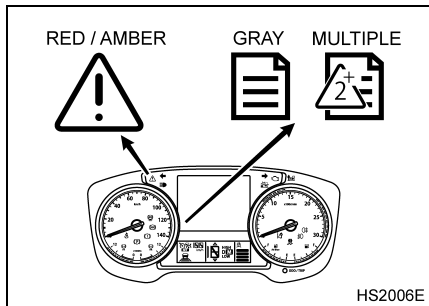
## MOIS warning indicator♦

Blinks or illuminates steadily to warn when MOIS is activated. For details of MOIS, refer to “Moving Off Information System (MOIS)♦” (page 6-88) in “Controls and functions”.



## Master warning indicator

- The master warning indicator illuminates together with other warning and/or warning indicator to warn the driver of malfunction.
- There are two types of warning indicators - for red and amber warning messages and for gray message.
- In addition, if more than one messages exist (but only one can be displayed), an indicator informing this is displayed.



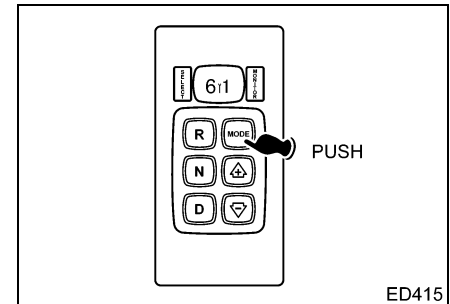
- When the multiple message indicator is displayed, the contents of the messages can be checked from the “Vehicle message” screen under the MONITORING screen. For details, refer to “Vehicle message” (page 5-14).

## Power mode indicator light (ATM)<sup>†</sup>

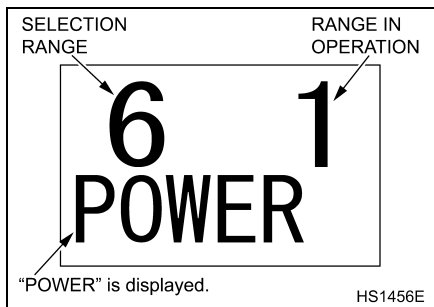
The indicator light will come on when the power mode switch is set to the power mode.

When the switch is pushed once, the power mode will activate.

When the switch is pushed again, operation stops (normal mode).

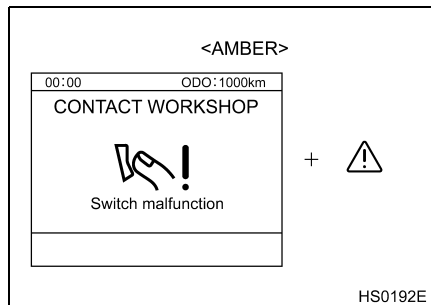


While the power mode is operating, the indicator is displayed on the multi-display in the selector switch.



## Switches

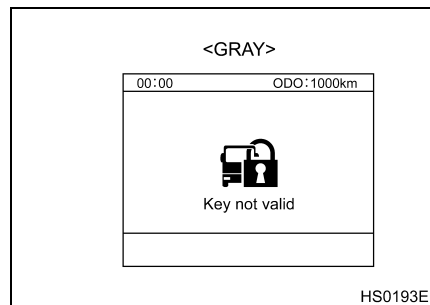
If any switch on the instrument panel described in this or other section is faulty, a warning is displayed in the multi-display. If the warning is displayed, have your vehicle inspect and service at the nearest authorized UD Trucks dealer.



## Ignition key

- The ignition key is used in the ignition switch and to lock and unlock the doors. The vehicle comes with two keys, so use one key and keep the other in a safe place as a spare.

- This vehicle has an immobilizer system. This system electronically performs verification between the ignition key and the vehicle for theft prevention. If the verification result is faulty, a warning is displayed and the engine would not start.

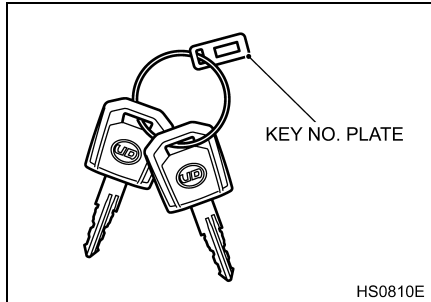


- If you lose a key, a new key must be registered to the immobilizer system. Confirm your key number and contact the nearest authorized UD Trucks dealer to purchase and register a new key.



## Key number plate

The key number is engraved on the key number plate so that only the owner will know the key number. Remove this from the key you normally use and store it in a safe place other than in the vehicle. (The key number is not engraved on the key.)



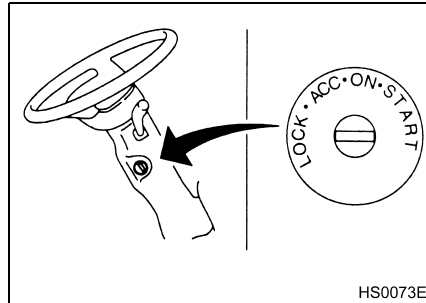
### WARNING

**Do not leave children alone in the vehicle. If you have to leave a child in the vehicle, be sure to remove the ignition key to avoid an accident.**

### NOTE

**When leaving the vehicle, be sure to remove the key and lock the doors to prevent theft.**

## Ignition switch



**LOCK (OFF):** This is the position that turns off the power to the engine. It is also the position in which the key can be inserted and removed and in which the steering wheel can be locked. Turning the steering wheel after removing the key will automatically lock the steering wheel to prevent theft.

**ACC:** This is the position used to stop the engine. It is also the position that is used to listen to the radio, etc., when parked with the engine stopped.

**ON:** This is the position used when the engine is running. Never turn the key to any other position while driving.

**START:** This is the position used to start the engine. The key automatically returns to the ON position when released.

Never turn the key to the START position after the engine has started.

**! WARNING**

- Never move the vehicle with the ignition key removed or with it in the LOCK position. The steering wheel could be locked and become unable to steer.
- Never turn the ignition switch to any position other than the ON position while driving. If turned to the ACC position, the engine will stop, which will make it very difficult to turn the steering wheel, and the brakes will not work as well as normal. Furthermore, if turned to the LOCK position, the steering wheel could be locked, making the steering impossible.
- If a ignition key with immobilizer is lost, you cannot start the engine. In such a case, contact the nearest authorized UD Trucks dealer.

**! CAUTION**

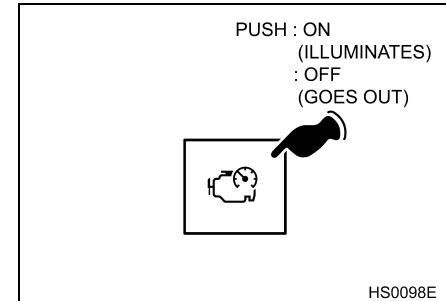
To avoid damage to the starting system, do not turn the key to the START position while the engine is in operation.

**NOTE**

- When the steering wheel is locked, if the key is difficult to turn, jiggle the steering wheel right and left and turn the key to “ACC” or “ON” position.
- If the engine stalls, return the key to LOCK (OFF) position once and then turn to the START position.

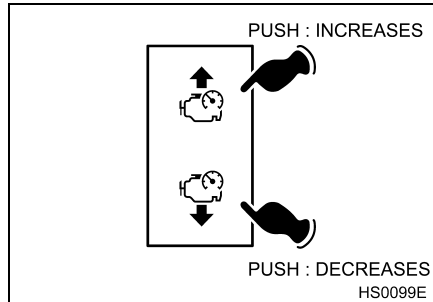
## Idling control ON/OFF switch

- When this switch is turned ON, the switch illuminates in amber and the idling speed can be adjusted using the idling control switch.
- When this switch is turned OFF, the idling speed is adjusted automatically.



## Idling control switch

- This switch is used to control the engine idling speed. Pressing the upper side of the switch increases the engine speed and pressing the lower side decreases it.
- The idling control switch is operable only when the parking brake is applied and the shift lever or gear selector is in "N" position.



### Standard idling speed:

- 500 to 600 rpm (GH8 Engine)
- 400 to 500 rpm (GH11 Engine)
- (For Singapore CG series:  
450 to 550 rpm)

### CAUTION

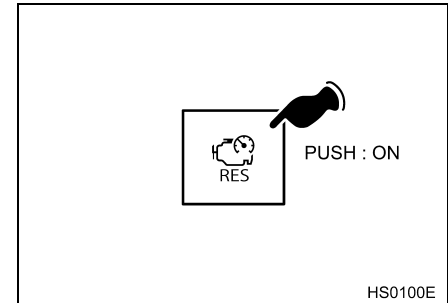
**To adjust the idling speed manually, be sure to turn off the quick warm-up switch.**

### NOTE

- The idling speed may increase temporarily after the engine is subjected to high load.
- When the engine coolant temperature is too low, the idling speed may become higher than normal even with the parking brake released.
- If the engine is kept at high idle for a long time, the fuel consumption will worsen.

## Idling control resume switch

- If this switch is pressed when the idling speed is adjusted by the idling control switch, the idling speed is set to the default value.
- If the switch is pressed again, the engine speed returns to the previous speed.



## Quick warm-up switch

- The warm-up system increases the idling speed when the engine coolant temperature is low to shorten the warm-up time and enhance the room heating effect while stopping for an extended period.

The engine speed during warm-up system operation varies depending on the engine coolant temperature.

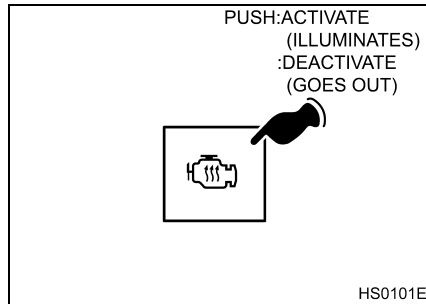
### Engine speed during warm-up system operation:

500 to 910 rpm (GH8 engine)

400 to 800 rpm (GH11 engine)

- This system can only be used when the parking brake is applied.
- When the quick warm-up switch is pressed to turn on the quick warm-up system, the switch illuminates in amber.

- For how to operate the system, refer to “How to start and stop the engine” (page 10-2) in “Correct driving operation” or “Air conditioner”.



### WARNING

**Never warm up the engine in a poorly-ventilated area.**

### CAUTION

- **Except when warming up the engine, be sure to turn off the quick warm-up switch. Otherwise, the fuel efficiency at idling may lower.**
- **Be sure to turn off the quick warm-up switch when operating the transmission PTO.**
- **Before turning on the quick warm-up switch, turn off the idling control ON/OFF switch.**

### NOTE

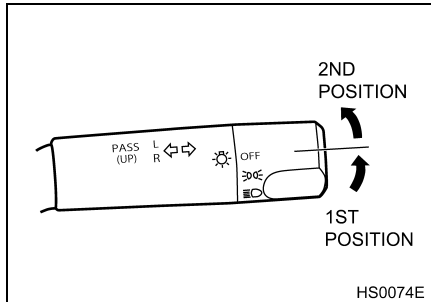
- **When the vehicle starts off or when the engine is raced, the quick warm-up system is cancelled.**
- **If the engine coolant temperature rises excessively while operating the quick warm-up system, the system is cancelled.**

## Stalk switch (right side)

The stalk switch (right side) combines the lighting switch, headlight position change switch, passing switch, and turn signal switch.

## Lighting switch

Turn the knob on the end of the lever to turn on the lights and switch illuminations.



Knob	OFF	1st	2nd
Lights	OFF	1st	2nd
Headlights	OFF	OFF	ON
Position light (front)	OFF	ON	ON
Daytime running light	ON *1	OFF	OFF
End outline marker light	OFF	ON	ON
License plate light	OFF	ON	ON
Position light (rear)	OFF	ON	ON
Meter illumination	OFF	*2	*2
Switch illumination	OFF	ON	ON

\* 1: ON when the engine is started.

\* 2: Illuminates at the set brightness.

## NOTE

- On some models, the auto leveler function which automatically adjusts the vertical angle of the headlights is provided.
- If the engine is started while some lights are turned on, the lights will go off. This is to reduce the load of batteries when the starter is operating and is not a malfunction. The lights will illuminate when cranking is finished.

- Fog may temporarily form inside the lens of exterior lights, such as headlights, during rain or in a car wash. A temperature difference between inside and outside of the light causes the fog inside the lens. This is not a malfunction. This fog formation is the same phenomenon as the fog that is generated on a window glass during rain. If, however, water gathers inside the light unit or large drops of water collect inside the lens, contact the nearest authorized UD Trucks dealer.

### Turn signal switch

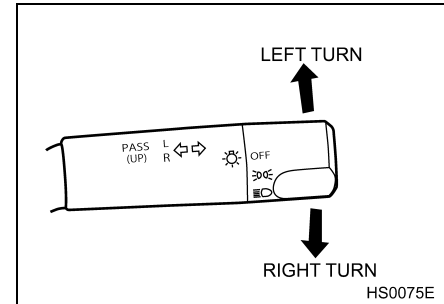
- This is used to signal a right turn or a left turn by flashing the turn signal light, and turn signal indicator also flashes.
- The lever is automatically returned to its neutral position after it is operated when the steering wheel returns to the straightforward position.

#### NOTE

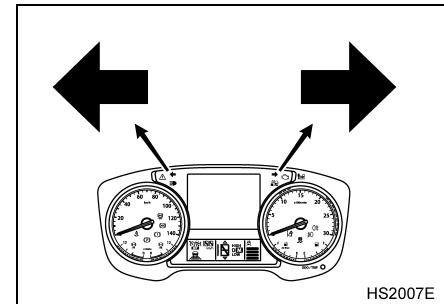
Note that the lever might not return to its neutral position when the steering wheel is only turned a little bit. When this occurs, return it to the neutral position by hand.

- When the lever is moved to a mid-position and released, the lever will return to the neutral position and appropriate turn signals flash once. The turn signals continue to flash if the lever is held in this position. (Lane changer function)

- If the indicator flashes quickly, it indicates that a turn signal light bulb is burned out.



Indicator

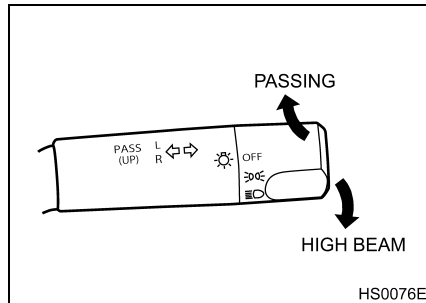


**WARNING**

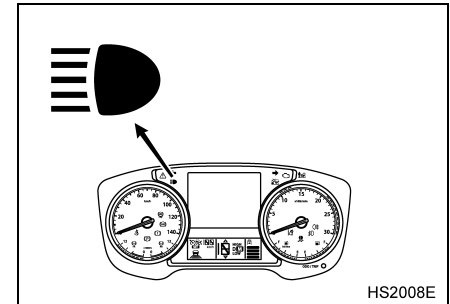
- Use light bulbs of the specified wattage for the turn signal lights. Using a bulb other than the specified bulb or increasing the number of the turn signal lights could prevent the burnt bulb detection function.
- If LED lamps are used for the turn signal lamps on the trailer or the mounted body, the turn signal lamps may blink abnormally fast. The appropriate blinking rate of the turn signal lamps is 60 to 120 times per minute.

## Headlight position change switch

- Lowering this lever while the headlights are on will turn on the high beam headlights. Always use the low beam headlights when there is a vehicle ahead of you or there is an oncoming vehicle.
- The high beam indicator lights up when the high beam headlights are turned on.

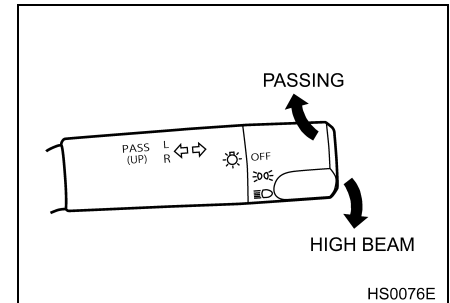


## High beam indicator



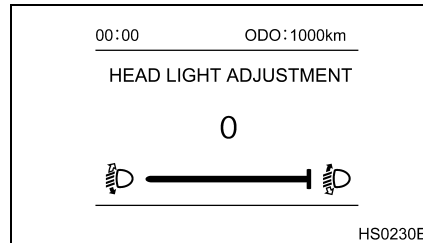
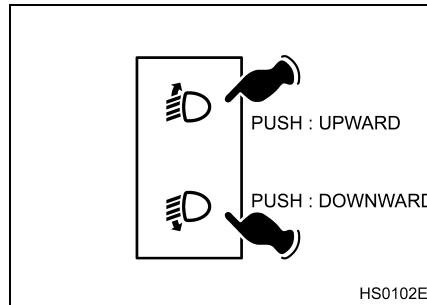
## Passing switch

This is used to signal other vehicles when you are passing, etc. The high beam of the headlights illuminate while the lever is pulled toward you.



## Headlight levelizer switch<sup>†</sup>

- This function is optional and should be used out of public roads. (For example, off-road in construction fields, etc.)
- The switch is used to adjust (lower) the headlight beam vertical angle to compensate for the vehicle loaded state when driving at night. This can be used when the lighting switch is in the second position.
- Pushing the upper side moves the beam upward and pushing the lower side moves the beam downward.
- The beam angle is temporarily displayed on the multi-display (by the figure -3 to 0) when the switch is operated.
- “0” is the standard position for the switch. The switch should be ensured to select “0” position before back to the public road driving.



### CAUTION

- Do not use this function on public roads. Otherwise, driver's front clear vision may be lost significantly.
- If the headlight beam angle is improper, the headlight beams may dazzle the driver of the oncoming or forwarding vehicle. If the headlight beam is pointing on the windshield of the oncoming vehicle or on the rearview mirror of the forwarding vehicle, lower the beam angle.

### NOTE

Make sure that the headlight beam angle is at the standard (“0”) position when adjusting the light beams after the headlights have been replaced, etc.



## Stalk switch (left side)

The stalk switch (left side) combines the hazard switch, auxiliary brake switch, wiper and washer switch and ESCOT auto shift down switch.

## Wiper and washer switch

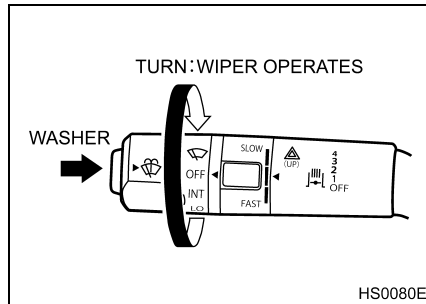
Turning this switch turns on the wipers.

INT: Intermittent operation

LO: Operates at a low speed

HI: Operates at a high speed

- The washer fluid is sprayed and the wipers operate several times when the switch at the end of the lever is pressed.
- Operating the wipers when the wiper blades are stuck or frozen to the glass will cause the wiper stop function to operate and temporarily stop the wipers (for about 10 seconds). When this happens, turn off the wiper switch and remove what is causing the wiper blades to stick before operating the wipers again.

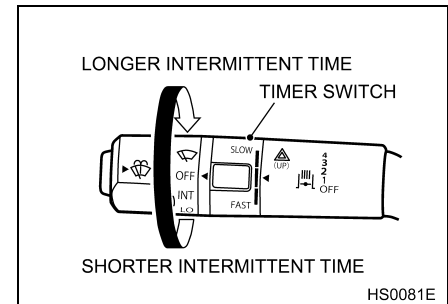


### CAUTION

- **Do not operate the washer when the washer liquid is empty. Operating the washer when there is no washer fluid could cause the washer motor to seize up.**
- **Do not continuously spray the washer fluid for more than 20 seconds. Doing so could cause the motor to seize up.**
- **Turning on the wipers when the windshield is dry could scratch the glass, so spray the washer fluid before operating the wipers.**

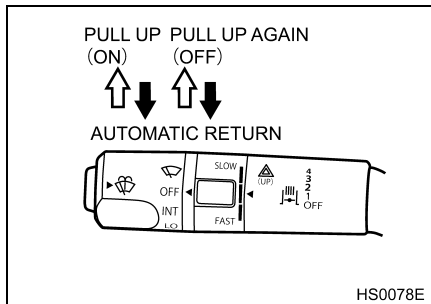
## Intermittent wiping time adjustment switch

By turning the timer switch with the wiper switch is in the “INT” position, the intermittent wiping interval can be adjusted to a desired interval (2, 5.5, 9 or 12 seconds).



## Hazard switch

- When this lever is pulled up, all the turn signal lights and turn signal indicators will flash regardless of the position of the ignition switch.
- The lever automatically returns to its original position when released. To turn off the hazard lights, pull the level up again.
- The hazard lights are used when making emergency stops on the road because you have a mechanical trouble, etc., or for other emergencies.

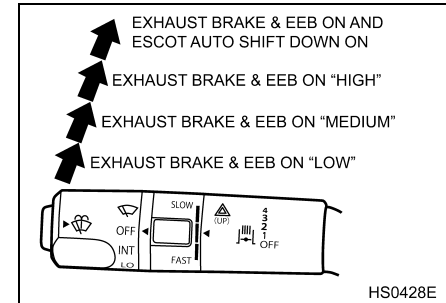


## Auxiliary brake switch

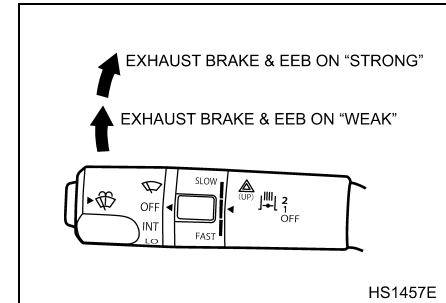
### Exhaust brake & EEB (Extra Engine Braking)

- If you release your foot from the accelerator pedal when this switch is activated, the exhaust brake & EEB will be applied in accordance with the lever position and the exhaust brake indicator will illuminate.
- The current lever position is indicated in the sub display.
- The exhaust brake & EEB may be temporarily released in the following cases. Even if temporarily released, they will re-engage after returning to the original conditions.
  - When the accelerator pedal is depressed.
  - When the engine speed is low.
  - When the ABS operates
- In addition, the EEB may not engage when the engine coolant temperature is low.

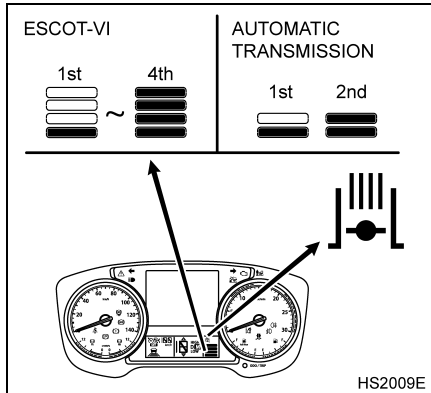
## ESCOT-VI



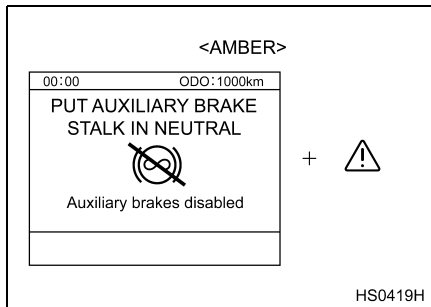
## AUTOMATIC TRANSMISSION



Exhaust brake indicator



- If this switch is in other than OFF position when the auxiliary brake is inoperative, the following warning is displayed.



**! WARNING**

Use of the exhaust brake or EEB on the slippery road (roads with packed snow or/and ice, wet roads and etc.) could cause the lock-up of the rear wheels and slip. Be careful especially when the tractor is not coupled to the trailer or the vehicle is not fully-loaded.

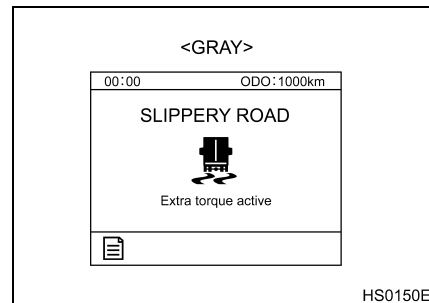
**! CAUTION**

- When warming up the engine in winter, avoid using the exhaust brake & EEB until the engine becomes warm. If these brakes are operated repeatedly when the warming up is insufficient, they may be damaged due to high viscosity of the engine oil.
- The exhaust brake & EEB may not operate when the engine oil temperature is low because the exhaust brake & EEB release system activates to prevent faulty operation.
- The exhaust brake & EEB may operate while shifting even if the auxiliary brake switch is turned to OFF. This does not indicate a malfunction.

## NOTE

- The exhaust brake & EEB improves the engine braking. Use them as an auxiliary brake when driving a downgrade or highway. The exhaust brake & EEB do not operate when the engine is at idling speed.
- The exhaust brake and EEB will be activated regardless whether the tractor is coupled to the trailer.
- If the auxiliary brake indicator does not turn on, the exhaust brake & EEB may be faulty. Set the auxiliary switch to OFF position and have your vehicle inspected and serviced at your nearest authorized UD Trucks dealer.

- When the exhaust brake switch is set to a position other than “OFF”, the main brake blending function will not operate even if the brake pedal is depressed while the brake blending OFF switch is in the “AUTO” position.
- If the wheels slip when using the exhaust brake & EEB while driving on slippery roads or over bumps, etc., a message warning a slippery road is indicated on the multi-display. In this case, ABS operates, the exhaust brake & EEB are temporarily cancelled and the indicator goes off, but this is normal ABS operation and is not a malfunction. Drive carefully while taking into consideration of the road conditions, the following distance, and other factors.

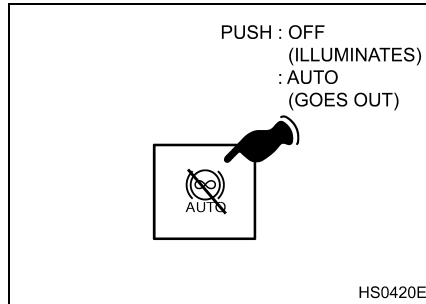


### ESCOT auto shift down switch

For more information regarding the ESCOT auto shift down switch, refer to “ESCOT auto shift down switch (and exhaust brake & EEB switch)” (page 6-126) in “Controls and functions”.

## Brake blending OFF switch

- When the brake pedal is depressed, the auxiliary brakes are also applied in combination with the main brake. (Brake blending)
- This brake blending OFF switch releases this brake blending function.
- When the switch is in the “AUTO” position, the auxiliary brakes are applied when the brake pedal is depressed even if the exhaust brake switch is in the “OFF” position.
- When the switch is in “OFF” position, the brake blending function is cancelled and the switch illuminates in amber.



### CAUTION

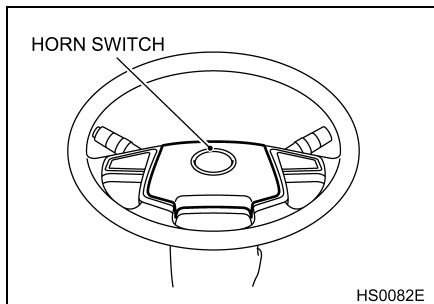
- **Appropriate use of the auxiliary brakes will extend the service life of the main brake pads. Normally, set this switch in “AUTO” position. If you feel that the braking force is too much when driving with no load, set the switch in “OFF” position.**
- **If the road surface is slippery by snow or other reason, set the switch in “OFF” position. When the road grip recovers, set the switch in “AUTO” position.**

### NOTE

**When the switch is in the “AUTO” position and the exhaust brake switch is set to a position other than “OFF”, the auxiliary brakes are applied in accordance with the position of the exhaust brake switch when the accelerator pedal is released, but the main brake blending function will not work.**

## Horn switch

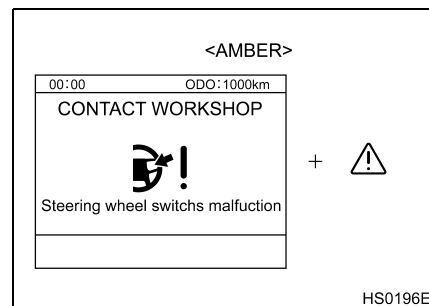
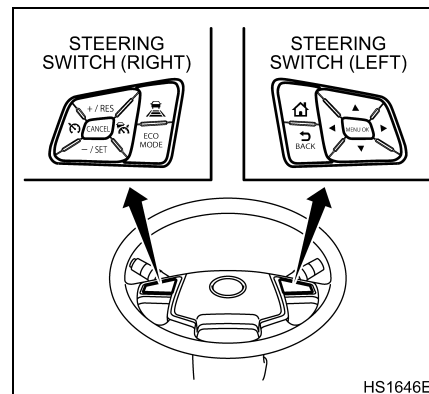
- The horn switch is in the center of the steering wheel.
- Push the pad (horn switch) to sound the horn.



## Steering switch

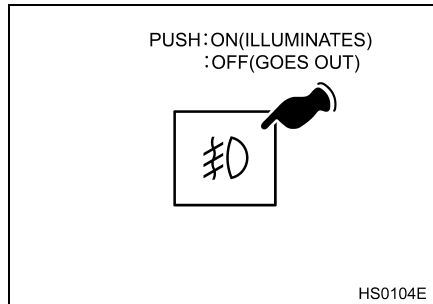
- The switches to control the multi-display are on the right spoke and the switches for setting the cruise control, etc. are on the left spoke of the steering wheel.
- The switches illuminate when the light switch is in the ON position.
- For the switches to control the multi-display, refer to “Multi-display” (page 5-10).
- On the left side are the cruise control switches, ECO MODE switch, inter-vehicle distance setting switch, etc. For the operation method of the switches, refer to “Auto cruise♦” (page 6-41), “ECO MODE switch” (page 6-124) (page 10-31), and “Driver support system♦” (page 6-46) in “Controls and functions” or “Correct driving operation”.
- If any abnormality is found in the steering switch, a warning is displayed on the multi-display. Contact the nearest authorized UD

Trucks dealer for inspection and service.

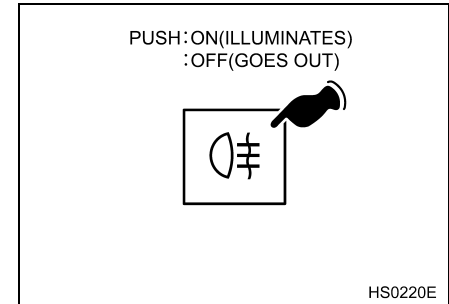
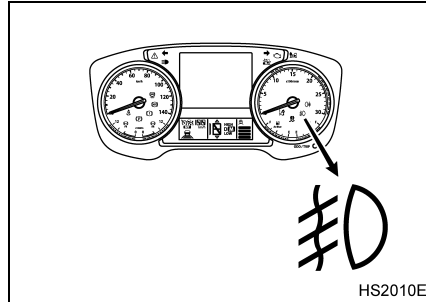


## Front fog light switch

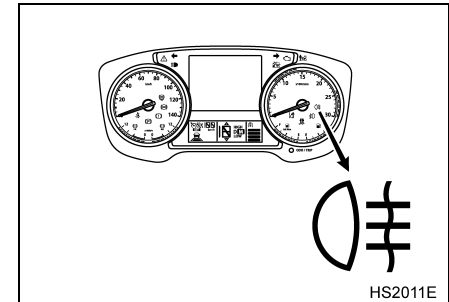
- Pushing this switch turns on the front fog lights regardless of the position of the lighting switch. The switch illuminates in amber when the front fog lights are on.
- The following lights will also turn on when the front fog light switch is turned on.
  - Position lights
  - License plate light
  - End outline marker lights



Indicator



Indicator



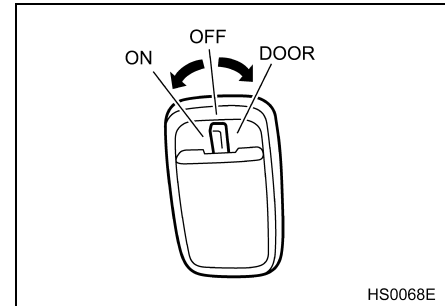
## Rear fog light switch

- When the lighting switch is in the OFF position or the 1st position and the front fog light switch is ON, pushing this switch turns on the rear fog lights.
- When the lighting switch is in the 2nd position, pushing this switch turns on the rear fog lights regardless of whether the front fog light switch is ON or OFF.
- The switch illuminates in amber when the rear fog lights are on.

## Room light switch

- Setting the room light switch to ON position turns on the room light regardless of whether or not a door is open or closed.
- The room light turns off when the room light switch is set to OFF position.
- When the room light switch is in the DOOR position, the room light will turn on when the driver's door or the assistant's door is opened, and will turn off when both doors are closed.

State of the doors		Room light switch position						
		Driver's side			Assistant's side			
Driver's door	Assistant's door	ON	OFF	DOOR	ON	OFF	DOOR	
Close		Turn on	Turn off	Turn off	Turn on	Turn off	Turn off	
Open	Close			Turn on			Turn on	Turn on
Close	Open							
Open								



HS0068E

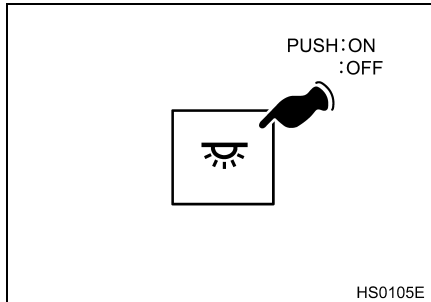
### NOTE

**The room light can be operated after turning off the ignition switch, but it will be shut down after a while.  
To continue the operation of the light, turn the ignition key to ACC and then to OFF position or unlock and lock the door once.  
For details, contact the nearest authorized UD Trucks dealer.**



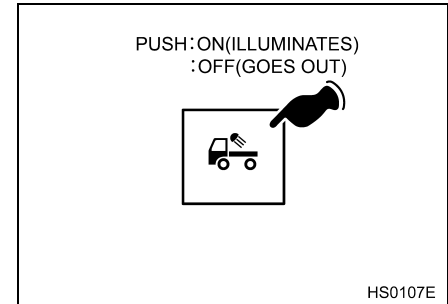
## Fluorescent light switch

- The light comes on when the switch is pushed. The light turns off when the switch is pushed again.
- The fluorescent light can be used for a while after the ignition switch is set in OFF position.



## Working light switch♦

- The working light comes on when the switch is pressed. This can be used when unloading freight at night for example. Always turn off this light while driving.
- The switch illuminates in amber when it is turned on.
- When the engine is not running, the light will go off at a specified time.
- The working light goes off automatically when the vehicle speed reaches 10 km/h or higher.

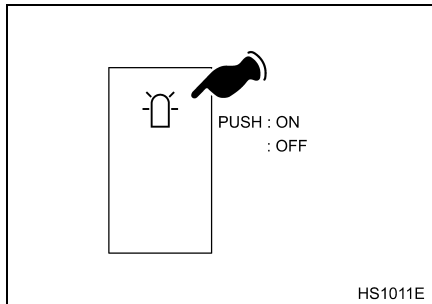


### NOTE

**The working light automatically goes off during cranking to protect the battery, and automatically returns on after cranking.**

## Beacon lamp switch<sup>◆</sup>

- When this switch is pressed, the beacon lamp on the roof lights up. To turn off the beacon lamp, press the switch again.
- Even when the beacon lamp switch is on, the beacon lamp goes out when the ignition switch is turned to the OFF or ACC position.



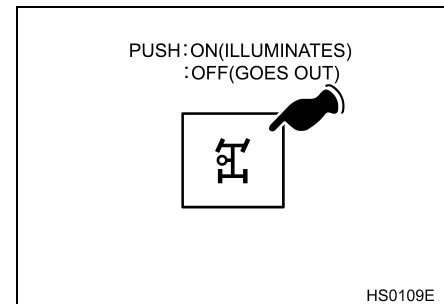
### NOTE

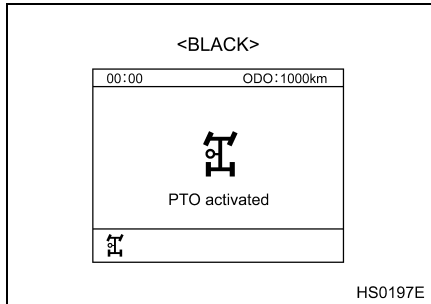
**The working light automatically turns off when the engine is cranking to reduce the load of batteries and it turns on when the cranking is finished.**

## Transmission PTO switch<sup>◆</sup>

- This switch connects or disconnects the drive force from the transmission to the hydraulic pump, etc.
- Make sure that the shift lever is placed in the “N” position and the gear position indicator displays “N” before operating the switch (both when turning it ON and OFF).

- Pushing this switch awhile. The switch illuminates in amber, PTO is turned on, and “PTO activated” and PTO indicator are displayed on the multi-display. The PTO indicator remains on as far as the PTO is in operation. The switch illuminates in amber. Engine speed control is switched from the accelerator pedal control to the external control (except for some models such as dump trucks).
- Pushing the switch again turns PTO off, switches the engine control from the external control to the accelerator pedal control, and the PTO indicator disappears.



**CAUTION**

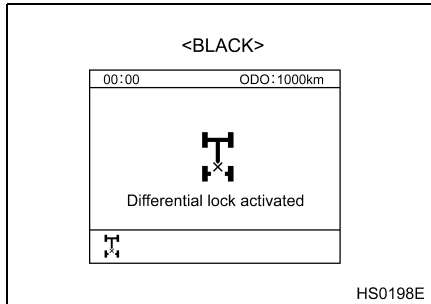
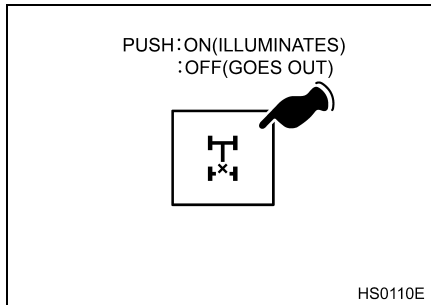
**Always turn this switch off when driving. Leaving it on disables the engine speed control by the accelerator pedal, so it is very dangerous to drive with this switch on.**

**NOTE**

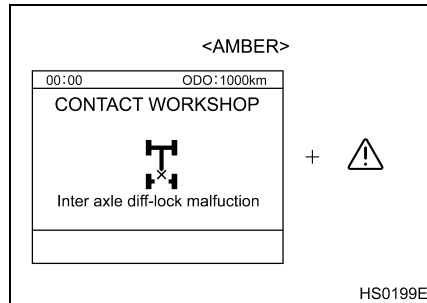
- **Always turn this switch off before starting the engine. The engine cannot be started when this switch is on.**
- **Before operating PTO, turn off the idling control ON/OFF switch.**
- **When controlling the engine speed by other than the accelerator pedal for PTO, etc., be sure to turn off the quick warm-up switch.**
- **Confirm that "PTO activated" message is displayed on the multi-display before starting to operate PTO. If the message is not displayed, the PTO system is faulty. Turn off the PTO switch and have your vehicle inspected and serviced by the nearest authorized UD Trucks dealer.**

## Inter-axle differential lock switch<sup>†</sup> (CG, CW and GW models)

- This switch suspends (locks) the differential operation of the differential (inter-axle differential) located between the front rear axle and the back rear axle.
- When this switch is turned on, it illuminates in amber. Then, when the differential lock is engaged, the message "Differential lock activated" is displayed on the multi-display.
- Use the inter-axle differential lock only to get out of a sandy, muddy or icy patch where some wheels of rear axles are slipping badly, or when driving on such slippery road surfaces.



- If the inter-axle differential lock fails, a warning is displayed on the multi-display. If the warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



 **CAUTION**

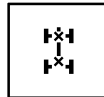
- After displaying the “Differential lock activated” message, it may take several seconds for the front and rear axles to lock completely.
- Do not turn on the differential lock switch while the wheels are spinning and the differential is operating. Doing so may damage the differential lock.
- Do not engage the differential lock while driving on paved roads or under other normal driving conditions. Doing so can cause premature tire wear, abnormal noise, vibration or differential system failure.
- If the rear wheels are allowed to slip repeatedly without engaging the differential lock, the differential system may fail. Use the differential lock to quickly get out of the difficult patch.

## NOTE

- Engaging the differential lock makes the vehicle's turning radius larger.
- Drive the vehicle under 30 km/h when the differential lock is engaged. If the differential lock switch is turned on while driving over 30 km/h, the differential lock would not be engaged until the vehicle speed lowers below 30 km/h.
- Even when the differential lock switch is turned off and the "Differential lock activated" message on the multi-display disappears, the differential lock may not be immediately disengaged.

## Inter-wheel differential lock switch<sup>†</sup> (CG, CW and GW models)

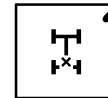
- This switch stops (locks) differential operation between the right and left wheels on the rear front axle and the rear rear axle.
- Use the inter-wheel differential lock switch together with the inter-axle differential lock switch only for escaping when one of the two wheels on the drive axle slips on sand, mud, icy roads, etc., or when traveling on such a road surface.



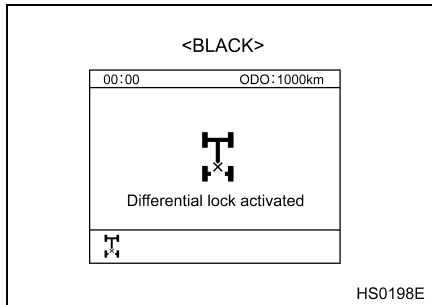
HS1461E

- Push the inter-axle differential lock switch to turn it ON and stop (lock) the operation of the inter-axle differential first. When the switch is turned ON, the switch lights up in yellow. The differential locks start to operate and "Differential lock activated" is displayed on the multi-display.

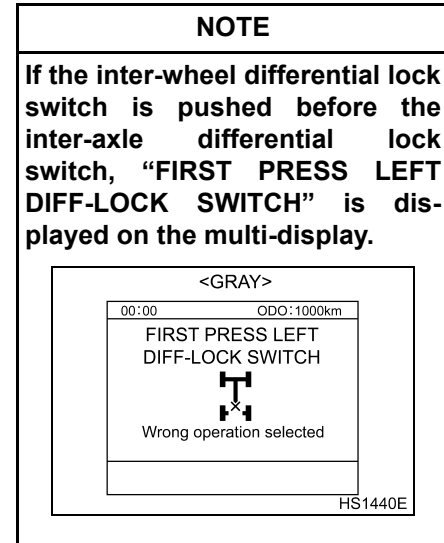
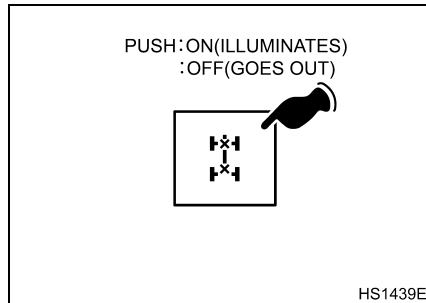
PUSH: ON (ILLUMINATES)  
: OFF (GOES OUT)

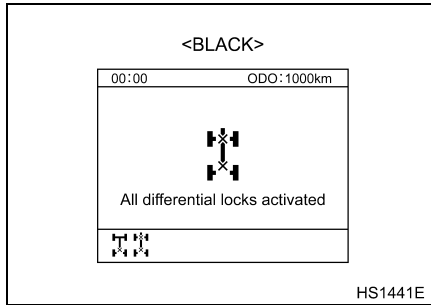


HS0110E

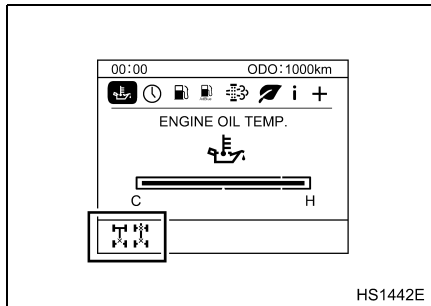


- When the inter-axle differential lock is activated, push the inter-wheel differential lock switch to turn it ON. When the switch is turned ON, it lights up in amber. When the inter-wheel differential locks for the front rear axle and the rear rear axle are fully locked, “Differential lock activated” is displayed on the multi-display.



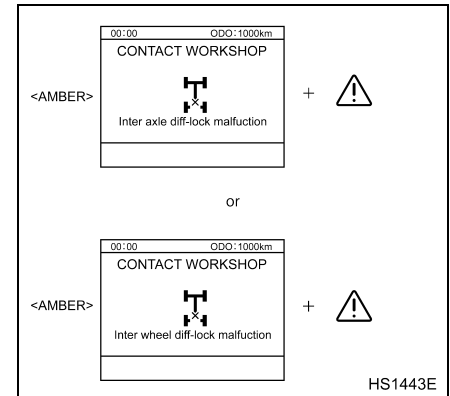


- After the inter-wheel differential lock is activated, the “All differential locks activated” message disappears, but the lower left indicator is displayed continuously.



- To deactivate the inter-wheel differential lock, push the inter-wheel differential lock switch to return the mode to inter-axle differential lock operation. When the inter-axle differential lock switch is pushed, it is deactivated. This is not displayed on the multi-display. If the inter-axle differential lock switch is pushed while the inter-wheel differential lock is activated, all differential locks are deactivated.

- If an abnormality occurs in the inter-wheel differential lock, one of the warnings below is displayed on the multi-display. If a warning is displayed, have your vehicle inspected by your nearest authorized UD Trucks dealer.



 **CAUTION**

- ASR functions to synchronize the right and left wheel rotations when turning on the differential lock switch. At this moment, ASR indicator flashes. The differential lock would not be engaged until the right and left wheels are synchronized. Therefore, it may take several seconds to engage the differential lock completely after the differential lock starts to operate.
- If ASR is deactivated, this synchronizing function would not operate. In such a case, perform the following operations before turning on the differential lock switch.

- Reduce the wheel speed difference between right and left wheels.
- Release the accelerator pedal.
- Lower the vehicle speed below 30 km/h.
- Do not turn on the differential lock switch while the wheels are spinning and the differential is operating. Doing so may damage the differential lock.
- Do not engage the differential lock while driving on paved roads or under other normal driving conditions. Doing so can cause premature tire wear, abnormal noise, vibration or differential system failure.
- If the rear wheels are allowed to slip repeatedly without engaging the differential lock, the differential system may fail. Use the differential lock to quickly get out of the difficult patch.

- Even the differential lock switch is turned off, the differential lock is still operating until “Differential lock activated” message on the multi-display disappears.

**NOTE**

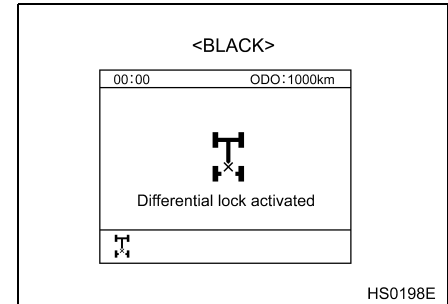
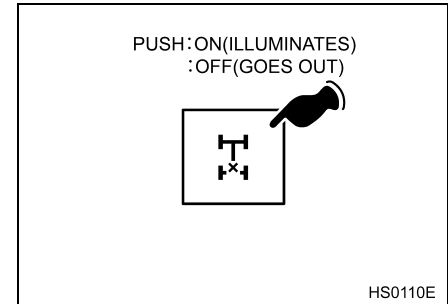
- Engaging the differential lock makes the vehicle’s turning radius larger.
- Drive the vehicle under 30 km/h when the differential lock is engaged. If the differential lock switch is turned on while driving over 30 km/h, the differential lock would not be engaged until the vehicle speed lowers below 30 km/h.



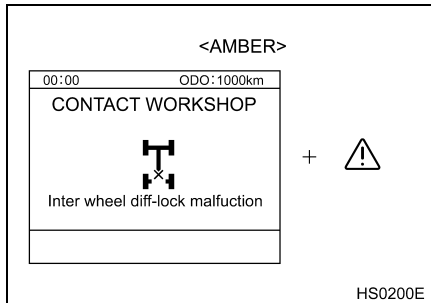
- The differential lock may not be disengaged immediately after the switch is set to OFF. In that case, use the following methods to disengage the differential lock.
  - When driving off: Turn the steering wheel slightly to the left and right. This will bring the differential system into action, releasing the differential lock.
  - While driving: Ease up the accelerator pedal slightly. This will remove any load on the differential lock, letting it disengage.

## Inter-wheel differential lock switch<sup>†</sup> (CD and GK models)

- This switch suspends (locks) the differential operation of the differential between the left and right wheels of the drive axle. When this switch is turned on, it illuminates in amber. Then, when the differential is locked completely, “Differential lock activated” is displayed.
- Use the differential lock only to get out of a sandy, muddy or icy patch where one of the drive wheels is slipping badly, or when driving on such slippery road surfaces.



- If the inter-wheel differential lock fails, a warning is displayed on the multi-display. If the warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



### CAUTION

- **ASR functions to synchronize the right and left wheel rotations when turning on the differential lock switch. At this moment, ASR indicator flashes. The differential lock would not be engaged until the right and left wheels are synchronized. Therefore, it may take several seconds to engage the differential lock completely after the differential lock starts to operate.**
- **If ASR is deactivated, this synchronizing function would not operate. In such a case, perform the following operations before turning on the differential lock switch.**
  - Reduce the wheel speed difference between right and left wheels.
  - Release the accelerator pedal.
  - Lower the vehicle speed below 30 km/h.
- **Do not engage the differential lock while driving on paved roads or under other normal driving conditions. Doing so can cause premature tire wear, abnormal noise, vibration or differential system failure.**
- **If the rear wheels are allowed to slip repeatedly without engaging the differential lock, the differential system may fail. Use the differential lock to quickly get out of the difficult patch.**
- **Even the differential lock switch is turned off, the differential lock is still operating until "Differential lock activated" message on the multi-display disappears.**

**NOTE**

- Engaging the differential lock makes the vehicle's turning radius larger.
- Drive the vehicle under 30 km/h when the differential lock is engaged. If the differential lock switch is turned on while driving over 30 km/h, the differential lock would not be engaged until the vehicle speed lowers below 30 km/h.

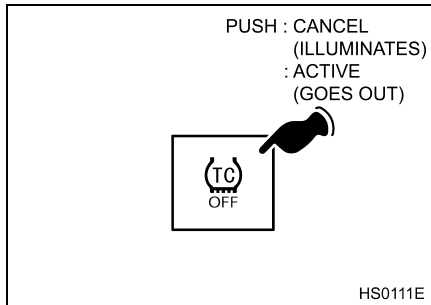
- The differential lock may not be disengaged immediately after the switch is set to OFF. In that case, use the following methods to disengage the differential lock.
  - **When driving off:**  
Turn the steering wheel slightly to the left and right. This will bring the differential system into action, releasing the differential lock.
  - **While driving:**  
Ease up the accelerator pedal slightly. This will remove any load on the differential lock, letting it disengage.

**ASR OFF (Traction control OFF) switch**

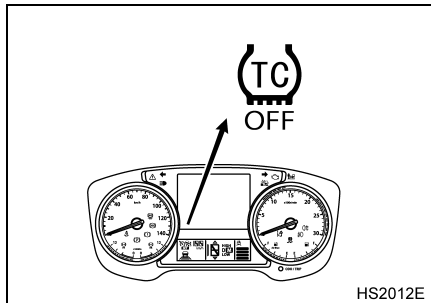
The ASR OFF switch is used when you want to temporarily allow the tires to slip a little when driving on gravel, muddy, or deep snowy roads, or when you want to drive while revving the engine a little bit.

When you need to cancel the ASR while driving, push the switch once to stop ASR operation. The ASR OFF indicator illuminates and the switch illuminates in amber. Note that the ABS is available even when the ASR is cancelled.

Push the switch again to restore the ASR function (the indicator turns off). When the ASR is cancelled, turning the ignition key to the ACC position and then to the ON position will automatically engage the ASR.



Indicator

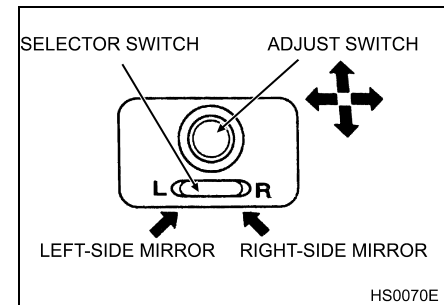


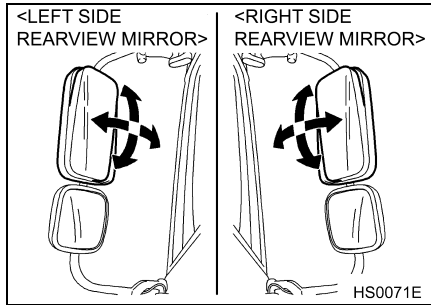
## NOTE

- **Always leave the ASR activated (switch OFF) during normal driving. In addition, when using this switch to free the vehicle from a muddy road, etc., push the switch again to reactivate the ASR immediately after the vehicle has been freed. If the ASR is left cancelled (switch ON), it will not operate when it is needed.**
  - **Contact the nearest authorized UD Trucks dealer for advice before mounting tires that are not the specified size.**
  - **Even the inter-wheel differential lock switch is turned ON, it does not operate if the ASR OFF switch is in ON position.**
- For details of the ASR indicator, refer to “ASR (Traction control)” (page 6-107) in “Controls and functions”.

Power mirror switch<sup>†</sup>

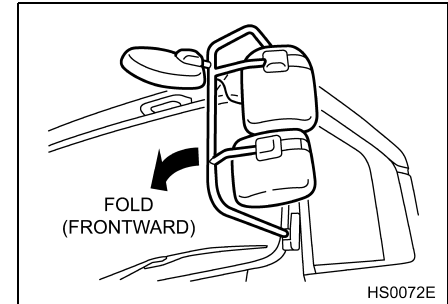
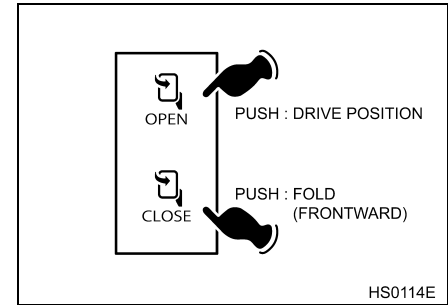
- This switch is used to adjust the angle of the rear view mirrors on the driver's side and assistant's side. It can operate when the ignition switch is in the ON position.
- Push either side of the selector switch to select the mirror to be adjusted and then move the adjust switch up or down, left or right to adjust the view to the rear.





## Power mirror retraction arm switch<sup>†</sup>

- By operating this switch, the mirror retraction arm on the passenger side can be activated to fold or unfold the mirror when driving in a narrow place like a parking slot at low speed, while the ignition switch is in the ON position.
- Press the CLOSE side of the switch to fold the mirror forward in one action. Press the OPEN side of the switch to return the mirror to the normal position in one action.
- If the mirror cannot be operated with the switch, move the mirror manually. Have your vehicle inspected and serviced at your nearest authorized UD Trucks dealer as soon as possible.

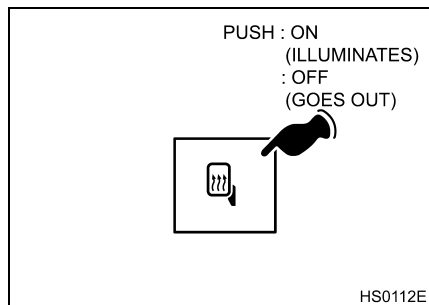


**CAUTION**

- **Never drive with the mirror folded, as you will not be able to see the rear of your vehicle in the mirror. Set the mirror to the normal position before driving.**
- **Do not move the mirror by hand unless it cannot be operated with the switch. The arm-retaining force may decrease and functions may be impaired.**

## Mirror heater switch<sup>†</sup>

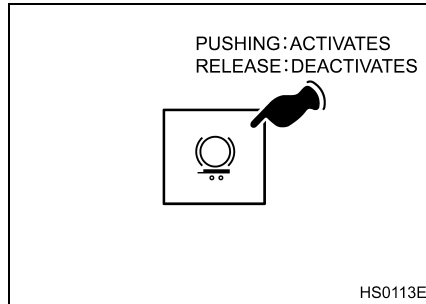
- Turning this switch on activates the heaters in the mirror (right and left rear view mirrors) to clear the fogged mirrors. The switch illuminates in amber while the heater is activated.
- The switch turns off automatically after 60 minutes, but be sure to turn off the switch after use and check that the switch illumination has gone out.

**CAUTION**

**After removing the fogging of the mirrors, immediately turn off the switch. Otherwise, it can be a cause of dead battery.**

## Static trailer brake check switch (Tractor)

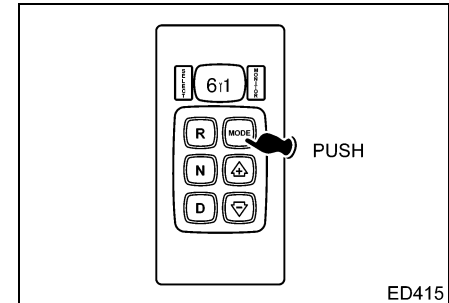
- This switch can be used after changing the trailer to check whether the connection is complete by slowly starting the tractor with the trailer brake applied.
- When starting, the trailer brake operates while the switch is pressed with the trailer connected.
- When the connection is complete, the tractor will not be able to move forward, so you can be sure the trailer is completely connected.
- When the vehicle speed exceeds 10 km/h or when the switch is released, the trailer brake is released.



### WARNING

- **If the trailer brake would not operate when this switch is pressed after confirming the message “Confirm correct coupling” on the multi-display, the trailer brake system may be faulty. Have the system inspected and serviced at the nearest authorized UD Trucks dealer.**
- **Traveling with incomplete connection may cause disengagement of the tractor and trailer leading to an accident, so be very careful.**

## Power mode switch (ATM)<sup>†</sup>



This switch is located on the selector switch to the left of the driver's seat. Select the normal or power mode with the mode change switch depending on the driving condition. When the switch is pushed once, the power mode will activate. When the switch is pushed again, power mode operation stops (normal mode).





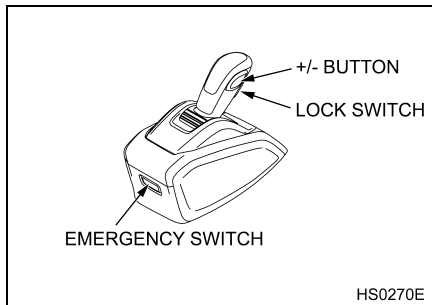
## 6. Controls and functions

Levers .....	6-2	Opening and closing	
SRS airbag system .....	6-12	the front lid.....	6-144
UDPC		Cab tilt operation .....	6-145
(UD Particulate Cleaning) .....	6-21		
Hill start assist function♦.....	6-35		
Road grip			
(low friction road start assist			
system)♦ (CD series).....	6-39		
Auto cruise♦ .....	6-41		
Driver support system♦ .....	6-46		
Driver status monitor♦ .....	6-100		
UDSC and ASR.....	6-104		
Height control♦			
(Air-suspension models) .....	6-112		
ESCOT VI System♦ .....	6-120		
Nenpi Coach♦ .....	6-137		

## Levers

### Gearshift lever (ESCOT-VI)

- The shift lock function is provided. When moving the shift lever from the “N” position to any other position, the brake pedal must be depressed.
- Make sure that the vehicle is completely stopped before shifting from forward to reverse, or from reverse to forward.







### CAUTION

**Do not drive with your hand resting on the gearshift lever. Doing so could result in an accidental shifting.**

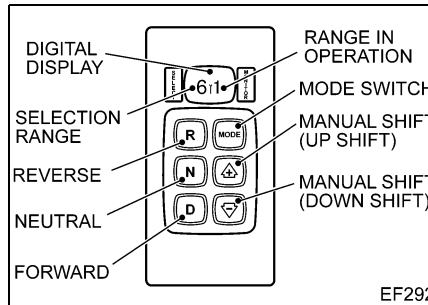
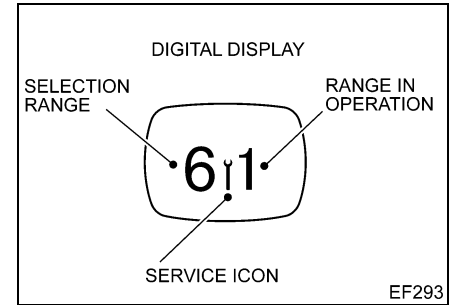
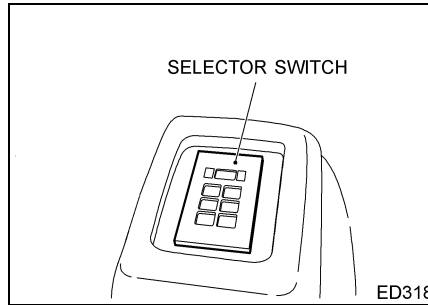
### Gear selector switch (ATM)

- The Allison automatic transmissions have 6 forward and 1 reverse gear ranges.
- The selector switch is located on the left of the driver's seat.
- When the selector switch is pushed into “R” position, the backup lights come on, the backup buzzer sounds and the back buzzer sounds in the cabin. The backup lights and buzzer are located on the rear of the vehicle.
- The engine starts in the “N” position.

## Selector switch

- The Range selector switch is used to shift the gear to the desired driving range from among 6 forward ranges and the reverse range. When the switch is pushed, the selected range is displayed on the left side of the digital display above the selector switch. The range can be selected with the  or  switch. By pressing  1 time while traveling forward, you can select the same gear as the range currently being used. By pressing  1 time while traveling forward, you can move the selection range 1 step higher.
- The selected range is displayed on the left side of the digital display of the selector switch, and the range in operation on the right side.

- For service icons, refer to “Transmission oil filter” (page 13-36) in “Inspection and maintenance”, “Replacement of automatic transmission fluid” (page 14-7) in “Service of lubricants”.



### Relationship between switch operation and digital display

Range operation	Digital display		Automatic transmission range
	Selection range	Range in operation	
R	R	R	R
N	N	N	N
D	6	1 to 6	1 to 6
	5	1 to 5	1 to 5
	4	1 to 4	1 to 4
	3	1 to 3	1 to 3
	2	1 to 2	1 to 2
	1	1	1

(R): Reverse Position —

This position is used when moving the vehicle backwards. The backup light comes on and the back buzzer sounds in the cabin.

(N): Neutral Position —

This position is used when starting the engine, for warming up the engine, and when stopped.

(D): Driving Position —

This position is used during normal driving. Shifting between gears 1 - 6 is done automatically, according to engine load and speed.

(5): Fifth Range —

This position is used when a small amount of engine braking is needed. Shifting between gears 1 - 5 is done automatically.

(4): Fourth Range —

This position is used when engine braking is needed while the vehicle is descending a slope. Shifting between gears 1 - 4 is done automatically.

(3): Third Range —

This position is used when strong engine braking is needed while the vehicle is descending a slope. Shifting between gears 1 - 3 is done automatically.

(2): Second Range —

This position is used when strong engine braking is needed. Shifting between gears 1 - 2 is done automatically.

(1): First Range —

This position can be used during rough road conditions, when freeing the vehicle from mud or deep snow, when driving at very slow speed through narrow spaces, when climbing or descending steep slopes, or when the maximum amount of engine braking force is required. The transmission remains in 1st gear and does not shift.

 **WARNING**

- **Always apply the service brakes when selecting R (Reverse). The selected range may not be obtained, resulting in unexpected vehicle motion.**
- **Do not allow the vehicle to coast in N (Neutral), as there is no engine braking and you could lose control. Coasting can also cause severe transmission damage.**
- **While the service brakes, parking brake, or emergency brake is not applied:**
  - **Do not shift from R (Reverse) to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes unless an auxiliary system to apply the parking brake is installed.**

- **Do not shift from N (Neutral) to a forward range or from N (Neutral) to R (Reverse) to avoid sudden movement of the vehicle.**
- **Do not shift from a forward range to N (Neutral). Selecting N (Neutral) does not apply vehicle brakes unless an auxiliary system to apply the parking brake is installed.**
- **D (Drive) and other forward ranges may not be obtained due to an active inhibitor. The range selected may not be obtained, resulting in unexpected vehicle motion. Always apply the service brakes when selecting D (Drive) or other forward ranges.**

- The transmission incorporates a hold feature to prohibit upshifting above the range selected during normal driving. For downhill operation, select a lower transmission range. If the engine-governed speed is exceeded in the held range, however, the transmission may upshift to the next higher range. To avoid loss of vehicle control, use the vehicle brakes to prevent exceeding the engine-governed speed in the held range.
- If you just downshift or just use service brakes when going downhill, there is a risk of losing control and causing injury and/or property damage. To avoid loss of control, use a combination of downshifting, braking, and other retarding devices.

- Downshifting to a lower transmission range increases engine braking and helps you to maintain control. The transmission has a feature to prevent automatic upshifting above the lower range selected. However, during downhill operation, if the engine-governed speed is exceeded in the lower range, the transmission may upshift to the next higher range. This will reduce braking and could cause a loss of control. Apply the vehicle brakes or other retarding device to prevent exceeding the engine-governed speed in the lower range selected.

**CAUTION**

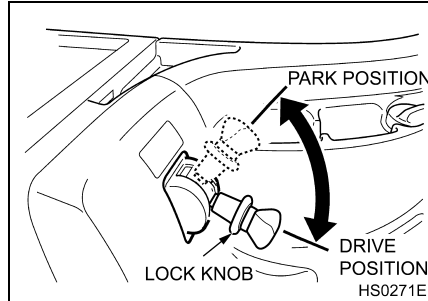
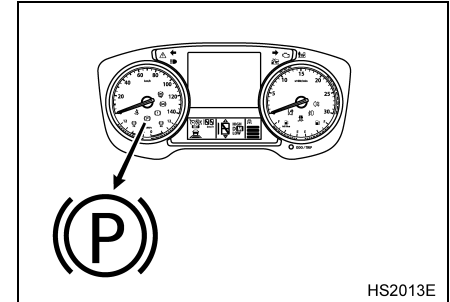
Do not idle in R (Reverse) or D (Drive) for more than 5 minutes. Doing so may cause transmission overheating and damage. Always use N (Neutral) if you need to idle for more than 5 minutes.

**NOTE**

- If the gear shifts up and down repeatedly while driving (i.e. shift hunting), set the gear to Low.
- You must first stop the vehicle before shifting from a forward gear to Reverse, or from Reverse to a forward gear.
- The maximum speed varies by range. Select an appropriate range depending on the situations.
- When shifting to lower speed gears, the transmission shifts within a range in which an engine overrun is not caused.
- If the vehicle speed becomes excessively high on a downslope, etc., the transmission may upshift to a higher range than the selected range due to activation of the safety device. If this happens, use the service brake to drive at a safe speed.

**Parking brake lever**

- When parking, pull up the parking brake lever to the parking position (until the lock is applied). When the lever is pulled up, the spring brakes operate and the parking brake warning indicator illuminates.

**Parking brake warning indicator****NOTE**

The parking brake warning indicator may remain awhile after turning the ignition switch in OFF position but this is not a malfunction.

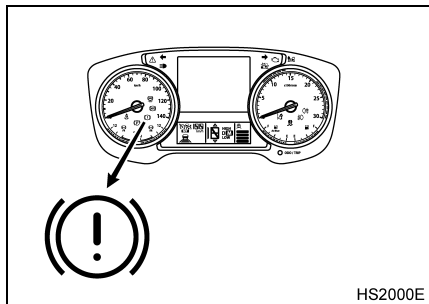
- To release the brake, pull up the lock knob to release the lock and then return the parking brake lever to the driving position.

- In the event that there is a problem in the brake piping and the braking force has declined, the parking brake can be used for emergency braking by pulling up the brake lever.

If the lever is pulled all the way up at once when doing this, the wheels may lock up depending on the load conditions. Be careful when applying the parking brake.

- If a problem in the pneumatic piping which causes a drop of air pressure for the spring brake system occurs during driving, the brake warning indicator will illuminate and the buzzer will sound when the air pressure drops a certain amount.

#### Brake warning indicator



- If the air pressure in the parking brake line drops a certain amount due to a breakage of the pneumatic piping or some other problem, the parking brake warning indicator will illuminate to warn the driver.
- If the air pressure in the parking brake line has dropped, the parking brake might not be released even when the parking brake lever is lowered. In this case, refer to “Manual release of spring brake (wheel parking brake)” (page 15-3) in “Emergency procedures” and release the parking brake.

#### WARNING

- After pulling the parking brake to the parking position, jiggle the lever slightly to make sure that it is locked in place. If it is not locked in place, there is the danger that the parking brake will suddenly be released and the vehicle may start moving.
- Do not operate the parking brake lever while driving except in emergencies. Mistakenly applying the parking brake could cause the rear wheels to lock up, which could impede vehicle operation and result in a serious accident.
- If you must park on an incline, apply the parking brake and chock the wheels.



- If the brake warning indicator or parking brake warning indicator illuminates due to a breakage of the pneumatic piping or some other problem, immediately stop the vehicle in a safe place. Continuing to drive in this condition could cause the parking brake to operate, which would make driving impossible.

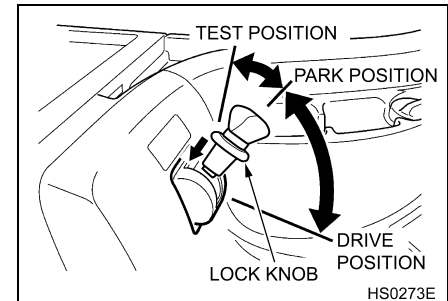
**⚠ CAUTION**

- Do not hold or step on the parking brake lever when it is in the park position while moving to the bed, etc. Doing so could damage the lever.

- The parking brake cannot be released if the air pressure is insufficient even when the parking brake lever is released. If the parking brake cannot be released, confirm that the parking brake lever is in the park position and rev up the engine to resupply the air pressure.
- Avoid operating the gearshift lever or gear selector as much as possible while stopping (while the engine is stopping) to suppress the consumption of compressed air.
- When frequently operating the parking brake, keep an eye on the air pressure gauge and resupply the air if the air pressure drops near the red zone.

### Test position (Tractors)

- The parking brake lever for tractor have a test position. The test position is used on hills and other inclines to check if only the tractor's spring brake can be used to park. Always check this function when parking.
- Push in the lock knob and pull the parking brake lever from the parking position to the test position. The trailer brake will be released and only the tractor's spring brake will be applied.



- The lever automatically returns to the park position when released.

- When moving the lever from the park position to the test position, move it smoothly without stopping midway.

**! WARNING**

- If the vehicle moves when the lever is pulled in the test position, quickly return the lever to the park position and depress the brake pedal.
- In this case, move your vehicle to a flat or less inclined place and check again.

**! CAUTION**

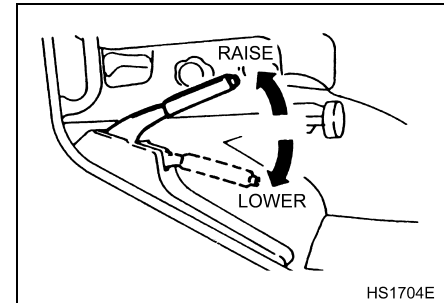
Release the parking brake before driving. The brakes could be damaged if the parking brake is not released.

## Dump lever<sup>†</sup> (Dump trucks)

The dump lever is used to raise or lower the dump body. Operate this lever after turning on the transmission PTO switch. The dump buzzer will sound when the dump body is raised.

### Operating procedure

- Pull the lever up with the lever end lock button pressed, and the dump body will rise. Push down the lever, and the dump body will lower. The rising speed of the dump body is controlled by the amount of accelerator pedal depression.



- The lever is locked at the RAISE or LOWER position when the lock button is released.
- The dump body lowers, irrespective of whether the engine is operating or not, if the dump lever is pushed down to the LOWER position when the dump body is in raised position.

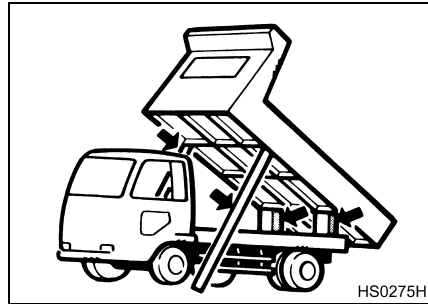
### Precautions during dumping operation

A dump truck is sometimes serviced with the dump body raised. In such a case, observe the following safety precautions.

- Be sure to empty the dump body before raising it for inspection or maintenance.
- Before getting under the raised dump body for inspection or maintenance, be sure to set and lock the dump lever in the cab to the RAISE position, and put a safety block under the dump body or apply other safety measures to prevent accidental lowering.
- Never attempt to get under the raised dump body without a safety measure in place and the dump lever locked.
- To ensure safe operation, also use a rigid bar to support the dump body.

For further details of the operation and handling of the dump body, refer

to the instruction manual for the dump body.



#### CAUTION

- Always keep the dump lever in the lower position while driving.
- Do not operate the dump lever when the PTO operation message is not displayed. If the PTO operation message is not displayed, there may be a problem. Turn off the PTO switch and have your vehicle inspected and serviced by the nearest authorized UD Trucks dealer.

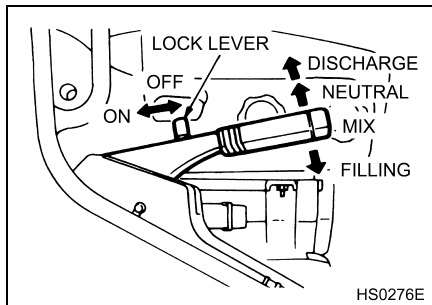
#### NOTE

- Check the safety of the surrounding area before dumping.
- Gently perform the dump operation.

## Mixer lever<sup>†</sup> (Mixer trucks)

- This lever operates the rear body (drum) of mixer truck. This lever is interlocked with the operating lever on the chassis.
- Be sure to place the mixer lever in the MIX position and the lock lever in the ON position during driving.

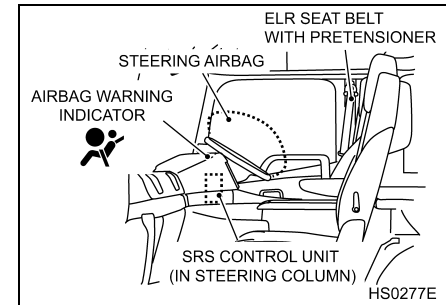
For details of the operation and handling of the mixer, refer to the instruction manual of the mixer manufacturer.



## SRS airbag system

- The SRS (Supplemental Restraint System) airbag system will become operable when the ignition switch is in the ON position. For models equipped with the SRS airbag system, the ELR (Emergency Locking Retractor) seat belt with pretensioner is installed on the driver's seat. Using the ELR seat belt with pretensioner enhances the effectiveness of the SRS airbag system. Always wear the seat belt. If a frontal collision occurs causing a severe impact, the airbag instantly inflates to reduce the impact to the driver's head. At the same time, the seat belt pretensioner instantly retracts the seat belt to remove any additional slack in the seat belt resulting from the clothes worn by the occupant or the change of posture.

Component locations of the SRS airbag system



## Precautions for the SRS airbag system

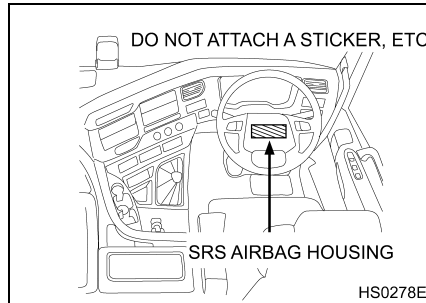
Always observe the points described below in order to maintain optimum performance of the SRS airbag system.

### WARNING

**When installing a vehicle accessory or when servicing the area around the driver's seat, the precautions detailed in this section must be observed. If they are not observed, the SRS airbag system may not activate properly or may inflate improperly. Furthermore, this may result in serious or fatal injuries.**

## When installing vehicle accessories

- Do not put a cover or a sticker on the SRS airbag housing.



- Radio waves that are emitted from a wireless device may adversely affect the control unit of the SRS airbag system. If installing a wireless device in your vehicle, contact the nearest authorized UD Trucks dealer.
- Do not modify the front area of the vehicle. This may change the impact to the sensor of the SRS airbag system and could result in a malfunction of the SRS airbag system. If you are intending a

modification, consult the nearest authorized UD Trucks dealer.

## Handling the components of the SRS airbag system

The SRS airbag housing located in the steering wheel pad must not be applied with excessive force, for example, hitting the steering wheel pad hard. This may result in a malfunction of the SRS airbag system, and in the worst case, may cause serious or fatal injuries.

## When the SRS airbag system is deployed

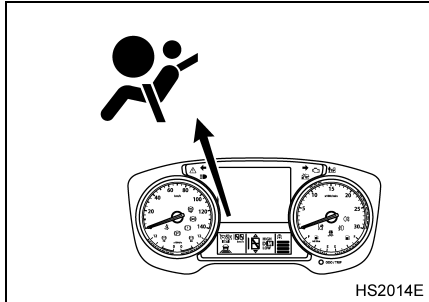
Do not touch the components of the SRS airbag system immediately after airbag inflation. Several airbag system components will be hot and contact with them may cause severe burns.

**WARNING**

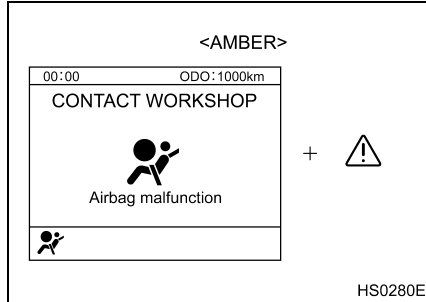
- Always wear the seat belt. The airbag is not a substitute for the seat belt. Only using the airbag will not prevent the driver from flying out of the seat in the event of a collision.
  - Always wear the seat belt properly while seated in the correct posture. If the seat belt is not worn properly, this may impair the effectiveness of the airbag system and could result in a serious injury.
  - Do not replace the steering wheel with a non-genuine one. Also, do not affix a sticker on the horn pad. The SRS airbag system may not function properly.
- When repairing the areas around the steering wheel, instrument panel and pedals, or installing an audio device, contact the nearest authorized UD Trucks dealer in order to avoid adverse effect against the SRS airbag system.
  - Do not disconnect the SRS airbag connector.
  - Do not perform circuit diagnosis for the SRS airbag system using an electronic tester, etc., and do not modify the SRS airbag system circuit. These may result in a malfunction of the SRS airbag system and could cause a serious accident.
- Do not place your hands or legs on the deployment area nor put your head or chest close to the deployment area of the airbag system. Do not drive gripping the steering wheel with the palm of your hand facing you. If the airbag inflates, this may result in a serious injury. Also, you may burn yourself.
  - When discarding the vehicle, the airbags and the seat belt with pretensioner must be disposed of in accordance with the stipulated procedures. Contact the nearest authorized UD Trucks dealer.

## Airbag warning indicator

- When the ignition switch is set to “ON” position or the engine is started, the airbag warning indicator illuminates and then goes off.



- If the SRS airbag system is faulty, the airbag warning indicator illuminates and a warning is displayed on the multi-display. If these warnings are displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer immediately.



- When the airbag warning indicator appears, the SRS airbag system will not function properly.

**! WARNING**

**If the airbag warning indicator does not appear when the ignition switch is turned to the ON position or continuously appears while the ignition switch is in the ON position and the engine is running, contact the nearest authorized UD Trucks dealer for service immediately.**

## Operation of the SRS airbag system

- If a frontal collision occurs and its impact is severe enough to cause serious damage to the driver, the seat belt pretensioner retracts the belt in order to instantly remove any slack. At the same time, the airbag that is stored in the steering wheel immediately inflates.
- The airbag immediately deflates after inflation.



**CAUTION**

The airbag becomes hot when inflated. Do not touch the airbag for at least 30 minutes.

**NOTE**

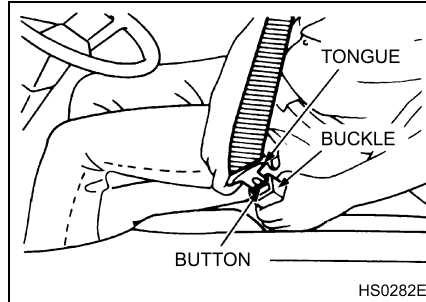
- The SRS airbag system functions when a heavy impact, which may cause a serious damage to the driver, is applied to the front of the vehicle. In combination with the body restraining action of the seat belt, it mitigates the damage to the driver's head, face, or upper body.
  - The SRS airbag system may not function on a light frontal impact. In addition, even when a heavy frontal impact is applied, it may not function if the driver wears the seat belt properly and there is little possibility of his/her suffering a serious damage.
- Even the deformation of the front of vehicle is severe, there may be the cases that the impact to the cabin is not so hard to function the SRS airbag system. Whether the SRS airbag system functions or not is not always coincide with the level of the deformation and damage of the vehicle.
  - Be sure to read "When the SRS airbag system functions / does not function".
  - Because the SRS airbag inflates so quickly, the driver may receive a blow or be scratched by the airbag when it functions.
- The SRS airbag generates an explosive sound and white smoke when it functions, but it is not a fire. The white smoke is harmless but you should avoid inhaling too much. If the residue left by the function of the SRS airbag contacts your eyes or skin, wash it off with water quickly. It may cause irritation.
  - Once functioned, the SRS airbag system would not function again. Be sure to replace a functioned SRS airbag with a new one at your nearest authorized UD Trucks dealer.



## How to wear the seat belt

The SRS airbag system is effective when used with the ELR seat belt with pretensioner. Wear the seat belt correctly following the instructions below.

- Avoid twisting the belt, and insert the tongue into the buckle until it locks in place. The degree of safety provided by the seat belt will decrease if the belt is twisted.
- To release the seat belt, press the red button on the end of the buckle. The belt will automatically wind up. Always hold the tongue while returning the belt to its retracted position.



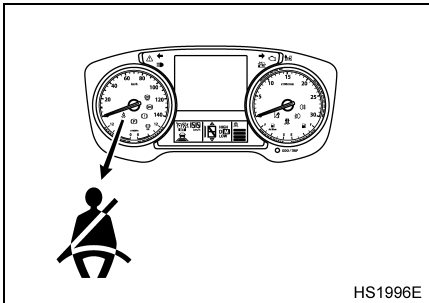
### WARNING

- Always wear the seat belts for safety. Drivers and passengers are required by law to wear seat belts.
- Never put on, take off, or adjust the seat belt while driving because it could lead to an accident.
- Adjust the shoulder strap so that it crosses over the shoulder and not the neck. Wear the waist belt over the pelvis. Do not place the waist belt over the stomach because it will be subjected to strong forces during a crash, etc.

## Precautions for wearing seat belts

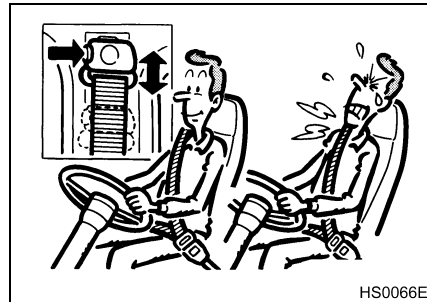
If a driver is going to drive without wearing the seat belt, the warning indicator will illuminate to warn the driver. If the driver has started the vehicle and reaches a certain speed, the buzzer sounds.

If the vehicle exceeds approx. 40 km/h with the driver still not wearing the seat belt, the buzzer sounds louder again.



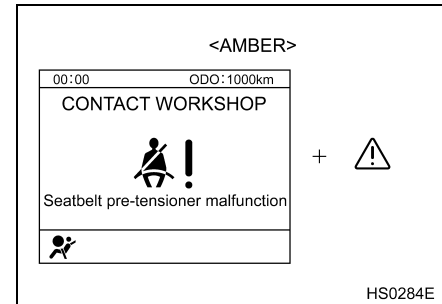
## Seat belt adjustment button

- Adjust the seat belt after the seat position is adjusted.
- To adjust the shoulder belt to the best position for your shoulder, push and hold the anchor button and then move the shoulder belt anchor up or down.
- Wear the waist belt over the pelvis.



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- If the seat belt with pretensioner is faulty, a warning is displayed on the multi-display. If this warning is displayed, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



## NOTE

- Normally, the seat belt with ELR can be freely extended and retracted, but it automatically locks when the belt is pulled rapidly or the vehicle stops suddenly. Pull the belt out slowly when wearing.
- Replace the seat belt if it becomes damaged or inoperable.
- Replace all seat belts that were in use when an accident occurred.

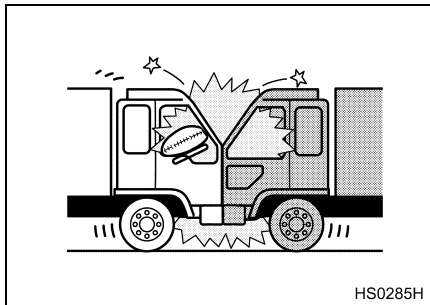
## When the SRS airbag system functions / does not function

Refer to the following examples.

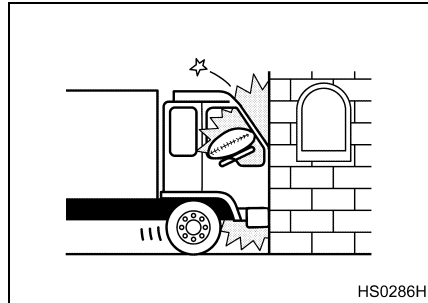
### When the SRS airbag system functions

The SRS airbag system functions in the following cases if the impact is severe.

Frontal collision with another vehicle



Frontal collision against a hard wall

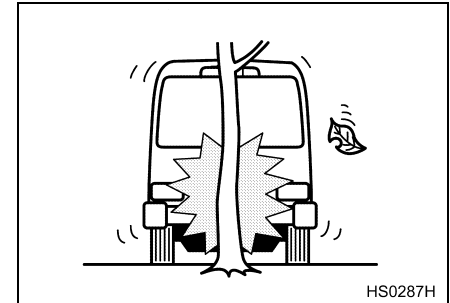


Depending on the degree of impact, the SRS airbag system may function if the lower side of the vehicle hits a projecting object such as a culvert, bollard, curb, etc. on a road while driving.

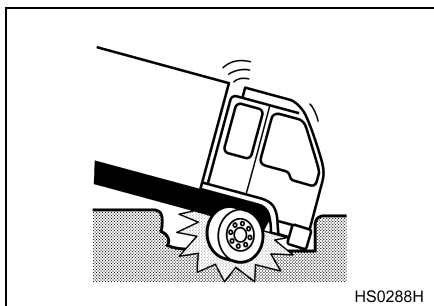
### When the SRS airbag system does not always function

Depending on the degree of impact, the SRS airbag system may not function in the following cases.

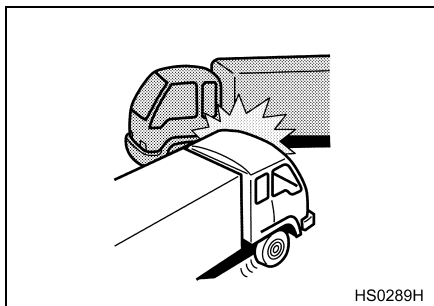
Collision against a tree or an utility pole



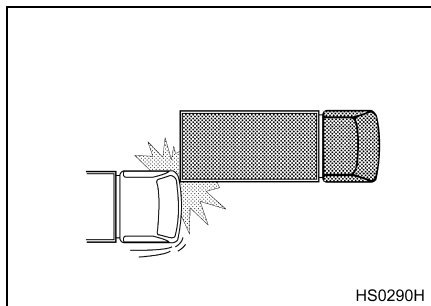
Falling into a large hole or a ditch



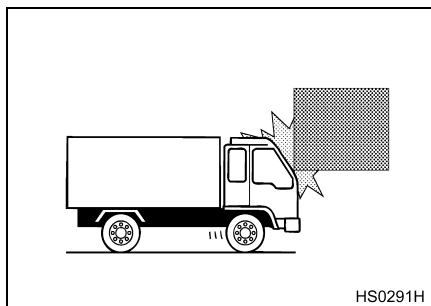
Diagonal collision



Offset collision with a small amount of overlap or at a slow collision speed



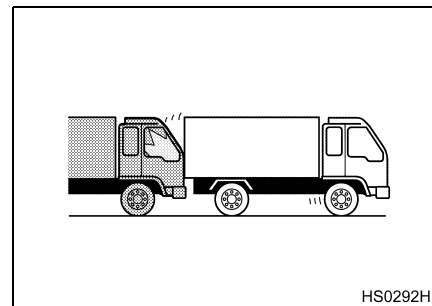
Collision under an overhead obstacle



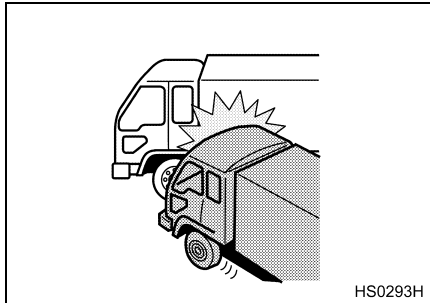
## When the SRS airbag system does not function

The SRS airbag system does not function even in a frontal collision if the impact is not severe or in the following cases. Also, after the SRS airbag system functions once, it does not function again if the vehicle is subjected to another severe impact.

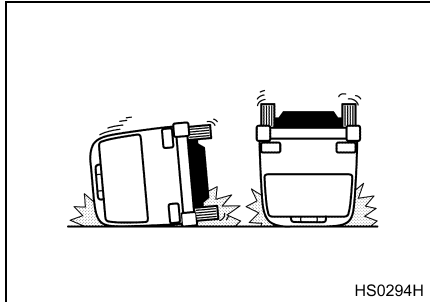
Hit by another vehicle from rear



Hit by another vehicle from side



Overturn or rollover




## UDPC (UD Particulate Cleaning)

- The UDPC system uses a filter to trap soot (particulate matter) in the exhaust gas, and it continuously regenerates the filter (by burning off the soot) using an oxidizing catalyst.
- When continuous regeneration cannot be performed due to low vehicle speed, etc., the automatic regeneration process is activated in order to carry out combustion (regeneration) and prevent excessive accumulation of soot in the filter, thus maintaining the filtering function at an optimum level.
- When the automatic regeneration function cannot be activated because of low-speed driving, driving with frequently repeated engine start/stop cycle, etc., manual regeneration is required after stopping the vehicle.

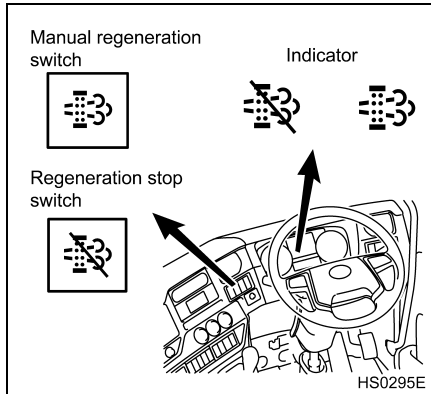
- Execute the regeneration in accordance with the amount of soot by referring to the following table.

### NOTE

**UDPC automatically starts the combustion of soot (regeneration process) when a specified amount of exhaust soot is trapped by the filter. The combustion process may not be completed depending on the operating conditions. In this case, the exhaust emission control system indicator flashes and a warning message is displayed on the multi-display, prompting manual regeneration.**

Amount of soot accumulation	Vehicle state	Cleaning method
Small  Large	Normal driving	During high-speed or high-load driving, regeneration is performed continuously to burn off soot.
	Automatic regeneration	When soot accumulation reaches the limit, the system automatically burns off the soot.
	<ul style="list-style-type: none"> <li>• Exhaust emission control system indicator flashes</li> <li>• “Start UDPC regeneration” message displayed.</li> </ul>	Stop the vehicle in a safe place and carry out manual regeneration.
	“Contact workshop immediately” message displayed.	Have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer as soon as possible.
	“Stop vehicle” message displayed.	Promptly stop the vehicle in a safe place and have the vehicle inspected and serviced at the nearest authorized UD Trucks dealer.

## Outline of the system

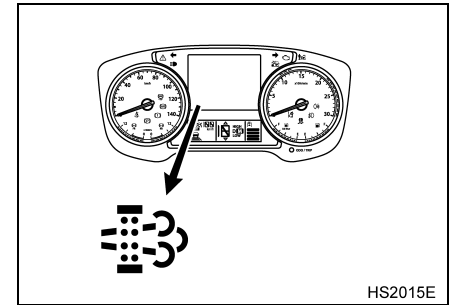


## Exhaust emission control system indicator

- The exhaust emission control system indicator is displayed depending on the conditions as follows.

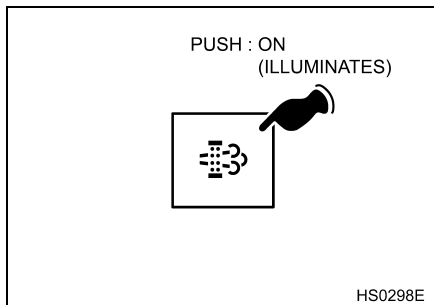
Operating condition	Color	Illumination pattern
During automatic regeneration	Green	Steady on
Requiring manual regeneration	Amber	Flashing
During manual regeneration	Amber	Steady on

- When the exhaust emission control system indicator flashes in amber, stop the vehicle in a safe place and press the manual regeneration switch to start manual regeneration.

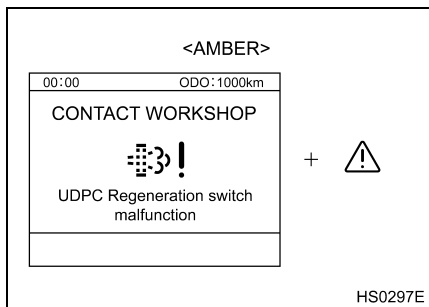


## Manual regeneration switch

- This switch is used to manually carry out combustion of the soot trapped in the filter (regeneration process) to sustain the function of the exhaust emission control system. For further details, refer to “Method for manual regeneration operation” (page 6-30).



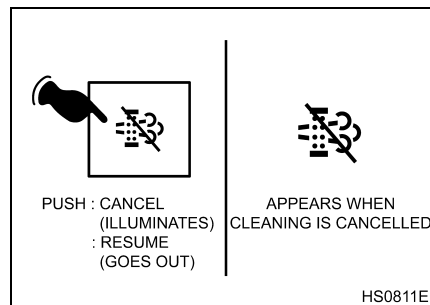
- If the switch is faulty, a warning is displayed on the multi-display.



## Regeneration stop switch

- This switch is to stop the automatic or manual regeneration.
- If this switch is turned on (switch illuminates in amber) during the automatic regeneration, it will stop after a while. (It takes approx. 2 minutes to stop regeneration. The vehicle can continue operation.)
- When the regeneration is stopped, the regeneration stop indicator appears and automatic regeneration is deactivated.

- When the switch is turned off, the system resumes to the regeneration-acceptable condition.

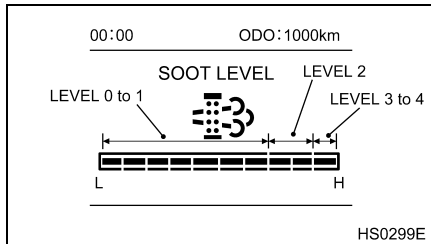


- If this switch is turned on (switch illuminates in amber) during the manual regeneration, it will stop after a while. (It takes approx. 2 minutes to stop regeneration. During that time the engine speed will increase, but vehicle can continue operation.)



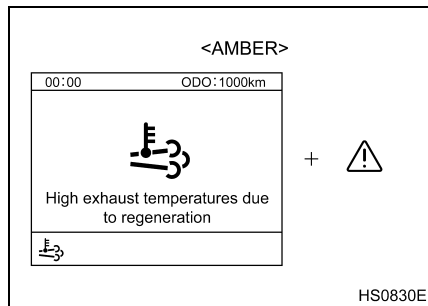
### Exhaust emission control system meter

- The exhaust emission control system meter indicates the accumulated level of soot in the filter. Check the meter as required.
- For how to display this meter, refer to “Gauges” (page 5-6) in “Meters, indication lamps and switches”.







### High temperature warning indicator

- This warning indicator appears together with the warning message when the temperature of the muffler, exhaust pipe, or exhaust gas becomes high.
- This condition can be a cause of fire. Check that there is no flammable around the vehicle.
- Be careful not to touch the exhaust system. Otherwise you may get burnt.



## Soot accumulation level display

Soot accumulation state	Level 0	Level 1	Level 2	Level 3	Level 4
Exhaust emission control system meter	0 – 3	4 – 7	8 – 9	10	
Automatic cleaning	Inactive	Active	Inactive		
Manual cleaning operation	Not required	Enabled	Required	Disabled	
Engine torque limiter	Inactive			Active	
Indicators			(*1) (Amber)  	(*2) (Amber) 	(*3) (Red) 

- \* 1: Exhaust emission control system indicator flashes (amber), master warning indicator illuminates (amber), and manual regeneration request appears.
- \* 2: Master warning indicator illuminates (amber), and inspection request message appears.
- \* 3: Master warning indicator illuminates (red), and stop vehicle request message appears.

Soot accumulation state: Level 0

- At Level 0, manual regeneration operation is not required.

Soot accumulation state: Level 1

- When the green exhaust emission control system indicator illuminates, the automatic regeneration starts operation. During automatic regeneration, the exhaust emission control system indicator illuminates and the idling speed rises but it's not a malfunction. The manual regeneration can also be performed.

Soot accumulation state: Level 2

- When the amber exhaust emission control system indicator flashes and the "Start UDPC regeneration" message is displayed on the multi-display, perform the manual regeneration within 200 km of driving.

Soot accumulation state: Level 3

- When the "Contact workshop immediately" message is displayed on the multi-display, the torque limiting control is applied to lower the engine output. Have

your vehicle inspected and serviced at the nearest authorized UD Trucks dealer immediately.



### CAUTION

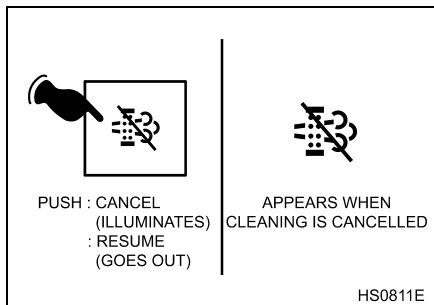
**Continue to drive at Level 3 may cause a failure of UDPC. Have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer as soon as possible.**

Soot accumulation state: Level 4

- When the "Stop vehicle" message is displayed on the multi-display, immediately stop the vehicle in a safe place and contact the nearest authorized UD Trucks dealer.

## Automatic regeneration

- To prevent excessive soot accumulation in the filter, the system automatically burns off the soot.
- During automatic regeneration, the idling speed rises. Also, the fuel consumption (including AdBlue consumption) will be different from that during normal driving. The driving sensation may feel differently, but this is normal.
- If the regeneration stop switch is turned on (switch illuminates in amber) during the automatic regeneration, it will stop after a while. (It takes approx. 2 minutes to stop regeneration. The vehicle can continue operation.)
- When the regeneration is stopped, the regeneration stop indicator appears and automatic regeneration is deactivated.
- When the switch is turned off, the system resumes to the regeneration-acceptable condition.

**WARNING**

- The exhaust piping, the muffler, the areas around these components and the exhaust gas are hot immediately after driving and while the regeneration mode is active. Do not stop the vehicle near fallen leaves, waste paper or other flammables.
- Flammables near the vehicle can catch on fire. Hot exhaust gas can cause burns.

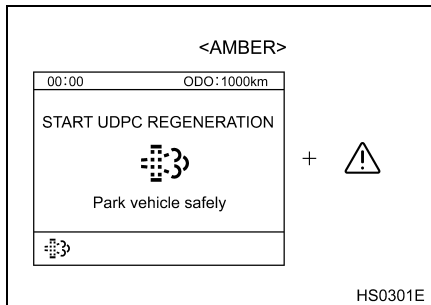
**NOTE**


- No operation is needed for the automatic regeneration.
- AFI (After-treatment fuel injection) injects fuel into the exhaust piping to assist the regeneration.
- Set the shift lever or gear selector in “N” position during stopping. The idling speed will rise further to promote burning of soot. On vehicles with ESCOT, the idling speed rises while the brake pedal is depressed even when the shift lever is in the D or M position.
- When the vehicle is stopped and the parking brake is applied, automatic regeneration will be interrupted in about 5 minutes. Regeneration will be resumed after the vehicle starts running and the conditions are met. In some cases, regeneration may be repeated several times.

- The automatic regeneration takes place after a specified time of engine operation even the accumulation of soot is small.
- If the starter switch is turned off and then on while the automatic regeneration is stopped by the regeneration stop switch, the system resumes to the regeneration-acceptable condition.
- The automatic regeneration is stopped when the engine is stopped. For effective regeneration, keep the engine running until the regeneration is completed as much as possible.
- Automatic regeneration may start even when little soot has accumulated. This is to maintain the performance of the muffler.

## Manual regeneration (When the exhaust emission control system indicator flashes in amber)

- If the vehicle is mostly operated at low speeds or with frequent engine starts and stops, the automatic regeneration may not clean the soot in the filter sufficiently.
- In this case, the soot must be manually burnt off. The exhaust emission control system indicator flashes in amber and “Start UDPC regeneration” message is displayed.



 **CAUTION**

When the exhaust emission control system indicator flashes in amber and the “Start UDPC regeneration” message is displayed, press the manual regeneration switch within 200 km of driving to carry out manual regeneration to burn off the soot in the filter. Continuing driving in level 2 will result in a rise to level 3. The engine torque will be limited according to the accumulation of soot resulting in decreased engine output.

**NOTE**

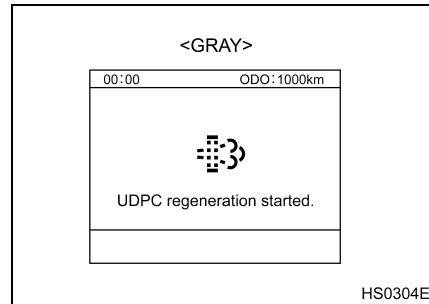
Using the vehicle under any of the following conditions, the automatic regeneration function may not function sufficiently. For this reason, the “Start UDPC regeneration” message appears more frequently than usual.

- When the vehicle is driven mostly at low speed
- When engine start/stop is repeated frequently
- When the vehicle is frequently driven only short distances
- When the engine is stopped every time before it is warmed up

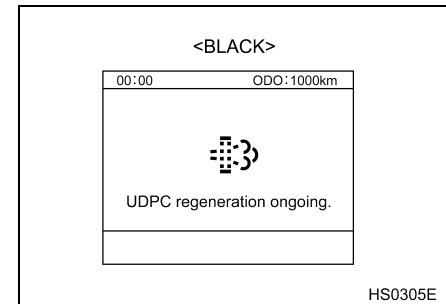
## Method for manual regeneration operation

- When the exhaust emission control system indicator flashes in amber and “Start UDPC regeneration” message appears, carry out the manual regeneration to burn off the soot in the filter using the following procedure.
  - Manual regeneration operation will normally be completed in about 30 minutes, although it depends on the driving conditions just before the regeneration operation or the engine warm-up conditions.
1. Stop the vehicle in a safe place. Confirm that there is no flammables around the exhaust pipe. Never perform the regeneration at a poorly-ventilated place, such as garage or warehouse.
  2. With the engine idling, set the shift lever or gear selector in “N” position. Confirm that the parking brake is applied. Do not step on the accelerator pedal.

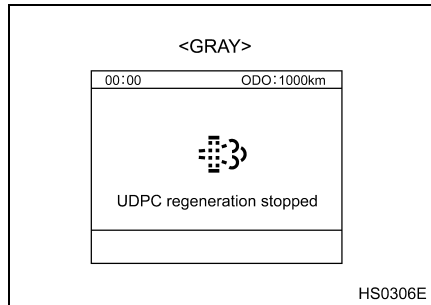
3. Press the manual regeneration switch. “UDPC regeneration started” message is displayed on the multi-display.



4. As soon as the regeneration starts, the “UDPC regeneration ongoing.” message is displayed on the multi-display, and the idling speed rises.



5. When the manual regeneration is completed, the exhaust emission control system indicator and “UDPC regeneration ongoing” message disappear and the “UDPC regeneration stopped” message appears, and after a while, the idling speed returns to the original value.



6. After completion of the manual regeneration, the vehicle can be driven normally.

7. To interrupt the manual regeneration, press the regeneration stop switch. When the manual regeneration is interrupted, the multi-display shows “UDPC regeneration stopped” message. In this case, the manual regeneration has not completed. Be sure to perform the manual regeneration again as soon as possible.

**WARNING**

- Do not carry out manual regeneration in a closed or poorly ventilated place, such as a garage or warehouse. Doing so can result in carbon monoxide poisoning from the exhaust gas.

- Do not carry out manual regeneration near fallen leaves, waste paper or other flammables. The exhaust piping, the muffler, the areas around these components and the exhaust gas are hot while the cleaning mode is active, and may cause nearby flammables to catch on fire. To prevent possible burn injuries, do not touch the exhaust piping, the muffler, and the areas around these components or the exhaust gas. Paved road surfaces on which the vehicle is parked may become discolored due to the heat of regeneration.

**NOTE**

- While manual regeneration is in progress, the idling speed increases. This is to increase the exhaust gas temperature to burn off the trapped soot (regeneration) and is not a failure.
  - AFI (After-treatment Fuel Injection) system injects fuel into the exhaust piping to assist regeneration.
  - For vehicles equipped with the PTO switch, before turning the manual regeneration switch to "ON", be sure to turn the PTO switch to "OFF". Manual regeneration will not start.
- On vehicles equipped with air suspension, return the vehicle height to neutral to perform the manual regeneration.
  - Manual regeneration terminates earlier when performed immediately after engine operation rather than when the muffler is cool. When the muffler is cool, regeneration is performed after engine warm-up, and thus it takes longer due to the warm-up. Engine warm-up time is normally about 5 to 10 minutes, depending on the ambient temperature. It is recommended to perform the manual regeneration immediately after stopping the vehicle (engine warmed-up state).
- Manual regeneration cannot be performed under the following conditions:
    - When the engine coolant temperature is low. (Carry out manual regeneration after warming up the engine.)
    - When the accelerator pedal is pressed down.
    - When the shift lever or gear selector position is other than neutral.
    - When the parking brake is released.
  - If the manual regeneration has interrupted or if the vehicle is driven before the regeneration is finished, the regeneration has not completed and the exhaust emission control system indicator starts flashing again. Restart the manual regeneration immediately.

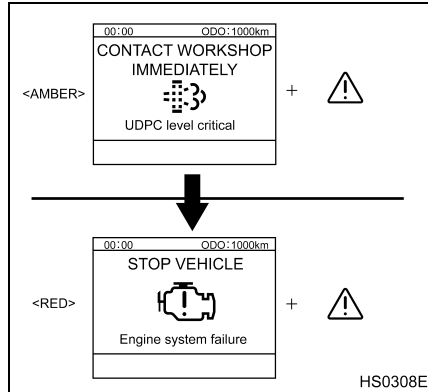


- Even though automatic regeneration is in progress, manual regeneration can be performed using the above-mentioned process.
- When the idling operation is continued for a long time, the idling speed may rise to prevent white smoke. This is normal.

### When the exhaust emission control system warning is displayed

- If the vehicle is driven while the exhaust emission control system indicator lamp continues flashing until the soot accumulation level exceeds the limit, warning message is displayed on the multi-display to alert the driver. Note that the warning is classified into two levels: amber and red.

- The warning display suggests that the filter is clogged or the system is malfunctioning.



- When the amber “Contact workshop immediately” message appears, have your vehicle inspected at the nearest authorized UD Trucks dealer.
- When the above message is displayed, the exhaust emission control system decreases the engine torque to protect the system.

- When the red “Stop vehicle” message is displayed and a buzzer sounds, immediately stop the vehicle in a safe place and contact the nearest authorized UD Trucks dealer.

**CAUTION**

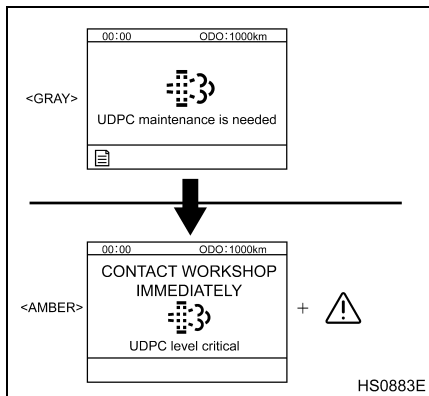
- Do not continue driving while the “Contact workshop immediately” message is displayed. Doing so may result in a failure of the UDPC filter.
- If the “Stop vehicle” message is displayed, stop the vehicle immediately in a safe place.

**NOTE**

- When the exhaust emission control system warning is displayed, the manual regeneration cannot be performed.
- The vehicle is equipped with protection functions to carry out torque reduction to protect the exhaust emission control system when there is an excessive accumulation of soot in the UDPC.

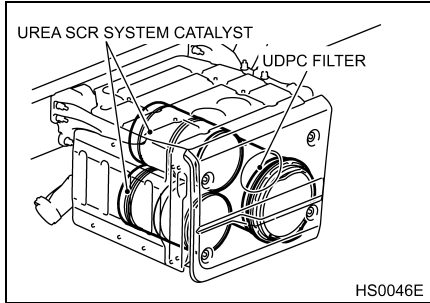
- As the UDPC maintenance regeneration period approaches, a gray warning is displayed on the multi-function monitor. It changes to an amber warning when the period is reached.
- When the gray warning appears, the timing of UDPC maintenance regeneration period is approaching. Contact the nearest authorized UD Trucks dealer for preparation of UDPC maintenance regeneration.

- When the amber warning is displayed, UDPC maintenance regeneration is necessary. Have your vehicle serviced at the nearest authorized UD Trucks dealer. For details, refer to “Periodic cleaning for muffler integrated with UDPC and urea SCR system” (page 6-34).



## Periodic cleaning for muffler integrated with UDPC and urea SCR system

- To maintain its efficiency, the UDPC filter must be cleaned regularly to remove accumulated ash which, unlike soot, cannot be burned in the regeneration process. Contact the nearest authorized UD Trucks dealer for ash removal.
- To maintain its performance, the UDPC maintenance regeneration of the catalyst for urea SCR system must be performed regularly. If not performed, the exhaust emission control system warning (amber) is displayed on the multi-display. Contact the nearest authorized UD Trucks dealer for UDPC maintenance regeneration.



**CAUTION**

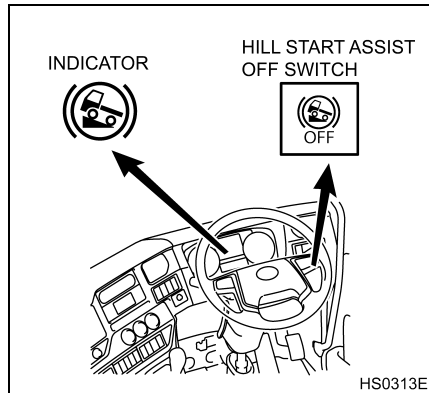
Be sure to clean muffler integrated with UDPC filter at regular intervals. Otherwise, there is a risk of worsening fuel consumption and decreased output.

**NOTE**

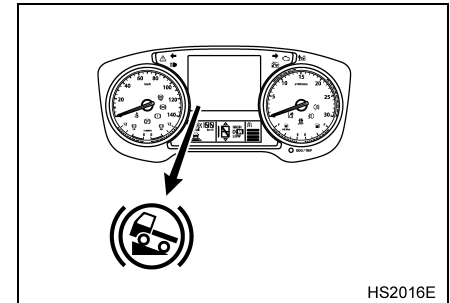
Ash is mainly generated from the components of engine oil additives. To minimize the generation of ash, use only the specified engine oil.

## Hill start assist function

- The hill start assist function helps the driver to maintain the braking effort for the time (approximately 1 to 2 seconds) that is necessary to release the brake pedal and depress the accelerator pedal when starting the vehicle on an uphill grade. This enables to start moving the vehicle on an uphill grade without using the parking brake and changing the pedals depressed rapidly.



- The hill start assist function is activated when the ignition switch is set in the ON position. To cancel this function, use the hill start assist OFF switch.
- While the hill start assist function operates, a message is displayed on the multi-display and the hill start assist indicator appears.



- If the shift lever is in "N" position, the hill start assist would not function.

**CAUTION**

- The hill start assist function applies the brakes temporarily. Never leave the driver's seat while the hill start assist function is operating. Always apply the parking brake when leaving the driver's seat.
- The hill start assist function would not operate if the shift lever is in "N" position.
- If it takes longer to release the brake pedal and depress the accelerator pedal, the braking effort is automatically canceled and the vehicle may roll backward. Change the depressing pedals quickly to start the vehicle.
- Use the parking brake if the stopping time becomes longer.

- Do not push the hill start assist OFF switch or turn the ignition switch to any position except the ON position while the hill start assist function is operating. The braking effort will be canceled and the vehicle will roll down the slope.
- If shifting gear to the neutral position or to a position that allows the vehicle to move in the descending direction, the braking effort is canceled and the vehicle will roll down the slope.
- If the vehicle moves while the hill start assist function is operating, depress the brake pedal further or apply the parking brake.

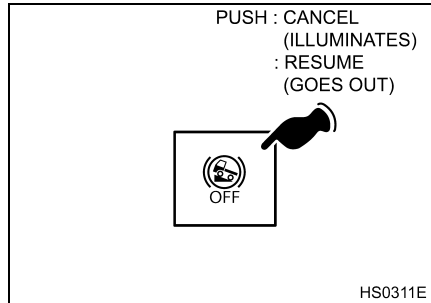
- If the hill start assist function does not work properly and the ABS warning indicator illuminates, push the hill start assist OFF switch to cancel this function.
- When the ABS warning indicator or brake warning indicator illuminates, the hill start assist function will not operate.

**NOTE**

The hill start assist function operates only on an uphill grade. It does not operate on a level or downhill grade. Also, it may not operate on an uphill grade, depending on the gear position.

## Hill start assist OFF switch

- This switch is to cancel the hill start assist function.
- When this switch is pushed, the switch illuminates in amber and the hill start assist function is canceled. To reactivate the function, push the switch again. The amber illumination goes out.



### NOTE

**Even when the hill start assist function is cancelled, it will be resumed if the ignition switch is turned to ACC or OFF position and then set to ON position.**

## Operating procedure

### Conditions for maintaining the braking effort

- Check that the amber illumination of the hill start assist OFF switch and the ABS warning indicator are turned off, and then release the parking brake.
- When keeping the brake pedal depressed while stopping the vehicle on a slope and engaging a gear in the position that allows the vehicle to move in an uphill direction, the hill start assist function will operate, and the hill start assist indicator will illuminate.

## Conditions for canceling the braking effort

To cancel the hill start assist function:

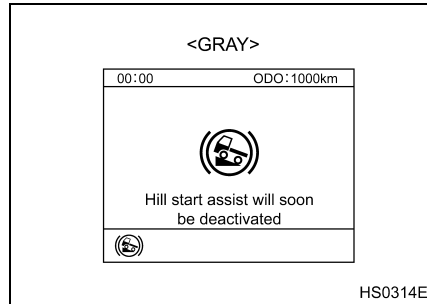
- Turning on the hill start assist OFF switch.
- Shift the gear to a position other than the position that allows the vehicle to move in an uphill direction. Alternatively, shift the gear to the neutral position.
- Release the brake pedal, but do not depress the accelerator pedal. (Braking is released after sounding the warning buzzer and displaying the “Hill start assist will soon be deactivated” message in the multi-display.)
- Release the brake pedal and depress the accelerator pedal. (Start the vehicle.)

## Releasing the brake when starting

- Release the brake pedal and depress the accelerator pedal releases the braking effort.
- If it takes longer to release the brake pedal and depress the accelerator pedal, the braking effort may be canceled automatically. Change the depressing pedals quickly to start the vehicle.

## Warning

- When the brake pedal is released while hill start assist is operating, the system will warn the driver of brake release using a message on the multi-display. Keep the brake pedal depressed just before starting.



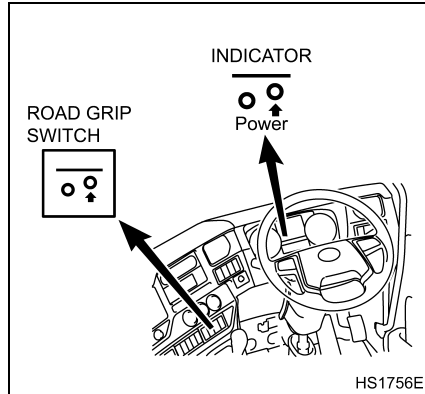
### CAUTION

**The hill start assist function helps the driver to change the depressing pedal from the brake pedal to the accelerator pedal when starting the vehicle on an uphill grade. Keep the brake pedal depressed or apply the parking brake while keeping the vehicle stopped.**

- If the following warnings appear, the hill start assist function will not work:
  - ABS warning indicator illuminates
  - Brake warning indicator illuminates
  - A malfunction occurs in the ESCOT system
- If the ABS warning indicator illuminates or the ESCOT system malfunctions, immediately contact the nearest UD Trucks dealer for inspection and maintenance.
- When the brake warning indicator illuminates, immediately stop the vehicle in a safe location, and leave the engine in idling to increase the air pressure.

## Road grip (low friction road start assist sys- tem)♦ (CD series)

Road grip is a function that assists starting on slippery roads and hills.



### Precautions for use

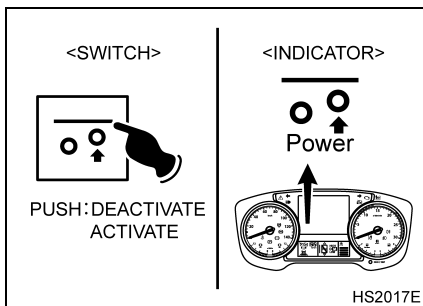
- Use road grip when starting on slippery roads or hills.
- Road grip is activated at vehicle speeds below 15 km/h. It is automatically deactivated when the vehicle speed exceeds 15 km/h.
- Road grip deactivates when the parking brake lever is pulled during activation, but this is normal.
- Road grip temporarily increases the load distribution of the drive axle while remaining within the legal axle load, to assist starting. Therefore, it may not operate when the vehicle is loaded, but this is normal.
- Road grip may not operate if the air pressure in the air reservoir is low, but it will operate if the air pressure is increased.

### NOTE

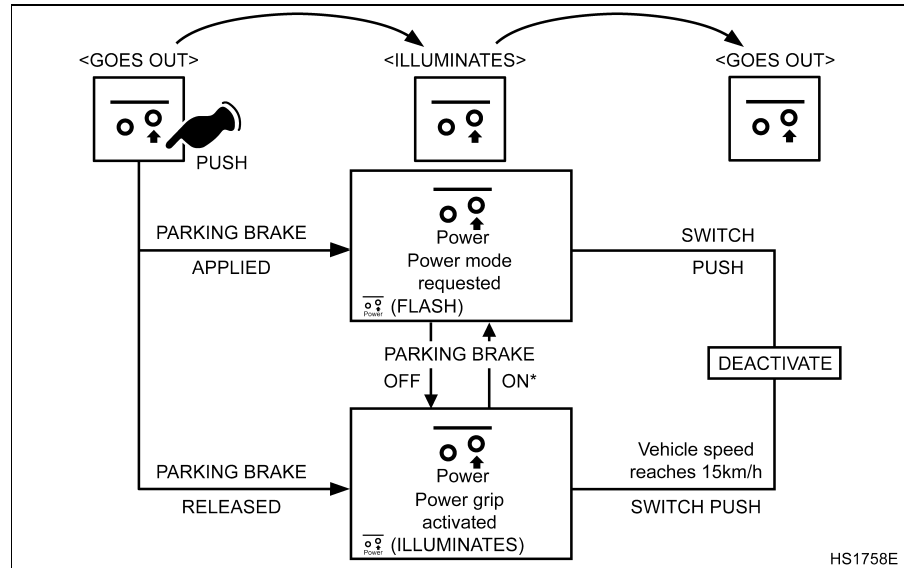
- Road grip may not perform adequately if the air pressure in the air reservoir is low. Make sure that the air pressure is sufficient before using.
- Road grip is not activated when the switch is pressed at vehicle speeds above 15 km/h.
- The road grip indicator does not illuminate if road grip is activated when the ignition switch is in the ACC position.
- Air may be supplied to the air springs when the road grip switch is pressed even when the parking brake is applied, such as immediately after the ignition switch is turned to the ON position. This is normal because it is not for activating road grip but to bring the vehicle height to the neutral standby position.

## Operating procedure

- When the road grip switch is pressed, the switch illuminates in amber. "Power mode requested" is displayed on the multi-display, the indicator blinks, and the system enters the standby state.
- If the parking brake is released in this state, road grip will start operating.
- When the vehicle speed exceeds 15 km/h, or the road grip switch is pressed again, the switch illumination goes out, "Power mode deactivated" is displayed on the multi-display, and operation is stopped.

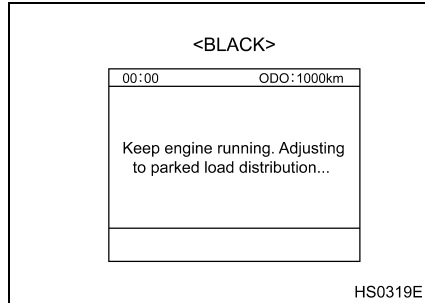


- When the parking brake is applied while road grip is activated, the "Keep engine running. Adjusting to parked load distribution..." message is displayed for about 3 seconds, and then the system returns to the standby state.





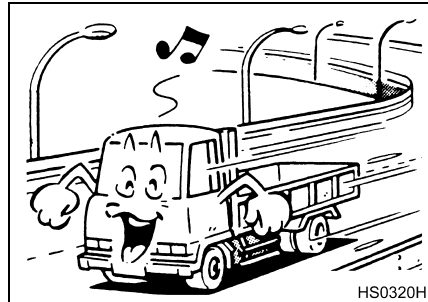
## \* Adjusting message



## Auto cruise

Auto cruise is a device that allows the vehicle to maintain a constant speed without stepping on the accelerator pedal while driving on highway and other areas.

The range in which the vehicle speed can be kept constant is 30 km/h to road speed limit or 140 km/h, whichever is lower.



### ⚠ DANGER

For safety reasons, do not use auto cruise under the following road conditions.

- Roads with heavy traffic, such as in urban areas
- Roads with sharp curves and steep descents
- Slippery (wet, icy, snowy roads, etc.) roads

### ⚠ CAUTION

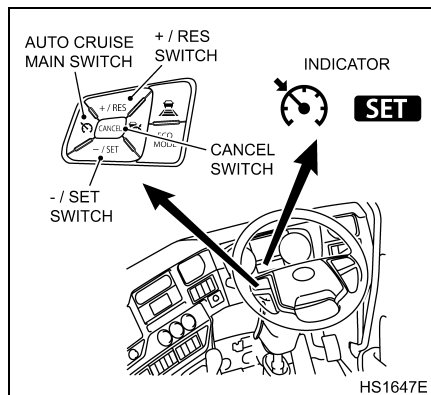
- When canceling auto cruise driving, be particularly careful of following vehicles.
- For safety reasons, always turn OFF the auto cruise main switch when not using the auto cruise.
- Auto cruise might be canceled when a constant vehicle speed cannot be maintained, such as when driving up steep inclines.

## NOTE

- The auto cruising is maintained even a manual gear change is performed on an upgrade, etc.
- When driving in auto cruise and the vehicle speed exceeds the set speed, such as when driving downhill, the auxiliary brakes (exhaust brake and EEB) will operate to automatically control the speed.

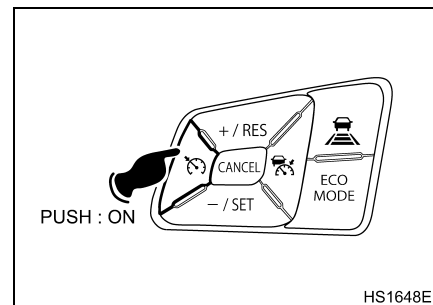
## Components

The following switches are mounted on the steering wheel.

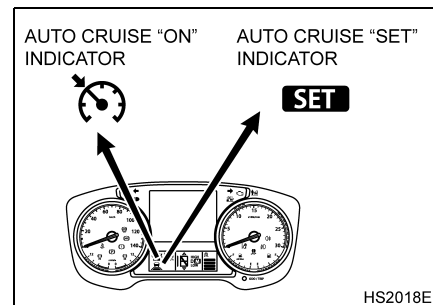


## Auto Cruise Main Switch

Setting the auto cruise main switch to ON turns on the auto cruise "ON" indicator and sets the vehicle in the state where it can be driven with cruise control.



## Indicator



### -/SET Switch

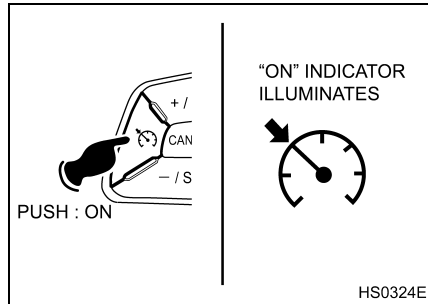
This switch is used to set the auto cruise vehicle speed and to decelerate the vehicle. The auto cruise "SET" indicator illuminates when the switch is pushed and the vehicle speed is set.

### + /RES Switch

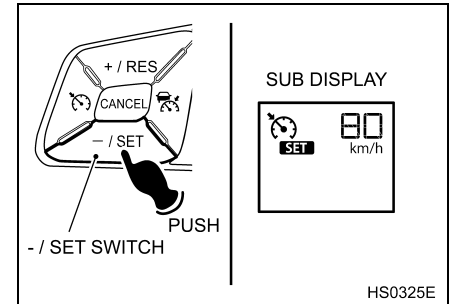
This switch is used during auto cruise driving to accelerate the vehicle or return to auto cruise mode after it has been temporarily canceled (resume function).

### Cruise control vehicle speed setting

- Push the auto cruise main switch. Confirm that the auto cruise ON indicator appears.



- Depress the accelerator pedal to accelerate, and when the vehicle has reached the desired speed (approx. 30 km/h or faster), push the -/SET switch. The auto cruise SET indicator will appear, set cruise speed is displayed on the sub display, and the vehicle will run in auto cruise.



- When driving in auto cruise and the vehicle speed exceeds the set speed, such as when driving downhill, the auxiliary brakes (exhaust brake and EEB) will operate to automatically decelerate in order to control the speed.

### NOTE

- There may be a slight difference between the set vehicle speed and the speedometer indication, but this is normal.
- The vehicle speed cannot be set when the auxiliary brake lever switch is in the ON position.

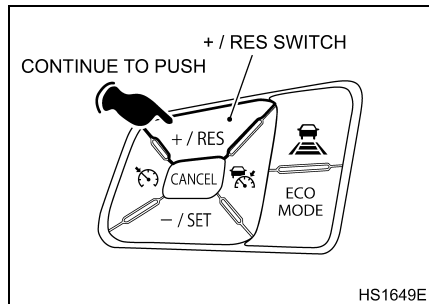
- The auto cruise vehicle speed cannot be set while changing gears even if the **-/SET** switch is pushed. If the auto cruise SET indicator does not appear, set the vehicle speed again after the gear change operation has finished.

### To accelerate temporarily

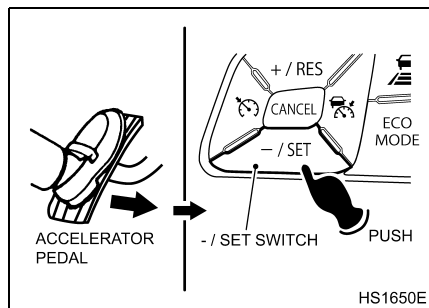
To accelerate temporarily while driving in auto cruise, such as to pass a vehicle, depress the accelerator pedal to accelerate. When acceleration has finished, remove your foot from the accelerator pedal. The vehicle speed will return to the originally set speed.

### Changing vehicle speed (To increase the set vehicle speed)

Continue to push the **+ / RES** switch until the desired speed is reached, and then release the switch to set the new speed.



If you want to accelerate quickly, depress the accelerator pedal to accelerate and then push the **- / SET** switch when the desired speed is reached.

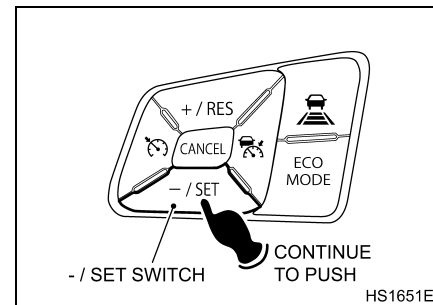


### NOTE

If the **+ / RES** switch is pressed when the cruise speed is set to the highest settable speed, no further acceleration takes place.

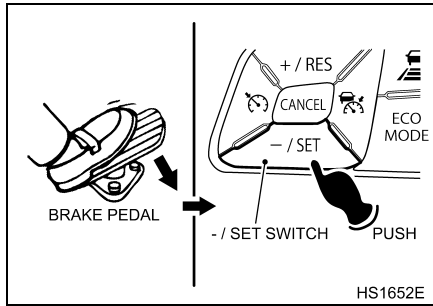
### Changing vehicle speed (To decrease the set vehicle speed)

Continue to push the **- / SET** switch to decelerate, and when the desired speed is reached, release the switch to set the new speed.



If you want to decelerate quickly, depress the brake pedal to decelerate.

ate and then push the -/SET switch when the desired speed is reached.

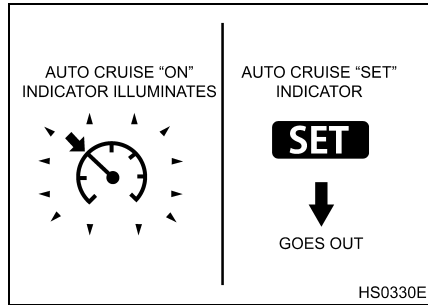


### NOTE

**If the -/SET switch is pressed when the cruise speed is set to the lowest settable speed, no further deceleration takes place.**

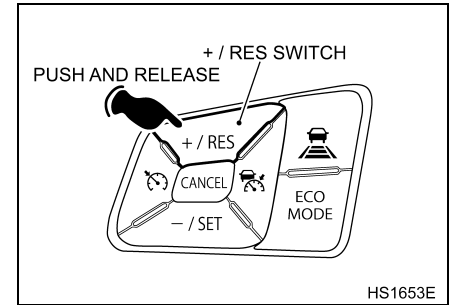
### Temporal canceling of auto cruise

- During auto cruise driving, auto cruise will be temporarily canceled in any of the following situations. When canceled, the auto cruise "SET" indicator goes out.

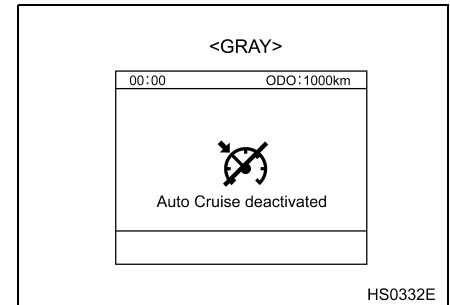


- When the "CANCEL" switch is pressed
- When the brake pedal is depressed.
- When the auxiliary brake is applied.
- When the shift lever or gear selector is shifted to neutral.
- When the vehicle speed drops below 15 km/h.

If the vehicle speed after temporal cancellation is above 15 km/h, pushing and releasing the +/RES switch (resume function) will return the vehicle to auto cruise driving at the previously set vehicle speed.

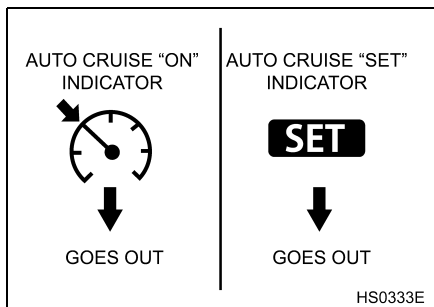


- When the system temporarily cancels auto cruise for safety, such as when the Driver Alert Support activates, "Auto Cruise deactivated" is displayed on the multi-display.



## Canceling auto cruise

Auto cruise can be canceled by pressing and holding the CANCEL switch during auto cruise driving, or by pressing the switch again when auto cruise is temporarily canceled. When canceled, the auto cruise “ON” indicator goes out.



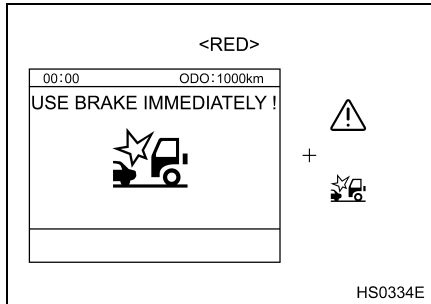
## Driver support system<sup>♦</sup>

- The driver support system supports the safety drive using the information from the millimeter wave radar, camera, and other various sensors.
- The driver support system consists of the following:
  - Traffic Eye Brake (Collision damage alleviating system)
  - Traffic Eye Cruise (Adaptive cruise control)
  - Lane Departure Warning System (LDWS)
  - Smart BSIS (Blind Spot Information System) and Smart LCS (Lane Change Support)
  - Driver Alert Support (DAS)
  - Moving Off Information System (MOIS)
  - Traffic Sign Recognition

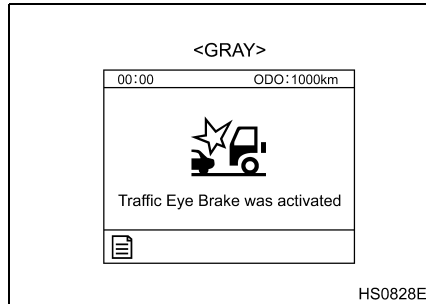
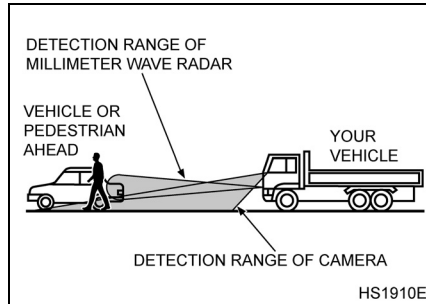
For details of each system, refer to the applicable chapter.

## Traffic Eye Brake (Collision damage alleviating system)<sup>♦</sup>

- Traffic Eye Brake uses millimeter-wave radars and a camera to measure the distance to the vehicle or pedestrian in front and the relative speed with them. If the vehicle approaches closer than the appropriate distance, it sounds an alarm to alert the driver.
- If a risk of collision is detected and the emergency action is required by the driver, the system sounds an alarm and “Use brake immediately!” message is displayed on the multi-display to urge the driver for collision avoidance action.



- If the driver fails to take action, the system lightly applies the main brakes to further urge the driver to take action.
- If the driver's action is supposed to be insufficient to avoid a collision, full braking is applied to decelerate the vehicle to avoid a collision, or even if a collision occurs, to alleviate the damage.
- When the Traffic Eye Brake has applied heavily and the vehicle is stopped, "Emergency brake was activated" message is displayed on the multi-display.



**CAUTION**

- **Though Traffic Eye Brake controls braking using the main brake according to the distance to the vehicle or pedestrian in front and the relative speed with them, the system is not designed to automatically stop your vehicle or avoid a collision in every situation.**
- **Traffic Eye Brake recognizes pedestrians by their size, shape, and movement. Depending on the movement, posture, etc., the object may not be recognized as a pedestrian.**

- When driving, always check the distances to the vehicles and pedestrians in front and your surroundings. Apply the brake as necessary to slow down to keep an appropriate distance from other vehicles and pedestrians, and drive safely.
- For further details, refer to “Precautions for using the Traffic Eye Brake” (page 6-54).

### Operating conditions

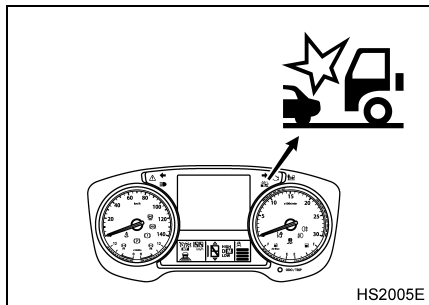
The Traffic Eye Brake is operable under the following conditions:

- Ignition switch is in “ON” position.
- Vehicle speed is at 10 km/h or higher.

### Conditions when the Traffic Eye Brake is inoperative

If the vehicle is under the following condition, TEB indicator appears and the Traffic Eye Brake becomes inoperative.

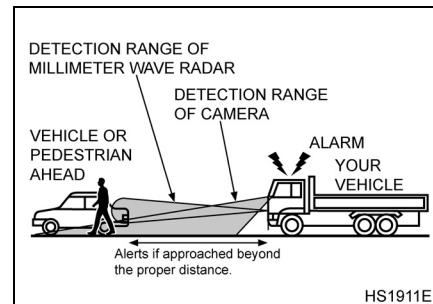
- The system is temporarily released.
- The system is malfunctioning.



### System operation

If your vehicle approaches the vehicle or pedestrian in front closer than an appropriate distance

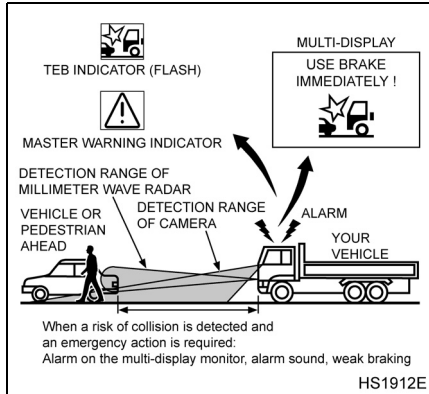
The system sounds an alarm to alert the driver.





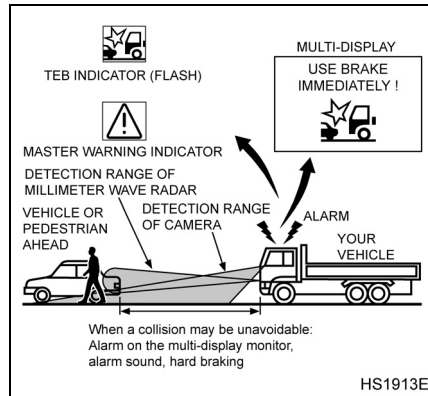
**When a risk of collision is detected and an emergency action is required**

- An alarm sounds, “Use brake immediately!” message is displayed on the multi-display, and TEB indicator flashes to urge the driver to take action.
- If the driver fails to take action, the system lightly applies the main brakes to further urge the driver to take action.



**If the driver’s action is supposed to be insufficient to avoid a collision**

Full braking is applied to decelerate the vehicle to avoid a collision, or even if a collision occurs, to alleviate the damage.



**When your vehicle is stopped by the system’s full braking**

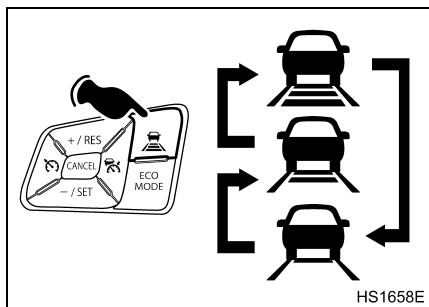
- When the vehicle stops due to the operation of the Traffic Eye Brake, the hazard lamps automatically blink to alert the following vehicles.
- After stopping, the system releases the brakes when the driver performs any of the following operations:
  - Release the brake pedal
  - Depress the accelerator pedal
  - Shift gears to reverse
  - Apply the parking brake

### ⚠ CAUTION

- When the Traffic Eye Brake is applying a light or full brake, it releases the brake if the driver performs the following action:
  - Fully depress the accelerator pedal. (Kick-down)
- If the Traffic Eye Brake applies the heavy braking three times, the system is turned off and the TEB indicator illuminates. In this case, the Traffic Eye Brake would not operate until it is restarted by an authorized UD Trucks dealer. This condition has no problem for normal driving but it is recommended to reactivate the Traffic Eye Brake in the earliest opportunity.

### Changing the warning distance<sup>♦</sup>

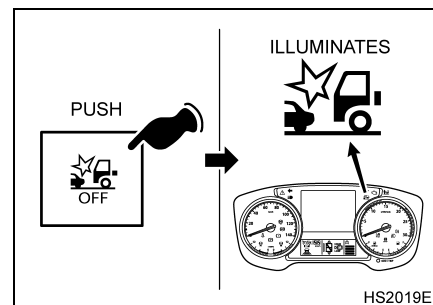
- The alarm issuing distance can be changed by the following distance setting switch on the steering wheel.
- Every time the switch is pressed, the setting distance is changed as: “Middle” → “Long” → “Short” → “Middle” → “Long” and so on. The set distance is indicated on the multi-display.
- When a vehicle ahead is detected, the current setting distance is displayed on the sub display.



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### Deactivating the Traffic Eye Brake

- The Traffic Eye Brake can be deactivated by pressing the TEB OFF button. When the Traffic Eye Brake is deactivated, the TEB indicator illuminates.



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- To reactivate the Traffic Eye Brake, press the TEB OFF button again.

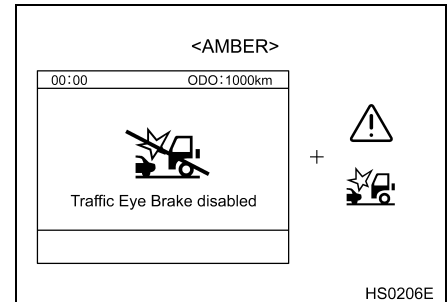
**NOTE**

- When the Traffic Eye Brake is deactivated, it will be reactivated automatically (automatic return function) if the following condition is satisfied and the TEB indicator goes out.
  - When the vehicle is driven at approx. 80 km/h or higher for 1 minute
- This automatic return function can be turned on or off from the Menu screen on the multi-display. For details, refer to “Traffic Eye Brake automatic return” (page 5-23) in “Meters, indication lamps and switches”.

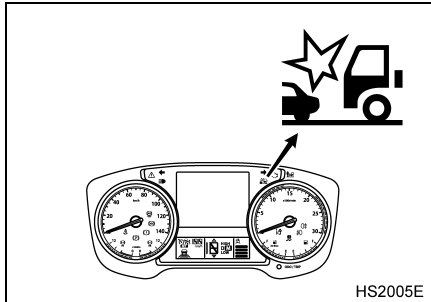
- When “OFF” is selected, the Traffic Eye Brake would not be reactivated even the vehicle is driven at approx. 80 km/h or higher for 1 minute.
- When the ignition switch is turned off and then on, the automatic return function is resumed.

**Fault in the brake system**

- If EBS (ABS) or UDSC is malfunctioning, the Traffic Eye Brake is deactivated.
- If ABS of the connected trailer is malfunctioning, or if the trailer without ABS is connected, the Traffic Eye Brake is deactivated.
- When the Traffic Eye Brake is deactivated by any of the above reason, “Traffic Eye Brake disabled” message is displayed on the multi-display and a buzzer sounds.

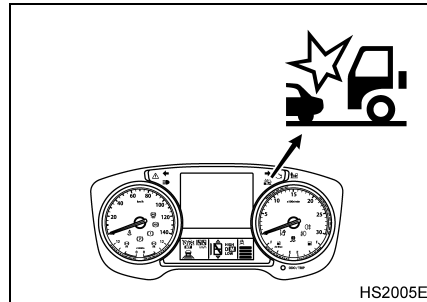


- Depending on the market and the specifications of the vehicle, the following can be hidden or deactivated. The warning buzzer does not sound on these vehicles.
  - The message and indicators on the multi-display monitor
  - Master warning indicator
- The TEB indicator cannot be deactivated.



### Fault in the Traffic Eye Brake system

If any fault is detected in the Traffic Eye Brake, the Traffic Eye Brake is deactivated and the TEB indicator illuminates on the multi-display. When the fault is cleared, the system is reactivated automatically.

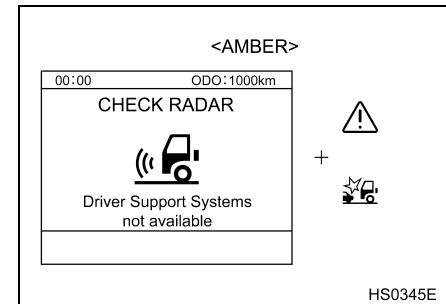


#### ! CAUTION

**If the TEB indicator illuminates frequently or stays illuminated, there may be a fault in the system. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.**

### If the millimeter wave radar is dirty

If the front (cover) of the millimeter wave radar is dirty, "Check radar" message appears on the multi-display. Clean the area quickly.

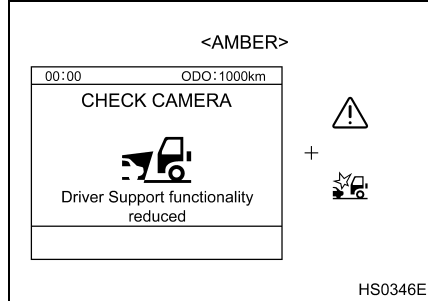


 CAUTION

- If the “Check radar” message appears, park the vehicle at a safe place and wipe clean the front (cover) of the millimeter wave radar with soft cloth.
- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- Depending on the road conditions, a message may be displayed even if the radar is clean, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the millimeter wave radar may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

If the camera or its surrounding is dirty

- The camera is located behind the windshield and is used to detect stationary vehicles.
- If the camera’s field of view is hindered by dirt or the like, “Check camera” message appears on the multi-display.
- In this condition, the Traffic Eye Brake would not work against a stationary vehicle.

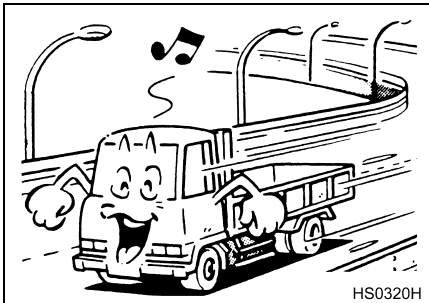


 CAUTION

- If the “Check camera” message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.
- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

## Precautions for using the Traffic Eye Brake

- Do not be overly confident of the Traffic Eye Brake.
- Using the system does not allow the driver to become inattentive or absent-minded. The driver must always be carefully looking ahead and checking the traffic conditions.
- Be sure to drive safely by maintaining an appropriate following distance using the brakes to reduce the speed as required, while paying attention to the surrounding conditions as well as the distance to the vehicle ahead.



- **The Traffic Eye Brake does not react to the oncoming vehicles.**
- **Traffic Eye Brake may not be able to accurately detect surrounding conditions in the following situations, causing non-activation of alarm issuance or braking or issuing an alarm while activating the emergency brake without prior notice.**
  - When the vehicle speed exceeds the legal speed limit
  - Fallen objects on the road
  - Motorcycles, bicycles, pedestrians, animals, etc.
  - In bad weather (such as rain, fog, or snow)
  - Vehicles with small metal part area
  - When the vehicle ahead or vehicles in the other lanes are splashing water or snow
  - When a significant amount of exhaust smoke (black smoke, etc.) is emitted from the vehicles ahead or vehicles around
    - When a load is protruding from the body of the vehicle ahead
    - When the vehicle ahead is of a special shape
    - When the vehicle in front is sideways
    - When smoke, etc. generated from the adjacent area interferes with the front vision of your vehicle
- When the vehicle receives an intense light (sunlight, headlights of oncoming vehicle, etc.) from the front
- When a sudden change in brightness occurs, for example, at the entrance or exit of a tunnel
- When the vehicle ahead is difficult to see in dim light (dawn, dusk, etc.), at night, or in a tunnel
- When sunlight, etc. is strongly reflected by the vehicle ahead
- When the brightness of headlights is insufficient due to dirty lens, etc.

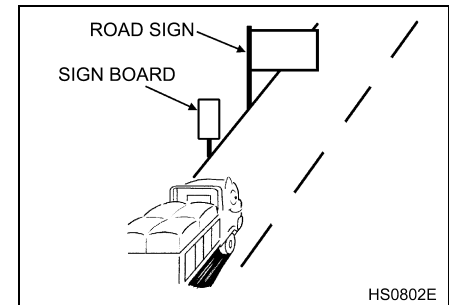
- When the headlamp light axes are out of adjustment
- When your vehicle is loaded with an extremely heavy cargo near the rear end of the truck bed
- When another vehicle abruptly cuts in front of your vehicle
- When the distance to the vehicle ahead is extremely short
- When driving on a curved road
- When driving on a steep road that repeatedly goes up and down
- Offset collision
- Objects that do not reflect radio waves
- **Pedestrian detection by Traffic Eye Brake may be limited for the following reasons:**
  - The pedestrian is short
  - The pedestrian is holding a large object like luggage or an umbrella that hides part of their body
  - The pedestrian is wearing something such as a rain pon-

cho that masks their body outline

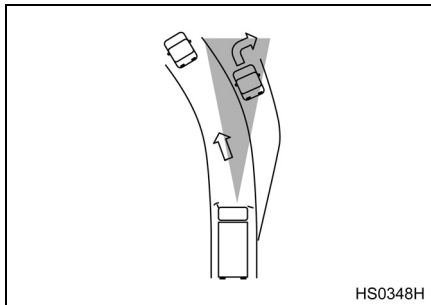
- The pedestrian is stooping, crouching, or lying down
- The pedestrian is pushing a stroller, wheelchair, bicycle, etc.
- Pedestrians are forming a crowd of people
- The pedestrian is in a dark place such as a tunnel or at night
- The pedestrian is wearing clothes similar in color to the background, blending into the landscape
- The pedestrian is near a wall or other obstacle
- The pedestrian suddenly jumps into view
- The pedestrian is near a metal object (manhole cover, steel plate, sign pole, etc.)

- **The Traffic Eye Brake may react in any of the following situations:**

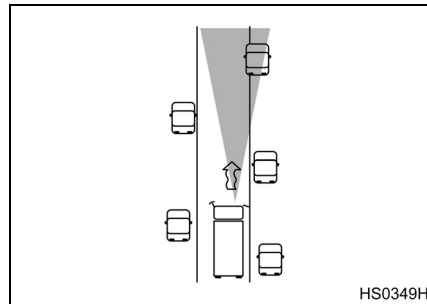
- When the system detects a vehicle in the adjacent lane or objects nearby (signboard, road sign, etc.). This is caused by the road conditions (curved road, entrance/exit of a curve, lane closure or narrower lane due to road construction), or the conditions of your vehicle or the vehicle ahead (because of steering operation, lane position, unstable driving due to an accident or failure).



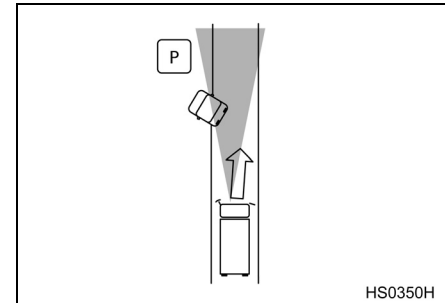
Example 1: When a right-turning vehicle in a right turning lane is detected as an object of control on a leftward curve with a right-turning lane



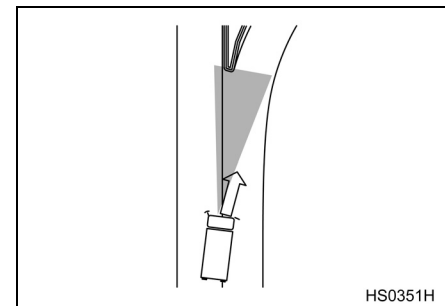
Example 2: While cruising at a low speed on a congested road, when a vehicle in the adjacent lane is detected because of the swaying of your vehicle or the vehicle in the adjacent lane.



Example 3: When a vehicle that is the object of control is going off the road and your vehicle passes the road as if overtaking it.

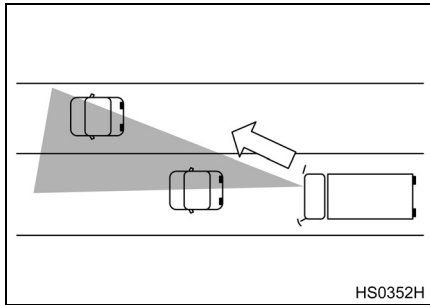


Example 4: When changing lanes to enter a branch road, a guard rail, etc. ahead of your vehicle is detected as the object of control.

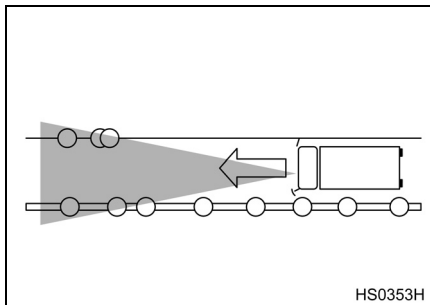




Example 5: When approaching and overtaking the vehicle ahead.

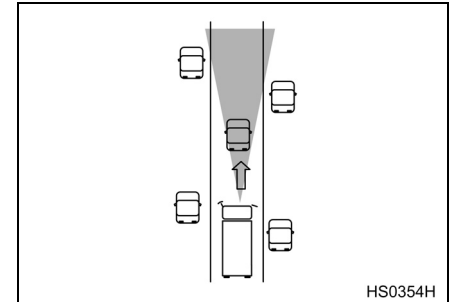


Example 6: When driving a road with almost no road shoulders or when driving close to the roadside objects such as guardrail or central divider poles.



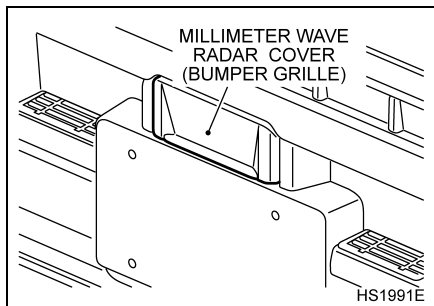
- When driving through a structure covering the road
  - ETC gates
  - Narrow tunnels
  - Iron bridges
  - Elevated bridges
  - Pedestrian bridges, etc.
- When driving along or over a metallic surface or object that reflects radio waves
  - Long vehicles such as trucks, buses, towing vehicles, etc.
  - Manhole covers
  - Iron plates laid on the road at construction sites, etc.
- When driving inside the vessel while onboard a ferry
- The pedestrian is on the roadside
- **The Traffic Eye Brake may also react in the following situations:**
  - When the driver accelerates the vehicle by stepping on the accelerator pedal

Example 1: While driving on a congested road following the vehicle ahead, when your vehicle accelerates and approaches the vehicle.



## Handling of the millimeter wave radar

- The millimeter wave radar is a device for sending and receiving millimeter radio waves. Keep the surface of the millimeter wave radar cover (bumper grille) clean. If it is dirty, wipe the dirt off using soft cloth carefully so as not to damage the surface.



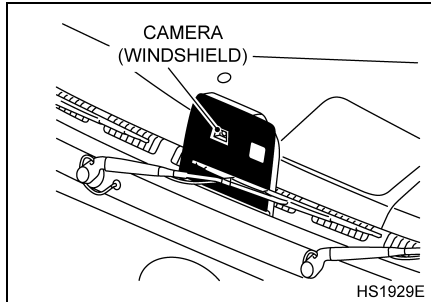
- Avoid any strong impact to the device as there is a risk of failure or malfunction. Also, do not disassemble it.
- When washing the vehicle, do not remove the millimeter wave radar cover (bumper grille). If steam or water from a high-pressure washer directly hits the internal components, it may cause a failure.
- Do not attach any stickers or mount any accessories that may block the front view of the millimeter wave radar cover (bumper grille), radar body or its peripheral area. Do not paint or mount a plated frame at the peripheral area.
- Do not install a license plate frame as it may cause malfunction of the radar.
- Since this device is certified for conformance to the Technical Standards based on the Radio Act, the following requirements must be observed:
  - Do not remove the “Technical Standards Conformance Certification Label”.
  - Do not attempt to modify the device.
  - Illegal modification may be penalized under the Radio Act.


**CAUTION**

- **Never relocate the millimeter wave radar as it may cause malfunction.**
- **Do not remove the millimeter wave radar body from the vehicle. If it has been removed, alignment of the radar is required when reinstalled. Contact the nearest authorized UD Trucks dealer.**
- **If the system malfunctions, the reason may be an axial deviation of the millimeter wave radar or camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the radar or camera.**
- **If the millimeter wave radar cover (bumper grille), the millimeter wave radar body or its mounted section is deformed, contact the nearest authorized UD Trucks dealer.**

### Handling of the camera

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.

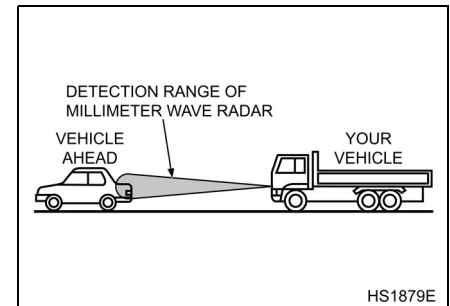



**CAUTION**

**If Traffic Eye Brake malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.**

### Traffic Eye Cruise (Adaptive cruise control)♦

- The Traffic Eye Cruise is an adaptive cruise control system.
- The Traffic Eye Cruise measures the following distance and the relative speed difference between your vehicle and the vehicle ahead using the millimeter wave radar and the camera and conducts the auto cruise driving while maintaining the following distance appropriate for the set cruise speed.



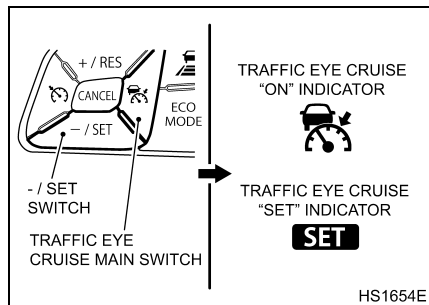
### ⚠ CAUTION

- The Traffic Eye Cruise uses the main brake for its control, but this system does not have the function to stop the vehicle automatically or to avoid a collision automatically.
- The Traffic Eye Cruise is intended to use on a highway or motorway with gentle curves and where frequent speed changes are not required.
- For details, refer to “Precautions for using the Traffic Eye Cruise” (page 6-67).

### How to set

1. Push the Traffic Eye Cruise main switch.
2. The Traffic Eye Cruise system is activated to be ready to set the cruise speed, and the Traffic Eye Cruise “ON” indicator appears on the sub display.

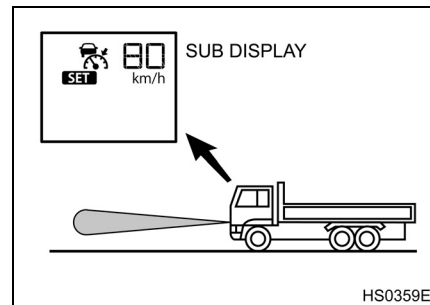
3. Depress the accelerator pedal to increase the vehicle speed to the desired set speed (approx. 30 km/h or higher).
4. When the desired vehicle speed is reached, press the -/SET switch. The Traffic Eye Cruise “SET” indicator appears and the set speed is displayed on the sub display.



### Operation of the system

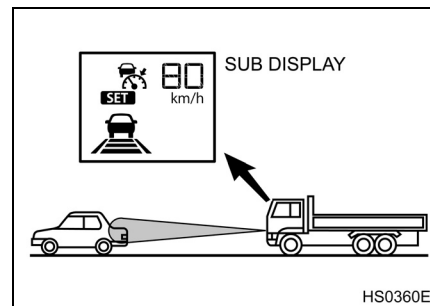
#### When no vehicle ahead

The vehicle runs constantly at the set cruise speed.



#### When a vehicle ahead is detected

The vehicle detection indicator appears on the sub display. The system control the vehicle speed to keep the following distance set by the driver.

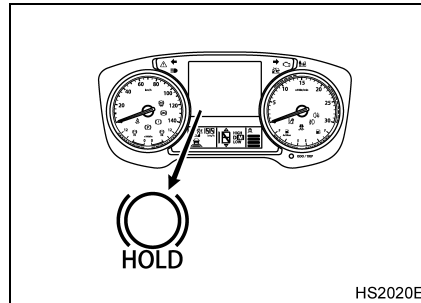


 CAUTION

- The Traffic Eye Cruise does not perform the deceleration control against a motionless material or a vehicle running at very low speed. Carefully observe the conditions around your vehicle and apply brake as necessary. Drive safely.
- While depressing the accelerator pedal, the system does not conduct the deceleration control even your vehicle is approaching the vehicle ahead. Drive safely while confirming the safety of the forward direction of your vehicle.

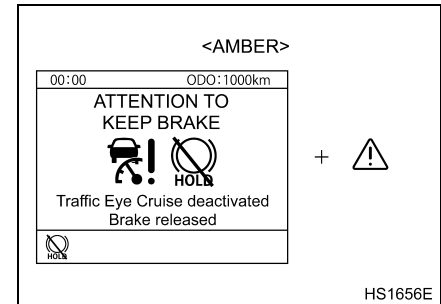
**When the preceding vehicle slows down and stops**

- Following the deceleration and stop of the preceding vehicle, the own vehicle also decelerates and stops.
- When the vehicle is stopped, the warning indicator for brake hold illuminates, and stays on while the vehicle is stopped.



- In the following cases, the warning indicator for brake hold cancel illuminates, a warning display and a buzzer sound alert the driver, and then the brake hold is canceled.

- When the “CANCEL” switch is pressed
- When the brake pedal is depressed
- When there is no longer a preceding vehicle
- When the driver’s or passenger’s door is opened
- When the driver’s seat belt is unfastened
- When the vehicle is stopped for a long time (4 minutes or more)
- When an abnormality has occurred in the system



**! WARNING**

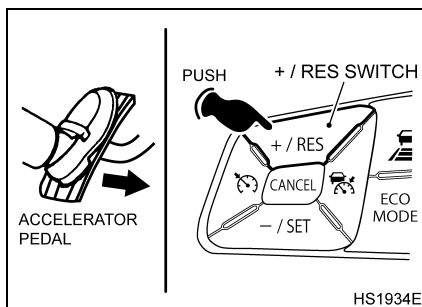
When the vehicle is stopped on a slope, if the brake hold is canceled, the vehicle may start moving and lead to an unexpected accident. When the brake hold is canceled, be sure to depress the brake pedal or apply the parking brake.

**! CAUTION**

When the vehicle is stopped by Traffic Eye Cruise, do not leave the driver's seat. The vehicle may start moving, resulting in an unexpected accident.

**When the vehicle in front starts**

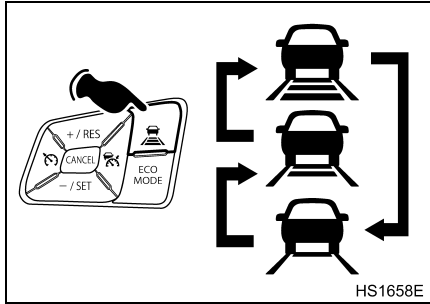
- After stopping by following the vehicle ahead, if the vehicle ahead starts moving before the brake hold warning indicator lights up, your vehicle also starts and resumes follow-up driving.
- If the vehicle ahead starts moving after the brake hold warning indicator lights up, depress the accelerator pedal or press the +/RES switch to start your vehicle and resume follow-up driving.
- When follow-up driving is resumed, the warning indicator for brake hold goes out.

**! CAUTION**

Depending on the gradient of the road or the amount of load, the vehicle may not start when the +/RES switch is pressed. In this case, depress the accelerator pedal until the vehicle starts.

**Changing the following distance setting<sup>†</sup>**

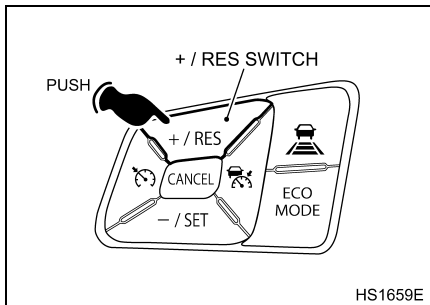
- The standard following distance for the Traffic Eye Cruise can be changed using the following distance set switch.
- Every time the switch is pressed, the distance is changed “Middle” → “Long” → “Short” → “Middle” → “Long” and so on, and the current distance is displayed on the multi-display.
- When a vehicle ahead is detected, the current setting distance is displayed on the sub display.



### Changing the set cruise speed

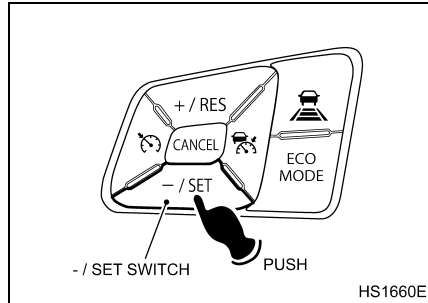
#### To increase the set cruise speed

Pressing the +/RES switch increases the set cruise speed.



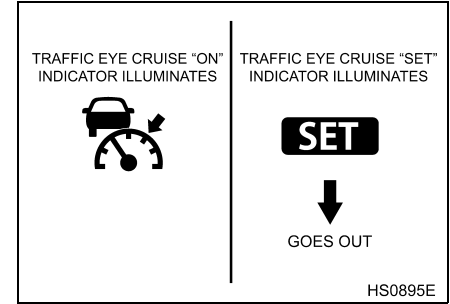
#### To decrease the set cruise speed

Pressing the -/SET switch decreases the set cruise speed.



#### Temporal deactivation of the Traffic Eye Cruise

- During Traffic Eye Cruise driving, Traffic Eye Cruise will be temporarily canceled when any of the following actions is taken. When canceled, the Traffic Eye Cruise “SET” indicator goes out.

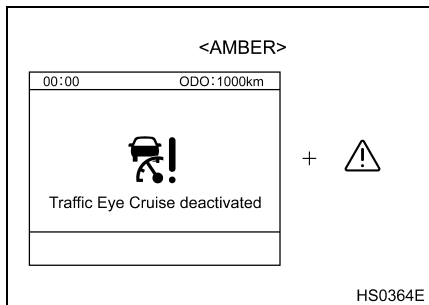


- When the “CANCEL” switch is pressed
- When the brake pedal is depressed
- When the vehicle speed lowers below 15 km/h when there is no preceding vehicle
- When the brake is applied by the Traffic Eye Brake
- When the Driver Alert Support activates an alarm

**NOTE**

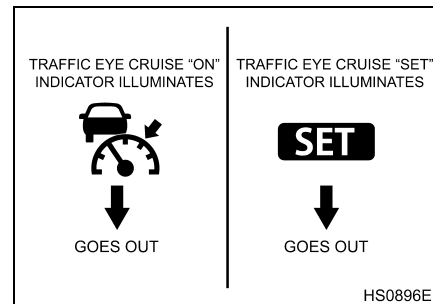
After a temporary deactivation and if there is a preceding vehicle, the vehicle can be returned to Traffic Eye Cruise control by pressing the +/RES switch. If there is no preceding vehicle and the vehicle speed is 15 km/h or higher, the vehicle can be returned to Traffic Eye Cruise control by pressing the +/RES switch.

- When the system temporarily cancels Traffic Eye Cruise for safety, such as when the Driver Alert Support activates, "Traffic Eye Cruise deactivated" is displayed on the multi-display.



## Completely deactivating the Traffic Eye Cruise

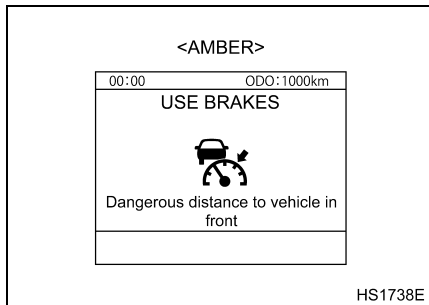
Traffic Eye Cruise can be completely canceled by pressing and holding the CANCEL switch of the steering switches during Traffic Eye Cruise driving, or by pressing the switch again when Traffic Eye Cruise is temporarily canceled. When completely canceled, the Traffic Eye Cruise "ON" indicator goes out.





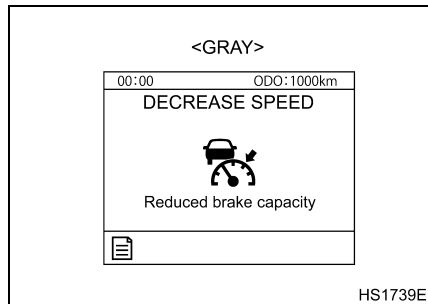
### Following distance warning

- If it is determined that the appropriate following distance cannot be maintained by the deceleration control of Traffic Eye Cruise, the driver will be alerted by a following distance warning display and a buzzer sound.
- If a following distance warning is displayed or the following distance is short, depress the brake pedal to decelerate and maintain an appropriate following distance.



### Protection of brakes

- The Traffic Eye Cruise has the protection function to limit the application of the main brake to prevent excessive application of the main brake. When this function is activated, the Traffic Eye Cruise enters the limit mode, and “Decrease speed – Reduced brake capacity” message is displayed on the multi-display to warn the lowering of brake performance.
- When the main brake returns to the normal condition, the Traffic Eye Cruise returns to the normal condition automatically.



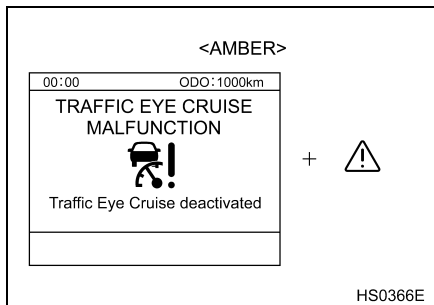
**CAUTION**

- **If the connected trailer is not equipped with ABS or its ABS is faulty, the Traffic Eye Cruise enters the restricted mode.**
- **In the restricted mode, deceleration is performed only the auxiliary brakes (without using the main brake), and therefore the braking performance may reduce severely. When driving in this condition, observe the traffic condition carefully and depress the brake pedal as necessary to drive safely.**
- **When driving down a long slope following a slow vehicle, temporarily deactivate the Traffic Eye Cruise to reduce the possibility of entering the restricted mode.**

## Fault in the Traffic Eye Cruise system

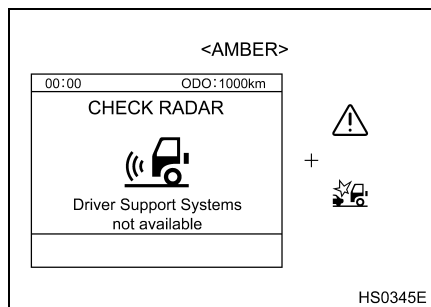
If any fault is detected in the Traffic Eye Cruise system, the Traffic Eye Cruise is deactivated and the “TRAFFIC EYE CRUISE malfunction” message is displayed on the multi-display.


When the fault is cleared, the system is reactivated automatically.



## If the millimeter wave radar is dirty

If the front (cover) of the millimeter wave radar is dirty, “Check radar” message appears on the multi-display. Clean the area quickly.



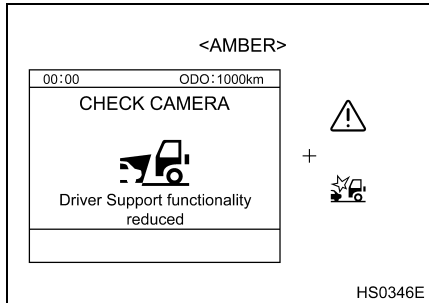
 **CAUTION**

- If the “Check radar” message appears, park the vehicle at a safe place and wipe clean the front (cover) of the millimeter wave radar with soft cloth.

- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- Depending on the road conditions, a message may be displayed even if the radar is clean, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the millimeter wave radar may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

**If the camera or its surrounding is dirty**

- The camera is located behind the windshield and is used to detect stationary vehicles.
- If the camera's field of view is hindered by dirt or the like, "Check camera" message appears on the multi-display.
- In this condition, the Traffic Eye Cruise would not work.



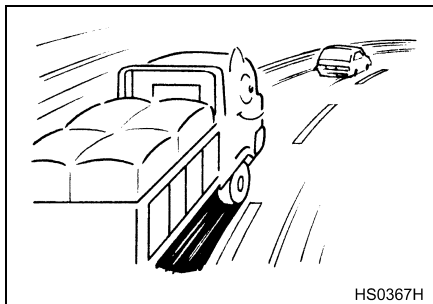
**⚠ CAUTION**

- **If the "Check camera" message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.**
- **The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.**
- **A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.**
- **If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.**

**Precautions for using the Traffic Eye Cruise**

- Do not be overly confident of the Traffic Eye Cruise.
- Using the system does not allow the driver to become inattentive or absent-minded. The driver must always be carefully looking ahead and checking the conditions.
- The Traffic Eye Cruise controls the main and auxiliary brakes, but be aware of the distance between the preceding vehicle and the surrounding conditions, and depress the brake pedal as necessary to ensure a safe distance and safe driving.

- The detection performance of the millimeter wave radar and the camera is limited. Use the Traffic Eye Cruise on a highway or motorway without frequent speed change and with slight curves.



- The Traffic Eye Cruise may perform deceleration control by main and auxiliary brakes and issue a warning when it detects a vehicle in the adjacent lane or objects nearby (signboard, road sign, etc.). This is caused by the road conditions (curved road, entrance/exit of a curve, tunnel, lane closure, narrower lane due to road construction, road with metal objects that reflect radio

waves sideways or upwards, etc.), or the conditions of your vehicle or the vehicle ahead (because of steering operation, lane position, unstable driving due to an accident or failure). On the other hand, it may temporarily miss the vehicle ahead and may approach to it.



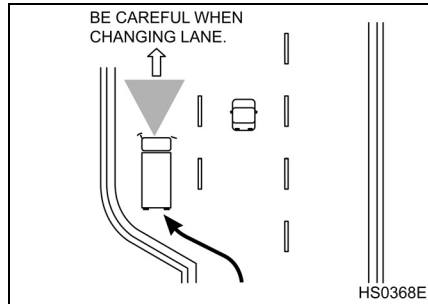
### CAUTION

**Do not use the Traffic Eye Cruise under the following conditions as it may lead to an accident.**

- **In bad weather (rain, fog, snow). In a dense fog or heavy rain, the sensitivity of the millimeter radar lowers, which makes the detection of the vehicle ahead difficult, and the correct following distance may not be obtained.**

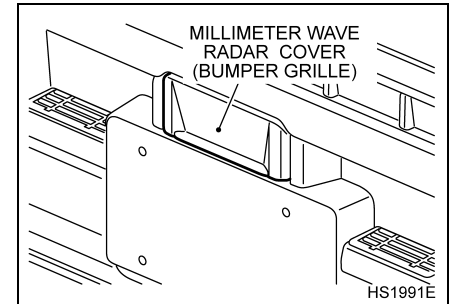
- **On a frozen or snow-covered road. The wheels may skid on a slippery road surface and you may lose the vehicle control.**
- **On a steep downslope. The deceleration control of the Traffic Eye Cruise may not be able to keep the set cruise speed. When following a vehicle ahead, you may approach it excessively.**
- **On a road with repeated steep up- and downslope. It is difficult to detect the vehicle ahead correctly and you may approach it excessively, which can be a cause of an accident.**
- **In a traffic condition with frequent acceleration and deceleration. It is difficult to keep the following distance constant, and it is difficult to drive at a vehicle speed appropriate for such conditions, which may cause an accident.**

- In traffic conditions where the surrounding vehicles keep changing lanes due to traffic congestion, etc. It is difficult to keep the following distance constant, and it is difficult to drive at a vehicle speed appropriate for such conditions, which may cause an accident.
- On a motorway, when going off the main road (entering an interchange or a rest area). When following a vehicle ahead running at a speed slower than your vehicle's set speed, if the vehicle ahead disappears because either vehicle changes lanes, the system increases your vehicle's speed, which may cause an unexpected accident.



### Handling of the millimeter wave radar

- The millimeter wave radar is a device for sending and receiving millimeter radio waves. Keep the surface of the millimeter wave radar cover (bumper grille) clean. If it is dirty, wipe the dirt off using soft cloth carefully so as not to damage the surface.



- Avoid any strong impact to the millimeter wave radar as there is a risk of failure or malfunction. Do not disassemble it.
- When washing the vehicle, do not remove the millimeter wave radar cover (bumper grille). If steam or water from a high-pressure washer directly hits the internal components, it may cause a failure.

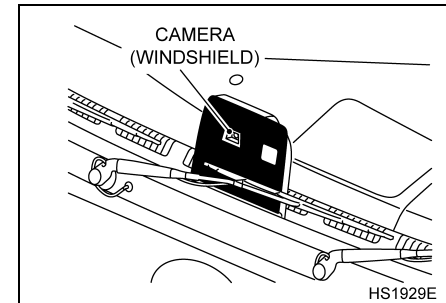
- Do not attach any stickers or mount any accessories that may block the front view of the millimeter wave radar cover on the radar cover (bumper grille), radar body or its peripheral area. Do not paint or mount a plated frame at the peripheral area.
- Do not install a license plate frame as it may cause malfunction of the radar.
- Since this device is certified for conformance to the Technical Standards based on the Radio Act, the following requirements must be observed:
  - Do not remove the “Technical Standards Conformance Certification Label”.
  - Do not attempt to modify the device.
  - Illegal modification may be penalized under the Radio Act.

 **CAUTION**

- **Never relocate the millimeter wave radar as it may cause malfunction.**
- **Do not remove the millimeter wave radar body from the vehicle. If it has been removed, alignment of the radar is required when reinstalled. Contact the nearest authorized UD Trucks dealer.**
- **If the system malfunctions, the reason may be an axial deviation of the millimeter wave radar. Contact the nearest authorized UD Trucks dealer for axial alignment of the radar.**
- **If the millimeter wave radar cover (bumper grille), the millimeter wave radar body or its mounted section is deformed, contact the nearest authorized UD Trucks dealer.**

### Handling of the camera

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.

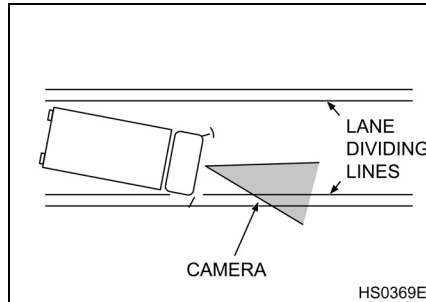


**CAUTION**

If Traffic Eye Cruise malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.

## Lane Departure Warning System (LDWS)<sup>†</sup>

The Lane Departure Warning System (LDWS) uses a camera to detect the lane. If the vehicle crosses the right- or left-lane dividing line while driving at approximately 50 km/h or higher, LDWS alerts the driver by displaying a warning and sounding the buzzer.

**CAUTION**

- The LDWS can issue an alarm under the condition that it recognizes the lane-dividing lines. The system has no such function for recognizing the road shoulder or side gutter as a road edge to issue an alarm. Steer the vehicle as necessary and drive safely.
- For details, refer to “Precautions for using LDWS” (page 6-74).

## Operating conditions

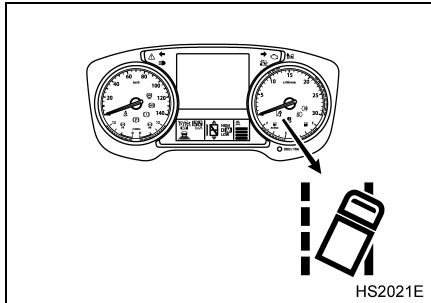
LDWS is activated under the following conditions.

- The ignition switch is in ON position.
- Your vehicle speed is 50 km/h or higher.

## Deactivation of LDWS

LDWS is deactivated and the LDWS lamp illuminates under the following conditions.

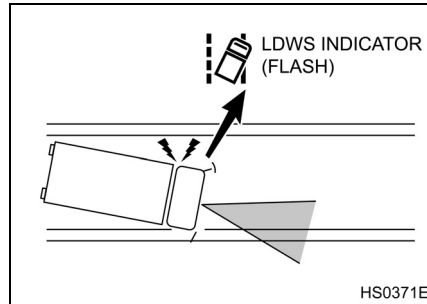
- LDWS is deactivated temporarily.
- LDWS is malfunctioning.



## Operation of LDWS

If the vehicle crosses the right or left lane dividing line

The system alerts the driver by an alarm sound and flashing of the LDWS lamp.



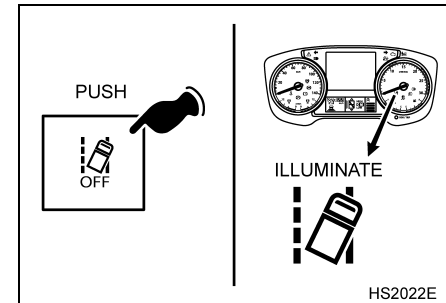
### CAUTION

The system does not alert under the following conditions.

- When the brake pedal is depressed
- When the turn signal switch is operated
- When the vehicle speed is below 50 km/h
- When the driver steered quickly

## Deactivating LDWS

- LDWS is deactivated by pressing the LDWS OFF switch. In this condition, LDWS lamp illuminates.



- To reactivate LDWS, press the LDWS OFF switch again.


### NOTE

When the ignition switch is turned off and then on, LDWS is turned on.



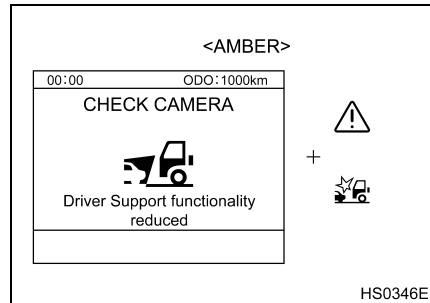
### Malfunction of LDWS


When a fault occurs in LDWS, the LDWS indicator in the multi-display appears and the system is deactivated. If the fault is solved, the LDWS indicator will disappear and LDWS will be reactivated automatically.

 <b>CAUTION</b>
<p>If the LDWS indicator appears frequently or continuously, LDWS is faulty. This does not present a problem for normal driving, however, contact the nearest authorized UD Trucks dealer in the earliest opportunity.</p>

### If the camera or its surrounding is dirty

- The camera is installed behind the windshield.
- If the camera's field of view is hindered by dirt or the like, "Check camera" message appears on the multi-display.
- In this condition, LDWS would not work.



 <b>CAUTION</b>
<ul style="list-style-type: none"> <li>● If the "Check camera" message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.</li> <li>● The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.</li> <li>● A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.</li> <li>● If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.</li> </ul>

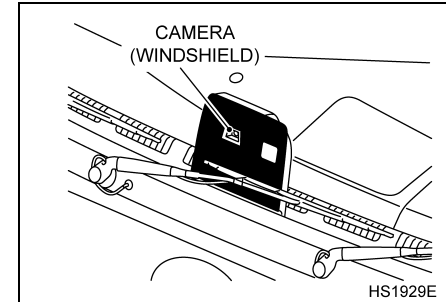
### Precautions for using LDWS

- Do not be overly confident of LDWS.
- Using the system does not allow the driver to become inattentive or absent-minded. The driver must always be carefully looking ahead and checking the traffic conditions.
- Be sure to drive safely by steering the vehicle properly while paying attention to the surrounding conditions.
- **LDWS cannot accurately detect the lane dividing lines and may not operate correctly under the following conditions.**
  - Hardly detectable lane-dividing line (obscure, not common, covered with puddles, dirt or snow)
  - Sharply curved road
  - Erased line markings are still visible
  - Shadows, snow, puddles, wheel tracks, road seams, traces of repair, are found on the road

- Road branching, merging, and crossing
- The following distance to a vehicle ahead is so short that the detection range of the camera is blocked.
- Raindrops, snowflakes, dirt and the like are deposited on the windshield.
- Headlamp brightness is insufficient due to dirty lens, etc., or the light axes are out-of-adjustment.
- When lane markings on the road are difficult to see in dim light (dawn, dusk, etc.), at night, or in a tunnel
- Subjected to intense light (typically sunlight) from the heading direction
- Sudden change of brightness (at the entrance/exit of a tunnel)
- Road under construction and/or lanes are provided temporarily

### Handling of the camera

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.



 **CAUTION**

If LDWS malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.

## Smart BSIS (Blind Spot Information System) and Smart LCS (Lane Change Support)<sup>♦</sup>

Smart BSIS and Smart LCS detect moving objects on the right and left sides of the vehicle using side millimeter wave radars mounted on both sides of the vehicle and alert the driver by turning on an indicator and sounding an alarm to prevent accidents when turning and changing lanes.

 **CAUTION**

- **Smart BSIS and Smart LCS are intended to assist drivers in preventing misidentification and are not for avoiding drowsy or inattentive driving.**
- **Their recognition performance is limited. Do not overly trust the system, always check the safety of the surroundings when driving, and drive safely.**

## Smart BSIS (left side)

Smart BSIS detects moving objects such as bicycles on the left side and notifies the driver with an indicator to prevent accidents involving them when making left turns.

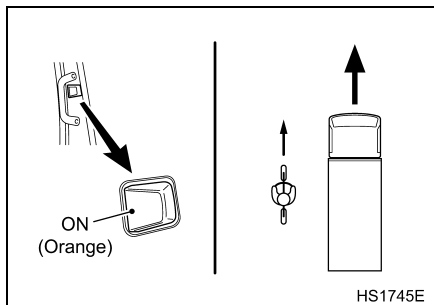
### Operating conditions

Smart BSIS is ready to operate under the following conditions.

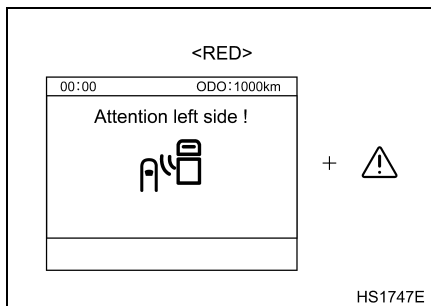
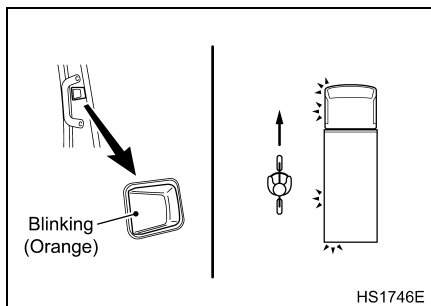
- When the ignition switch is in the ON position
- When an object moving in the same direction is detected on the left side of the vehicle while driving at 30 km/h or less
- When a moving object crossing in front of the vehicle from the left side is detected when the vehicle is stopped

## Operation of Smart BSIS

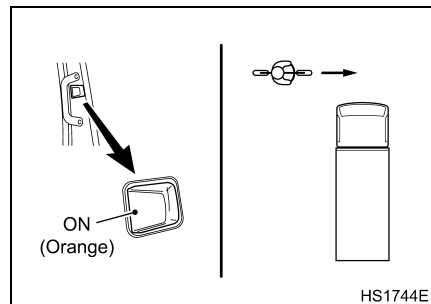
- When an object moving in the same direction is detected on the left side of the vehicle and there is a possibility of a collision if a left turn is made, an indicator on the passenger side door pillar illuminates to alert the driver.



- When the possibility of a collision with the detected object moving in the same direction increases and the turn signal switch is operated to the left, the indicator blinks, a message is displayed in the multi-display, and a buzzer sounds.



- When a moving object crossing in front of the own vehicle from the left side is detected when the vehicle is stopped, an indicator on the passenger side door pillar illuminates to alert the driver.



## CAUTION

The indicator may be difficult to see in the following cases.

- When the sunlight is strong
- When the light from the headlights of the vehicle behind is hitting the indicator

### Smart LCS (left side)

Smart LCS detects moving objects such as vehicles on the left side to prevent accidents when making lane changes.

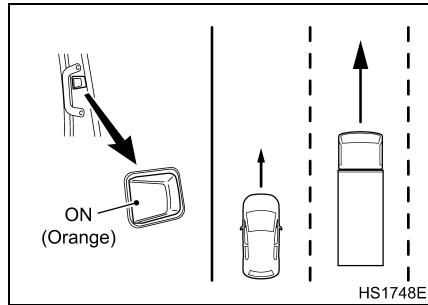
### Operating conditions

Smart LCS is ready to operate under the following conditions.

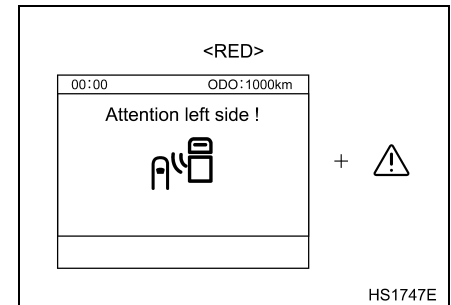
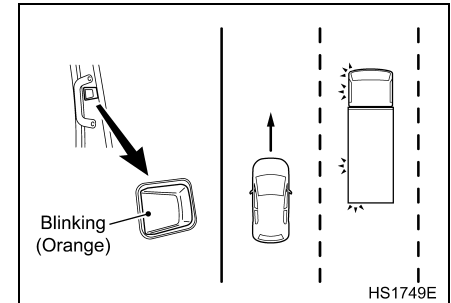
- When the ignition switch is in the ON position
- When a moving object such as a vehicle is detected on the left side of the own vehicle while driving at 10 km/h or more

### Operation of Smart LCS

- When a moving object such as a vehicle is detected on the left side of the own vehicle, an indicator on the passenger side door pillar illuminates to alert the driver.



- When the possibility of a collision with the detected object moving in the same direction increases and the turn signal switch is operated to the left, the indicator blinks, a message is displayed in the multi-display, and a buzzer sounds.



 **CAUTION**

The indicator may be difficult to see in the following cases.

- When the sunlight is strong
- When the light from the headlights of the vehicle behind is hitting the indicator

### Smart BSIS (right side)

Smart BSIS detects moving objects such as bicycles on the right side and notifies the driver with an indicator to prevent accidents involving them when making right turns.

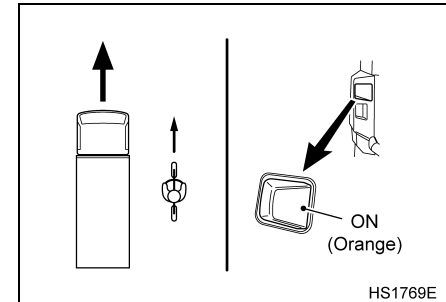
### Operating conditions

Smart BSIS is ready to operate under the following conditions.

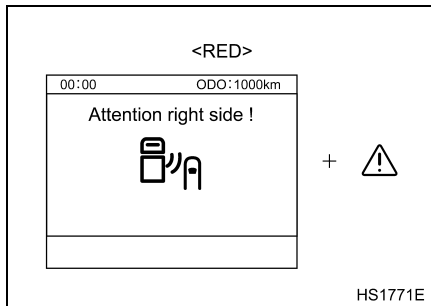
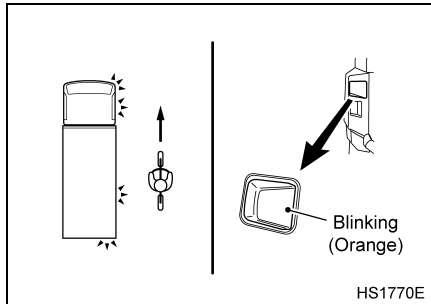
- When the ignition switch is in the ON position
- When an object moving in the same direction is detected on the right side of the vehicle while driving at 30 km/h or less
- When a moving object crossing in front of the vehicle from the right side is detected when the vehicle is stopped

### Operation of Smart BSIS

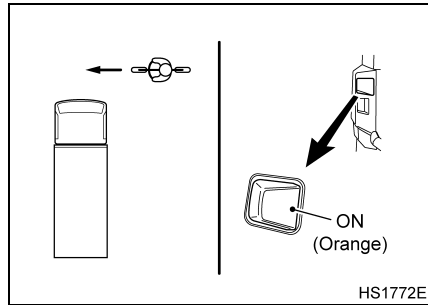
- When an object moving in the same direction is detected on the right side of the vehicle and there is a possibility of a collision if a right turn is made, an indicator on the driver side door pillar illuminates to alert the driver.



- When the possibility of a collision with the detected object moving in the same direction increases and the turn signal switch is operated to the right, the indicator blinks, a message is displayed in the multi-display, and a buzzer sounds.



- When a moving object crossing in front of the own vehicle from the right side is detected when the vehicle is stopped, an indicator on the driver side door pillar illuminates to alert the driver.



**⚠ CAUTION**

**The indicator may be difficult to see in the following cases.**

- **When the sunlight is strong**
- **When the light from the headlights of the vehicle behind is hitting the indicator**

### Smart LCS (right side)

Smart LCS detects moving objects such as vehicles on the right side to prevent accidents when making lane changes.

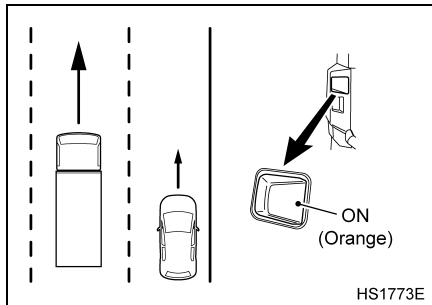
### Operating conditions

Smart LCS is ready to operate under the following conditions.

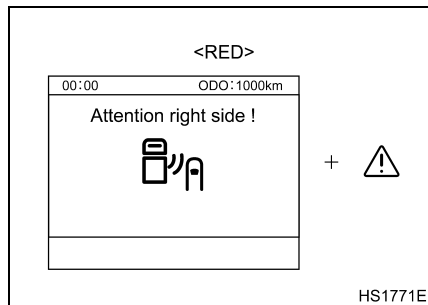
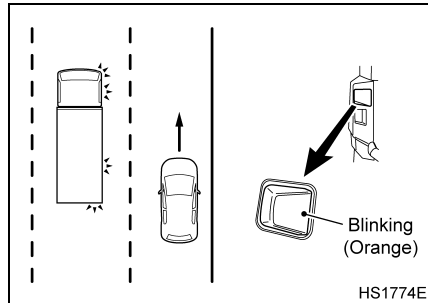
- When the ignition switch is in the ON position
- When a moving object such as a vehicle is detected on the right side of the own vehicle while driving at 10 km/h or more

## Operation of Smart LCS

- When a moving object such as a vehicle is detected on the right side of the own vehicle, an indicator on the driver side door pillar illuminates to alert the driver.



- When the possibility of a collision with the detected object moving in the same direction increases and the turn signal switch is operated to the right, the indicator blinks, a message is displayed in the multi-display, and a buzzer sounds.



### CAUTION

The indicator may be difficult to see in the following cases.

- When the sunlight is strong
- When the light from the headlights of the vehicle behind is hitting the indicator




### Canceling Smart BSIS and Smart LCS warning

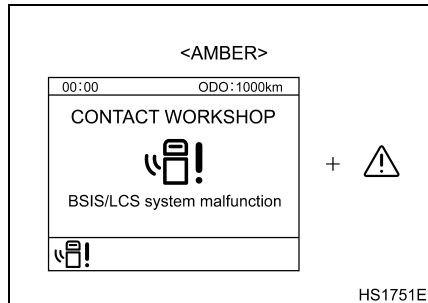
- BSIS/LCS warning is activated (ON) when the ignition switch is turned to the ON position and is ready to alert the driver with lighting/blinking of the indicator, warning messages, and an alarm buzzer.
- BSIS/LCS warning can be deactivated by switching it to OFF on the multi-display menu screen. When deactivated (OFF), blinking of the indicator, warning messages, and alarm buzzer are canceled. For the switching method, refer to “BSIS/LCS warning” (page 5-23) in “Meters, indication lamps and switches”.

### Malfunction of Smart BSIS and Smart LCS

- If Smart BSIS and Smart LCS is not functioning properly, it turns off.
- If an abnormality occurs in Smart BSIS and Smart LCS, the message “BSIS/LCS system malfunction” is displayed in the multi-display, and Smart BSIS and Smart LCS will not operate. If the abnormality is resolved, they will automatically return to the normal state.

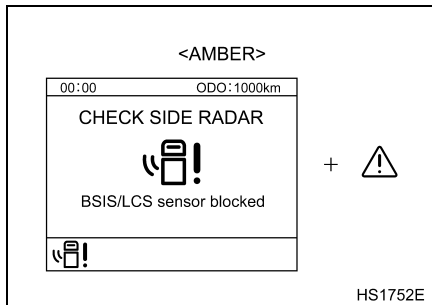
 **CAUTION**

**If the “BSIS/LCS system malfunction” message appears frequently, although this does not present a problem for normal driving, contact the nearest authorized UD Trucks dealer in the earliest opportunity.**



### If the area around the side millimeter wave radar is dirty

If the front area of the side millimeter wave radar (cover) is dirty, the message “BSIS/LCS sensor blocked” is displayed in the multi-display. Clean as soon as possible.



### Precautions when using Smart BSIS and Smart LCS

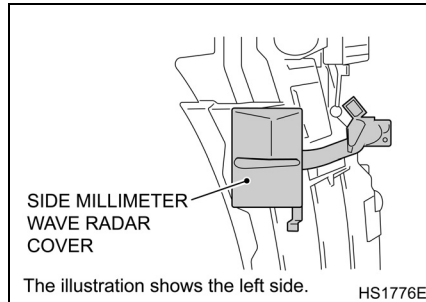
- Smart BSIS and Smart LCS are a type of driver assistance system and their detection ability is limited. Do not overly trust the system. Drive safely while carefully checking the surrounding conditions.
- **Smart BSIS and Smart LCS may not operate properly in the following situations.**
  - When driving on an undulating road surface, driving on curved sections
  - When driving on a driving in bad weather (heavy rain, fog, blizzard, snow, etc.)
  - When moving object detection is limited due to the following reasons:
    - The size of the moving object is too small
    - The speed of the moving object is too slow, too high, or the same speed as the own vehicle

- The direction of travel of the moving object is not the same as or is not perpendicular to the direction of the own vehicle
- The distance between the moving object and the own vehicle is too close or too far
- When side millimeter wave radar radio waves are reflected or blocked (by snow, trees, stopped vehicles, walls, guardrails, metal structures, etc.) or when obstacles are detected as moving objects
- When reversing, while turning or the own vehicle is tilted
- When the side millimeter wave radar or its cover is broken, deformed, repositioned
- When the side millimeter wave radar or its cover is painted, dirty, or the radar is blocked by splashing water, snow, mud, etc.

- When changes were made to the vehicle body such as tire size
- When a trailer towed by the own vehicle is detected as a moving object
- When towing a wide trailer

### Handling of the side millimeter wave radar

- The side millimeter wave radar is a device that transmits and receives radio waves. Always keep the surface of the side millimeter wave radar cover clean. If it gets dirty, wipe it with a soft cloth to avoid scratching.



- Do not give a strong impact to the side millimeter wave radar as it may cause a failure or malfunction. Also, do not disassemble it.
- When washing the vehicle, do not remove the side millimeter wave radar cover. If steam or water from a high-pressure washer

directly hits the internal components, it may cause a failure.

- Since this device is certified for conformance to the Technical Standards based on the Radio Act, the following requirements must be observed:
  - Do not remove the “Technical Standards Conformance Certification Label”.
  - Do not attempt to modify the device.
  - Illegal modification may be penalized under the Radio Act.

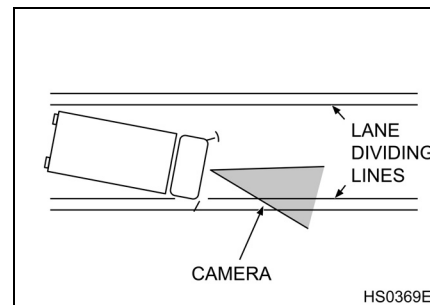
**CAUTION**

- Relocation of the side millimeter wave radar may cause malfunctions. Never do this.
- Do not remove the side millimeter wave radar from the vehicle. If removed, it will be necessary to adjust the axis of the radar sensor after reinstallation, so contact the nearest authorized UD Trucks dealer.
- If the system malfunctions, the axis of the side millimeter wave radar may be off. It will be necessary to adjust the axis of the radar sensor, so contact the nearest authorized UD Trucks dealer.
- If the side millimeter wave radar cover, side millimeter wave radar body, or its mounting parts get deformed due to an accident, etc., contact the nearest authorized UD Trucks dealer.

- The system may not operate normally when two or more trailers are connected.

## Driver Alert Support (DAS)

The Driver Alert Support (DAS) presumes the driver's attention level on driving from the meandering of the vehicle detected by the camera and alerts the driver when it determines that the attention level is low.



**CAUTION**

- **DAS can operate on a road where the lane dividing lines can be detected. It cannot function on a road without such lines. Drive safely while observing the traffic conditions.**
- **For details, refer to “Precautions for using DAS” (page 6-87).**

### Operating conditions

DAS is operable under the following conditions:

- Ignition switch is in “ON” position.
- Vehicle speed is 65 km/h or higher.

### When DAS is inoperative

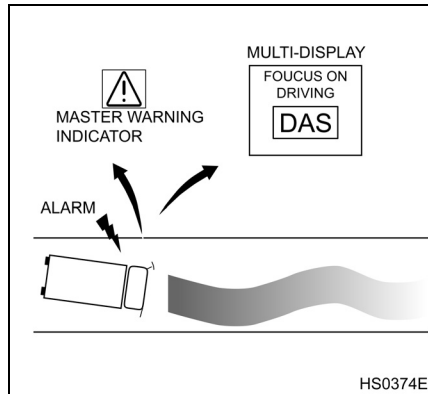
DAS is inoperative when your vehicle is in the following condition.

- DAS is temporarily deactivated.

### Operation of DAS

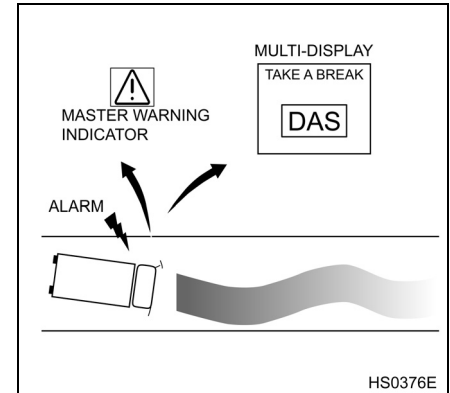
#### When low attention level is detected

DAS sounds an alarm and “Focus on driving” message is displayed.



#### When low attention level continues

DAS sounds an alarm and “Take a break” message is displayed.



### NOTE

**If the auto cruise or Traffic Eye Cruise is operated, it is cancelled temporarily.**

## Deactivating DAS

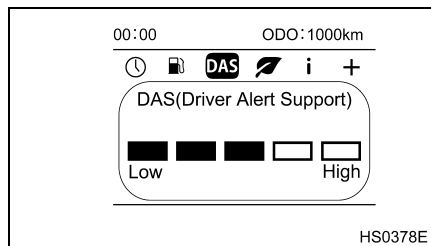
DAS can be switched to OFF on the multi-display menu screen. When set to OFF, warning messages and the warning sound are canceled. For the switching method, refer to “Driver Alert Support” (page 5-25) in “Meters, indication lamps and switches”.

### NOTE

**When the ignition switch is turned off and then on, DAS is activated automatically.**

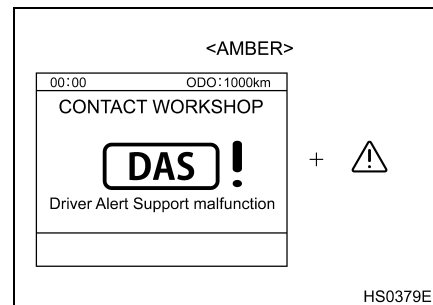
## Displaying the condition of driver

- The driver's degree of concentration to drive estimated by DAS can be displayed on the multi-display. (DAS gauge)
- It is displayed on a 5-point scale.
- When the vehicle speed is lower than 65 km/h, or when the lane dividing lines cannot be detected, “DAS unavailable” message is displayed.
- When DAS is deactivated, “DAS off” message is displayed.



## Malfunction of DAS

When a fault occurs in DAS, “Driver Alert Support malfunction” message is displayed and the system is deactivated. If the fault is solved, DAS will be reactivated automatically.

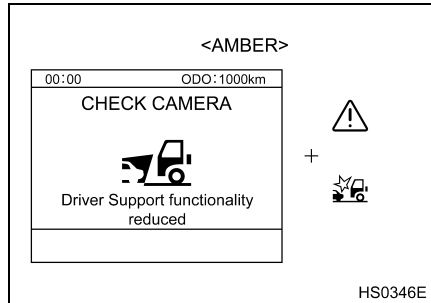


### CAUTION

**If the “Driver Alert Support malfunction” message appears frequently, although this does not present a problem for normal driving, contact the nearest authorized UD Trucks dealer in the earliest opportunity.**

### If the camera or its surrounding is dirty

- The camera is installed behind the windshield, and is used to detect a stationary vehicle.
- If the camera's field of view is hindered by dirt or the like, "Check camera" message appears on the multi-display.
- In this condition, DAS would not work.



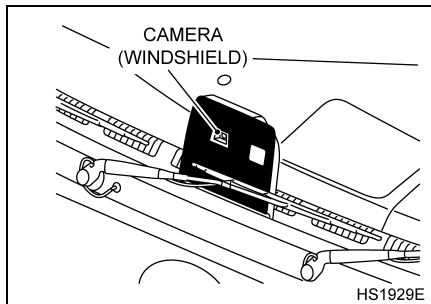
### ⚠ CAUTION

- **If the "Check camera" message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.**
- **The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.**
- **A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.**
- **If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.**

### Precautions for using DAS

- Do not be overly confident of DAS.
- Using DAS does not allow the driver to become inattentive or absent-minded. The driver must always be carefully looking ahead and checking the traffic conditions.
- Be sure to drive safely by steering the vehicle properly while paying attention to the surrounding conditions.
- **DAS cannot accurately detect the lane dividing lines and may not operate correctly.**
  - Hardly detectable lane-dividing line (obscure, not common, covered with puddles, dirt or snow)
  - Sharply curved road
  - Erased line markings are still visible
  - Shadows, snow, puddles, wheel tracks, road seams, traces of repair, are found on the road

- Road branching, merging, and crossing
  - The following distance to a vehicle ahead is so short that the detection range of the camera is blocked.
  - Raindrops, snowflakes, dirt and the like are deposited on the windshield.
  - Headlamp brightness is insufficient due to dirty lens, etc., or the light axes are out-of-adjustment.
  - Subjected to intense light (typically sunlight) from the heading direction
  - Sudden change of brightness (at the entrance/exit of a tunnel)
  - Road under construction and/or lanes are provided temporarily
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.

**CAUTION**

**If DAS malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.**

**Handling of the camera**

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.

**Moving Off Information System (MOIS)<sup>◆</sup>****NOTE**

**This function does not satisfy all R159 requirements.**

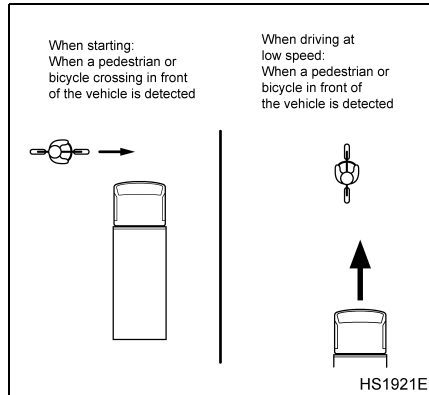
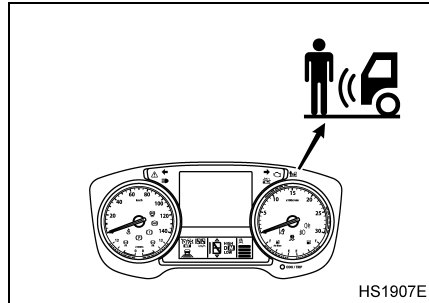
- The Moving Off Information System (MOIS) detects pedestrians and bicycles in front of the own vehicle by using a camera, forward millimeter-wave radar, and right/left side millimeter-wave radars to alert the driver to their presence.
- If a pedestrian or bicycle crossing in front of the own vehicle is detected when starting or if a pedestrian or bicycle in front of the vehicle is detected when driving at a low speed (10 km/h or less), the warning indicator comes on.



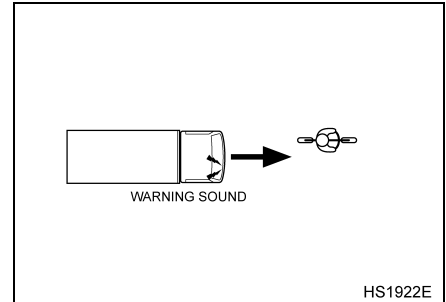
**CAUTION**

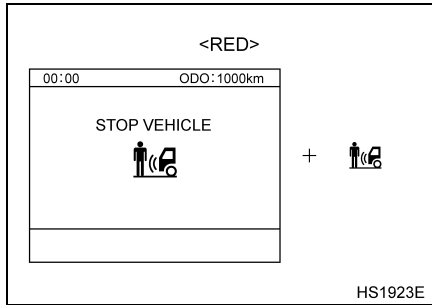
Their recognition performance is limited. Do not overly trust the system, always check the safety of the surroundings when driving, and drive safely.

### MOIS warning indicator



- If the system judges that your vehicle is approaching a pedestrian or bicycle in front when driving at a low speed (10 km/h or less) and there is a possibility of collision, the warning indicator blinks, a warning message appears on the multi-display, and a warning sound is issued to warn the driver.





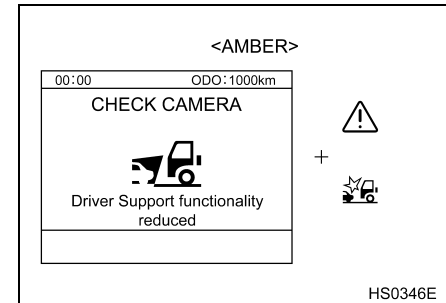
- MOIS can be switched off on the multi-display menu screen. When turned OFF, the lighting and blinking of the warning indicator, warning messages, and warning buzzer are canceled. For the switching method, refer to “MOIS warning♦” (page 5-25) in “Meters, indication lamps and switches”.
- The warnings return to ON when the ignition switch is turned OFF and ON again.

### Malfunction of MOIS

- If an error occurs in MOIS, a warning is displayed on the multi-display, and MOIS is deactivated. If a warning is displayed, have your vehicle inspected and serviced at your nearest authorized UD Trucks dealer.

### If the camera or its surrounding is dirty

- The camera is installed behind the windshield.
- If the camera’s field of view is hindered by dirt or the like, “Check camera” message appears on the multi-display.
- In this condition, MOIS would not work.

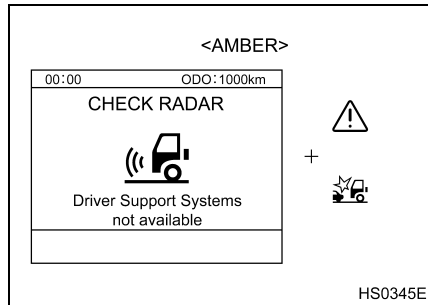


 CAUTION

- If the “Check camera” message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.
- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

**If the millimeter wave radar is dirty**

If the front (cover) of the millimeter wave radar is dirty, “Check radar” message appears on the multi-display. Clean the area quickly.



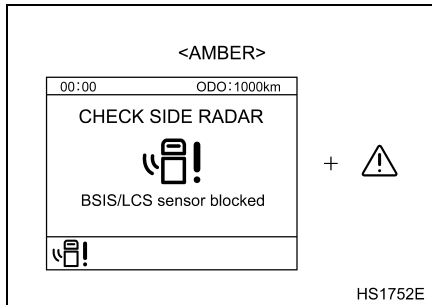
 CAUTION

- If the “Check radar” message appears, park the vehicle at a safe place and wipe clean the front (cover) of the millimeter wave radar with soft cloth.

- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- Depending on the road conditions, a message may be displayed even if the radar is clean, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the millimeter wave radar may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

### If the area around the side millimeter wave radar is dirty

If the front area of the side millimeter wave radar (cover) is dirty, the message “BSIS/LCS sensor blocked” is displayed in the multi-display. Clean as soon as possible.



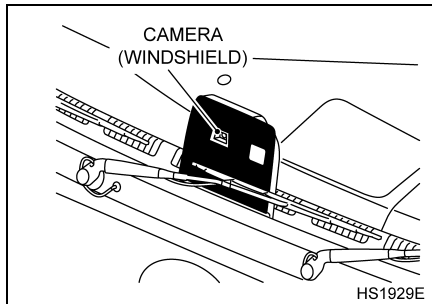
### Precautions when using MOIS

- Do not overly trust MOIS.
- MOIS does not operate in every situation.
- The system is not intended to allow the driver to become inattentive or absent-minded and fail to look ahead or commit hands-off driving.
- Operate the steering wheel as necessary while paying close attention to your surroundings, and drive safely.
- **In the following situations, surrounding conditions may not be detected accurately and MOIS may not operate normally.**
  - Immediately after turning the ignition switch to the ON position
  - When your vehicle is stopped for a long time, such as for a break, etc.
- When driving on an undulating road surface, driving on curved sections
- When driving in bad weather (heavy rain, fog, blizzard, snow etc).
- The detection of pedestrians and bicycles is limited for the following reasons:
  - The pedestrian or bicycle is very small
  - The pedestrian or bicycle is not moving
  - The speed of the pedestrian or bicycle is very low, high, or equivalent to that of your vehicle
  - The pedestrian or bicycle is not moving in the same direction or is not crossing in front of your vehicle
  - The pedestrian or bicycle is too near or too far from your vehicle
- The detection of pedestrians is limited for the following reasons:
  - The pedestrian is short

- The pedestrian is holding a large object like luggage or an umbrella that hides part of their body
- The pedestrian is wearing something such as a rain poncho that masks their body outline
- The pedestrian is stooping, crouching, or lying down
- The pedestrian is pushing a stroller, wheelchair, bicycle, etc.
- Pedestrians are forming a crowd of people
- The pedestrian is in a dark place such as a tunnel or at night
- The pedestrian is wearing clothes similar in color to the background, blending into the landscape
- The pedestrian is near a wall or other obstacle
- The pedestrian suddenly jumps into view
- The pedestrian is near a metal object (manhole cover, steel plate, sign pole, etc.)
- When radio waves of the forward or side millimeter wave radar are reflected or blocked (by snow, trees, stopped vehicles, walls, guardrails, gates, metal structures, etc.) or when obstacles are detected as moving objects
- When reversing, while turning or the own vehicle is tilted
- When the side millimeter wave radar or its cover is broken, deformed, repositioned
- When the side millimeter wave radar or its cover is painted, dirty, or the radar is blocked by splashing water, snow, mud, etc.
- When changes were made to the vehicle body such as tire size
- Raindrops, snowflakes, dirt and the like are deposited on the windshield.
- Headlamp brightness is insufficient due to dirty lens, etc., or the light axes are out-of-adjustment.
- Subjected to intense light (typically sunlight) from the heading direction
- Sudden change of brightness (at the entrance/exit of a tunnel)

### Handling of the camera

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.

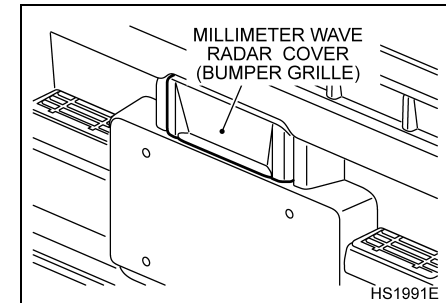


### CAUTION

**If the system malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.**

### Handling of the millimeter wave radar


- The millimeter wave radar is a device for sending and receiving millimeter radio waves. Keep the surface of the millimeter wave radar cover (bumper grille) clean. If it is dirty, wipe the dirt off using soft cloth carefully so as not to damage the surface.



- Avoid any strong impact to the millimeter wave radar as there is a risk of failure or malfunction. Do not disassemble it.
- When washing the vehicle, do not remove the millimeter wave radar cover (bumper grille). If steam or

water from a high-pressure washer directly hits the internal components, it may cause a failure.

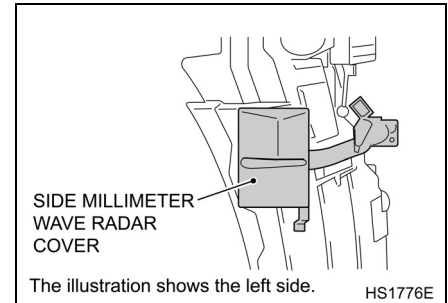
- Do not attach any stickers or mount any accessories that may block the front view of the millimeter wave radar cover on the radar cover (bumper grille), radar body or its peripheral area. Do not paint or mount a plated frame at the peripheral area.
- Do not install a license plate frame as it may cause malfunction of the radar.
- Since this device is certified for conformance to the Technical Standards based on the Radio Act, the following requirements must be observed:
  - Do not remove the “Technical Standards Conformance Certification Label”.
  - Do not attempt to modify the device.
  - Illegal modification may be penalized under the Radio Act.

 **CAUTION**

- **Never relocate the millimeter wave radar as it may cause malfunction.**
- **Do not remove the millimeter wave radar body from the vehicle. If it has been removed, alignment of the radar is required when reinstalled. Contact the nearest authorized UD Trucks dealer.**
- **If the system malfunctions, the reason may be an axial deviation of the millimeter wave radar. Contact the nearest authorized UD Trucks dealer for axial alignment of the radar.**
- **If the millimeter wave radar cover (bumper grille), the millimeter wave radar body or its mounted section is deformed, contact the nearest authorized UD Trucks dealer.**

## Handling of the side millimeter wave radar

- The side millimeter wave radar is a device that transmits and receives radio waves. Always keep the surface of the side millimeter wave radar cover clean. If it gets dirty, wipe it with a soft cloth to avoid scratching.



- Do not give a strong impact to the side millimeter wave radar as it may cause a failure or malfunction. Also, do not disassemble it.

- When washing the vehicle, do not remove the side millimeter wave radar cover. If steam or water from a high-pressure washer directly hits the internal components, it may cause a failure.
- Since this device is certified for conformance to the Technical Standards based on the Radio Act, the following requirements must be observed:
  - Do not remove the “Technical Standards Conformance Certification Label”.
  - Do not attempt to modify the device.
  - Illegal modification may be penalized under the Radio Act.

**CAUTION**

- **Relocation of the side millimeter wave radar may cause malfunctions. Never do this.**
- **Do not remove the side millimeter wave radar from the vehicle. If removed, it will be necessary to adjust the axis of the radar sensor after reinstallation, so contact the nearest authorized UD Trucks dealer.**
- **If the system malfunctions, the axis of the side millimeter wave radar may be off. It will be necessary to adjust the axis of the radar sensor, so contact the nearest authorized UD Trucks dealer.**
- **If the side millimeter wave radar cover, side millimeter wave radar body, or its mounting parts get deformed due to an accident, etc., contact the nearest authorized UD Trucks dealer.**

- **The system may not operate normally when two or more trailers are connected.**

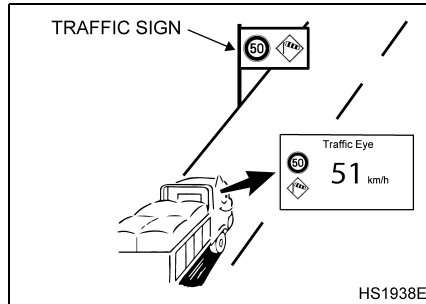
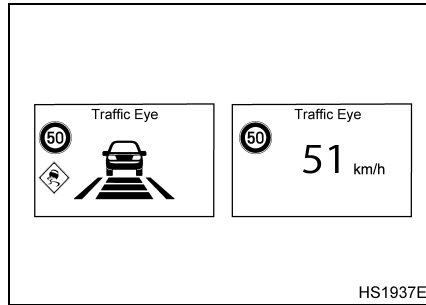


## Traffic Sign Recognition<sup>†</sup>

- Traffic signs are displayed on the multi-display to prevent drivers from missing them.
- Up to two traffic signs recognized by the camera are displayed on the Traffic Eye screen of the multi-display and the digital speedometer screen.

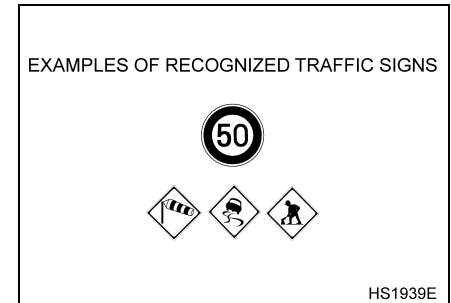
### CAUTION

Traffic Sign Recognition is a function to support safe driving by the driver. The traffic sign detection function has its limits and may fail to detect a traffic sign or may show a wrong sign in some situations. When driving, the driver must always check the actual traffic signs.

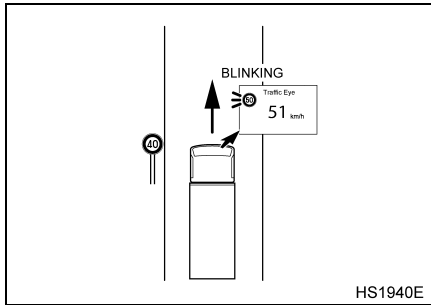


- The traffic signs recognized are: SPEED LIMIT and danger warning signs.

- SPEED LIMIT signs are displayed for a certain time after recognition. If a new speed limit is recognized during this period, the display switches to the new speed limit.
- Danger warning signs are displayed for a certain time after recognition.
- If another traffic sign the same as the one already recognized and displayed is recognized, it is not displayed additionally.



- If the vehicle speed exceeds the recognized speed limit, the speed limit display on the multi-display blinks to alert the driver.

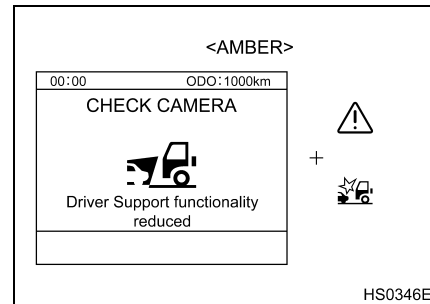


## Malfunction of Traffic Sign Recognition

- If an error occurs in Traffic Sign Recognition, a warning is displayed on the multi-display, and Traffic Sign Recognition is deactivated. If a warning is displayed, have your vehicle inspected and serviced at your nearest authorized UD Trucks dealer.

## If the camera or its surrounding is dirty

- The camera is installed on the windshield.
- If the camera's field of view is hindered by dirt or the like, "Check camera" message appears on the multi-display.
- In this condition, Traffic Sign Recognition would not work.



## CAUTION

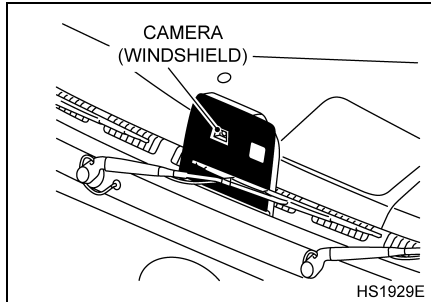
- If the "Check camera" message appears, park the vehicle at a safe place and wipe clean the front area (windshield) of the camera with soft cloth.
- The message will disappear when the vehicle is driven for a few minutes or when the ignition switch is turned off and on.
- A message may be displayed when strong light is received or depending on the road conditions, but this is not a failure. After driving for a while, the display disappears.
- If the message would not disappear, the camera may be faulty. Contact the nearest authorized UD Trucks dealer in the earliest opportunity.

## Precautions for using Traffic Sign Recognition

- Do not be overly confident of Traffic Sign Recognition.
- The system is not intended to allow the driver to become inattentive or absent-minded and fail to look ahead or commit hands-off driving.
- Be sure to drive safely by steering the vehicle properly while paying attention to the surrounding conditions.
- **Traffic Sign Recognition cannot accurately detect the lane dividing lines and may not operate correctly under the following conditions.**
  - Sharply curved road
  - The following distance to a vehicle ahead is so short that the detection range of the camera is blocked.
  - Raindrops, snowflakes, dirt and the like are deposited on the windshield.
- Headlamp brightness is insufficient due to dirty lens, etc., or the light axes are out-of-adjustment.
- Subjected to intense light (typically sunlight) from the heading direction
- Sudden change of brightness (at the entrance/exit of a tunnel)
- The headlamps are not turned on at night or in a tunnel, etc.
- The visibility is poor due to bad weather (rain, snow, fog, etc.)
- Water, snow, sand, etc. is being blown up by vehicles in front or oncoming vehicles
- The traffic sign is ahead of a turn or curve
- The traffic sign is in a position where it is hardly illuminated by the headlamps of your vehicle at night
- The traffic sign is faded or bent
- The traffic sign is damaged or deformed
- The traffic sign is covered with mud, snow, frost, etc.
- The traffic sign is partially hidden by trees, dirt, etc., making it difficult to read
- Lights (street lights, etc.) or shadows are reflected on the traffic sign
- The traffic sign is too large or too small
- The traffic sign is installed too low or too high
- Numbers on the traffic sign are difficult to recognize (disappearing, etc.)
- There is something similar in color or shape near the traffic sign to be detected (similar sign, electric sign, billboard, flag banner, structure, numbers on a guide sign, etc.)
- A traffic sign for another road is installed near and facing the road you are driving on (such as a speed limit sign on a side road branching off the main road)

### Handling of the camera

- Always keep the windshield at the front of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle. If it has been removed, alignment of the camera is required when reinstalled. Contact the nearest authorized UD Trucks dealer.

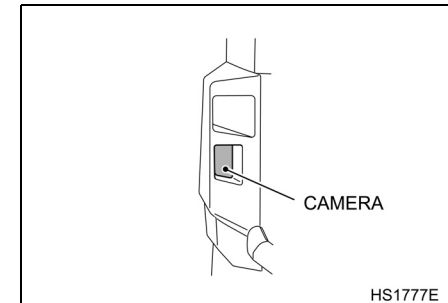


### CAUTION

**If the system malfunctions, the reason may be an axial deviation of the camera. Contact the nearest authorized UD Trucks dealer for axial alignment of the camera.**

## Driver status monitor<sup>◇</sup>

The driver status monitor is a system to detect the driver's facial orientation, driving posture, and eye movements using a camera installed on the door pillar on the driver's seat side, and is used to alert the driver by displaying a warning and sounding an alarm, and thus prevent inattentive or drowsy driving.



 CAUTION

- Driver status monitor does not detect physical conditions such as fatigue or health.
- Their recognition performance is limited. Do not overly trust the system, take good care of your physical condition, and drive safely.

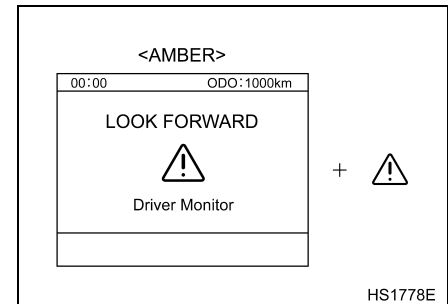
## Operating conditions

- Driver status monitor is ready to operate under the following conditions.
  - When the ignition switch is in the ON position
  - Your vehicle speed is 30 km/h or higher
  - When the vehicle is going straight ahead
- No alarm will be given when the steering wheel is turned a lot, such as when driving on a sharp curve, changing lanes, or turning right or left.
- An alarm will be given when the steering wheel is not turned a lot, even when the turn signal switch is operated for changing lanes or turning right or left.

## Operation of driver status monitor

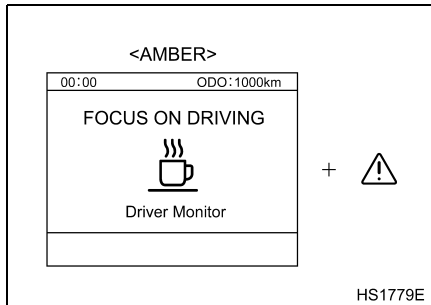
**When the system detects the driver's facial orientation, driving posture, and eye movements and determines that the driver is not facing the direction of travel or has a very bad driving posture**

In addition to sounding an audible alarm, a message "LOOK FORWARD" is displayed to alert the driver.



## When the system detects the driver's eye movements and driving posture and determines that the driver has closed their eyes or seems to be sleepy

In addition to sounding an audible alarm, a message "FOCUS ON DRIVING" is displayed to alert the driver.

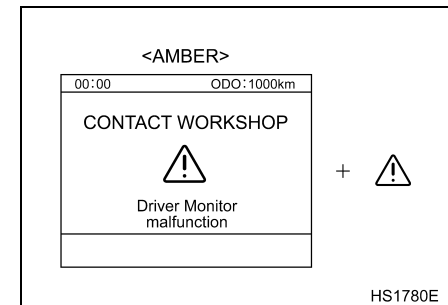


## Driver status monitor ON/OFF switching

- When the ignition switch is turned to the ON position, driver status monitor turns ON and will be ready to alert the driver with a warning message and an alarm buzzer.
- Driver status monitor can be switched OFF on the multi-display menu screen. When switched OFF, the warning message and alarm buzzer are canceled. For the switching method, refer to "Driver Monitor" (page 5-24) in "Meters, indication lamps and switches".

## Malfunction of driver status monitor

- If driver status monitor is not functioning properly, it turns off.
- If an abnormality occurs in driver status monitor, the message "Driver Monitor malfunction" is displayed in the multi-display, and driver status monitor will not operate. If the abnormality is resolved, they will automatically return to the normal state.

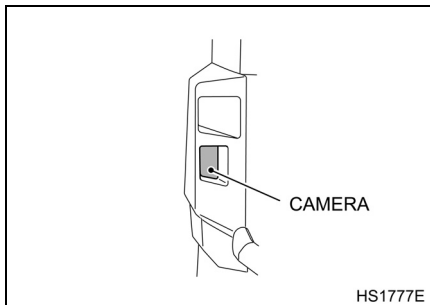


**CAUTION**

If the “Driver Monitor malfunction” message appears frequently, although this does not present a problem for normal driving, contact the nearest authorized UD Trucks dealer in the earliest opportunity.

## Handling of the camera

- Always keep of the camera clean.
- Do not apply hard impact to the camera.
- Do not remove the camera from the vehicle.



## Precautions when using driver status monitor

- The driver status monitor is a system to assist driving; its recognition performance is limited. Do not overly trust the system, take good care of your physical condition, and drive safely.
- Driver status monitor may not operate properly in the following situations.
  - When the driver leans forward or against the door or armrest resulting in a bad driving posture
  - When the driver raises their hand around the head or moves the posture during stretching, etc.
  - When the vehicle is shaking due to strong winds or running on rough roads
  - When the driver is not in the correct driving posture
- When the driver's eyes are looking down to operate switches or read instruments, etc.
- When the driver squints their eyes, such as when the light is bright
- When it is difficult to distinguish the eyes due to changes in facial expression or eye makeup, etc.
- When the driver is wearing glasses, sunglasses, a mask, an eye patch, a hat, a helmet, a towel, or any other object that covers their eyes or face
- When the driver's eyes or face are hidden by the driver's hand, etc.
- When there is an obstacle between the driver and the camera
- When the camera is dirty
- When sunlight or illuminations are reflected in the driver's glasses or sunglasses

- When the background is reflected in the driver's glasses or sunglasses
- When the driver's eyes are hidden or shaded by the glasses' frame
- When the driver's face is exposed to direct sunlight
- When the driver's face is in a dark shadow compared to strong light such as sunlight
- When the intensity of the light illuminating the driver changes rapidly
- When there are devices that emit infrared rays behind or around the driver
- When there are objects that reflect infrared rays strongly behind or around the driver
- When there is a picture of a person or the face of a passenger behind or around the driver
- When the temperature around the camera is very high

## UDSC and ASR

### ⚠ CAUTION

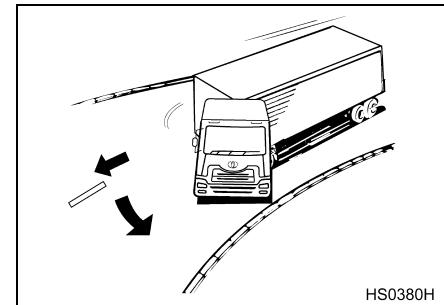
**Although the UDSC and ASR systems function to maintain the vehicle stability, it is not intended to enable driving beyond the limits. Refrain from reckless driving and always drive safely.**

### NOTE

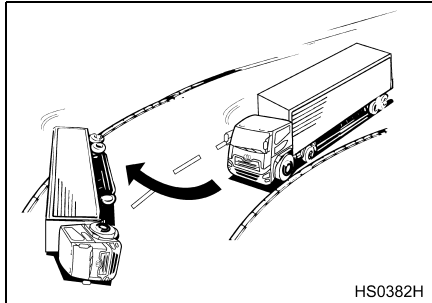
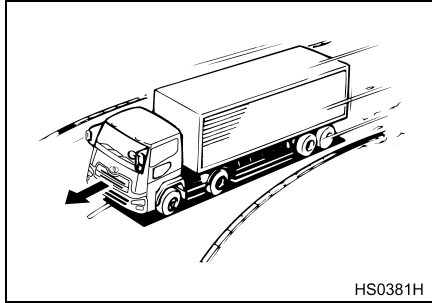
**If the tires other than those of the specified size is used, UDSC and ASR may not function. When using such tires, consult your nearest authorized UD Trucks dealer.**

## UDSC (UD stability control)

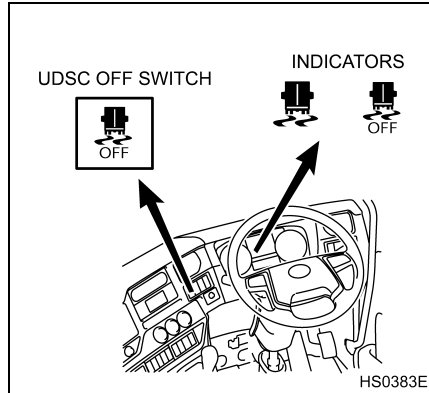
- When a risk of unstable attitude such as skid or excessive roll arises while making a turn or abrupt maneuver, UDSC warns the driver by means of the buzzer and the UDSC warning indicator and takes action to maintain stable vehicle operation.
- UDSC attempts to suppress skid that may result in jackknifing or drifting out and excessive roll that may result in overturning.







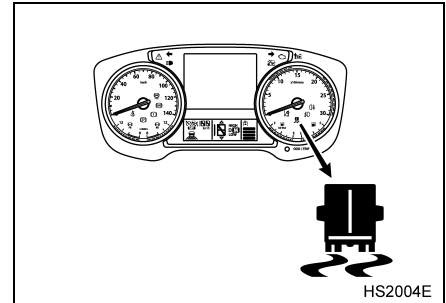
Functions of UDSC



- While running, if it is determined that there is a risk of vehicle losing stability from various sensor data, the system restricts the engine output and applies the wheel brakes as necessary in an attempt to maintain vehicle stability.
- While UDSC is activated, the UDSC warning indicator flashes and the alarm buzzer beeps to warn that there is a risk of losing stability.

UDSC warning indicator

The UDSC warning indicator flashes and the alarm buzzer beeps when UDSC is activated.

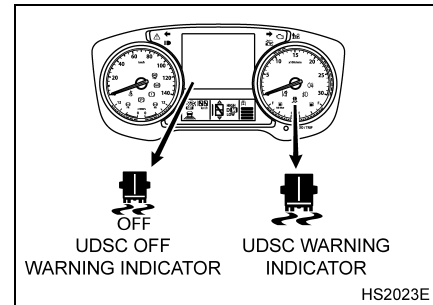
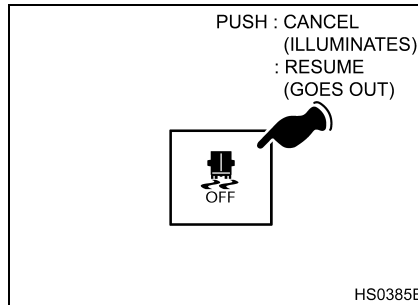


**! CAUTION**

**If the UDSC warning indicator keeps appearing when the ignition switch is turned on, UDSC is faulty. Contact the nearest authorized UDSC dealer for inspection.**

### UDSC OFF switch

- The UDSC OFF switch is used for temporarily canceling UDSC to prevent wheel skid occurred by brake application by UDSC while driving on a gravel, muddy, or deep snow-covered road.
- To cancel UDSC, press the UDSC OFF switch once. The UDSC OFF switch illuminates in amber and the UDSC OFF warning indicator appears.
- Pressing the switch again restores the UDSC operation. (The amber illumination of the switch and the warning indicator go off.)



UDSC OFF switch	UDSC indicator	UDSC OFF indicator	UDSC function
ON / Illuminates	OFF	ON	Inoperative
OFF / Goes out	OFF	OFF	Operative
OFF / Goes out	Flashing	OFF	Operating

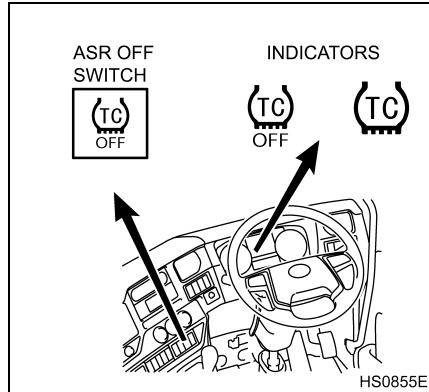
#### NOTE

When UDSC has been cancelled by the UDSC OFF switch, if the ignition switch is turned OFF and then ON, UDSC operation is restored.

## ASR (Traction control)

The ASR system is designed to minimize spinning of the drive wheels on a snow-covered, icy or muddy road and improve the starting performance, acceleration performance, straight stability and hill-climbing performance to increase the overall safety and reduce the burden on the driver.

## Functions of ASR



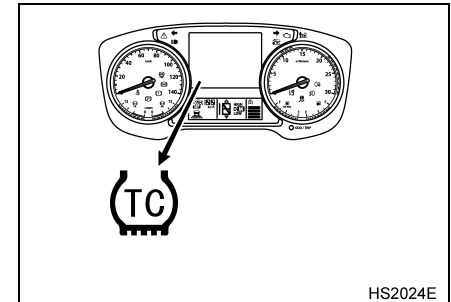
- By sensing the slip of a drive wheel, the system controls and applies the brake to the slipping wheel to stop slipping.
- The system controls the engine speed when both the left and right wheels continue spinning. It controls the engine torque by reducing the engine speed.
- While ASR is activated, the UDSC warning indicator flashes to warn that the road surface is slippery.

## ASR warning indicator

The ASR warning indicator flashes when ASR is activated.

**⚠ CAUTION**

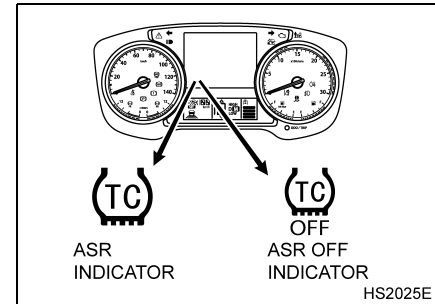
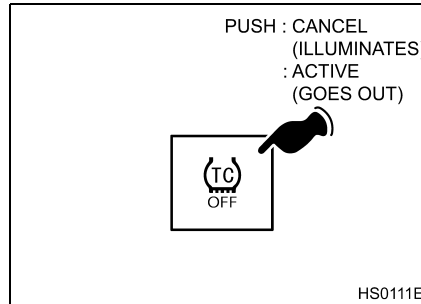
The ASR warning indicator appears if a fault occurs in ASR. This does not present a problem for normal driving, however, contact the nearest authorized UD Trucks dealer in the earliest opportunity for service.



## ASR OFF switch

- The ASR OFF switch is used for temporarily canceling ASR to allow moderate wheelspin and/or slightly higher engine speed while driving on a gravel, muddy, or deep snow-covered road.
- To cancel ASR, press the ASR OFF switch once. The ASR OFF switch illuminates in amber and the ASR OFF indicator appears.
- Pressing the switch again restores the ASR operation. (The amber illumination of the switch and the indicator goes out.)

NOTE
<ul style="list-style-type: none"> <li>• When ASR has been cancelled by the ASR OFF switch, if the ignition switch is turned OFF and then ON, ASR is resumed.</li> <li>• If the inter-wheel differential switch is turned ON when ASR is cancelled (ASR OFF switch in ON position), the synchronizing function of the differential lock would not operate.</li> </ul>



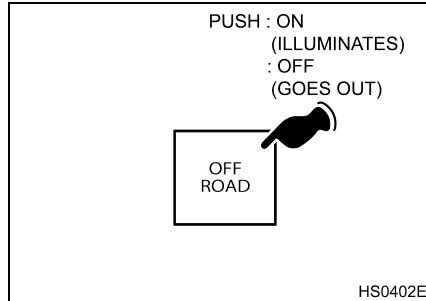
ASR OFF switch	ASR indicator	ASR OFF indicator	ASR function
ON / Illuminates	OFF	ON	Inoperative
OFF / Goes out	OFF	OFF	Operative
OFF / Goes out	Flashing	OFF	Operating

## Off-road mode

- The off-road mode allows larger wheelspin under ASR (traction control) operation for smoother rough-road driving.
- This mode increases the permissible slipping range of the drive wheels (it allows a little more slipping) on sandy, gravel, or snow-covered road. This means that the tires can “dig” their way forward better without reducing pulling power. Using this mode improves the startability and acceleration performance.
- When the off-road mode is on, the ECO OFF mode is selected and the ECO mode indicator goes out. For the ECO OFF mode, refer to “ECO MODE switch” (page 6-124) (GH11 engine only).
- To use the off-road mode, press the off-road mode switch.

## Off-road mode switch

- This switch turns on and off the off-road mode.
- When the off-road mode is activated, the switch illuminates in amber, and when it is deactivated, the amber illumination goes off.














## CAUTION

- **If the off-road mode is used on a paved road, the tire wear is accelerated. Use this mode depending on the road condition.**
- **The off-road mode does not function when ASR (traction control) is turned off.**

## When UDSC and/or ASR is inoperative

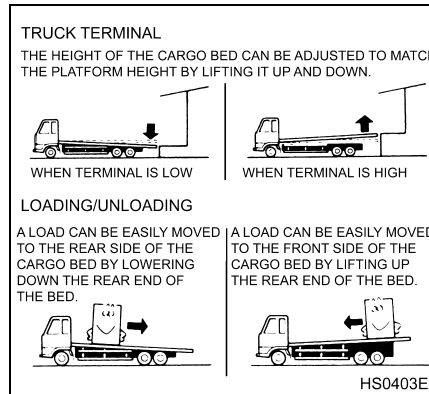
Relations between the indications (lamps and messages) and the operation of UDSC and/or ASR are as follows.

Condition	Lit lamp and displayed message		Remarks
Malfunction in UDSC	<ul style="list-style-type: none"> <li>UDSC warning indicator</li> <li>Master warning indicator</li> <li>UDSC warning message</li> </ul>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center; margin: 0;">&lt;AMBER&gt;</p> <p style="text-align: center; margin: 0;">00:00 ODO:1000km</p> <p style="text-align: center; margin: 0;">CONTACT WORKSHOP</p> <div style="text-align: center; margin: 5px 0;">             UDSC malfunction         </div> </div> <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;">  <span style="margin: 0 5px;">+</span>  </div> <p style="text-align: right; margin-top: 5px;">HS0839E</p>	<p>If there is a malfunction in UDSC, it becomes inoperative.</p>
UDSC deactivated by UDSC OFF switch	<ul style="list-style-type: none"> <li>UDSC OFF warning indicator</li> </ul>	<div style="text-align: center; margin: 0 auto;">         OFF     </div> <p style="text-align: right; margin-top: 5px;">HS146WP</p>	<p>UDSC is inoperative. In normal driving, be sure to set UDSC operative (UDSC OFF warning indicator does not appear).</p>
ASR deactivated by ASR OFF switch	<ul style="list-style-type: none"> <li>ASR OFF indicator</li> </ul>	<div style="text-align: center; margin: 0 auto;">         OFF     </div> <p style="text-align: right; margin-top: 5px;">HS142WP</p>	<p>ASR is inoperative. In normal driving, be sure to set ASR operative (ASR OFF warning indicator does not appear).</p>

Condition	Lit lamp and displayed message		Remarks
Brake system (ABS and EBS) is faulty	<ul style="list-style-type: none"> <li>• ABS warning indicator</li> <li>• Master warning indicator</li> <li>• “Truck ABS malfunction” message</li> </ul>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center;">&lt;AMBER&gt;</p> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>00:00</span> <span>ODO: 1000km</span> </div> <p style="text-align: center;">CONTACT WORKSHOP</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Truck ABS malfunction</p> </div> <div style="display: flex; align-items: center; margin-left: 100px;">  <span style="margin: 0 5px;">+</span>  </div> <p style="text-align: right; margin-right: 10px;">HS0842E</p>	If the brake system (ABS and EBS) is faulty, the control of UDSC may not function properly. Therefore, UDSC becomes inoperative.
		<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">&lt;AMBER&gt;</p> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>00:00</span> <span>ODO: 1000km</span> </div> <p style="text-align: center;">CONTACT WORKSHOP</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Truck ABS malfunction Check wheel bearing</p> </div> <div style="display: flex; align-items: center; margin-left: 100px;">  <span style="margin: 0 5px;">+</span>  </div> <p style="text-align: right; margin-right: 10px;">HS1168E</p>	

## Height control<sup>♦</sup> (Air-suspension models)

Height control allows the height (above the ground) of the cargo bed or coupler to be adjusted to make it easier to load and unload freight at freight terminals, etc. In addition, a “standby mode” is provided, which enables a desired vehicle height to be maintained for a certain period even when the ignition switch is in the ACC or OFF position regardless of the load. On tractor models, the height control allows the height of the coupler to be adjusted to make the connection/disconnection of trailer and cargo handling easier.



### CAUTION

**When the air suspension warning is displayed, it might not be possible to obtain a stable vehicle posture, so be very careful while driving and have the vehicle inspected and serviced at the nearest authorized UD Trucks dealer as soon as possible.**

## Standby mode

- Even when the ignition switch is in the ACC or OFF position, the vehicle height can be maintained by activating the standby mode.
- The standby mode will be held for about 90 minutes when the air pressure in the air tank is sufficient.
- The cargo bed height is maintained as far as the air pressure in the air tanks is sufficient.
- The standby mode cannot be activated when the air pressure is lower than 800 kPa.
- For details of the standby mode, refer to “Standby mode start method” (page 6-118).

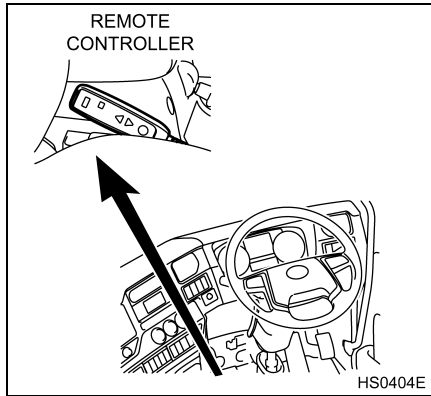


### CAUTION

**Riding in and out of the cargo bed with a forklift, etc. consumes much pressurized air, so the air pressure may become insufficient faster.**

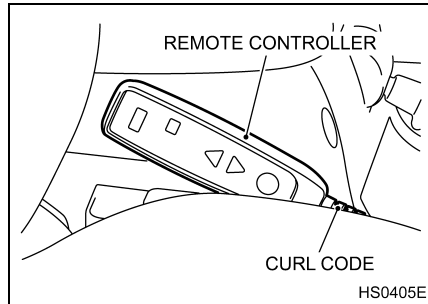


## Height control components



### Remote controller (cargo bed or coupler vertical adjustment switch)

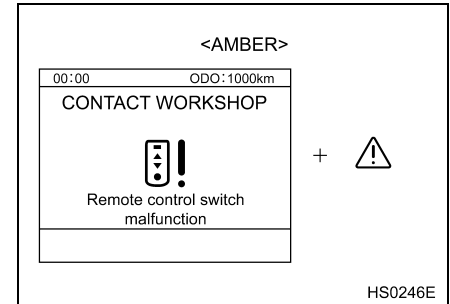
The controller is to vertically adjust the cargo bed or coupler height and is provided inside the cab.



#### NOTE

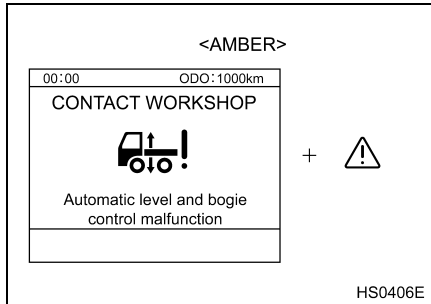
- When stowing this away, face the cord toward the front of the vehicle and store it in the holder.
- Store the cord in the depressed area in the console at the bottom of the holder.

If a malfunction occurs in the remote controller, a warning is displayed on the multi-display. When this warning is displayed, contact the nearest authorized UD Trucks dealer.



## Air suspension warning

The air suspension warning will be displayed to warn the driver when there is a problem with the air suspension system.

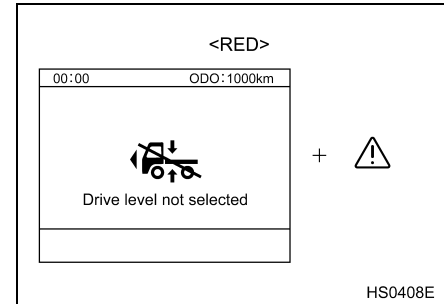


### NOTE

If the “Air suspension warning” message or the indicator on the remote controller remains on and does not disappear, refer to “When the air suspension warning appears” (page 15-19) in “Emergency procedures”.

## Precautions for using height control

- Perform height control on a level ground.
- Fill the air tanks with air before performing height control.
- The truck bed automatically returns to the neutral position when the vehicle speed exceeds 15 km/h. (CW, CD and CG series)
- With a semi-trailer specification vehicle, when the vehicle speed exceeds 20 km/h when the vehicle height is other than neutral, a warning appears and a buzzer sounds to warn that the vehicle height is not in the neutral position. To cancel the warning and buzzer, set the height control to the neutral position using the remote controller or lower the vehicle speed below 20 km/h. (GK series)



- Make sure that the indicator lamp on the remote controller is not illuminating before beginning a normal drive.

### CAUTION

- **Before adjusting the coupler height, check around the vehicle to make sure that no people or obstacles are in the way to ensure everything is safe.**
- **The vehicle height will not be maintained unless any button other than the stop button on the remote control switch is pressed.**

- Press any button other than the stop button on the remote control switch when carrying out cargo handling or connection/disconnection of the trailer.
- Do not carry out cargo handling or connection/disconnection of the trailer when the vehicle height cannot be maintained. Air will not be supplied and exhausted, applying excessive force to the suspension system and causing a failure.
- Backing toward curbs or wheel stops that are 100 mm or higher could cause interference with the rear end of the rear suspension, so drive with the cargo bed or coupler height in the neutral (normal driving) position.
- Chock the tires when handling freight. The vehicle might move if this is not done.

- It might not be possible at times to operate height control when the parking brake is engaged. In such condition, chock the tires and release the parking brake before operating the height control.

### Instructions for filling the air tanks

1. Start the engine.
2. Run the engine at high idling to fill the air tanks until the air pressure gauges reach the specified air pressure.

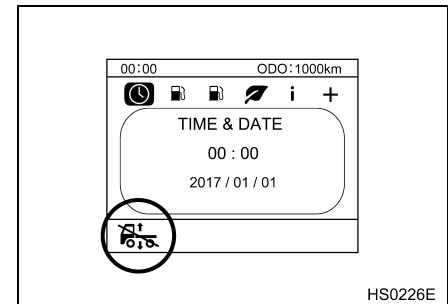
#### NOTE

Increasing the engine speed will shorten the filling time.

## Height control operation instructions

### Height control operation

- When the ignition switch is set to ON position or when the stop button on the remote controller is pressed, the indicator shown below appears on the multi-display. In this state, the height control is inoperative.
- Pressing any button on the remote controller other than the stop button or moving the parking brake lever to the drive position makes the height control operative and the indicator disappears.

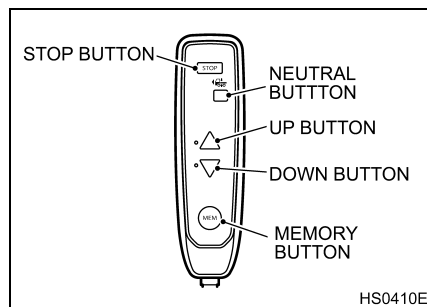


1. Fill the air tanks with air. The height control cannot be performed if the air pressure is below 800 kPa. (Refer to the previous item for information regarding the air filling method.)
2. Shift the gearshift or gear selector lever to neutral.
3. Pull up the parking brake lever to the park position.
4. The height control system turns on by pressing any button on the remote controller.
5. The height control can be performed using the up and down buttons.

**CAUTION**

- **The vehicle height will not be maintained unless any button other than the stop button on the remote control switch is pressed when carrying out cargo handling or connection/disconnection of the trailer.**
- **The vehicle height will not be maintained by simply turning the ignition switch to the ON position. Check the indication on the multi-display.**

Remote controller

**Up button**

The cargo bed or coupler rises while the Up button is pushed, until the upper limit is reached. You can stop at the desired height at any time by releasing the button. If the memory button is pressed while holding the Up button, the cargo bed or coupler continues rising (Hold mode). To stop, press the stop button.

**Down button**

The cargo bed or coupler lowers while the Down button is pushed, until the lower limit is reached. You can stop at the desired height at any time by releasing the button. If the memory button is pressed while holding the Down button, the cargo bed or coupler continues lowering (Hold mode). To stop, press the stop button.

### Neutral button

When the cargo bed or coupler is at a position other than the neutral height, push the neutral button once to automatically return the cargo bed or coupler to the neutral height.

### Stop button

To stop during automatic return, push the stop button. The cargo bed or coupler will stop at that height.

### Memory button

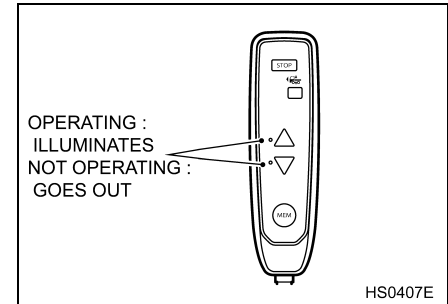
- This saves one cargo bed or coupler height adjustment value. If a frequently used height is set, the cargo bed or coupler can be adjusted to that height by just pushing the memory button for more than 2 seconds.
- Adjust to a desired height using the Up and Down buttons. In this state, push the memory button for 5 seconds to store the height in memory.
- To use the memorized height, push the memory button for 2 seconds.

### NOTE

- **Do not leave the remote controller on the dashboard or another place where it could be exposed to direct sunlight and become very hot. Doing so may deform it.**
- **The neutral button and memory button do not need to be held down during height adjustment.**

### Cancelling height control

- Make sure that the ignition switch is in the ACC or ON position, the gear shift lever or gear selector is in neutral and the parking brake lever is in the park position.
- Push the neutral button of the remote controller to return the cargo bed/coupler height to the neutral position. When the cargo bed/coupler returns to the neutral position, confirm that the indicator on the remote controller has turned off.



- To turn off the height control system, turn the ignition switch from ON to OFF position. If the height control is performed with the ignition switch in the OFF position, the system can be turned off by pressing and holding the stop button (2 seconds or longer) or by the automatic timer (90 minutes).

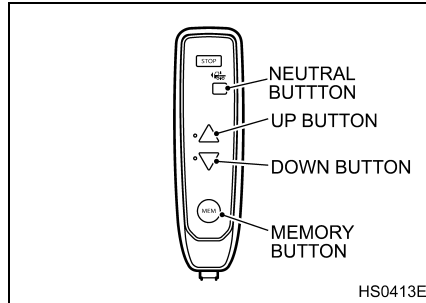
**NOTE**

The cargo bed or coupler might not return to the neutral position if the air in the air tanks is insufficient. In this case, start the engine to fill the tanks with air before pushing the neutral button again.

**Standby mode start method**

- Before activating the standby mode, charge air in the air tanks sufficiently. If the air pressure is less than 800 kPa, the standby mode cannot be activated.
- With the engine stopped and the ignition switch in ACC or OFF position, pressing a button on the remote controller (other than STOP button) activates the standby mode.
- The standby mode is active for 90 minutes or as long as the air pressure in the air tanks is sufficient.

- The standby mode is cancelled when the STOP button is pressed for 2 seconds or longer.

**CAUTION**

- The standby mode retains the cargo bed height for approx. 90 minutes. Be careful that the vehicle height will change during cargo handling or connection/disconnection of the trailer after about 90 minutes.
- If the ignition switch is operated after adjusting the vehicle height by the height control, the height maintaining function (including the standby mode) turns off, and the vehicle height will not be maintained during cargo handling or connection/disconnection of the trailer.
- The cargo bed height cannot be maintained even in the standby mode if the air pressure in the air tanks becomes insufficient.

- The cargo bed or coupler height during standby mode will be maintained when the engine is restarted. Be sure to return the cargo bed or coupler height to the neutral height before starting off.
- The standby mode cannot be used in the ferry mode.
- During standby mode, the parking brake warning indicator lights up, but this is not a malfunction.

## Ferry mode

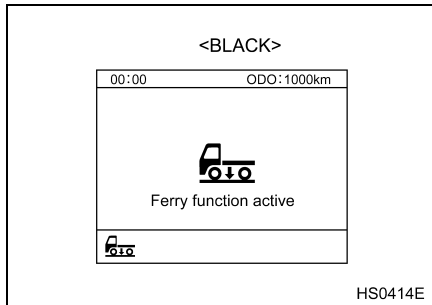
### Precautions for use

- The ferry mode is to lower the vehicle height when transporting the vehicle onboard a ferry by releasing all the air in the air suspensions. This reduces the possibility of damaging the freight while transporting in a ferry.
- Tie down the truck to the ferry after fully releasing the air of the air suspension.
- The ferry mode can be activated by the remote controller.

### Operation procedure

1. Apply the parking brake.
2. While holding the Down button, press the Memory button. (Hold function is activated.)
3. Release both buttons.
4. Press the memory button for 5 seconds.
5. When the air in the suspension is completely released and no discharging sound is heard (vehicle height has become the lowest), set the ignition key in the "OFF" position.
6. To cancel the ferry mode, with the ignition switch in ON position, press the neutral button on the remote controller or release the parking brake to return the height to the normal height.

When the vehicle height is set to the ferry height, "Ferry function active" message is displayed on the multi-display.



#### NOTE

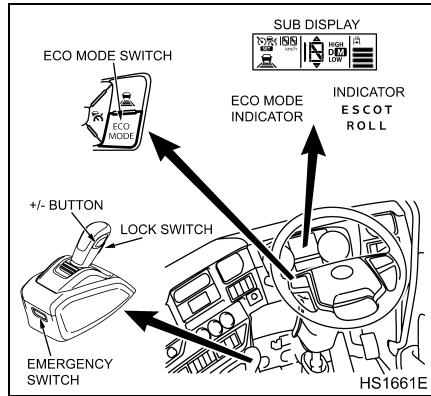
- **The standby mode cannot be activated in the ferry mode.**
- **Although the vehicle height may not be lowered any further by operating the ferry mode with the truck bed/coupler height set to the lowest by the height control, the ferry mode will be engaged when the "Ferry function active" message is displayed on the multi-display.**

## ESCOT VI System <sup>◆</sup>

- The ESCOT-VI system assists the driver in shifting the transmission in an easier and safer manner. A vehicle equipped with ESCOT-VI has no clutch pedal. It can be started by only the operation of the accelerator pedal, and it automatically shifts gears in accordance with the vehicle speed and the traffic conditions when the shift lever is in the "D" position. When the shift lever is in the "M" position, the transmission can be shifted by simply operating the +/- button at the side of the shift lever at the preferred timing. The system prevents improper shifting that causes engine overrun, which ensures the safe shift operation.
- On ESCOT-VI, the system enters the "ECO" mode when the ignition switch is turned to the "ON" position. This enables the use of various functions to support the fuel-saving driving such as the ESCOT roll, soft cruise, and acceleration limiter. By pressing the ECO MODE switch, the system switches between ECO mode and ECO OFF mode, and in ECO OFF mode, it is possible to drive with an emphasis on power performance suitable such as when driving uphill.

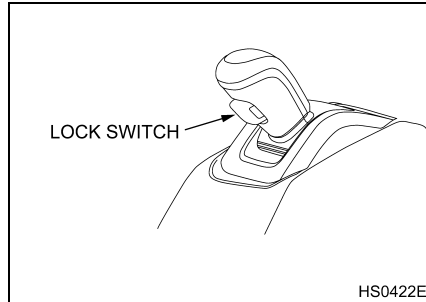


## Switch and system display



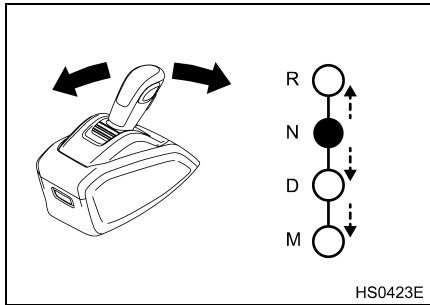
## Shift lever

The ESCOT-VI is equipped with the shift lock mechanism to prevent unintentional setting of the start gear by touching the shift lever. When moving the shift lever from the “N” position, depress the the brake pedal and shift the lever while pushing the lock button on the lever.



### CAUTION

- When starting the engine, set the shift lever in the “N” position, apply the parking brake, and depress the brake pedal. The engine cannot be started with the shift lever in other than the “N” position.
- To prevent an unintentional start, hold the brake pedal depressed when shifting from “N” to “D” or “M” position.
- Vehicles equipped with ESCOT-VI cannot be parked with the gear engaged. Even when the vehicle is parked with the gear engaged, the system automatically shifts gear to the neutral position when the ignition switch is turned off. Apply the parking brake and use wheel chocks if necessary.



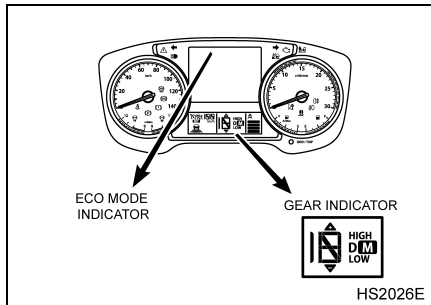
 **CAUTION**

If no indication is shown in the gear position indicator, a gear may be engaged even the shift lever is in the “N” position. When parking the vehicle, confirm that “N” is shown in the gear position indicator.

Shift lever and +/- switch operation		Function
R		Setting the reverse gear
	+/-	Selecting the High/Low range of the reverse gear
N		Shifting to the neutral
	+/-	Selecting the High/Low range in the neutral position
D	Stopping	Setting the forward gears (automatic shift mode)
	+/- (Driving)	Shift up and down
M	Stopping	Setting the forward gears (manual shift mode)
	+/- (Driving)	Shift up and down

## ESCOT indicator

- The information for ESCOT system is mainly indicated in the sub display.
- The gear position is indicated by the figures 1 through 12 in the gear position indicator.
- When the ignition switch is turned to the "ON" position, the ECO mode indicator appears to indicate the selected mode on the display.

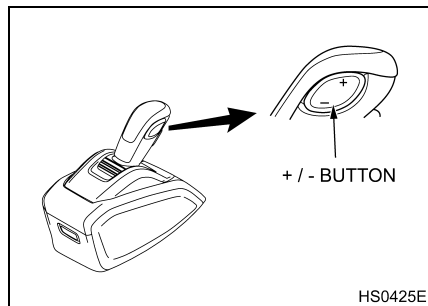


### ⚠ CAUTION

If no indication is shown in the gear position indicator, a gear may be engaged even the shift lever is in the "N" position. When parking the vehicle, confirm that "N" is shown in the gear position indicator.

### +/- button

The +/- button is used to shift gears and to select HIGH or LOW ranges in the "R" or "N" position.



### ⚠ CAUTION

Check the starting gear position before moving off. If the selected gear is improper, select the proper gear using the +/- button.

- In the following situations, perform the manual gearshifting with the shift lever in "M" position and using the +/- button to prevent the wheelspin, engine stall or unnecessary gear change.
  - Steep up- or downgrade
  - Slippery road surface (snow-covered or icy road)
  - Heavy traffic jam

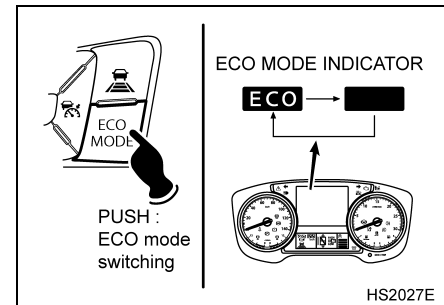
**NOTE**

- The +/- button can be operated either the vehicle is stopping or moving.
- The manual gearshifting by the +/- button can be performed even the shift lever is in the "D" position. When decelerating or driving on a downgrade, downshift the transmission to make best use of the engine braking.
- Perform gearshifting by the +/- button when the shift lever is in the "M" position.

**ECO MODE switch**

- The ECO MODE switch switches the mode each time it is pressed. The indicator of the selected mode illuminates on the multi-display.

- The ECO mode performs upshift at rather low engine speeds for fuel-saving drive. On the other hand, the ECO OFF mode (ECO mode indicator goes out) performs upshift at rather high engine speeds to obtain more power when running upgrade, etc.
- In ECO mode, the acceleration limiter is active. When the accelerator pedal is depressed, rapid acceleration exceeding a predetermined level is suppressed, resulting in a moderate acceleration with good fuel economy. In cases such as when accelerating to overtake another vehicle, you can press the ECO MODE switch to change to ECO OFF mode (ECO mode indicator goes out) to obtain the vehicle's original acceleration.
- If the auto cruise system is activated in the ECO mode, the system operates in the "soft cruise" mode and performs the moderate acceleration for fuel economy.



ECO MODE switch	Gearshift timing	Indicator lamp	Auto cruise condition
1st position (ECO mode)	Low engine speed shifting mode	ECO indicator illuminates	Soft cruise
2nd position (ECO OFF mode)	High engine speed shifting mode	Indicator goes out	Normal cruise

**NOTE**

- Switch the ECO mode according to the driving conditions. It is recommended to drive in ECO mode during normal driving.
- During the soft cruise mode, the vehicle speed may lower temporarily on an upgrade because this mode emphasizes on the fuel economy. This is normal.

**When stuck in a snow or mud**

- Using the ECO OFF mode facilitates to get out of snow or mud rather than using the ECO mode.
- Move the vehicle back and forth by “depressing” and “releasing” the accelerator pedal to get out of snow or mud.

**NOTE**

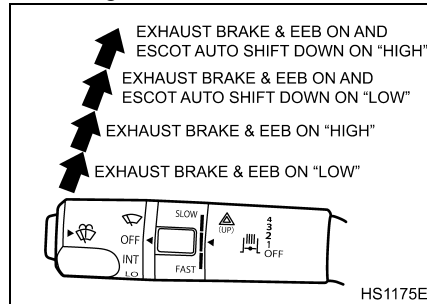
**When escaping out of snow or mud, sufficient attention should be paid to the surrounding traffics.**

### ESCOT auto shift down switch (and exhaust brake & EEB switch)

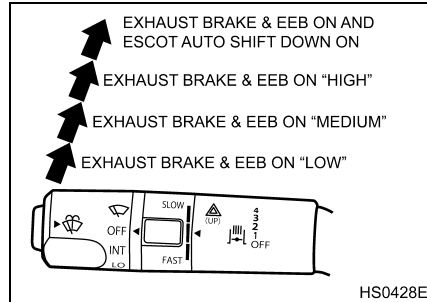
- Use this switch to manually activate the ESCOT auto shift down function to make effective use of the engine braking.
- When the shift lever is in the “D” position and the switch is set to the following position, the transmission automatically shifts down in conjunction with the return of the accelerator pedal to the gear speed that maximizes the effect of the auxiliary brake.

GH8 engine	3rd and 4th positions
GH11 engine	4th position

#### GH8 Engine



#### GH11 Engine



#### WARNING

Pay special attention not to lock the rear wheels to prevent the vehicle from skidding when the exhaust brake & EEB or ESCOT auto shift down function is activated on a slippery road (snow-covered, icy, or wet road, etc.).

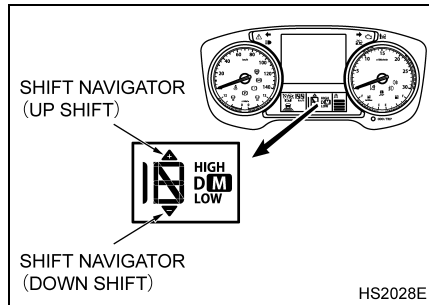
#### NOTE

- The shift-down operation would not take place when the shift lever is in “M” position.
- If harder engine braking is required on a downgrade or the like, shift down using the +/- button.
- If the accelerator pedal is depressed after downshifting, the transmission will shift up to the former gear. This may not take place on some driving conditions.

- When the switch is set to a position other than “OFF”, the main brake blending function will not operate even if the brake pedal is depressed while the brake blending OFF switch is in the “AUTO” position.

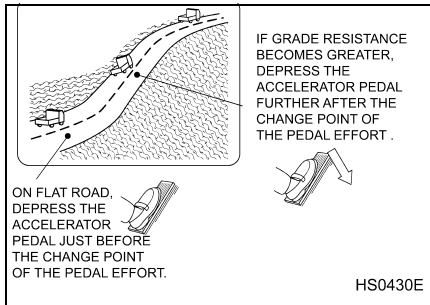
## Shift navigation function

- When driving at an uneconomical engine speed, the navigator (triangles) in the shift position indicator illuminates to encourage the driver to shift the gear up or down.
- The shift navigation function will be activated when the shift lever is in “M” position.



## Kick down select function

- This function allows the driver to perform downshifting by the operation of the accelerator pedal in an automatic gearshift mode. While the accelerator pedal is depressed and held over the “depressing force change point”, the system selects a lower gear position which emphasizes on the driving performance.
- When downshifting is required to drive on an upgrade or to pass a vehicle, depress the accelerator pedal beyond the depressing force change point, and the downshifting will take place immediately.
- If downshifting is not necessary, operate the accelerator pedal so as not to exceed the depressing force change point.

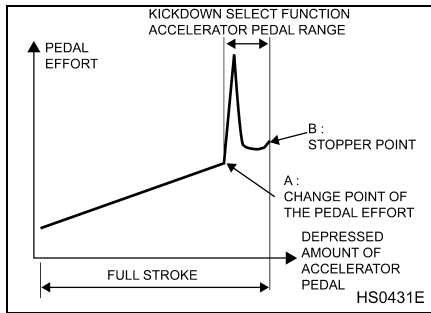


## NOTE

- Even if the accelerator pedal is depressed beyond the depressing force change point, downshifting may not occur depending on the gear position and the engine speed at that time.
  - Gearshift can be performed using the +/- button even when the vehicle is driven in the automatic gearshift mode. Use the +/- button as necessary.
  - To drive on a steep upgrade, depress the accelerator pedal to shift down before approaching the grade. This facilitates maintaining the vehicle speed.
- If the accelerator pedal is returned to the point before the depressing force change point immediately after shifting down by depressing the accelerator pedal over the depressing force change point, upshifting may take place. Keep the accelerator pedal depressed beyond the depressing force change point in order to maintain the downshifted gear position.



- When the accelerator pedal is gently depressed, the depressing force change point is identified. When the pedal is then depressed further, there will be a certain amount of pedal travel. The kick down select function allows the driver to control acceleration within this pedal travel.



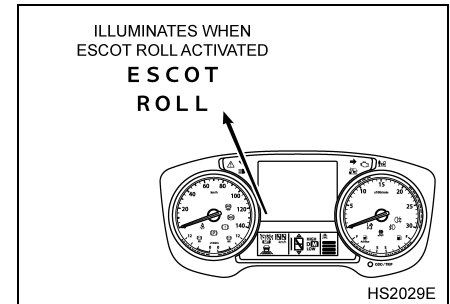
**NOTE**

The pedal travel is approximately 10% of the total stroke of the accelerator pedal. Check the pedal travel when the engine is stopped.

**ESCOT ROLL function**

- The ESCOT ROLL function supports the economical drive. When several specified conditions are met, the system places the transmission gear in neutral or disengages the clutch to cut off the engine braking effect. This prevents the vehicle speed from decreasing while the vehicle is coasting and helps the vehicle to accelerate again with lower fuel consumption.
- The ESCOT ROLL function will be activated when the following conditions are met:
  - In the ECO mode
  - The exhaust brake switch is in the OFF position.
  - The shift lever is in the “D” position.
  - The vehicle speed is 50 km/h or higher.
  - The accelerator pedal is not depressed.
  - The brake pedal is not depressed.

- The vehicle is not driving on a steep upgrade or downgrade.
- When the ESCOT ROLL function activates, the gear position indicator in the sub display shows “N” and the “ESCOT ROLL” indicator appears in the multi-display.



**CAUTION**

Do not drive the vehicle by manually shifting the gear in neutral. Driving in such a condition is dangerous. Doing so may also result in a transmission malfunction.

**NOTE**

Depending on the driving condition, fuel economy may not improve.

## Driveline protection function

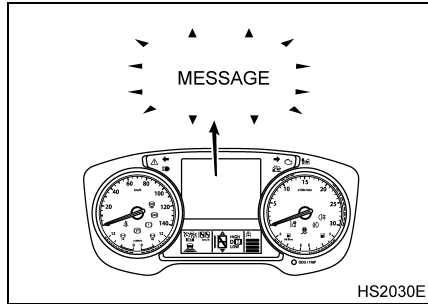
The driveline protection function alerts the driver by applying the brake intermittently if the vehicle moves to the opposite direction against the direction of the selected gear position due to a slope, etc. (For example, the vehicle backs up when a forwarding gear is selected, or the vehicle moves forward when the reverse gear is selected.)



**CAUTION**

- The driveline protection function only alerts the driver and does not stop the vehicle. When the driveline protection function activates, depress the brake pedal to stop the vehicle.
- While the driveline protection function operates, the vehicle may shake hard. This does not indicate a malfunction.

## Buzzer and operation messages















A buzzer and an operation message shown in the multi-display inform the driver of the driving status and the operating methods.





Message	Status	Actions	Message	Status	Actions
—	Reverse gear is selected. (Back-up buzzer)	Drive carefully while observing around the vehicle.	 Gear lever malfunction	Shift lever is faulty	Have your vehicle inspected at an authorized UD Trucks dealer.
<b>N</b> Door open	A door is opened when the start gear has been set automatically. (Door ajar warning)	To get out of the vehicle, set the shift lever in “N” position and apply the parking brake.	 Depress brake pedal	Start gear set operation is performed without depressing the brake pedal.	Depress the brake pedal to set the start gear.

## ESCOT System warning

- If a malfunction occurs in the ESCOT system, the master warning indicator illuminates and a warning message is displayed in the multi-display. This message contains a comment indicating necessary actions to be taken.
- If two or more warning messages are generated, the priority is given to the message with higher risk.

Color	Warning indications	Warning message	Status	Action
Amber	 + 	CONTACT WORKSHOP↔ Transmission system malfunction	Fault in the transmission system	Drive in emergency drive mode and inspect the vehicle at the nearest authorized UD Trucks dealer.
Red	 + 	STOP VEHICLE↔ Gearbox failure	Vehicle should not be operated.	Stop the vehicle. Contact the authorized UD Trucks dealer for repair.
Amber	 + 	DRIVE CAUTIOUSLY↔ Gearbox oil temperature high	Transmission fluid temperature is high.	Drive carefully as the transmission fluid temperature is high.
Red	 + 	STOP VEHICLE↔ Gearbox oil temperature high	Transmission fluid temperature is high, which may result in faulty transmission.	Stop the vehicle. Lower the transmission fluid temperature.
Amber	 + 	CONTACT WORKSHOP↔ Transmission functionality reduced	Transmission function is reduced.	Inspect the vehicle at the authorized UD Trucks dealer.
Amber	 + 	ATTENTION↔ Gearbox air pressure low	Air pressure for transmission is low	Stop at a safe place. Run the engine at idle to increase the air pressure.
Red	 + 	STOP VEHICLE↔ Clutch system malfunction	Vehicle should not be operated.	Stop the vehicle. Contact the authorized UD Trucks dealer for repair.

Color	Warning indications	Warning message	Status	Action
Amber		CONTACT WORKSHOP↔ Clutch malfunction	Fault in the clutch system	Inspect the vehicle at the authorized UD Trucks dealer.
Black		PTO activated	Transmission PTO is in operation	--

 **CAUTION**

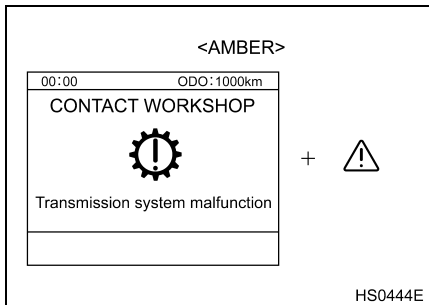
**If the “Gearbox air pressure low” warning message is displayed and it does not disappear after the air pressure is increased to the standard pressure, repair is necessary. Contact the nearest authorized UD Trucks dealer for inspection and service.**

**NOTE**

**If a warning other than ESCOT warning exists, they are displayed alternatively.**

## Emergency drive function

- Use this function if the ESCOT system malfunctions.
- If a fault occurs in the ESCOT system, “Transmission system malfunction” message is displayed in the multi-display.
- While driving with the emergency drive mode, the automatic gearshift function does not work. In addition, the manual gearshift function cannot be operated. Only the starting gear position can be selected.

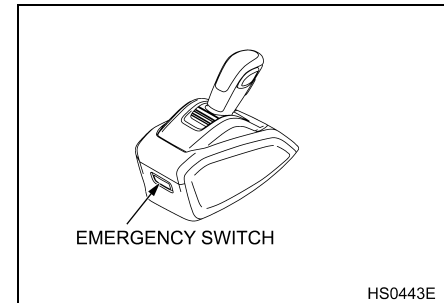


### CAUTION

- **Do not drive for a long distance in the emergency drive mode. If the “Transmission system malfunction” message has been displayed, immediately have your vehicle inspected by the nearest authorized UD Trucks dealer.**
- **The hill start assist function would not operate in the emergency drive mode. Use the parking brake appropriately when starting on an uphill.**

## Emergency switch

- This switch is used to change to the emergency drive mode from the normal drive mode.
- This switch is located at the back of the shift lever cover.

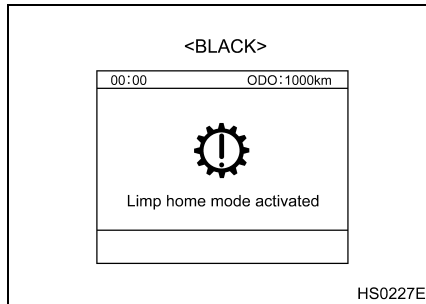


## Emergency drive mode

- To enter the emergency drive mode, perform the following procedure with the vehicle in standstill.
1. Depress and hold the brake pedal. (Keep the pedal depressed until this procedure is completed.)
  2. While pressing the emergency switch, move the shift lever from “N” to “D” position. (This operation must be performed within 5 seconds after pressing the emergency switch.)
  3. Confirm that the “Limp home mode activated” message is displayed on the multi-display.
  4. Move the shift lever to “M” or “R” position.
  5. Set the starting gear by the +/- switch.

6. Check the indication of the starting gear on the gear position indicator, release the brake pedal, and depress the accelerator pedal gradually to start off slowly.
- When the system enters the emergency drive mode, the “Limp home mode activated” message is displayed on the multi-display.

- Setting the shift lever to “D” or “N” position during emergency driving, the gear will be in neutral.
- The emergency drive mode continues until the ignition switch is turned to the “OFF” position.



### Start gear select pattern

- In the emergency drive mode, only the starting gear can be selected using the shift lever and +/- button.
- After entering into the emergency drive mode, the starting gear can be selected with the vehicle in standstill.
- Confirm the set starting gear on the gear position indicator, release the brake pedal and depress the accelerator pedal gradually to start off.

Shift lever operation	+/- switch operation	Gear position
"D" → "M"		1st
	+ switch	1st → 3rd, or 3rd → 5th
	- switch	3rd → 1st, or 5th → 3rd
"D" → "R"		Reverse (low)



### CAUTION

- **Shift operation by the +/- switch cannot be performed during the emergency driving. The +/- switch can only be used to select the starting gear.**
- **The actual gear and the indication on the gear position indicator may differ or the display of the gear position indicator may disappear depending on the severity of malfunction. In such conditions, drive carefully.**

### NOTE

- **The selectable gears in the emergency drive mode are: "1", "3", "5" and "R (low)".**
- **In the emergency drive mode, high/low changeover of the reverse gear by the +/- switch cannot be performed. Only "R (low)" is selectable for reverse.**



## Nenpi Coach♦

- The Nenpi Coach system evaluates the driving of a driver from the point of economical driving to support the economical driving of the driver.
- The Nenpi Coach information is displayed on the multi-display. The cursor buttons, OK button, return button and the home button on the steering wheel are used to control it.
- Two types of evaluations are provided. One is a score out of 100 points. Higher score means better fuel economy and more environmental-friendliness. The other is advices for your driving obtained from the result of the evaluation.

- The following four categories are evaluated.
  - Engine & gear
  - Speed
  - Anticipation
  - Standstill
- Each category has an icon. If the icon is in green, you are evaluated as driving in fuel-saving and environmentally-friendly manner.

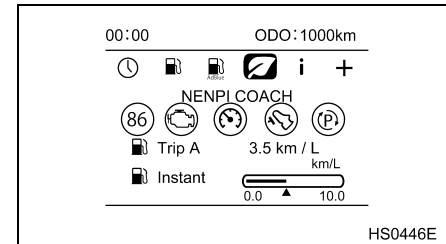
**NOTE**

**That there might be functional restrictions on some functions depending on markets. For details, contact the nearest authorized UD Trucks dealer.**

## Nenpi Coach display

Two types of Nenpi Coach screen can be registered in the Home screen: Overview and Advice. These screens can be selected using the right and left cursor buttons on the steering wheel.

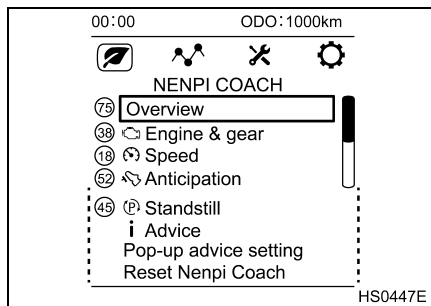
For the “instantaneous fuel consumption” displayed on the Overview screen, refer to “Economical driving” (page 10-46) in “Correct driving operation”.



## Menu screen

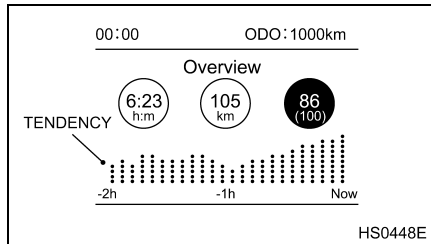
- The “Menu” screen is displayed by pressing the OK button on the Home screen. From the “Menu” screen, “Monitoring”, “Maintenance” and “Settings” screen can be selected using the right and left cursor buttons. For details of these screens, refer to “Changing the screen of the multi-display” (page 5-11) in “Meters, indication lamps and switches”.
- On the menu screen, scores of the four categories are displayed as well as the score of the overall evaluation. Higher score indicates better fuel-saving and environmental-friendly driving.
- When the color of the icon of a category is green, the category is in good fuel-saving and environmental-friendly condition; if the icon is red, it is in bad condition, and if the icon is amber, it is in moderate condition.

- The advice and score reset items appear when scrolling down the menu.



## Overview

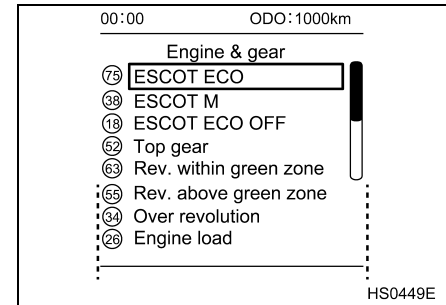
- By selecting the “Overview” from the menu screen, the overview of the driving evaluation is displayed.
- On the overview screen, hours driven, distance driven and overall score (from the left) are shown. These are the values for the duration after the last resetting of the Nenpi Coach information. Refer to “Reset Nenpi Coach” (page 6-141) for how to reset the Nenpi Coach information.
- At the lower part of the screen, the tendency of the driving (the scores of the overview) for the last 2 hours are shown as a graph.
- If the tendency bar graph is not displayed, turn the ignition switch off and on again.



### Engine and gear

- By selecting the “Engine & gear” from the menu screen, detailed information related to the engine and transmission during driving is displayed.
- The following evaluations are included.
  - The proportion of driving hours in ECO mode (D range ECO mode), M range, and ECO-OFF mode (D range ECO OFF mode) is displayed by the color of icon and score. For fuel-economy driving, use the ECO mode when allowed to do so.

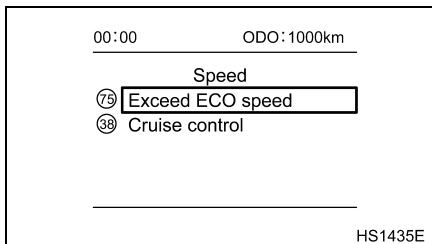
- The proportion of driving in top gear is displayed by the color of icon and score.
- The proportion of the fuel consumption while driving in green zone, and the duration in the red zone (of tachometer) is displayed by the color of icon and score. For fuel-economy driving, drive in the green zone as much as possible. When the tachometer is in red zone, the engine is overrunning. Be careful not to drive in red zone.
- The proportion of distance driven with high engine torque is displayed by the color of icon and score. If this ratio is large, it may be because you are using high torque needlessly, vehicle is driven in heavily-loaded condition, or driven in serious driving condition.



### Speed

- By selecting the “Speed” from the menu screen, detailed information related to the vehicle speed is displayed.
- The following evaluations are included.
  - The proportion of driving over the economical speed is displayed by the color of icon and score. For the “economical speed”, refer to “Economical driving” (page 10-46) in “Correct driving operation”.

- The proportion of using cruise control is displayed by the color of icon and score. For economical driving, use the cruise control if the traffic and road conditions allow. (Models with auto cruise)

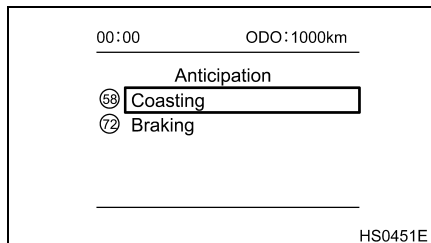


## Anticipation

- By selecting the “Anticipation” from the menu screen, detailed information related to the anticipated driving is displayed.
- The following evaluations are included.
  - The proportion of coasting is displayed by the color of icon and score. For economical

driving, use the coasting as much as possible.

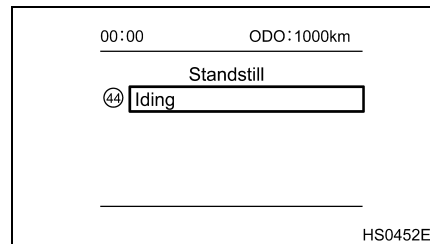
- At each vehicle stop, the number of brake pedal depression is estimated and the result is displayed by the color of icon and score. Control the vehicle speed so that you don't need to apply brake unnecessarily.



## Standstill

- By selecting the “Standstill” from the menu screen, detailed information while the vehicle is in standstill is displayed.
- This menu evaluates the engine idling. The proportion of engine idling is displayed by the color of icon and score. For economical

driving, reduce the idling time as low as possible.

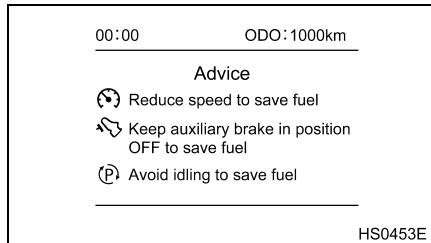


## NOTE

**Depending on the specifications of the vehicle there are items that are not subject to evaluation within Engine & gear, Speed, Anticipation and Standstill. In this case the icon color will be red and the score will be 0.**

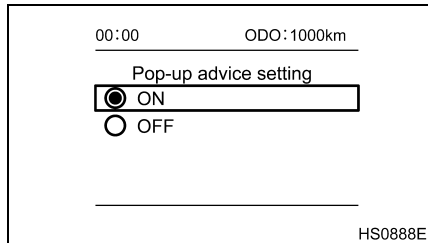
### Advice

- By selecting the “Advice” from the menu screen, the top three advices (if available) for fuel-economy driving obtained from the evaluation of the driving are displayed.
- The currently most important advice is displayed at the top.



### Pop-up advice setting

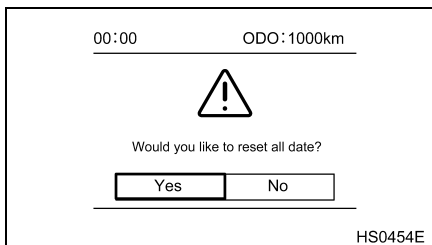
- By selecting the “Pop-up advice setting” from the menu screen, display of advices while driving can be turned on or off.
- When this function is set to OFF position, display of advices while driving and its buzzer is turned off.



### Reset Nenpi Coach

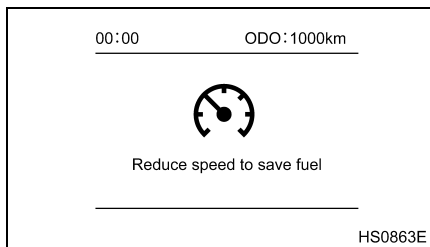
- To reset the Nenpi Coach information, select “Reset Nenpi Coach” from the menu screen and click “Yes”.
- Once the Nenpi Coach information is reset, all the information presented to the driver (overview, graph, scores of each item, advices, distance driven, driving duration, etc.) are reset.
- The information is also reset automatically when the ignition switch is set in “ON” position after stopping the engine for some hours.

- To start driving evaluation and display the results, it is necessary to drive the vehicle for a certain period of time after the reset. Therefore, when the driving time after the reset is short, the driving time may not match the number of bars of the tendency bar graph.

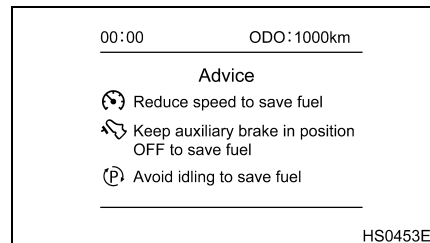
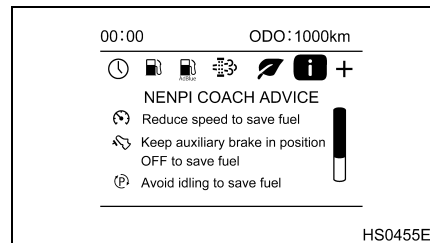


### Advice while driving






- If the points to be improved for economical driving are identified from the evaluation of the current driving condition, the Nenpi Coach system inform them directly to the driver through the multi-display and beep.
- This display appears for several seconds.
- This display can be erased by pressing the OK button, BACK button or HOME button.



- Of the advices, the top three advices can be seen by selecting the "Advice" from the "Home" screen or selecting the "Advice" from the Nenpi Coach menu.



Icon	Message
(Speedometer icon)	Reduce speed to save fuel
(Speedometer icon)	Use Cruise Control to save fuel
(Hand icon)	Keep auxiliary brake in position OFF to save fuel

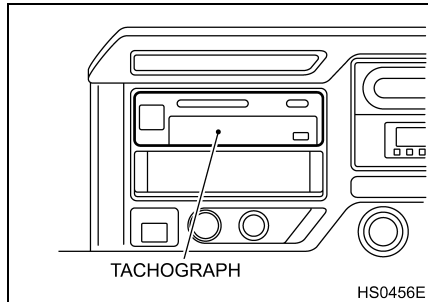
Icon	Message
	Avoid kick-down with gas pedal to save
	Use ESCOT in D to save fuel
	Avoid idling to save fuel
	Avoid harsh braking
	Avoid fast acceleration


**NOTE**

**Advices may vary depending on the vehicle specifications.**

### Tachograph<sup>†</sup>

- Tachograph records such vehicle operation conditions as vehicle speed, time, etc. on the recording paper in the unit. Observe the legal speed limit and drive safely.
- For operation of the tachograph, refer to the manufacturer's operation manual.

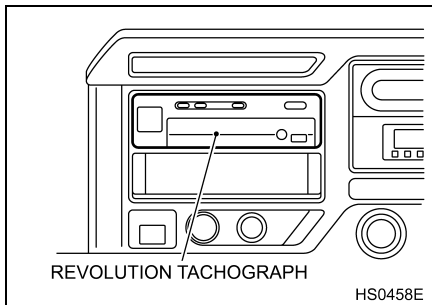


 **CAUTION**

**Do not cut the 7-day chart separated per day and set the separated sheet in the 7-day cartridge. Doing so may make the cartridge unable to take out from the tachograph.**

### Revolution tachograph<sup>†</sup>

- Revolution tachograph records such vehicle operation conditions as vehicle speed, time, engine speed etc. It is equipped with recording paper. Observe the legal speed limit and drive safely.
- For operation of the revolution tachograph, refer to the manufacturer's operation manual.



**CAUTION**

Do not cut the 7-day chart separated per day and set the separated sheet in the 7-day cartridge. Doing so may make the cartridge unable to take out from the tachograph.

## Opening and closing the front lid

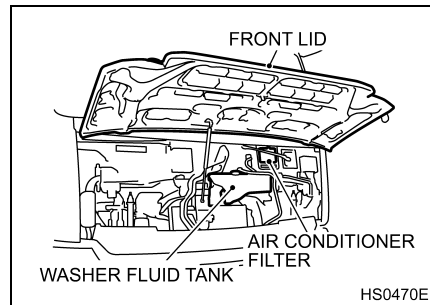
**WARNING**

- Make sure that the front lid is locked before driving.
- When inspecting inside the front lid, always make sure that the wiper switch is OFF. If the wipers operate, your fingers, etc., could be pinched.

### Inspection items

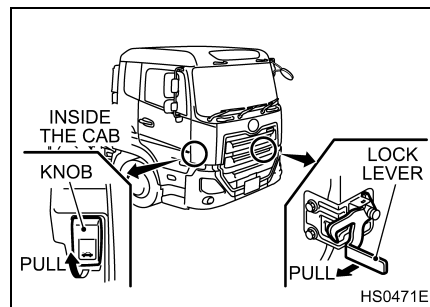
The following items can be inspected by opening the front lid.

- Air filter (for the air conditioner)
- Washer fluid



### How to open the front lid

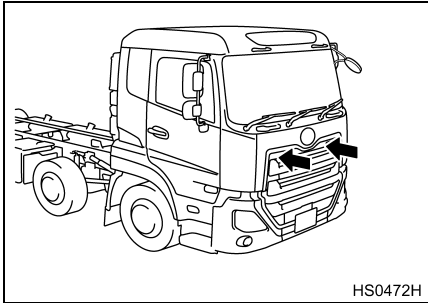
Pull the release knob in the cab toward you to release the front lid lock, and then open the lid while pulling the lock lever inside the lid.





## How to close the front lid

- Lower the front lid slowly.
- Push the front lid around the lid lock position until it clicks into place.
- Make sure that the front lid is locked.



## Cab tilt operation

A power tilt method that employs hydraulic cylinders is used to tilt the cab.

### WARNING

**Do not stand in front of the cab when tilting it or lowering it. Also, do not get under the cab.**

### NOTE

**The cab cannot be tilted without opening the front lid.**

## Tilt preparation

- Stop the vehicle on a level ground.
- If things are on the seat or bed, etc., be sure to move them outside the cab. Also check to make sure that the console box lids are securely closed.
- When tilting the cab indoors, make sure there is enough room

above and in front of the cab so that the cab will not strike anything when tilted.

- Pull up the parking brake lever to the park position, put the gear-shift lever or gear selector in neutral, and chock the wheels.
- Make sure that the engine is stopped.
- Open the front lid.
- Securely close the doors.

## Raising the cab

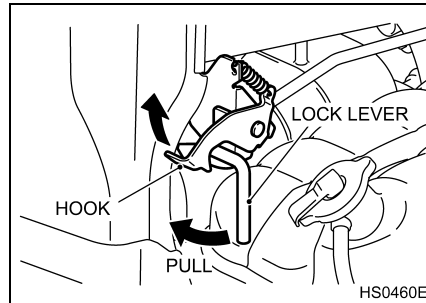
### WARNING

- **When raising the cab, make sure that there are no people or obstacles in front of the cab.**
- **Make sure that the tilt stopper is fully extended when the cab is tilted.**

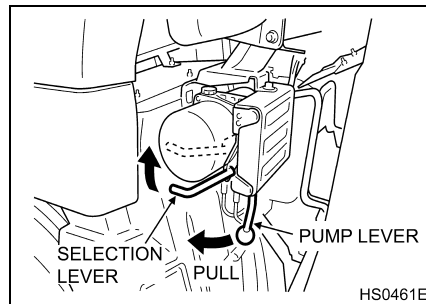
**⚠ CAUTION**

- Do not operate the pump lever intermittently. Doing so could damage the hydraulic pump.
- Releasing the pump lever while the cab is rising will cause the cab to stop in that position, but do not stop raising the cab midway except in an emergency.
- Always keep the pump lever up while tilting the cab.
- Do not get on the cab mount's subframe or apply a strong lateral force while the cab is tilted. Applying a strong force could damage the shock absorbers.
- Avoid continuous operation. It will shorten the useful life of the hydraulic pump.

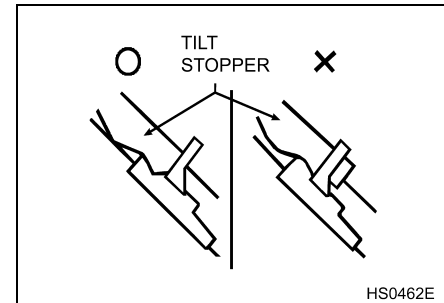
- Lift up the hook and pull the lock lever towards you. The warning buzzer will sound to notify that the cab is being tilted up.



- Raise the selection lever to the UP position and pull the pump lever until the cab is completely raised.



- When the cab has been completely tilted and the tilt stopper is completely extended, the warning buzzer will shut off and the hydraulic pump will stop.
- Confirm that the tilt cylinder is fully extended.



## Lowering the cab

**⚠ DANGER**

Make sure that all body parts are away and safe from cab area before lowering the cab.

**⚠ CAUTION**

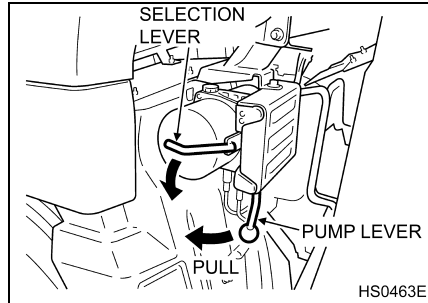
If the tilt lock is not completely engaged, a buzzer will sound, so check the lock again.

**NOTE**

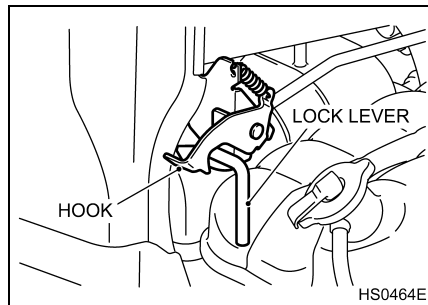
Make sure that nothing has been left around the engine, especially cloth (shop rags) and tools close to the exhaust manifold.

- Lower the selection lever to the DOWN (Drive) position. The warning buzzer will sound to notify the operator that the cab is being tilted down.

- Pull the pump lever until the cab is completely lowered. When the cab lock is completely engaged, the electric pump will stop, and the warning buzzer will turn off.



- Make sure that the hook is completely engaged with the lock lever.



**⚠ CAUTION**

- Do not operate the pump lever intermittently. Doing so could damage the hydraulic pump.
- Releasing the pump lever while the cab is rising will cause the cab to stop in that position, but do not stop raising the cab midway except in an emergency.
- Never go under the cab while the warning buzzer is sounding.
- Avoid continuous operation. It will shorten the useful life of the hydraulic pump.

## Tilt operation in special cases (intermediate tilt)

When the maximum tilt angle (approx. 65°) cannot be obtained, such as when servicing the truck in cramped indoor conditions, use the intermediate tilt (45°).

### ⚠ CAUTION

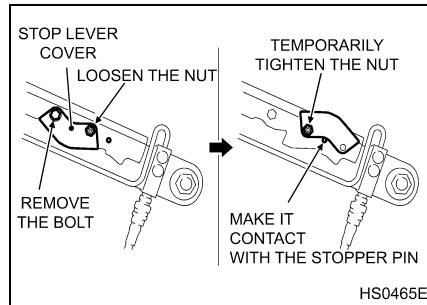
Do not leave the cab in the intermediate tilt position for a long time. For intermediate tilt, the warning buzzer will continue sounding, which could drain the battery. It could also have a negative impact on the hydraulic mechanism.

## Raising the cab

### ⚠ CAUTION

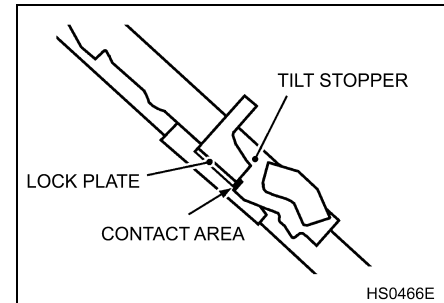
For safety reasons, make sure that the tilt stopper contacts the tilt cylinder lock plate.

- Raise the cab to a height which can perform the work described below.
- Rotate the cover as shown in the drawing.



- Raise the selection lever to the UP position.
- Continue pulling the pump lever to raise the cab until the tilt cylinder stops extending and the tilt stopper locks in place.

- Make sure that the stopper lever is in complete contact with the tilt cylinder lock plate. If the cab is raised when these are not in contact, the cab will tilt beyond the set angle, causing damage to parts.



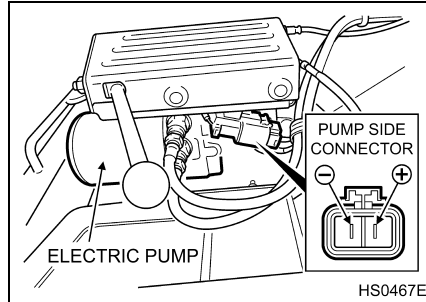
## Lowering the cab

- Using the normal operation to lower the cab, tilt down the cab to a position that allows the following operations to be performed.
- Return the cover of the tilt stopper to its original position.
- Use the regular cab lowering operation to lower the cab.

## Cab tilt operation when there is an electrical system failure

If the cab tilt operation cannot be performed due to an electrical system failure or the like, the cab can be tilted by connecting the battery directly to the hydraulic pump using a dedicated subharness. In this case, have the vehicle inspected and serviced by the nearest authorized UD Trucks dealer as soon as possible.

- Make sure that the transmission is in the Neutral position.
- Pull out the hydraulic pump motor connector on the bottom front of the pump lever box.



- Use the dedicated subharness for cab tilt hydraulic pump to connect batteries directly to the pump and apply 24 V power.
- This subharness is available at an authorized UD Trucks dealer.

### CAUTION

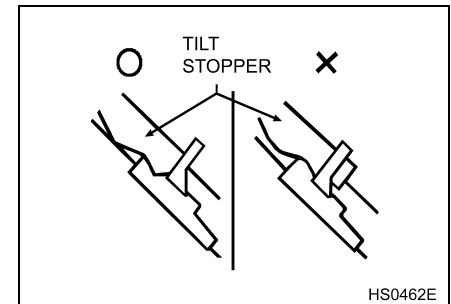
**When connecting the alligator clips of the subharness to the battery terminal, be careful not to contact the frame, etc. It is dangerous because a spark may occur.**

## Precautions when connecting the battery

Depending on the fault condition, the lock position detection switch is not operable. In addition, the warning buzzer may not sound. Due care is required to perform this procedure.

## When raising the cab

- Open the front lid before tilting.
- Press the pushbutton on the subharness to operate the hydraulic pump.
- The cab will not automatically stop, so continue operating the hydraulic pump until the tilt cylinder stops extending.



### When lowering the cab

- Continue pushing the button on the subharness and pulling the pump lever until the cab is completely lowered. (The hydraulic pump runs even if you do not pull the lever, but the tilt stopper will be locked and the cab cannot be lowered completely.)
- The cab will not automatically stop, so continue operating the hydraulic pump until the tilt cylinder is completely retracted even if the tilt lock engages. (When the cylinder is completely retracted, the operating sound of the motor changes.)

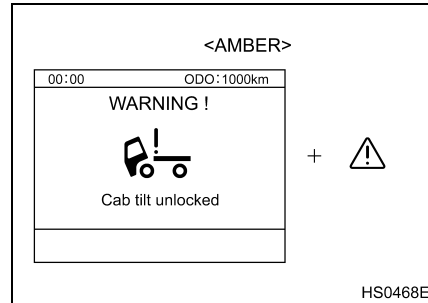
#### CAUTION

**The cab could fly up while driving if the tilt cylinder is not completely retracted.**

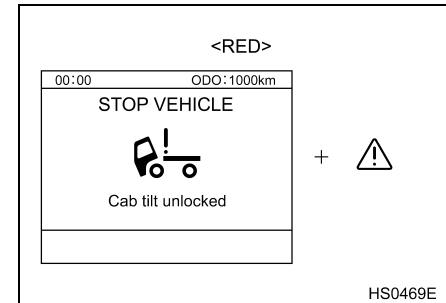
- Confirm that the hook is engaged to the lock lever.

### Cab tilt warning

- If the cab is not lowered completely (not locked), an amber warning message is displayed on the multi-display when the ignition switch is set in "ON" position. Lower the cab until it is locked and confirm that the warning disappears.



- If you drive the vehicle with the cab not locked, a buzzer sounds and a red warning message is displayed on the multi-display. If the red warning message is displayed, stop the vehicle immediately and lock the cab securely.



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# 7. Air conditioner

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Ventilation ..... 7-2  
Air conditioner ..... 7-3

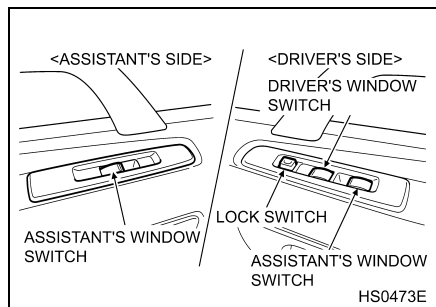
## Ventilation

Effectively use the ventilation and air conditioning to make yourself comfortable while driving.

## Door window (Power window)

### Open/Close switch

This switch is used to open and close the door windows on the driver and assistant's side. It can be operated when the ignition switch is in the ON position.



### WARNING

- **When closing the windows, make sure that no one has his/her head or hands extended outside the window before operating the switch. Otherwise, someone may be pinched and injured by the windows.**
- **Do not leave children alone in the vehicle. If children must be left in the vehicle, be sure to remove the ignition key.**
- **When children are riding in the vehicle, use the power window lock switch to lock the assistant's side window for safety.**

## Opening and closing the driver's side window

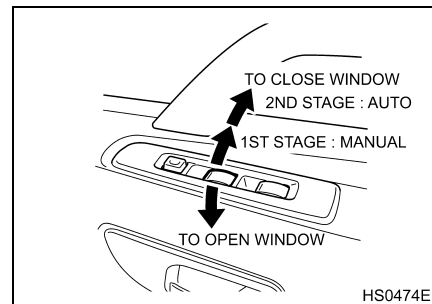
The driver's side door window switch opens or closes the window manually by pushing or pulling the switch lightly (1st stage) or automatically by pushing or pulling it further (2nd stage).

### 1st stage (manual):

The window stops in its current position when the switch is released.

### 2nd stage (automatic):

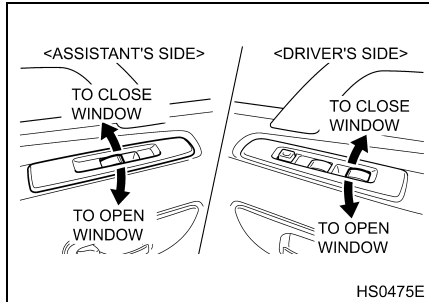
The window continues moving until fully closed or fully open even when the switch is released.





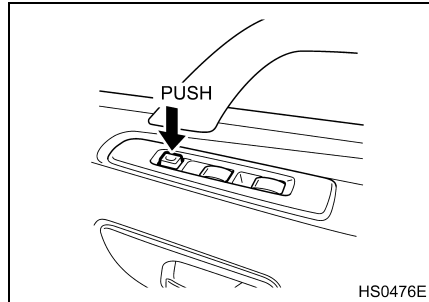
## Opening and closing the assistant's side window

An assistant's side door window switch is provided in both the driver and assistant's side doors. The window moves while the switch is being pushed or pulled and stops when it is released.



## Window lock switch

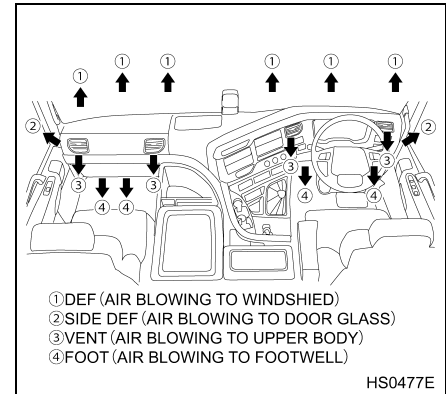
When this switch is pushed, the assistant's side door window cannot be opened or closed even when the open/close switch is operated. To open or close the window, push this switch again to release the window lock.



## Air conditioner

### Air vent

- Use the air conditioner when the engine is running.
- The engine cooling system is used to heat the air for heating. The air coming from the air vent will not be warm until the coolant temperature rises.



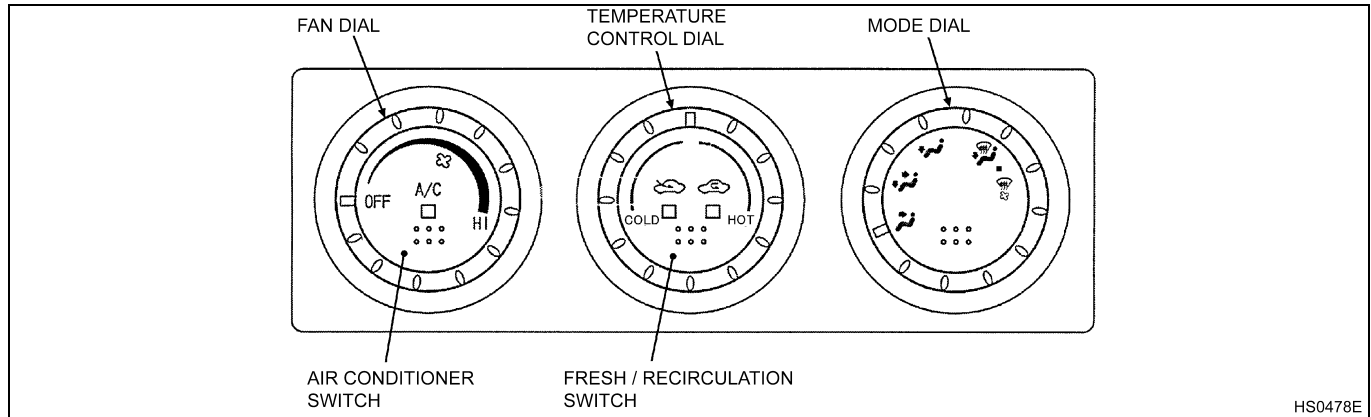
**Handling the air conditioner air filter**

- Both the outside and inside air intakes have cartridge type air filters. The air conditioner will not be effective if these air filters become clogged, so inspect and clean them periodically.
- For information about how to clean the air filter, refer to “Air filter for air conditioner” (page 13-5) in “Inspection and maintenance”.





## Manual air conditioner


Change the switch and dial selections to match the weather condition to make your driving pleasant.

### Operation panel



## Air conditioner

Name		Position	Purpose and Function	
Dial	Fan dial	OFF	To stop fan operation: <ul style="list-style-type: none"> <li>This stops the blower fan and the compressor. However, the fan continues operating at the minimum flow level when the mode dial is in the "Defrost" position.</li> </ul>	
		Up to HI	To adjust the fan speed: The fan speed is adjusted manually. <ul style="list-style-type: none"> <li>Turn right: Increases airflow, Turn left: Reduces airflow</li> </ul>	
	Temperature control dial	COLD	Use maximum cooling: Blows cool air without passing the air through the heater core.	
		HOT	Use maximum heating: Blows warm air passing through the heater core.	
		COLD to HOT	Adjust the temperature of the air: The temperature of the air can be changed by the temperature control dial setting. <ul style="list-style-type: none"> <li>Turn right: Raises temperature, Turn left: Lowers temperature</li> </ul>	
	Mode dial	Vent		Sends air from the vent: The air outlets are fixed to the Vent position.
		Vent & Foot		Sends air from the vent and foot vents: The air outlets are fixed to the Vent & Foot position.
		Foot		Sends air from the foot vents: The air outlets are fixed to the Foot position.
		Foot & Defrost 1		Sends air from the foot and defrost vents: The air outlets are fixed to the Foot & Defrost position.

Name		Position		Purpose and Function
Dial	Mode dial	Foot & Defrost 2	■	Sends air from the foot and defrost vents: The air outlets are fixed to the Foot & Defrost position. (This divides the air to blow more from the defrost vents than from the foot vents.)
		Defrost		Sends air from the defrost vents: The air outlets are fixed to the Defrost position. The fresh air is introduced. The compressor is operated. • The minimum air will blow even if the fan dial is set to OFF.
Switch	Air conditioner switch	The indicator light turns on/off each time this switch is pushed.		This switches between the dehumidifier mode (light on) and heater mode (light off). • Light ON: The compressor operates • Light OFF: The compressor does not operate
	Fresh/Recirculation switch	Alternates the illuminating indicator light between recirculation and fresh air introduction each time this switch is pushed.		It switches between inside air recirculation and outside air introduction. • Inside air indicator ON: Set to inside air recirculation. • Outside air indicator ON: Set to outside air introduction.

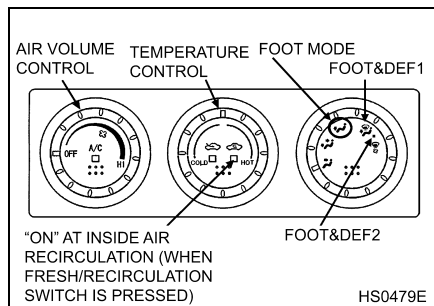
### NOTE

**Do not operate the dials or switches while driving for safety.**

## Heating

- Moving the mode dial to the Foot position will blow warm air on the feet.
- The temperature control dial is used to adjust the air temperature, and the fan dial is used to adjust the air volume as desired.
- When you want to heat up the cab quickly or when you are in a dusty location, push the Fresh/Recirculation switch to select recirculation.
- When the windshield fogs up easily, set the air vents to Foot & Defrost.

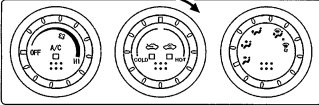
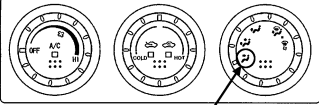
NOTE
<p><b>Mode dial Foot &amp; Defrost 1 blows more air through the foot vents than the defrost vents, and Foot &amp; Defrost 2 blows more air through the defrost vents than through the foot vents.</b></p>

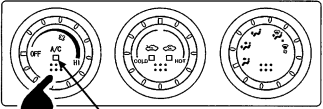
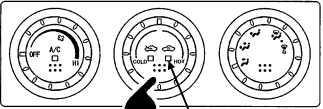


**When napping in the bed or resting in the seat**

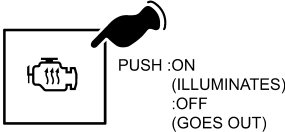
Use the heater as instructed below to heat the cab in cold weather with the engine idling.

**When napping in the bed after driving**

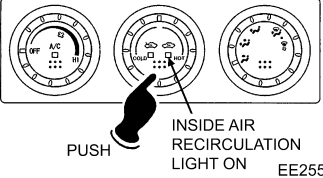
No.	Operation method and description	Illustration
1	<p>Adjust the air conditioner temperature higher than normal.</p> <ul style="list-style-type: none"> <li>The air temperature in the cabin rises according to the adjustment of the temperature control dial.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>The air temperature in the cabin tends to drop because the temperature of the engine coolant becomes low while taking a nap. Set the air conditioner temperature higher beforehand to keep the cabin temperature comfortable.</b></p> </div>	<p style="text-align: center;">SET TO FURTHER HIGHER TEMPERATURE</p>  <p style="text-align: right;">EE252</p>
2	<p>Adjust the mode dial to the "Vent" position and direct the air vent toward the bed.</p> <ul style="list-style-type: none"> <li>Warm air is delivered to the bed.</li> </ul>	 <p style="text-align: center;">TURN TO "VENT"</p> <p style="text-align: right;">EE253</p>

No.	Operation method and description	Illustration
3	<p>Push the air conditioner switch to turn off the A/C indicator light (heater mode).</p> <ul style="list-style-type: none"> <li>The air conditioner compressor stops.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>When the A/C indicator light is on (dehumidifier mode), the air conditioner cools the incoming air before warming it. Thus, the air temperature from the vent becomes lower.</b></p> </div>	<div style="text-align: center;">  <p>AIR CONDITIONER LIGHT OFF PUSH</p> <p style="text-align: right;">EE254</p> </div>
4	<p>Push the fresh/recirculation switch to illuminate the recirculation mode indicator light.</p> <ul style="list-style-type: none"> <li>The intake vent is fixed to recirculation position.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>The air temperature from the vent becomes low when the fresh air mode is selected because the cold outside air is warmed. The air temperature from the vent becomes high when the recirculation mode is selected because the warm inside air is warmed again.</b></p> </div>	<div style="text-align: center;">  <p>INSIDE AIR RECIRCULATION LIGHT ON PUSH</p> <p style="text-align: right;">EE255</p> </div>



No.	Operation method and description	Illustration
If you feel cold even after performing the previous operations (1) through (4), do as follows.		
5	<p>Turn on the quick warm-up switch.</p> <ul style="list-style-type: none"> <li>The engine speed will rise and the engine coolant temperature will rise.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"> <li>The quick warm-up switch is used to shorten the engine warm-up time or to improve the performance of heater when parking for a long time. The engine coolant temperature tends to lower when parking for a long time. Using the quick warm-up switch assures the sufficient heating performance.</li> <li>For the precautions for the quick warm-up switch, refer to “Quick warm-up switch” (page 5-58) in “Meters, indication lamps and switches”.</li> </ul> </div>	<div style="text-align: center;">  </div> <p style="text-align: right; margin-top: 20px;">HS0480E</p>

### When resting in the seat after driving

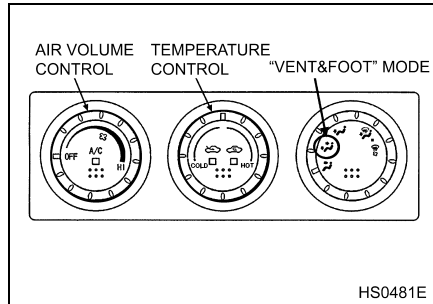
No.	Operation method and description	Illustration
	<p>Push the fresh/recirculation switch to illuminate the recirculation mode indicator light.</p> <ul style="list-style-type: none"> <li>The intake vent is fixed to recirculation position.</li> </ul>	 <p>INSIDE AIR RECIRCULATION LIGHT ON EE255</p>

### NOTE

The heater utilizes heat from the engine coolant. While idling, the engine coolant temperature gauge may indicate a lower value because the temperature of engine coolant tends to decrease. However, performing the steps above will allow sufficient performance of the heater.

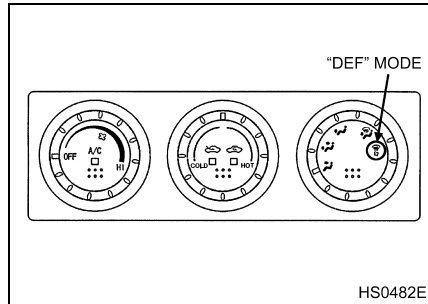
### Vent & foot

The temperature control dial is used to adjust the air temperature, and the fan dial is used to adjust the air volume as desired.



### Defrost

Setting the mode dial in the Defrost position will blow warm air from the defroster vents beside the windshield.

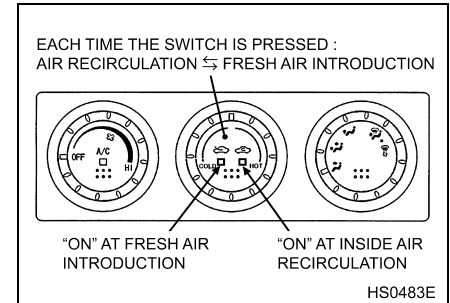


### NOTE

- When the mode dial is set to the Defrost position, the compressor begins to run and the intake vents are set to fresh air. Note that the compressor might not turn on due to certain conditions, such as the outside air temperature.
- When the mode dial is set to the Defrost position, the minimum amount of air will blow even if the fan dial is set to OFF.

### Switching between inside and outside air

Normally, the intake vents use outside air, but when you want to avoid dust, exhaust fumes, etc., push the Fresh/Recirculation switch to switch to inside air recirculation.

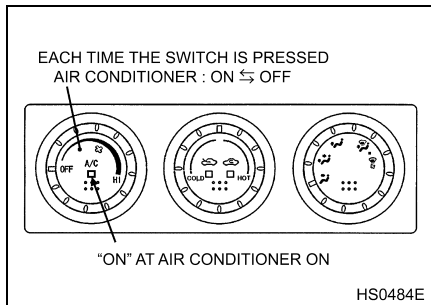


### ⚠ WARNING

Do not use inside air recirculation for a long time. Doing so will cause the air inside the cab to become foul or the windshield to fog up, etc.

## Cooling and dehumidifying

- Cooling and dehumidifying can be done by pushing the air conditioner switch.
- The temperature control dial is used to adjust the air temperature, the fan dial is used to adjust the air volume, and the mode dial is used to select the air vents as desired.
- When you want to quickly cool down the cab, push the Fresh/Recirculation switch to switch inside air recirculation.



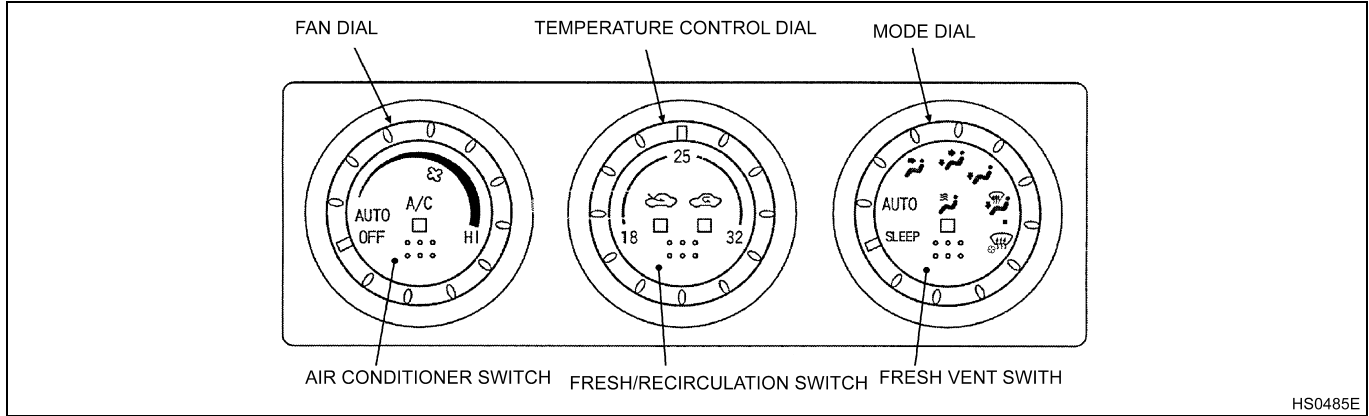
## Fully automatic air conditioner<sup>♦</sup>

- After setting the desired temperature, this air conditioner automatically keeps the cab at that temperature to maintain a pleasant cab environment. Manual operation can also be done when necessary.
- The following items are automatically controlled.
  - Air temperature (cab set temperature: 18°C to 32°C)
  - Airflow (freely adjustable)
  - Air vent selection (Vent, Vent & Foot, Foot)
  - Switching the intake vents between inside and outside air
  - Switching ON/OFF the air conditioner








### NOTE

- Do not operate the switches and dials while driving for safety.
- For maximum cooling, set the temperature to 18°C, and for maximum heating, set the temperature to 32°C. Note that the air temperature will not be automatically controlled at these positions.

Operation panel



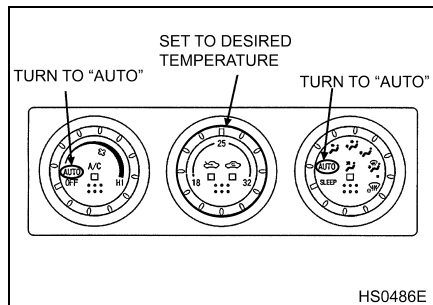
Name		Position	Purpose and Function
Dial	Fan dial	OFF	To stop fan operation: <ul style="list-style-type: none"> <li>• This stops the blower fan and the compressor. However, the fan speed is automatically adjusted when the mode dial is in the Defrost position.</li> </ul>
		AUTO	Automatically adjust the fan speed: The fan speed is automatically adjusted in accordance with the set temperature.
		Up to HI	To set the fan speed: Manually adjust the fan speed. <ul style="list-style-type: none"> <li>• Turn right: Increases airflow; Turn left: Reduces airflow</li> </ul>

Name		Position		Purpose and Function
Dial	Temperature control dial	18		Perform maximum cooling: Blows cool air without passing through the heater core.
		32		Perform maximum heating: Blows warm air passing through the heater core.
		18 to 32		To change the temperature setting: The temperature is controlled to match the temperature control dial setting. • Turn right: Raises temperature; Turn left: Lowers temperature
	Mode dial	AUTO		Automatically select the air vents: The selection of air vents is automatically controlled.
		Vent		Sends air from the vent: The air outlets are fixed to the Vent position.
		Vent & Foot		Sends air from the vent and foot vents: The air outlets are fixed to the Vent & Foot position.
		Foot		Sends air from the foot vents: The air outlets are fixed to the Foot position.
		Foot & Defrost 1		Sends air from the foot and defrost vents: The air outlets are fixed to the Foot & Defrost position.
		Foot & Defrost 2		Sends air from the foot and defrost vents: The air outlets are fixed to the Foot & Defrost position. (This divides the air to blow more from the defrost vents than from the foot vents.)
		Defrost		Sends air from the defrost vents: The air outlets are fixed to the Defrost position. The fresh air is introduced. The compressor is operated. • The airflow is automatically adjusted in accordance with the set temperature even if the fan dial it set to OFF.

Name		Position		Purpose and Function
Dial	Mode dial	SLEEP	SLEEP	<p>Used when napping in the bed.</p> <p>&lt;When the parking brake is applied&gt;</p> <ul style="list-style-type: none"> <li>• Set the air outlet vent to the BED and VENT position.</li> </ul> <p>&lt;When the parking brake is released&gt;</p> <ul style="list-style-type: none"> <li>• Set the air outlet vent to the BED position.</li> </ul> <p>(The air outlet vents other than that of the bed are automatically selected according to the set temperature.)</p>
Switch	Air conditioner switch	The indicator light turns on/off each time this switch is pushed.		<p>This switches between the dehumidifier mode (light on) and heater mode (light off).</p> <ul style="list-style-type: none"> <li>• Light ON: The compressor operates.</li> <li>• Light OFF: The compressor does not operate.</li> </ul>
	Fresh/Recirculation switch	Alternates the illuminating indicator light between recirculation and fresh air introduction each time this switch is pushed.		<p>It switches between inside air recirculation and outside air introduction.</p> <ul style="list-style-type: none"> <li>• Inside air indicator ON: Set to inside air recirculation.</li> <li>• Outside air indicator ON: Set to outside air introduction.</li> <li>• OFF: Automatically selected in accordance with the outside air temperature, etc.</li> </ul>
	Fresh vent switch	The indicator light turns on/off each time this switch is pushed.		<p>Used to introduce cool and fresh outside air to the head area while warming feet by the heater.</p> <ul style="list-style-type: none"> <li>• Light ON: Cool air without passing through the heater is blown from the VENT position.</li> <li>• Light OFF: The Fresh Vent is not activated.</li> </ul>

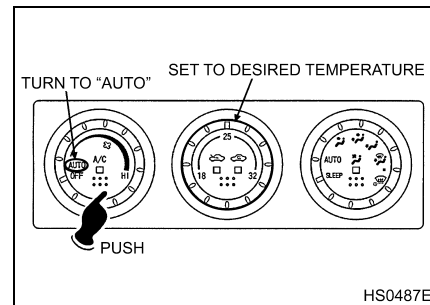
### Automatic air conditioner operation (Cool/Heat)

- With the ignition switch in the ON position, set the fan dial and mode dial to the AUTO position.
- Use the temperature control dial to set the desired cab temperature (in the range of 18 to 32°C).
- During operation, air temperature, airflow, air vents, intake vents, and compressor ON/OFF operation are all controlled automatically.
- Set the fan dial in the OFF position to stop the air conditioning operation. This stops the fan and the compressor.



### Automatic heater operation

- Push the air conditioner switch (A/C) during automatic air conditioner operation to switch to the heater mode. At this time, make sure that the A/C indicator light is off.
- Use the temperature control dial to set the desired cab temperature (in the range of 18 to 32°C).
- During operation, air temperature, airflow, air vents, and intake vents are all controlled automatically.
- Set the fan dial in the OFF position to stop the automatic heating operation. This stops the fan.

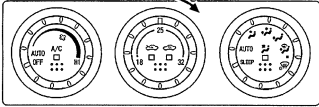





**When napping in the bed or resting in the seat**

Use the heater as instructed below to heat the cab in cold weather with the engine idling.

**When napping in the bed after driving**

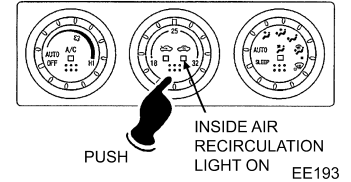
No.	Operation method and description	Illustration
1	<p>Adjust the air conditioner temperature higher than normal.</p> <ul style="list-style-type: none"> <li>The air temperature in the cabin rises according to the adjustment of the temperature control dial.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"> <li><b>The air temperature in the cabin tends to drop because the temperature of the engine coolant becomes low while taking a nap. Set the air conditioner temperature higher beforehand to keep the cabin temperature comfortable.</b></li> <li><b>When the temperature control dial is turned to the maximum temperature setting, the system does not control the temperature but maximize its heating performance.</b></li> </ul> </div>	<p style="text-align: center;">SET TO HIGHER TEMPERATURE.</p>  <p style="text-align: right;">EE190</p>
2	<p>Adjust the mode dial to the "Sleep" position to direct the air vent toward the bed.</p> <ul style="list-style-type: none"> <li>The air outlet and inlet are set to the optimum positions, and warm air is blown out to the bed portion.</li> <li>The air outlet vent is secured to the "Bed" and "Vent" positions.</li> </ul>	 <p style="text-align: center;">TURN TO "SLEEP"</p> <p style="text-align: right;">EE189</p>

No.	Operation method and description	Illustration
3	<p>Push the air conditioner switch to turn off the A/C indicator light (heater mode).</p> <ul style="list-style-type: none"> <li>The air conditioner compressor stops.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>When the A/C indicator light is on (dehumidifier mode), the air conditioner cools the incoming air before warming it. Thus, the air temperature from the vent becomes lower.</b></p> </div>	<div style="text-align: center;"> <p style="text-align: center;">AIR CONDITIONER LIGHT OFF</p> <p style="text-align: center;">PUSH</p> </div> <p style="text-align: right;">EE192</p>
<p>If you feel cold even after performing the previous operations (1) through (3), do as follows.</p>		
4	<p>Turn on the quick warm-up switch.</p> <ul style="list-style-type: none"> <li>The engine speed will rise and the engine coolant temperature will rise.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"> <li><b>The quick warm-up switch is used to shorten the engine warm-up time or to improve the performance of heater when parking for a long time. The engine coolant temperature tends to lower when parking for a long time. Using the quick warm-up switch assures the sufficient heating performance.</b></li> <li><b>For the precautions for the quick warm-up switch, refer to “Quick warm-up switch” (page 5-58) in “Meters, indication lamps and switches”.</b></li> </ul> </div>	<div style="text-align: center;"> <p style="text-align: center;">PUSH :ON (ILLUMINATES) :OFF (GOES OUT)</p> </div> <p style="text-align: right;">HS0480E</p>

**When resting in the seat after driving**

Push the fresh/recirculation switch to illuminate the recirculation mode indicator light.

- Set the intake vents to inside air recirculation.

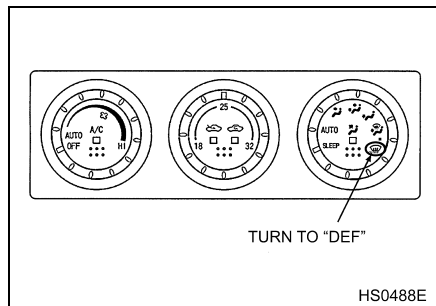
**NOTE**

**The heater utilizes heat from the engine coolant. While idling, the engine coolant temperature gauge may indicate a lower value because the temperature of engine coolant tends to drop. However, performing the steps above will allow sufficient performance of the heater.**

## Defrost

When the mode dial is set to the Defrost position, the air vents are set to the defroster vents. At the same time the compressor begins to run and the intake vents are set to fresh air introduction. In addition, the air temperature and air volume will be automatically controlled.

Note that the compressor might not turn on due to certain conditions, such as the outside air temperature.



HS0488E

## NOTE

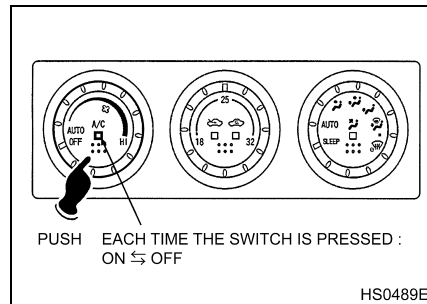
**When the mode dial is set to the “Defrost” position, the air will blow even if the fan dial is set to OFF. The airflow is automatically adjusted in accordance with the set temperature.**

## Manual operation

If you want to change the air volume, air vents, intake vents, etc. during automatic operation, only the specified setting(s) can be manually controlled by the following operation.

## Setting the operation mode

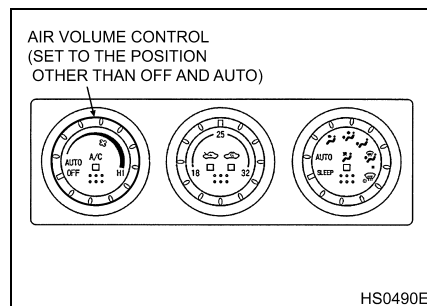
Pushing the air conditioner switch (A/C) to switch the compressor operation mode between “Dehumidifier Mode” and “Heater Mode”. The A/C indicator light illuminates in dehumidifier mode.



HS0489E

## Setting the air volume

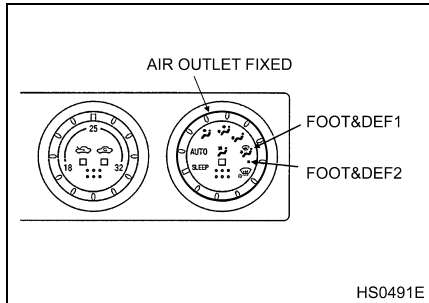
The air volume can be set in 25 steps with the fan dial (other than OFF and AUTO positions).



HS0490E

### Setting the air vents

You can switch to setting any of “Vent”, “Vent & Foot”, “Foot”, “Foot & Defrost 1”, “Foot & Defrost 2”, and “Defrost” by setting the mode dial to any of these positions (other than AUTO).



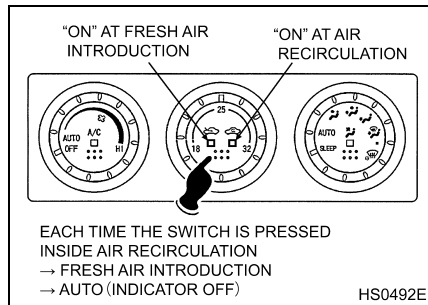
HS0491E

#### NOTE

Mode dial “Foot & Defrost 1” blows more air through the foot vents than the defrost vents, and “Foot & Defrost 2” blows more air through the defrost vents than through the foot vents.

### Setting the intake vents

This is used to switch the intake vents to inside air recirculation or outside air introduction. Each time the Fresh/Recirculation switch is pushed, the intake vents are alternately switched to inside air recirculation, fresh air introduction, and AUTO.



HS0492E

#### WARNING

Do not use inside air recirculation for a long time. Doing so will cause air inside the cab to become foul or the windshield to fog up, etc.

### Information regarding automobile air conditioner refrigerant

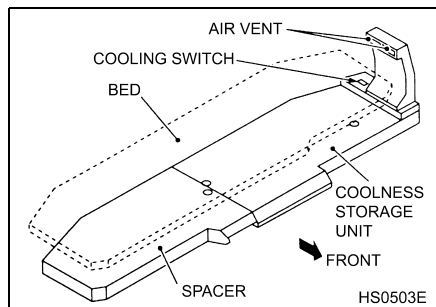
- The cooling performance could drop if the refrigerant is insufficient or the air conditioner compressor belt is loose.
- If refrigerant is leaking, have it inspected by the nearest authorized UD Trucks dealer. Also, if the belt is loose, have it adjusted.

#### CAUTION

- This system uses Freon HFC134a for protection of environment. Only use this specified refrigerant to charge the air conditioner system.
- To protect the global environment, do not discharge refrigerant into the atmosphere.

## Coolness storage bedroom cooler (For Singapore)♦

The coolness storage bedroom cooler allows air conditioning refrigerant to pass through the coolness storage unit under the bed to freeze the coolness storage agent while traveling. After stopping the engine, cool air can be blown by passing air around the coolness storage agent.



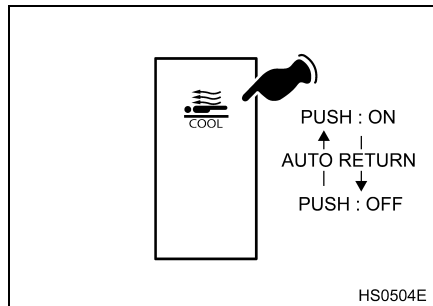
### NOTE

- The coolness storage completion time differs depending on the outside air temperature and driving conditions. Also, coolness storage does not work when the air conditioner switch is OFF.
  - Coolness storage is not possible when the outside air temperature is low (about 13°C or below).
  - Once the engine is stopped, the coolness storage switch is canceled. Turn ON the switch again to continue coolness storage.
  - Cool air can be blown even if coolness storage is not completed, but the effect will be limited.
  - The maximum cooling time is 4 hours. After 4 hours, the timer automatically stops the fan.
- Depending on the outside air temperature and the coolness storage condition, the duration of cool air flow differs. The duration becomes extremely short especially when:
    - There is sunlight
    - When the central curtain is open
    - When coolness storage is not completed
  - To prevent a dead battery, do not use the system together with other electrical components.
  - Clean the air filter periodically.

## How to use the coolness storage bedroom cooler

### Coolness storage

- Start the engine and turn ON the air conditioner switch.
- Press the coolness storage switch to turn it ON. The indicator lights up.
- After traveling for about 4 hours in this state, the indicator blinks to inform that coolness storage is complete.
- To stop coolness storage, press the coolness storage switch again to turn it OFF.

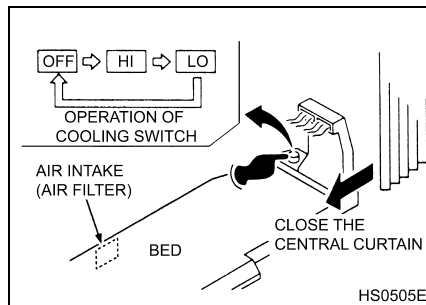


## Cooling (using the coolness storage bedroom cooler)

- Stop the engine and turn the ignition switch to the ACC position.
- Enter the bedroom and close the central curtain.
- Press the cooling switch. Air blows out from the air outlet. Each time you press the cooling switch, the setting will cycle between OFF → HI → LO → OFF.

“HI” indicator ON: High air volume

“LO” indicator ON: Low air volume







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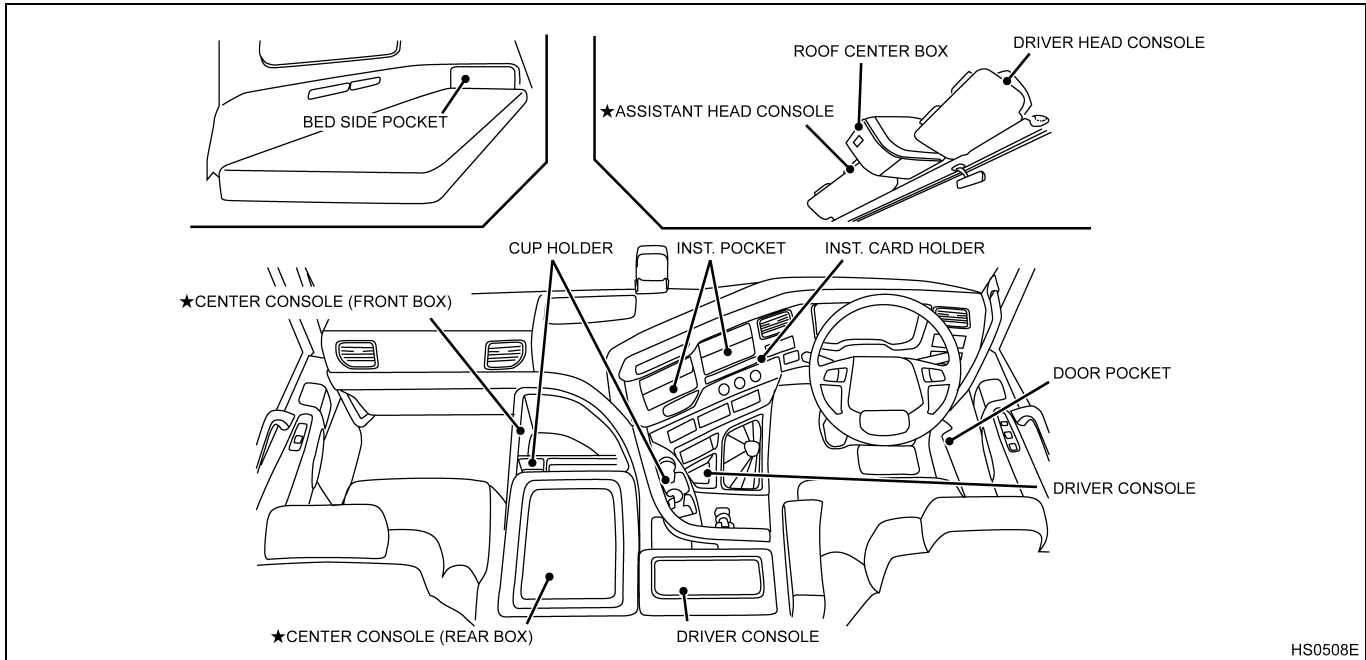
# 8. Accessories

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Accessories.....8-2

# Accessories

## Storage box



## Head console

 **CAUTION**

The maximum weights acceptable in the upper consoles are indicated below. Storing objects exceeding the following weight limits may damage the console or lid.

- Roof center box: 3 kg or less
- Driver and assistant head console: 2 kg or less

### Roof center box

Use this large box with lid for light-weight items, such as vehicle documents or magazines.

### Driver and assistant<sup>†</sup> head consoles

This space can be used to store small items, such as cards and sunglasses as well as storing lightweight items such as newspaper.

## Driver console

- This driver console with coin holder can be used as a tray when its lid is closed.
- On models with fully automatic air conditioner, the hot & cool box is equipped in this position. For how to use this box, refer to “Hot & cool box (Models with fully automatic air conditioner only)<sup>†</sup>” (page 8-5).

## Center console<sup>†</sup>

### Front box

This can hold a helmet, work gloves, etc.

### Rear box

This can be used to hold small items, such as the vehicle documents and other documents, and it also has a special space for cards. When its lid is closed, it can be used as a tray to place small items.

## Cup holder

- This is used to hold bottles and cups for drinks, etc. The driver’s seat holder can hold 2 bottles and the assistant seat holder can hold 1 bottle.
- On models with fully automatic air conditioner, driver’s cup holder has the warming and cooling function. For how to use this function, refer to “Hot & cool cup holder (Models with fully automatic air conditioner only)<sup>†</sup>” (page 8-6).
- The cup holder can also be used as a tray to hold small items.

**! WARNING**

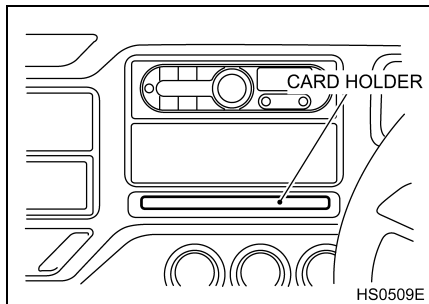
- Do not place heavy objects in the driver and assistant head consoles. The vibration from driving, etc. could cause them to fall off to cause injury.
- Be sure to keep the roof center box closed while driving. Driving with its lid open could allow the items in the box to fall over and hinder driving.

**! CAUTION**

Do not place beverage cans, etc., in any other location other than the cup holder. If beverage spills over the switches, they may cause malfunction.

**Card holder**

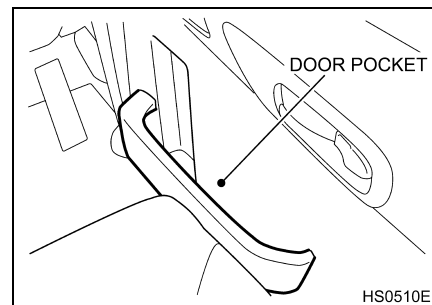
This can be used to hold cards.

**! CAUTION**

To prevent theft, do not leave credit cards in the card holder when leaving the vehicle.

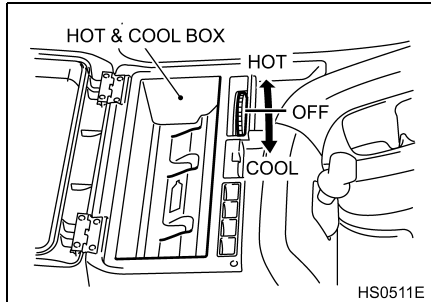
**Door pocket**

Door pocket is located on the driver's door. Use it to place road maps, magazines, etc. Do not put your foot or something on it. Doing so may damage the door pocket.



## Hot & cool box (Models with fully automatic air conditioner only)♦

The warm or cool air from the air conditioner can be used to keep beverage cans, etc. warm or cold. If 1-liter or larger bottles are placed in the box, align them with the mark on the bottom of the box.



### ⚠ CAUTION

- The hot & cool box is just for keeping things cool or warm, and it cannot cool or heat things actively.
- Do not place uncooked food or the like which easily rot in the box.
- Do not place opened beverage cans or the like in the box.
- Cans might become hot when this is used as a hot box, so be careful when taking them out.

### NOTE

When the outside air temperature is low, things can be kept cool just by introducing the outside air without operating the air conditioner.

## How to use the hot & cool box

### When used as a hot box

- It can be used as a hot box when the air conditioner is set to any temperature other than 18°C (max. cool).
- Turn the selection dial inside the box all the way to HOT.
- Operate the air conditioner or heater to blow air into the box.

### When used as a cool box

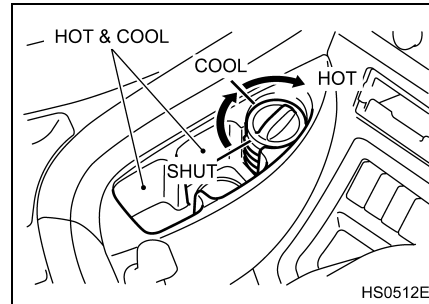
- It can be used as a cool box regardless of the air conditioner temperature setting.
- Turn the selection dial inside the box all the way to COOL.
- Operate the air conditioner to blow air into the box.

**When used as a storage box**

- It can be used as a storage box regardless of whether the air conditioner is being used.
- Move the selection lever inside the box to the center position “●” (OFF). No warm or cool air will blow in.

**Hot & cool cup holder (Models with fully automatic air conditioner only)♦**

The warm or cool air from the air conditioner can be used to keep beverage cans, etc. warm or cold.

**⚠ CAUTION**

- The hot & cool cup holder is for keeping things cool or warm, and it cannot cool or heat things actively.
- A can might become hot when this is used as a hot cup holder, so be careful when picking it up.
- Be sure to put hot & cool cup holder dial in the SHUT position when not using it.
- Do not place anything but drinks in the cup holder.

## How to use the hot & cool cup holder

### When used as a hot cup holder

- It can be used as a hot cup holder when the air conditioner is set to any temperature other than 18°C (max. cool).
- Turn the selection dial in front of the cup holder to HOT.
- Operate the air conditioner or heater to blow air into the cup holder.

### When used as a cool cup holder

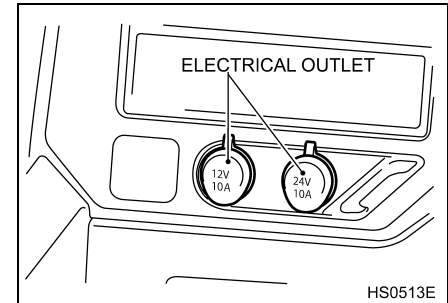
- It can be used as a cool cup holder regardless of the air conditioner temperature setting.
- Turn the selection dial in front of the cup holder to COOL.
- Operate the air conditioner to blow air into the cup holder.

### When used as a cup holder

- It can be used as a cup holder regardless of whether the air conditioner is used.
- Turn the selection dial in front of the cup holder to SHUT. No warm or cool air will be blown in.

## Electrical outlet in the cab<sup>◆</sup>

The cab accessory power outlet can be used for commercial electrical products. The allowable load of the electrical outlet is 10A (24V–240W) or 10A (12V–120W).

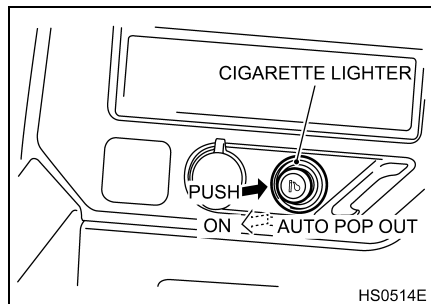


**⚠ WARNING**

- Using a voltage greater than the allowable load or using an incorrect outlet could cause the outlet or cord to overheat and cause a fire. Confirm the allowable load and voltage indicated on the cap of the outlet. Use the correct power outlet within the allowable load.
- The power outlet can be used when the ignition switch is in the ACC or ON position. Unplug electrical devices when leaving the vehicle.

## Cigarette lighter<sup>♦</sup>

Push in the cigarette lighter, let go of it and wait for it to pop out. After the end of the lighter has become red hot in about 10 seconds, it will automatically pop out to its original position. Incorrect handling of the cigarette lighter could cause a fire. Be very careful when handling it.



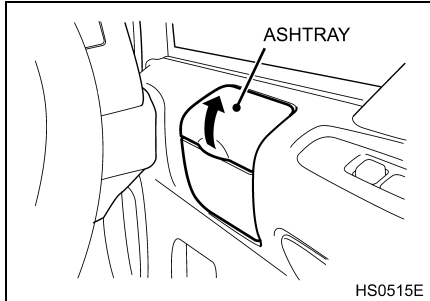
**⚠ WARNING**

- Continuing to push in the cigarette lighter could damage it or cause a fire. Never do it.
- Do not touch the metal part of the lighter when in use. You could be burned by the hot metal parts.
- Be careful not to deform the lighter. Deformed lighter could cause problems with its pop-out function. If it does not pop out within approx. 20 seconds, it could be malfunctioning. Pull it out by hand.
- Never use electrical products that use cigarette lighter as a power source such as a coffee pot.
- If the lighter is to be replaced, be sure to replace it with a genuine part. Never use the lighters from other vehicles or after-market lighters.
- Do not leave the vehicle with the lighter pushed in.



## Ashtray

- Open the lid of the ashtray to use it. Always close the lid after use. To clean the ashtray, pull it upwards and out.
- Clean the ashtray before driving.



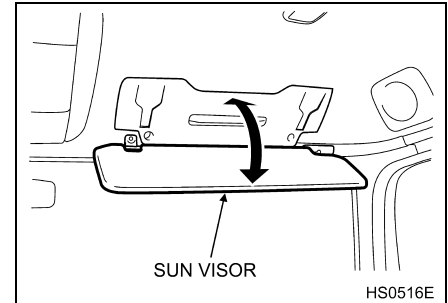
### WARNING

- **Extinguish cigarettes before discarding them in the ashtray.**
- **Do not put paper waste, empty cigarette cartons, etc. in the ashtray.**
- **Make sure that the cigarette, etc. is extinguished and that the ashtray lid is closed before leaving the vehicle.**

## Sun visors

### Driver's sun visor

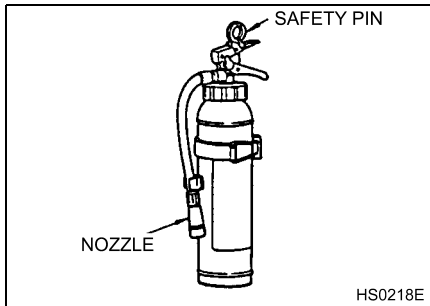
This is used to protect the eyes when the direct sunlight is bright. It can also be used to hold small things such as a card.



### Assistant's sun visor<sup>†</sup>

This is used to protect the eyes when the direct sunlight is bright.

## Fire extinguisher♦



It is important that a fire be extinguished in the beginning stages. Always check the fire extinguisher to make sure it is ready in case of an emergency and familiarize yourself with the proper way to use it. The chemical contained in the fire extinguisher is suitable for extinguishing fires caused by gasoline, heavy oil, gases, electricity and any other flammable material.

### Operation

To operate the fire extinguisher, pull out the safety pin, direct its nozzle toward the base of the flame and grasp the lever. Release the lever to stop the discharge of the chemical.

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## 9. Audio

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For audio unit, refer to the separate instruction manual provided by the manufacturer.



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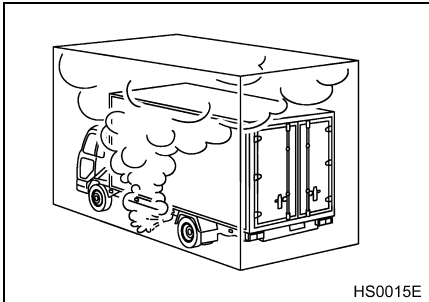
# 10. Correct driving operation

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Before starting the engine .....	10-2
How to start and stop the engine .....	10-2
AdBlue® tank .....	10-9
Operation of ESCOT .....	10-11
Operation of automatic transmission .....	10-23
Operation precautions .....	10-29
Correct driving when pulling a trailer .....	10-42
Economical driving .....	10-46
Driving under special conditions .....	10-49
Washing the vehicle .....	10-53

## Before starting the engine

- Check the area around the vehicle to make sure that there are no people or obstacles in the vicinity.
- Confirm that the parking brake lever is pulled up to the park position.
- Adjust the mirrors so that you can see to check the sides and behind the vehicle.
- Wear the seat belt correctly.



### WARNING

- **Adjust the driver's seat and steering wheel so that you can properly operate the switches and pedals.**
- **Keep the area around the pedals clean. Empty cans, gravel, or other debris be caught by the pedals and hinder the return of the accelerator pedal or cause brake dragging.**
- **Do not run the engine in an area with poor ventilation. Automobile exhaust contains harmful CO gas. If exhaust gas leaks into the cab, immediately stop the engine and open the windows to ventilate the cab.**
- **Absolutely do not drive while exhaust fumes are still in the cab.**

## How to start and stop the engine

### Ignition switch operation precautions

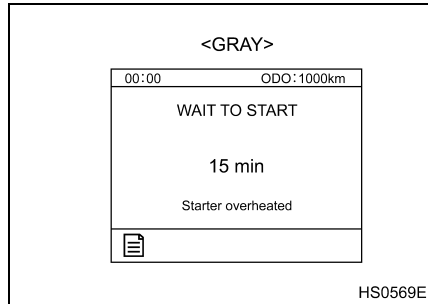
- This vehicle is equipped with an immobilizer which electronically performs the verification for theft prevention between ignition key and the ignition switch.
- If you lose your ignition key, registration of a new ignition key is necessary. Contact the nearest authorized UD Trucks dealer and inform them your key number.
- When the ignition switch is turned directly from the LOCK or ACC to the START position, starter operation may be delayed for approximately 1 second. When the ignition switch is turned to the ON position and then to the START position, starter operation is not delayed.

- Turn and hold the ignition switch in the START position to operate the starter.

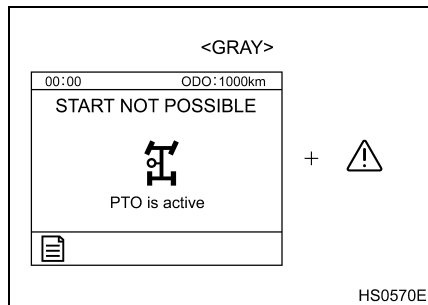
The starter operates for the maximum of 15 seconds and automatically stops if the engine does not run within 15 seconds.

If this occurs, return the ignition switch to the LOCK position, and then turn it to the START position to operate the starter again.

- The starter of this engine is equipped with an automatic anti-overheating device. (In principle, the device operates when the starter operation of approx. 15 seconds is repeated 3 to 4 times.) When the anti-overheating device is operated, “Starter overheated” warning message will be displayed. This message indicates the cooling time (10 to 15 minutes regularly) required for the starter to operate again.



- If the PTO switch is in the ON position, “Start not possible – PTO is active” message is displayed, and the engine is unable to start. If this occurs, turn the PTO switch to the OFF position, and then start the engine.



**CAUTION**

- **Start the engine while sitting in the driver's seat and fully depressing the brake pedal.**
- **Do not start the engine while reaching through the window. If the vehicle suddenly starts off, it could lead to an accident.**
- **If the engine would not start, wait for approx. 30 seconds after stopping the starter to recover the power of battery, and then try to start the engine.**

## Starting the engine

### ESCOT-VI

1. Make sure that the parking brake lever is pulled to the parking position.
2. Make sure that the gearshift lever is in the “N” position.
3. Make sure that the PTO switch is in the OFF position.
4. Turn the ignition switch to the ON position. Check that the meters are operating properly.
5. Check that the gear position indicator indicates “N”.

#### CAUTION

**When the gear position indicator displays nothing, there is a possibility that a gear is engaged. Therefore, move the shift lever again to the “N” position.**

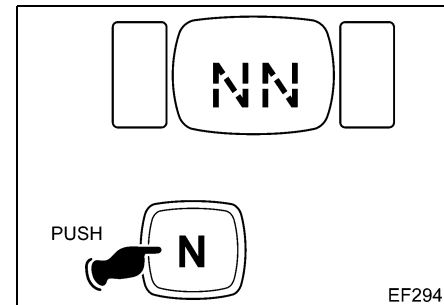
6. Depress the brake pedal fully, and turn the ignition switch to the “START” position to start the engine.

#### CAUTION

**The engine does not start if the gear is not in the “N” position. (Safety device)**

## Automatic transmission

1. Check that the parking brake has been pulled up.
2. Turn the ignition switch to the ON position. Check that the meters are operating properly.
3. Before starting the engine, make sure that “N N” is displayed on the digital display. The engine can only be started when “N N” is displayed; if it is not, push the N switch to display “N N”.



4. Depress the brake pedal fully, and turn the ignition switch to the “START” position to start the engine.



**CAUTION**

The engine does not start if the gear is not in the “N” position. (Safety device)

**NOTE**

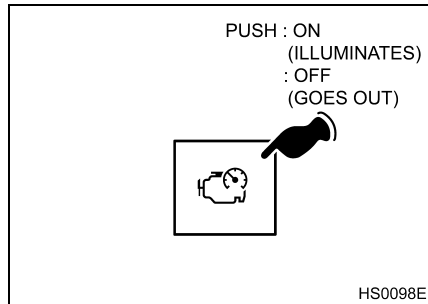
- Also warm up the automatic transmission. When the oil temperature is low during wintertime, only N, R and the lowest speed gear in the D range can be used.
- If the engine can be started in any range other than N, it is a malfunction. Contact your nearest authorized UD Trucks dealer.
- Avoid attempting to start your vehicle by pushing or towing.

**Warm-up operation**

The idling speed is adjusted automatically by setting the idling control ON/OFF switch to OFF position.

Appropriate idling speed after warm-up:

- 500 to 600 rpm (GH8 Engine)
- 400 to 500 rpm (GH11 Engine)
- (For Singapore CG series: 450 to 550 rpm)



**CAUTION**

Driving a vehicle with high idle speed may prevent the vehicle from being started smoothly and the gearshift being operated smoothly. Warm up the engine until the idle speed lowers, and then drive the vehicle.

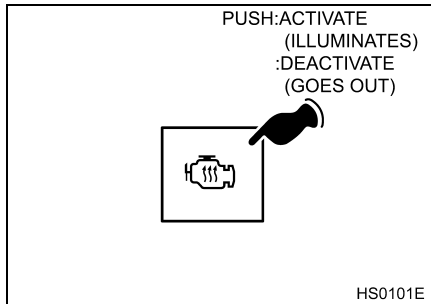
**NOTE**

- If idling is continued for a long time, the engine protection function operates and the engine speed temporarily fluctuates.
- Failing to allow the engine to warm up before starting off will reduce the useful life of the engine.

## To warm up quickly

### Operation procedure

1. Apply the parking brake.
2. Set the shift lever or gear selector in "N" position.
3. Start the engine and turn on the quick warm-up switch. The switch illuminates in amber and the warm-up operation at high idling speed will start.



### CAUTION

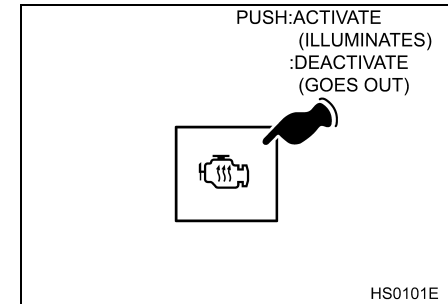
**Be sure to turn off the idling control ON/OFF switch before turning on the quick warm-up switch.**

### NOTE

**For the precautions of the quick warm-up switch, refer to "Quick warm-up switch" (page 5-58) in "Meters, indication lamps and switches".**

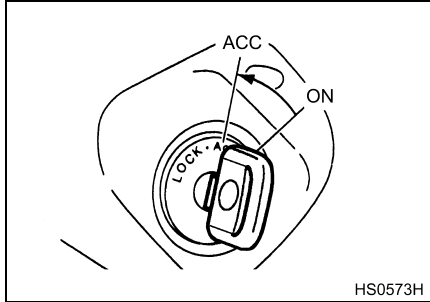
## To cancel operation

To cancel the quick warm-up operation, turn off the quick warm-up switch. The amber illumination will go off.



## Stopping the engine

Turn the ignition switch to the ACC position to stop the engine.



### CAUTION

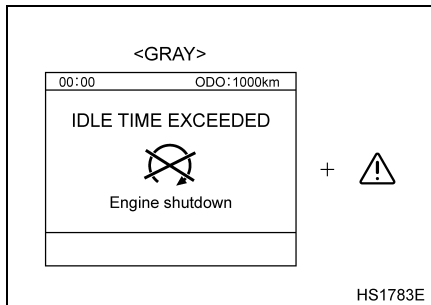
- If the engine does not stop even though the ignition switch has been returned to the ACC position, there is a problem, and therefore you should have it inspected and serviced by the nearest authorized UD Trucks dealer.
- In order to prevent a vehicle starting suddenly, always make sure that the gear position indicator displays “N” by operating the shift lever or gear selector to the “N” position before stopping the engine.

### NOTE

- Allow the engine to idle for a short period of time before stopping it.
- In particular, allow the engine to idle for a few minutes after hauling heavy loads or driving at high speeds. At such times the engine could overheat if stopped without being allowed to idle first, which will reduce the useful life of the engine.

## Automatic engine shutdown<sup>†</sup>

- The engine is switched off automatically when it is running at idling speed in order to save fuel. This takes place 150 seconds after the parking brake has been applied.
- At 30 seconds before automatic engine shutdown, the system displays the message “Engine shutdown” to alert the driver.



- The following conditions must be fulfilled before the engine is switched off:
  - Engine temperature and ambient temperature is within range
  - Vehicle is standstill
  - Accelerator pedal not pressed
  - The parking brake is applied
  - Brake pedal not pressed
  - Transmission PTO not activated
  - ACC stop & go is disabled
  - ACC is disabled
  - UDPC (UD Particulate Cleaning) is disabled
- The set time to alarm (30 seconds) and time to automatic engine shutdown (150 seconds) can be adjusted. Ask your nearest authorized UD Trucks dealer for cleaning.

## Delay and interruption of automatic engine shutdown

- The timer is reset under the following conditions.
  - Brake pedal is pressed
  - Releasing parking brake
  - Pressing accelerator pedal
- Engine shutdown does not affect any other functions, such as work lights for example.

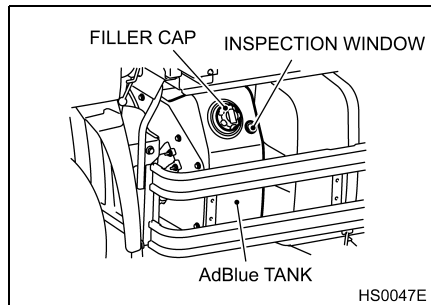
### CAUTION

- **When stopping the engine for a long time or when leaving the driver's seat for loading or unloading cargo, be sure to turn the ignition switch to the OFF position to prevent battery discharge.**
- **After the engine has stopped automatically, turn the ignition switch to the ON position and start the engine.**

## AdBlue<sup>®</sup> tank

### Urea water solution (AdBlue) supply

- Only add AdBlue specified by UD Trucks that satisfies the ISO22241-1 specifications to the tank.
- Make the effort to resupply the tank early to always keep it full. Also be careful to keep water and foreign material from getting in the tank when filling it.



#### ⚠ CAUTION

- Be sure to fill the specified urea water solution (AdBlue) in the AdBlue tank. If any sub-standard urea water solution or water is filled in the tank, the urea dosing system may cause a malfunction. In addition, filling something other than the urea water solution (such as diesel, kerosene, or gasoline) could cause a fire or malfunction. If something other than the specified urea water solution is added to the tank, have it inspected and serviced by the nearest authorized UD Trucks dealer.
- A vehicle cannot be operated with the AdBlue tank empty. This will not only worsen the exhaust emission condition, but the engine cannot be restarted if stopped. Refill the AdBlue earlier.

#### NOTE

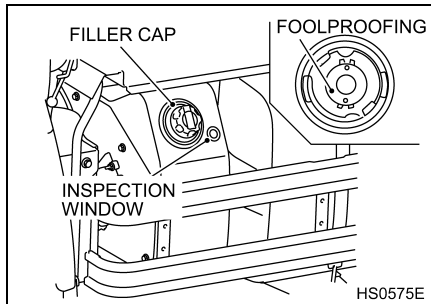
- If the solution is spilled when filling the tank, quickly wipe it up and then flush the area with a large amount of water.
- Do not get on the AdBlue tank or the cover and piping on top of the tank. Doing so could cause a malfunction.

### Precautions for supplying AdBlue

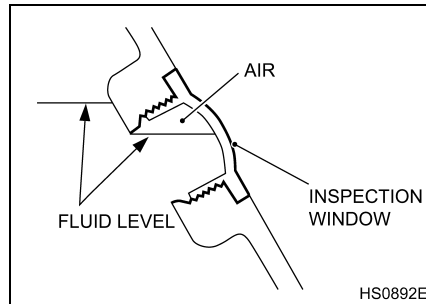
- The filler cap is locked by means of a key lock.
- The tank's filler port is fitted with a foolproofing device for receiving only the dedicated filler gun in order to avoid any product other than AdBlue from being introduced into the tank.

- Remove the filler cap and fill AdBlue until its level can be seen in the inspection window in the side of the filler port. Stop filling when the level appears in the window which means the tank is full.

Example of 50 liter tank



- Even if you continue filling after checking the level, the level in the inspection window will not rise further because air remains in the upper part of the window. Continuing refilling after checking the level may cause an overflow from the filler port.



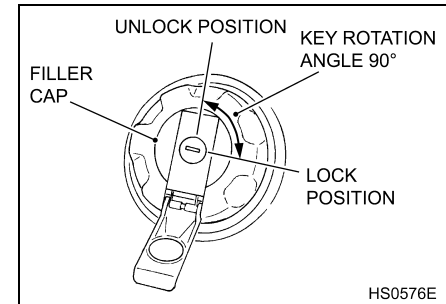
- Properly tighten the cap on the filler after supplying the solution.

## Handling of a filler cap

### Removing the filler cap

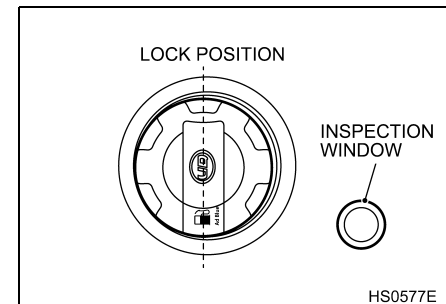
- When the cap is locked, the cap turns free so that it cannot be opened. Insert the special key and turn it 90° counterclockwise to unlock the cap.
- Remove the key in this position. When the cap is not locked, the cap does not turn free so that the cap can be opened.

- Turn the cap counterclockwise to remove it and then fill the tank with AdBlue.



### Attaching the cap

- Turn the cap clockwise until it stops. ("UD" logo becomes vertical.)



2. Insert the special key and turn it 90° clockwise to lock the cap. Remove the key in this position.

### NOTE

- Turn the cap fully until it stops. The key will not lock the cap if the cap is not in this position.
- To remove the key, turn it all the way to the lock or unlock position. Trying to force the key out between these positions will damage it and/or the lock.

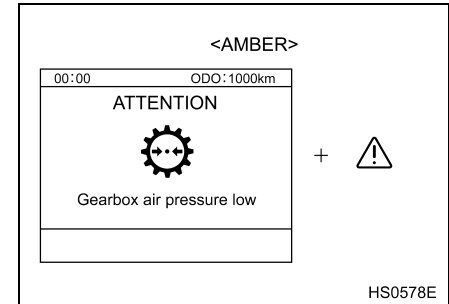
## Operation of ESCOT

### Smart operation of the ESCOT system

In order to operate the ESCOT functions fully and safely, observe the following items.

### Precautions while driving

When the “Gearbox air pressure low” warning is displayed on the multi-display, gearshift operation cannot be performed. Park the vehicle in a safe location and increase the air pressure. Drive the vehicle after confirming that the warning has disappeared.



### NOTE

**When the air pressure warning is displayed, charge air sufficiently and then drive the vehicle.**

- Do not drive with your hand resting on the shift lever. Unexpected gearshifting may occur.
- Do not shift into the “R” position while the vehicle is moving forward. Doing so may cause a transmission malfunction.

## Operation at a low temperature

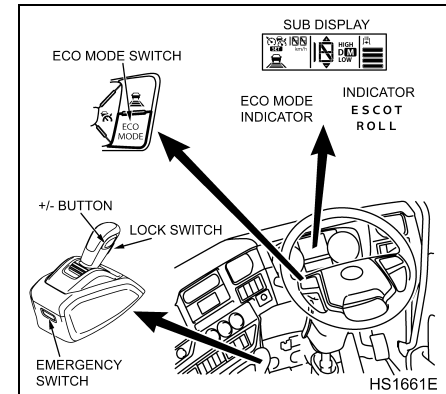
If the vehicle is not warmed up or is insufficiently warmed up in a cold winter morning, a gearshift malfunction may occur while driving the vehicle due to low temperature of the transmission oil. Warm up the engine sufficiently before driving.

### NOTE

**If operating the shift lever when the temperature of the transmission oil is low, a slight gear change noise may occur. This is not a malfunction.**

## Outline of the ESCOT-VI operation

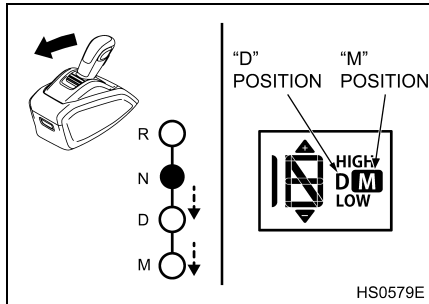
- ESCOT-VI automatically shifts the gear with no clutch pedal operation.
- The ESCOT-VI doesn't have a clutch pedal. It can start off by just operating the accelerator pedal. When the shift lever is set in the "D" position, ESCOT-VI performs the automatic shifting in accordance with the vehicle speed and road condition. When the shift lever is set in the "M" position, shift operation can be performed at your desired timing by just pressing the +/- button at the side of the shift lever. Because improper shift operations which may cause engine overrun is rejected by the system, you can operate the ESCOT system with ease.





### Setting of the starting gear

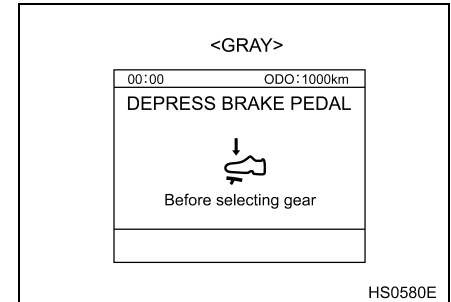
- To set the starting gear, depress the brake pedal, and shift the shift lever from the “N” position to the “D” or “M” position with its lock switch depressed.



#### NOTE

- **The shift lever is provided with an interlock mechanism. To shift the shift lever from the “N” position, depress and hold the brake pedal and operate the shift lever with its lock switch depressed.**
- **If the brake pedal is released before the starting gear has been engaged, the gear engagement will not be completed.**
- **When the shift lever is set in the “D” or “M” position, an optimum forward gear is selected from the 1st to 6th gears depending on the load of the vehicle and inclination of road.**
- **If the shift lever is moved from the “N” position to the “D” position while pressing the “-” button, the 1st gear is selected.**

- If the shift lever is operated without depressing the brake pedal, the starting gear will not be set, and “Depress brake pedal” message will be displayed on the multi-display. Depress the brake pedal to set the starting gear.



#### NOTE

**If the brake pedal is depressed after “Depress brake pedal” message disappeared, the starting gear would not be set. Perform the shift operation again.**

- When the starting gear is set, the set gear position is displayed on the sub display.

- The starting gear can be changed using the +/- button. Adjust the gear as required.

 **CAUTION**

Adjust the starting gear if it is improper just after loading or unloading the freight, etc.

**NOTE**

- When performing the shift-down operation several times, down to 1st gear can be selected.
- When performing the shift-up operation several times, higher gear positions than the selectable starting gear positions cannot be selected. Start the vehicle by selecting the available gear position.

- Check the gear position on the sub display, release the parking brake, release the brake pedal, and then gently depress the accelerator pedal. The clutch is automatically engaged and the vehicle will start.

 **WARNING**

- When the brake pedal is released while the starting gear position is set, the vehicle may start moving slowly. Depress the brake pedal firmly while stopping. Do not depress the accelerator pedal carelessly. Doing so could result in an accident. Depress the accelerator pedal after checking the area around the vehicle to be safe. Do not put your foot on the accelerator pedal while stopping except for starting the vehicle.

- If the starting gear position is not set, the vehicle will not start even if the accelerator pedal is depressed. The vehicle may roll backward on an uphill grade. Always check the gear position indicator when starting the vehicle before moving your foot from the brake pedal to the accelerator pedal.

 **CAUTION**

Use the Hill Start Assist function to prevent the vehicle from rolling backward on an uphill grade when starting the vehicle. If necessary, also apply the parking brake. However, do not park the vehicle with the starting gear set and parking brake applied for a long time. Doing so may cause premature wear or damage of the clutch disc.

### Automatic gearshift driving

- While the vehicle is driving with the shift lever in the “D” position, the transmission is automatically shifted depending on the degree of accelerator pedal depression and the engine speed.

**CAUTION**

To avoid unexpected gearshifting, set the shift lever in the “M” position and drive the vehicle in the manual gearshift mode under the following conditions. Use the +/- button on the shift lever to change gear in this mode.

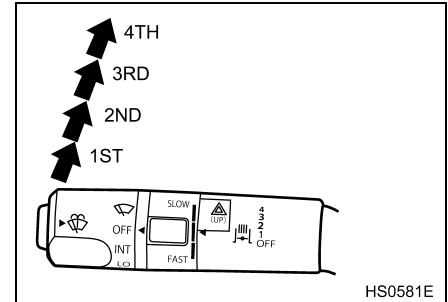
- Steep uphill or downhill grade
- Severe traffic jam
- Slippery road surface (compacted snow, frozen road, etc.)

**NOTE**

While shifting up the gear, the auxiliary brake may operate even if the auxiliary brake switch has not been operated. This may occur to achieve rapid and smooth gearshifting operation and is not a malfunction.

- When the accelerator pedal is lightly depressed, the transmission is shifted up at a low engine speed. When the accelerator pedal is firmly depressed, the transmission is shifted up at a high engine speed.
- Even when the accelerator pedal is depressed, the transmission may shift down depending on the driving condition.
- When the auxiliary brake switch is placed in the 4th position, the transmission will automatically shift down to an appropriate gear position in conjunction with the release of the accelerator pedal.

GH8 Engine:  
3rd and 4th positions  
GH11 Engine:  
4th position



**NOTE**

- Downshifting allows the engine speed to be higher and the engine braking effort to be larger.
- When decelerating from high speeds, use the downshift function to fully utilize the engine braking effort.
- When the shift lever is in the “M” position, the shift down function does not take place.

- When the accelerator pedal is firmly depressed beyond the depression force change point of the kick down select function\*, the transmission is shifted down to the gear position where driving performance is maximized.

\* Kick down select function

When the accelerator pedal is gently depressed, the depression force change point can be noticed. The short pedal travel after this point activates the kick down select function. As the pedal travel is short (approximately 10 percent of the total stroke), check this when the engine is stopped. (For details, refer to the "Kick down select function" (page 6-127) in "Controls and functions".)

- The optimum gear position for downshifting is selected from the 12 gear positions depending on the degree of accelerator pedal depression and the driving conditions.



### CAUTION

- **Even if the accelerator pedal is depressed beyond the depression force change point, the gear position may not be shifted down depending on the driving gear position or the engine speed at that time.**
- **If the accelerator pedal is returned to the point before the depression force change point immediately after shifting down by depressing the accelerator pedal over the depression force change point, the transmission may shift up. Keep the accelerator pedal depressed over the depression force change point in order to maintain the gear position.**

### Operation of shift lever while driving

- The gear is shifted up or down by one position each time the +/- button is pressed.
- When the +/- button is pressed twice, the transmission can be shifted up or down two positions at one time within a range that does not cause overrun or underrun.
- Even when the vehicle is driven with the shift lever in the "D" position, the transmission can be shifted up or down using the +/- button.
- When the gearshift operation is performed using the +/- button while driving the vehicle in the automatic transmission mode, the transmission may not be shifted up or down by one gear. This is a normal gearshift operation to shift to an appropriate gear position and is not a malfunction. Set the shift lever in the "M" posi-

tion and operate the +/- button if necessary.

- Select the appropriate gear position before the vehicle approaches an uphill grade. Judging the road conditions ahead and selecting the proper gear enable the driver to achieve smoother driving.

**NOTE**

**When decelerating or driving on a downhill grade, use the +/- button and downshift the transmission to use effective engine braking.**

- Even the +/- button is operated, the system does not accept gearshift operation that causes engine overrun or underrun. In this case, reconsider and perform the proper shift operation.

**NOTE**

- **If the gear position indicator does not change during gearshifting, place the shift lever in the “N” position, confirm the gear position indicator shows “N”, then return the shift lever to the “D” position and operate the +/- button.**
- **When the idle speed is high, starting the vehicle or shifting the gear may not be performed smoothly. Warm up the engine until the idle speed lowers, and then drive the vehicle.**
- **If the vehicle is not warmed up or insufficiently warmed up on a cold winter morning or the like, a gearshift malfunction may occur due to low transmission oil temperature. Warm up the engine sufficiently before driving.**

**Stopping the vehicle after driving (automatic setting of the starting gear)**

- While driving with the shift lever in the “D” position (automatic gearshifting mode), if the accelerator pedal is released and the brake pedal is depressed to reduce the vehicle speed, automatic downshifting takes place in accordance with the vehicle speed.
- When the vehicle is stopped, the system automatically disengages the clutch, shifts to the starting gear position and enters the standby state.



**CAUTION**

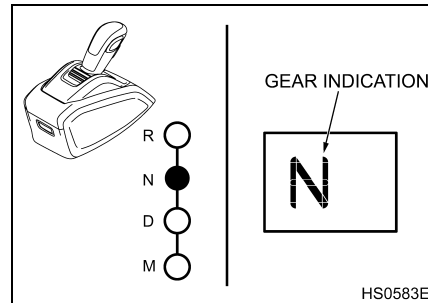
**If the starting gear position is not appropriate because freight is just loaded or unloaded, change the starting gear position as necessary.**

## NOTE

- The engine speed increases when downshifting during deceleration. This is to prevent shift shock by adjusting engine speed, and is not a malfunction.
- The gear is automatically shifted just before the vehicle is stopped. A noise may be heard when the gear is shifted. This is to achieve smooth gearshift when starting or accelerating the vehicle again. This is not a malfunction.

## Operation for long term parking

- When stopping or parking the vehicle for a long period of time, shift the shift lever to the “N” position, make sure that the indicator displays the “N” position and a buzzer sounds, and apply the parking brake.

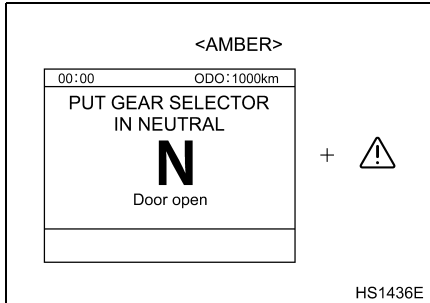


## CAUTION

- Even the shift lever is moved to the “N” position, the gears are still engaged until the shift operation of the gearbox is completed. In addition, if there is no gear position indication, the gears may still be engaged. Before turning the ignition switch to the “OFF” position, shift the shift lever to “N” position and confirm that “N” is displayed on the gear indicator.
- This vehicle (ESCOT-VI model) cannot be parked with the gear engaged. Even when the vehicle is parked with the gear engaged, the system automatically shifts gear to the neutral position after the ignition switch is turned off. Apply the parking brake and use wheel chocks as necessary.

**Opening the door when the starting gear position has already been set automatically**

If a door is opened when the starting gear position has already been set, the system alerts the driver with “Put gear selector in neutral” message. When leaving the vehicle, shift the shift lever to the “N” position, make sure that the indicator shows the “N” position, and apply the parking brake.



**! WARNING**

**Never leave the vehicle while the starting gear position is set. Doing so may cause unintentional start of vehicle.**

**NOTE**

**The “GEAR SELECTOR” in the warning message refers to the gear lever.**

**Interrupted start**

When the accelerator pedal is returned while starting, clutch engagement is automatically interrupted and starting of the vehicle is cancelled. When the accelerator pedal is returned after the vehicle has started, the vehicle moves in the starting gear at idle speed. Depress the brake pedal to stop the vehicle.

**! CAUTION**

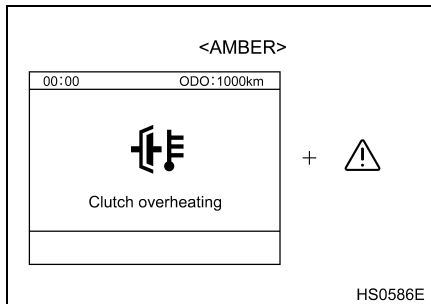
**If the auxiliary brake switch is turned on, the vehicle decelerates abruptly. Turn the auxiliary brake switch to the OFF position if it is not necessary.**

**NOTE**

**If the accelerator pedal is returned rapidly while starting, the vehicle may shake. This does not indicate a malfunction. Keep a safe distance from the vehicle in front and avoid abrupt operation of the accelerator pedal.**

## Automatic start on an uphill grade

- When starting the vehicle on an uphill grade, use the hill start assist function and the parking brake depending on the loading weight or the angle of the grade.
- If starting the vehicle forcibly, “Clutch overheating” message appears to warn the driver of overloaded clutch. In this case, change the starting gear position.



### WARNING

To prevent the vehicle from rolling backward unexpectedly, pay attention to the following items:

- The transmission of this vehicle is not a torque converter type and does not have a creep function. Firmly depress the brake pedal to stop the vehicle on an uphill grade.
- When starting the vehicle on a steep uphill grade, use the hill start assist function and the parking brake as necessary depending on the loading weight or the angle of the grade.

### NOTE

If “Clutch overheating” warning appears, the starting gear position is restricted to “1”. This restriction is released when the gear is shifted to “7” or higher.

- If the vehicle rolls backward on an uphill grade when the brake pedal is released while the starting gear position is automatically set, the system alerts the driver with the main brake applied intermittently for driveline protection. (Driveline protection function)
- If the vehicle rolls backward, depress the brake pedal to stop the vehicle.

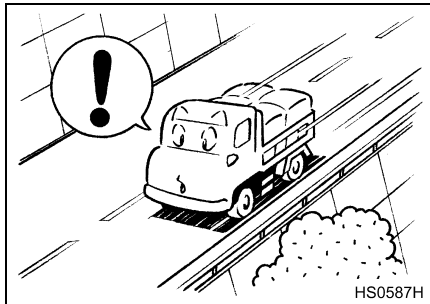
### CAUTION

- Do not start to move the vehicle forward when the vehicle is rolling backward on an uphill grade while the starting gear position is automatically set. Doing so may cause damage to driveline components such as the clutch, etc.
- The driveline protection function only alerts the driver and does not stop the vehicle.



### Starting on a downhill grade

- When the vehicle starts moving on a downhill grade with the brake pedal released while the starting gear is automatically set, the clutch is automatically engaged to apply engine braking when the vehicle speed exceeds a specified value to prevent excessive acceleration.



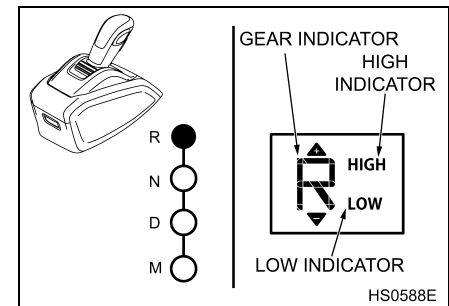
### Re-acceleration from slow speed driving on an uphill grade

- If the accelerator pedal is depressed when the vehicle is slowing down to almost stop on a steep uphill grade, a higher gear position may be selected and this may result in insufficient acceleration.
- Use the +/- switch to shift the gear down earlier to an appropriate gear position even in the automatic transmission mode.

### Reversing

- The reverse gear is set by operating the shift lever to the “R” position while the brake pedal is depressed and the vehicle is stopped.
- The gear range (high or low) can be selected using the +/- button.

The gear positions to be set	
Shifted to “R”	R•LOW
“+” is pressed in “R•LOW” position	R•HIGH
“-” is pressed in “R•HIGH” position	R•LOW



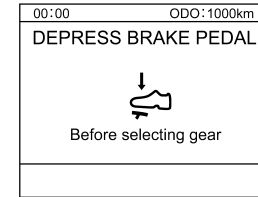
**CAUTION**

- A gear noise may occur when the transmission is shifted to the “R” position while the vehicle is moving forward or the engine speed is high. This may cause a malfunction of the transmission.
- Before shifting gear to the forward position while backing up or to the reverse position while moving forward, always stop the vehicle. Not doing so could cause the transmission and clutch to malfunction.

**NOTE**

- There are cases that the reverse gear may not be engaged smoothly when shifting gear to the “R” position. If the gear position indicator does not switch to “R”, move the shift lever to the “N” position to shift gear to neutral, and then move the shift lever into the “R” position.
- If the brake pedal is released before the reverse gear is set, the reverse gear is not selected.
- When the shift lever is operated without depressing the brake pedal, “Depress brake pedal” message is displayed. In this case, the reverse gear has not been set yet. Depress the brake pedal to set the reverse gear.

&lt;GRAY&gt;



HS0580E

**NOTE**

If the brake pedal is depressed after “Depress brake pedal” message disappeared, the reverse gear would not be set. Perform the shift operation again.

- When the reverse gear is set, the gear position indicator displays “R”.
- Check the gear position indicator, release the brake pedal, and then gently depress the accelerator pedal. The clutch is automatically engaged and the vehicle will start.

**WARNING**

- When the brake pedal is released while the reverse gear position is set, the vehicle may start moving slowly. Depress the brake pedal firmly while stopping. Do not depress the accelerator pedal carelessly. Doing so could cause an accident. Depress the accelerator pedal after checking the area around the vehicle is safe. Do not rest your foot on the accelerator pedal while stopping.
- If the reverse gear position is not set, the vehicle will not start even if the accelerator pedal is depressed. The vehicle may move forward on a downhill grade. Always check the gear position indicator when starting the vehicle before moving your foot on the accelerator pedal.

**CAUTION**

Even when the gear position indicator displays nothing, the gear may be engaged. Therefore, confirm the gear position before releasing the brake pedal.

**NOTE**

When the reverse (R) gear is engaged, an intermittent buzzer (chirp) will sound inside and outside the cab.

**Driving with the shift lever in “M” position**

- When the shift lever is in “M” position, the manual gearshift mode activates.
- While driving, shift gears using the +/- button.

## Operation of automatic transmission

The automatic transmission automatically engages and disengages the clutch and shifts gears by electronic control. Manual clutch operation is not required. Automatic shifting is performed according to road conditions such as heavy traffic in urban areas, sharp curves and slopes, and slippery road surfaces.

## Characteristics of automatic transmission vehicles

### Creep phenomenon

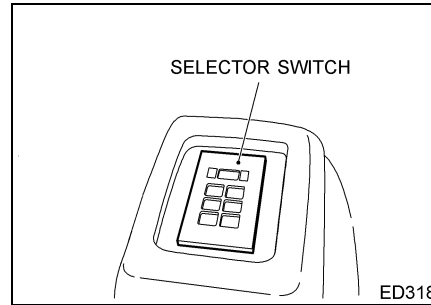
This is a phenomenon specific to automatic transmission vehicles. When the gear selector is in other than the N range (engine power is connected), the vehicle moves slowly even if the accelerator pedal is not depressed.

During a temporary stop or park, depress the brake pedal sufficiently, or if necessary move the gear selector to the N range, so that the vehicle does not move.

In particular, if you leave the vehicle with the engine running and the gear selector outside the N range, the vehicle may creep, or suddenly start by accidentally depressing the accelerator pedal, causing a serious accident. Make it a habit to put the gear selector in the N range and pull the parking brake lever fully before leaving the vehicle.

#### NOTE

Check that the digital display of the gear selector is "N".

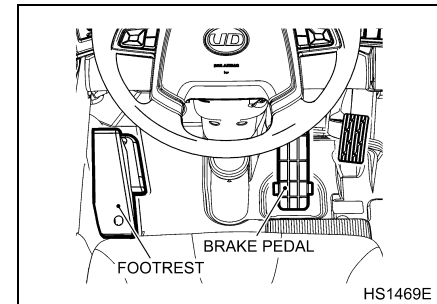


### Brake operation

To ensure reliable braking, always step on the brake pedal with your right foot.

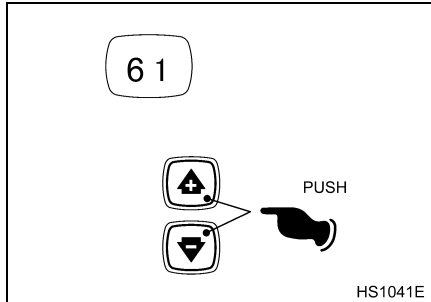
Braking with the left foot can be very dangerous as you may be late to respond in an emergency if you are not used to left foot braking.

Place your left foot on the footrest while driving.



## Starting to move the vehicle

- With the power mode switch, select normal or power mode.
- Keeping the brake pedal depressed with the right foot, push the switch and select the range. To move the vehicle forward, select D (Drive), to move backwards select R (Reverse).




- If the engine speed is high, the gear is not engaged. Use the idling control switch to lower the speed.
- To start the vehicle on a level ground, select the "D" range.

- Release the parking brake. Lift your foot off the brake pedal.
- When traveling forward, acceleration begins from 1st gear. According to the engine load and speed, the transmission will automatically shift from 1st gear, to 2nd, to 3rd... up to the maximum gear for the selected range.



### CAUTION

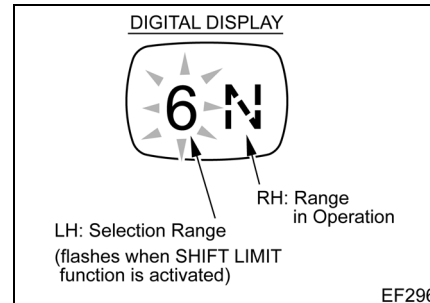
- If upshifts and downshifts repeatedly occurs while driving (shift hunting), shift to a lower speed gear range using the  switch.
- When the accelerator pedal is gradually depressed to accelerate the vehicle or to maintain a constant speed when climbing slopes, kickdown may occur, leading to an increase of the engine speed, but this is not a failure.
- Before shifting the range from "N" to "D" or "R" or from "D" to "R", allow the engine to idle. Before shifting the range to the position above 1st gear, release the accelerator pedal.

## NOTE

- Shifting with the power mode switch can be done only while the engine running.
- The engine protection function may provide torque derating to prevent the engine from being damaged, which may also cause shift shock to occur.
- If the temperature of the automatic transmission fluid rises excessively due to continuous climbing on a steep slope or continuous starting and stopping, the engine power may be automatically limited to reduce the load on the transmission. This is not abnormal.

## SHIFT LIMIT warning message

On the selector digital display, the left side (selection range) character ("R", "6", "5", "4", "3", "2" or "1") flashes when there has been an error in operation or when the safety circuit has been activated. It indicates that it is not possible to change from the current gear to another specified gear.



## Stopping and parking

- When stopping temporarily, leave in the D (Drive) position. Be sure to keep the brake pedal depressed with the right foot. Then it is not necessary to return the selector switch to N (Neutral).
- When stopping for 5 minutes or longer, shift to the N (Neutral) position.
- When parking, first stop the vehicle, then shift to N (Neutral), then slowly release the brake pedal and check that the lock has been engaged. Then firmly apply the parking brake.
- Each time you park the vehicle or leave the cab with the engine running, do the following.
  1. Bring the vehicle to a complete stop using the service brake.
  2. Ensure that the engine is at low idle rpm.
  3. Put the transmission in N (Neutral).

4. Apply the parking brake if present, and make sure it is properly engaged.
5. Slowly release the service brake.
6. If the cab will be unoccupied with the engine running, chock the wheels and take any other steps necessary to keep the vehicle from moving.

## Accelerator pedal control

The position of the accelerator pedal influences the automatic shifting. When the pedal is fully depressed, the transmission will automatically upshift near the engine-governed speed. A partially depressed position of the pedal will cause the upshifts to occur at a lower engine speed.

### WARNING

**When depressing the accelerator pedal or when the engine speed is higher than the idling speed, do not shift the selector switch from N to the forward or R range.**

**Doing so is very dangerous, as the vehicle might jump suddenly forward or backward. The transmission might also be damaged.**

## Downshift or reverse inhibitor feature

The transmission hydraulic system will not permit a shift into any forward gear at a speed that would cause excessive engine overspeed. Any lower forward range may be selected at any time, but the actual engagement of the gears in that range will not occur until the road speed is reduced. Downshifting is progressive as road speed decreases. The inhib-

itor effect will cause downshifts to occur at slightly higher speeds than normal automatic downshifts. If the selector switch is accidentally pushed to reverse while traveling forward, the transmission is designed not to shift into reverse gear until the road speed is very low. To avoid shift shock, always come to a complete stop before shifting from forward to reverse or from reverse to forward.

## Using the engine to slow the vehicle

To use the engine as a braking force, shift the selector to the next lower range. If the vehicle is exceeding the maximum speed for a lower gear, use the service brakes to slow the vehicle to an acceptable speed where the transmission may be downshifted safely.

## Parking brake

There is no park position in the transmission shift pattern. Therefore, always put the selector in neutral and apply the parking brake to hold the vehicle when it is unattended.

## Driving on ice or snow

Here is where all of your skill as a professional driver is needed, regardless of what transmission you have. If possible, reduce speed and select a lower range before you lose traction. Select the range that will not exceed the speed you expect to maintain. Accelerate or decelerate very gradually to prevent losing traction. It is very important to slow down gradually when a lower range is selected. It is important that you reach the lower range selected before attempting to accelerate. This will avoid an unexpected downshift during acceleration.

## Rocking out

If the vehicle is stuck in deep sand, snow, or mud, it may be possible to rock it out. Shift to D (Drive) and apply steady, light throttle (never full throttle). When the vehicle has rocked forward as far as it will go, apply and hold the vehicle service brakes. Allow the engine to return to idle; then select R (Reverse). Release the brakes and apply a steady, light throttle and allow the vehicle to rock in R (Reverse) as far as it will go. Again, apply and hold the service brakes and allow the engine to return to idle. This procedure may be repeated in D (Drive) and R (Reverse) if each directional shift continues to move the vehicle a greater distance. Never make N (Neutral)-to-D (Drive) or directional shift changes when the engine rpm is above idle.



**To avoid injury or property damage caused by sudden movement of the vehicle, do not shift from N (Neutral) to a forward range or R (Reverse) when the accelerator pedal is depressed. The vehicle will lurch forward or rearward and the transmission may be damaged. Avoid this condition by making shifts from N (Neutral) to a forward range or R (Reverse) only when the throttle is closed.**



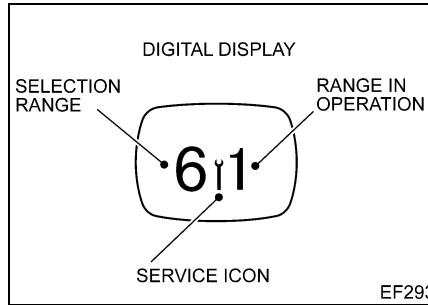
**CAUTION**

If the wheels are stuck and not turning, do not apply full power for more than 30 seconds in either D (Drive) or R (Reverse). Full power for more than 30 seconds under these conditions will cause the transmission to over-heat. If the transmission overheats, shift to N (Neutral) and operate the engine at 1,200 to 1,500 rpm until it cools (2 to 3 minutes), and then confirm that the warning light of the automatic transmission fluid temperature has gone out.

**Automatic transmission maintenance information light**

This light will illuminate when the automatic transmission should be serviced as soon as possible to

check its components such as fluid, filter and clutch.



- If the light illuminates, contact your nearest authorized UD Trucks dealer.

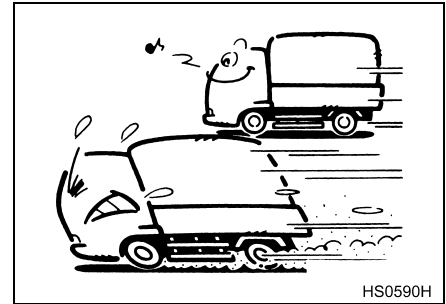
**CAUTION**

Do not continue driving the vehicle with the automatic transmission maintenance information light on. Doing so may cause damage to the automatic transmission.



**Operation precautions**

**Start-off precautions**

- Avoid sudden start-off or stops. Sudden start-off not only wear out the clutch but also cause abnormal wear of the tires. Sudden stopping also causes premature wear of the tires and brake pads.



## Automatic transmission vehicles

- When the gear selector is moved from the N range to another range to start, the vehicle will creep. When starting, be sure to shift the range with the brake pedal depressed or the parking brake lever pulled fully.
- Do not move the gear selector lever or press the  /  button while depressing the accelerator pedal. If you do this, the vehicle will start suddenly. For automatic transmission vehicles, the starting speed is controlled only by the accelerator. Operate the accelerator carefully.

### CAUTION

**When the gear selector is in other than the N range, the vehicle may creep even if the accelerator pedal is not depressed. Be sure to use the brakes until you start (while stopped).**

## Precautions while driving

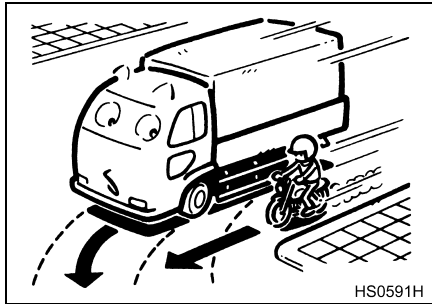
### WARNING

**Coasting with the engine off is dangerous. Never do it. Compressed air will not be supplied to the brakes when the engine is off, which will lead to inoperative brakes. The steering assist mechanism also will not work, so the steering wheel operation will become heavy, which will hinder proper steering.**

- **It is normal for the warning indicators to be off while driving.** If a warning indicator illuminates or a warning buzzer sounds, it means that there is a problem, so immediately stop the vehicle in a safe place and take the required measures.

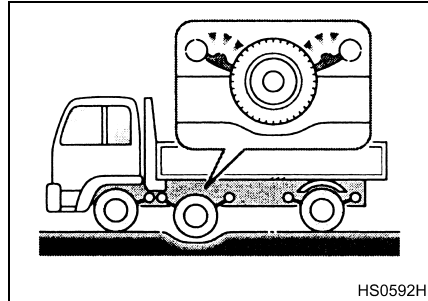
- **Decelerate before entering curves.** Braking while turning the steering wheel makes the wheels to lock up easily, which could cause them to lose their grip on slippery roads (wet, icy, or snowy roads, etc.). In addition, the tires will wear out prematurely. Avoid doing this as much as possible.
- **Be careful of the space next to the vehicle on the inside of turns when turning at an intersection.** The rear wheels will cut a tighter radius than the front wheels, which could strike pedestrians or bicycles, etc. Be sufficiently careful when turning. When turning left in particular, use the indirect field of view via the mirrors to make sure that the left side of the vehicle is safe. The left-side mirror should always be properly adjusted so that it can be used to check that it is safe when turning left.

Inside wheel turning radius difference



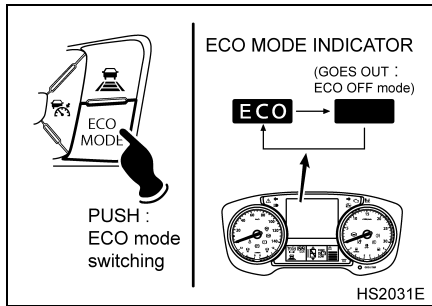
- The shoulder of the road may crumble easily, so be careful to keep the wheels off of the road shoulder when passing an oncoming vehicle, when passing a vehicle ahead of you, or when avoiding an obstacle, etc.
- The low bed models have smaller ground clearance. Be careful not to hit the undercarriages, etc. when passing a stepped portion.
- On front 2-axle models, there may be a case that the wheels of either of the front axles do not contact the ground depending on the surface condition. If the truck

is parked in this condition for a long time, an excessive load is applied to the suspensions of the contacting axle, which can be a cause of trouble. Do not park the vehicle in this condition for a long time.



## ECO MODE switch<sup>◆</sup>

- The ECO MODE switch is used to change between ECO mode and ECO OFF mode. An indicator illuminates on the multi-display. In the ECO OFF mode, an indicator goes out on the multi-display.
- In ECO mode, the acceleration limiter is active. When the accelerator pedal is depressed, rapid acceleration exceeding a predetermined level is suppressed, resulting in a moderate acceleration with good fuel economy. In cases such as when accelerating to overtake another vehicle, you can press the ECO MODE switch to change to ECO OFF mode to obtain the vehicle's original acceleration.



## When traveling down-hill or shifting down

### ESCOT-VI

When traveling downhill, use the same gears that were used when traveling up the hill in combination with the exhaust brake & EEB to ensure safe driving. If the vehicle still runs too high speed, use the main brake and maintain a safe speed at all times.

### WARNING

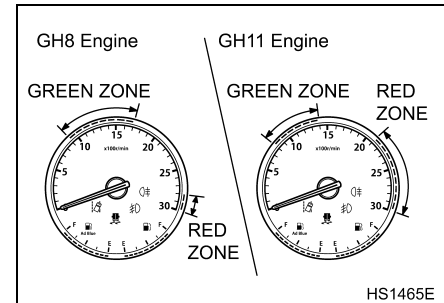
**Use of the exhaust brake or EEB on the slippery road (roads with packed snow or/and ice, wet roads and etc.) could cause the lock-up of the rear wheels to slip. Be careful.**

- Do not drive downhill with the transmission in neutral (except ESCOT ROLL).

- Be careful not to overrun the engine when driving (especially when driving downhill).
- The tachometer's red zone shows the overrun speed range, so make sure that the needle does not enter the red zone.

### Red Zone:

**2,800 rpm and higher  
(GH8 Engine)**  
**2,100 rpm and higher  
(GH11 Engine)**



 **CAUTION**

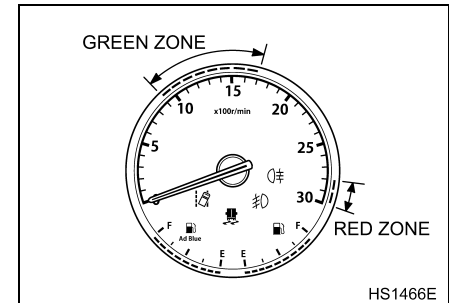
- **Overrun is when the engine is running at a speed that exceeds the engine's maximum rpm. Do not exceed the maximum allowable rpm. Driving beyond this range over-stresses the engine components and could cause the engine to malfunction.**
- **The radiator cooling fan stops when the engine speed enters the red zone. If the engine is operated in red zone when the engine coolant temperature is high, overheating may occur. Be sure to drive the vehicle with the engine speed not entering the red zone.**

### Automatic transmission

- When descending a slope, downshift to D→5→4→3→2→1 depending on the conditions of the slope and use engine braking. In addition, use the exhaust brake and EE brake in combination for safe driving.
- When the vehicle speed is excessively high, the transmission may upshift to a higher range than the selected range due to activation of the safety device. In that case, use the service brake and drive at a safe speed.
- Be careful not to let the engine overrun while driving (especially, descending slopes).

- The tachometer's red zone shows the overrun speed range, so make sure that the needle does not enter the red zone. Overrun means that the engine runs above the maximum speed. If the engine is used above the allowable speed, the engine components can be overstressed and the engine can be damaged.

**Red Zone:**  
**2,800 rpm and higher**



- If the engine speed enters the red zone, reduce the engine speed immediately.

## Brakes

- **When braking, apply auxiliary brakes in combination with the main brake.** The vehicle is equipped with auxiliary brakes that include the exhaust brake & EEB. Shifting the shift lever into neutral will prevent the auxiliary brakes from working, which will reduce the braking force and lengthen the stopping distance. Using the auxiliary brakes will lengthen the life of the brake pads. Never use the parking brake as service brake except in emergencies.
- **Before descending down steep roads or long downhill roads, check the brakes ahead of time to make sure that they are working correctly. Then, always use the exhaust brake & EEB to maintain a safe speed at all times.** Shifting down (while taking care not to overrun the engine) will also increase the braking force of the exhaust

brake & EEB. Using the main brake too much will cause the brake to overheat, which will decrease the braking effect.

- If you feel that something is wrong with the brakes while driving, immediately stop the vehicle in a safe location and inspect them.



### WARNING

**Avoid continuously using the main brake for a long period of time. The brakes could overheat and cause fading, which seriously decreases the braking effect.**



### CAUTION

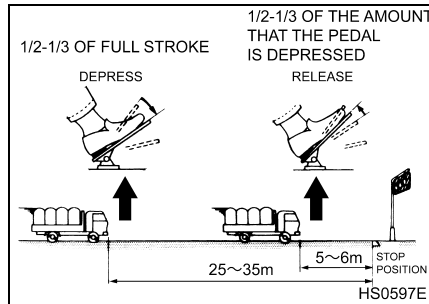
- **Do not brake sharply except in emergencies. Sharp braking causes the tires and brakes to wear out prematurely and will shorten the useful life of other parts. In addition, abrupt braking on slippery road such as rainy road is very dangerous.**
- **When driving after washing the vehicle or driving through deep puddles, etc., the braking effect could be greatly reduced by water getting on the brakes.**

## Brake pedal operation method

- The brakes of this vehicle are full-air type brakes, so unlike hydraulic type brakes where the foot depression force on the pedal is used to apply the brakes, **the amount the pedal is depressed is used to control the air pressure, and this air pressure is applied to the brakes.** The pedal just opens and closes the suction and discharge valves, so powerful braking can be applied with a very light depression force. Therefore, do not depress the pedal deeply except for emergencies.
- Follow the directions below to smoothly stop the vehicle.
  - Depress the pedal about 1/3 to 1/2 of full pedal stroke at 25 to 35 meters in front of the planned stopping position.
  - At about 5 to 6 meters in front of the planned stopping position, gradually allow the pedal

to return (about 1/3 to 1/2 of the initial depressed amount).

- Depress the pedal only slightly just before the planned stopping position to stop the vehicle.



## ! WARNING

- The brakes will become inoperative when the compressed air for the brake is used up. The braking performance will decline as the air pressure drops, so always keep an eye on the air pressure gauges and maintain the standard air pressure.
- Keeping the pedal depressed deeply will stop the vehicle in a short distance, but this will be accompanied by a strong shock.
- If the pedal is released completely, the air in the air chamber will be discharged and the vehicle will continue to roll forward, which could result in a collision on crowded roads, etc.
- Pumping the pedal will discharge the air in the air chamber and the vehicle will keep rolling forward, so do not do it.

## Brake assist function

- This function increases the braking force to the maximum braking force quickly when applying sudden braking.
- When this function operates, the brake lights flash to warn the sudden braking to the following vehicles.

## Emergency Braking Signal<sup>†</sup>

The Emergency Braking Signal system automatically flashes the brake lights rapidly to alert the driver of the vehicle behind that you braked suddenly, reducing the risk of a rear-end collision.



### CAUTION

**The Emergency Braking Signal system reduces the risk of rear-end collisions, but cannot completely prevent them. When driving, avoid unnecessary sudden braking and drive safely.**

## Precautions when driving vehicles with EBS

- EBS stands for electronic braking system, and it adds an electric signal to the air signal of the brake system.
- EBS also has the ABS and ASR functions. For ASR, refer to “Precautions for vehicles equipped with ASR” (page 10-52).
- EBS detects the brake pedal stroke and uses a computer to control the braking force to improve operability and safety. It does not, however, make it possible to drive a vehicle beyond the safety limits. Observe the following safety precautions and always drive safely.

## Engine starting precautions

- When the ignition switch is turned ON, confirm that the EBS warning indicator illuminates and then turns off after lighting (system) check is completed (approx. 3 seconds).
- When starting the engine on an uphill slope, the change in battery voltage could affect the EBS and cause the vehicle to move. Apply the parking brake or fully depress the brake pedal when starting the engine.



## EBS (ABS) operations

- When the ABS is operating, the vehicle body and brake pedal may vibrate a little, and intermittent operation sound might also be heard, but these are not malfunctions.
- When driving on slippery roads, the braking distance will be longer than during normal driving on dry, paved roads even when the ABS is operating. When the ABS operates while braking on roads covered with deep snow, gravel roads, or when using tire chains, the braking distance might be a little farther than that of vehicles not equipped with ABS. Always drive at a safe speed and sufficient following distance, while taking into consideration the road conditions, tire conditions, etc.
- A greater amount of air than normal will be consumed when the ABS operates during sharp braking at high speed or when braking on slippery roads. If the brake warning indicator illuminates and the buzzer sounds, immediately stop the vehicle in a safe location and wait for the air pressure to recover before continuing to drive.
- The ABS is designed to prevent the wheels from slipping when braking and will not operate when the wheels slip during acceleration or when cornering. In addition, when driving on very slippery road, such as icy road, you might lose control of the vehicle and have trouble in steering it even when ABS operates. Always drive at a safe speed and avoid sharp braking and sharp steering as much as possible.
- If the wheels slip when using the auxiliary brakes (exhaust brake and EEB) while driving on slippery roads or over bumps, etc., it could cause the auxiliary brakes to temporarily release and their respective indicators to go off, but this is a normal operation of ABS and is not a malfunction. Drive carefully taking into consideration

of the road conditions, the following distance, and other factors.



### WARNING

**ABS is a device that improves safety by appropriately controlling wheel slip during braking to utilize the friction between the tires and the road surface, but it is not a device that makes unsafe driving above safety limits possible.**



### CAUTION

**Repeatedly turning the ignition switch ON and OFF will cause the ABS warning indicator to remain lit when the engine is started. If this happens, turn off the engine and then turn the ignition switch slowly to start the engine. If the warning indicator still does not turn off, there might be an ABS malfunction.**

## EBS (ABS) warnings

The brake pedal will feel heavier when the EBS warning indicator stays on, but the braking force can be increased by further depressing the pedal. Depress the brake pedal carefully.

### CAUTION

**If the brake warning indicator stays on, have your vehicle immediately inspected by the nearest authorized UD Trucks dealer.**

## Other precautions

When installing an electronic component such as a radio set, route its wiring carefully so that it does not affect the EBS function. If you have any questions, please ask an authorized UD Trucks dealer in advance.

### CAUTION

- **If the battery voltage is low, it may affect the operation of EBS. Check the battery periodically.**
- **When charging the battery while the battery is still installed in the vehicle, use a charger with an output voltage of 30V or less. Using higher than 30V could damage the EBS control unit.**
- **If the tires other than the specified size are installed, EBS (ABS) may malfunction. Contact the nearest authorized UD Trucks dealer for advice before mounting tires that are not the specified size.**

## Precautions when driving vehicles with UDSC

- The UDSC system is designed to maintain vehicle stability. When the vehicle is going to lose stability due to skidding or excessive rolling while turning or during other abrupt maneuvers, the system limits the engine output and, if necessary, applies the brakes.
- The UDSC system does not make it possible to drive beyond the vehicle's limitations. The driver must drive safely at all times.
- The UDSC is designed to work with the EBS. Refer to the "Precautions when driving vehicles with EBS" (page 10-36) together.
- Disabling the ASR using the UDSC/ASR cutoff switch will also disable the UDSC. Under normal driving conditions, we recommend keeping the UDSC/ASR enabled.

 **CAUTION**

**Avoid abrupt steering, acceleration, and braking even on a UDSC vehicle. Drive safely at all times.**

## Steering wheel operation precautions

When the steering wheel is turned, the power steering hydraulic pressure change could create a sound that sounds like someone is striking the hydraulic pipes, but this is not a malfunction and will not lead to any trouble.

 **CAUTION**

**Do not hold the steering wheel turned all the way for more than 10 seconds. Doing so could damage the power steering unit.**

## Following distance

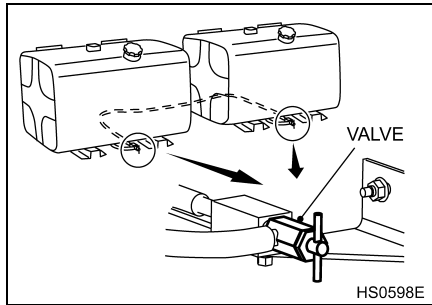
- There is a tendency to ignore the following distance when following another vehicle, but sufficient space must be maintained among vehicles. If a sufficient following distance that will allow you to stop in time in case the vehicle in front stops suddenly is not kept, it could result in an accident.
- Generally, when driving at under 60 km/h, the following distance should be half the number on the speedometer, but when driving faster than 60 km/h, it should be greater than the number on the speedometer. For example, when driving at 40 km/h, maintain a distance of 20 m or more, but when driving at 70 km/h, maintain a distance of over 70 m. It is important to maintain an even greater distance when it is raining, etc., to allow extra distance for emergency stopping.

## Handling the fuel tank (additional tank)

- Always close the connection valve while the tank is nearly full when fueling and immediately after fueling. If the connection valve is open, the fuel will flow to one of the tanks when driving or parking on a hill, which could cause fuel to spill from the filler port.
- Open the connection valve after the level of the main fuel tank has lowered to some extent.

### NOTE

- **“Distance to empty” value displayed on the multi-display is inaccurate when the connection valve for the additional fuel tank is closed.**
- **If a non-UD-genuine fuel tank is installed, displayed quantity of remaining fuel and the “distance to empty” may be inaccurate.**



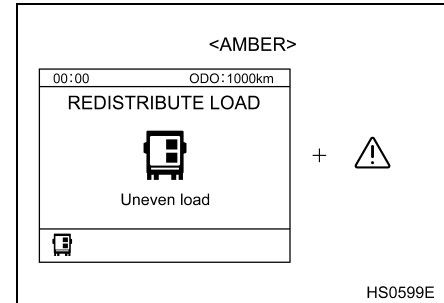
## When handling freight

### Do not overload the vehicle.

- Overloading accelerates wear of the vehicle components and greatly shortens the useful life of the vehicle.
- If the load is unstable, it could move when braking or turning, so fasten it to the truck bed using braces, wires, etc.

### Even, low center-of-gravity cargo loading

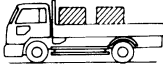

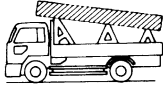
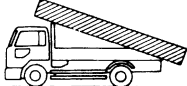
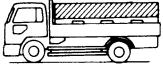
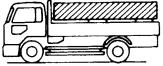


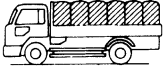
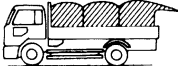
- Vehicle behavior is affected by the weight of the cargo carried and how it is loaded. These factors must be taken into consideration when driving the vehicle. At the same time, the cargo must be loaded as evenly and low as possible.
- If the cargo load is uneven, a warning is displayed to alert the driver.



### WARNING

- **Securely fasten down sheets and ropes. The heat from the muffler or exhaust pipe could cause sheets or ropes to catch fire while driving.**
- **Overloading will negatively affect steering and braking, which could lead to an accident. Never do it.**

**Freight loading method**

	Correct loading method	Incorrect loading method
Load so that the freight is distributed equally and not unbalanced to one side.	 <p>EF084</p>	 <p>EF089</p>
When loading long objects, keep them from extending outside the body as much as possible, use a rack and do not support them just two points, front guard frame and overhanging portion.	 <p>EF085</p>	 <p>EF090</p>
When using racks under the freight, be careful how they are positioned so that the freight is equally supported.	 <p>EF086</p>	 <p>EF091</p>
Highly stacked freight could fall over when turning, so do not stack the freight high.	 <p>EF087</p>	 <p>EF092</p>
Make sure that ropes and sheets are tight and secure. Be especially sure heavy freight is securely fastened to the truck bed.	 <p>EF088</p>	 <p>EF093</p>

## Unloading from an air suspension vehicle

If a large freight applying heavy load on the coupler is removed from an air suspension vehicle (for example, when a large container is lifted up with a crane), the height of the vehicle will increase rapidly and this may cause an accident.

Before removing large freight from the vehicle, lower the height of the coupler using the height control, and sufficiently reduce the air pressure in the air springs.

## When opening the truck rear gate



**When opening the truck rear gate while on the road to unload, the gate will block some of the taillights, hazard lights, and reflectors, etc. on the back (or front) of the vehicle. Place a sign or reflective warning sign at the back (or front) of the vehicle to warn other drivers that the vehicle is stopping.**

## Correct driving when pulling a trailer

### Braking phenomena when pulling a trailer

When driving while pulling a trailer, the tractor and trailer move independently or the force is transmitted via the coupling mutually affecting the movements of both tractor and trailer. In addition, the transverse force (sideways force) generated between the tires and the road surface changes during steering and braking. For this reason, when pulling a trailer, sharp braking could cause the wheels to lock up (the transverse force changes) and create the following unusual phenomena, which are very dangerous.

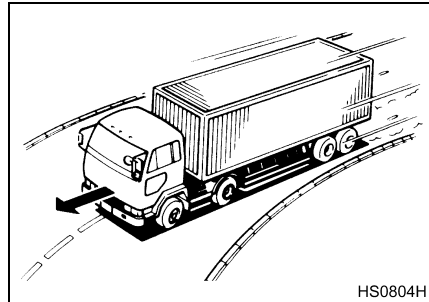
 **CAUTION**

Drive carefully even your vehicle is equipped with UDSC. The UDSC system restrains the following phenomena and roll-over, but it is not a system to enable the driving beyond the vehicle's limitations. Always drive safely.

**Drift out**

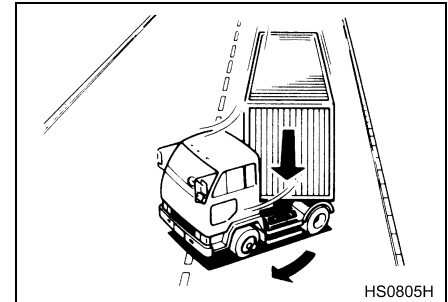
This is the phenomenon in which the tractor and trailer keep going straight and move outside of the curve. (This occurs when the tractor's front wheels lock up.)

When this happens, immediately release the brakes (lessen the sharp braking) and turn the steering wheel to change the direction of the vehicle.

**Jackknife**

This is the phenomenon where the tractor folds up against the trailer. (This occurs when the tractor's rear wheels lock up.)

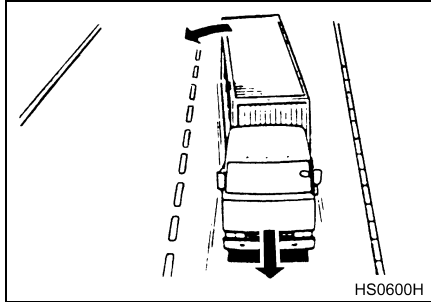
When this happens, the vehicle movement is very rapid, but keep calm and quickly release the brakes and change the vehicle direction while paying attention to oversteering.



## Trailer swing

This is the phenomenon where the trailer drifts to the right or left (it sways far into the oncoming lane). (This occurs when the trailer's wheels lock up.)

When this happens, carefully release the brakes (do not apply more than the necessary brakes) while keeping an eye on the trailer movement using the tractor mirrors (rearview mirror, etc.).



## Enforced servicing of tires, brakes, etc.

- It is very important that the tractor and trailer tires maintain appropriate traction (force of resistance between the road surface and the tires).

For this reason, be sure to use the tires with the proper tread pattern, and inspections must be performed to make sure that the tires are at the optimum air pressure and are not abnormally worn.

- Be sure to check that the braking system is functioning normally.

## Operation while driving

### Do not steer sharply.

Steering sharply when passing or when changing lanes at a high speed is very dangerous because it could cause the vehicle to sway and turn over.

### Do not brake sharply.

Braking sharply when driving at a high speed, in curves, on downhill slopes, or on rainy, snowy, or other slippery roads is very dangerous because it could cause the vehicle to jackknife.

### Do not pass other vehicles aggressively.

Passing other vehicle aggressively is very dangerous. When pulling a trailer in particular, it must be remembered that the total vehicle length is very long, and that extra leeway should be maintained while driving.



### Be careful of the rear right and left sides of the trailer when turning.

When driving through a tight curve, the back of the trailer might not be completely visible in the rearview mirror. Sufficiently reduce speed and drive slowly, or stop the vehicle and check behind the trailer yourself. In particular, be sure to check sufficiently when turning left.

### When backing up the vehicle, check behind and right and left of the vehicle to make sure that it is safe.

When going straight back, back up slowly while keeping the right side of the trailer in a straight line. In addition, when backing up in a curve, use the rearview mirror or look directly back to watch the back of the trailer while backing up slowly as you gradually change the angle at which the tractor and trailer are turning.

### Operation when stopping or parking

Park on a level ground as much as possible.

#### WARNING

- Always apply the parking brake.
- Put the parking brake lever in the test position and if the vehicle moves, quickly return the lever to the park position and apply the foot brake.

#### CAUTION

- Release the parking brake before driving. The brakes could be damaged if the parking brake is not released.
- Use the tractor parking brake lever's test position to make sure that the tractor parking brake is holding well enough and can keep the vehicle in the stopped position.
- If you must park on an incline, always apply the parking brake and chock the wheels.
- Do not keep the steering wheel turned all the way to one side continuously for a long time when the engine is running.

#### NOTE

When parking the vehicle, select a location that is lawful, safe, and will not interfere with traffic.

### **Stopping temporarily**

- Pull up the tractor parking brake lever to the park position to apply the parking brake.
- When the parking brake is applied, the trailer brake will also be applied automatically.

### **When leaving the vehicle or when parking**

- Pull up the tractor parking brake lever to the park position to apply the parking brake.
- When the parking brake is applied, the trailer brake will also be applied automatically.
- When parking, securely apply the parking brake and chock the wheels.

## **Economical driving**

Major conditions that improve fuel efficiency depend on the engine and transmission specifications and whether or not wind deflectors and air dam skirts are installed. Driving technique and vehicle maintenance, however, also have a large impact on fuel efficiency.

Refer to the following points and perform “economical driving”.

## **Driving techniques for improving fuel efficiency**

### **Idling for too long wastes fuel**

Stop wasteful idling. 5 to 10 minutes is sufficient to warm up the engine.

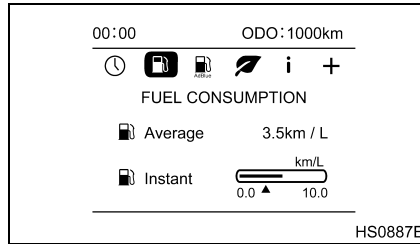
### **Drive at an economic speed**

The economic speed is 50 km/h on general roads and 80 km/h on highways.

### **Be conscious of instantaneous fuel consumption**

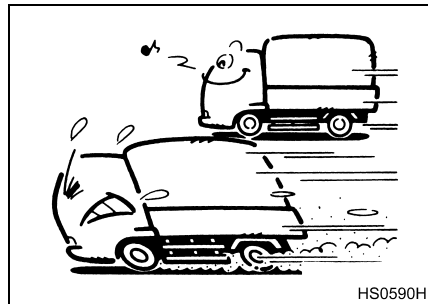
- You can see the fuel consumption just when the accelerator pedal is depressed or released on the instantaneous fuel consumption meter.

- Operate the accelerator pedal while being conscious of the instantaneous fuel consumption. The instantaneous fuel consumption gauge is displayed in three types: the one through “Gauges” display, the one on Home screen, and the one on Nenpi Coach screen.
- When stopping at idle, the value is indicated by L/h (liters per hour).
- When running, the value is indicated by the unit specified on “Fuel unit” screen. When “km/h” is selected, better fuel economy is obtained when the bar is at the right side of the gauge, and when “L/100km” is selected, it is better when the bar is at the left side of the gauge.
- A triangle displayed under the gauge on Home screen or Nenpi Coach screen indicates the average fuel consumption.



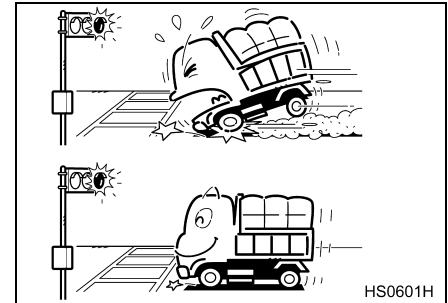
**Quick start-offs and quick accelerations will hurt fuel economy.**

Quickly starting off or quickly accelerating with the accelerator pedal fully depressed increases acceleration resistance and consumes much fuel.



**Coasting improves fuel economy**

Fuel is not consumed when the exhaust brake & EEB is being used. Use slow coasting using the engine braking and exhaust brake when driving downhill or before stopping at a red light.



### Shift up early on and shift down later on

- Increasing the engine speed consumes much fuel. Use as high a gear as possible to keep the engine speed low.
- When driving a vehicle equipped with ESCOT-VI, it is recommended to drive in ECO mode, which upshifts the gears early at low engine speeds.

### Do not needlessly accelerate and decelerate while driving (“wavy driving”).

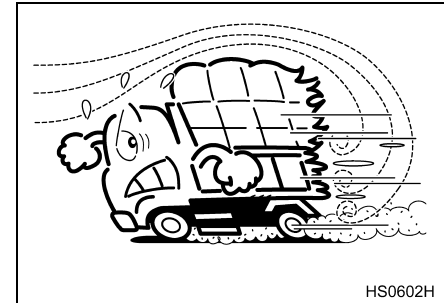
Repeated acceleration and deceleration greatly decreases fuel economy. Avoid changing speed as much as possible.

### Reduce the start-off and stopping frequency as much as possible.

Start-off acceleration requires energy to get the stationary vehicle moving, so the engine is at nearly a full load and much fuel is consumed. Strive to drive carefully before signals to reduce the vehicle start-off and stopping frequency as much as possible.

### Also be careful of how the freight is stacked.

Make sure that the freight is not stacked high, or stacked unevenly. Also make sure that the sheet is not loose or fluttering. Such stacking increases air resistance and greatly decreases fuel economy.



## Vehicle maintenance for good fuel efficiency

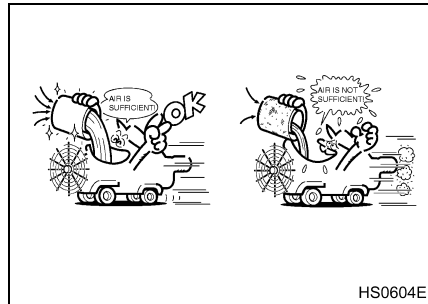
### Keep the tires at the proper air pressure

If the tire air pressure is low, it will increase the rolling resistance and decrease the fuel economy.



### Is the air cleaner free from clogging?

Driving with the air filter element clogged increases the intake air resistance and decreases power, which decreases the fuel economy.



### Is the valve clearance correct?

If the valve clearance is greater than specified, it will decrease power and decrease the fuel economy. Inspect the valve clearance periodically at the nearest authorized UD Trucks dealer.

## Driving under special conditions

### Driving on poor roads

- Drive in a low gear and maintain constant speed when driving on muddy or gravel roads.
- As an aid for driving on snowy and icy roads or unpaved areas, the inter-axle differential lock is installed on CG, and CW models and the inter-wheel differential lock is installed on CD and GK models. Refer to the “Inter-wheel differential lock switch♦ (CG, CW and GW models)” (page 5-75) or “Inter-wheel differential lock switch♦ (CD and GK models)” (page 5-79).



### CAUTION

**Do not spin a wheel for a long time. Doing so may result in seizure of the differential.**

## Driving when it is raining

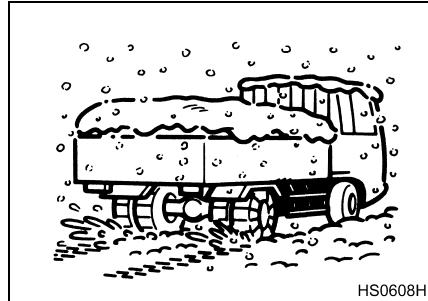
- Slipping can occur especially just after the rain begins to fall. Drive carefully to try to eliminate the need to brake sharply.



- Driving through puddles will decrease the braking performance. The brake performance will return to normal after applying the brakes 2 or 3 times.
- Avoid driving on a road flooded by heavy rain, etc.
- When driving in fog, turn on the front fog lights (and the rear fog lights as necessary) and watch in front and the centerline carefully.

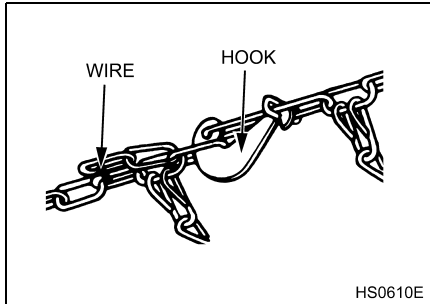
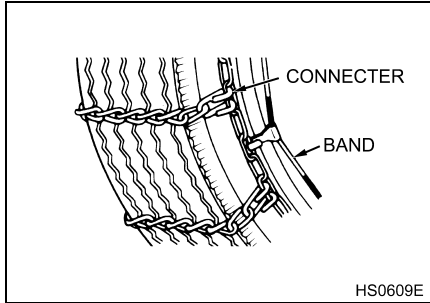
## Driving while it is snowing

- When driving on snowy or icy roads, put on tire chains or mount snow tires and drive more slowly.
- Snowy and icy roads are dangerous because they are easy to slip, so drive carefully while avoiding sharp steering and sharp braking.



## Tire chains

- Fit chains on the tires when driving on snowy or icy roads when not using snow tires or to drive safely in muddy areas.
- Fit the tire chains so that they do not damage the tires, wheels, fenders, etc. during driving.
- Precautions for fitting the tire chains (typical)
  - Fit the chains so that they would not become loose.
  - Fit the chains so that the bends of the tire chain connectors are facing away from the tire.
  - Attach the chain bands securely.
  - Tie down any excess chain with wire to keep it from slapping the fender, etc.



- Check the tire chains for looseness after driving 5 to 10 minutes. Always keep in mind while driving that you are using chains.

**! WARNING**

**Check the tire air pressure before putting on the chains. The tires could be damaged if they are not inflated to the proper air pressure.**

- **Always use tire chains that match the tire size.**
- **When attaching chains on double tires, use the triple chains because they are safer.**
- **If the tire chains are not fit correctly, they could become loose or come off while driving and interfere with other vehicle components.**

**NOTE**

**There are various types of tire chains. Please ask an authorized UD Trucks dealer for advice when purchasing tire chains.**

**Fuel tank**

- Fill the fuel tank full as much as possible. If much air is in the tank, moisture in the air could condensate and freeze, cause corrosion in the fuel system, or other problems.
- Securely tighten the tank cap and keep water and snow out of the tank.
- Be sure to use the type of fuel which fit for the ambient temperature where you are driving.
- Always use the low-sulphur diesel fuel (S10: Sulphur constituent 10 ppm or less).

### ⚠ DANGER

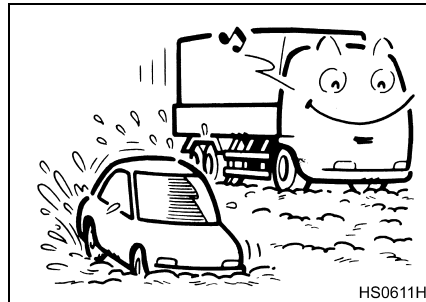
- After fueling, make sure that the tank cap is tightened securely. Fuel leaks caused by vibration while driving or an accident could cause a serious fire.
- Check the fuel tank, hoses, and pipes, etc. for fuel leaks. Leaks could cause a fire. If a fuel leak is found, contact the nearest authorized UD Trucks dealer.

### When parking

When parking for a long time in frigid areas, choose a flat place where the vehicle will be out of blown snow as much as possible, apply the parking brake securely and take measures such as covering the engine compartment. If an appropriate place is not available, park the vehicle so that the wind will not strike the engine compartment.

## Precautions for vehicles equipped with ASR

- The ASR is a safety device that effectively uses the friction and grip between the tires and the road surface to increase safety by suppressing tire spinning.
- The ASR does not make it possible to exceed the safety limits while driving. Therefore, when driving vehicles equipped with ASR, take the following precautions and drive safely.



### ⚠ CAUTION

Even when equipped with ASR, do not suddenly turn the steering wheel or depress the accelerator pedal. Especially when driving on slippery roads, start off carefully.

- Vehicles equipped with ASR will have better start-off acceleration and performance on slippery roads than non-equipped vehicles, but the gripping force of the tires is not improved.
- On very slippery icy roads, etc., the tire grip force is decreased, so the vehicle might not steer properly and could become unstable. Always drive at a safe speed for the road surface and tire conditions and be careful not to drive too fast.



- The ASR is pneumatically operated, so the air pressure decreases the more times it is operated, and thus the brake warning indicator might illuminate and the buzzer might sound. If this happens, immediately stop the vehicle in a safe area and restore the air pressure to the specified value before starting to drive again.
- When inspecting vehicles equipped with ASR using a chassis dynamometer or speedometer tester, the ASR will operate and hinder the inspection.  
To perform such inspections, set the roller bench mode from the multi-display. For details, refer to “Roller bench mode” (page 5-22) in “Meters, indication lamps and switches”.
- Contact the nearest authorized UD Trucks dealer for advice before mounting tires that are not the specified size.
- When washing the vehicle in cold weather or after driving on snowy roads, immediately remove any water, snow, ice, etc., that is near the EBS valve air exhaust port.

## Washing the vehicle

### Vehicle washing precautions

- When washing the vehicle, protect the electrical components (starter motor, generator, sensors, relays, electronic units, lights, EGR valve, turbocharger actuator, etc.) in order to prevent them from becoming wet.  
In addition, do not allow the electrical wiring, wiring connectors, electrical components, etc. that are located around the chassis to be directly contacted by steam or water from a high pressure washing machine (steam washing machine).

- Some electrical components incorporate an electronic circuit. Therefore, if they become wet, a vehicle malfunction or an improper operation may occur. Do not wash the engine compartment and the driving cabin directly with water because many electrical components are concentrated in these areas.
- Before washing the vehicle, cover the opening of the engine air inlet in order to prevent water or foreign materials from entering through the opening.

**⚠ CAUTION**

**Using a moist generator may shorten the life of the generator. Dry the generator sufficiently before starting the engine.**

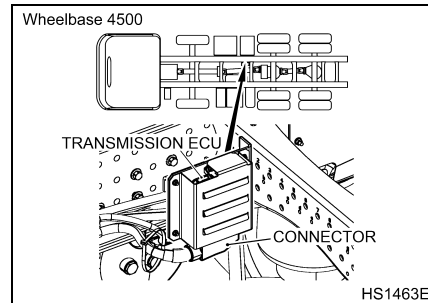
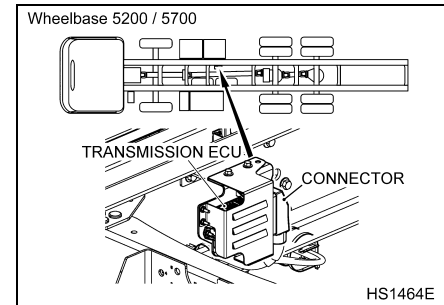
### Precautions while washing around the muffler

When washing around the muffler, perform the following procedures.

#### High pressure washing

Spray 1.5 meters away from the muffler.

Make sure that high pressure washing water does not directly hit the transmission ECU (especially the harness and connectors).



## Removing mud or snow

Use only a soft cloth or a washing brush even if the muffler is extremely dirty. Never use a shovel or a handle of a washing brush for this purpose. Doing so may damage sensors, harnesses, and connectors.

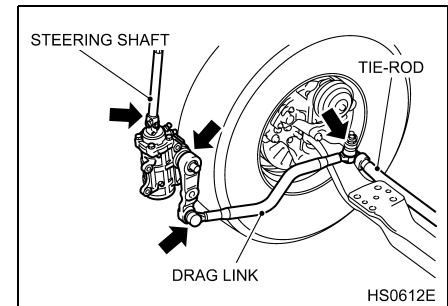
### NOTE

- If UDPC manual regeneration is performed after washing the vehicle, white smoke may be emitted from around the muffler. This is the vapor of water remained around the muffler after washing.
- When driving in an area which has a high salt content, such as driving on a road near the sea or on a road where deicing agent has been applied, rust may occur on the surface of the muffler. If you continue to drive the vehicle when rust is forming, the surface of the muffler may be corroded. After driving in an area which has a high salt content, always wash the surface of the muffler with water.

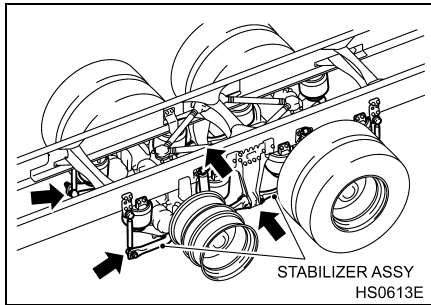
## Precautions when washing the undercarriage

When washing the undercarriage, do not directly apply the steam or water from a high-pressure washer on the steering shaft joint, front axle drag link, tie rod dust covers, or, on vehicles with air suspensions, the rubber dust covers for the rear axle stabilizer. Doing so could cause a malfunction.

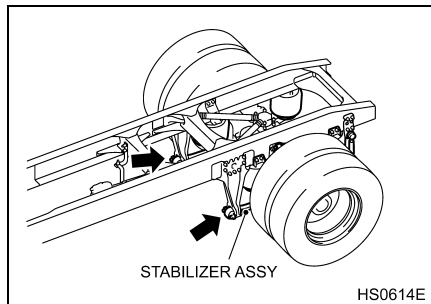
### Front undercarriage



Rear undercarriage  
(Air suspension vehicles)



(Tractors)



### Precautions when washing vehicle lights

Follow the instructions below when washing vehicle lights.

#### When using a high-pressure car wash

- Spray from a distance of at least 1.5 m from the lights. Further, do not spray on the same place for more than 5 seconds. Spraying from a closer range could allow water to get into the lights.
- When using a high-pressure wash, use water pressure under 5 MPa {50 kgf/cm<sup>2</sup>}.

#### When using a car shampoo

- When using a car shampoo, rinse well with water to remove all car shampoo from the lens. Not doing so could cause cracks in the lens surface.

### Precautions when washing the front of the cab

#### When using a high-pressure car wash

- Spray from a distance of at least 1.5 m from the cab. Further, spray at a right angle against the core of the intercooler or the air conditioner condenser (cab opening) and do not spray aslant.
- Do not spray from under the front bumper.
- Do not spray concentrically on a position of the intercooler or the air conditioner condenser.

#### When using tap water and hose

- Do not apply high-pressure water from near the cab by crushing the end of the hose or by using the washer nozzle.
- Do not wash the core of the intercooler directly using a car washing brush, sponge, etc.

### Precautions when washing around millimeter wave radars

Wash the vehicle without removing millimeter wave radar covers. If steam or water from a high-pressure washer directly hits the internal components, it may cause a failure.

### Plated cab parts♦

- Dirt attached to the front lid grille and other plated parts can lead to marks and rust if not removed. In cases like those listed below, wash the vehicle promptly.
  - When bird droppings, insect residue, soot, sap, iron powder, coal tar and other substances have adhered to those parts.
  - After driving in coastal areas or on roads covered with anti-freeze agents.
  - When the vehicle is heavily covered with dirt or dust.

- Wash the vehicle thoroughly with car shampoo, neutral detergent or other appropriate products. Then, rinse the vehicle thoroughly with water to remove the detergent. Finally, wipe the vehicle with a dry cloth.

NOTE
<ul style="list-style-type: none"><li>• Wash the vehicle's horizontal areas frequently as these areas tend to collect dirt easily.</li><li>• To prevent discoloration and marks, do not use thinner, benzene or other organic solvents.</li></ul>



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# 11. Trailer connection and disconnection

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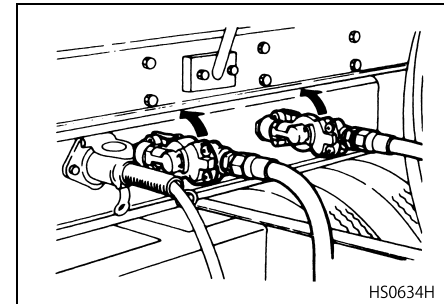
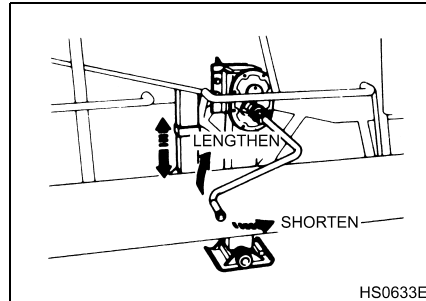
In this chapter, only the method to disconnect the jumper hoses is described. For details of other operations, please refer to the coupler manufacturer's manual.

## Disconnection operation

### ⚠ CAUTION

- Before separating from the trailer, apply the tractor parking brake and trailer parking brake and chock the trailer wheels. Furthermore, when disconnecting the jumper hoses, first disconnect the red coupler supply (emergency) line before disconnecting the yellow coupler control (service) line to perform the work safely.
- Pull up the tractor parking brake lever to the park position to apply the tractor and trailer brakes.
- Apply the trailer parking brake and chock the wheels.

- With the tractor height set at neutral, lower the auxiliary legs of the trailer to the ground. When the auxiliary legs are on the ground, adjust the height of the coupler using the height control to remove the coupler load before disconnection.



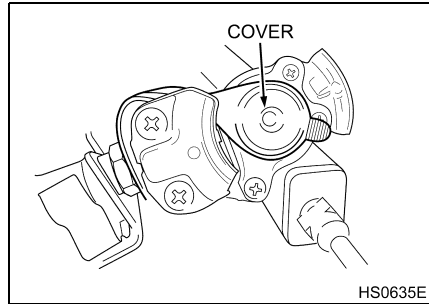
- Turn and disconnect the control (service) line and supply (emergency) line jumper hose couplings.



**⚠ CAUTION**

- When disconnecting the jumper hoses, if the red coupler supply (emergency) line is disconnected first, the trailer's emergency brakes will be applied at the same time, but if the yellow coupler control (service) is disconnected first, the trailer main brakes that are applied by the tractor will be released.
- Hold the coupling part when working with the jumper hoses. The jumper hose may be damaged if you hold other parts such as the hose itself.

- Attach the coupling cover to protect the connection.



- Securely attach the jumper hose couplings to the holder on the back of the tractor.



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# 12. Daily (pre-driving) inspection

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Areas to inspect ..... 12-2

Inspection instructions..... 12-5

## Areas to inspect

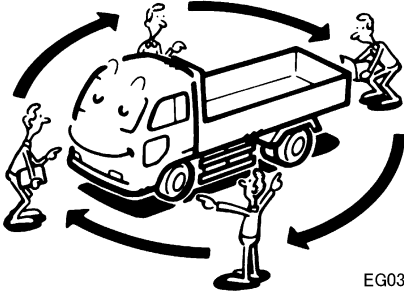
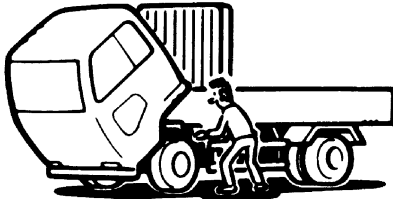
- It is important for the driver to always be fully aware of the condition of the vehicle to drive safely and comfortably while preventing accidents and malfunctions. For this reason, **always conduct the daily (pre-driving) inspection once a day before driving the vehicle.**
- Conduct the inspection in the following order to ensure that the daily (pre-driving) inspection is conducted properly. The detailed inspection instructions are explained on the following pages.
- The inspection **items shown in bold** are items that are conducted as appropriate based on the vehicle's mileage, driving conditions, and other factors.
- If an abnormality is found, have the vehicle inspected and adjusted or repaired at the nearest authorized UD Trucks dealer. Make an effort to always keep the

vehicle in safe operating condition.



### CAUTION

- **Check that there is no flammable remained in the engine compartment before operation.**
- **If the vehicle has been unused for a long period, check that there are no twigs, etc. brought in by small animals or birds.**
- **If you smell something is burning during driving, do not continue to drive because there is a danger of fire.**

<p>1. Have all problems from the previous day been completely repaired?</p>	
<p>2. Vehicle exterior</p>  <p>EG031</p>	<ul style="list-style-type: none"> <li>• Are the tires inflated to the proper air pressure? Also, is there no crack, damage, or abnormal wearing?</li> <li>• <b>Is the tire tread groove depth enough?</b></li> <li>• Is the wheel installation condition proper?</li> <li>• <b>Is the engine oil filled to the proper level?</b></li> <li>• <b>Is the coolant reserve tank filled to the proper level?</b></li> <li>• Has water condensation been removed from the air tanks?</li> <li>• <b>Is the battery fluid at the proper level?</b></li> <li>• <b>Is the window washer fluid filled to the proper level?</b></li> </ul>
<p>3. Tilt the cab.</p>  <p>EG032</p>	<ul style="list-style-type: none"> <li>• <b>Is the drive belt (fan belt) tensioned properly?</b> <b>Does it have no damage?</b></li> </ul>

4. Lower the cab and get into it.



EG033

- Is the parking brake lever stroke proper?
- **Is the window washer fluid sprayed properly?**
- **Do the wipers wipe properly?**

5. Start the engine.



EG034

- **Does the engine start smoothly? Is there no abnormal sound?**
- **Does the engine operate at low speeds properly? Does it accelerate properly?**
- Does the air pressure as seen by the air pressure gauges rise well?
- Is the air exhausting noise when the brake valve (pedal) is depressed and released normal?
- Do the lights illuminate or flash properly? Also, are they not dirty or damaged?

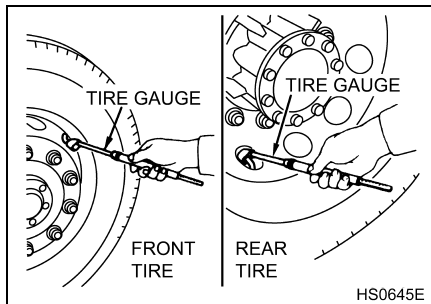
6. Drive the vehicle.

- Do the brakes work well? Are the right and left braking performance even?

## Inspection instructions

### Tire inflation pressure, cracks, damage, and abnormal wear

- Inspect the tire air pressure using a tire pressure gauge. Do not forget to inspect the spare tire pressure. Be sure to put valve caps on the air valves after inspection.



#### ⚠ DANGER

Using tires without the correct air pressure may not only result in abnormal tire wear but could also cause a flat or burst tire. If the vehicle is driven with low tire pressure or flat tire, wheel nuts may loosen and drop off, or bolts may break. This may result in a wheel falling off.

#### ⚠ CAUTION

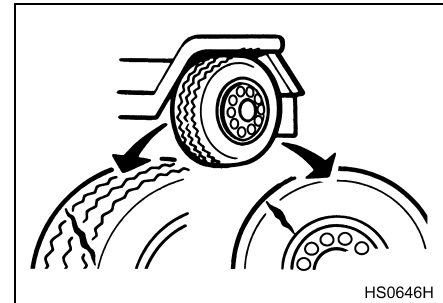
When checking the tire pressure of the inner side of the double wheels, use a tire gauge with long chuck or use a valve extension. In addition, a valve cap driver facilitates the removal of the valve caps.

#### NOTE

- Tire pressure gradually decreases over time. It is difficult to check the inflation condition visually, especially on low-profile tires or radial tires. Use a tire pressure gauge to inspect the tire pressure.
- Perform tire pressure inspection when the tires are cold. Air in the tires will expand due to heat from the tires after driving and tire pressure will increase approximately 10%.
- For double wheels, check that there is no difference between the inner and outer tire pressures.

Tire size	Proper inflation pressure		Australia & New Zealand Proper inflation pressure	
	kPa	kgf/cm <sup>2</sup>	kPa	kgf/cm <sup>2</sup>
11R22.5 148/145K, 148/145L	850	8.50	825	8.25
275/70R22.5 148/145K, 148/145L	900	9.00		
295/80R22.5 152/148K, 152/148M				
315/80R22.5 156/150L				

- Inspect the entire tire to make sure there are no cracks, damage, or abnormal wear. At the same time, check to make sure that there are no pieces of metal, rocks, or other debris stuck in the tire tread and other surfaces.



**! WARNING**

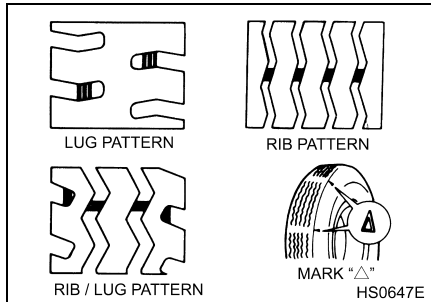
**Driving with tires with cracks, damage, or abnormal wear could result in a flat or burst tire.**

- For replacement of tires, refer to “Change of tire” (page 13-43) in “Inspection and maintenance”.



## Tire tread groove depth

Inspect the tire to make sure that it has enough tread groove depth. Each tire has 6 tread wear indicators (at “ $\Delta$ ” marked positions) which appear when the tire has worn below a certain level. Replace the tire with a new one before the tire has worn down to your area’s regulatory limit.

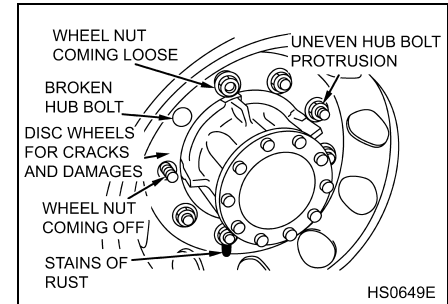
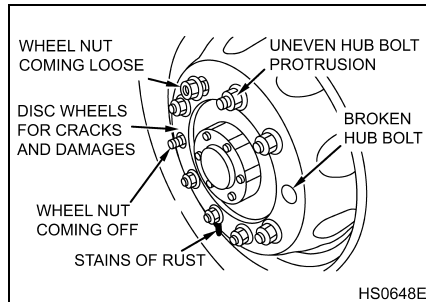


### WARNING

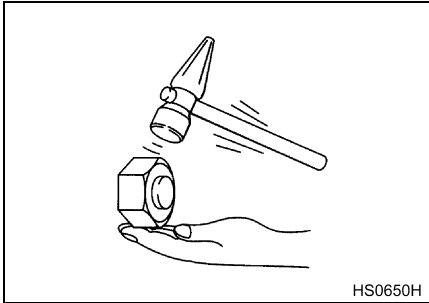
**Do not drive with tires that have a tread groove depth less than the usage limit. Doing so could cause slipping and hydroplaning at high speeds.**

## Disc wheel installation condition

- Check that all the hub bolts and wheel nuts are installed correctly.
- Check the disc wheels, hub bolts and wheel nuts for stains of rust.
- Check the disc wheels for cracks and damages.
- Check the protrusion of the hub bolt from each wheel nut. Ensure that all the hub bolts protrude by the same length on a wheel. Also check that the protrusion is almost the same for all wheels.



- Check for broken hub bolt, loose wheel nut and other problems using an inspection hammer and other tools. Touch the lower side of the wheel nut with your finger and tap the nut with an inspection hammer to check if the vibration felt with your finger is different from that of other nuts or if the hitting sound is dull.

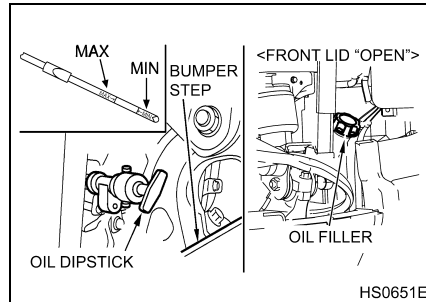
**NOTE**

- When using an inspection hammer, tap the wheel nut in the tightening direction. All the wheel nuts are right-threaded.
- Abnormal vibration or a dull sound when tapped suggests that the wheel nut may be loose or the bolt may have broken.

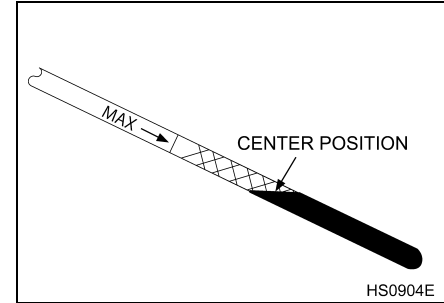
- If the initial inspection results indicate the need to remove the disc wheel for further inspection, refer to “Change of tire” (page 13-43) in “Inspection and maintenance”.

**Engine oil level**

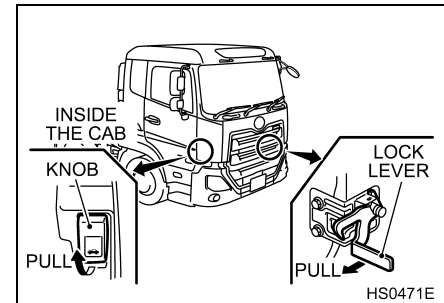
- Turn the handle of the oil dipstick counterclockwise to release the stopper of the dipstick and pull it out. Wipe the oil from the gauge surface, reinsert the dipstick, remove it again, and check if the oil level is between MAX and MIN.

**Front of the cab****NOTE**

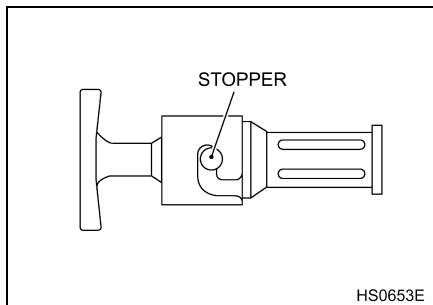
**When checking the oil level, if the oil on the dipstick is angled, read the center position.**



- If the oil level is too low, open the front lid and add oil through the oil filler port.

**Front lid**

- After using the dipstick, return it and turn the handle clockwise to engage its stopper.



**! WARNING**

- Be careful not to spill the oil, and completely wipe up any oil that is spilt. In particular, check to make sure that there is no oil on the exhaust manifold or electrical components. Oil on these components could catch on fire when they become hot.
- Be careful not to get burned during inspections conducted immediately after driving because the engine is still very hot.

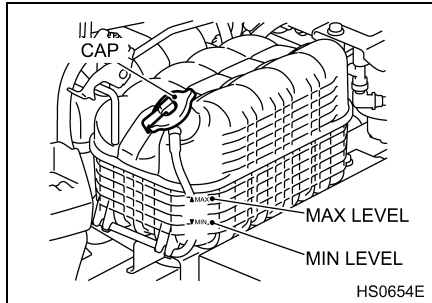
**! CAUTION**

- Park the vehicle in a level location for inspection. If the vehicle is inclined, the correct level may not be indicated.
- Be sure to check the engine oil before starting the engine. When checking after stopping the engine, wait at least 30 minutes after stopping the engine. Otherwise, the oil is still remaining in various parts of the engine, so that the measurement is inaccurate.
- When using the oil dipstick, make sure that no one is in the cab.
- Make sure that no one gets into the cab while you are using the oil dipstick. The lower grille will move, the gap between it and the front bumper will become smaller and your hand may be caught between them.

- Do not drive the vehicle when the oil level is below MIN. Insufficient engine oil may cause engine seizure.

## Coolant level

Check the coolant level in the reserve tank. It is normal if the level is between MAX and MIN. Add coolant if the level is low.

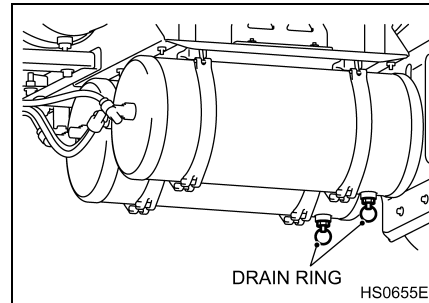


### ⚠ CAUTION

- Continuing to drive with insufficient coolant should absolutely be avoided because it could cause overheating. This also could damage the radiator.
- For the coolant, use UD Trucks genuine Long Life Coolant.

## Draining water condensate from the air tank

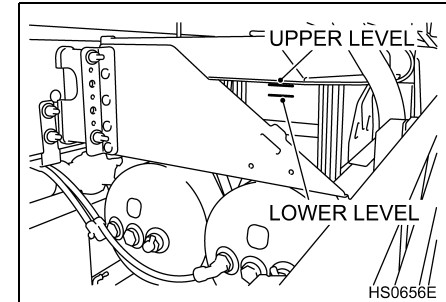
- Pull the drain ring of the air tank and drain the water collected in the tank.
- If a large amount of water and/or oil is drained out, there could be a problem with the air dryer. Have it inspected at the nearest authorized UD Trucks dealer.



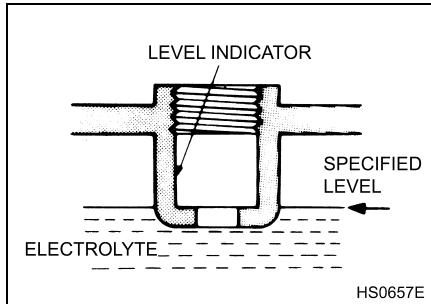
## Battery fluid inspection and re-supply

### Battery fluid level inspection

- The battery fluid level is normal if it is between UPPER (or HIGH-EST) and LOWER (or LOWEST) markings. If the level is low, add distilled water.



- If the battery fluid level cannot be seen from outside the battery case, open the cap to inspect it. **The battery fluid level is normal if it is at the level indicator location.** If the level is low, add distilled water.



**⚠ DANGER**

- The battery generates flammable hydrogen gas. Do not smoke, and keep flames and sparks away from the battery. Otherwise the battery may ignite and explode, causing injury.

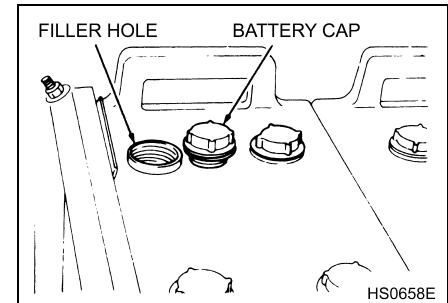
- Diluted sulphuric acid is used for the battery fluid, so be careful not to get it on your clothes or body. If you get battery fluid on you, immediately flush the area with water and wash off the sulphuric acid with soap. If you get it in your eyes, immediately flush them with a large quantity of water and seek the care of a physician.

**⚠ CAUTION**

Do not use the battery when the battery fluid level is below the LOWER LEVEL. Doing so could cause the battery to wear out prematurely or create heat or explode.

## Adding battery fluid

- If there is not enough battery fluid, remove the caps and fill the battery with distilled water until the fluid level reaches the level indicator (UPPER position) for all cells.
- Properly tighten the caps on the battery after supplying the distilled water.



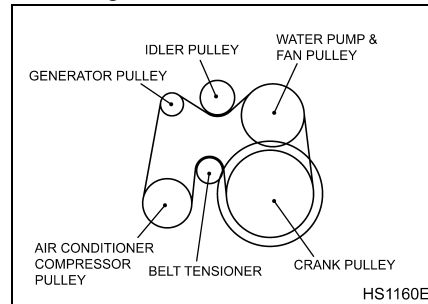
Use pure (distilled) water with no impurities to fill the battery. Observe the following precautions when filling the battery.

- Add pure water up to the level indicator. Overfilling the battery could spill battery fluid, which could damage the vehicle body or components.
- Do not add diluted sulphuric acid. Adding diluted sulphuric acid will raise the specific gravity of the battery fluid, which will shorten the life of the battery. In addition, changing the specific gravity makes it impossible to determine the charging condition of the battery from the specific gravity.
- Do not neglect to fill the battery until the electrode plates are exposed or the fluid drops below the LOWER level. Doing so will cause the electrode plates to undergo sulfation, which will prevent the battery from being recharged.

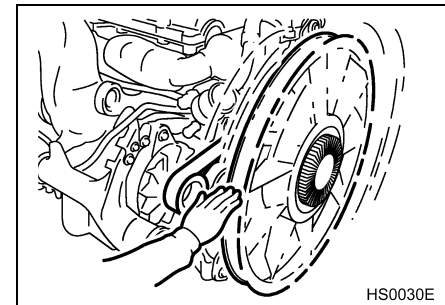
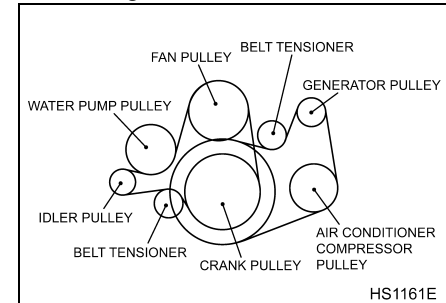
## Drive belt inspection

- Check the front and back of the belt for crack and peel.
- Because this engine is equipped with an automatic belt tensioner, the adjustment of belt deflection is not necessary.

### GH8 Engine



### GH11 Engine

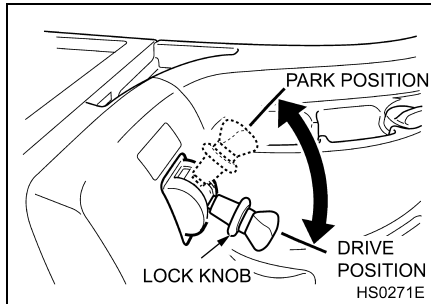


**! WARNING**

**Always stop the engine first when inspecting the drive belt.**

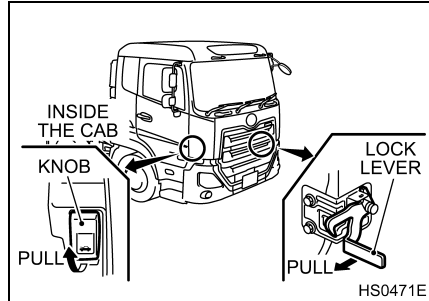
## Parking brake lever operation

- Pull the lever all the way to the park position and confirm that you can hear the air being exhausted.
- Check if the lever is securely set in the park position.

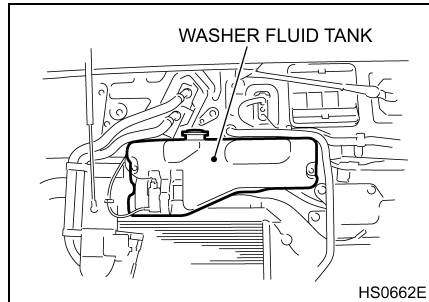


## Windshield washer level and spray performance

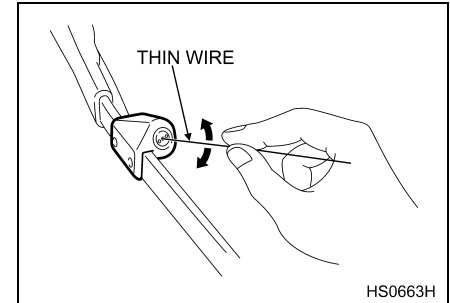
- Open the front lid.



- Check the washer tank fluid level.
- If it is low, add washer fluid up to the tank filler neck.



- Check to see if the washer fluid sprays out normally. If it does not spray out normally, insert a thin wire into the spray jet to adjust its direction.



### **! WARNING**

**Do not use coolant as washer fluid. Doing so will greatly impair windshield visibility and could cause an accident.**

**⚠ CAUTION**

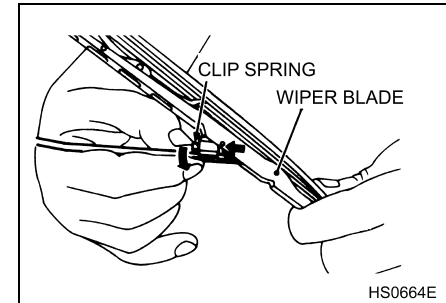
- Operating the windshield washer when the washer tank is empty could damage the motor. Always keep the washer tank filled with fluid to the specified level.
- Do not use soapy water or anything else in place of the washer fluid. Doing so could cause blotches in the paint or the fluid to freeze.
- Do not operate the wipers when the windshield is dry. Wiping the windshield with the wipers when it is dry could scratch the glass.
- To prevent damage to the wiper blades, do not use the wipers when the windshield is frozen.

**Windshield washer fluid**

- Use genuine UD Trucks windshield washer fluid. The windshield washer fluid is mixed with water when used, so if the concentration is not adjusted to match the temperature and usage conditions, it could freeze and could not spray from the washer jets, or the motor could be damaged.
- As a guideline, normally, 3.5 parts of water is mixed with 1 part of genuine UD Trucks windshield washer fluid. In winter, mix with 2 parts of water. If the temperature drops to  $-20^{\circ}\text{C}$ , mix with 1 part of water. When oil due to smog, etc. is stuck to the windshield, mix with 1.5 parts of water.

**Wiper wiping performance**

- If the wipers do not wipe properly, replace the wiper blades.
- Raise the wiper arm.
- While pushing the clip spring, push the blade assembly toward the wiper arm mount and remove it.



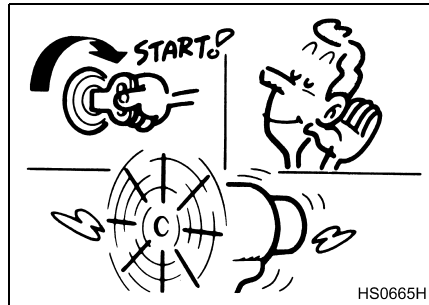


**NOTE**

- When removing the blade assembly, do not bend the arm by applying more force than necessary.
- When removing the assembly, do not allow the spring force to slap the arm against the wind-shield because this could scratch the glass.
- After replacement, confirm that the wiper blade is locked securely.
- Use UD Trucks genuine parts when replacing the wiper blades.

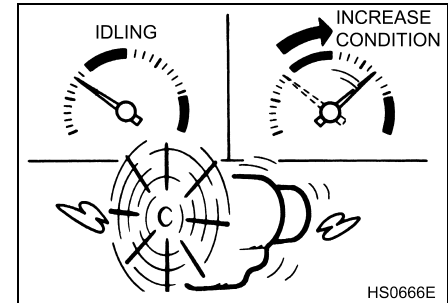
## Engine starting performance and abnormal sounds

- Check if the engine starts quickly and runs smoothly.
- Check if there is no abnormal sound when the engine is started or when it is idling.



## Engine performance when running at low speed and when accelerating

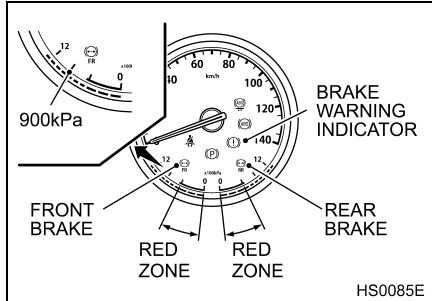
- With the engine warmed up, check if it continues to run smoothly while idling. Also, check the tachometer if the engine idles in the specified range.



- Gradually accelerate the engine and check if the accelerator pedal moves without sticking and if the engine runs smoothly without knocking.

## Air charging performance

- Check the air pressure gauges if the air pressure increases well. If the time for the indicator segments to rise is as shown in the table, it is normal.



- If it does not rise normally, there could be a leak in the air system or other trouble. Contact the nearest authorized UD Trucks dealer.

Standard time	Engine speed (Idling)	Air pressure
Within approx. 15 min.	500 to 600 rpm (GH8 Engine) 400 to 500 rpm (GH11 Engine) (For Singapore CG series: 450 to 550 rpm)	0→1250 kPa {0→12.7 kgf/cm <sup>2</sup> }

- On vehicles equipped with road grip or air suspension, it might take longer time than the standard value shown above.
- The electronically controlled air dryer performs the regeneration of the desiccant in the air dryer using the air in the air tanks after charging the air tanks. During regeneration, air is discharged from under the air dryer. The regeneration phase is launched at each cut-off (unload) of the air dryer. The air pressure gauge indication will drop when performing this function but this is normal. When large amount of air is charged at

once, the regeneration and charging may be repeated several times.

- Check if the air pressure shown by the air pressure gauges are normal. It is normal if the indicator is in the range shown in the table.

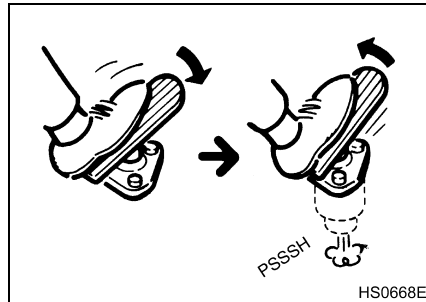
Standard air pressure (Brake pressure)	1100 – 1250 kPa {11.2 – 12.7 kgf/cm <sup>2</sup> }
--	---

**NOTE**

- If starting to fill an empty air tanks (0 kPa {0 kgf/cm<sup>2</sup>}), the gauge indicators will not move for a while after the engine is started. Also, at times the two gauge indicators will not start moving at the same time. This is because there is a pressure protection valve between the air compressor and the air tanks, and is not a gauge malfunction.
- Increasing the engine idling speed will shorten the air charging time.

**Brake valve operation**

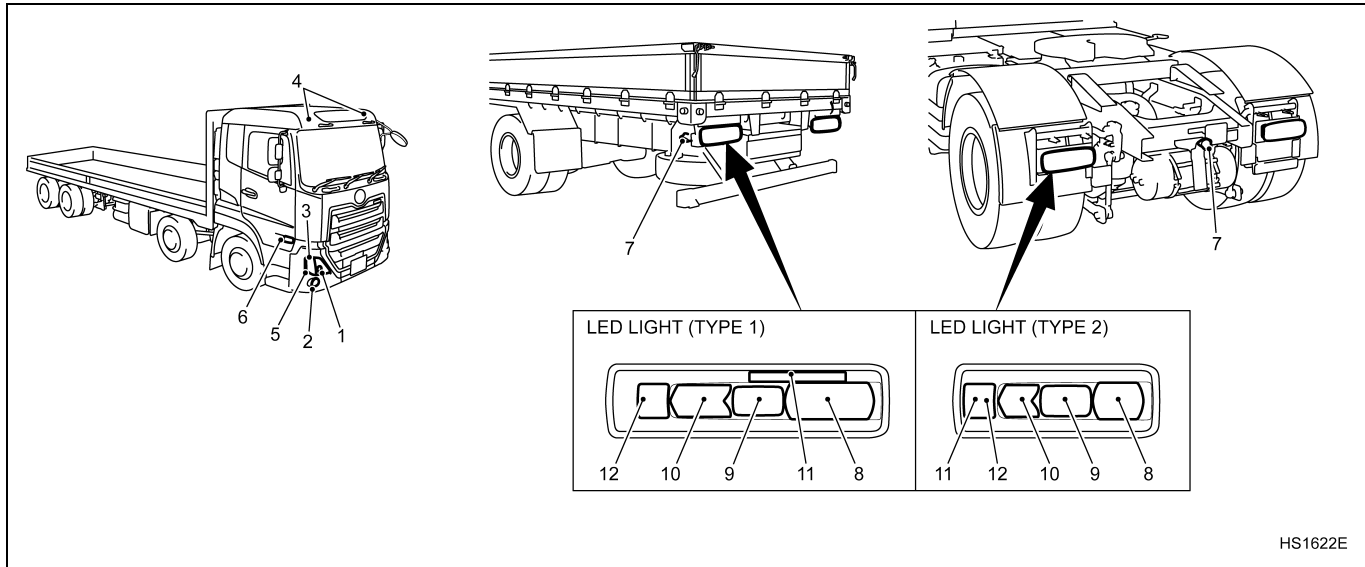
- The brake valve operation is normal if the pedal does not stick abnormally when depressed, the air exhausting sound can be heard from the brake valve under the floor when the pedal is released, and the pedal returns completely when it is released.
- If you feel any abnormality in the brake valve operation, have your vehicle inspected at the nearest authorized UD Trucker dealer.

**WARNING**

**Keep the area around the pedals clean. Empty cans, gravel, etc., could wedge into the pedal and interfere with braking operation.**

## Operation of lights

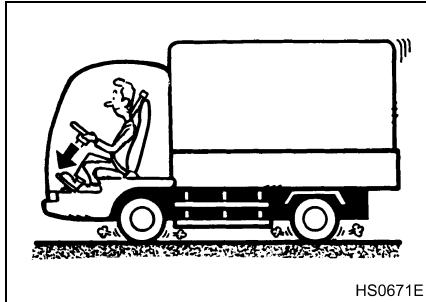
- Turn on each light switch and check if the light(s) concerned comes on or flashes. The turn signals are normal if they flash 60 to 120 times per minute. The lights can be inspected faster if done by two persons.
- Check if the light lenses are not dirty or damaged.



1	Headlight
2	Front fog light
3	Front position light/Daytime running light
4	End outline marker light
5	Front turn signal/Hazard light
6	Side turn signal/Hazard light
7	License plate light
8	Rear fog light
9	Back-up light
10	Rear turn signal/Hazard light
11	Rear position light
12	Stop light

## Braking performance

Drive the vehicle at low speed, apply the brakes, and check if the brakes perform well and there is no uneven braking.



### NOTE

**Conduct the brake test in a safe area with good visibility, while paying attention to surrounding traffic.**



# 13. Inspection and maintenance

Air dryer.....	13-3	Tools.....	13-94
Air cleaner .....	13-4		
Air filter for air conditioner .....	13-5		
Engine oil filter.....	13-7		
Fuel filter .....	13-14		
Air bleeding of fuel system .....	13-33		
AdBlue filter.....	13-36		
Transmission oil filter .....	13-36		
Battery.....	13-38		
Tires .....	13-42		
Jack up.....	13-54		
Lights.....	13-59		
Mirrors.....	13-66		
Coolant.....	13-68		
Others .....	13-81		
Emission and external noise ..	13-90		

Regular inspection and maintenance can extend the service life of your vehicle and contribute to safe and comfortable driving. This section describes simple maintenance that can be performed by customers. For detailed inspections and maintenance, or parts that cannot be serviced by you, contact the nearest authorized UD Trucks dealer. For inspection and replacement of lubricant, refer to "Service of lubricants". When performing inspections and service, pay attention to the following items:

- Select a safe location.
- Maintain safe working conditions.
- Use appropriate tools.
- Stop the engine before inspection.
- Apply chocks at the tires to stop the vehicle. Apply the parking brake.
- Do not use the on-board jack for any other purpose than changing of the tire.

**WARNING**

- **Do not touch the EGR system parts (EGR valve, EGR pipe, EGR cooler, cooling pipes, turbocharger and actuator) when the engine is hot (during running the engine or just after running). Otherwise, you may get burnt.**
- **Do not touch the exhaust pipe, muffler, and their surrounding just after driving. These parts are hot and you may get burnt if touched. The inspection and maintenance of the muffler and its surrounding should be performed after these parts have become sufficiently cool.**

**CAUTION**

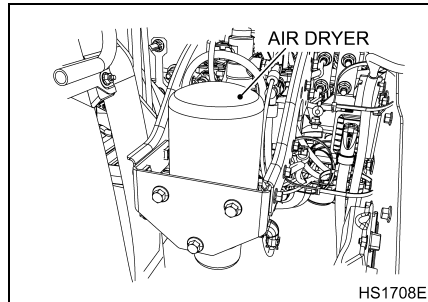
- **When set to display inspection and maintenance information on the multi-display, a warning can be displayed for each item when the next inspection period depending on the mileage, operating hours or months is approaching. Since the distance, time and warnings displayed as inspection and maintenance information are calculated based on the actual driving conditions, they may not match the replacement periods specified in this manual depending on road conditions and driving conditions. If a warning is displayed earlier than the replacement period specified in this manual, replace the item when the warning is displayed.**



- When inspections and maintenance are performed by the customer, the customer should also reset the inspection and maintenance information stored in the multi-display. (See page 5-17.)

## Air dryer

- Check visually that air and water are discharged from the outlet of the air dryer.
- Discharge is performed when the air dryer is switched from load to unload (air discharge noise is heard from the discharge port of air dryer).
- If oil and/or much water are found when draining the air tank, desiccant in the air dryer may be eroded. Have your vehicle inspected at the nearest authorized UD Trucks dealer.

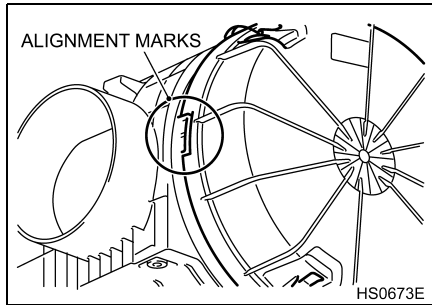


 CAUTION

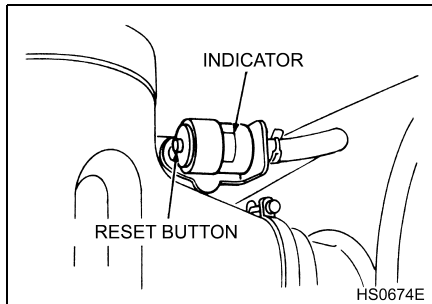
- If much condensate is discharged from the air tank, desiccant may be deteriorated. Replace the desiccant cartridge even before the replacement period.
- For the replacement of the air dryer cartridge, contact the nearest authorized UD Trucks dealer.

## Air cleaner

The air cleaner element is dry type.



Indicator



### Replacement

- If the air filter indicator turns red, replace the element (both outer and inner on dump truck and mixer).
- After replacing the element, press the reset button to reset the indicator.



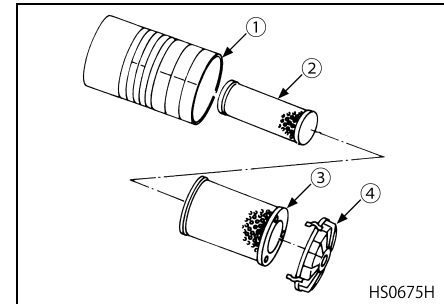
### CAUTION

**If the indicator turns red, replace the element.**

### Inspection and replacement procedures

1. Release the cleaner cover fixing clips and remove the cover.
2. Take out the element(s) toward you.
3. Check the element and its packing. If the element damaged or deformed, replace it with a new one.
4. Clean the case before reinstalling the element.

5. Install the cover on the case and fix it with the clips.



1. Air cleaner case
2. Inner element (for dump truck, mixer, etc.)
3. Outer element
4. Cover

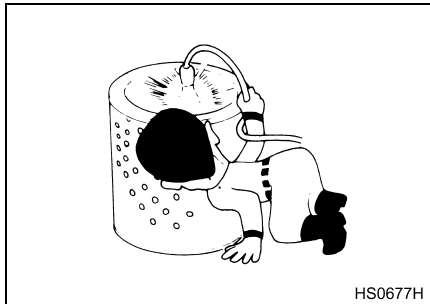
### Handling precautions for air cleaner

- Make sure that the cover and the element are installed correctly. If they are not correctly installed, dust may enter into the engine, causing malfunction.

- Do not touch the element paper of the element with hand or object. In particular, do not attach lubricant on the element paper.
- When replacement, be sure to keep dust away from entering the engine-side duct.

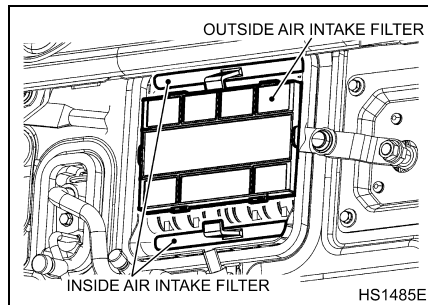
### Inspection procedures of element

Light the element from inside to check it. If the element has damage, pin hole or thin area, or if the packing is damaged or deformed, replace the element with a new one.



## Air filter for air conditioner

- The air filters for outside air intake and inside air intake may cause clogging due to dirt or dust. Clean them.
- There are two types of outside air intake filters: non-woven filter type and nylon mesh filter type.
- The air filter is a cartridge type.
- Clean the air filter with water or air.

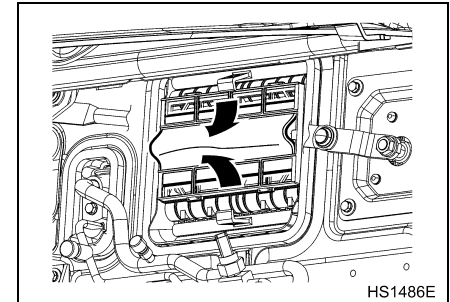


## Outside air intake filter

### Non-woven filter type

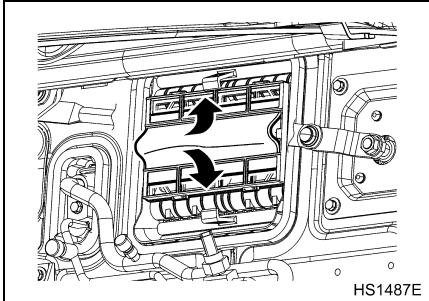
#### Method for removal

1. Hold the filter through the rectangular opening in the center of the filter case and pull it out.

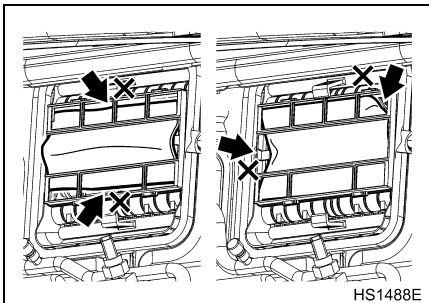


### Installation method

1. Insert the filter by sliding it through the rectangular opening in the center of the filter case.



2. Make sure that there are no gaps at the corners and sides when the filter is installed.



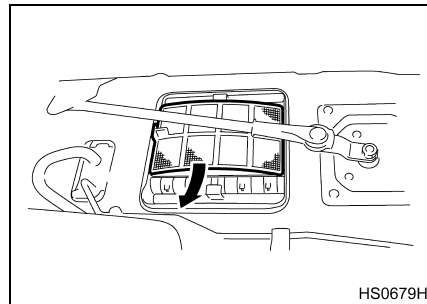
### NOTE

**The filter can be washed and reused up to five times.**

### Nylon mesh filter type

#### Method for removal

1. Hold the upper and lower centers of the filter with right hand and bend the filter toward you.
2. Hold the handle at the left end of the filter with left hand and pull it toward you.

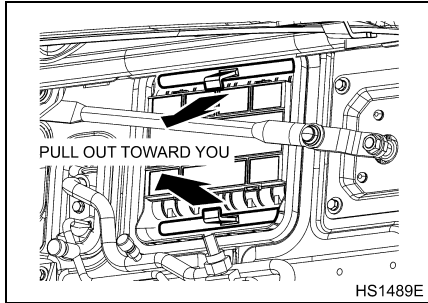


### Installation method

1. Hold the handle at the right of the filter and insert the tab near the handle into the hole of the case.
2. Hold the upper and lower centers of the filter and bend the filter toward you.
3. Hold the handle at the left end of the filter and insert the tab near the handle into the hole of the case.

### Inside air intake filter

- Pull out the upper and lower two filters toward you.
- After cleaning, insert the filters into the filter slots of the case until they are locked.



**NOTE**

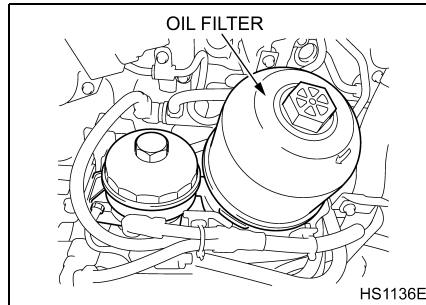
- Clogging of the air filter lowers air flow, resulting in poor performance of the heater and the air conditioner.
- Clean the air filter every 6 months or when performance of the heater or the air conditions is poor.

## Engine oil filter

### GH8 Engine

#### Replacement of oil filter

- A cartridge type oil filter is used.



**! WARNING**

- Do not perform the replacement just after stopping the engine. You may get burnt by hot parts.
- You may get burnt by hot oil. Be careful not to spill oil when draining it.

**! CAUTION**

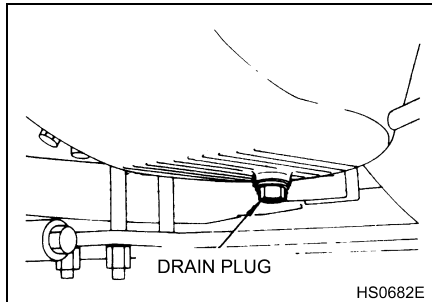
If a filter is clogged, dirty oil will be supplied to the engine without being filtered or the oil supply rate will lower, shortening the service life of the engine. Be sure to replace the oil filter periodically.

### Replacement period

- Replace the oil filter when replacing the engine oil.
- Refer to “Service data” for the replacement period of the engine oil and filter.

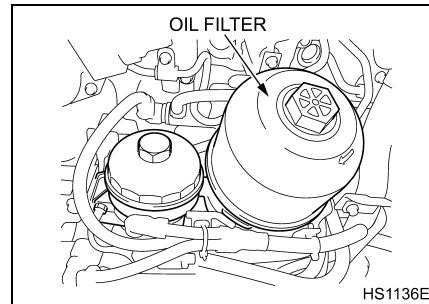
### Replacement procedure

1. Clean around the drain plug. The drain plug is at the bottom of the oil pan.

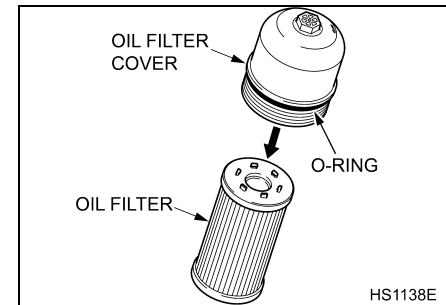


2. Remove the drain plug to drain the oil. It is better to drain the oil while the engine is still warm and the oil flows smoothly.

3. Clean the outside of the filter and filter bracket to prevent dirt from entering when the new filter is fitted.
4. Remove the existing oil filter using a filter wrench.



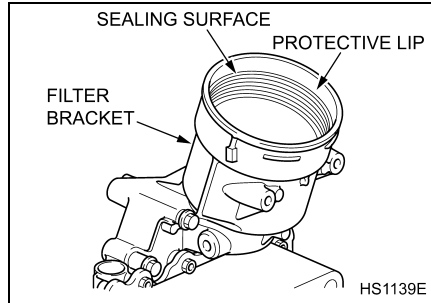
5. Remove the oil filter and O-ring from the oil filter cover and discard them. The oil filter is of the disposable type and should always be scrapped after use.



### ⚠ CAUTION

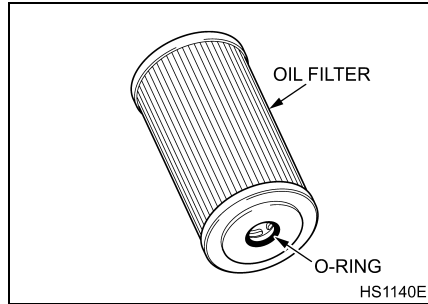
The oil filter must not be cleaned and reused. Always replace the oil filter with a new one when the oil is changed.

6. Thoroughly clean the sealing surface for the oil filter cover O-ring and the surrounding surfaces on the filter bracket.



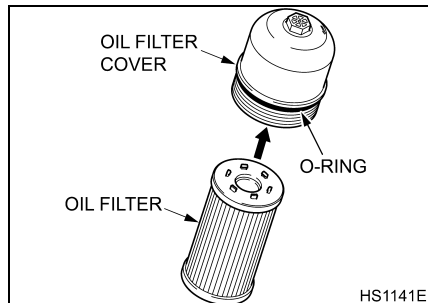
7. The inside of the protective lip on the oil filter bracket must also be cleaned thoroughly.

8. Apply a thin film of oil to the O-ring on the new oil filter.



9. Install a new O-ring on the oil filter cover, and apply a thin film of oil to the O-ring.

10. Install the oil filter on the oil filter cover.



11. Install the oil filter using a filter wrench.

**Oil filter tightening torque:**  
 $40 \pm 5 \text{ N}\cdot\text{m}$  { $4.1 \pm 0.5 \text{ kgf}\cdot\text{m}$ }

12. Reinstall the drain plug with a new seal. Fill oil through the oil filler port of the engine.

**Drain plug tightening torque:**  
 $50 - 70 \text{ N}\cdot\text{m}$  { $5.1 - 7.1 \text{ kgf}\cdot\text{m}$ }

13. Check that the oil level reaches the upper half of the range between the MAX and MIN marks on the dipstick.



## CAUTION

**The oil level should always be between the MAX and MIN marks on the dipstick.**

14. Start the engine and make sure that there is no oil leakage.

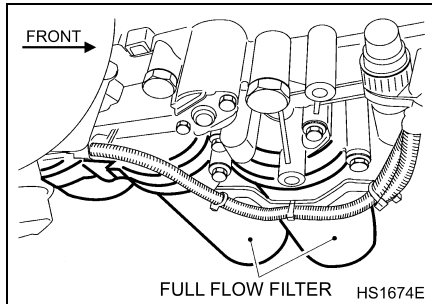
15. Stop the engine and check the oil level after several minutes. Top up as necessary.

## GH11 Engine

### Two oil filter cartridge type

#### Replacement of oil filter

Element cartridge type oil filters are used.



#### ⚠ WARNING

- Do not perform the replacement just after stopping the engine. You may get burnt by hot parts.
- You may get burnt by hot oil. Be careful not to spill oil when draining it.

#### ⚠ CAUTION

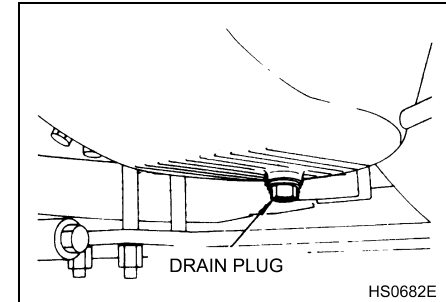
If a filter is clogged, dirty oil will be supplied to the engine without filtration or the oil supply rate will lower, thereby shortening the service life of engine. Replace the oil filters periodically.

#### Replacement period

Replace the oil filters when replacing the engine oil.

#### Replacement procedure

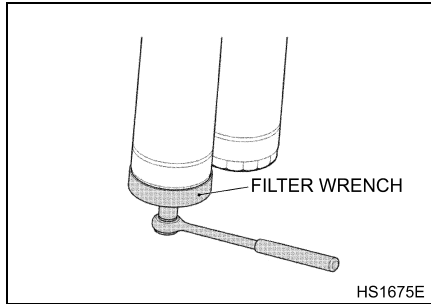
1. Clean around the drain plug. The drain plug is at the bottom of the oil pan.



2. Remove the drain plug to drain the oil. It is better to drain the oil when the engine is still warm and the oil flows smoothly.
3. Clean the outside of filters and filter brackets to prevent dirt from entering when the new filters are fitted.



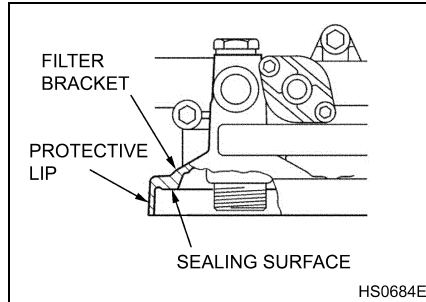
- Remove the existing oil filters using a filter wrench and discard them. The oil filters are of the disposable type and should always be scrapped after use.



### NOTE

**The filters must not be cleaned, and replacement is the only measure that may be taken. Always replace the filters with new ones when the oil is changed.**

- Clean the sealing surface for the oil filter seal and the surrounding surfaces on the filter bracket thoroughly.



- The inside of the protective lip must also be cleaned thoroughly.
- Apply a thin film of oil to the rubber seals on the new oil filters.
- Screw on the oil filters by hand until the rubber seals just touch the sealing surfaces.
- Then turn 3/4 to 1 turn.
- Install the oil filter using a filter wrench.

**Oil filter tightening torque:**

**$25^{+5}_0$  N·m { $2.5^{+0.5}_0$  kgf·m}**

- Reinstall the drain plug with a new seal and fill new oil through the oil filler port.

**Drain plug tightening torque:  
 $50 - 70$  N·m { $5.1 - 7.1$  kgf·m}**

- Check that the oil level reaches the upper half of the range between MAX and MIN on the dipstick.

### NOTE

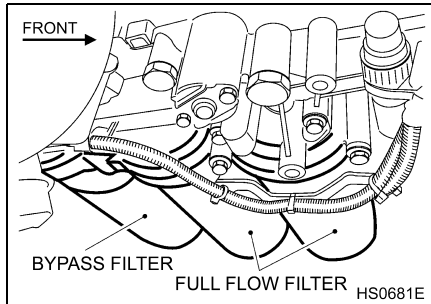
**The oil level should always be between the MAX and MIN on the dipstick.**

- Start the engine and make sure that there is no oil leakage.
- Stop the engine and check the oil level after several minutes. Top up as necessary.

## Three oil filter cartridge type

### Replacement of oil filter

- Three cartridge type oil filters are used: two full-flow filters (long type) and one bypass flow filter (standard type).
- Replace the full flow filters and the bypass filter at the same time as the oil is changed.



### ⚠ WARNING

- Do not perform the replacement just after stopping the engine. You may get burnt by hot parts.
- You may get burnt by hot oil. Be careful not to spill oil when draining it.

### ⚠ CAUTION

If a filter is clogged, dirty oil will be supplied to the engine without filtration or the oil supply rate will lower, thereby shortening the service life of engine. Replace the oil filters periodically.

### NOTE

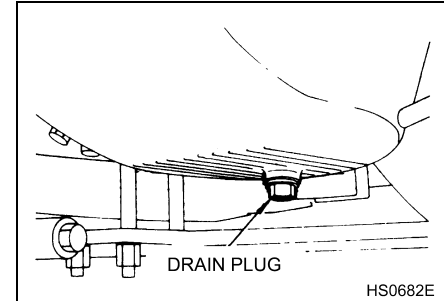
The mounting threads for the full-flow filter and bypass filter are different in diameter to prevent faulty installation.

### Replacement period

Replace the oil filters when replacing the engine oil.

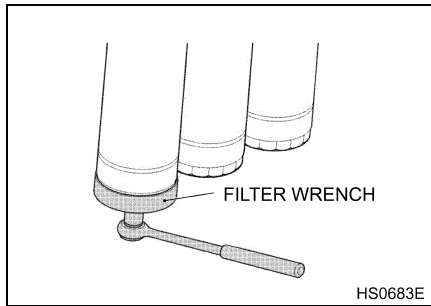
### Replacement procedure

1. Clean around the drain plug. The drain plug is at the bottom of the oil pan.



2. Remove the drain plug to drain the oil. It is better to drain the oil when the engine is still warm and the oil flows smoothly.
3. Clean the outside of filters and filter brackets to prevent dirt from entering when the new filters are fitted.

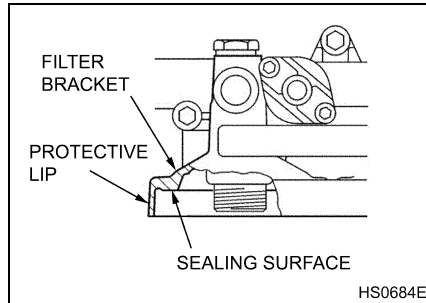
- Remove the existing oil filters using a filter wrench and discard them. The oil filters are of the disposable type and should always be scrapped after use.



### NOTE

**The filters must not be cleaned, and replacement is the only measure that may be taken. Always replace the filters with new ones when the oil is changed.**

- Clean the sealing surface for the oil filter seal and the surrounding surfaces on the filter bracket thoroughly.



- The inside of the protective lip must also be cleaned thoroughly.
- Apply a thin film of oil to the rubber seals on the new oil filters.
- Screw on the oil filters by hand until the rubber seals just touch the sealing surfaces.
- Then turn 3/4 to 1 turn.
- Install the oil filter using a filter wrench.

**Oil filter tightening torque:**

**$25^{+5}_0$  N·m { $2.5^{+0.5}_0$  kgf·m}**

- Reinstall the drain plug with a new seal and fill new oil through the oil filler port.

**Drain plug tightening torque:  
50 – 70 N·m {5.1 – 7.1 kgf·m}**

- Check that the oil level reaches the upper half of the range between MAX and MIN on the dipstick.

### NOTE

**The oil level should always be between the MAX and MIN on the dipstick.**

- Start the engine and make sure that there is no oil leakage.
- Stop the engine and check the oil level after several minutes. Top up as necessary.

## Fuel filter

### WARNING

- Do not perform the replacement just after stopping the engine. You may get burnt by hot parts.
- Do not leave fuel spilled. There is a risk of fire. If fuel is spilled, wipe it clean.

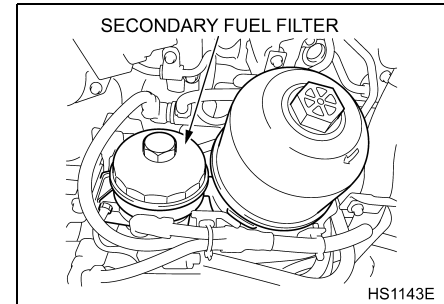
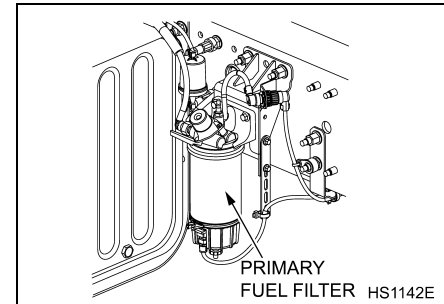
### CAUTION

Do not scratch filters and filter cases. It may cause fuel leakage.

## GH8 Engine

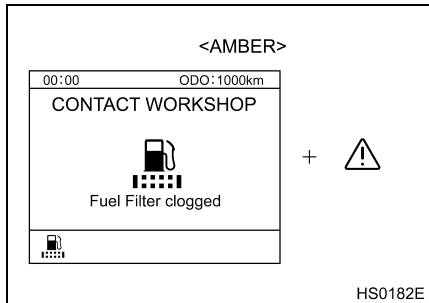
### Replacement of fuel filter

- Fuel must be filtered sufficiently. If fuel is contaminated with dust, etc., this may adversely affect the fuel system devices and reduce vehicle performance. If the pressure in the fuel filters decreases below a certain level while the engine is running, the clogged fuel filter warning will be displayed. When the warning is displayed, replace the fuel filters. There are two fuel filters: the primary fuel filter and the secondary fuel filter.



### Replacement period

- Replace the fuel filters at every other engine oil replacement.
- In addition, replace the fuel filters when any of the following occurs.
  - Fuel pressure decreases.
  - Engine output decreases.
  - Fuel quality is uneven.
  - Clogged fuel filter warning is displayed.



**⚠ CAUTION**

- **Leaving the filters clogged could damage the elements and allow dirty fuel to enter the fuel pump and nozzles, which could shorten the useful life of the engine. The fuel filters must be replaced regularly even if the warning is not displayed.**
- **Depending on how the vehicle is used, the warning may be displayed even before the replacement time. In this case, replace the fuel filters. If the warning is often displayed even after replacing the fuel filters, contact the nearest UD Trucks dealer for inspection and maintenance.**

### Replacement procedure

**⚠ DANGER**

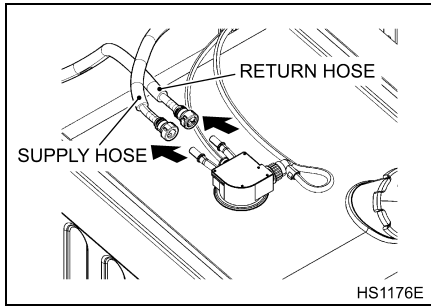
**Fuel leakage may cause a fire. The filters and hoses must be firmly installed in order to prevent leakage.**

**⚠ CAUTION**

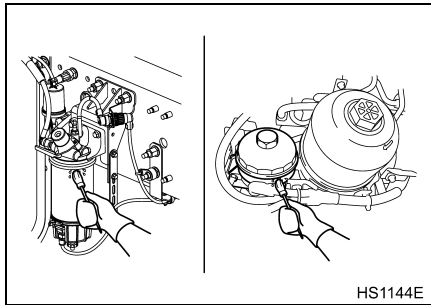
**The new fuel filter should be empty when installing it. Never fill fuel in a new fuel filter before installing it to the vehicle.**

1. Loosen the fuel tank cap to release pressure in the tank. After releasing the pressure, tighten the fuel tank cap.

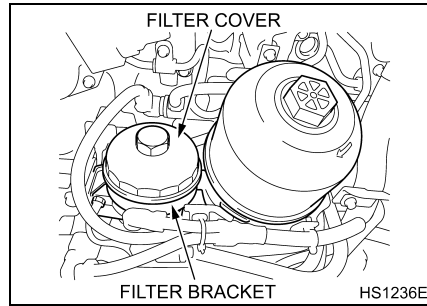
2. Disconnect the supply hose and return hose from the fuel tank.



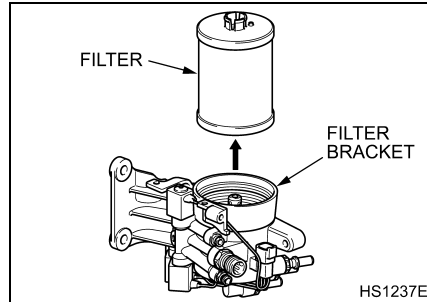
3. Clean around the fuel filters.



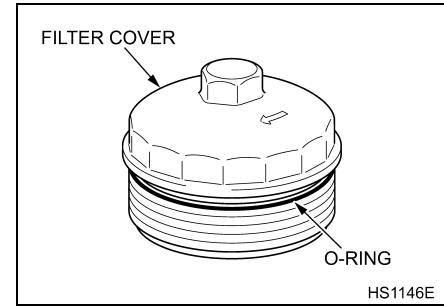
4. Remove the filter cover using a filter wrench.



5. Remove the filter from the filter bracket.

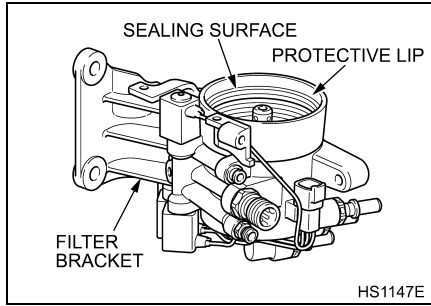


6. Remove the O-ring from the filter cover.

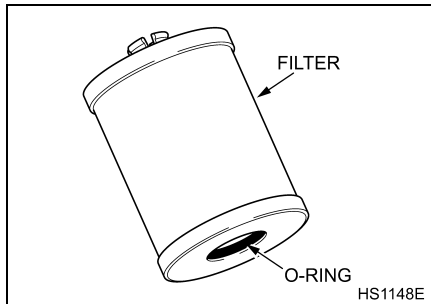


7. Thoroughly clean the sealing surface for the filter cover O-ring and the surrounding surfaces on the filter bracket.

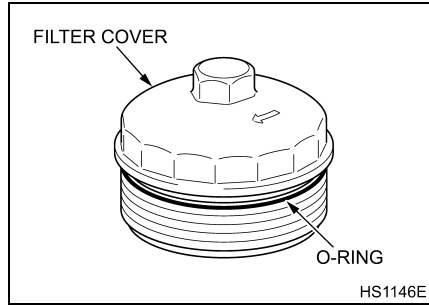
8. The inside of the protective lip on the filter bracket must also be cleaned thoroughly.



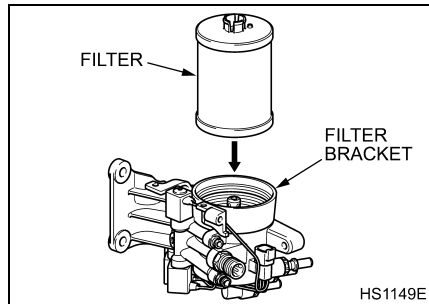
9. Apply fuel to the O-ring on the new filter.



10. Install the O-ring on the filter cover, and apply fuel to the O-ring.



11. Install the filter on the filter bracket.

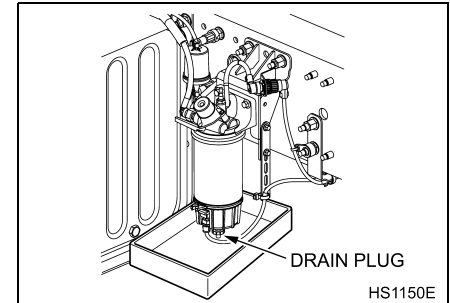


12. Install the filter cover using a filter wrench.

**Secondary fuel filter tightening torque:  
25 N·m {2.5 kgf·m}**

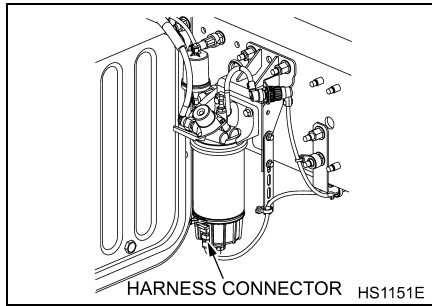
13. Replace the primary fuel filter at the same time as replacing the secondary fuel filter.

14. Place a container under the primary fuel filter. Loosen the drain plug to drain the fuel.

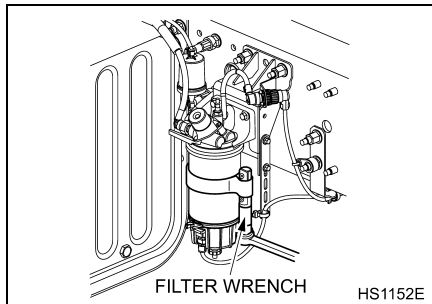


15. After draining the fuel, tighten the drain plug.

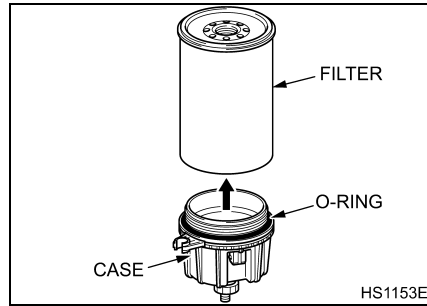
16. Disconnect the harness connector from the primary fuel filter.



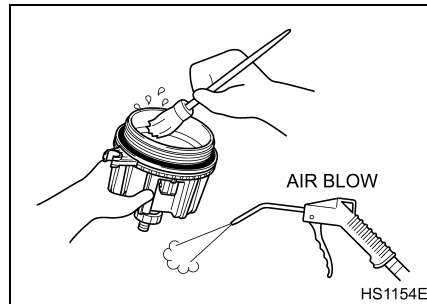
17. Remove the primary fuel filter using a filter wrench.



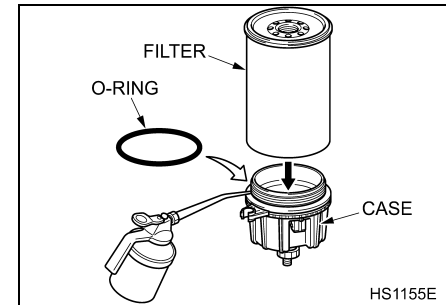
18. Remove the filter and O-ring from the case.



19. Clean the inside of the case.



20. Install a new O-ring on the case, and apply fuel to the O-ring. Install the filter to the case and tighten until the O-ring contacts the mating surface.

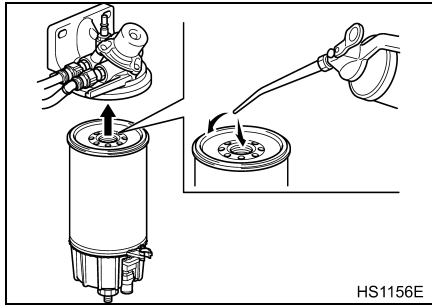


21. Turn the filter a further 1/2 to 2/3 turns by hand.

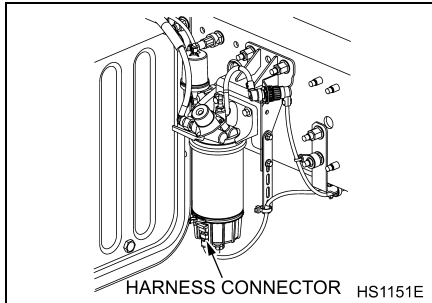
22. Apply fuel to the O-ring of the primary fuel filter. Install and tighten the filter until the O-ring contacts the mating surface.



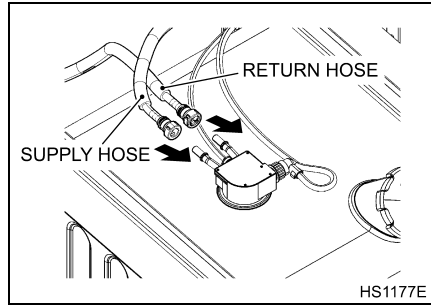
23. Turn the filter a further 1/2 to 2/3 turns by hand.



24. Connect the harness connector on the primary fuel filter.

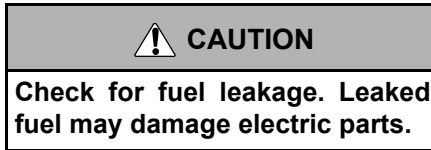


25. Connect the supply hose and return hose to the fuel tank.

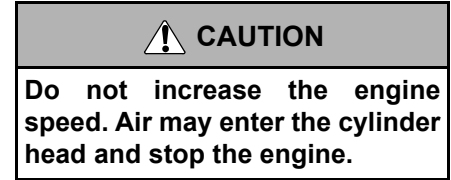


26. After replacing the filters, bleed air from the fuel system. For details, refer to "Air bleeding of fuel system" on page 13-33.

27. Start the engine and make sure that there is no fuel leakage.

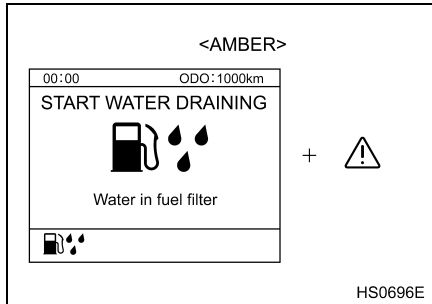


28. Let the engine idle for about 5 minutes to bleed air from the fuel system.



## Water draining of fuel filter

- If water accumulates in the primary fuel filter, the “Water in fuel filter” warning is displayed to warn the driver.



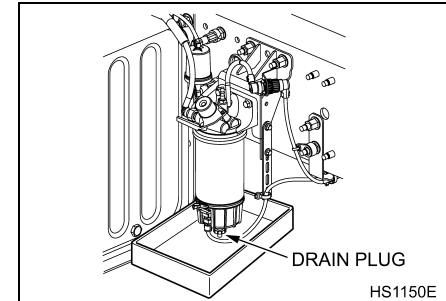
- If the warning is displayed, stop at a safe place promptly and drain water from the primary fuel filter.
- If the warning is frequently displayed, there is a problem with the fuel quality. Drain fuel from the fuel tank and refill the specified fuel.

### CAUTION

**Do not continue to drive the vehicle with too much water in the fuel filter. Doing so may cause the fuel pump to seize, resulting in engine damage.**

## Water draining procedure

1. Park the vehicle.
2. Apply the parking brake.
3. Stop the engine.
4. Place a container under the primary fuel filter.
5. Turn the ignition key to the ACC position.
6. Loosen the drain plug to drain the water.



7. Wait until water draining stops.
8. When the draining has finished, securely tighten the drain plug by hand.



**WARNING**

- Be sure to catch the drained water and fuel with a container for safety and cleanliness.
- If fuel splashes on engine parts, wipe it off completely.



**CAUTION**

In cold weather, icicles may form under the fuel filters. Before performing the draining, be sure to check the filters and remove any icicles.

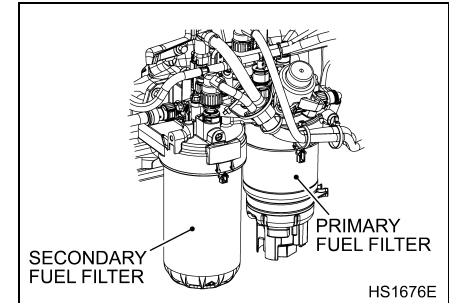
## GH11 Engine

### Replaceable element type fuel filter

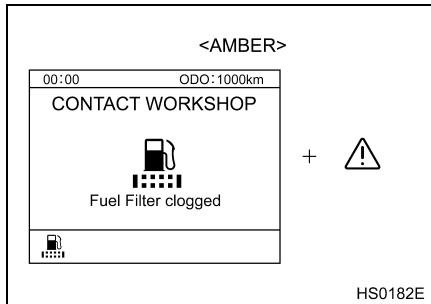
#### Replacement of fuel filter

- Fuel must be filtered sufficiently. If fuel is contaminated with dust, etc., this may adversely affect the fuel system devices and reduce vehicle performance. If the pressure in the fuel filter decreases below a certain level, the clogged fuel filter warning will be displayed. When the warning is displayed, replace the fuel filter.

- There are two fuel filters: the primary fuel filter and the secondary fuel filter.



- Replace the fuel filters at every other engine oil replacement.
- In addition, replace the fuel filters when any of the following occurs.
  - Fuel pressure decreases.
  - Engine output decreases.
  - Fuel quality is uneven.
  - “Fuel pressure low” warning is displayed.



### CAUTION

- If the filter is clogged but left unattended, the element will be damaged and contaminated fuel will flow directly to the fuel pump and the nozzles. This may adversely affect the service life of the engine. The fuel filter must be replaced regularly even if the warning is not displayed.

- Depending on how the vehicle is used, the warning may be displayed even before the replacement time. In such a case, replace the fuel filter. If the warning is often displayed even after the fuel filter was replaced, contact the nearest UD Trucks dealer for inspection and maintenance.

### Replacement procedures

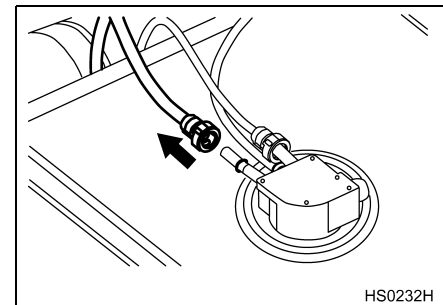
### DANGER

Fuel leakage may cause a fire. The filters and hoses must be firmly installed in order to prevent leakage.

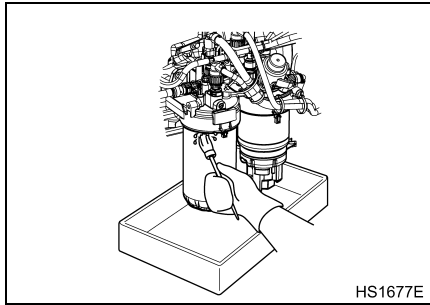
### CAUTION

- The new fuel filter should be empty when installing it. Never fill the fuel in a new fuel filter before installing it to the vehicle.
- Be sure to replace the O-ring with a new one.

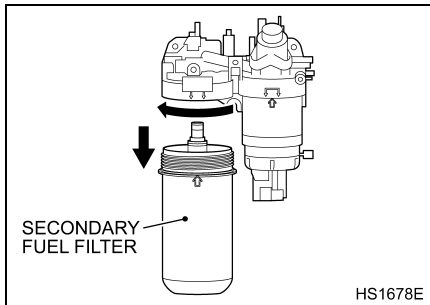
1. Loosen the fuel tank cap to release pressure in the tank. After releasing the pressure, tighten the cap.
2. Disconnect the supply hose from the fuel tank.



3. Clean the surface of the fuel filters.



4. Remove the secondary fuel filter using a 41 mm hex socket.

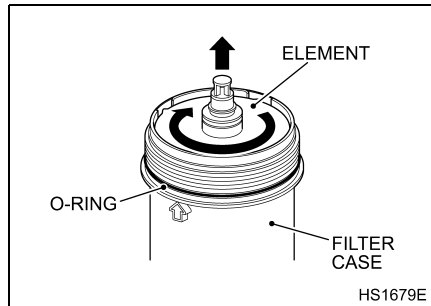


**! CAUTION**  
**Be sure to use a 41 mm hex socket to remove the filter.**

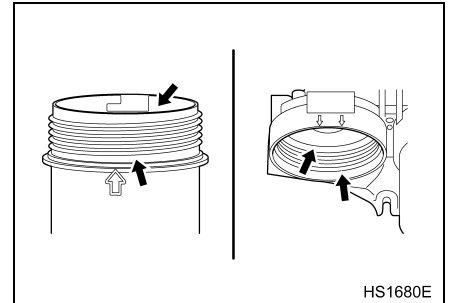
5. Turn the element clockwise to remove it from the filter case.

**! CAUTION**  
**When removing, be careful not to damage the filter case.**

6. Remove the O-ring from the filter case.



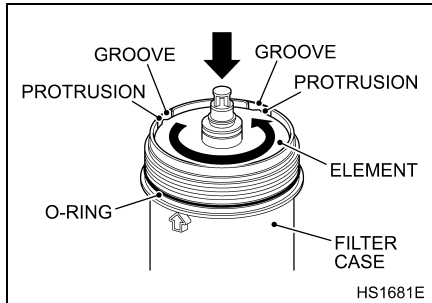
7. Clean the inside of the filter case, the O-ring mounting part of the filter case, and the filter mounting threads on the engine side.



8. Install a new O-ring to the filter case.

9. Install the new element in the filter case. Align the protrusions on the element with the grooves in the filter case to install the filter element, and turn it counterclockwise.

Do not forcibly turn if it is too hard. It can be used as it is.



10. Using a 41 mm hex socket, install the secondary fuel filter.

**Secondary fuel filter tightening torque:**

$$35^{+5}_0 \text{ N}\cdot\text{m} \{3.6^{+0.5}_0 \text{ kgf}\cdot\text{m}\}$$



### CAUTION

**Be sure to use a 41 mm hex socket to install the filter.**

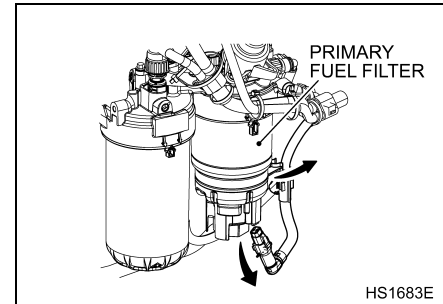
11. After installation, check that there is no gap between the filter and the engine body side.

### NOTE

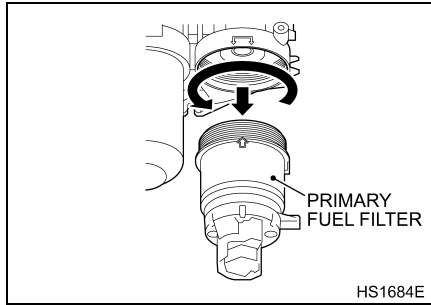
**When tightened to the specified torque, there is no problem even if the mark on the filter is slightly off between the marks on the engine body side.**

12. Replace the primary fuel filter at the same time when the secondary fuel filter is replaced.

13. Disconnect the harness connector from the primary fuel filter.



14. Remove the primary fuel filter using a 41 mm hex socket.



**CAUTION**

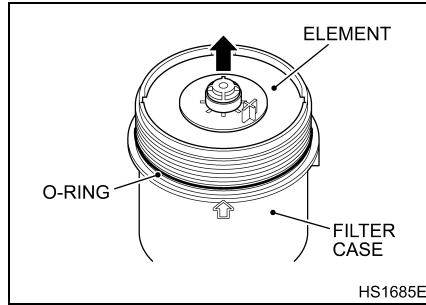
**Be sure to use a 41 mm hex socket to remove the filter.**

15. Remove the element from the filter case.

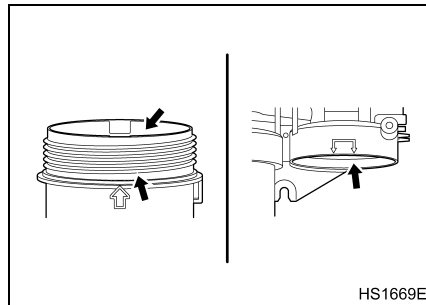
**CAUTION**

**When removing, be careful not to damage the filter case.**

16. Remove the O-ring from the filter case.

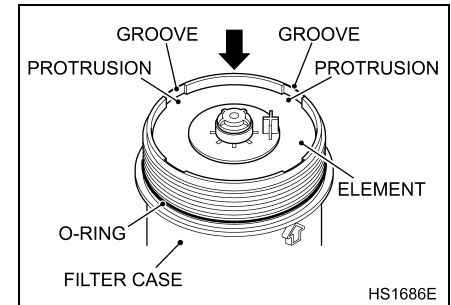


17. Clean the inside of the filter case, the O-ring mounting part of the filter case, and the filter mounting threads on the engine side.



18. Install a new O-ring to the filter case.

19. Align the protrusions on the new filter element with the grooves in the filter case and install the filter element in the case.



20. Using a 41 mm hex socket, install the primary fuel filter.

**Primary fuel filter tightening torque:**

**$35^{+5}_0$  N·m { $3.6^{+0.5}_0$  kgf·m}**

**CAUTION**

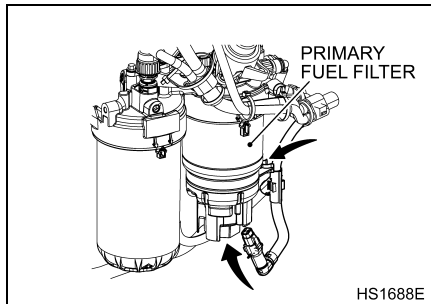
**Be sure to use a 41 mm hex socket to install the filter.**

21. After installation, check that there is no gap between the filter and the engine body side.

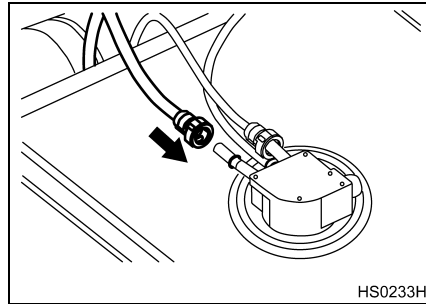
**NOTE**

When tightened to the specified torque, there is no problem even if the mark on the filter is slightly off between the marks on the engine body side.

22. Connect the harness connector on the primary fuel filter. Secure the harness with the clip on the primary fuel filter.



23. Reconnect the supply hose to the fuel tank.



24. Start the engine and check for fuel leakage.

**CAUTION**

Check for fuel leakage. Leaked fuel may deteriorate the electronic parts.

25. Let the engine idle for about 5 minutes to bleed air in the fuel system.

**CAUTION**

The engine speed should not be increased. Air may enter in the cylinder head and stop the engine.

**NOTE**

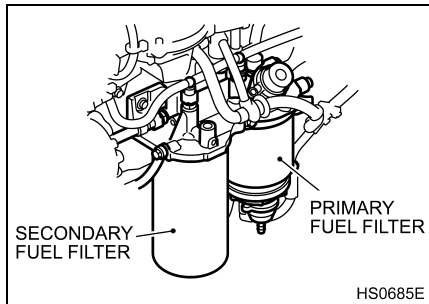
Because this engine uses the automatic air bleeding system, the air bleeding using the priming pump is unnecessary after replacing the fuel filter. The manual air bleeding using the priming pump is only necessary when the whole fuel system has been drained.



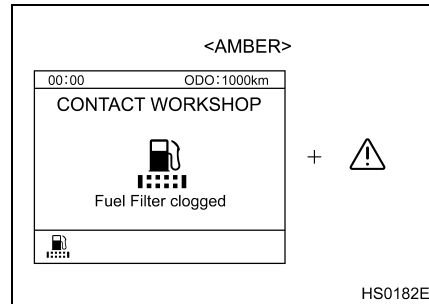
## Element cartridge type fuel filter

### Replacement of fuel filter

- Fuel must be filtered sufficiently. If fuel is contaminated with dust, etc., this may adversely affect the fuel system devices and reduce vehicle performance. If the pressure in the fuel filter decreases below a certain level, the clogged fuel filter warning will be displayed. When the warning is displayed, replace the fuel filter.
- There are two fuel filters: the primary fuel filter and the secondary fuel filter.



- Replace the fuel filters at every other engine oil replacement.
- In addition, replace the fuel filters when any of the following occurs.
  - Fuel pressure decreases.
  - Engine output decreases.
  - Fuel quality is uneven.
  - “Fuel pressure low” warning is displayed.



**CAUTION**

- If the filter is clogged but left unattended, the element will be damaged and contaminated fuel will flow directly to the fuel pump and the nozzles. This may adversely affect the service life of the engine. The fuel filter must be replaced regularly even if the warning is not displayed.
- Depending on how the vehicle is used, the warning may be displayed even before the replacement time. In such a case, replace the fuel filter. If the warning is often displayed even after the fuel filter was replaced, contact the nearest UD Trucks dealer for inspection and maintenance.

## Replacement procedures

**⚠ DANGER**

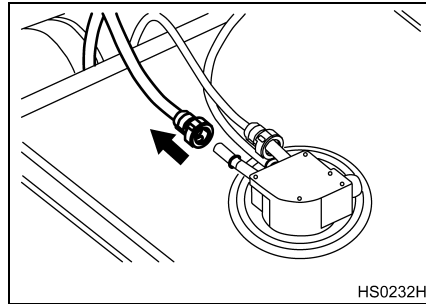
Fuel leakage may cause a fire. The filters and hoses must be firmly installed in order to prevent leakage.

**⚠ CAUTION**

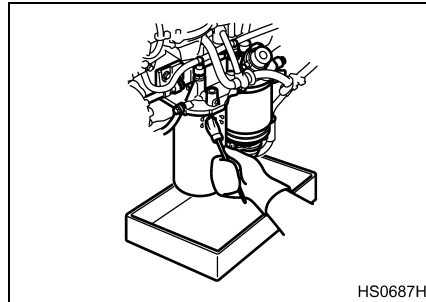
The new fuel filter should be empty when installing it. Never fill the fuel in a new fuel filter before installing it to the vehicle.

1. Loosen the fuel tank cap to release pressure in the tank. After releasing the pressure, tighten the cap.

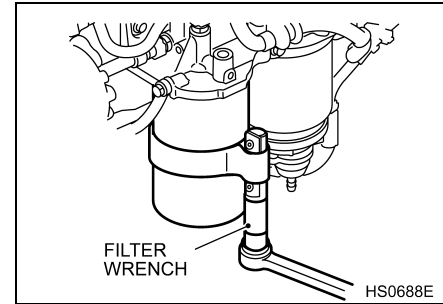
2. Disconnect the supply hose from the fuel tank.



3. Clean the surface of the fuel filters.

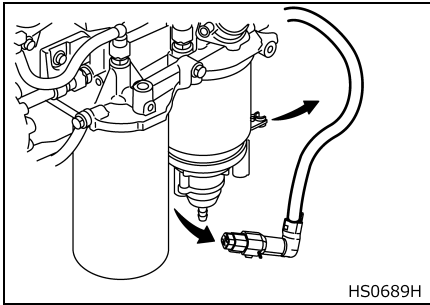


4. Remove the secondary fuel filter using a filter wrench.



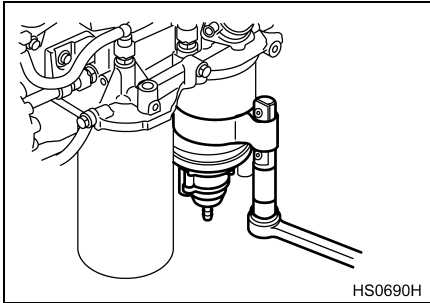
5. Apply fuel to the O-ring of a new fuel filter.
6. Screw the filter with your hand until the O-ring contacts the mating surface.
7. Turn the filter an additional half turn by hand.
8. Replace the primary fuel filter at the same time when the secondary fuel filter is replaced.

9. Disconnect the harness connector from the primary fuel filter.



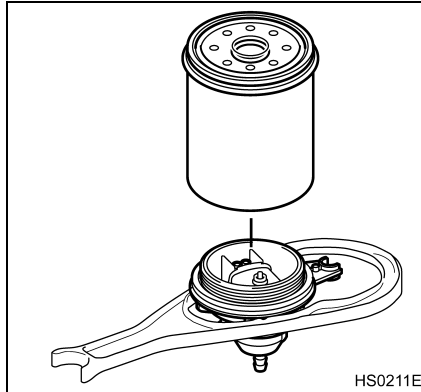
HS0689H

10. Remove the primary fuel filter using a filter wrench.



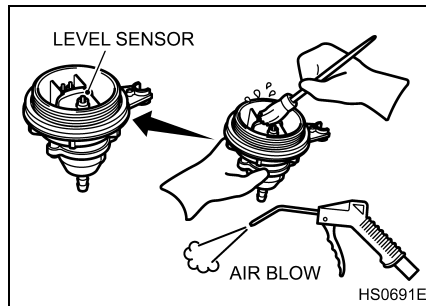
HS0690H

11. Remove the water separator at the bottom of the primary fuel filter using a puller.



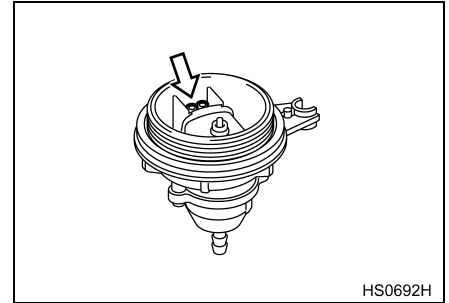
HS0211E

12. Clean the water level sensor in the water separator.



HS0691E

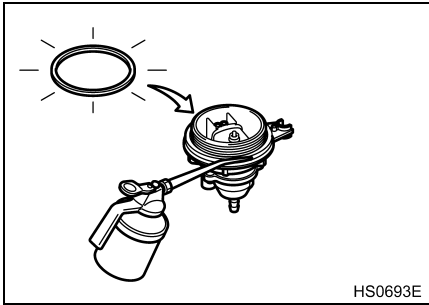
13. Check that the discharge port at the bottom of the water level sensor is not clogged.



HS0692H

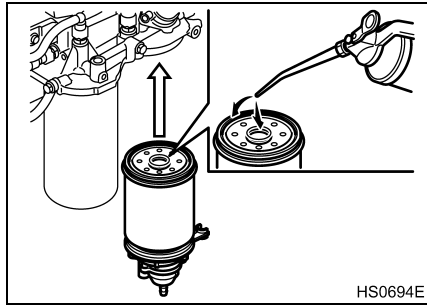
14. Attach a new O-ring, apply fuel to it, and then turn the water separator by hand until the O-ring contacts the mating surface.

15. Turn the water separator further 1/3 turn by hand.

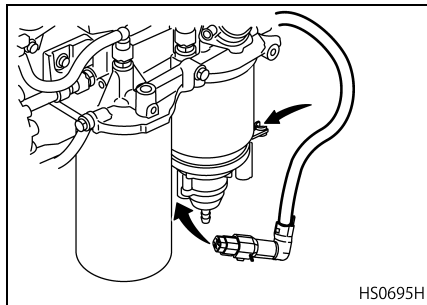


16. Apply fuel to the O-rings of the primary fuel filter. Install and tighten the filter by hand until its O-rings contact their mating surfaces.

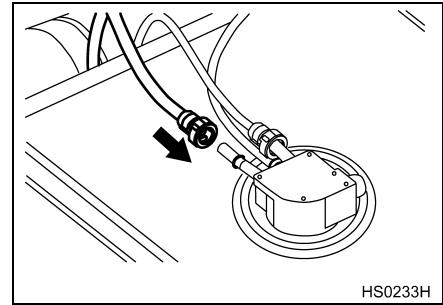
17. Tighten the filter further 1/2 to 2/3 turns by hand.



18. Connect the harness connector on the primary fuel filter. Secure the harness with the clip on the primary fuel filter.



19. Reconnect the supply hose to the fuel tank.




20. Start the engine and check for fuel leakage.

**! CAUTION**

**Check for fuel leakage. Leaked fuel may deteriorate the electronic parts.**

21. Let the engine idle for about 5 minutes to bleed air in the fuel system.

 **CAUTION**

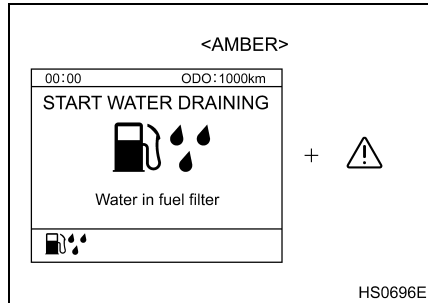
The engine speed should not be increased. Air may enter in the cylinder head and stop the engine.

**NOTE**


Because this engine uses the automatic air bleeding system, the air bleeding using the priming pump is unnecessary after replacing the fuel filter. The manual air bleeding using the priming pump is only necessary when the whole fuel system has been drained.

### Water draining of fuel filter

- When water gathers in the primary fuel filter, "Water in fuel filter" warning and warning indicator are displayed to warn the driver.



- If the warning is displayed, stop at the first opportunity and drain water from the primary fuel filter.
- If the warning frequently requires the draining, there is a problem with the fuel quality. Drain fuel from the fuel tank and refill the fuel of the correct quality.

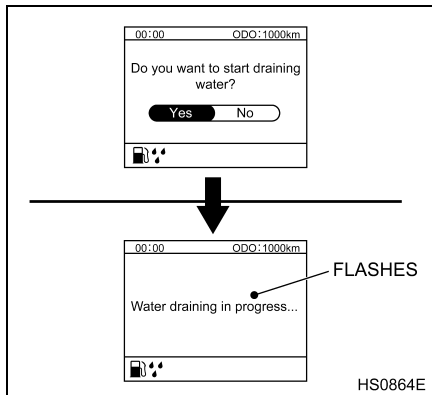
 **CAUTION**

**Do not drive with too much water in the fuel filter. Doing so may cause seizure of the fuel pump, resulting in engine damage.**

### Water draining procedure

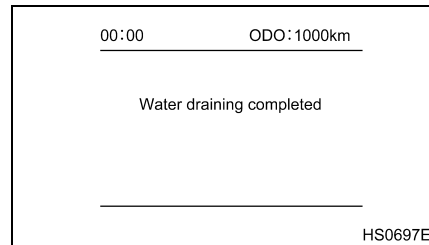
1. Stop the vehicle.
2. Apply the parking brake.
3. Turn off the engine.
4. Place a container under the primary fuel filter.
5. Turn the ignition key to the ACC position.

6. On the multi-display, select “Water draining” from “Maintenance” screen. Then select “Yes” to start draining. “Water draining in progress” message is displayed.



7. Wait until the water has stopped.

8. When the draining has finished, “Water draining completed” message appears on the multi-display.



**WARNING**

- Be sure to catch the drained fuel and water with a container for safety and cleanliness.
- If the fuel is splashed over the engine parts, wipe it off completely.

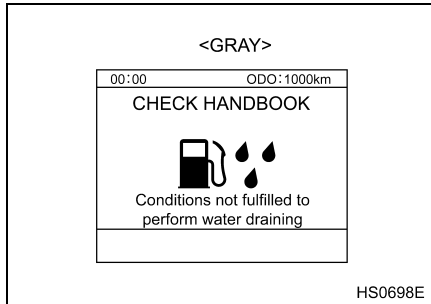
**CAUTION**

In cold weather, icicles may be formed under the fuel filter. Before performing the draining, be sure to check the filter and remove the icicles if formed.

**NOTE**

- If the engine is started before draining is complete, the process is interrupted.
- If the warning message still appears, repeat the draining procedure until it disappears.

- If you try to start the draining but the draining conditions are not satisfied, “Conditions not fulfilled...” message appears on the multi-display. Refer to “Water draining procedure” to confirm the conditions and retry the draining.



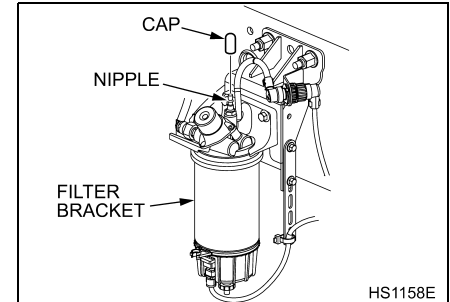
## Air bleeding of fuel system

- The engine of the GH11 Engine vehicle is provided with an automatic air bleeding system that automatically bleeds air from the fuel system and evacuates it to the fuel tank while the engine is running. Thus, on regular filter replacement, it does not need to bleed air using priming pump manually.
- The air bleeding procedures using the priming pump should be performed when the entire fuel system has run out of fuel in any of the following conditions.
  - The engine has not been started for a long period of time.
  - The fuel tank becomes empty.

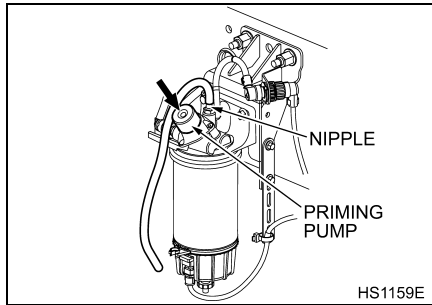
## Air bleeding procedure

### GH8 Engine

1. Park the vehicle.
2. Apply the parking brake.
3. Stop the engine.
4. Place a container under the primary fuel filter.
5. Remove the cap. Loosen the nipple 2 turns, and then connect a hose.



6. Pump the priming pump attached to the primary fuel filter bracket until fuel without bubbles flows out.



7. Tighten the nipple. Remove the hose, and torque-tighten the nipple.

**Nipple tightening torque:**  
 $3.5 \pm 0.5 \text{ N}\cdot\text{m} \{0.4 \pm 0.1 \text{ kgf}\cdot\text{m}\}$

8. Pump the priming pump until it becomes heavy, and then wait for 15 seconds. After 15 seconds, pump about 30 more times.

9. Install the cap on the nipple. This completes the air bleeding.

10. Start the engine. Let the engine idle at low speed for about 5 minutes.

**CAUTION**

**Do not increase the engine speed. Air may enter the cylinder head.**

11. If the engine is difficult to start, repeat pumping.
12. Check for any fuel leakage.
13. Operate the engine and check that it operates smoothly.

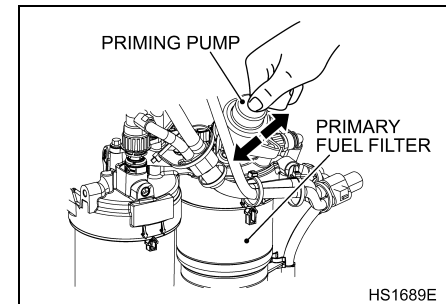
**DANGER**

- After starting the engine, check that there is no fuel leakage from any components of the fuel system. A fuel leakage can cause a fire. If a fuel leakage is found, contact the nearest authorized UD Trucks dealer.
- If fuel splashes on the engine, wipe it off completely. This may cause a fire.

## GH11 Engine

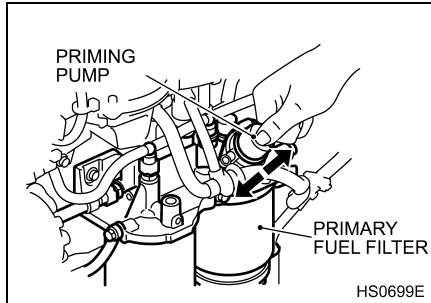
1. Stop the vehicle.
2. Apply the parking brake.
3. Turn off the engine.
4. Open the front lid.
5. Tilt the cab.
6. Pump the priming pump attached to the primary fuel filter bracket.  
**Replaceable element type fuel filter: About 200 times**  
**Element cartridge type fuel filter: About 100 times**

Replaceable element type fuel filter





Element cartridge type fuel filter



Thus the air bleeding has been completed.

**NOTE**

- Opening the air bleeding valve or nipple is not necessary.
- In cold climates, the priming pump may be too stiff to work. In this case, warm the priming pump by pouring hot water over it or move the vehicle to a warmer location. Be careful not to burn yourself when pouring hot water.

7. Start the engine. Let the engine idle at low speed for about 5 minutes.

**CAUTION**

**Do not increase the engine speed. Air may enter into the cylinder head and stop the engine.**

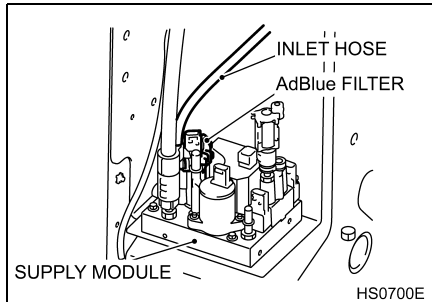
8. If the engine does not start, perform air bleeding again.
9. Check for any leakage.
10. Operate the engine and check that it operates smoothly.

**DANGER**

- After starting the engine, check that there is no fuel leakage from any components of the fuel system. A fuel leakage can cause a fire. If a fuel leakage is found, contact the nearest authorized UD Trucks dealer.
- If fuel spills over the engine, be sure to wipe it off completely. This may cause a fire.

## AdBlue filter

The AdBlue filter is provided at the inlet hose connection at the top of the supply module. It is not necessary to replace the AdBlue filter periodically.



### ⚠ CAUTION

AdBlue is a very safe liquid, but it might cause a very slight irritation for some people. If it is spilled on the body, wash it off with water. If it is swallowed by mistake, drink 1 or 2 cups of water or milk.

## Transmission oil filter

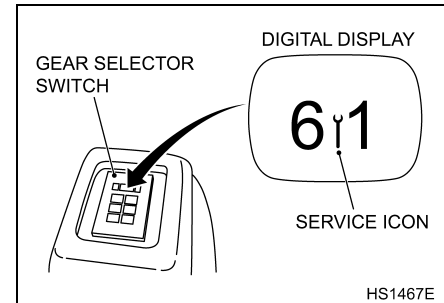
### Replacement of oil filter

- The transmission oil filter for ESCOT-VI is a full-flow type filter. The oil filters for the automatic transmission can be disassembled.

### ⚠ CAUTION

If the filter has clogged, dirty oil may be directly distributed to the transmission without going through the filter or a reduction of oil amount may shorten the life of the transmission. Be sure to replace the filter on a regular basis.

- For automatic transmission vehicles, the service icon will flash for 2 minutes in the digital display of the gear selector switch when the replacement period of the filters is approaching. If the service icon flashes, contact your nearest authorized UD Trucks dealer.



## Replacement period

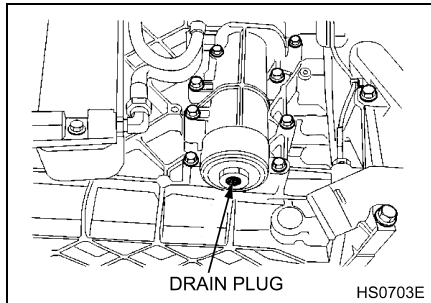
Replace the oil filter together with replacement of the transmission gear oil.

## Replacement procedure

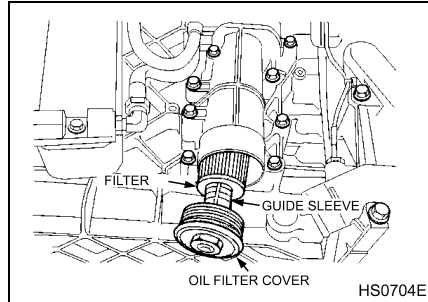
### ESCOT-VI

1. To drain oil, remove the drain plug from the oil filter. After draining, install the drain plug to the oil filter.

**Drain plug tightening torque:**  
**30 – 40 N·m {3.1 – 4.1 kgf·m}**



2. Remove the oil filter cover and the guide sleeve, and then remove the filter.



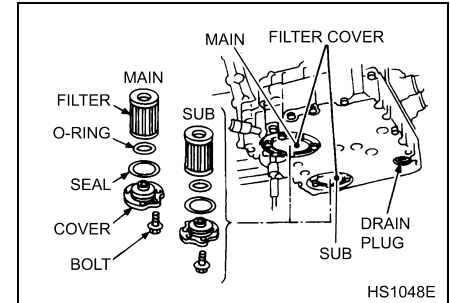
3. Install a new filter, and then install the oil filter cover.

**Oil filter cover tightening torque:**  
**45 – 55 N·m {4.6 – 5.6 kgf·m}**

4. After refilling the transmission gear oil, run the engine to check for oil leakage.

## Automatic transmission

The oil pan incorporates a type of filter that can be disassembled.



1. Clean the periphery of the filter covers to prevent dust from entering when removing the filter.
2. Remove the mounting bolts of the filter covers and pull out the covers and filters downward.
3. Replace the filters, O-rings and seals with new ones and install to the covers. When installing, apply a light coating of clean oil to the entire perimeter of O-rings and seals.

4. Install the cover and filter combined as one unit into the transmission body.

**Tightening torque:**

**51 – 61 N·m {5.2 – 6.2 kgf·m}**

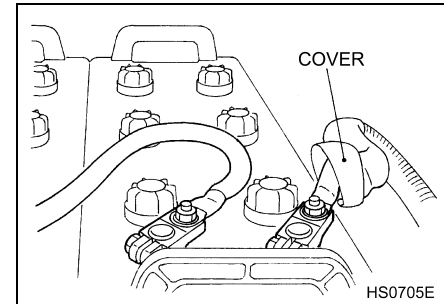
5. After replacement, be sure to refill fluid, then, check the fluid level.

## Battery

### Handling of the battery

#### Cleaning the battery terminal

- If the battery terminal is dirty or corrosive, clean it. White powder at the terminal due to corrosion can be removed by wiping with lukewarm water. If the terminal is heavily corroded, remove the battery cable and polish the terminal with a wire brush or sandpaper. After cleaning and tightening, apply chassis grease lightly to prevent the terminals from poor contact or corroding.



**CAUTION**

**When the terminal at the battery cable side is cleaned, be careful that excessive polishing with a wire brush may result in removal of the rust preventive plating on the surface.**

- Be sure to connect the battery cable terminals securely. If connected improperly, the case or the electrode may be damaged due to vibration during driving, resulting in deterioration of the battery life. Tighten the clamping bolts. After tightening, apply thin coat of chassis grease on the battery cable terminals to prevent corrosion.

### Handling Precautions for Battery

- **When disconnecting the battery cables, be sure to disconnect the negative (-) terminal first and connect the negative (-) terminal later.** With the negative (-) terminal cable connected, if a tool contacts the battery positive (+) terminal and a frame of vehicle, a spark will occur. It is dangerous.
- **To charge the battery, remove it from the vehicle and carry out charging with the battery**

**caps removed.** To charge the battery mounted on the vehicle, be sure to disconnect the negative (-) terminal cable before charging.

- Always keep the battery clean. If a battery is dirty, inclusion of impurities in the battery fluid may damage the electrode or leakage may occur on the upper surface of the battery case.
- After replenishing distilled water in the battery, drive the vehicle for charging with the generator or remove the battery from the vehicle and charge it with the battery charger. During winter, in particular, without stirring of the battery fluid (charging) after replenishing distilled water, the distilled water may freeze and damage the battery.
- The urea dosing system continues to operate for few minutes after the ignition switch is turned off. Therefore, wait for at least 5 minutes before disconnecting the battery cable.

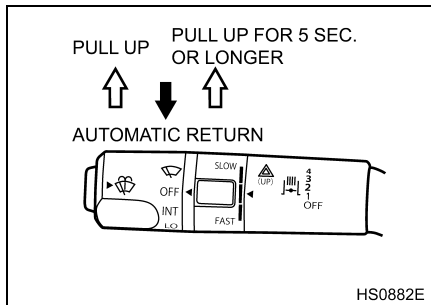


- **The battery generates flammable hydrogen gas. Keep away from flame including lit cigarettes and a spark. Explosion of the battery may result in injury.**
- **Since the battery fluid is diluted sulphuric acid, avoid contacting with your body or clothes. If the battery fluid comes in contact with you, wash it off immediately with water and clean and then rinse sulphuric acid with soap. If you get it in your eyes, immediately flush them with a large quantity of water and seek the care of a physician.**

### When disconnecting the battery cables

When replacing the battery, observe the following procedures:

1. Perform the following operations to set the vehicle (its electronic control systems) in the service mode.
  - Pull off the ignition key from the ignition switch.
  - Pull up the hazard switch once.
  - Then, pull up and hold the hazard switch for 5 seconds or longer. The hazard lamps will go out and the vehicle will enter the service mode.



2. Confirm that the vehicle is in the service mode by checking that the room light, etc. do not illuminate when opening a door.

3. If you have confirmed that the vehicle is in the service mode, wait for 30 seconds.
4. Remove clamps and remove the battery cover.
5. Disconnect the battery cable from the negative (-) terminal.
6. Disconnect the battery cable from the positive (+) terminal.

### ⚠ DANGER

**Be sure to set the vehicle in the service mode before disconnecting/connecting the battery. Otherwise, a spark may occur between the battery terminal and the battery cable terminal, resulting in a serious accident. Furthermore, the spark may ignite the hydrogen gas generated by the battery and the battery may explode, leading to a serious injury.**

### NOTE

**The service mode restricts the operations of the vehicle's electronic control systems to lower the power consumption of the vehicle. This mode is cancelled when the ignition switch is set to the "ACC" position.**

### When replacing the battery

When replacing the battery, observe the following procedures:

1. Disconnect the battery cables.
2. Loosen the nuts and remove the battery clamps.
3. Remove the battery.
4. Mount the battery in the reverse order of removal.

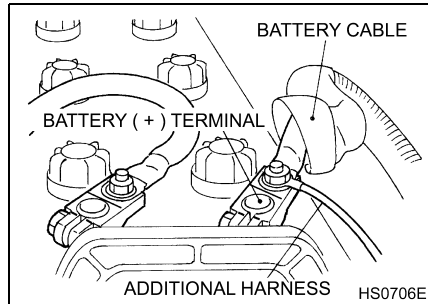
**⚠ CAUTION**

- When connecting the battery cables, make sure that the cables do not come in contact with pipes or edges of brackets. Abrasion may cause air leakage or sparking. This is dangerous.
- If a battery bracket or a battery terminal becomes loose during driving, it may cause a short-circuit. Be sure to tighten the bracket and terminals securely.

**When power is directly taken from the battery**

When power is directly taken from the battery, tighten the battery cable terminal and the additional harness terminal together with a fixing nut. Provide a fuse with the appropriate capacity at the power source side of the added equipment for safety.

Taking the power for a radio (24V)



**⚠ CAUTION**

- Tighten the terminals together securely so that loosening does not occur.
- Do not use other terminal than the terminal specially designed for power supply.

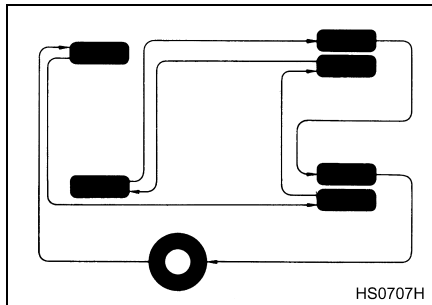
# Tires

## Tire rotation

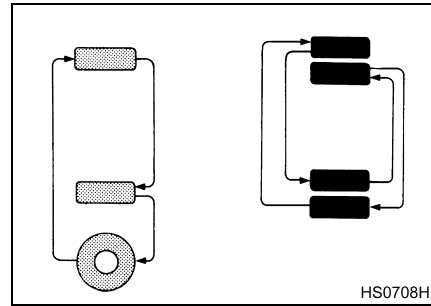
Tires at each wheel are worn differently depending on road conditions, cargo, brake operation, steering operation, etc. If the spare tire is not used for a long time, it may be deformed. To make wear of tires even and to extend the life of tires, rotate the tire positions according to a planned schedule.

The figure below is an example of tire position rotation.

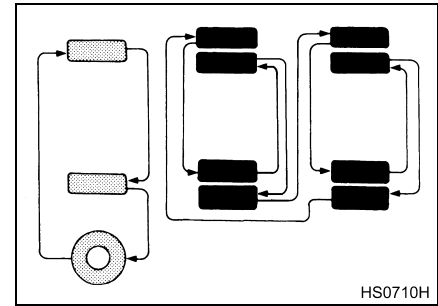
GK series



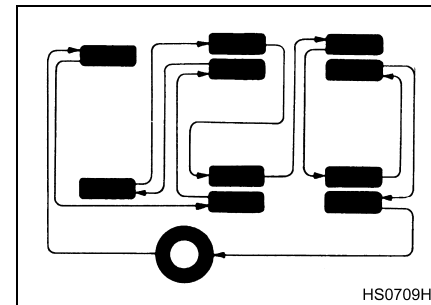
GK series front and rear variant tire fitted car



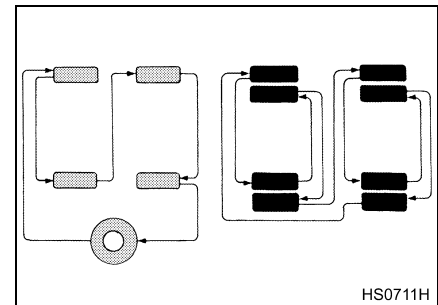
CD, CW and GW series front and rear variant tire fitted car



CD, CW and GW series



CG series





### Precautions for tire rotation

- Do not install tires with the difference in outer diameters beyond the specified range at double wheels. When the difference is within the specified range, install the smaller tire at the inner side.


Nominal size of tire width	Specified range of outer diameter difference for double tires
	Radial tire
9.00 (or equivalent) or more	Within 8 mm
Low-profile radial tire	Within 6 mm

- Use less worn tires with adjusted wheel balance at front wheels.
- Make sure that the turning direction is opposite to the previous installation.
- Be sure to install the same size tire on the same axle. If tires with different sizes are used on the same axle, the vehicle may be pulled either right or left when braking or the steering wheel

may be turned. Never install tires of different sizes.

- Replenish new tires in two pairs and install them on the front wheels first.
- When new tires are installed, perform a break-in drive. Perform break-in drive for 200 km or more at the speed of 60 km/h or less or for 300 km at the speed of 50 km/h or less. Check the air pressure frequently until the vehicle has been driven about 3,000 km.
- During tire rotation, if the additionally painted surface (e.g. body-colored flat area of the wheel) comes in contact with the mating part (hub or wheel), peel off the paint of the contact surface (flat area). Clean the surface with a wire brush and install the wheel.
- Check the disc wheel. If any crack is found, replace it.
- Install double wheels so that the air valves of the inner wheel and the outer wheel may be diagonally positioned.

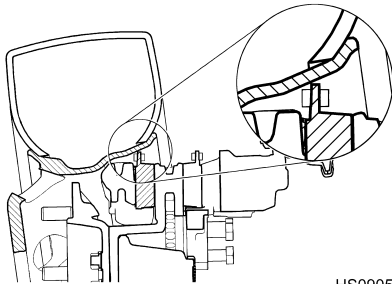
### Change of tire

 **WARNING**

**When changing a tire, park on a flat and hard surface, set the ignition switch in “OFF” position, and apply the parking brake securely. Put chocks at the front and rear of the tire which is located diagonally opposite to the tire to be changed.**

**⚠ CAUTION**

- Be careful not to damage the screw portion of the hub bolt when removing or installing the wheels.
- Be careful not to hit the disc wheel against the brake parts when removing or installing the wheels. Doing so could result in damage to the disc wheel or brake parts.



HS0905H

- The wheel nut for the right and left sides of the vehicle is a right-hand screw type. The mark “R” that indicates a right-hand screw is stamped on the hub bolt. If the bolt is mistakenly tightened instead of being loosened, the hub bolt may be stretched or broken.
- If the tire size or brand needs to be changed, contact the nearest authorized UD Trucks dealer. If tires that are not specified are installed, difference in the outer diameter may affect the accuracy of speedometer, or they may contact the vehicle components, causing vehicle damage.
- If the front tires are changed from bias tires to radial tires (or from radial tires to bias tires), toe-in must be adjusted. Ask for adjustment at the nearest authorized UD Trucks dealer.
- If toe-in is not adjusted to the appropriate value, the steering may be unstable or eccentric wear of the tires may occur. In particular, it is dangerous to drive the vehicle on a highway in this condition. Adjust toe-in to the appropriate value and keep the vehicle in safe conditions.

### Removal of tire

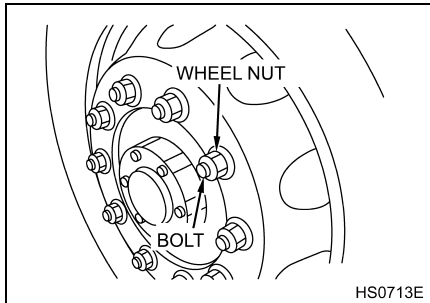
1. Place the jack at the jack-up point and jack up the vehicle to the degree that tires are not lifted. For the jack-up point and the jack-up procedures, refer to “Jack up” (page 13-54).

- Loosen the nuts with a wheel nut wrench. Loosen the nuts to the degree that they can be turned by hand.

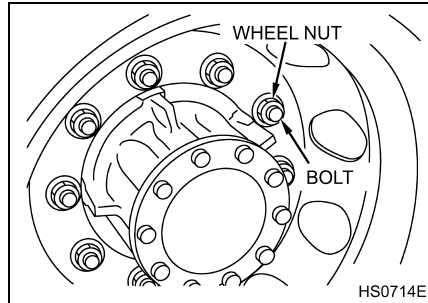
The wheel nuts are common for the right side and left side of the vehicle. They are right-hand threaded.

- Jack up the vehicle until the tire is lifted a little.
- Remove the nuts and remove the tire.

### Front wheel



### Rear wheel



### CAUTION

- When loosening the wheel nuts before jacking up the vehicle, do not loosen the wheel nuts excessively. Doing so may result in wheel offset and damage the thread.

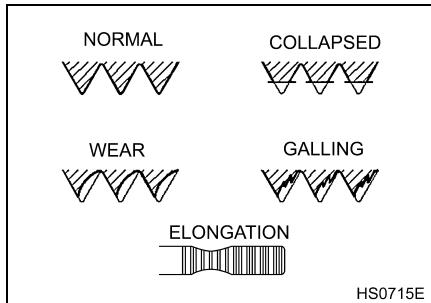
- When removing the outer wheel of the rear double wheels, never raise the outer wheel off the ground by positioning the inner wheel of that double wheel over a wood block or the like. Because the inner and outer wheels are tightened together, when the wheel nuts are removed and the outer wheel is removed, the inner wheel may come off or the inner wheel may shift to damage the hub bolts or other parts.

### Check for damage to the wheel nut, hub bolt, disc wheel and hub

- When replacing a tire, check for any abnormality in the wheel nut, hub bolt, disc wheel and hub. If an abnormality is found on a wheel, check the other wheels securely. Replace the faulty part with a new one.

### Wheel nut and hub bolt

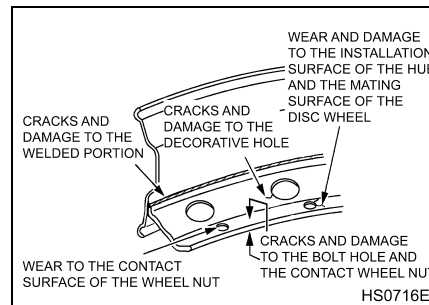
- Check that no cracks or damage is found, the bolt is not elongated, and that there is no severe corrosion. In addition, check that there is no collapse, wear or galling in the screw portion.



- Check for smooth rotation of the nut portion and the washer portion of the wheel nut.
- If a hub bolt is broken, the whole hub bolts and the wheel nuts of the wheel will require replacement. Contact the nearest UD Trucks dealer.

### Inspection of the disc wheel

- Check for cracks and damage to the bolt holes, decorative holes and welded portions. Check for cracks, damage and wear to the contact surface of the wheel nuts. Also, check for wear and damage to the installation surface of the hub and the mating surface of the disc wheel. If a wheel is seriously damaged, have it inspected by the nearest authorized UD Trucks dealer.



### Inspection of the hub

- Check for excessive wear and damage to the installation surface of the disc wheel.

**CAUTION**

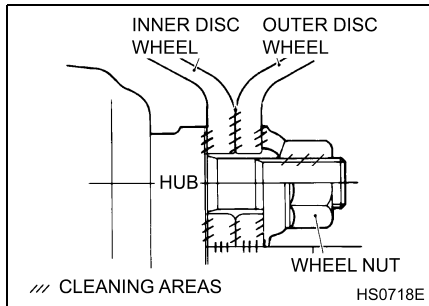
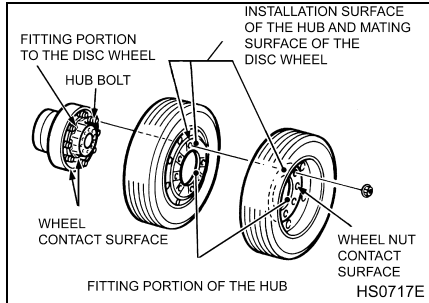
**If replacing a part, always use a genuine UD Trucks part.**

### Tire installation

#### Cleaning

- Clean the following portions to remove rust, mud, additional paint, etc.: Installation surface of the disc wheel to the hub, fitting portion to the hub, mating surface of the disc wheel, contact surface of the wheel nut, installation surface of the hub to the disc wheel, fitting portion of the disc wheel, screw portion of the hub bolt and the wheel nut.
- If a nut does not turn smoothly even after cleaning, the threads of the hub bolt may be faulty.

Have your vehicle inspected at the nearest authorized UD Trucks dealer.

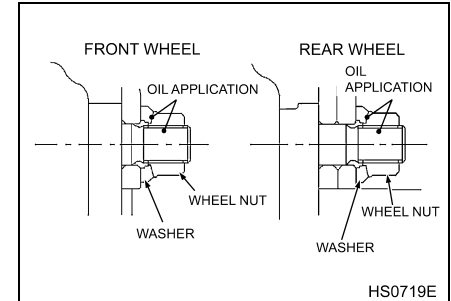


## ⚠ CAUTION

- If the installation surface is dirty, the wheel nuts may loosen.
- Do not apply additional paint to the installation surface. A thick paint coat may cause the wheel nuts to loosen and the hub bolts to break.
- If a spare wheel is painted on the installation surface in order to protect corrosion, remove additional paint when replacing.
- Always use genuine UD Trucks wheel nuts. Do not use genuine wheel nuts and non-genuine wheel nuts together.

## Lubrication on thread

- When tightening the wheel nut, apply engine oil lightly to the threads of the hub bolt and wheel nut and the tapered portion (clearance between nut and washer) of the wheel nut.



## ⚠ WARNING

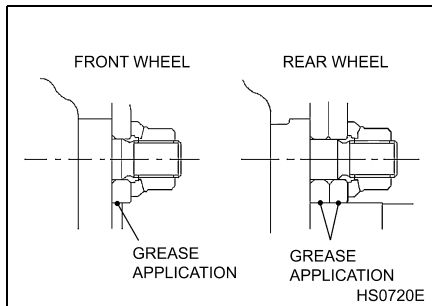
Do not use oil or grease that includes molybdenum disulfide. Using such oil or grease may cause excessive tightening and the hub bolt may be elongated or broken.

**! CAUTION**

Never apply oil or grease to the contact surface of the washer and wheel. If oil is applied, over-tightening of nut, excessive wear of the washer contacting surface or loosening of nut may be caused.

### Tightening of the wheel nut

1. To prevent the disc wheel from sticking to the hub, apply grease lightly to the fitting portion of the hub and wheel.



2. Paying special attention to avoid damaging the screw portion of the hub bolt. Fit the disc wheel down into the hub along the guide located on the fitting portion of the hub using a tire lever. For the double-wheel model, install the inner wheel and the outer wheel in position so that the air valves are located diagonally.

3. Install the wheel nuts. Turn the wheel nut by hand in order to check that it rotates smoothly. If it does not rotate smoothly, the screw portion may be damaged. If a damage is found, the whole hub bolts and the wheel nuts of the wheel need to be replaced as a set. Contact the nearest authorized UD Trucks dealer.

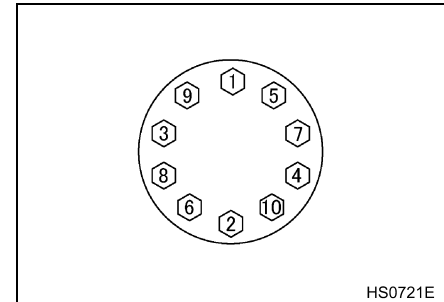
4. Set the wheel so that each hub bolt is positioned at the center of the bolt hole and temporarily tighten the wheel nuts to prevent the wheel from shaking.

**Tightening Torque (reference):**  
**100 N·m {10 kgf·m}**

5. First, lower the jack until the tire contacts the ground. Then, tighten the wheel nuts diagonally in 2 or 3 steps. Finally, tighten the wheel nuts to the specified torque.

**Tightening Torque:**  
**550 – 600 N·m {55 – 60 kgf·m}**

Tightening sequence



HS0721E

**WARNING**

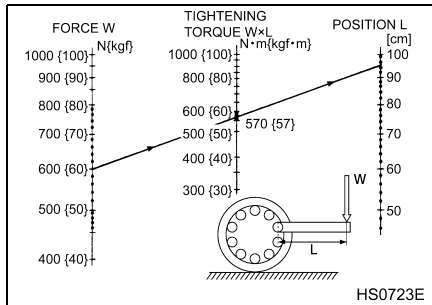
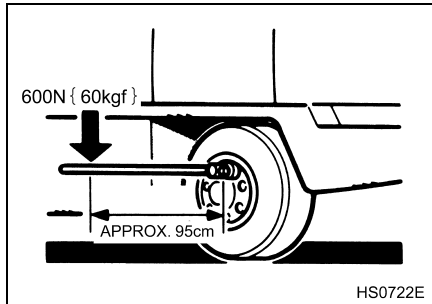
- Be careful not to tighten the wheel nuts insufficiently or excessively. Doing so may cause the hub bolt to break and the disc wheel to crack and may cause a wheel to fall off. After tightening the nuts, check if the nuts are tightened to the specified torque to prevent improper or missed tightening.
- Do not tighten the wheel nut with excessive torque.
- Do not tighten the wheel nut vigorously. Doing so may result in excessive tightening.

- If an impact wrench is used to tighten wheel nuts, be sure not to tighten the nuts excessively by paying careful attention to the compressed air pressure and tightening time. Tighten the nuts to the specified torque using a torque wrench at last.
- There are two types of hub bolts: one is for the steel wheel and the other is for the aluminum wheel. Be careful not to use them together. For details, refer to the “Aluminum disc wheel” (page 13-52).

**Calculation of specified torque**

- To tighten the wheel nut to the specified torque, the best way is to use a torque wrench. When using a wheel nut wrench for tightening, be sure to fix the gripping position so that the specified torque can be obtained. Do not tighten the nut excessively. Excessive tightening of a wheel nut may cause elongation of a bolt or may deform the contact surface of the disc wheel with the wheel nut, so that the specified torque cannot be obtained.

**Example: When tightened to 570 N·m {57 kgf·m}**



- To tighten using a wheel nut wrench, determine the position of force application using the previous figure.
- When the tightening torque is 570 N·m {57 kgf·m}, connect the point of 600 N {60 kgf} at the left line with the point of tightening torque

570 N·m {57 kgf·m} at the center line. Extend this line and obtain the intersection point on the right line. This point of approximately 95 cm is the position for applying force to the wheel nut wrench.

- Tightening torque (N·m {kgf·m}) is force N {kgf} multiplied by the position (m) of force application. The position of force application can be obtained by calculation. For the previously described example:  

$$570 \div 600 \{57 \div 60\} = 0.95 \text{ (m)}$$

$$\rightarrow 95 \text{ cm}$$

### Retightening of the wheel nut



**WARNING**

After tire replacement, the tightening force to the wheel decreases due to initial break-in. After 50 to 100 km driving, retighten the wheel nuts to the specified torque.

For details regarding the retightening instruction, refer to “Check for loosening of wheel nuts” (page 13-50).

## Check for loosening of wheel nuts

- When the hub, disc wheel and wheel nuts are changed, be sure to check for loosening after driving 50 to 100 km.



**WARNING**

If wheel nuts frequently become loose, contact the nearest authorized UD Trucks dealer and have the vehicle inspected and serviced.



## Inspection procedures

### Tightening Torque:

**550 – 600 N·m {55 – 60 kgf·m}**

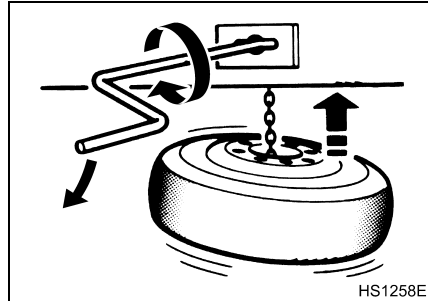
1. Make sure that the wheel nuts are tightened to the specified torque using a torque wrench.
2. Additionally tighten the wheel nuts to the specified torque using a torque wrench.

**CAUTION**

- **Tighten the wheel nut gradually and gently. Do not tighten the wheel nut vigorously. Doing so may cause the wheel nut to be excessively tightened.**
- **The wheel nut for the right and left sides of the vehicle is a right-hand screw type. The mark “R” that indicates a right-hand screw is stamped on the hub bolt.**

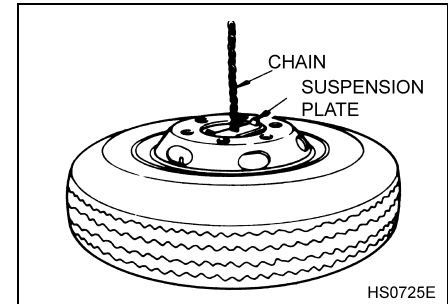
## Handling spare wheel carrier

- To mount or dismount a spare wheel, insert a crank handle into the socket of the wheel carrier and turn the crank handle by hand.



- When a spare wheel is lifted, fit the carrier lifting plate tab with the disc wheel correctly. At this time, be sure to mount the wheel with its convex side facing upward. When the wheel is lifted with the chain twisted, the chain may loosen during driving. Make sure that the chain is not twisted, and

turn the crank handle clockwise for lifting.



- If there is deformation of a bracket, poor flatness of a contact surface, fall of cushion material or clearance between cushion materials, seating of the tire or disc wheel may be inaccurate. Even if tightening is complete, it may become loose during driving. In this case, repair the problem at an authorized UD Trucks dealer before use.
- After lifting, fix the wheel by tightening the wheel carrier to the specified torque of 58 to 76 N·m {5.9 to 7.7 kgf·m} with the crank handle. Apply a force of 294 to

392 N·m {30 to 40 kgf·m} at the end of the handle for tightening. The guideline is approximately the degree of turning the handle using one hand with the full force of a normal adult.

- After tightening, remove the crank handle without turning it in reverse.
- For driving without a wheel on the spare wheel carrier, lift the lifting plate to the top.

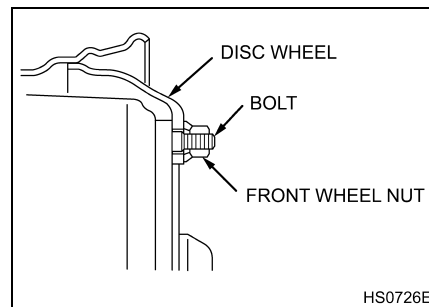
### WARNING

- When mounting a wheel, be sure to face the convex side of the disc wheel upward. Mounting in the opposite way is unstable and it may result in loosening.
- Fit the lifting plate correctly with the disc wheel. Incorrect installation may cause the wheel to fall.

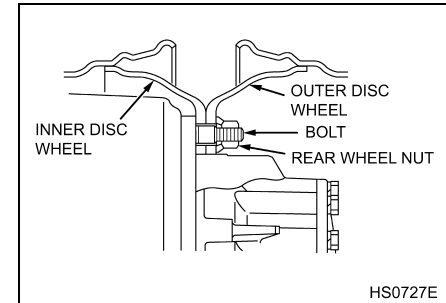
- After mounting the wheel, press the wheel strongly with a hand to make sure that it is securely fixed. If it is not securely fixed, the wheel may fall during driving. Fall of a wheel may not only disturb subsequent vehicles, but it may also cause an accident. Mount the spare wheel securely.

## Aluminum disc wheel

Front wheel




Rear wheel



### CAUTION

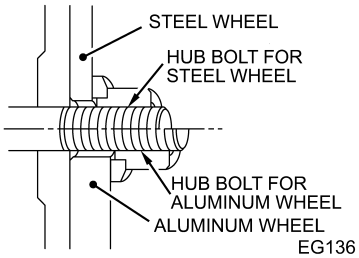
- Always use the genuine UD Trucks aluminum wheels.
- The hub bolts are specialized for the aluminum wheels. If replacing the steel wheels with aluminum wheels, contact the nearest authorized UD Trucks dealer and have the hub bolts replaced.
- Do not mix the aluminum wheels and the steel wheels when performing a tire rotation or replacing a tire in the event of a flat tire, etc.

- When installing the aluminum wheel on the vehicle for the first time or reinstalling the wheel due to flat tire or tire rotation, check wheel nut for looseness after driving 50 to 100 km.
- When using the tire chains, the side chains or fasteners may contact and damage the aluminum wheel.
- When installing the aluminum spare wheel on the vehicle, pay particular attention to prevent the wheel from being scratched.
- Do not use a sandsoap or a wire brush when washing the aluminum wheel as it scratches easily. Use mild detergent if necessary.

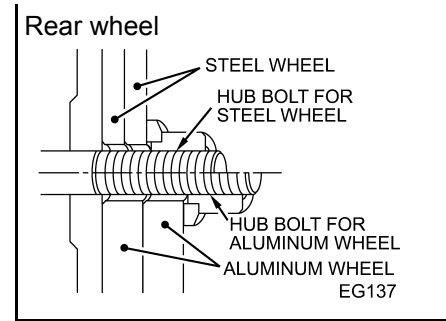
 **WARNING**

**If the aluminum wheel is installed using the hub bolt for the steel wheel, shortage of bolt length can cause damage to the thread of the bolt and nut, which may result in a wheel falling off due to insufficient tightening force.**

Front wheel



EG136



**NOTE**





- **Always use the hub bolts that are specialized for the aluminum wheel (the wheel nut is a common part). Do not use the hub bolts for the steel wheel.**
- **On the hub bolt, there is an identification mark that distinguishes the bolt for steel wheel and that for aluminum wheel, and there is another identification mark that indicates a right-hand screw. When installing, check the identification mark in order to avoid incorrect installation.**

**ST:** Hub bolt dedicated for steel wheel

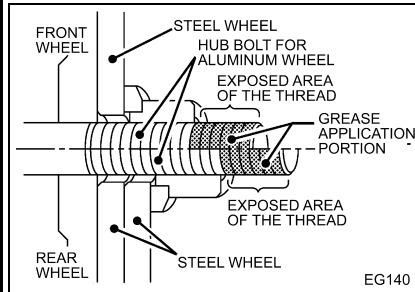
**AL:** Hub bolt dedicated for aluminum wheel

**R:** Right-hand screw

HUB BOLT

	For steel wheel	For aluminum wheel
Right side		
Left side		
	HS0807H	HS0808H

- If the steel wheels with winter tires are installed only in the winter season on a vehicle with aluminum wheels and the hub bolts for the aluminum wheel, take measures to prevent the protruding section of the bolt (the exposed area of the thread) from rusting, such as applying grease, etc.

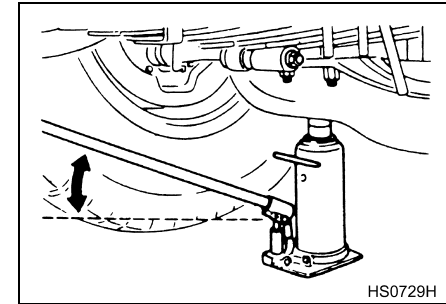


- After driving on the road where deicing agent is applied or on a road near the sea, wash the wheels completely and coat with wax.
- Never process a wheel in a way that results in shape change and/or material change, such as welding, heating, cutting, tapping, bending, etc.

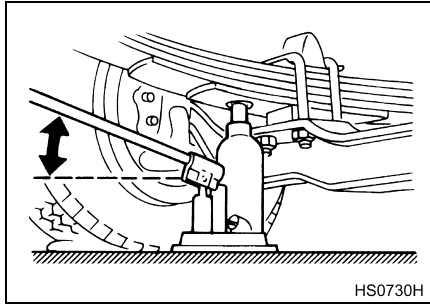
## Jack up

### Jack-up point

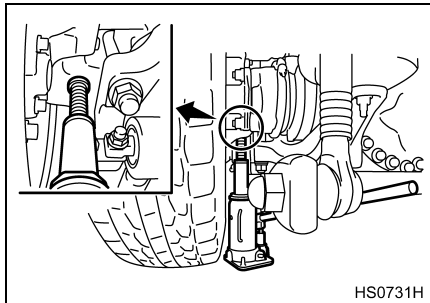
Front wheel



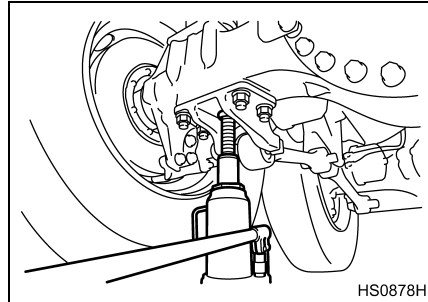
Front wheel (when the jack cannot be placed under the front axle (leaf spring))



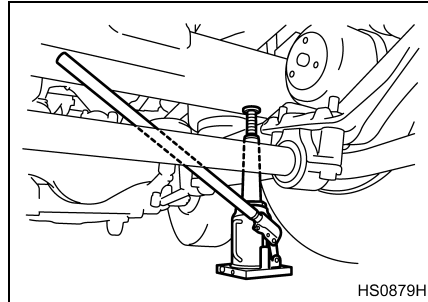
Rear wheel (air suspension (drive axle))



Rear wheel (leaf spring (drive axle))



Rear wheel (tag axle)



## Jack-up procedures

### ⚠ WARNING

- On models with differential lock, do not jack up the vehicle with the differential lock switch in ON position. If a jacked-up wheel is turned in such a condition, engaged wheel on the ground will also turn, and the vehicle will move and may fall off the jack.
- Do not start the engine while the vehicle is jacked up. The jack may be dislocated due to engine vibration.
- Do not go underneath the vehicle while it is jacked up. If the jack is dislocated, it is very dangerous.
- Do not load or unload cargo during jack-up. Vibration or movement of the gravity center may dislocate the jack.

- Do not apply jack at the bottom of banjo portion of axle housing. Doing so may cause damage or oil leaks.
- On CD series, to jack up the rear rear axle (tag axle) with the vehicle in loaded condition, apply a wood or steel plate to increase the contact area.
- When lowering the jack, do not open the release valve quickly. The vehicle will lower suddenly and the jack may be dislocated.
- If a square piece of wood is used, use a wood block as wide as possible to ensure stability.
- Since the bottom surface of the leaf is curved, be careful when applying a jack to it.
- For vehicles with air suspension, do not set the ignition switch to ACC or ON position during jack-up. The vehicle height is changed suddenly and the jack may be dislocated.

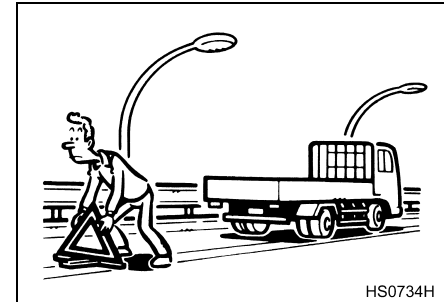
**CAUTION**

- While the vehicle is jacked up, do not leave passengers in the cabin.
- Wipe off the adhered grease from the jacking point completely before jack-up.
- During jack-up, make sure that the jack is securely engaged with the jack-up point before lifting a tire off the ground.
- Do not apply jack to the front underrun protection device (FUPD).
- If it is necessary to jack-up a vehicle for a long time, support it with a block or square piece of wood for safety.
- If the stroke of the jack is insufficient, put the jack on a wooden block or steel plate of sufficient size and strength to increase the height.

**NOTE**

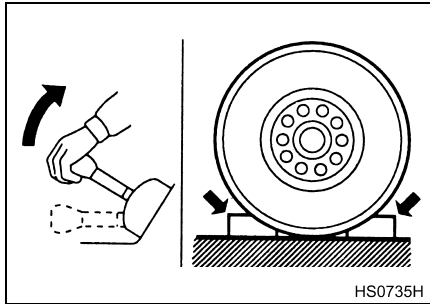
- Use only the jack equipped on the vehicle (specified part).
- Use the jack when the ambient temperature is from  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

If jack-up is performed on the road due to a flat tire, select a safe location where traffic is not disturbed. Alert subsequent vehicles using the hazard lights or warning triangles.

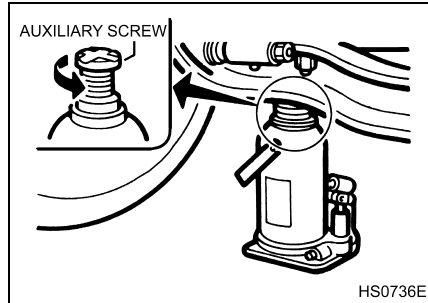


### Normal jack-up

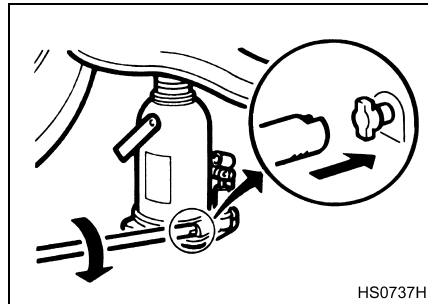
1. To jack up wheels for replacement of a wheel, park the vehicle on flat and hard ground. Apply the parking brake securely. Put chocks at the front and rear of the wheel that is diagonally positioned to the wheel to be replaced.



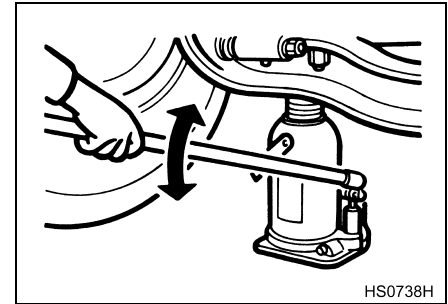
2. Place the jack under the jack-up point and set it securely by turning the auxiliary screw.



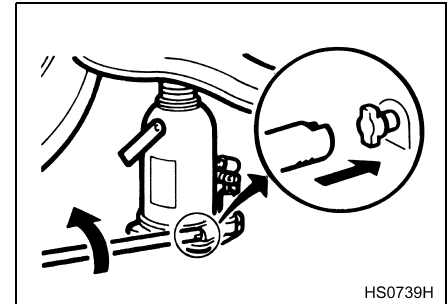
3. Use the jack handle to close the release valve of the jack.



4. Set the jack handle and move it up and down for jack-up.



- To lower the jack, turn the release valve gradually counterclockwise with the jack handle. Lower the jack slowly.

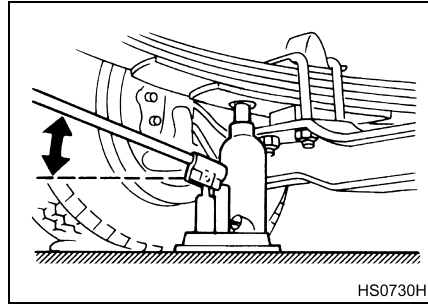


## Jack-up for flat tire of front wheel

If a front tire is flat, the normal jack-up point cannot be used. Use a rigid wood block for jack-up with the following method.

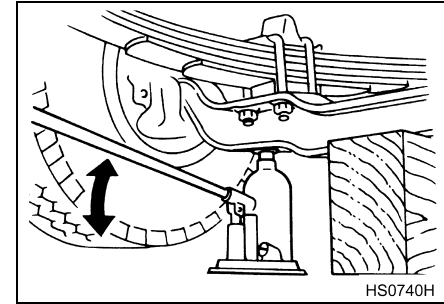
1. Similar to the normal jack-up, park the vehicle on flat and hard ground and apply the parking brake securely. Put chocks at the front and rear of the rear wheel that is diagonally positioned to the wheel to be replaced.
2. Place the jack near the front axle at the bottom leaf surface of the front spring and set it securely by turning the auxiliary screw. Operation of the jack is the same as that of the normal jack-up.

3. Jack up the vehicle to the height that a jack can be placed under the front axle.



4. Put a square piece of wood under the front axle and lower the jack gradually. Make sure that the front axle is supported.
5. Lower the jack completely and move it under the front axle.

6. Set it securely by turning the auxiliary screw and jack it up to the required height.



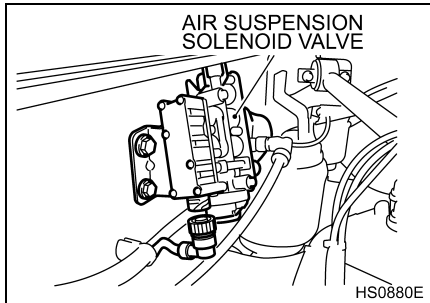
7. After changing the wheel, remove the square wood and lower the jack slowly.

## Jack-up of air suspension vehicle

1. To jack up the air suspension vehicle, stop the engine and set the ignition switch to the OFF position.



2. If the ignition switch is set to the ACC or ON position during jack-up, the vehicle height increases or decreases suddenly. It is very dangerous.
3. If it is necessary to set the ignition switch to the ACC or ON position during jack-up, disconnect the harness connector connected to the air suspension solenoid valve with the ignition switch in the OFF position to stop operation of the air suspension before jack-up.



4. After servicing, when connecting the harness connectors to the air suspension solenoid valves, make sure that the ignition switch is in the OFF position.

**! WARNING**

**To jack up the air suspension vehicle, lower the vehicle height with the height control or disconnect the air pipe and release air in the air spring before jack-up.**

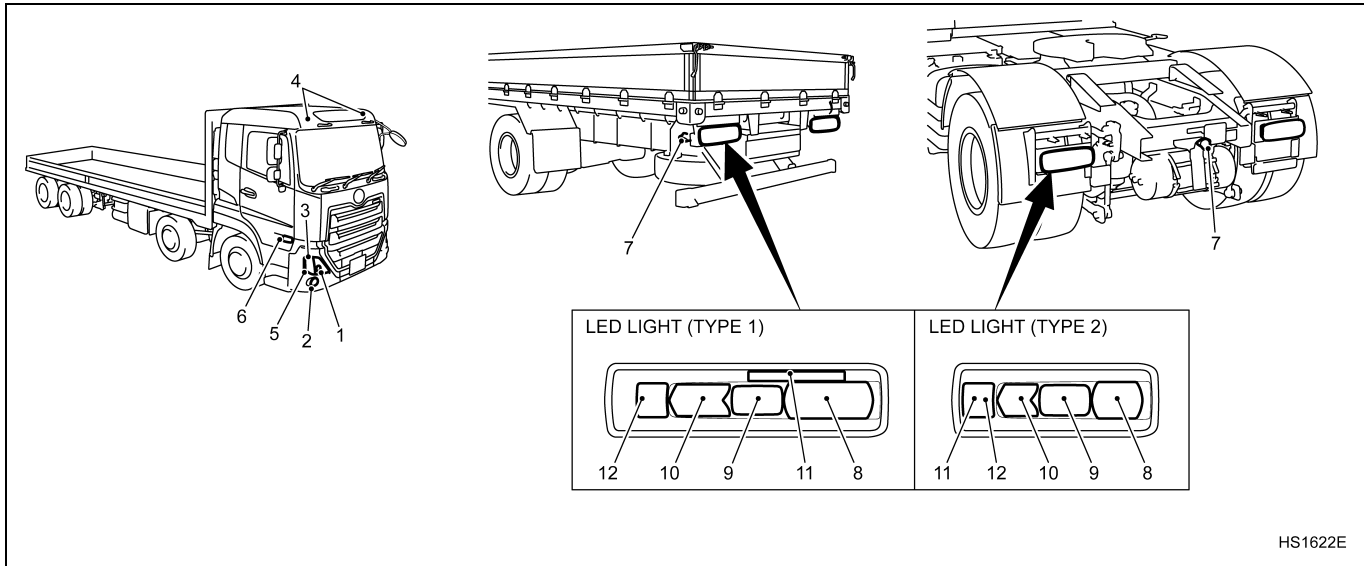
## Lights

When changing the light bulbs, be sure to turn OFF the ignition switch and light switches. Be sure to use the bulb of the specified capacity. Tighten the light lens screws with washers uniformly so that undue force is not applied to the lens.

**! WARNING**

**Be sure to use the bulbs and fuses of the specified capacity. If a bulb or fuse other than the specified capacity is used, it can be a cause of malfunction, failure or a fire due to overheated circuit.**

## List of light bulbs



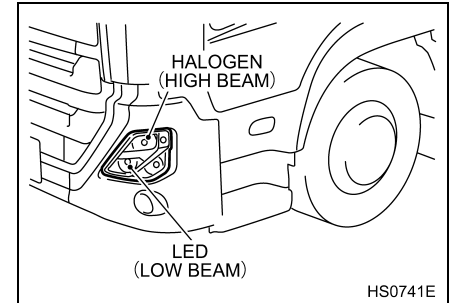
	Light name		Bulb used [V-W]
1	Headlight	Low beam	LED
		High beam (H7)	24-70
2	Front fog light		LED
3	Front position light/ Daytime running light		24-5/21
4	End outline marker light		24-5
5	Front turn signal/ Hazard light		24-21
6	Side turn signal/ Hazard light		24-21
7	License plate light		24-10
8	Rear fog light		LED
9	Back-up light		LED
10	Rear turn signal/ Hazard light		LED
11	Rear position light		LED
12	Stop light		LED

## Change procedures of lights including headlight

NOTE
<ul style="list-style-type: none"> <li>● When a bulb of halogen light (headlight or front fog light) is changed, never touch the glass surface of the new bulb. Oil from your hand may be a cause of blown bulb.</li> <li>● For the light with waterproof cover such as headlight and front fog light, water-tightness cannot be assured if there is a gap between the cover and light body. After working on such light, confirm that the cover is fully contacted with the light body.</li> </ul>

## Headlight

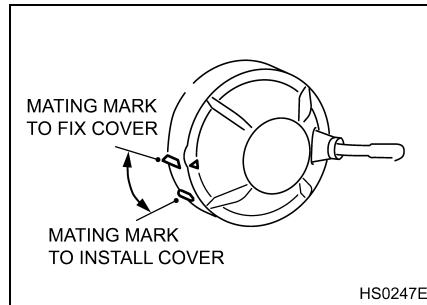
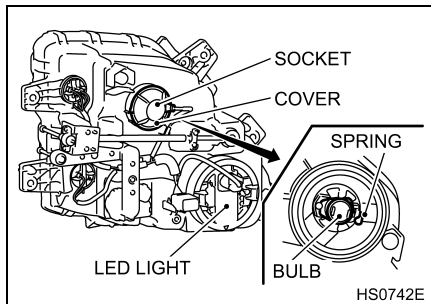
Halogen lights are used for driving beam (high beam) and LED is used for passing beam (low beam).



NOTE
<p>For replacement of the LED unit, contact the nearest authorized UD Trucks dealer.</p>

### Halogen light (driving/high beam)

1. From the back side of the light housing, remove the cover and disconnect the socket.
2. Release the spring holding the halogen bulb. Pull out the bulb slowly toward you.
3. Install the bulb in the reverse order of removal.
4. Push in the cover securely.
5. Turn the cover clockwise to align the mating marks on the cover and housing.
6. After installation, visually check that there is no gap between the cover and housing.

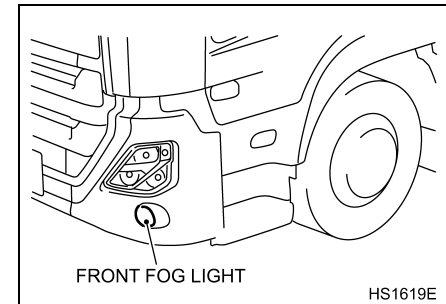


#### NOTE

- When a headlight bulb is changed, the light axis must be adjusted. If you inevitably replaced it, bring the vehicle for inspection immediately at the nearest authorized UD Trucks dealer.
- If the cover is hard to turn or if the O-ring of the cover is soiled or damaged, replace the O-ring.

### Front fog light

LED lights are used for front fog lights.

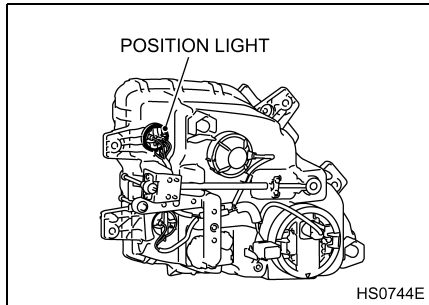


#### NOTE

For replacement of the LED unit, contact the nearest authorized UD Trucks dealer.

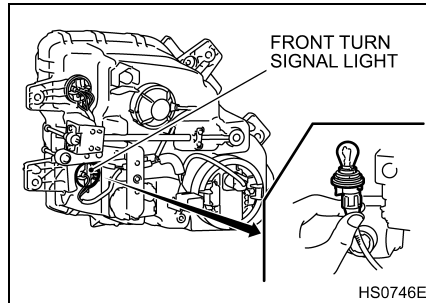
### Front position light/daytime running light

1. Turn and take out the socket, and remove the bulb.
2. Insert a new bulb into the socket. Install it in the reverse order of removal.



### Front turn signal (and hazard) light

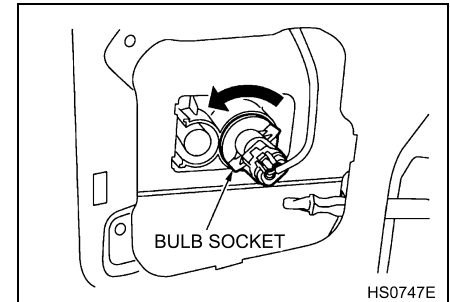
1. Turn the bulb socket counterclockwise and remove it.
2. Remove the bulb from the socket.
3. Install a new bulb to the socket.
4. Install the bulb socket by turning it clockwise.



**⚠ CAUTION**  
**Amber bulb must be used.**

### Side turn signal (and hazard) light

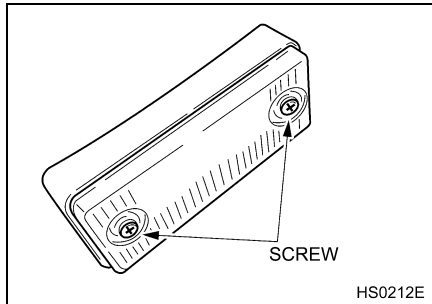
1. Remove the small trim from the lower inside of the door.
2. Turn the bulb socket counterclockwise and remove it from the housing.
3. Turn the bulb counterclockwise and remove it from the socket.
4. Push a new bulb into the socket and install it by turning clockwise.
5. Install the bulb socket to the housing by turning it clockwise.



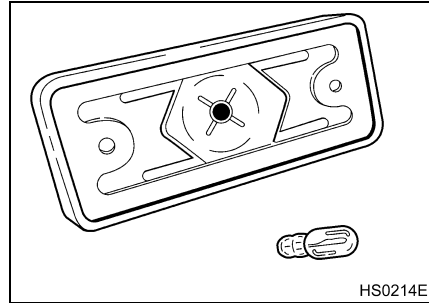
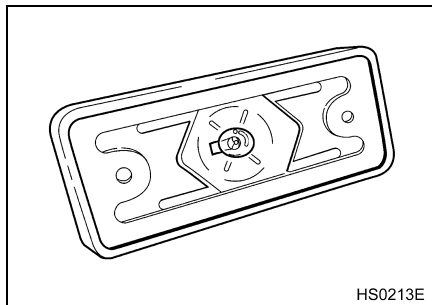
**⚠ CAUTION**  
**Amber bulb must be used.**

### End outline marker light

1. Loosen the screw and remove the lens.



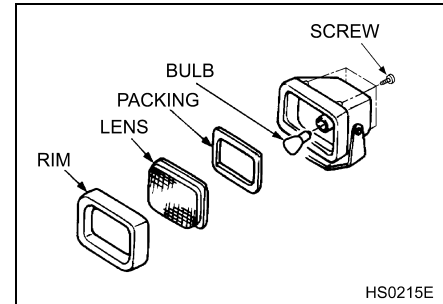
2. Hold the bulb, pull it and remove it.



3. Install the bulb in the reverse order of removal.

### Working light

1. Remove the screws (4 places) from the backside of the working light and remove the rim.
2. Disconnect 2 lead cable terminals connected to the bulb.
3. Remove the hook of the set spring which is fixing the bulb to the reflector and remove the bulb.



### License plate light

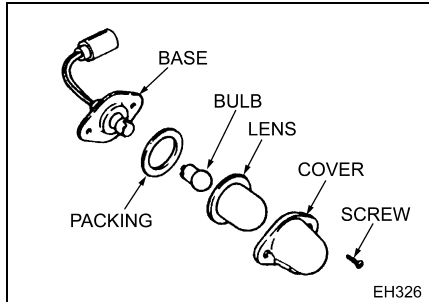
1. Remove the screw and remove the license plate light from the bracket.
2. Holding the base (socket assembly), turn the bulb counterclockwise and remove it.
3. Push a new bulb into the socket and install it by turning it clockwise.



**CAUTION**

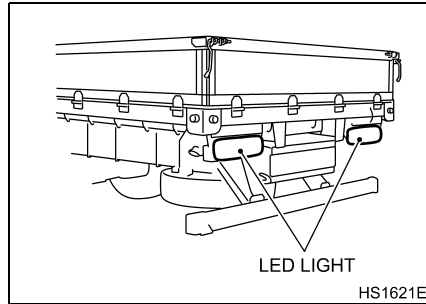
**A 10W bulb must be used. If a 12W bulb is used, the lamp lens may melt.**

4. Install the lens and the cover to the base with a packing in between, taking care that the packing does not stick out of the cover and the base.
5. Install the bulb socket by turning it clockwise.



### Rear turn signal/hazard, position, back-up, stop and rear fog light

LED lights are used for each light.



#### NOTE

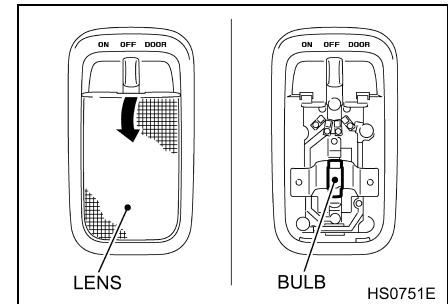
For replacement of the LED unit, contact the nearest authorized UD Trucks dealer.

### Room light

#### NOTE

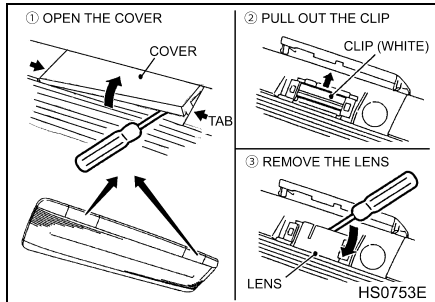
When a flat-bladed screwdriver is used, wrap a rag around its tip to prevent the vehicle from being damaged.

1. Insert a flat-bladed screwdriver and remove the lens.
2. Press the bulb sideways against a contact and remove the bulb.



## Fluorescent light

1. Open the cover with a flat-bladed screwdriver.
2. Take out the clip fixing the lens and remove the lens.
3. Remove the fluorescent light and replace it with a new one.
4. Installation is in the reverse order of removal.



### NOTE

When a flat-bladed screwdriver is used, wrap a rag around its tip to prevent the vehicle from being damaged.

## Other lights

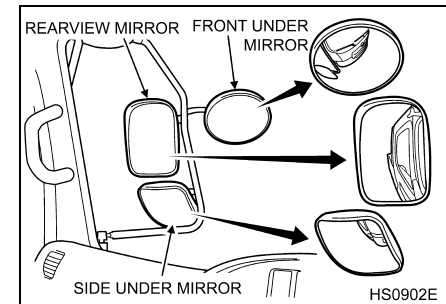
- Loosen the screws fixing the lens or the rim holding the lens, and remove the light bulb by holding and turning it counterclockwise.
- Be sure to install a gasket securely to prevent entry of water when installing a lens.

## Mirrors

### Image on mirrors

#### TYPE I: For Singapore

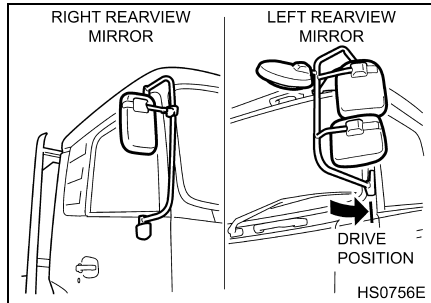
- With the rear-view mirror, check if the side and rear of the vehicle can be viewed. On the under mirror and the side under mirror, check if the immediate front and left (side near the left wheel) of the vehicle can be viewed.
- Check if images on mirrors are good, and if mirrors are clean.



- The figure shows the road view at the standard driving position and the driving posture.

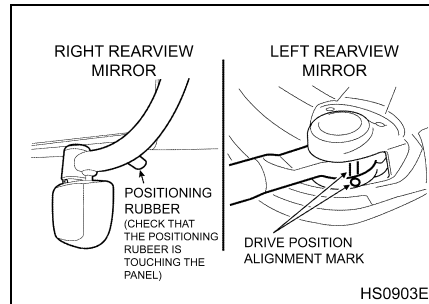


- For safety, the area in the range of 2 m at the front and 3 m at the side of the vehicle in the figure must be checked with the left rear-view mirror, under mirror and side under mirror.
- To adjust the mirror image, make sure that the mirror arm is positioned at "Drive" ("OPEN" for the power mirror arm).



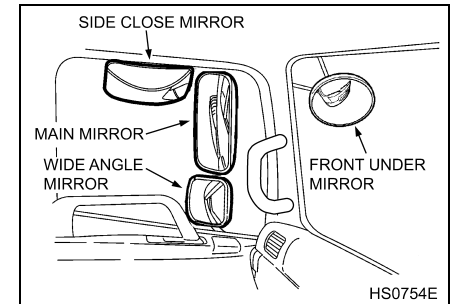
## Check method of mirror arm drive position

- The left/right mirror arms have the mark and the positioning rubber to check the drive position. Check them visually before driving the vehicle.



## TYPE II: For Australia/New Zealand

- Make sure that the side and rear of the vehicle can be seen in the main mirrors and wide angle mirrors, and immediate front and left (side of the left front wheel) of the vehicle in the front under mirror and side close mirror.
- Check if images on mirrors are good and mirrors are clean.

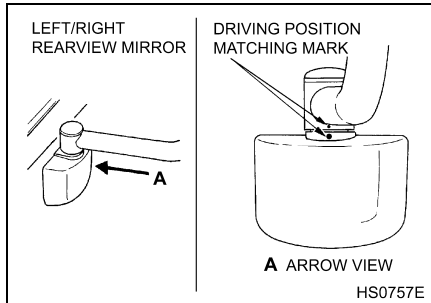


- For safety, the area 2 m from the front of the vehicle and 3 m from the left side of the vehicle must be able to be observed using the left main mirror, front under mirror and side under mirror.

- Before adjusting the mirror image, make sure that the mirror arm is in the drive position.

### Check method of mirror arm drive position

The left/right mirror arms have the alignment marks and positioning rubbers to check if the arm is in the drive position. Check them visually before entering the cab.



## Coolant

### GH8 engine

- For the coolant, use UD Trucks genuine Long Life Coolant VCS2 (hereinafter referred to as UD Trucks genuine LLC) diluted with tap water. Use of UD Trucks genuine LLC not only prevents the engine coolant from freezing, but also reduces boiling of coolant because the boiling point is raised. In addition, it is also effective for prevention of rust in the engine or adhesion of water scale. UD Trucks genuine LLC provides many benefits as shown above, so please use it year round. UD Trucks genuine LLC must be diluted with clean soft water. If the water quality is poor, it could cause water deposits and corrosion.

- If only the water or improperly diluted UD Trucks genuine LLC is used, adhesion of rust or water scale on the units of the cooling system (radiator and circumference of cylinder liner in particular) will occur, which may cause overheating.
- In this section, replenishment, replacement and the cleaning procedures of coolant are described. For replacement or cleaning, it is recommended to ask the nearest authorized UD Trucks dealer.

## Water leakage from the cooling units

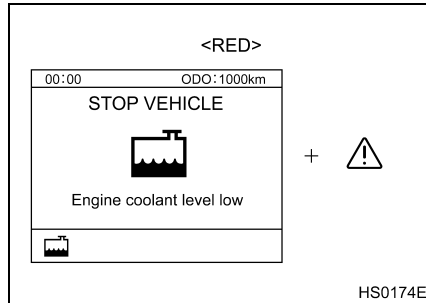
Check if there is water leakage from the cooling units such as radiator, reserve tank, radiator hose, etc. Check if there are signs of water leakage on the ground where the vehicle is parked.

### CAUTION

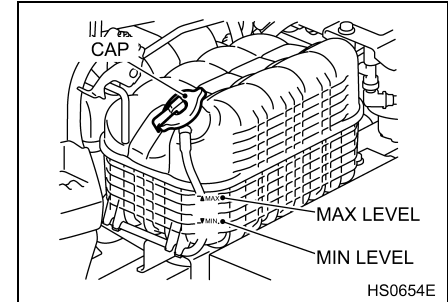
- Continued use of a vehicle with insufficient coolant may result in damage to the radiator or seizure of engine. If coolant reduces frequently, have it inspected by the nearest authorized UD Trucks dealer.
- Water leakage may begin after pressure is applied to the cooling units (water passage) (due to operation of the water pump or increase of coolant temperature). Check for leakage once or twice a month while the engine is in operation.

## Replenishing the coolant

- Replenish the coolant if the “Engine coolant level low” warning message is displayed and the buzzer sounds or when the water level in the coolant reserve tank is below MIN level.



- Raise the lever of the reserve tank cap to release the internal pressure and remove the cap. Replenish the coolant to the MAX level.
- After replenishment, securely tighten the cap.



### WARNING

- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.

- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.

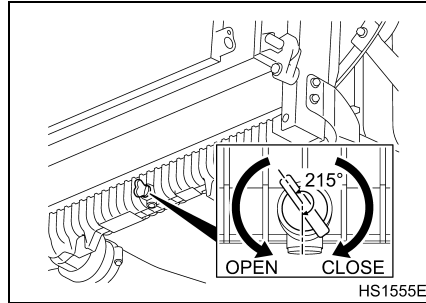
#### NOTE

If coolant is significantly reduced, have it inspected by the nearest authorized UD Trucks dealer.

## Replacing coolant

### Draining coolant

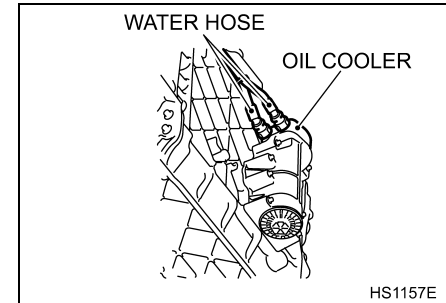
1. Remove the reserve tank cap.
2. Open the drain cock under the radiator and drain the coolant completely from the radiator.



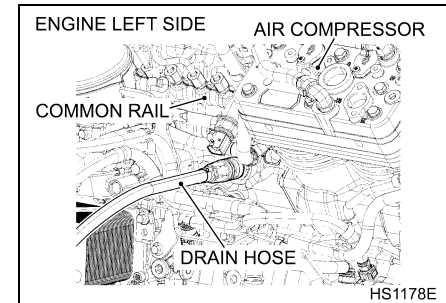
#### NOTE

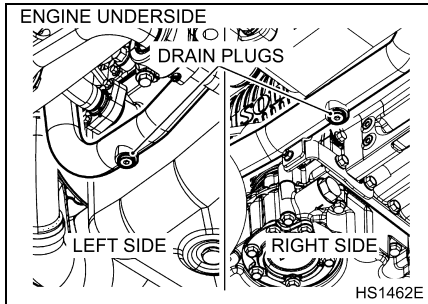
- The drain cock must be opened and closed by hand. Using a tool may damage the radiator.
- Turn while pushing when opening or closing the drain cock. Be careful as the drain cock may fall out while turning it and coolant may spurt out through the hole.

3. Disconnect the water hose of the transmission oil cooler and drain the coolant. (ESCOT vehicles only)



4. Tilt the cab. Disconnect a water hose from the cylinder block and drain the coolant.





**NOTE**

To have the coolant drained from the engine block, contact the nearest authorized UD Trucks dealer.

**! WARNING**

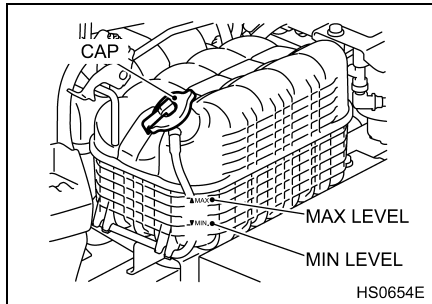
- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.
- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.

**NOTE**

The drain cock must be opened and closed by hand. Using a tool may damage the radiator.

**Replenishing the coolant**

1. Close the drain cock at the bottom of the radiator securely.
2. Connect the water hose to the transmission oil cooler securely. (ESCOT vehicles only)
3. Connect the water hose to the cylinder block securely. Lower the cab.
4. Pour coolant slowly up to the MAX level through the filler port of the reserve tank.



5. Start the engine to bleed air until the coolant level becomes stable. If the amount of the coolant is reduced, replenish it.
6. Reinstall the reserve tank cap.

**⚠ CAUTION**

Continued use of a vehicle with insufficient coolant may result in damage to the radiator or seizure of the engine. If coolant reduces frequently, have it inspected by the nearest authorized UD Trucks dealer.

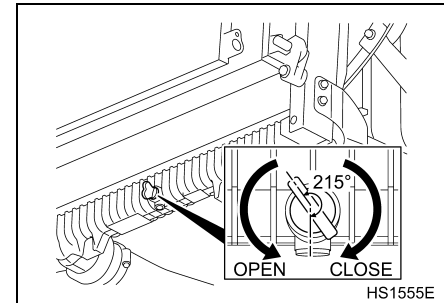
## Cleaning procedure of the cooling system

Perform the cleaning of the cooling system if the coolant is seriously dirty.

### Cleaning procedure

Perform cleaning after warming up the coolant temperature to 80°C or higher. If the temperature is low, the thermostat is closed and the coolant does not circulate in the radiator. It is not effective.

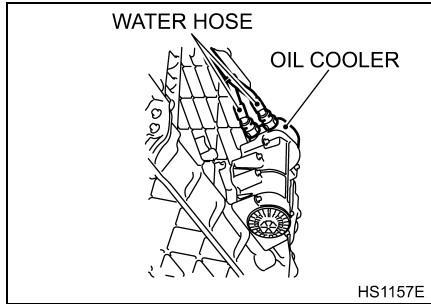
1. Open the reserve tank cap and the drain cock at the bottom of the radiator and drain the coolant from the radiator.



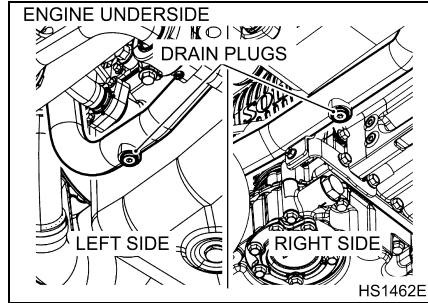
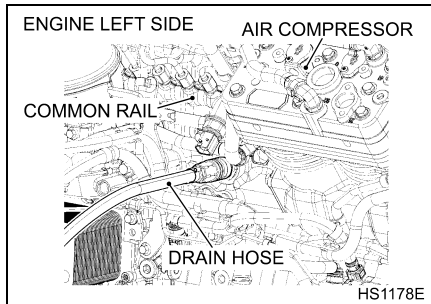
### NOTE

- The drain cock must be opened and closed by hand. Using a tool may damage the radiator.
- Turn while pushing when opening or closing the drain cock. Be careful as the drain cock may fall out while turning it and coolant may spurt out through the hole.

2. Disconnect the water hose of the transmission oil cooler and drain the coolant. (ESCOT vehicles only)



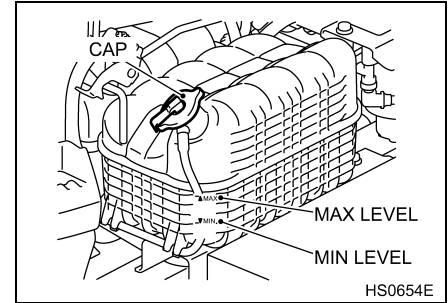
3. Tilt the cab. Disconnect a water hose from the cylinder block and drain the coolant.



**NOTE**

**To have the coolant drained from the engine block, contact the nearest authorized UD Trucks dealer.**

4. Close the drain cock and connect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block. Lower the cab.
5. Pour tap water through the reserve tank.



6. Start the engine and keep running at a high engine idling speed for about 30 minutes. Pay attention to the amount of the water for 5 minutes after starting the engine. If it is reduced, replenish tap water.
7. After about 30 minutes, stop the engine and drain the water from the radiator, transmission oil cooler (ESCOT vehicles only) and the cylinder block.

8. Close the drain cock and reconnect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block. Pour tap water through the reserve tank. Start the engine and keep running at high idling speed until the water temperature reaches 80°C or higher.
9. Stop the engine and drain the water. Repeat washing with water until dirty water does not come out.
10. When cleaning is completed, close the drain cock, reconnect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block securely. Pour the new coolant to MAX level. Start the engine to bleed air until the coolant level becomes stable. If the amount of the coolant is reduced, replenish the coolant to the MAX level again.

**NOTE**

**If the radiator is clogged or the coolant is heavily contaminated, have it inspected at the nearest authorized UD Trucks dealer.**

**Long Life Coolant**

For the coolant, use UD Trucks genuine Long Life Coolant VCS2 diluted by soft water year round. UD Trucks genuine LLC contains additives for rust prevention and anti-freezing. It is not necessary to add commercially available antifreeze or rustproof agent.

**How to use UD Trucks genuine LLC**

Dilute UD Trucks genuine LLC in accordance with the table below to match the minimum outside temperature of your driving route.

UD Trucks genuine LLC concentration table

Minimum outside temperature (°C)		-25 or higher	-35 or higher
Mixture ratio (%)	UD Trucks genuine LLC	40	50
	Water	60	50
Required UD Trucks genuine LLC (L)	ESCOT-VI	14.4	18
	ATM	18.4	23

**Total amount of coolant:**  
**36 liters (ESCOT-VI)**  
**46 liters (ATM)**



### Precautions for use of UD Trucks genuine LLC

- When the coolant level has dropped due to natural water dissipation, add UD Trucks genuine LLC diluted to the same concentration.
- Do not use UD Trucks genuine LLC at higher density than specified. Doing so may cause deposition.
- The water to dilute UD Trucks genuine LLC must be soft water.
- Never mix UD Trucks genuine LLC with commercially-available antifreeze, rustproof agent or long life coolant.

### GH11 Engine

- For the coolant, use UD Trucks genuine Long Life Coolant VCS2 (hereinafter referred to as UD Trucks genuine LLC) diluted with tap water. Use of UD Trucks genuine LLC not only prevents the engine coolant from freezing, but also reduces boiling of coolant because the boiling point is raised. In addition, it is also effective for prevention of rust in the engine or adhesion of water scale.  
UD Trucks genuine LLC provides many benefits as shown above, so please use it year round. UD Trucks genuine LLC must be diluted with clean soft water. If the water quality is poor, it could cause water deposits and corrosion.

- If only the water or improperly diluted UD Trucks genuine LLC is used, adhesion of rust or water scale on the units of the cooling system (radiator and circumference of cylinder liner in particular) will occur, which may cause overheating.
- In this section, replenishment, replacement and the cleaning procedures of coolant are described. For replacement or cleaning, it is recommended to ask the nearest authorized UD Trucks dealer.

## Water leakage from the cooling units

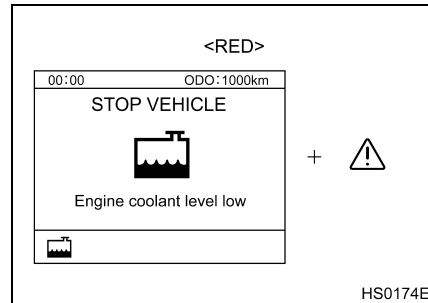
Check if there is water leakage from the cooling units such as radiator, reserve tank, radiator hose, etc. Check if there are signs of water leakage on the ground where the vehicle is parked.

### ⚠ CAUTION

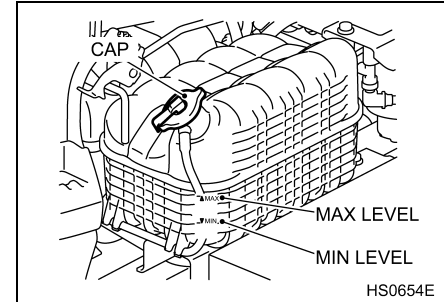
- Continued use of a vehicle with insufficient coolant may result in damage to the radiator or seizure of engine. If coolant reduces frequently, have it inspected by the nearest authorized UD Trucks dealer.
- Water leakage may begin after pressure is applied to the cooling units (water passage) (due to operation of the water pump or increase of coolant temperature). Check for leakage once or twice a month while the engine is in operation.

## Replenishing the coolant

- Replenish the coolant if the “Engine coolant level low” warning message is displayed and the buzzer sounds or when the water level in the coolant reserve tank is below MIN level.



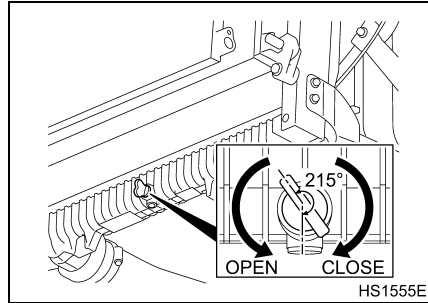
- Raise the lever of the reserve tank cap to release the internal pressure and remove the cap. Replenish the coolant to the MAX level.
- After replenishment, securely affix the cap.



### ⚠ WARNING

- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.

- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.



**NOTE**

- The drain cock must be opened and closed by hand. Using a tool may damage the radiator.
- Turn while pushing when opening or closing the drain cock. Be careful as the drain cock may fall out while turning it and coolant may spurt out through the hole.

**NOTE**

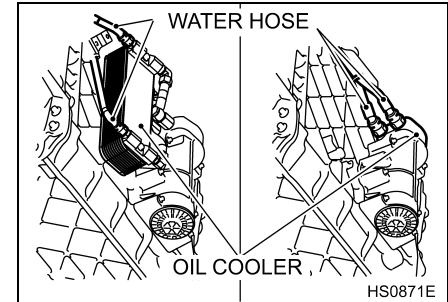
If coolant is significantly reduced, have it inspected by the nearest authorized UD Trucks dealer.

## Replacing coolant

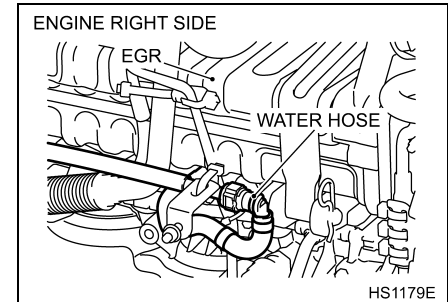
### Draining coolant

1. Remove the reserve tank cap.
2. Open the drain cock under the radiator and drain the coolant completely from the radiator.

3. Disconnect the water hose of the transmission oil cooler and drain the coolant. (ESCOT vehicles only)



4. Tilt the cab. Disconnect a water hose from the cylinder block and drain the coolant.



**! WARNING**

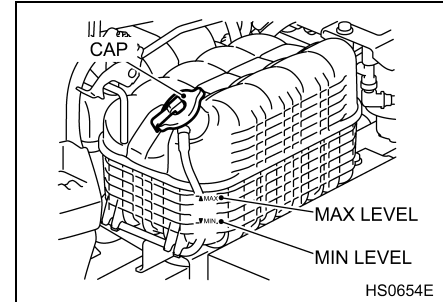
- Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.
- If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.
- Grip the cap with a thick cloth and gradually loosen the cap.
- When opening the reserve tank cap, make sure that the engine is completely cool. When the cap is opened quickly while the coolant is hot, steam or hot water may come out. This is very dangerous. After the coolant temperature becomes low, hold the cap with a rag and open it gently.

**NOTE**

The drain cock shall be opened and closed by hand. Using a tool may damage the radiator.

**Replenishing coolant**

1. Close the drain cock at the bottom of the radiator securely.
2. Connect the water hose to the transmission oil cooler securely. (ESCOT vehicles only)
3. Connect the water hose to the cylinder block securely. Lower the cab.
4. Pour the coolant slowly up to the MAX level through the filler port of the reserve tank.



5. Start the engine to bleed air until the coolant level becomes stable. If the amount of the coolant is reduced, replenish the coolant.
6. Reinstall the reserve tank cap.

**! CAUTION**

Continued use of a vehicle with insufficient coolant may result in damage to the radiator or seizure of engine. If coolant reduces frequently, have it inspected by the nearest authorized UD Trucks dealer.

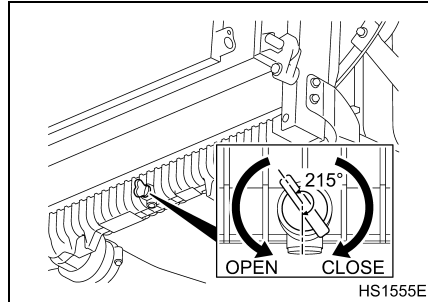
## Cleaning procedure of the cooling system

Perform the cleaning of the cooling system if the coolant is seriously dirty.

### Cleaning procedure

Perform cleaning after warming up the coolant temperature to 80°C or higher. If the temperature is low, the thermostat is closed and the coolant does not circulate in the radiator. It is not effective.

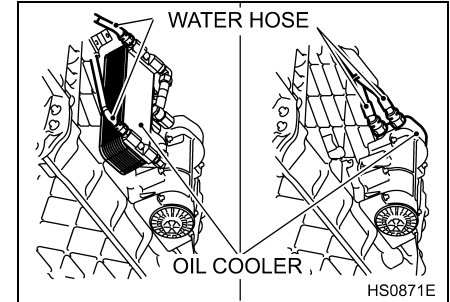
1. Open the reserve tank cap and the drain cock at the bottom of the radiator and drain the coolant from the radiator.



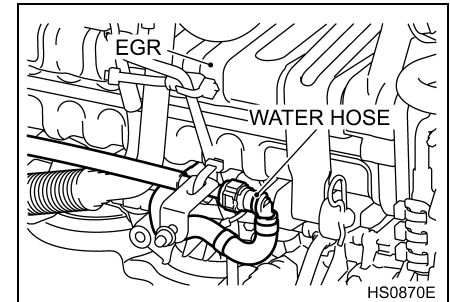
#### NOTE

- The drain cock must be opened and closed by hand. Using a tool may damage the radiator.
- Turn while pushing when opening or closing the drain cock. Be careful as the drain cock may fall out while turning it and coolant may spurt out through the hole.

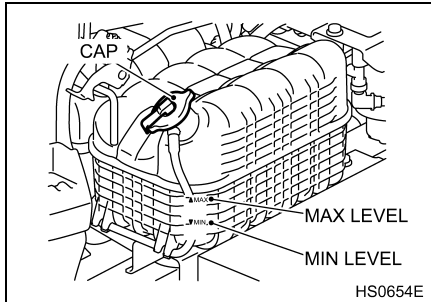
2. Disconnect the water hose of the transmission oil cooler and drain the coolant. (ESCOT vehicles only)



3. Tilt the cab. Disconnect a water hose from the cylinder block and drain the coolant.



4. Close the drain cock and connect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block. Lower the cab.
5. Pour tap water through the reserve tank.



6. Start the engine and keep running at a high engine idling speed for about 30 minutes. Pay attention to the amount of the water for 5 minutes after starting the engine. If it is reduced, replenish tap water.

7. After about 30 minutes, stop the engine and drain the water from the radiator, transmission oil cooler (ESCOT vehicles only) and the cylinder block.
8. Close the drain cock and reconnect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block. Pour tap water through the reserve tank. Start the engine and keep running at high idling speed until the water temperature reaches 80°C or higher.
9. Stop the engine and drain the water. Repeat washing with water until dirty water does not come out.

10. When cleaning is completed, close the drain cock, reconnect the water hoses to the transmission oil cooler (ESCOT vehicles only) and the cylinder block securely. Pour the new coolant to MAX level. Start the engine to bleed air until the coolant level becomes stable. If the amount of the coolant is reduced, replenish the coolant to the MAX level again.

#### NOTE

**If the radiator is clogged or the coolant is heavily contaminated, have it inspected at the nearest authorized UD Trucks dealer.**

## Long Life Coolant

For the coolant, use UD Trucks genuine Long Life Coolant VCS2 diluted by soft water year round. UD Trucks genuine LLC contains additives for rust prevention and anti-freezing. It is not necessary to add commercially

available antifreeze or rustproof agent.

### How to use UD Trucks genuine LLC

Dilute UD Trucks genuine LLC in accordance with the table below to match the minimum outside temperature of your driving route.

UD Trucks genuine LLC concentration table

Minimum outside temperature (°C)		-25 or higher	-35 or higher
Mixture ratio (%)	UD Trucks genuine LLC	40	50
	Water	60	50
Required UD Trucks genuine LLC (L)		18	22.5

**Total amount of coolant: 45 liter**

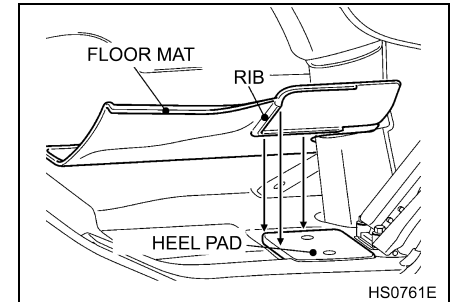
### Precautions for use of UD Trucks genuine LLC

- When the coolant level has dropped due to natural water dissipation, add UD Trucks genuine LLC diluted to the same concentration.
- Do not use UD Trucks genuine LLC at higher density than specified. Doing so may cause deposition.
- The water to dilute UD Trucks genuine LLC must be soft water.
- Never mix UD Trucks genuine LLC with commercially-available antifreeze, rustproof agent or long life coolant.

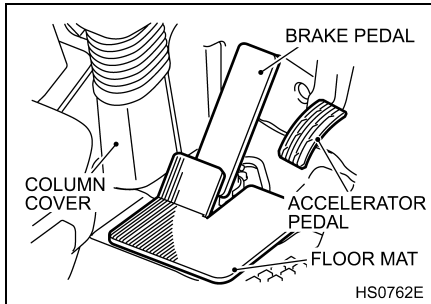
## Others

### Floor mat

- Align the positioning rib at the back of the floor mat with the end of the heel pad.



- Align the left side of the floor mat with the column cover and put its front end over the brake pedal.



**! CAUTION**

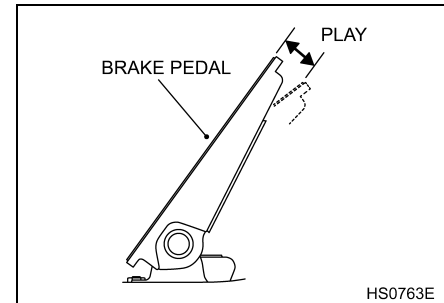
- **Fix the floor mat securely. If the floor mats are not secured properly, they may shift and interfere with the pedals while driving, causing accidents such as unexpected speed or difficulty in stopping the vehicle.**
- **Do not place another floor mat over the floor mat.**
- **Check that the floor mat is fixed securely before driving.**

## Play of brake pedal and braking performance

Inspection time: Every 3 months

- Press the pedal gently by a finger to check the play. The play means the distance until resistance is felt when the pedal is gently depressed by a finger. The play of the pedal usually does not change. However, if the play reduces, it may cause drag of the brake.

- Drive the vehicle at a low speed. Check if braking performance is good and if the vehicle is not pulled to one side. Insufficient braking or pulling to one side is very dangerous. In this case, contact the nearest authorized UD Trucks dealer.



**Play: 5 – 25 mm**





**WARNING**

- Be careful that no mat or foreign material be trapped under the brake pedal. If a mat or foreign material is trapped, the pedal does not return completely, resulting in brake drag.
- Always clean the area around the pedal. Empty cans, gravel, etc. could be trapped under the pedal and interfere with braking operation.

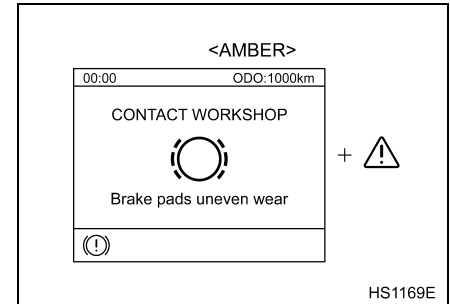
**NOTE**

Be aware of the ambient traffic conditions during the test drive for the brake.

## Clearance between brake pad and rotor and wear

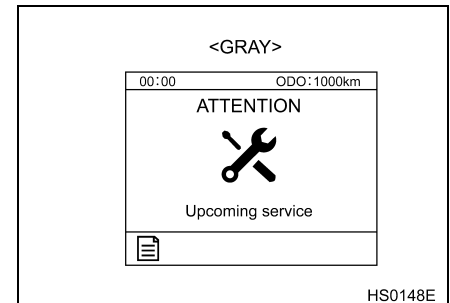
### Clearance check

- The brake pad to rotor clearance is automatically adjusted by the built-in automatic adjuster, so you don't need to inspect/adjust the clearance as daily maintenance. Have the brake check at the nearest authorized UD Trucks dealer at the specified inspection period.
- If you feel brake dragging, uneven braking, other abnormalities, or if you hear an abnormal noise from the brakes indicating abnormal wear of brake pads, immediately contact the nearest authorized UD Trucks dealer for inspection and service.

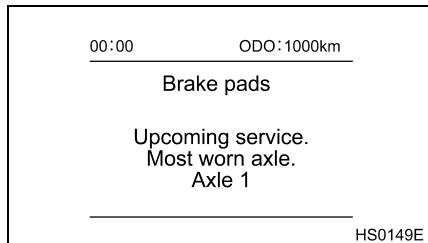


### Wear check

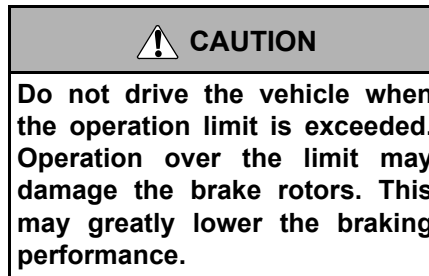
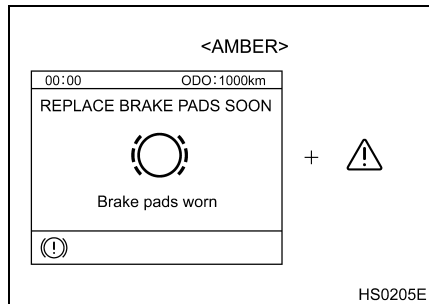
- When “Upcoming service” message is displayed on the multi-display, brake pad thickness may be reaching its service limit.



- If the following message is displayed when “Brake pad” is selected through the Maintenance display, have your vehicle inspected at the nearest authorized UD Trucks dealer.



- When a brake pad is almost reaching to its service limit, “Replace brake pads soon” message is displayed on the multi-display.
- When this message appears, have your vehicle inspected and serviced at the nearest authorized UD Trucks dealer.



## EBS unit check

In addition to the functions of ABS and ASR, EBS (electronic controlled brake system) controls the braking force by converting the driver's brake operation to electric signals. It is the system that obtains better braking response and brake feeling desired by a driver.

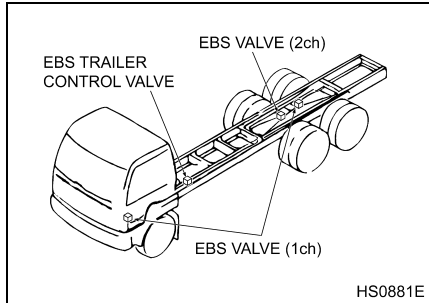
### NOTE

- When a radio unit is installed, select the item conforming to the applicable laws and regulations. When a unit is installed, keep it away from EBS or wiring to prevent the adverse effect of noise from the radio unit.
- If the battery voltage is low, operation of EBS may be disturbed. Check the battery on a regular basis.

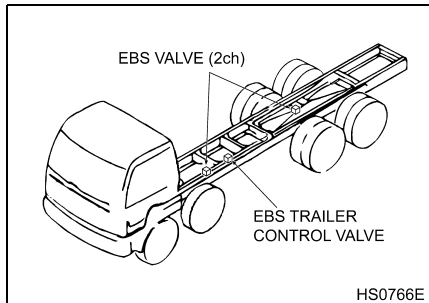
## Layout of EBS units

Since units for EBS are placed at various parts of the vehicle, be careful during inspection, service and handling.

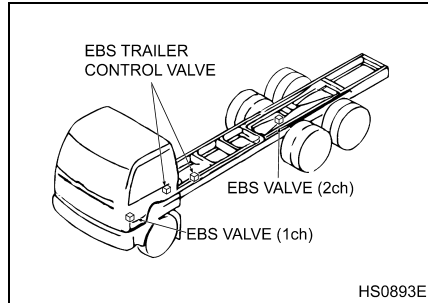
### CD series



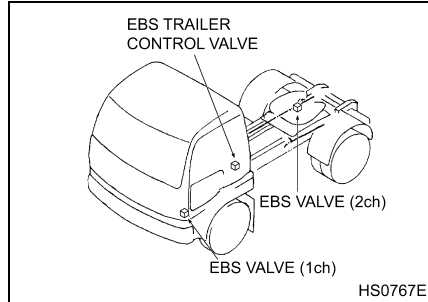
### CG series



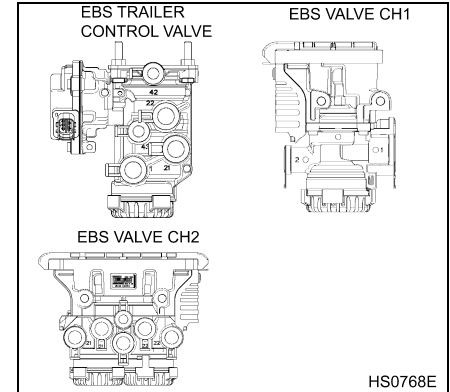
### CW and GW series



### GK series



### EBS unit



## Operation check of EBS valves

When the atmospheric temperature is low, snow or ice stuck to the exhaust outlet of the EBS units may cause EBS not to operate correctly. Check the operation of the EBS units with the procedures below.

- Depress the brake pedal sufficiently.

- Release the brake pedal. Check “discharge noise” of air emitted from the EBS units. Check also that the brakes are not dragging.

**CAUTION**

If there is no discharge noise from the EBS units after depressing and releasing of the brake pedal, the exhaust outlet may be clogged with frozen ice. Remove it.

**Washing in cold weather and driving on snow-covered road**

Washing in cold weather and driving on a snow-covered road may freeze water on the EBS unit, which may hinder its braking function. Remove the ice immediately.

**NOTE**

During washing, take measures to keep EBS parts (sensors, relays and electronic units) away from water.

When the chassis parts are washed with high-pressure water (steam washing), be careful that EBS units and harness connectors are not directly exposed to water.

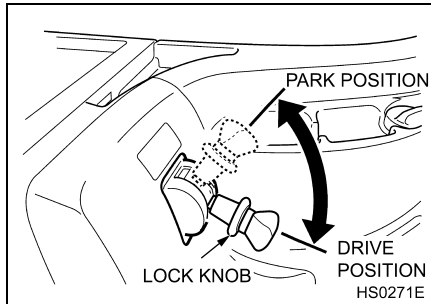
**Cleaning after driving on a snow-covered road**

To remove snow, ice or mud on the vehicle when cleaning after driving on a snow-covered road, be careful not to damage the EBS unit or wiring.

## Performance of parking brake

Inspection time: Every 3 months

Pull the parking brake lever to the parking position on a dry slope (downhill) and check if the vehicle can stay there.



### NOTE

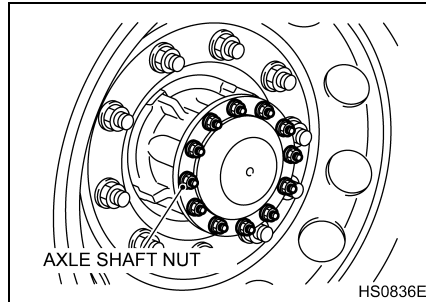
- Be aware of the ambient traffic conditions.
- In this check, be careful that the vehicle may not start abruptly.

## Checking axle shaft nut for looseness

Inspection time: Every 3 months

Tighten the axle shaft nut to the specified tightening torque using a torque wrench.

**Tightening torque:**  
**135 – 165 N·m {13.8 – 16.8 kgf·m}**



## Operation of the emergency shift device (ESCOT)

- ESCOT has an emergency shift device. Always check the operation of this device as one of the daily inspection item.
- Before activating the emergency drive function, confirm that the automatic regeneration and PTO are inactive.

1. Depress and hold the brake pedal.
2. Press and hold the emergency switch and move the shift lever from the “N” position to the “D” position.  
 (The shift lever operation must be performed within 5 seconds after pressing the emergency switch.)
3. Move the shift lever to “M” or “R” position and set the starting gear by the +/- switch.

4. Check the indication of the gear position indicator, release the brake pedal, and depress the accelerator pedal gradually to start off slowly.
- The emergency drive mode continues until the ignition switch is turned to the “OFF” position.

**CAUTION**

- Shift operation by the +/- switch cannot be performed during the emergency driving. The +/- switch can only be used to select the starting gear.
- Do not drive for a long distance in the emergency drive mode. When the “Transmission system malfunction” message is displayed, have your vehicle inspected by the nearest authorized UD Trucks dealer immediately.

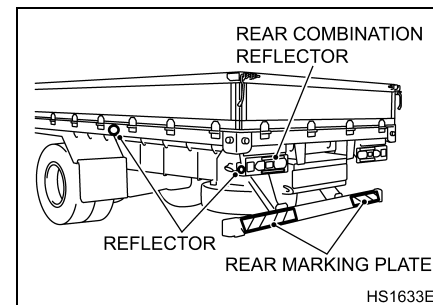
- The actual gear and the indication on the gear position indicator may differ or the display of the gear position indicator may disappear depending on the severity of malfunction. In such conditions, drive carefully.
- The hill start assist function would not operate in the emergency drive mode. Use the parking brake appropriately when starting on an uphill.

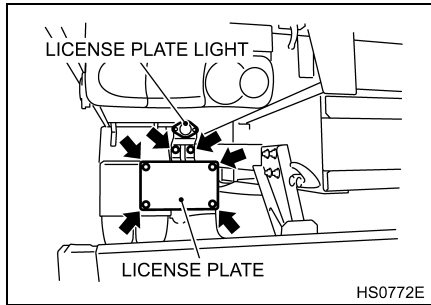
**NOTE**

- The selectable gears in the emergency drive mode are: “1”, “3”, “5” and “R (low)”.
- In the emergency drive mode, high/low changeover of the reverse gear by the +/- switch cannot be performed. Only “R (low)” is selectable for reverse.

## Condition of reflector and license plate

- Check for contamination or damage on the reflector or license plate.
- Check if the license plate is correctly installed and if the letters are clearly visible.





## Replacement of alternator charge regulator (or brush)

The alternator charge regulator (or brush) shall be replaced periodically. Contact an authorized UD Trucks dealer for replacement.

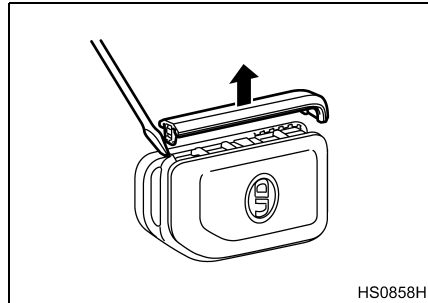
**⚠ CAUTION**

Be sure to replace the alternator charge regulator (or brush) periodically. Otherwise worn brushes may cause a failure of the alternator.

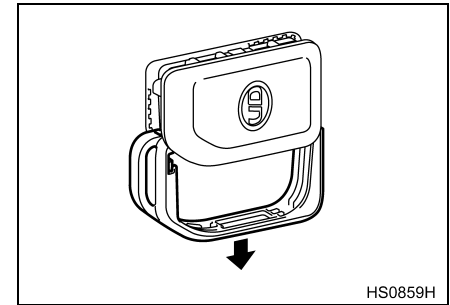
## Battery replacement of keyfob

When “Keyfob battery low” is displayed on the multi-display, replace the battery in the following procedure.

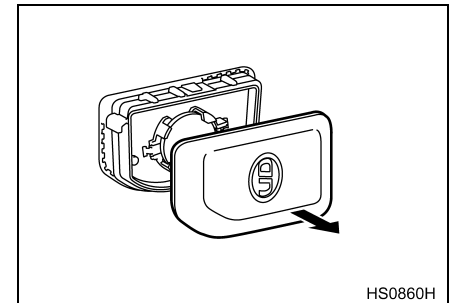
1. Insert a flat-blade screwdriver in a slot at the side of the keyfob and pry to remove the side cover.



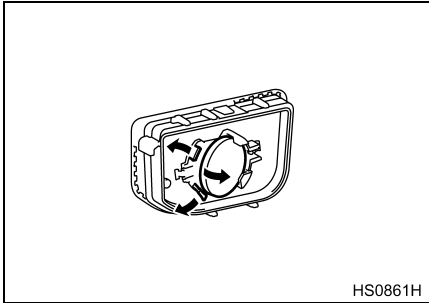
2. Pull off the U-shaped cover at the opposite side.



3. Open the back cover.



4. While pushing the claws holding the battery outward, pull and remove the battery. Then install a new battery (CR2032).



5. Reinstall the covers in the reverse order of removal.

 **WARNING**

- **The keyfob contains a button battery. If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.**
- **Keep batteries out of reach of children.**
- **If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.**

## Emission and external noise

Automobile emission and noise levels are specified in the applicable noise and emission control regulations. The regulatory values must be satisfied. This section describes the simple check and service for emission control and noise control units that may be performed by customers. With regular inspections and correct operations, you can contribute to a comfortable automobile society free from pollution.

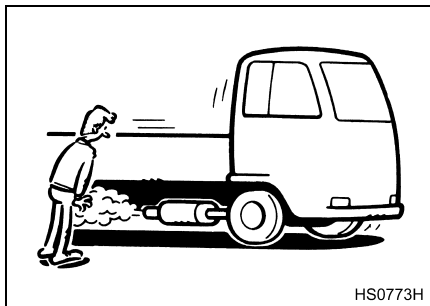


## Parts for emission control

### Conditions of exhaust gas

The color of exhaust gas represents the status of combustion. Check the exhaust gas carefully on a daily basis.

- No color or light blue: Normal
- Black: Incomplete combustion or damage on UDPC filter.
- White: Engine oil is burnt. If the temperature is low and the engine has not warmed up, the exhaust gas may be white.



HS0773H

### Air cleaner

If the air cleaner element is clogged, incomplete combustion tends to occur, resulting in black smoke. Check, clean or replace the element on a regular basis.

### Fuel system

If the fuel injection condition is improper due to clogging of the nozzle, or if the fuel is clogged or there is an accumulation of water, incomplete combustion tends to occur. Check it on a regular basis.

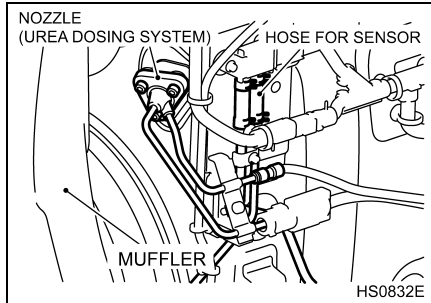
### Muffler integrated with UDPC and urea SCR system

The muffler is a catalyst integrated muffler. It has the cleaning function and the silencing function of exhaust emission. If the muffler must be replaced due to damage, be sure to use the genuine UD Trucks part.

### Inspection procedures

- Check for damage on the muffler, nozzle and sensor on the muffler, and also their wires and hoses. (The positions of the sensors and hoses differ depending on the vehicle model.)

- Replace the hose for sensor if it is damaged or cracked. Contact the nearest authorized UD Trucks dealer.

**! WARNING**

**Do not check parts around the muffler immediately after driving. Since the exhaust pipe and the muffler are hot, you may be burned.**

**NOTE**

**The UDPC filter requires periodical check and service. For the check and service, contact the nearest authorized UD Trucks dealer.**

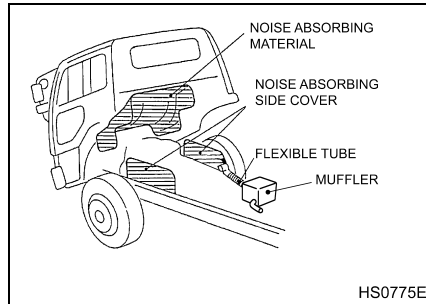
**Others**

Failure of parts related to exhaust emission control system not only exceeds the regulatory values of the emission standards, but also causes an increase of fuel consumption, increase of oil consumption and reduction of power. If any abnormality is found, ask for service at the nearest authorized UD Trucks dealer.

## Parts related to external noise

### Noise-proof system (If equipped)

- A cover and noise absorbing material shown in the figure are installed to reduce external noise to meet the regulatory value specified in the noise-related regulation. If it is removed for maintenance, be sure to reinstall it at the original position.
- Cover and noise absorbing material are used to reduce noise. Do not modify them intentionally or remove them. Check them on a regular basis to prevent the function from being degraded due to damage, deformation or corrosion.



## Muffler and exhaust pipe

- Damage or corrosion to the muffler and exhaust pipe may degrade the silencing function. Check it on a regular basis. If a failure is found, replace the part.

### NOTE

**If a vehicle is driven in a salty area such as seashore or a road covered with antifreezing agent, rust-like condition may be generated on the surface of the muffler.**

**If the muffler continues to be used as it is, the surface of the muffler may corrode.**

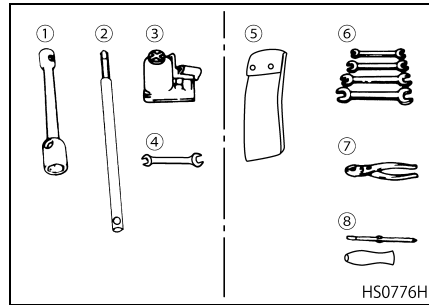
**If you drive in a salty area, wash the surface of the muffler immediately.**

## Tools

General tools required for the daily check and service are installed on the vehicle.

Special tools required for assembly and disassembly of vehicle are sold separately. Ask the nearest authorized UD Trucks dealer.

Be sure to carry all the tools at all times.



1. Wheel nut wrench
2. Wheel nut wrench handle (and jack handle)
3. Hydraulic jack
4. Wrench (for releasing spring brake)
5. Tool bag\*
6. Wrench set\*
7. Pliers\*
8. Flat-bladed and Phillips screwdrivers\*

\* Installed on some models

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# 14. Service of lubricants

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Genuine lubricant ..... 14-2  
Oils ..... 14-3  
Grease ..... 14-14

## Genuine lubricant

- It is important to check and replace lubricants regularly for long life of the vehicle and for safe and comfortable driving. Be sure to perform check and replacement regularly.
- This section summarizes the check and replacement items for lubricants which can be performed by customers. Lubricants in use are indicated on the list in the "Service data". Please refer to the list.
- UD Trucks genuine lubricants are prepared for the full performance of the UD vehicle. Be sure to use UD Trucks genuine lubricants for regular replenishment and replacement.



### CAUTION

- **When set to display inspection and maintenance information on the multi-display, a warning can be displayed for each item when the next inspection period depending on the mileage, operating hours or months is approaching. Since the distance, time and warnings displayed as inspection and maintenance information are calculated based on the actual driving conditions, they may not match the replacement periods specified in this manual depending on road conditions and driving conditions. If a warning is displayed earlier than the replacement period specified in this manual, replace the item when the warning is displayed.**

- **When inspections and maintenance are performed by the customer, the customer cannot reset the inspection and maintenance information stored in the multi-display.**

## Precautions for replenishment and replacement of oil

Incorrect service work may cause leakage of oil. It is recommended to ask for service at the nearest authorized UD Trucks dealer.

During inspection and service, observe the following items in addition to the precautions described in the previous chapter "Inspection and maintenance":

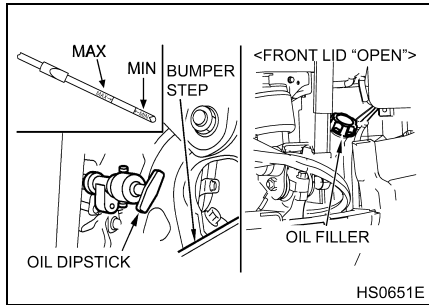
- Be sure to prepare a drain oil pan.
- Perform the work in a location where an oil disposal facility is available.
- Never dispose of waste oil in a ditch or vacant land.

# Oils

## Check and replenishment of engine oil

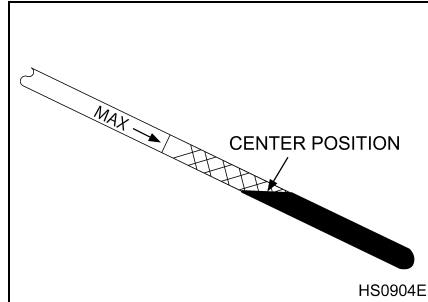
- Check the amount of oil and its contamination with an oil dipstick.
- To draw out the dipstick, first turn its handle counterclockwise to unlock it.

Front of the cab

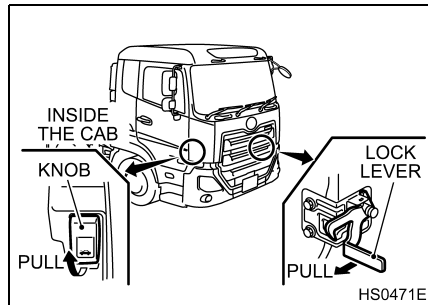


### NOTE

**When checking the oil level, if the oil on the dipstick is angled, read the center position.**



- If the oil is not sufficient, open the front lid and replenish oil from the oil filler port.



- If the oil is heavily contaminated, replace it.
- After replenishment, make sure that oil is filled to the specified level using the oil dipstick.

- Be sure to lock the handle of oil dipstick after the service work.

### WARNING

- Be careful not to enter dirt in the system during replenishment. Be careful not to spill oil. If it is spilled, clean it completely. In particular, check that there is no oil on the exhaust manifold or electrical components. If there is spilled oil, fire may occur due to heat or electric spark.
- Be sure to cool down the engine before inspection and maintenance so that you may not be burned by hot engine oil.

 CAUTION

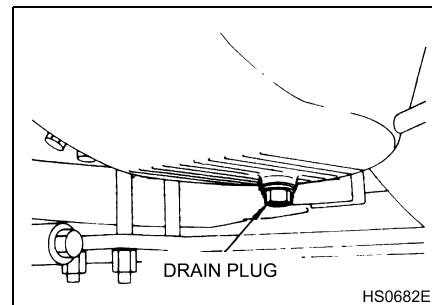
- Park the vehicle in a level location for inspection. If the vehicle is on an incline, the correct oil level may not be indicated.
- When checking using the oil dipstick, make sure that there is no one in the cab.
- When checking using the oil dipstick, no person should ride on the cab. As the lower grille moves, the clearance with the front bumper becomes small, and your hand may be pinched.
- Check the oil level before starting the engine. Wait for at least 30 minutes or longer for inspection after stopping the engine. Otherwise, oil still remains at various parts of the engine and the correct level cannot be checked.

- After replenishment of engine oil, wait for 5 minutes before checking oil level until the level becomes stable. If the oil level is checked immediately after replenishment, the oil dipstick may indicate low oil level because the oil has not reached the oil pan yet. If the oil is added to fill the apparent low level, the oil quantity becomes excessive, which will cause excessive oil consumption.
- Do not drive the vehicle when the amount of oil is lower than “MIN”. If the amount of engine oil is too small, the engine may seize.

## Replacement of engine oil

Refer to “Service data” for the amount of engine oil.

1. Remove the drain plug and drain the oil.



2. Replace the oil filter with a new one. (Refer to the “Inspection and maintenance”.)



3. Install the drain plug and pour engine oil from the oil filler port.  
**Drain plug tightening torque:**  
50 – 70 N·m {5.1 – 7.1 kgf·m}

**WARNING**

Avoid direct skin contact with used oil. If oil contacts skin, wash the skin thoroughly with soap and water. If irritation persists, seek medical advice.

**CAUTION**

- Replacement period of engine oil varies depending on the engine oil type used. It also varies depending on driving conditions. If the engine is used at high engine speed or high load, oil is deteriorated quicker, so that the replacement interval should be shorter.
- Be careful not to enter dirt from the oil filler port when filling engine oil. Be careful not to spill oil. If it is spilled, clean it completely.
- Do not pour engine oil higher than the appropriate level. Excessive amount of oil may result in excessive oil consumption.
- Check the oil level when the level is stable, 5 minutes or longer after engine oil is poured.

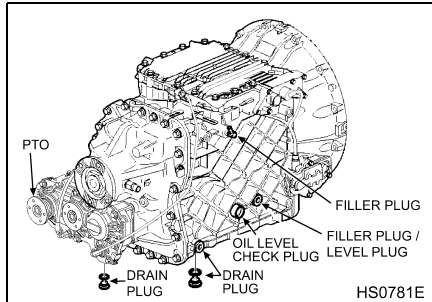
**NOTE**

Engine oil must be resistant to heat or oxidation, and the change of the viscosity with heat must be limited. The high-speed diesel engine must use better oil in quality than that for the general gasoline engine. Be sure to use the engine oil specified by UD Trucks. Note that UD Trucks is not responsible for warranty of any failure of the engine if an engine oil other than specified is used.

## Replacement of transmission gear oil

Refer to “Service data” for the amount of transmission gear oil.

1. To drain the oil, remove the two drain plugs (or three drain plugs for models with PTO).

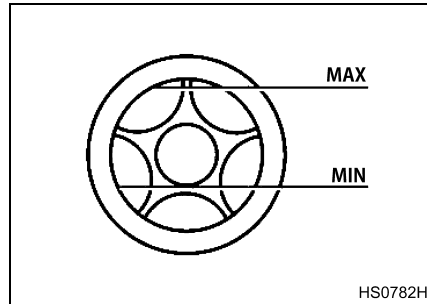


2. Reinstall the two (or three) drain plugs.

**Tightening torque (common to three plugs):**

**30 – 40 N·m {3.1 – 4.1 kgf·m}**

3. Refill the transmission oil from the filler plug hole up to the “MAX” level indicated on the transparent oil inspection plug.



4. Shift gear to neutral and run the engine for more than one minute.
5. Check the oil level. If the oil level has decreased, refill it and then run the engine for one more minute.
6. Repeat to check and refill until the oil level does not decrease any more after running the engine.

**⚠ DANGER**

**Do not burn you with hot transmission oil.**

**⚠ CAUTION**

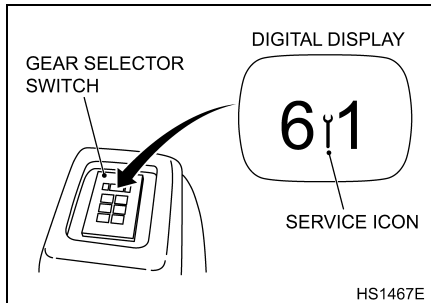
**Always use genuine oil. If any oil other than genuine oil is used, a malfunction of the transmission may occur or the lifespan of the transmission may be shortened.**

**NOTE**

**It is easier to drain oil when it is hot. Therefore, drain oil after driving the vehicle.**

## Replacement of automatic transmission fluid

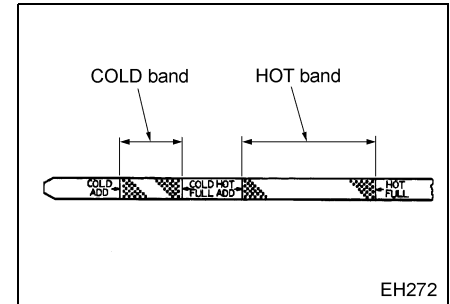
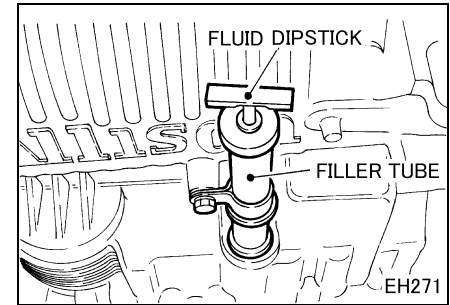
- The service icon appears for 2 minutes in the digital display of the gear selector switch when the replacement period of the automatic transmission fluid is approaching. If the service icon appears, contact your nearest authorized UD Trucks dealer.
- Refer to “Service data” for the amount of automatic transmission fluid.



## To check the automatic transmission fluid level

### Inspection with the fluid dipstick

- Check the fluid while the vehicle is on level ground and the parking brake applied. Start the engine and run for at least one minute at 900 to 1,000 rpm to clear the system of air.
- Idle the engine.
- With the engine at idle, depress the brake pedal and shift the range to D (Drive) or R (Reverse) to fill the whole hydraulic circuit with fluid.
- Shift the range to N (Neutral).
- With the engine at idle and the range in the N (Neutral) position, inspect the fluid level.



### <COLD CHECK>

- Pull the fluid dipstick out of the filler tube, wipe the fluid off the dipstick surface, and then insert the dipstick back in its original position.

- Pull out the fluid dipstick again to inspect the fluid level. Check (at least twice) to make sure that the fluid level is within the COLD band range. If the fluid level is not within the range, refill fluid.

#### <HOT CHECK>



- After warming up the engine and driving for about 10 to 15 minutes, pull the fluid dipstick out of the filler tube, wipe the fluid off the dipstick surface, and then insert the dipstick back in the original position.
- Pull out the fluid dipstick again to inspect the fluid level. Check (at least twice) to make sure that the fluid level is within the HOT band range.
- If the fluid level is within the HOT band range, the inspection is completed. If the fluid level is not within the range, refill fluid.

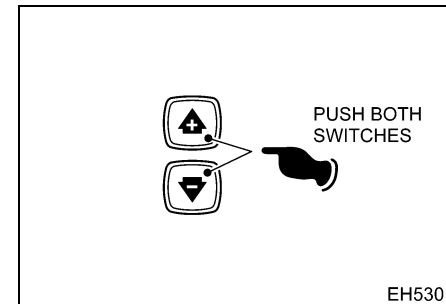


#### CAUTION

- **Before the inspection, be sure to apply the parking brake. Then, while the engine is running at idle, conduct the inspection. If the inspection is conducted while the engine is stopped, the apparent amount becomes large.**
- **If the fluid temperature increases, the fluid level increases. Be sure to conduct a final check while the fluid temperature is high after warming-up.**
- **Before the inspection, clean around the end of the filler tube to prevent dust, mud or water from entering the filler tube. If dust, mud or water enters, transmission failure may occur.**

#### Inspection with the electronic fluid level sensor

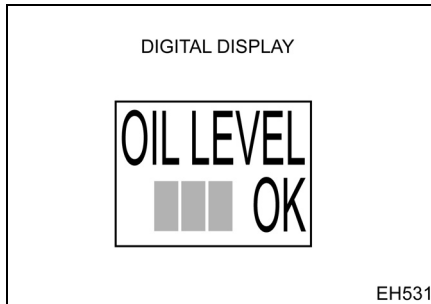
- Warm up the engine, drive the vehicle for about 10 to 15 minutes, stop on a level ground, and then shift to the N (Neutral) range.
- Allow the vehicle to be stationary for about 2 minutes to allow the fluid to settle.
- Run the engine at an idle.
- Push the  and  switches of the selector panel at the same time.
- By pressing the “N” button, you can return to Oil Level Check mode.



**NOTE**

**To recover the fluid level check mode, push the N switch of the selector.**

- If the measuring conditions have been satisfied, the results will be displayed on the digital display about 2 minutes later.



Oil level is good:  
“OIL LEVEL OK” is indicated.

Oil level is low:  
“OIL LEVEL 2L LO” or the like is indicated. If “2L LO” is indicated, it is necessary to add 2 L of oil.

Oil level is high:  
“OIL LEVEL 3L HI” or the like is indicated. If “3L HI” is indicated, it is necessary to remove 3 L of oil.

- If the measurement criteria cannot be satisfied, “OIL LEVEL INVALID” is indicated, followed by an Oil Level Code.

The Oil Level Codes are explained in the following table.

Code	Cause of code
"SETTLING / X"	Setting time too short
"ENG RPM / TOO LOW"	Engine speed (rpm) too low
"ENG RPM / TOO HIGH"	Engine speed (rpm) too high
"MUST BE / IN NEU"	N (Neutral) must be selected
"OIL TEMP / TOO LOW"	Sump oil temperature too low
"OIL TEMP / TOO HI"	Sump oil temperature too high
"VEH SPD / TOO HI"	Output shaft speed
"SENSOR FAILED"	Sensor failure

### Automatic transmission fluid change

Have the automatic transmission fluid changed by an authorized UD Trucks dealer or other qualified service facility. Use only the transmission fluid listed in the "Recommended lubricants" on page 16-7.

### Inspection and replenishment of differential gear oil

1. Clean around the level plug.
2. Remove the level plug.
3. Check the quality of oil. If it is excessively dirty, replace the oil.

4. Check if the oil level is at the lower edge of the level plug hole. If the oil level is low, refill the oil until the oil flows out from the level plug hole.

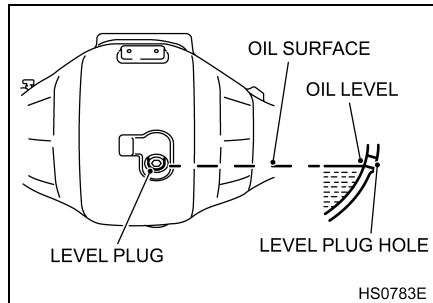
If the amount of oil to be refilled is supposed to be over 10% of the total oil amount, do not refill but replace the oil completely.

5. After refilling, confirm that the oil level is at the lower edge of the level plug hole.

6. Reinstall the level plug.

**Level plug tightening torque:  
80 ± 16 N·m {8.2 ± 1.6 kgf·m}**

Always replace the level plug gasket with a new one.



### ! WARNING

Be sure to perform the inspection and replenishment of the differential gear oil after the rear axle is cooled down sufficiently so that you do not get burnt.

### ! CAUTION

- Place the vehicle on a level ground when inspecting the oil level. If the vehicle is inclined, the oil level may be incorrect.
- Be careful not to enter dirt from the filler plug hole when pouring.
- Always use genuine oil. If any oil other than genuine oil is used, a malfunction of differential may occur or the lifespan of the differential may be shortened.

## Replacement of differential gear oil

### ! WARNING

Check or replace the differential gear oil after the rear axle has cooled down so that you do not get burned.

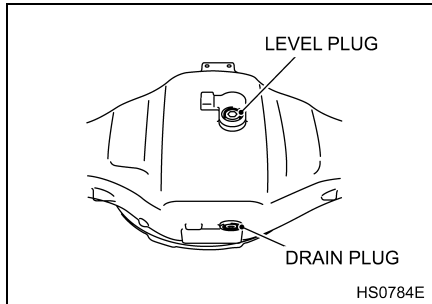
Refer to “Service data” for the amount of differential gear oil.

1. Clean around the drain plug and level plug.
2. Remove the drain plug and drain the oil. The drain plug has a magnet and it attracts steel powder in the oil. Clean the magnet. (CG and CW)
3. Reinstall the drain plug. Remove the level plug. Pour oil until it overflows from the level plug hole.

**Drain plug tightening torque:  
80 ± 16 N·m {8.2 ± 1.6 kgf·m}**

4. Reinstall the level plug.

**Level plug tightening torque:**  
 $80 \pm 16 \text{ N}\cdot\text{m}$  { $8.2 \pm 1.6 \text{ kgf}\cdot\text{m}$ }



- Always replace the gaskets of the plugs with new ones.

**⚠ CAUTION**

- Be careful not to enter dirt from the filler plug hole or level plug hole when pouring.
- Always use genuine oil. If any oil other than genuine oil is used, a malfunction of the differential gear may occur or the lifespan of the differential may be shortened.

**NOTE**

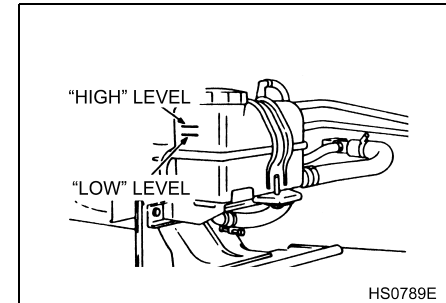
It is easier to drain oil when it is still warm. Therefore, drain oil when the rear axle has cooled down so that you do not get burnt after driving.

**Precautions when changing the type of oil**

When changing from the mineral oil to the synthetic oil, it takes 1500 km of driving for oil seals to fit the synthetic oil. During that period, it is necessary to check the oil seals for leakage carefully.

**Check and replenishment of power steering fluid**

- Check the amount of fluid in the power steering fluid reservoir. It is appropriate when its level is between HIGH and LOW.



- If it is not sufficient, replenish the power steering fluid.
- Check that there is no leakage of the power steering fluid from the power steering system.



**WARNING**

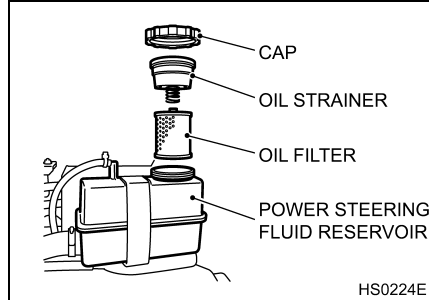
- Make sure that the temperature of the steering system is low before the check and replacement of the fluid so that you do not get burned.
- If the fluid is insufficient or dirty, the power steering may not operate correctly. Driving in this condition may cause a problem for operation of the steering wheel. Do not drive the vehicle. Replenish or replace the fluid immediately.

**CAUTION**

Be careful not to enter dirt in the reservoir during replenishment. Always clean the area around the reservoir.

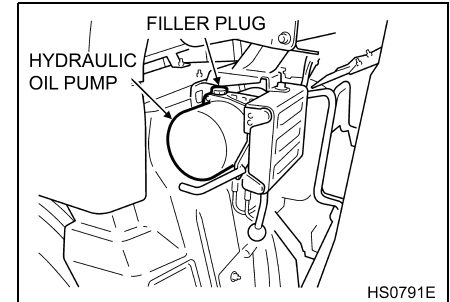
**NOTE**

- Be sure to check the amount of the power steering fluid when the engine is not in operation.
- When the fluid is replaced, replace the filter as well.



## Check and replenishment of power tilt hydraulic fluid

- Remove the filler plug of the hydraulic pump reservoir and check the amount of the hydraulic fluid.
- It is appropriate if the fluid level is at the bottom of the plug hole. If the level is lower than this, add the fluid.



**CAUTION**

- Be sure to check or replenish the fluid with the cab lowered.
- Be careful not to enter dirt in the reservoir when checking. Always clean the area around the reservoir.

**NOTE**

- On a new vehicle, the fluid level may not be at the bottom of the plug hole, but there is no problem.
- Always use the genuine UD Trucks hydraulic fluid.

## Grease

### Application of grease

- Apply grease on a regular basis.
- Clean dust or mud on the grease nipple with a cloth before application of grease. After application of grease, wipe off remaining grease. For a grease nipple with cap, be sure to reinstall the cap.

**WARNING**

Be careful not to spill grease; wipe clean any spilled grease. Check especially the muffler and the exhaust piping for adhered grease. If they are dirty with grease, a fire may occur due to heat.

**NOTE**

For greasing points, refer to “Greasing points” (page 16-8).

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# 15. Emergency procedures

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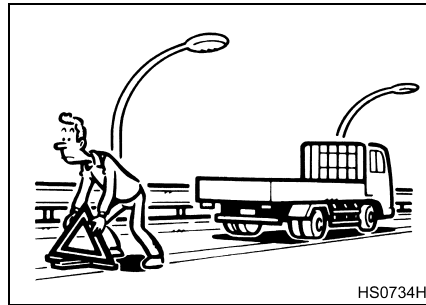
When there is a problem.....	15-2
If collision occurs.....	15-2
Manual release of spring brake (wheel parking brake).....	15-3
Towing.....	15-5
When a tire becomes flat .....	15-6
Blown fuse.....	15-7
Discharged battery .....	15-15
Overheat .....	15-16
Emergency driving by the ESCOT system.....	15-17
When the air suspension warning appears.....	15-19

## When there is a problem

### Precautions if a failure occurs

- Paying attention to subsequent vehicles, slow down gradually and stop the vehicle in a safe location.
- It is dangerous to stop the vehicle in a tunnel. Stop the vehicle outside the tunnel.
- Put signs to indicate that the vehicle is broken down. Without a sign, subsequent vehicles may collide into the rear. Be sure to put a sign of vehicle breakdown by the methods below.
  - Warning triangle
  - Hazard lights
  - Emergency signal (signal light or flare)
  - Red flag or red light

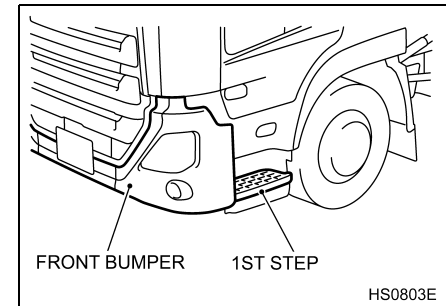
- Put a handkerchief at the door handle or a noticeable location at the rear.
- When placing a warning triangle, place it at a location where it is visible from subsequent vehicles.



- Check the failure. If it can be repaired, repair while paying attention to other traffic.
- If it cannot be repaired, contact the nearest authorized UD Trucks dealer.
- For repair with a jack on the shoulder of road, be careful that the jack may be dislocated due to wind pressure of passing vehicles. Never get under the vehicle.

## If collision occurs

- If the front bumper or the first step has been impacted or damaged, check if there is no problem around the front tires.
- If the first step interferes with the tire (including the case of interference when steered), the vehicle should not be driven. Ask for repair at the nearest authorized UD Trucks dealer.



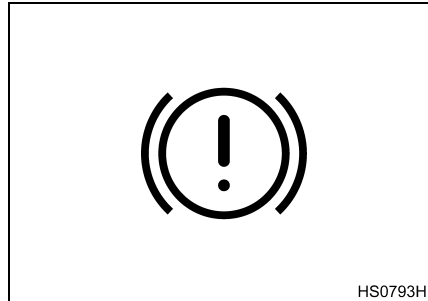
**CAUTION**

Driving with interference with the tire may cause flat tire or cause fire from overheating of tire.

## Manual release of spring brake (wheel parking brake)

If the brake warning indicator illuminates during driving, the spring brakes may operate to stop the vehicle.

Brake warning indicator



After the vehicle has stopped by the spring brakes, manually release all the spring brakes with the following method and move the vehicle to a safe location.

The spring brakes are installed to all the rear wheels.

**WARNING**

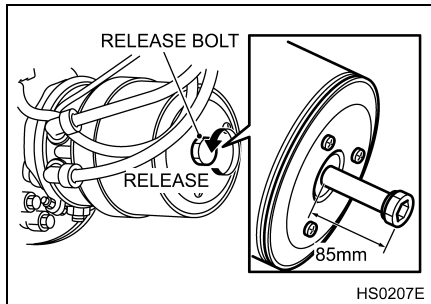
- Do not release the brakes manually if the vehicle stops on a slope. The vehicle will roll when the brakes are released.
- When the spring brakes are released, the parking brake is inoperative.
- Do not perform manual release except for emergently moving the vehicle or towing with a tow vehicle.
- If the vehicle is stopped by the spring brakes, the brake system is faulty. Have it inspected immediately by the nearest authorized UD Trucks dealer.

- Put chocks at the front and rear of tires located diagonally.

### Standard release type

Turn the release bolt counterclockwise to obtain the specified releasing amount.

**Releasing amount:**  
**Approximately 85 mm**

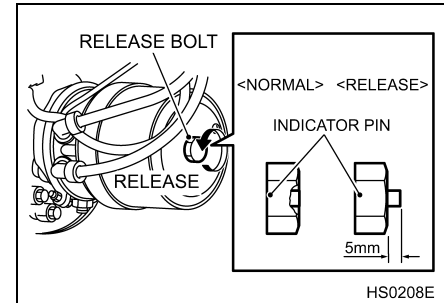


### Internal release type\*

When beginning to turn the release bolt counterclockwise, the indicator pin sticks out approximately 5 mm. (Sign to start the mechanical release)

After the indicator pin sticks out, turn the release bolt counterclockwise further to the point where the turning torque suddenly becomes greater (approximately 45 turns as a guide).

\* The internal release type is used for CG, CW and GW models, on the left wheel of the rear-front axle on air suspension models and on the right wheel of the rear-rear axle on the leaf suspension models. (The standard type is used on other wheels of CG, CW and GW models and the models other than CG, CW and GW model.)



### NOTE

- **The release bolt for the internal release type does not stick out like the one for the standard release type. Turn the bolt until the turning torque rises suddenly.**
- **Even if the indicator pin sticks out, it is not the sign of the completion of the release. Turn the release bolt until the turning torque rises.**

## Towing

### Towing

#### ! WARNING

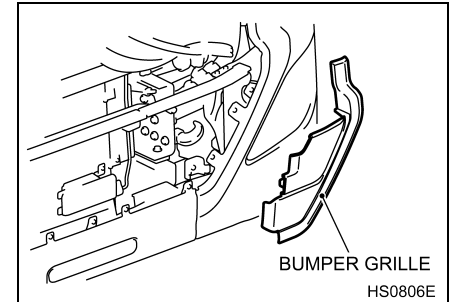
If the engine does not start, do not tow the vehicle except with a tow vehicle. If the engine does not start, not only the brake does not work, but also the power steering does not work. Therefore, the steering wheel becomes heavy.

#### ! CAUTION

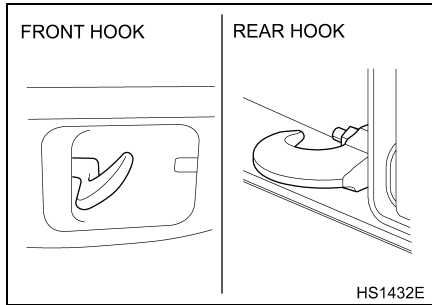
- For towing, be sure to remove the propeller shaft. Towing with the propeller shaft installed may cause insufficient lubrication in the transmission, resulting in a failure of the transmission.
- Do not disconnect the axle shaft unless the axle is faulty.
- To remove the bumper grille, check the clip positions before removal. Applying undue force may damage the bumper grille.
- For towing that requires large force or sudden force (such as when the vehicle has fallen in a ditch or hollow), avoid towing with a hook. Put a rope on the axle to extract the vehicle.

### Method to use hook

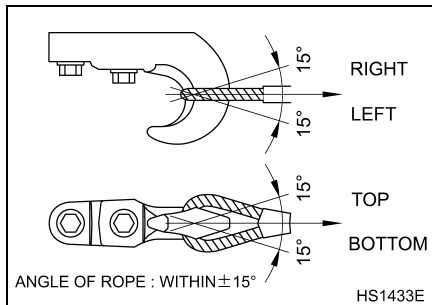
- When the front hook is used, pull the lower part of the bumper grille toward you and remove it. The front hook is at the back side of it.



- Use a strong tow rope. Tie the rope to the rear end hook of the tow vehicle and to the front end hook of the towed vehicle. There is an impact at the start. Start slowly to minimize the impact.



### How to tie the tow rope

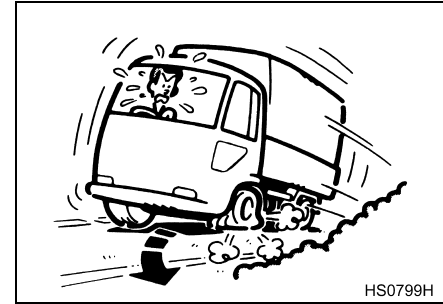


Be sure to run the engine of the towed vehicle. If the engine cannot be started, tow the vehicle with a tow truck.

## When a tire becomes flat

### If flat tire or burst of tire occurs while driving

- Hold the steering wheel securely and depress the brake pedal slowly to decrease the speed gradually.
- Turn on the hazard lights to alert subsequent vehicles and stop the vehicle in a safe location for changing the tire.
- For the method of changing a tire, refer to “Change of tire” (page 13-43) in “Inspection and maintenance”.



### DANGER

If you continue to drive the vehicle with a flat tire, the tire will overheat. It may result in a fire or burst tire. Furthermore, wheel nuts may become loose and fall off or wheel studs may break, resulting in falling off of a wheel. Replace the tire immediately.



**WARNING**

If sudden brake is applied, the steering wheel is strongly pulled. This is highly dangerous. Never apply the brake suddenly.

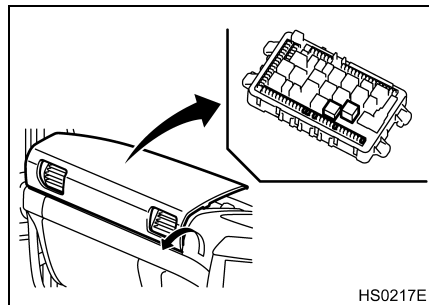
**NOTE**

When parking the vehicle, select a location that is lawful, safe, and will not interfere with traffic.

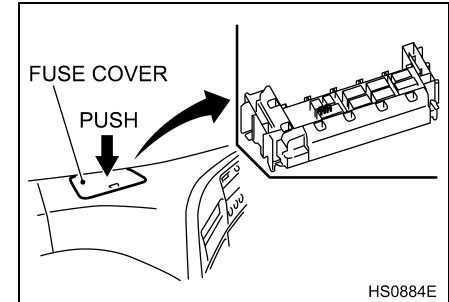
## Blown fuse

### Replacement of fuses

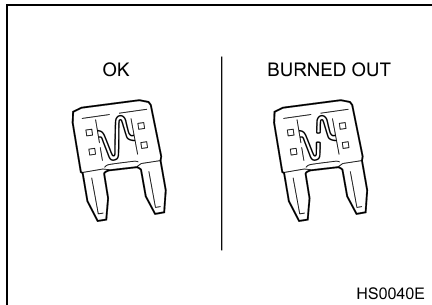
- Fuses are stored in two fuse boxes in the cab: FRC-A and FRC-B.
- When replacing a fuse, set the ignition switch to the OFF position.
- To check the fuses in FRC-A, open the dashboard in front of the assistant seat. Put your hands on the front (windshield) side of the dashboard and swing it open toward you.



- To check the fuses in FRC-B, push to open the fuse cover at the upper center of the instrument panel.



- Confirm the location of the fuse in question on the diagram at the back of the fuse cover. Remove the fuse and check if the fuse is blown.



 **DANGER**

Be sure to use a fuse with the specified capacity. Using a fuse beyond the specified capacity or a steel wire may cause overheating or fire of wiring. Do not use.










 **CAUTION**






- ISO8820 miniature-type fuse is used.
- Never connect an extra electric accessory to the circuit other than the circuit for the body builder power source fuse. Doing so could cause a failure.









**NOTE**





If the replaced fuse is immediately, shortly or frequently blown, it is necessary to check the cause for repair. Contact the nearest authorized UD Trucks dealer.




















No.	Icon	Use	Capacity (A)
1		Engine control unit	10
2		Engine control unit	15
3		Engine control unit	15
4		ABS/EBS	20
5	DC / DC	DC/DC converter	15
6		24V power outlet or cigarette lighter	10
7	OPT 2 	Connector for superstructure	7.5
8	<b>ACM</b>	ACM	20
9	 COOL / HOT 1	Parking heater / cooler	20
10	 COOL / HOT 2	Parking heater / cooler	10
11	–	–	–
12	<b>DACU</b>	DACU	5
13		Diagnosis for Allison gearbox	5






No.	Icon	Use	Capacity (A)
14	<b>RADIO</b>	Radio	7.5
15		Instrumental cluster	3
16	<b>DMS</b>	DMS	5
17		Diagnosis	5
18	–	–	–
19	–	–	–
20	<b>HMI IOM</b>	HMI IOM	3
21		Cab tilt switch	3
22	<b>TACHO 1</b>	Tachograph	3
23	Telematics	Telematics	3
24		Engine load	10
25	<b>TACHO 2</b>	Tachograph	3
26		Engine load	10

No.	Icon	Use	Capacity (A)
27		Mirror heater (assistant's side)	10
28		Mirror heater (driver's side)	10
29		Roof light	10
30	<b>CIOM</b>	CIOM	10
31	–	–	–
32		Rear wiper	15
33	 <small>COOL / HOT 3</small>	Air conditioner	20
34		Airbag	5
35	–	–	–
36		Rear-view camera	3
37	–	–	10
38	 <small>OPT 3</small>	Connector for superstructure	10
39	<b>BB-B1 20A</b>	Power for superstructure	20

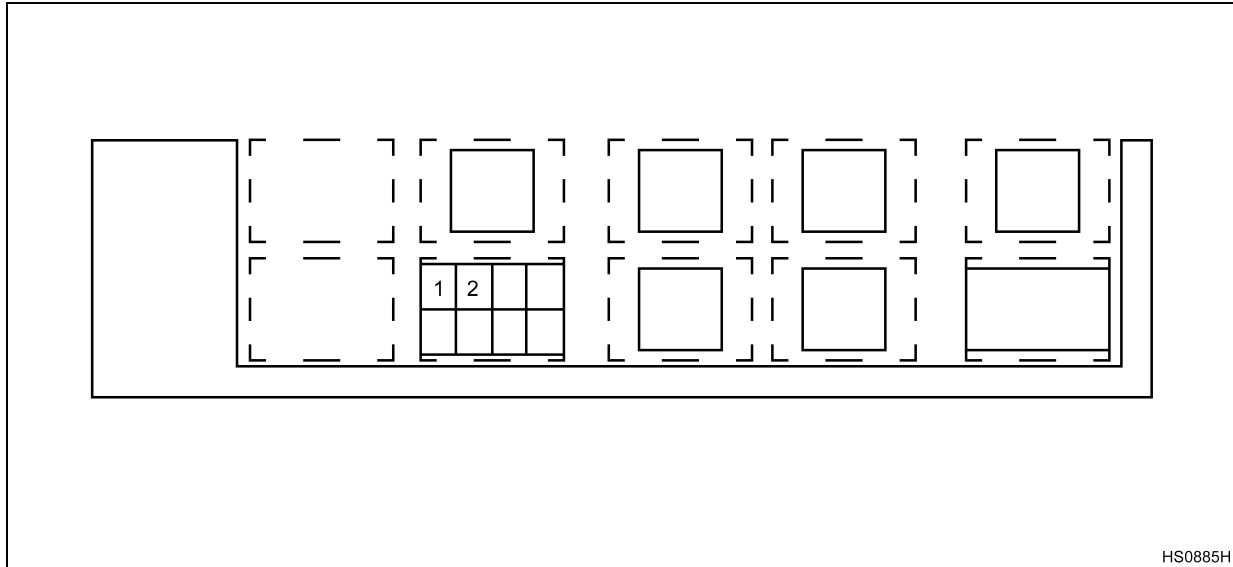
No.	Icon	Use	Capacity (A)
40	–	–	5
41	–	–	–
42	<b>VMCU 3</b>	VMCU	15
43	<b>VMCU 2</b>	VMCU	10
44	<b>VMCU 1</b>	VMCU	20
45		Rear-view camera	20
46		Cargo room light	10
47		Seat heater	5
48		Room light	10
49	–	–	–
50	–	–	–
51	–	–	–
52	<b>BB Buzzer</b>	Dump buzzer	3

No.	Icon	Use	Capacity (A)
53		Power for superstructure	30
54	–	–	–
55		Allison transmission	15
56	<b>BBM</b>	Module for superstructure	15
57	<b>A / C</b>	Air conditioner	5
58		TECU	20
59		Beacon chassis	20
60		Electrical outlet	15
61		Power mirror arm	15
62		Wiper	15
63		Power window	20

No.	Icon	Use	Capacity (A)
64		GH8 Engine vehicle Fuel filter heater	20
		GH11 Engine vehicle 12-speed manual transmission / Fuel filter heater	10
65		Retarder	10
66		Power mirror / seat belt / DC/DC converter	5
67		Beacon roof	10
68		Radio / ETC / camera	5
69		Road shoulder light	10
70		Millimeter wave radar, camera and side millimeter wave radar	10
71		Superstructure for Australia	10
72	–	–	–
73	–	–	–

No.	Icon	Use	Capacity (A)
74	–	–	–
75	12V 	12V power outlet	10
76	–	–	–
77	–	–	–
78	A / C 12V	12V air conditioner control	3
79	–	–	–
80		Trailer cable or Electric horn / Beacon lamp	10
81		Cab tilt motor	40
82	BB 	Connector for superstructure	40
83	–	–	–
84		Door lock	10

FRC-B



HS0885H

No.	Icon	Use	Capacity (A)
1		Wing buzzer	3

No.	Icon	Use	Capacity (A)
2		Wing main switch	10



## Discharged battery

### Precautions for use of booster cable

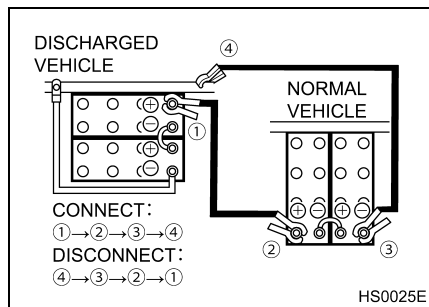
To start the engine using battery power of another vehicle through booster cables because of a discharged battery, a spark may occur when the cable is connected. Observe the following steps.

Be sure to use large capacity booster cables for a heavy-duty vehicle. For the booster cable, ask the nearest authorized UD Trucks dealer.

1. Turn off the ignition switches of both vehicles and apply the parking brakes.
2. Connect one end of the red booster cable to the positive (+) terminal of the discharged battery and the other end to the positive terminal of the good battery.
3. Connect one end of the black booster cable to the negative (-)

terminal of the good battery. Connect the other end of the black cable to the frame of the vehicle with the discharged battery at a location as away from the battery as possible.

4. Start the engine of the vehicle with the good battery. If it is cold, run the engine for some minutes. Then after increasing the engine speed to a moderate speed, try to start the vehicle with the discharged battery.
5. If the engine can be started, remove the booster cables in the reverse order of connection.



### ⚠ WARNING

- Never put a metal tool in contact with the positive (+) terminal and a metal part of either vehicle simultaneously.
- Check the booster cables for damage or faulty insulation.
- Check the battery fluid level before connecting the booster cables. If charging is performed when the battery fluid is at the lower level or below, the battery may be deteriorated early or heat or explosion of the battery may occur. Perform charging after replenishing the fluid.

### NOTE

If it seems that the battery is frozen or you can see ice in the cell, do not start the vehicle using booster cables.

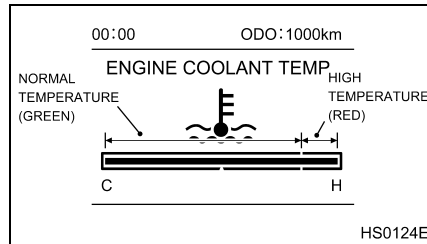
## Overheat

### CAUTION

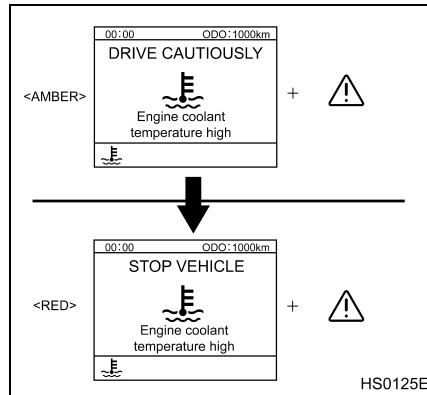
- Do not suddenly stop the engine when it has overheated. Seizure of the engine may occur. Keep the engine idling until the coolant temperature drops before turning off the engine.
- If an overheat occurred, any EGR system part may be damaged. Have your vehicle inspect at the nearest authorized UD Trucks dealer.

### Coolant temperature gauge and overheat warning

- The coolant temperature gauge indicates the engine coolant temperature.
- If the gauge indicates high temperature, keep the engine at idle until the temperature lowers to the normal range.



- If the coolant temperature further increases, an overheat warning with a 2-phase indication (amber: moderate, red: severe) will appear and a beep sounds.



- If the red overheat warning appears, immediately exit the road and park the vehicle in a safe location, then run the engine at high idle to lower the coolant temperature.
- After the coolant temperature drops, stop the engine and check the coolant level, and then inspect the cooling system for leaks.

### CAUTION

Do not drive while the red overheat warning is displayed. The engine protection function may provide torque derating to prevent the engine from being damaged.

## Replenishing the coolant

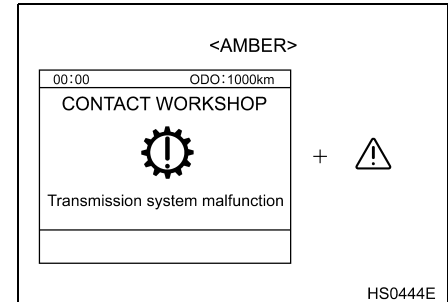
- To remove the reserve tank cap, raise the lever on the reserve tank cap and wait until the discharge sound ceases.
- While the engine is hot, abrupt pouring of cool water may cause the cylinder block or the cylinder head to crack. Replenish water slowly and gradually.

### WARNING

- **Carelessly opening the reserve tank cap could allow steam or hot water to spray out and burn you. Follow the handling instructions below.**
  - **If the coolant temperature gauge indicator is close to the red zone or overheat warning is displayed, keep the engine idling and do not touch the cap until the coolant temperature lowers sufficiently.**
  - **Grip the cap with a thick cloth and gradually loosen the cap.**

## Emergency driving by the ESCOT system

- If the ESCOT system becomes faulty, a warning message “Transmission system malfunction” is displayed on the multi-display.

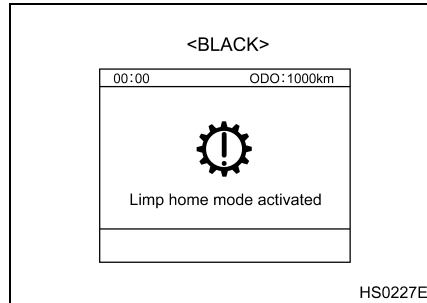


- When the “Transmission system malfunction” message is displayed, perform the following procedure to continue driving.

## Emergency drive mode

- Before activating the emergency drive mode, confirm that automatic regeneration and PTO are inactive.
  - Keep the brake pedal depressed until the emergency drive mode (Limp home mode) is activated.
  - With the vehicle stopped, perform the following procedure to enter the emergency drive mode.
1. Press and hold the emergency switch.
  2. While holding the switch, move the shift lever from “N” to “D” position, then ESCOT enters in the emergency drive mode. (The shift operation should be performed within 5 seconds after pressing the emergency switch.)
  3. Confirm that “Limp home mode activated” is displayed on the multi-display.
  4. Set the shift lever in “M” to drive forward or “R” to drive in reverse.
  5. Select the starting gear using the +/- button.

6. Confirm the gear position by the gear position indicator. Release the brake pedal and depress the accelerator pedal to start gently.



- The emergency drive mode continues until the ignition switch is set to the “OFF” position.



### CAUTION

- **While driving in the emergency drive mode, gear change cannot be performed by the +/- button.**

- **Do not drive the vehicle for a long distance in the emergency drive mode. If the “Transmission system malfunction” message is displayed, contact the nearest UD Trucks dealer for inspection and maintenance quickly.**
- **The gear position indicator may indicate an incorrect gear position or it may disappear depending on the level of the malfunction. In such cases, drive the vehicle with extreme attention.**
- **While driving in the emergency drive mode, the hill start assist function does not work. Use the parking brake as necessary.**

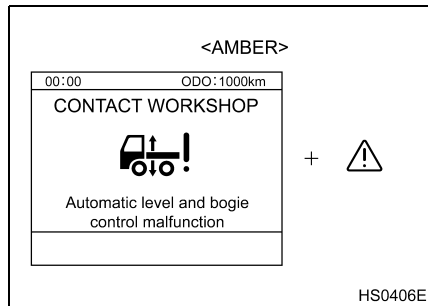
**NOTE**

- The +/- switch can only be used to select the starting gear. The selectable starting gears are: “1”, “3”, “5” and “R (low)”.
- The reverse gear usable in the emergency drive mode is “Low” range only.

## When the air suspension warning appears

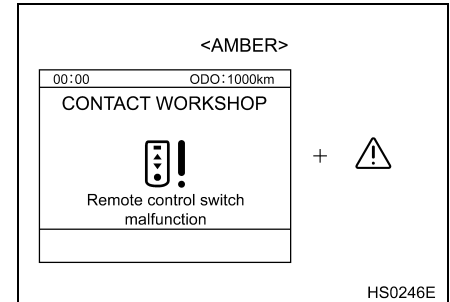
### When the air suspension warning appears

If the warning appears, the air suspension control unit is faulty. Contact the nearest authorized UD Trucks dealer.



## When the remote controller warning appears

If the warning appears, the remote controller is faulty. Contact the nearest authorized UD Trucks dealer.





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# 16. Service data

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Maintenance standard.....	16-2
Capacities .....	16-3
Performance of genuine lubricants.....	16-5
Greasing points .....	16-8
Certification for Australia and New Zealand.....	16-11

## Maintenance standard

Item	Maintenance standard	
Idling speed GH8 Engine GH11 Engine	500 to 600 rpm 400 to 500 rpm (For Singapore CG series: 450 – 550 rpm)	
Steering wheel Free play (at the outer periphery of the steering wheel, with steering wheel in straightforward position and the power steering system operated)	10 – 15 mm	
Brake pedal play Pedal angle At the tip of pedal	1° to 7° 5 – 25 mm	
Tire air pressure  11R22.5 148/145K, 148/145L  275/70R22.5 148/145K, 148/145L; 295/80R22.5 152/148K, 152/148M; 315/80R22.5 156/150L	All Markets	Australia & New Zealand
	850 kPa {8.50 kgf/cm <sup>2</sup> } 900 kPa {9.00 kgf/cm <sup>2</sup> }	825 kPa {8.25 kgf/cm <sup>2</sup> }
Wheel nut tightening torque	550 – 600 N·m {55 – 60 kgf·m}	
Axle shaft nut tightening torque	135 – 165 N·m {13.8 – 16.8 kgf·m}	
Toe-in	0 <sup>+2</sup> <sub>0</sub> mm	
Standard air pressure (brake pressure)	1100 – 1250 kPa {11.2 – 12.7 kgf/cm <sup>2</sup> }	



## Capacities

The values shown below are approximate values as the guideline when replacing lubricants. When a lubricant is replaced, be sure to check that the lubricant is filled to the specified level.

Item	Capacity (approx.)
Engine oil (Indicates the MAX level quantity) *	
Oil pan capacity	
GH8 Engine	27 L
GH11 Engine	27 L
Full capacity	
GH8 Engine	28.5 L
GH11 Engine : Two oil filter cartridge type	31 L
GH11 Engine : Three oil filter cartridge type	33 L
(Full capacity = Oil pan capacity + Oil filter capacity)	
Transmission [( ) : models with PTO]	
ESCOT-VI	
AT612F or AO612F model	16.0 L (17.2 L)
Models with transmission oil cooler	Add 0.8 L
AUTOMATIC TRANSMISSION	
Allison 3200	29.1 L
Differential gear	
GK, CD models	11 L
CG, CW and GW models	
Rear front axle	20 L
Rear rear axle	14 L

\* : The engine oil capacity is the same for models with and without PTO.

Item	Capacity (approx.)
Power steering GK, GW, CD and CW models CG model	7.7 L 8.0 L
Hydraulic tilt pump (system capacity)	1.35 L
Coolant GH8 Engine ESCOT-VI Automatic transmission GH11 Engine	36 L 46 L 45 L
Battery Fluid level Specific gravity (at 20°C)	10 – 15 mm above plates 1.200 – 1.290

- For the vehicle type and the types of units of your vehicle, refer to the vehicle specification label attached above the second step at the left of cab.

# Performance of genuine lubricants

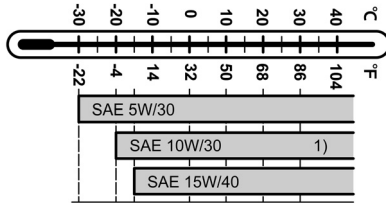
## Genuine oils

Purpose	Name	Grade	SAE Viscosity
Engine *1	Genuine UD engine oil VDS-5/DH-2F	VDS-5/DH-2F	5W/30
	Genuine UD engine oil VDS-4/DH-2	VDS-4/DH-2	10W/30 15W/40
Transmission (ESCOT-VI)	Genuine UD gear oil 97307 (Synthetic oil)	–	75W/85
	Genuine UD gear oil 97315 (Synthetic oil)	–	75W/90
Automatic transmission	Automatic transmission fluid *2	–	–
Differential gear	Genuine UD gear oil 97312 (Synthetic oil)	–	75W/90
	Gear oil (Mineral oil)	API GL-5	80W/140 85W/140

\* 1: Applicable engine oil varies depending on the engine type and the market; consult your nearest authorized UD Trucks dealer.

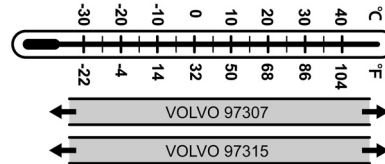
\* 2: See the Allison automatic transmission fluid recommendations on page 16-7.

## Engine oil



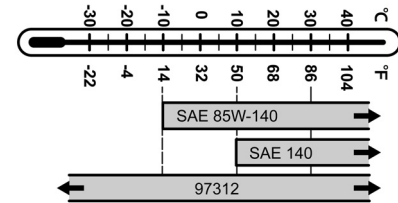
HS1698E

## Transmission oil



HS1498E

## Differential gear oil



HS0876E

## Precautions when changing the type of oil

When changing from the mineral oil to the synthetic oil, it takes 1500 km of driving for oil seals to fit the synthetic oil. During that period, it is necessary to check the oil seals for leakage carefully.

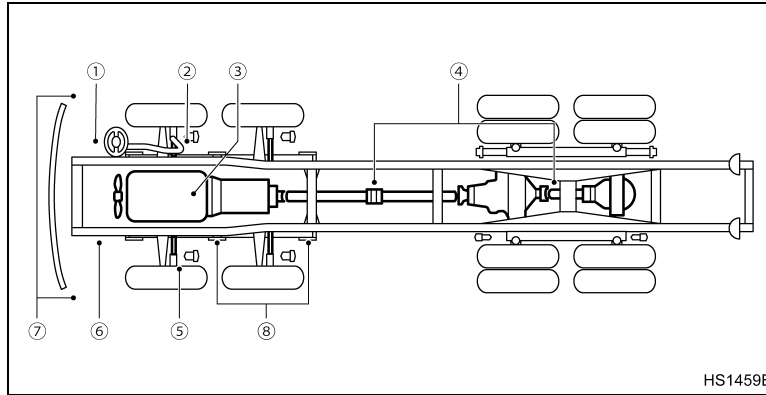
## Genuine grease

Purpose	Name	NLGI classification
Bearings	Genuine UD bearing grease	No. 2, No. 3
Undercarriage and general	Genuine UD chassis grease	No. 0, No. 1

## Allison automatic transmission fluid recommendations

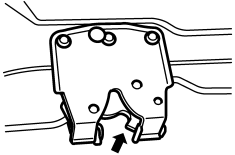
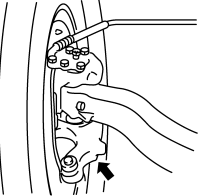
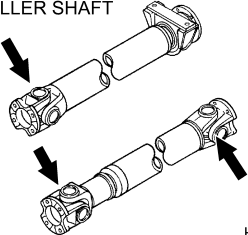
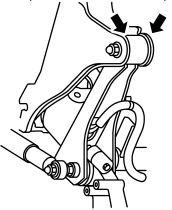
The hydraulic fluid used in the transmission greatly affects its reliability and durability. Allison TranSynd fluids or TES-295 approved fluids are recommended. This vehicle is factory filled with TranSynd fluid.

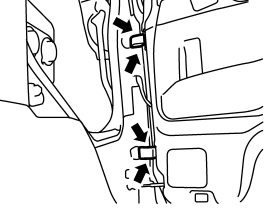
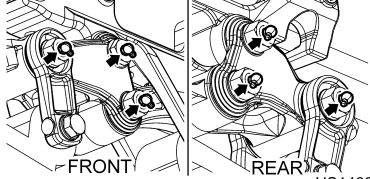
# Greasing points



Greasing point	No.	Lubricant to be used
<p>STEERING COLUMN JOINT</p> <p>STEERING COLUMN</p> <p>STEERING GEARBOX</p> <p>HS0812E</p>	1	Chassis grease

Greasing point	No.	Lubricant to be used
<p>NO.2 STEERING LINKAGE</p> <p>HS1499E</p>	2	Chassis grease (CG models)

Greasing point	No.	Lubricant to be used	Greasing point	No.	Lubricant to be used
<p>TILT LOCK HOOK</p>  <p>HS0815E</p>	3	Chassis grease	<p>KINGPIN</p>  <p>HS0821E</p>	5	Bearing grease
<p>PROPELLER SHAFT</p>  <p>HS0816E</p>	4	Bearing grease	<p>CAB SUSPENSION SIDE CUSHION (RIGHT AND LEFT)</p>  <p>HS0823E</p>	6	Silicone grease spray

Greasing point	No.	Lubricant to be used
<p>DOOR HINGE (TOP AND BOTTOM, RIGHT AND LEFT)</p>  <p>HS0822E</p>	7	UD genuine molybdenum disulfide spray
<p>LOAD SHARING SUSPENSION TYPE SUSPENSION LINK EQUALISER (RIGHT AND LEFT)</p>  <p>FRONT</p> <p>REAR</p> <p>HS1460E</p>	8	Chassis grease



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## Certification for Australia and New Zealand



This vehicle is equipped with radio communication devices that meet the Australian and New Zealand regulations (CIOM Cab Input Output Module, Keyfob, Keys, and TGW)



# 17. Index

## A

ABS warning indicator ..... 5-51  
 ABS (trailer) warning indicator ..... 5-51  
 AdBlue filler cap ..... 10-10  
 AdBlue filter ..... 13-36  
 AdBlue gauge ..... 5-4  
 AdBlue low level warning ..... 5-37, 5-38  
 AdBlue quality warning ..... 5-42, 5-43  
 AdBlue tank ..... 10-9  
 Air cleaner ..... 13-4  
 Air conditioner refrigerant ..... 7-23  
 Air dryer ..... 13-3  
 Air filter for air conditioner ..... 13-5  
 Air pressure gauge ..... 5-3  
 Air suspension warning ..... 6-114, 15-19  
 Air tank, draining water condensate ..... 12-10  
 Airbag warning indicator ..... 6-15

Alternator charge regulator (or brush), replacement ..... 13-89  
 Ashtray ..... 8-9  
 ASR OFF switch ..... 5-81, 6-108  
 ASR warning indicator ..... 6-107  
 ASR (Traction control) ..... 6-107  
 Auto cruise ..... 6-41  
 Auto levelizer warning ..... 5-46  
 Automatic regeneration ..... 6-27  
 Automatic transmission fluid temperature warning ..... 5-33  
 Automatic transmission system warning ..... 5-36  
 Axle shaft nut, check for looseness ..... 13-87

## B

Battery fluid level inspection ..... 12-10  
 Battery, charging ..... 3-15, 13-38  
 Battery, discharged ..... 15-15

Battery, disconnecting ..... 13-39  
 Battery, replacing ..... 13-40  
 Battery, when power is directly taken from the battery ..... 13-41  
 Beacon lamp switch ..... 5-72  
 Brake blending OFF switch ..... 5-67  
 Buzzers ..... 5-26

## C

Cab tilt operation ..... 6-145  
 Cab tilt warning ..... 6-150  
 Charge warning ..... 5-40  
 Chassis number and engine number ..... 2-3  
 Cigarette lighter ..... 3-18, 8-8  
 Clogged fuel filter warning ..... 5-41  
 Coasting ..... 3-8  
 Coolant ..... 13-68  
 Coolant level warning ..... 5-31  
 Coolant temperature gauge ..... 5-6

Coolness storage bedroom  
cooler (For Singapore) ..... 7-24

## D

Differential gear oil, inspection and  
replenishment..... 14-10  
Digital speedometer ..... 5-10  
Disc wheel, installation  
condition..... 12-7  
Door window (Power window).... 7-2  
Drive belt..... 3-13, 12-12  
Driveline protection function... 6-130  
Driver Alert Support (DAS)..... 6-84  
Driver status monitor ..... 6-100  
Driver support system ..... 6-46

## E

EBS unit, check..... 13-84  
ECO MODE switch..... 6-124, 10-31  
Electrical outlet  
in the cab..... 3-17, 8-7  
Engine control warning  
indicator..... 5-49  
Engine oil filter,  
replacement ..... 13-7, 13-10, 13-12  
Engine oil level ..... 12-8  
Engine oil level warning ..... 5-31

Engine oil pressure warning .... 5-29  
Engine oil temperature gauge ... 5-7  
Engine oil temperature  
warning ..... 5-30  
Engine oil, check and  
replenishment ..... 14-3  
Engine overrun warning..... 5-28  
Engine system warning..... 5-35  
ESCOT auto shift down  
switch..... 6-126  
ESCOT indicator..... 6-123  
ESCOT ROLL function ..... 6-129  
ESCOT VI System..... 6-120  
ESCOT, buzzer and operation  
messages ..... 6-131  
ESCOT, emergency drive  
function ..... 6-134  
ESCOT, emergency switch.... 6-134  
ESCOT, operation ..... 10-11  
ESCOT, +/- button ..... 6-123  
Exhaust brake & EEB  
(Extra Engine Brake) ..... 5-64  
Exhaust emission control  
system indicator..... 6-23  
Exhaust emission control  
system meter ..... 5-8, 6-25  
Exhaust emission control  
system warning..... 6-33

Exhaust gas detection system  
warning (For Hong Kong)..... 5-39

## F

Ferry mode..... 6-119  
Fluorescent light switch..... 5-71  
Freight, handling ..... 10-40  
Front fog light switch ..... 5-69  
Fuel filter,  
replacement .... 13-14, 13-21, 13-27  
Fuel filter, water  
draining ..... 13-20, 13-31  
Fuel gauge ..... 5-4  
Fuel system, air bleeding ..... 13-33  
Fuel tank ..... 3-14, 10-39, 10-51  
Fully automatic air  
conditioner..... 7-14  
Fuses, replacement..... 15-7

## G

Gauges..... 5-6  
Gear selector switch  
(automatic transmission) ..... 6-2  
Gearshift lever (ESCOT-VI) ..... 6-2  
Genuine lubricant..... 14-2  
Greasing points ..... 16-8

**H**

Hazard switch.....5-64  
 Headlight levelizer switch.....5-62  
 Headlight position change  
 switch .....5-61  
 Height control .....6-112  
 High temperature warning  
 indicator.....6-25  
 Hill start assist function .....6-35  
 Hill start assist OFF switch.....6-37  
 Home screen.....5-14  
 Hook.....15-5  
 Horn switch .....5-68  
 Hot & cool box.....8-5  
 Hot & cool cup holder.....8-6

**I**

Idling control ON/OFF switch ...5-56  
 Idling control resume switch.....5-57  
 Idling control switch.....5-57  
 Instantaneous fuel consumption  
 gauge .....5-8  
 Inter-axle differential lock  
 switch .....5-73  
 Intermittent wiping time  
 adjustment switch.....5-63  
 Inter-wheel differential  
 lock switch.....5-75, 5-79

**J**

Jacking up .....3-17, 13-54

**K**

Key number plate .....5-55  
 Keyfob, battery  
 replacement.....13-89  
 Keyless entry system.....4-5  
 Kick down select function .....6-127

**L**

Lane Departure Warning System  
 (LDWS).....6-71  
 Light bulbs,  
 replacement.....3-20, 13-61  
 Lighting switch .....5-59  
 Long Life Coolant (UD Trucks  
 genuine LLC).....3-12, 13-74, 13-80  
 Low keyfob battery indication ....4-5

**M**

Maintenance screen .....5-17  
 Manual air conditioner .....7-5  
 Manual regeneration  
 operation.....6-30  
 Manual regeneration switch.....6-24  
 Master warning indicator .....5-53

Menu screen .....5-14  
 Mirror heater switch .....5-84  
 Mirrors .....13-66  
 Mixer lever .....6-12  
 Monitoring screen .....5-14  
 Moving Off Information System  
 (MOIS) .....6-88  
 Multi-display .....5-10

**N**

Nenpi Coach .....6-137  
 New vehicle inspection .....2-4  
 Noise-proof system .....13-93  
 Non-ABS (trailer)  
 information .....5-47

**O**

Odometer .....5-5  
 Odo/trip changeover switch .....5-5  
 Odo/trip meter .....5-5  
 Off-road mode .....6-109  
 Overheat .....15-16

**P**

Parking brake warning .....5-47  
 Passing switch .....5-61  
 Periodic replacement parts .....2-5

- Periodical inspection .....2-4  
 Plated cab parts ..... 10-57  
 Power mirror retraction  
 arm switch .....5-83  
 Power mirror switch .....5-82  
 Power mode switch .....5-85  
 Power steering fluid, check and  
 replenishment ..... 14-12  
 Power window,  
 operation ..... 3-18, 7-2
- Q**  
 Quick warm-up switch .....5-58
- R**  
 Rear fog light switch .....5-69  
 Regeneration stop switch .....6-24  
 Remote controller  
 (cargo bed or coupler vertical  
 adjustment switch) .....6-113  
 Revolution tachograph .....6-143  
 Road grip (low friction road  
 start assist system) .....6-39  
 Room light switch .....5-70
- S**  
 Seat belts .....4-16  
 Seats ..... 4-8  
 Service information screen ..... 5-17  
 Service mode ..... 13-40  
 Setting screen .....5-19  
 Setting2 screen .....5-24  
 Shift navigation function ..... 6-127  
 Smart BSIS  
 (Blind Spot Information System)  
 and Smart LCS  
 (Lane Change Support) ..... 6-75  
 Spare wheel carrier ..... 13-51  
 Speed limiter device (SLD) ..... 5-2  
 Speedometer ..... 5-2  
 Spring brake (wheel parking  
 brake), manual release ..... 15-3  
 SRS airbag system ..... 6-12  
 Stalk switch ..... 5-59, 5-63  
 Standby mode start  
 method ..... 6-118  
 Starting the engine ..... 3-5, 10-2  
 Static trailer brake check  
 switch ..... 5-85  
 Steering switch ..... 5-68  
 Stop lamp malfunction  
 warning ..... 5-40  
 Storage box ..... 8-2  
 Stuck in a snow or mud ..... 6-125  
 Sun visors ..... 8-9
- T**  
 Tachograph .....6-143  
 Tachometer .....5-3  
 Test position, parking brake .....6-9  
 Tilt and telescopic steering  
 wheel ..... 4-16  
 Tire chains ..... 10-50  
 Tire rotation ..... 13-42  
 Tire tread groove depth ..... 12-7  
 Tires ..... 13-42  
 Tire, flat ..... 3-10  
 Tire, inspection ..... 12-5  
 Tools ..... 13-94  
 Towing ..... 3-10, 15-5  
 Traffic Eye Brake (Collision  
 damage alleviating system) .....6-46  
 Traffic Eye Cruise  
 (Adaptive cruise control) ..... 6-59  
 Traffic Sign Recognition .....6-97  
 Transmission gear oil,  
 replacement ..... 14-6  
 Transmission oil filter ..... 13-36  
 Transmission oil temperature  
 gauge ..... 5-8  
 Transmission oil temperature  
 warning ..... 5-33  
 Transmission PTO switch .....5-72  
 Trip computer screen .....5-16

Trip meter ..... 5-6  
Turn signal switch ..... 5-60

## U

UDPC  
(UD Particulate Cleaning) ..... 6-21  
UDSC OFF switch ..... 6-106  
UDSC warning indicator ..... 6-105  
UDSC (UD stability control).... 6-104  
Urea dosing system warning .... 5-45

## V

Vehicle data screen ..... 5-15  
Vehicle electronic control  
system malfunction warning .... 5-36  
Vehicle message ..... 5-14  
Voltmeter ..... 5-9

## W

Washing the vehicle ..... 10-53  
Wheel nuts, check for  
loosening ..... 13-50  
Window lock switch ..... 7-3  
Windshield wiper and  
washer ..... 5-63, 12-13  
Working light switch ..... 5-71

