VEHICLE MAINTENANCE REQUIREMENTS

G377A027D-GAT

SCHEDULED MAINTENANCE

The following maintenance services must be performed to assure good vehicle control and performance. Keep receipts for all vehicle services to protect your warranty. Where both kilometers and time are shown, the frequency of service is determined by whichever occurs first. Even though a certain system is in the same maintenance period, the distance of inspection or replacement can be different from each other due to the characteristics of system.

R : Replace I : Inspect and after inspection, clean adjust, repair or replace if necessary

	Interval (Kilometers) X 1000		1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Interval (Miles) X 1000		0.6	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
NO.	Item																						
	Engine control system maintenance																						
1	Air, fuel oil coolant for leakage				I		I		I		I		I		I		I		I		I		I
2	Oil filter	D6DA	R		R		R		R		R		R		R		R		R		R		R
		D6AB, D6AC, D6AV	R	Replace every 16,000 km (every 8,000 km in severe driving condition)																			
		D6CA, D6CB	Replace every 20,000 km																				
		D6CC	Replace initial 1,000 km and every 30,000 km																				
3	Engine oil	D6DA	R		R		R		R		R		R		R		R		R		R		R
		D6AB, D6AC, D6AV	R	Replace every 16,000 km (every 8,000 km in severe driving condition)																			
		D6CA	With oil cleaner : Replace initial 1,000 km and every 60,000 km Without oil cleaner : Replace initial 1,000 km and every 20,000 km																				
		D6CB	With oil cleaner : Replace initial 1,000 km and every 60,000 km Without oil cleaner : Replace initial 1,000 km and every 40,000 km																				
		D6CC	With oil cleaner : Replace initial 1,000 km and every 80,000 km Without oil cleaner : Replace initial 1,000 km and every 60,000 km																				
4	Air cleaner element *	D6AV	Replace every 20,000 km (inspect every 5,000 km)																				
		D6CB, D6AC, D6CA, D6AB	Replace every 6 month or 60,000 km																				
		D6CC	Inspect every 10,000 km and replace every 120,000 km or when the dust warning lamp on meter set light.																				

* Clean the air cleaner filter when dust indicator lamp is on.

VEHICLE MAINTENANCE REQUIREMENTS

	Interval (Kilometers) X 1000		1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Interval (Miles) X 1000		0.6	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
NO.	Item																						
	Engine control system maintenance																						
5	Interior of rotor in centrifugal type filter		Remove sediment when replacing the engine oil filter																				
6	V-belt tension and damage			I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
7	V-ribbed belt		Inspect initial 100,000 km and every 10,000 km																				
8	Injector tightening						I				I				I				I				I
9	Injection pressure and injection condition of the nozzle						I				I				I				I				I
10	Injection timing										I								I				
11	Fuel feed pump filter				I		I		I		I		I		I		I		I		I		I
12	Fuel filter	D6AB, D6AC, D6AV	Replace every 20,000km																				
		D6CA, D6CB	Replace every 25,000 km																				
		D6CC	Replace initial 20,000 km and every 40,000 km																				
13	Mass air flow (MAF) sensor		Clean every 6 months or 60,000 km																				
14	Closed crankcase ventilation (CCV) filter		Replace every 60,000 km or when the engine check warning light is on. And indicator at the top of the CCV spring out upward.																				
15	Air compressor										I								I				
16	Removal of foreign matter in the fuel tank				I		I		I		I		I		I		I		I		I		I
17	Valve clearance, EUI prestroke		Adjust the valve clearance every 40,000 km after first adjustment of 5,000 km																				
18	Engine operation condition (Starting,Idling speed, Max. speed, Acceleration)		I	I	I		I		I		I		I		I		I		I		I		I
19	Engine coolant		Inspect every 20,000km. Replace every 2 years or 40,000 km																				
	Power line																						
1	Transmission oil	DYMOS	Replace initial 5,000 km and every 40,000 km (inspect every 10,000 km)																				
		ZF	Replace initial 5,000 km and every 1 year or 60,000 km																				
2	Clutch/brake pedal free play and operation condition		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
3	Clutch fluid		Replace every 1 year or if necessary																				

VEHICLE MAINTENANCE REQUIREMENTS

	Interval (Kilometers) X 1000	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Interval (Miles) X 1000	0.6	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
NO.	Item																					
	Driving system																					
1	Rear axle oil	Inspect every 20,000 km. Replace initial 8,000 km and replace every 1 year or 40,000 km.																				
2	Propeller shaft universal joint, slip joint & center bearing			I		I		I		I		I				I		I		I		I
3	Front, rear wheel hub bearing damage & free play			I		I		I		I		I				I		I		I		I
4	Wheel stud bolts and nuts	I	Inspect every 5,000 km. Retighten after driving 50-100 km from replacing a tire.																			
5	Tire pressure and damage	Inspect before driving																				
6	Tire rotation	Replace every 15,000 km																				
	Steering system																					
1	Power steering gear oil		R									R										R
2	Steering system oil leakage		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
3	Overall axle alignment (side slip)									I								I				
4	Steer angle and stopper bolt retightening									I								I				
5	Steering free play & linkage for looseness (in driving the engine)									I								I				
	Service brakes																					
1	Brake fluid	I	I	I	I	R	I	I	I	R	I	I	I	R	I	I	I	R	I	I	I	R
2	Brake system for fluid leakage		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
3	Brake lining clearance	Inspect and replace if necessary																				
4	Brake lining for wear		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
5	Brake drum for wear																	I				
6	Brake pedal free play		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
7	Air dryer	Replace every 1 year or 50,000 km																				
8	Air dryer heater plug	Replace every 2 year or 100,000 km																				

VEHICLE MAINTENANCE REQUIREMENTS

	Interval (Kilometers) X 1000	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Interval (Miles) X 1000	0.6	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
NO.	Item																					
	Parking brake																					
1	Parking brake function	Inspect every 5,000 km and every 2,000 km in severe driving condition																				
2	Drum for wear			I		I		I		I		I		I		I		I		I		I
3	Lining for wear			I		I		I		I		I		I		I		I		I		I
	Suspension																					
1	Suspension for damage		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
2	U-bolt*	At first, retighten every 5,000 km. After that, retighten every 20,000 km																				
3	Leaf spring for damage		I	Inspect every 5,000 km or if necessary																		
4	Shock absorbers for oil leakage or damage		I	Inspect every 10,000 km or if necessary																		
	Chassis																					
1	Bolts and nuts on chassis and body	I	Inspect every 5,000 km or if necessary																			
2	Oil for cab tilt	Inspect every 1 year, replace every 2 year																				
3	Tractor coupler function pin and kingpin bearing for damage and looseness									I								I				
4	Pintle hook and lunette-eye									I								I				
	Electric system																					
1	Battery fluid specific gravity		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
2	Starter motor function									I								I				
3	Alternator (with tester)									I								I				
4	Electric harness and connection for damage and looseness		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
5	Gauges, warning and indicator lamps	Replace initial 1,000 km and Inspect before driving																				

* Retighten initial 1,000km after replacing a spring and the U-bolt of the suspension.

LB397D-FOT

MAINTENANCE UNDER SEVERE USAGE CONDITIONS

The following items must be serviced more frequently on vehicles normally used under severe driving conditions. Refer to the chart below for the appropriate maintenance intervals.

I : Inspect, correct or replace if necessary R: Replace

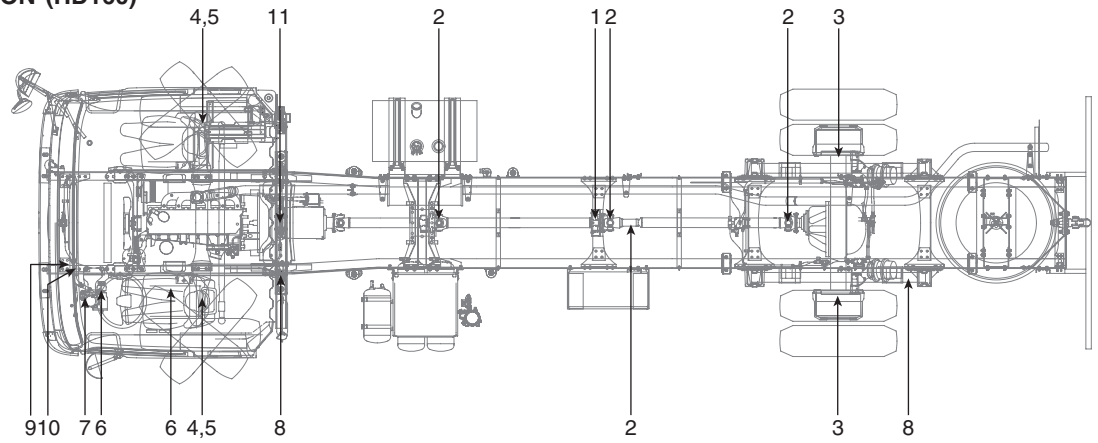
Maintenance item		Maintenance Operation	Maintenance Intervals	Driving Condition
Engine oil	D6DA	R	Every 5,000 km	A, B, C, F, H
	D6AB, D6AC, D6AV		Every 8,000 km	
	D6CA		With oil cleaner : Initial 1,000 km and every 20,000 km Without oil cleaner : Initial 1,000 km and every 10,000 km	
	D6CB		Initial 1,000 km and every 20,000 km	
	D6CC		With oil cleaner : Initial 1,000 km and every 40,000 km Without oil cleaner : Initial 1,000 km and every 30,000 km	
Oil filter	D6DA	R	Every 5,000 km	
	D6AB, D6AC, D6AV		Every 8,000 km	
	D6CA, D6CB		Every 10,000 km	
	D6CC		Replace initial 10,000 km and every 15,000 km	
Air cleaner filter		R	More frequently	C, E
Mass air flow (MAF) sensor		I	Clean every 6 months or 60,000 km	A, B, C, F, H
Brake lining		I	More frequently	C, D, G, H
Brake drums		I	Every 20,000 km	C, D, G, H
Steering gear rack, linkage & boots		I	More frequently	C, D, E, F

SEVERE DRIVING CONDITIONS

A - Repeated short distance driving
B - Extensive idling
C - Driving in dusty conditions
D - Driving in areas with salt or other corrosive materials or in very cold weather
E - Driving in sandy areas
F - More than 50% driving in heavy city traffic during hot above 90°F (32°C)
G - Driving in mountainous areas
H - Driving under overload

G377C017D-GAT

LUBRICATION (HD160)



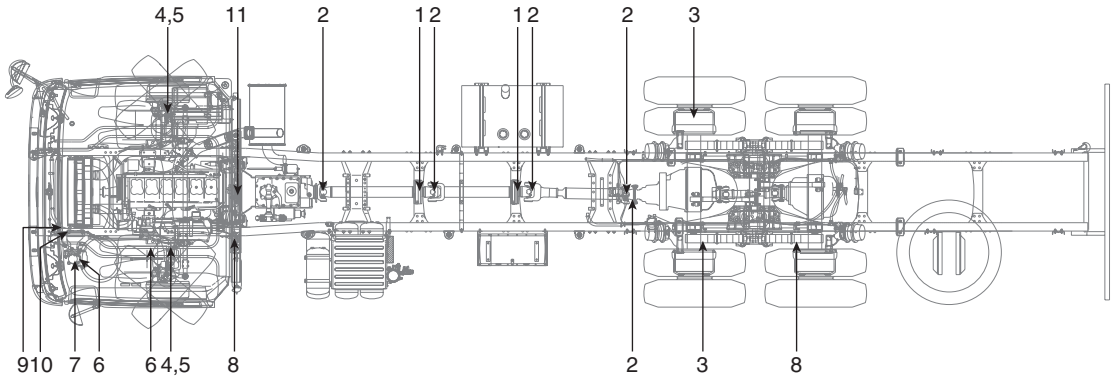
HD160

8 TON CARGO

NO	PART	GREASE SPEC.	INTERVAL	NO	PART	GREASE SPEC.	INTERVAL
1	PROPELLAR SHAFT CENTER BEARING ASSEMBLY	NLGI #2	Every 50,000km	7	STEERING, UNIVERSAL JOINT	NLGI #2	Every 10,000km or 3 months
2	PROPELLAR SHAFT UNIVERSAL JOINT AND SLIDING SLEEVE	NLGI EP#2	Every 15,000km or 1 month	8	FRT SPRING, RR SPRING	NLGI #2	Every 10,000km or 3 months
3	REAR WHEEL HUB BEARING	NLGI #2	Every 30,000km	9	CAB HINGE BRACKET LH/RH	NLGI #2	Every 10,000km or 3 months
4	KING PIN-LOWER, LH/RH	NLGI #2	Every 10,000km or 3 months	10	CAB SUSPENTION CONNECTING ARM LH/RH	NLGI #2	Every 10,000km or 3 months
5	KING PIN-UPPER, LH/RH	NLGI #2	Every 10,000km or 3 months	11	LATCH CTR	NLGI #2	Every 10,000km or 3 months
6	DRAG LINK	NLGI #2	Every 10,000km or 3 months				

G377D017D-GAT

LUBRICATION (HD250)

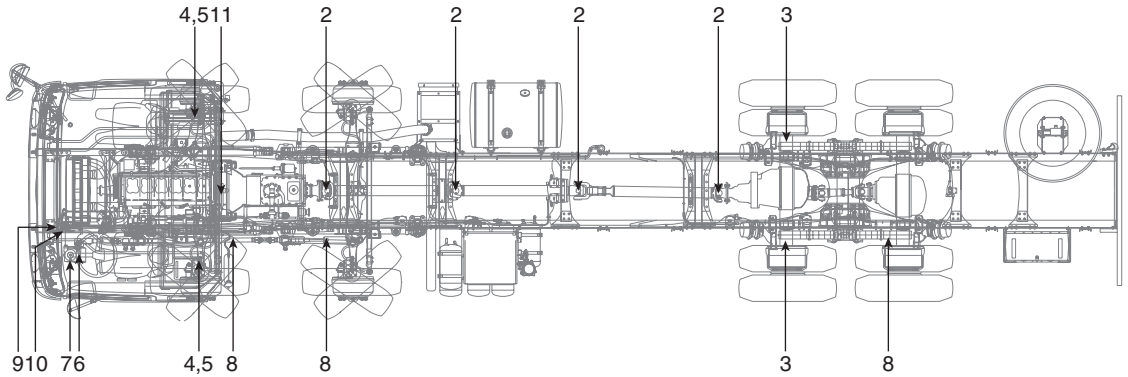


11.5 TON CARGO HD250

NO	PART	GREASE SPEC.	INTERVAL	NO	PART	GREASE SPEC.	INTERVAL
1	PROPELLAR SHAFT CENTER BEARING ASSEMBLY	NLGI #2	Every 50,000km	7	STEERING, UNIVERSAL JOINT	NLGI #2	Every 10,000km or 3 months
2	PROPELLAR SHAFT UNIVERSAL JOINT AND SLIDING SLEEVE	NLGI EP#2	Every 15,000km or 1 month	8	FRT SPRING, RR SPRING	NLGI #2	Every 10,000km or 3 months
3	REAR WHEEL HUB BEARING	NLGI #2	Every 30,000km	9	CAB HINGE BRACKET LH/RH	NLGI #2	Every 10,000km or 3 months
4	KING PIN-LOWER, LH/RH	NLGI #2	Every 10,000km or 3 months	10	CAB SUSPENTION CONNECTING ARM LH/RH	NLGI #2	Every 10,000km or 3 months
5	KING PIN-UPPER, LH/RH	NLGI #2	Every 10,000km or 3 months	11	LATCH CTR	NLGI #2	Every 10,000km or 3 months
6	DRAG LINK	NLGI #2	Every 10,000km or 3 months				

G377E017D-GAT

LUBRICATION (HD320)



19 TON CARGO HD320

NO	PART	GREASE SPEC.	INTERVAL	NO	PART	GREASE SPEC.	INTERVAL
1	PROPELLAR SHAFT CENTER BEARING ASSEMBLY	NLGI #2	Every 50,000km	7	STEERING, UNIVERSAL JOINT	NLGI #2	Every 10,000km or 3 months
2	PROPELLAR SHAFT UNIVERSAL JOINT AND SLIDING SLEEVE	NLGI EP#2	Every 15,000km or 1 month	8	FRT SPRING, RR SPRING	NLGI #2	Every 10,000km or 3 months
3	REAR WHEEL HUB BEARING	NLGI #2	Every 30,000km	9	CAB HINGE BRACKET LH/RH	NLGI #2	Every 10,000km or 3 months
4	KING PIN-LOWER, LH/RH	NLGI #2	Every 10,000km or 3 months	10	CAB SUSPENTION CONNECTING ARM LH/RH	NLGI #2	Every 10,000km or 3 months
5	KING PIN-UPPER, LH/RH	NLGI #2	Every 10,000km or 3 months	11	LATCH CTR	NLGI #2	Every 10,000km or 3 months
6	DRAG LINK	NLGI #2	Every 10,000km or 3 months				

G377F017D-GAT

RUBBERS & SWITCHES

Parts	Every 1 year	Every 2 year	Every 3 year	Remarks
Brake valve packing & rubber parts	•			
Wheel cylinder piston cup & dust seal	•			Except full air brake vehicle
Valve packing & rubber parts	•			
Pressure governor diaphragm & rubber parts	•			
Brake hose	•			
Load sensing valve cup & other rubber parts	•			
Brake system(Brake chamber relay valve, Quick release valve etc.) rubber parts	•			Except full air brake vehicle
Trailer brake system (Tractor)	•			
Heater hose	•			
Vacuum hose		•		
Air spring diaphragm		•		Vacuum sub hydraulic brake vehicle
Power steering system rubber parts & hose		•		
Fuel hose		•		
Air compressor & pressure gauge hose		•		
Air master & power cylinder packing (Except full air brake vehicle)		•		
Air conditioner hose		•		
Brake lamp switch		•		

G0001407D-FOT

EXPLANATION OF SCHEDULED MAINTENANCE ITEMS

o Engine oil and filter

The engine oil and filter should be changed at those intervals specified in the maintenance schedule. If the vehicle is being driven in severe conditions, more frequent oil and filter changes are required.

G0001427D-FOT

o Fuel lines and connections

Check the fuel lines and connections for leakage and damage. Replace any damaged or leaking parts immediately.

G0001437D-FOT

o Fuel filter

A clogged filter can limit the speed at which the vehicle may be driven, damage the emission system and cause hard starting. If an excessive amount of foreign matter accumulates in the fuel tank, the filter may require replacement more frequently.
After installing a new filter, run the engine for several minutes, and check for leaks at the connections.

G0001447D-FOT

o Vacuum and crankcase ventilation hoses

Inspect the surface of hoses for evidence of heat and/or mechanical damage. Hard and brittle rubber, cracking, tears, cuts, abrasions, and excessive swelling indicate deterioration. Particular attention should be paid to examining those hose surfaces nearest to high heat sources, such as the exhaust manifold.
Inspect the hose routing to assure that the hoses do not come in contact with any heat source, sharp edges or moving component which might cause heat damage or mechanical wear. Inspect all hose connections, such as clamps and couplings, to make sure they are secure, and that no leaks are present. Hoses should be replaced immediately if there is any evidence of deterioration or damage.

G0001457D-FOT

o Fuel hose, vapor hose and fuel filler cap

The fuel hose, vapor hose and fuel filler cap should be inspected at those intervals specified in the maintenance schedule. Make sure that a new fuel hose, vapor hose or fuel filler cap is correctly replaced. Consult your Hyundai dealer if you have any questions.

G0001467D-FOT

o Air cleaner filter

A genuine Hyundai part is recommended for replacement of the air cleaner filter.

G0001477D-FOT

o Drive belts

Inspect all drive belts (water pump and alternator) for evidence of cuts, cracks, excessive wear or oiliness, and replace if necessary. Drive belts should be checked periodically for proper tension and adjusted as necessary.

G0001487D-FOT

o Engine coolant

The coolant should be changed at those intervals specified in the Vehicle Maintenance Requirements Section.

G0001497D-FOT

o Manual transmission oil

Check manual transmission oil according to the maintenance schedule.

NOTE:
If the oil level is low, check for possible leaks before adding oil. Do not overfill.

G0001517D-FOT

o Brake fluid

Check brake fluid level in the brake fluid reservoir. The level should be between “L” and “H” marks on the side of the reservoir. Use only hydraulic brake fluid conforming SAE J706.

G0001507D-FOT

o Brake hoses and lines

Visually check for proper installation, chafing, cracks, deterioration and any leakage. Replace any deteriorated or damaged parts immediately.

G0001527D-FOT

o Brake drums and linings

Check for scoring, burning, leaking fluid, broken parts, and excessive wear.

G0001537D-FOT

o Brake pads, calipers and rotors

Check the pads for excessive wear, discs for run out and wear, and calipers for leaking fluid leakage.

G0001547D-FOT

o Parking brake

Inspect the parking brake system such as parking brake lever, cables, and so on. For detailed service procedures, refer to the Shop manual.

G0001557D-FOT

o Exhaust pipe connections, muffler and suspension bolts

Check the exhaust pipe, muffler, and suspension connections for looseness or damage.

G0001567D-FOT

o Steering gear box, linkage and boots

With the vehicle stopped and engine off, check for excessive free-play in the steering wheel. check the linkage for bends or damage. Check the dust boots and ball joints for deterioration, cracks, or damage. Replace any damaged parts.

G0001577D-FOT

o Wheel bearing grease

Check the wheel bearings and grease according to the maintenance schedule. For inspection procedures, see Shop Manual.

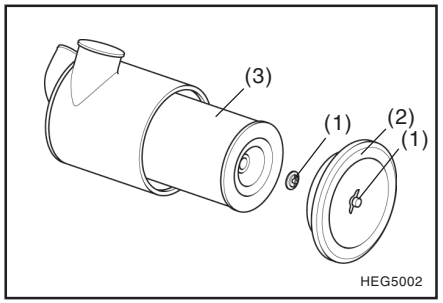
G280037D-FOT

PAPER ELEMENT TYPE AIR CLEANER MAINTENANCE

The air cleaner element should be cleaned or replaced when the dust indicator light in the cluster comes on.

G280047D-FOT

Removal and installation of element



1. Loosen the wing nut (1) and remove the cover (2) straight and withdraw the element (3).
2. Check the element for contamination. The cleaning procedure varies with the degree of contamination.
3. After cleaning, install by reversing the removal procedure.

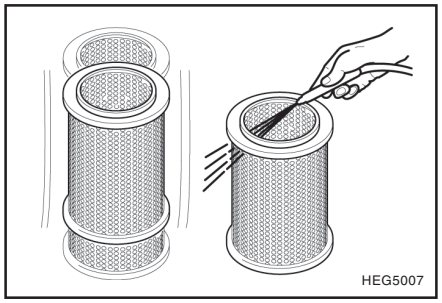
NOTE:
The inner element should be replaced when the outer element is replaced.
Note that the inner element is not washable.

CAUTION:
Make sure that the element and cover are securely installed. If they are loose, the cleaner will absorb dust and will fail to function properly.

G280067D-FOT

Cleaning of element

Dry dust buildup

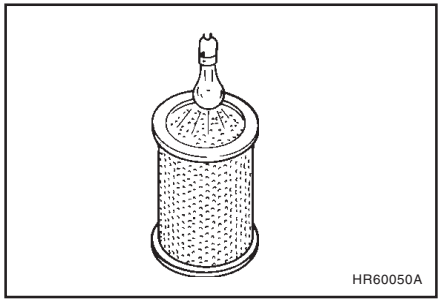


Blow clean compressed air evenly up and down from inside the element to loosen and remove the dust.

NOTE:
Do not strike the element or hit it against other object. Make sure that the pressure of the compressed air used for cleaning does not exceed 2 kgf/cm².

G280077D-FOT

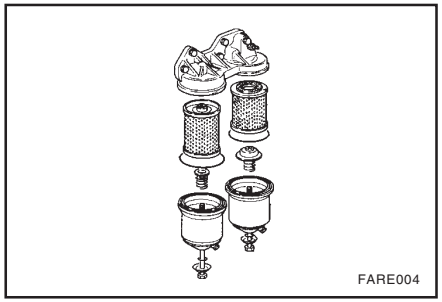
Checks to make after drying



Check the filter paper for damage, pinholes and thin portions. If a defective portion or broken packing is evident, replace the element with a new one.

G2607D-FOT

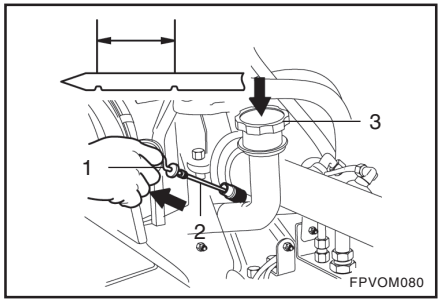
OIL FILTER



- The engine oil and filter should be changed at those intervals specified in the maintenance schedule. If the vehicle is being driven in severe conditions, more frequent oil and filter changes are required.
- If the filter is blocked the warning light is on and if the oil pressure is low the buzzer sounds at the same time. Replace it independent of the mileage.
- An element assembly cannot be reused.

G260137D-FOT

To check the oil filter



Position the vehicle on a level surface. The best time to check the oil level is before operating the engine or about 30 minutes after stop of engine. The checking procedure is as follows :

1. Wipe the level gauge (1) well with a cloth, insert it into the level gauge guide (2) and remove the gauge to check the oil level. The oil level should be between "FULL" and "LOW" inscribed lines.

CAUTION :
If the oil level is checked when the engine is stopped before sufficient rise of oil temperature, the detected level will be lower than the actual level, because some oil accumulation in the engine does not flow back into the oil pan.

2. If the level is low, add engine oil through the filler cap (3).
   After addition of engine oil, allow more than fifteen minutes and then recheck the oil level.
3. If badly contaminated engine oil is obvious when checking the oil level, replace the engine oil irrespective of the service intervals.

Replacement of filter type

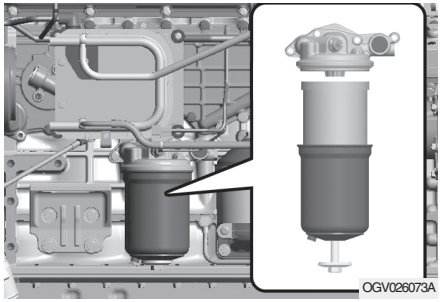
D6AB, D6AC, D6AV Engine

1. Put an empty container below the oil filter drain hose. Remove the air bleeding plug and drain the engine oil out.
2. Disassemble the case by pulling the center bolt on the oil filter out and remove the element.
3. Use the genuine parts when you assemble. Replace the element and rub packing of the case simultaneous. Apply engine oil on the rub packing before assembling. Tighten the center bolt with specified torque 5.5±0.5kg.m.
4. When you replace only the oil filter replenish the engine oil.
5. Crank the engine and check the oil leakage and the oil level later.

CAUTION:

Be very careful when draining the engine oil as it may be hot enough to burn you. Dropped oil may cause a fire. Wipe and clean each part in the engine room.

D6CB, D6CC Engine



1. Put an empty container below the oil filter drain hose. Remove the air bleeding plug and drain the engine oil out.
2. Disassemble the case by pulling the center bolt on the oil filter out and remove the element.
3. Use the genuine parts when you assemble. Replace the element and rub packing of the case simultaneous. Apply engine oil on the rub packing before assembling. Tighten the center bolt with specified torque 6~7kg.m.
4. When you replace only the oil filter replenish the engine oil.
5. Crank the engine and check the oil leakage and the oil level later.

CAUTION:

Be very careful when draining the engine oil as it may be hot enough to burn you. Dropped oil may cause a fire. Wipe and clean each part in the engine room.

NOTE:

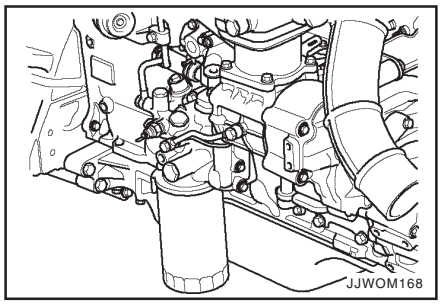
Always dispose of used engine oil in an environmentally acceptable manner. It is suggested that it be placed in a sealed container and taken to a service station for reclamation. Do not pour the oil on the ground or put it into the household trash.

WARNING:

Used motor oil may cause irritation or cancer of the skin if left in contact with the skin for prolonged periods of time. Although this will probably not be a concern unless you handle used oil on a regular basis, you should wash your hands with soap and warm water as soon as possible after handling used oil.

Replacement of cartridge type

D6DA Engine



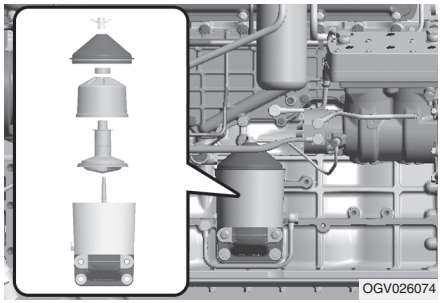
If the filter is blocked, the warning light is on when the RPM is high.
Replace it independent of the mileage.
If the oil pressure decreases the warning light also is on ant the buzzer sounds simultaneous. But the parking brake is applied on it does not sound.

1. Put an empty container below the oil filter and remove the drain plug. Drain the engine oil out.
2. When the draining is finished pull the oil filter out with a wrench.
3. Use the genuine parts when you assemble. Assemble the rub packing on top of the filter after applying the engine oil on.
4. When you replace the oil filter replenish the engine oil.
5. Start your engine. Check whether the oil leaks. The checking should be done before driving and after.

CAUTION:

Split oil may cause a fire. Wipe and clean each part in the engine room. Never reuse the filter assembly.

CENTRIFUGAL TYPE BY PASS FILTER INSPECTION (IF EQUIPPED)



1. Remove accumulated sediment inside the cover of centrifugal type when replacing the engine oil filter.
2. Using the proper cleaning solution, clean the rotor components.

WARNING:

- **There is the danger of a fire if the vehicle is driven with oil spread over engine compartment.**
  Be sure to wipe it clean.

CAUTION:

- **Be sure to replace the oil filter with genuine Hyundai parts when replacing it.**
- **Improper oil filter installation may cause damage to engine oil leaks.**

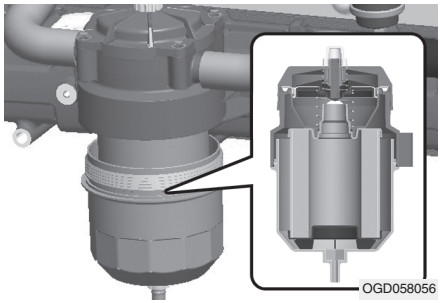
OIL CLEANER FILTER (IF EQUIPPED)

1. Turn the T bolt of T-R oil cleaner counter-clockwise to open it.
2. Remove the cap of T bolt and lift up the element after taking the element band.
3. Replace it with a new element.
4. Tighten the T bolt to the 5.5 ± 0.5 kg.m.
5. Add the oil 2.5 liter.
6. Start the engine and check for oil leaks.

NOTE:

Do not reuse the element. Refer to the label for maintenance interval.

CCV(CLOSED CRANKCASE VENTILATION) FILTER (IF EQUIPPED)



This is the device for re-circulating the blow-by gas generated from the engine to the intake side.

After oil warning lamp is turned on, check the indicator located upper side of the CCV. If the indicator is protruded upside, replace the CCV filter.

CAUTION:

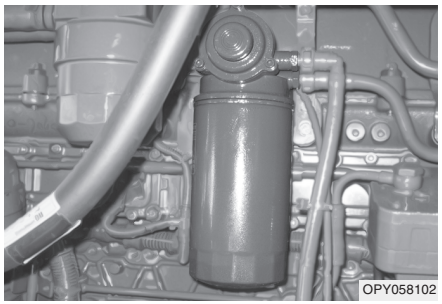
- **When oil pressure is lack, warning lamp and buzzer will work simultaneously.**
- **After replacing filter element, press the indicator to reset.**

WARNING:

- **Be careful not to burn yourself due to hot oil and wear the safety goggle and glove.**
- **There is the danger of a fire if the vehicle is driven with oil spread over engine compartment. Be sure to wipe it off.**
- **Use only genuine oil filter. Using unauthorized oil filter may cause damages to engine.**

FUEL FILTER

Replacement



Do not reuse the fuel filter element after cleaning it.

1. Separate the fuel filter cartridge by turning it counterclockwise. Use a filter wrench to loosen it.
2. Apply engine oil to the bowl slightly when assembling it and tighten it to 3/4~1 turn (4.2~4.6kgf.m).
3. Perform air bleeding.
4. Check fuel for leaks or not after starting the engine.

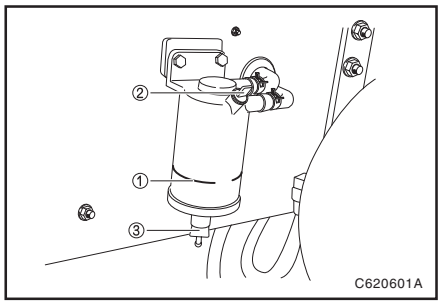
CAUTION:

- **Wipe off fuel to protect the danger of a fire in case fuel overflows.**
- **When replacing the fuel filter, do not spill off the fuel on the floor for the protection of environment.**

G300A02O-GAT

WATER SEPARATOR

Removal of water from the water separator (D6AB,D6AC,D6AV,D6CA,D6CB Engine)



Loosen the drain plug and remove the condensate before the float reaches the redline (1).

CAUTION:

If the water accumulated in the water separator is not drained at proper times, damages to the major parts such as pump priming plunger can be caused by water permeation in the fuel filter.

To remove, proceed as follows:

1. Loosen the air vent plug (2) at the upper part of the water separator.
2. Loosen the drain plug (3) at the bottom of the water separator.
3. Drain the water.
4. After the float has come down, tighten the drain plug at the bottom of the water separator.
5. Tighten the air vent plug.
6. Wipe the water separator and surrounding parts clean.
7. Check for fuel leaks.

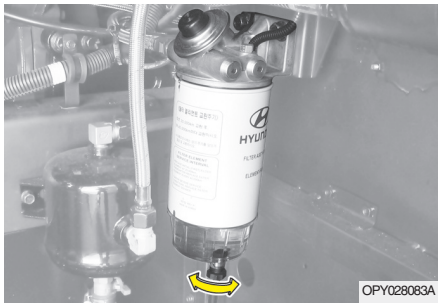
NOTE:

It is recommended that water accumulated in the water separator should be removed by an authorized Hyundai dealer.

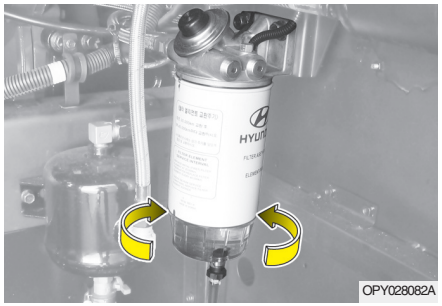
WARNING:

Be sure to carefully wipe away any water drained out in this manner, because the fuel mixed in the water might be ignited and result in a fire.

Replacement (D6CC Engine)



Do not reuse the water separator after cleaning it. Be sure to follow the prescribed maintenance interval of fuel filter. If you don't follow it, there may cause damage to engine.
Replace the water separator at initial 20,000km and replace it at every 40,000km. Even if it is within maintenance interval, be sure to replace the fuel filter element when the engine check lamp blinks since the element may be contaminated earlier than maintenance interval according to the conditions or circumstances of vehicle. The engine power is limited to protect the engine fuel system when the vehicle is operated with the warning lamp blinked for five hours or more.

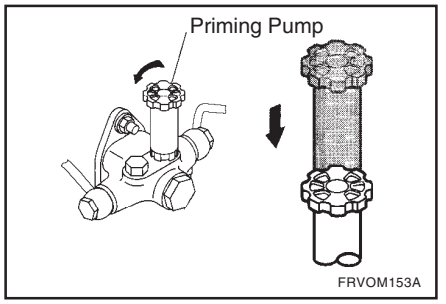


1. Separate the bowl by turning it counter-clockwise. Use a filter wrench to loosen it.
2. Apply new oil to the bowl slightly when assembling it and install the gasket on seal surface of head and tighten it to 3/4~1 turn (1.68~1.86kgf.m).
3. Perform air bleeding.
4. Check fuel for leaks or not after starting the engine.

CAUTION:
- **Wipe off the fuel to protect the danger of a fire in case fuel overflows.**
- **Be sure to follow the maintenance interval of fuel filter.**

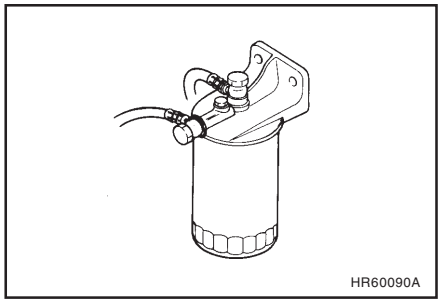
G311107D-FOT

BLEED OF FUEL FILTER
D6AB, D6AC, D6AV engine



If the engine stops by being used up fuel, cleaning the fuel system or changing the fuel filter the engine does not start through fuel is replenished due to be come air into the fuel system.
Air should be removed from the fuel system to make it start your engine.

Bleed air by the following procedure.
1. Loosen the air bent cock on the top of the fuel filter.


HR60090A

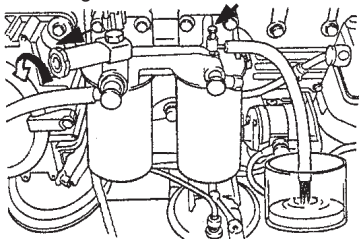
2. Turn the priming pump counterclockwise with pressing down and then the pump piston is pushed out by a spring.
3. Operate the priming pump until the fuel without air bubble flow out.
4. Tighten the air bent cock and fix the pump piston by turning clockwise with pressing down.
5. Start the engine and check for fuel leaks.

G311058A-FOT

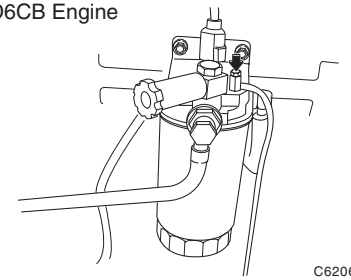
D6CA, D6CB engine

If the engine stops by being used up fuel

■ D6CA Engine


MA263000

■ D6CB Engine


C620602A

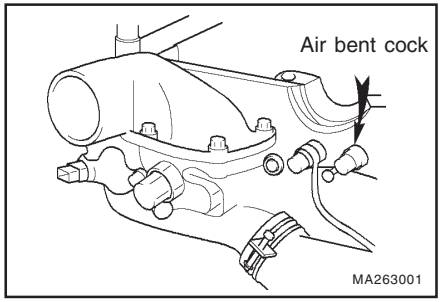
1. Do the above instruction 1 to 3 of the bleeding air from the fuel system.
2. Rock the air bent cock on the top of the fuel filter.
3. Open the air bent cock front of the cylinder head and have the priming pump worked. Rock the air bent cock of the cylinder head side if air is removed completely.
4. Crank the engine. Do the cranking several times for an enough time 10-15 seconds till the engine is running.

CAUTION:

As it cause the starter motor to overstrain to do cranking for a long time, do not exceed 15 seconds in the sequence cranking. Notice that there is a surplus time about 30 seconds from cranking to cranking in order not to overheat the starter motor.

5. After running the engine waits for the engine to be stable by keeping the revolution of the engine about 1,000 rpm.

If you replace a cartridge of the fuel filter



Do not necessary to bleed air from the cylinder head in replacing the fuel filter.
Usually the engine starts by once of cranking.

NOTE:
In replacing the cartridge if you install the fuel filter with the fuel filled up.
You can shorten the pumping time.

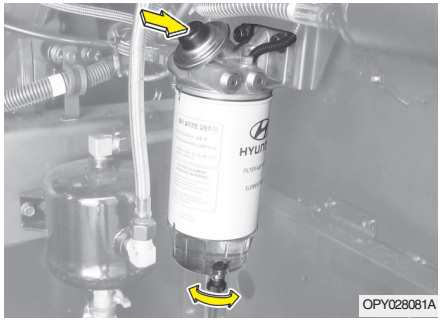
CAUTION:
- **As the new EUI system is applied to D6CA engine and the injector is installed inside of the cylinder head, there is remaining air in the injector after bleeding air from the fuel filter. Thus to remove remaining air, it is necessary to do enough the cranking after the bleeding.**
- **If the bleeding is finished normally there is no problem to start the engine by enough the cranking.**
- **Leakage of fuel could cause a fire. Wipe and clean leaked fuel.**

D6CC Engine

In case fuel in fuel line is exhausted and the engine stalls, the engine may not start even though fuel is refilled up after servicing fuel line or replacing fuel filter. In this case, since there is the air in fuel system, be sure to bleed air as follows.

CAUTION:
- **Keep sparks or open flames away when servicing.**
- **Before performing the air bleeding, clean out the air vent and around it.**
- **After air bleeding, start the engine and check if the fuel is leaked.**
- **After completing the air bleeding, perform the engine cranking 3~5 times at every 10~15 seconds. (Wait 30 seconds from one cranking to the next cranking to prevent the start motor from being overheated.)**

Air bleeding from the water separator



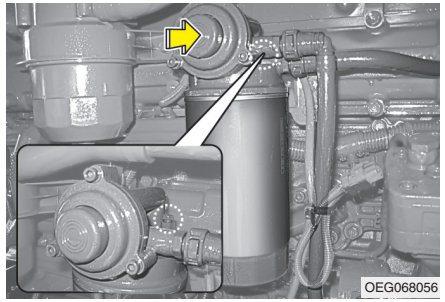
1. Loosen the plug for air bleeding of fuel filter with a hexagonal wrench.(One turn or so)
2. Cover the shop towel around the plug for air bleeding and repeat to operate priming pump until the air bubble in the fuel does not come out.
3. Tighten the plug for air bleeding securely.

❊ When replacing the fuel filter cartridge with new one, it is not required to perform the air bleeding from water separator.

CAUTION:

- **Check if there is any fuel leak around the plug for air bleeding or the fuel filter.**
- **Wipe any fuel spread over around off.**
- **Keep sparks or open flames away when servicing.**

Air bleeding from the fuel filter

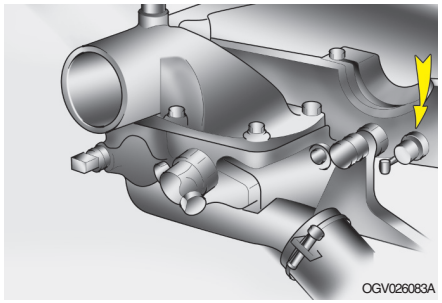


1. Loosen the air vent bolt a little.
2. Place a proper vessel under the rubber tube installed at the air bleeding plug.
3. Operate the priming pump repeatedly until air is not bleeding from the fuel.
4. After air is completely removed from the fuel, tighten the air vent bolt.

CAUTION:

- **Check if any fuel is leaked from the air bleeding plug or the fuel filter.**
- **Wipe any fuel spread over around off.**
- **Keep sparks or open flames away when servicing.**

Air bleeding from the cylinder head



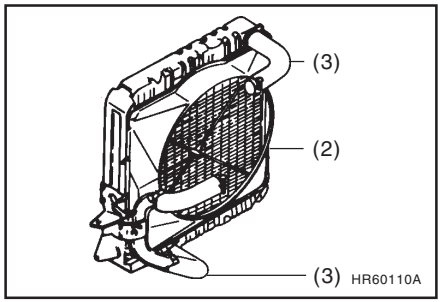
1. Loosen the air vent cock a little.
2. Place a proper vessel under the rubber tube installed at the air bleeding plug.
3. Operate the priming pump installed at the fuel filter head repeatedly until air is not bleeding from the fuel.
4. After air is completely removed from the fuel, tighten the air vent bolt.

❊ When replacing the fuel filter cartridge only, it is not required to perform the air bleeding from the cylinder head.

CAUTION:
- **Check if any fuel is leaked from the air bleeding plug or the fuel filter.**
- **Wipe any fuel spread over around off.**
- **Keep sparks or open flames away when servicing.**

G251157D-FOT

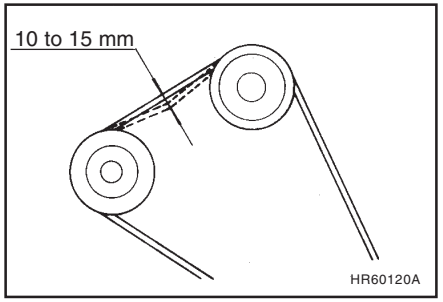
CHECK RADIATOR AND RADIATOR HOSE



Check the radiator (2), radiator hose (3), etc. for water leaks.
Check for the traces of water leaks on the ground where the vehicle has been parked. If there are water leaks in the cooling system, take the vehicle to the nearest service shop for service.

G255037D-FOT

V-BELT LOOSENESS AND DAMAGE



When the V-belt is pressed down at the middle with a force of about 10 kgf (98 N).

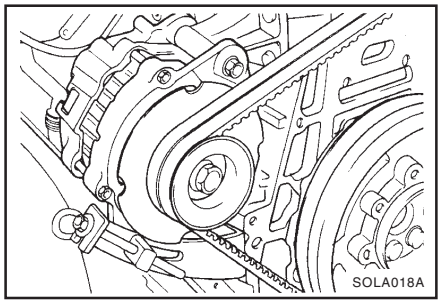
To adjust tension, refer to the table.

D6DA	5-15 mm
D6AB, D6AC,	20-25 mm (New)
D6CA	25-30 mm (Readjust)

Adjust tension 55 kgf for D6CA in case of new and readjust 40 kgf.

G371247D-FOT

Adjustable Generator Freeplay



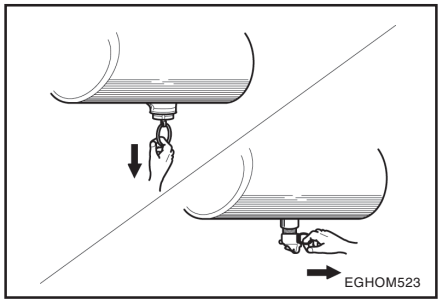
Slightly loosen the generator attaching bolts and adjust by moving the whole generator.

CAUTION:

- **After adjustment, tighten the bolts and nuts firmly. Over tension will cause damage to the V-belt and bearing.**
- **Make sure that the V-belt is not fouled with oil or grease. Oil or grease will cause the belt to slip and will shorten its life.**
- **When a V-belt is defective, make sure that the two V-belts are replaced as a set.**

G0001587D-FOT

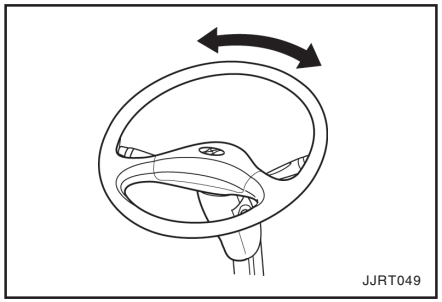
REMOVAL OF CONDENSATE WATER FROM AIR TANK



Open all drain cocks to remove the water collected in the air tank.

G563057D-FOT

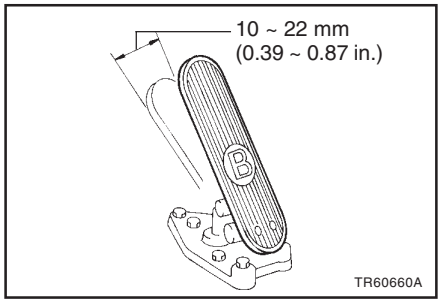
STEERING WHEEL FREE PLAY



Lightly rock steering wheel at the center position to check for free play. If the free play exceeds 15 to 35 mm, have the steering wheel adjusted by an authorized Hyundai dealer.

G580137D-FOT

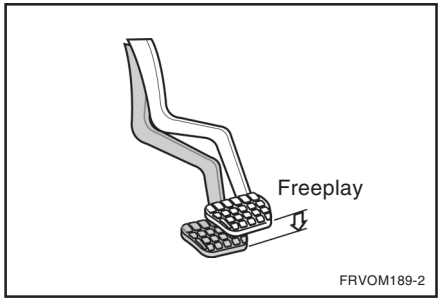
CHECKING BRAKE PEDAL FREE PLAY



Check the pedal free play by depressing the pedal with finger.
The pedal free play is the stroke made by the pedal moves until you feel a change in resistance.
This is the brake pedal free play. The freeplay should be within the limits specified in the illustration below. If it is not, have it inspected by an authorized Hyundai dealer and adjusted or repaired if necessary.

G414067D-FOT

CLUTCH PEDAL PLAY

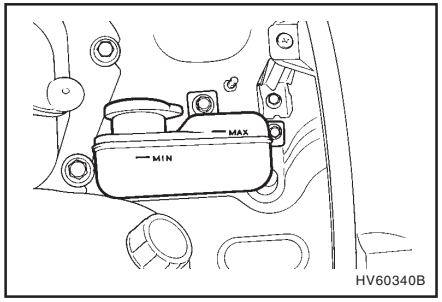


With the engine off, press lightly on the clutch pedal until you feel a change in resistance. This is the clutch pedal free-play. The play should be 3 ~ 8 mm. If it is not, have it inspected by an authorized Hyundai dealer and adjusted or repaired if necessary.

CAUTION:
A special care must be taken because the vehicle can be started suddenly if the clearance is too small.

G414067E-FOT

CLUTCH FLUID



1. Open reservoir tank cap and check that the level on the reservoir is between MAX and MIN.
2. Add clutch fluid if necessary.

CAUTION:

- **Do not add clutch fluid to bring it up to the upper position (MAX position).**
- **Be careful that dust etc. does not get into the reservoir tank when adding.**
- **Do not pour the clutch fluid around when adding. If the clutch fluid is poured around, it may cause damage to other parts. Wipe it off thoroughly with dry and clean cloth.**
- **Have the clutch system checked by Hyundai dealer for clutch fluid leaks if the level of clutch fluid is excessively low.**
- **Observe proper safety regulation when handling clutch fluid as clutch fluid is harmful to human body.**
- **When filling the clutch fluid, do not mix the clutch fluid with the other company's one.**

G580147D-FOT

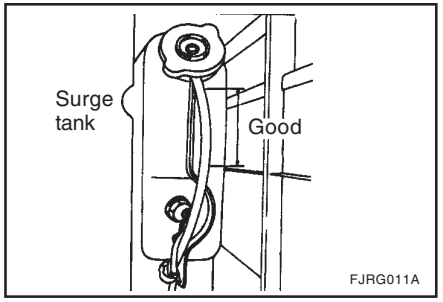
CHECKING THE BRAKES

CAUTION:

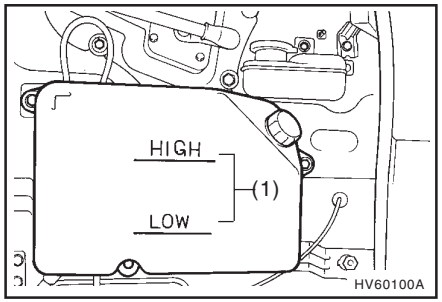
Because brakes are essential to the safe operation of the vehicle, it is suggested that they be checked and inspected by an authorized Hyundai dealer. The brakes should be checked and inspected for wear at those intervals specified in the vehicle maintenance schedule in Section 6.

G251147D-FOT

COOLANT LEVEL AND LEAKS IN COOLING SYSTEM



If lamp is illuminated add the coolant after removing the surge tank cap at first.



Check reservoir tank for the coolant level. The coolant level should be with in the range (1) shown in the illustration. If the level is low, add coolant by reference to "Replacement of coolant".

CAUTION :

- **Check the coolant level before vehicle operation while the engine is cold.**
- **After checking the coolant level, be sure to reinstall the cap positively.**
- **Be sure to add the coolant containing anti-rust or anti-freeze of the same concentration as the coolant in the cooling system.**
- **Do not check the coolant level after the engine has been stopped. Be sure to check the level when the coolant temperature is low.**

G251167D-FOT

Checking and changing the engine coolant

WARNING:

Do not remove the surge tank cap when the engine is hot. When the engine is hot, the coolant is under pressure and may erupt through the opening if the cap is removed. You could be seriously burned if you do not observe this precaution.

Do not remove the surge tank cap until the radiator is cool to the touch.

G251078A-FOT

Handling of cooling system

Engine overheating is caused by the low coolant level or rust and scale accumulations in the cooling system. If the radiator clogs very badly or coolant is very dirty, perform cleaning and coolant replacement as described below. If the coolant level is low, add coolant as necessary.

G251088A-FOT

Replacement of coolant

If the radiator clogs badly or coolant becomes dirty, replace coolant immediately regardless of the specified replacement intervals. In making this kind of replacement, be sure to clean the cooling system by the procedure shown in "Cleaning method".

G251098A-FOT

Cleaning method

Run the engine at idle to heat the coolant to 90°C or higher. Then clean by the following procedure.

1. Open the radiator and engine drain cocks to drain the coolant.
2. After complete draining, close each drain cock and fill the system with city water.
3. Close the drain cocks and fill the system with city water. Run the engine for a while and drain the system.
   Repeat this operation until a colorless, transparent water flows out from the drain cock.
4. Fill the radiator with city water containing genuine anti-rust "RADIPET 9" or genuine anti-freeze at a specified concentration. Run the engine until the coolant is heated to the temperature (90°C) at which the thermostat opens, and bleed air thoroughly from the cooling system.
5. Stop the engine and make sure that the coolant is at the proper level. If the coolant level is low, add city water.

CAUTION:

When the cooling system is cleaned, the coolant or cleaning solution is drained at elevated temperature. Therefore, be careful not to get scalded.

G251058A-FOT

Addition of coolant

If the warning lamp lights when the starter switch is set to "ON", the coolant level is low. Note that the procedure for adding coolant varies according to the type of the engine cooling system on vehicle.

Use city water as coolant and add anti-rust or anti-freeze to have a specified concentration for prevention of engine or cooling system corrosion.

Do not use hard water from well river etc..

G251178A-FOT

Antifreeze

Select proper concentration between 30 and 53% by reference to the table shown below.

Atmosphere temperature (°C)	Antifreeze fluid (%)	Coolant (%)
-10	30	70
-15	36	64
-20	42	58
-25	45	55
-30	50	50
-35	53	47

CAUTION :

- **Be sure to use anti-freeze at the concentration most appropriate for the atmospheric temperature within a range from 30 to 53%. If the concentration is below 30%, the anti-corrosion property will be adversely affected. If the concentration is above 53%, the anti-freeze property will decrease and engine overheating will also be caused. Use anti-freeze at the specified concentration.**
- **If winter is over, be sure to drain the coolant containing antifreeze and put in genuine anti-rust "RADIPET 9".**

G580187D-FOT

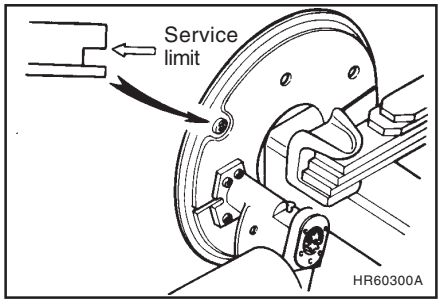
ADJUSTMENT OF BRAKE SHOE CLEARANCE

G580197D-FOT

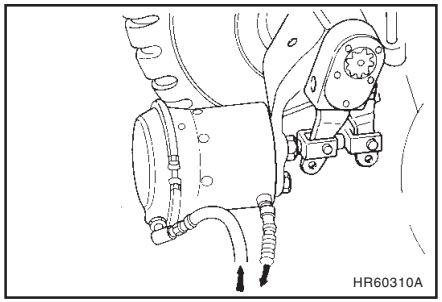
If the brake linings are worn and the clearance between the brake drum and linings (brake shoe clearance) increases, it can be dangerous because the brake performance deteriorates. Check and adjust the brake shoe clearance at regular intervals.

o The brake shoe clearance should be determined on the basis of the stroke of the brake chamber push rod. If the push rod stroke exceeds 40 mm (1.57 in.) on the front wheels or 50 mm (1.97 in.) on the rear wheels when the brake pedal is depressed all the way, adjust the clearance.

1. Apply chocks to the tires before the wheel to be adjusted is jacked up.
2. Strongly push the outer periphery of tire to check for wheel looseness. If the wheel is loose, it cannot be correctly adjusted. Take the vehicle to your nearest service shop for correction.
3. Start the engine to increase the compressed air pressure to more than 6.4 kgf/cm² (625 kPa). Leave the engine running at idle.
4. Release the parking brake.



5. Remove the dust cap from the wheel brake inspection hole and check the lining thickness.
   If the lining is worn down to the notch shown in illustration, it is worn beyond the service limit. Have your nearest service shop replace the linings. Make sure that the dust cap is reinstalled after inspection.
6. Turn the worm shaft of the slack adjuster in the direction that the push rod extends until the worm shaft touches the stopper.
7. Back off the worm shaft 3 or 4 notches on the front wheels or 4 or 5 notches on the rear wheels.
   The notches are indicated by the clocks the worm shaft makes when turned.



8. Measure the stroke made by the push rod of the brake chamber when the brake pedal is depressed all the way. Verify that the stroke is up to specifications given in the following table if it is out of specification, adjust with the worm shaft.

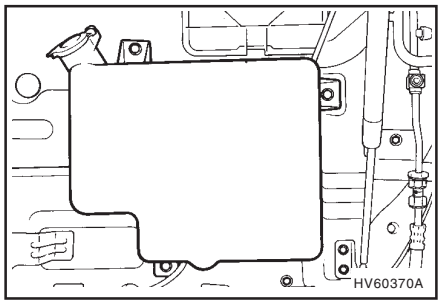
Standard stroke of brake chamber push rod

Front wheel	25 mm (0.98 in.)
Rear wheel	30 mm (1.18 in.)

9. Turn the wheel in the forward direction by hand and depress the brake pedal to stop rotation of the wheel. Turn the wheel to check for dragging. With slight foot pressure on the brake pedal, turn each wheel by hand to check that the front wheels are slightly lighter to turn than the rear wheels or there is not great difference and that right and left wheels are about equal.
10. As a final step, install the dust plug. Operate the vehicle at a slow speed and perform brake tests to check for brake performance, uneven braking and other troubles.

G981057D-FOT

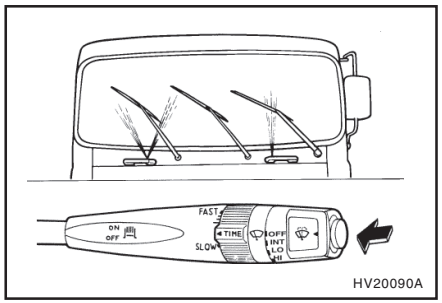
WINDSHIELD WASHER FLUID LEVEL



Check to ensure that windshield washer fluid is at a proper level.

G981067D-FOT

Operation of wipers



HV20090A

- o Push the knob to check that the windshield washer fluid is sprayed at the correct position.
- o Turn the lever and check the wipers for proper operation.

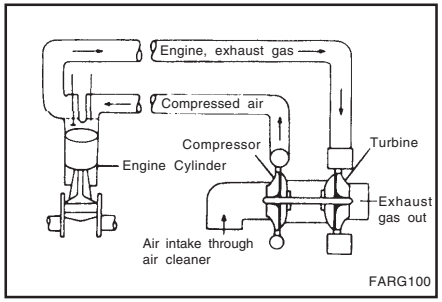
NOTE:

Be sure to operate the windshield washer before the wipers are operated.
Do not operate the wipers on dry glass. This can result in more rapid wear of the wiper blades and may scratch the glass.

C2827D-FOT

TURBOCHARGER

Principle of turbo charger operation

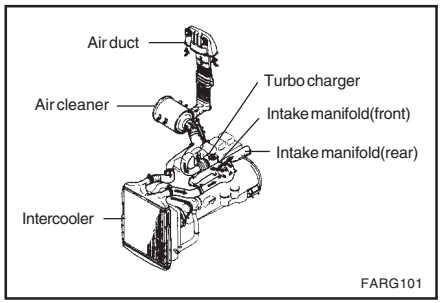


FARG100

Turbo engine is a device that produces more power by supplying sufficient air into the combustion chamber by using the energy of exhaust gas is usually wasted in the general engine.
The exhaust gases are accelerated in the turbine housing and directed onto the turbine wheel to turn it.
This spins the compressor wheel, which results in the intake air being forced into the engine cylinders.
As the intercooler is installed that improves the fuel economy and power of the engine, while reducing harmful exhaust gases to a minimum.

C2728D-FOT

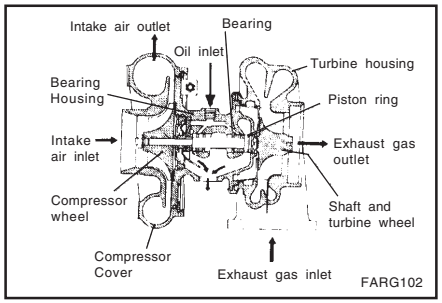
Intercooler



FARG101

The intake air compressed by the turbocharger increases to 170°C and as a result, power of the engine is limited by engine overheated.
The intercooler cools the heat. This improves the combustion efficiency and as a result, it increases that the fuel economy and power of the engine, while reducing harmful exhaust.

Precautions while operating



1. **Check the oil level and oil pressure**
   Before starting the engine, measure the crankcase oil level. As soon as the engine starts, check oil pressure indicator for normal rise.
2. **Warm the engine up**
   After the engine starts, avoid sudden acceleration or sudden start.
   Enough RPM is needed before starting engine until the engine is warm for 3 to 10 minutes.
3. **No staring suddenly and No accelerating heavily**
   If you accelerate heavily, start suddenly or when you turn off the engine suddenly it may damage to the engine and turbocharger parts.

CAUTION:

- **If running a vehicle without air cleaner filter, foreign material drawn can destroy engine and turbo charger.**
- **When you turn off an engine suddenly may damage bearing, hi-speed rotation part of turbo charger inside, so let the engine run at idle for sufficient time.**

HOW TO CHECK THE VEHICLE EQUIPPED WITH EGR (EXHAUST GAS RECIRCULATION) SYSTEM

EGR(Exhaust Gas Recirculation) system is the device that re-circulates the exhaust gas exhausted from the engine after combustion to the combustion chamber. The exhaust gas will be cooled by passing through the water-cooled type EGR cooler and it will be mixed with the intake air. It can remarkably reduce the amount of the nitrogen oxide emission comparing with general engines.

- How to handle the vehicle equipped with EGR system.
  - Failures of the EGR system are mainly caused by lack of coolant, severe incompliant from outside or service incompliant to instruction for changing parts.
  - If the vehicle is driven under lacking of coolant or with the engine overheat warning lamp on, the inside of the EGR cooler or all engine may lead to damages.
  - When coolant is lack or engine is overheated, please contact the authorized Hyundai dealer to check and remedy.
- How to check the vehicle equipped with EGR system.
  - When checking, be careful not to step on the EGR valve or EGR cooler.

CAUTION:
During driving a car, from the below reasons, Engine check indicator (CHECK) or Engine overheat warning indicator ( ) appears on the cluster with low power, immediately check or repair your car at near service center managed by Hyundai or service cooperator.
- **o High temperature of water from engine overheat.**
- **o The defect of EGR regarding equipment.**
- **o Problem with fuel support pressure.**

G210A01A-AAT

BATTERY

WARNING:
Batteries can be dangerous! When working with batteries, carefully observe the following precautions to avoid serious injuries.

The fluid in the battery contains a strong solution of sulfuric acid, which is poisonous and highly corrosive. Be careful not to spill it on yourself or the vehicle. If you do spill battery fluid on yourself, immediately do the following:

- o If battery fluid is on your skin, flush the affected areas with water for at least 15 minutes and then seek medical assistance.
- o If battery fluid is in your eyes, rinse out your eyes with water and get medical assistance as soon as possible. While you are being driven to get medical assistance, continue to rinse your eyes by using a sponge or soft cloth saturated with water.
- o If you swallow battery fluid, drink a large quantity of water or milk followed by milk of magnesia, eat a raw egg or drink vegetable oil. Get medical assistance as soon as possible.

While batteries are being charged (either by a battery charger or by the vehicle's alternator), they produce explosive gases. Always observe these warnings to prevent injuries from occurring:

- o Charge batteries only in a well ventilated area.
- o Do not permit flames, sparks or smoking in the area.
- o Keep children away from the area.

G210B01Y-GAT

Checking the battery

Keep the battery clean. Any evidence of corrosion around the battery posts or terminals should be removed using a solution of household baking soda and warm water. After the battery terminals are dry, cover them with a light coating of grease.

WARNING:

Always read the following instructions carefully when handling a battery.

Keep lighted cigarettes and all other flames or sparks away from the battery.

Hydrogen, which is a highly combustible gas, is always present in battery cells and may explode if ignited.

Keep batteries out of the reach of children because batteries contain highly corrosive SULFURIC ACID. Do not allow battery acid to contact your skin, eyes, clothing or paint finish.

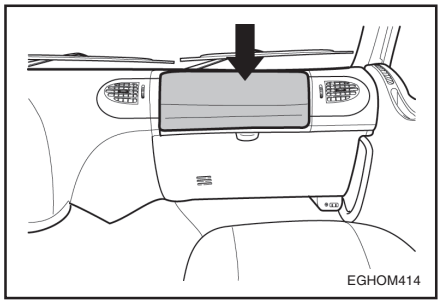
If any electrolyte gets into your eyes, flush your eyes with clean water for at least 15 minutes and get immediate medical attention.
If possible, continue to apply water with a sponge or cloth until medical attention is received.
If electrolyte gets on your skin, thoroughly wash the contacted area.
If you feel a pain or a burning sensation, get medical attention immediately.

Wear eye protection when charging or working near a battery.
Always provide ventilation when working in an enclosed space.

- **Never attempt to charge the battery when the battery cables are connected.**
- **The electrical ignition system works with high voltage.**
  Never touch these components with the engine running or the ignition switched on.

G911047D-FOT

REPLACEMENT OF FUSE



If the electrical system is out of order, open the cover and check for a blown fuse in the following sequence.

1. Open the cover.
2. Remove the circuit checker from the reverse side of the cover.
3. Insert the female terminal of the circuit checker into "CHECKER" ground terminal and touch the male terminal to the fuse top surface.
4. If the lamp lights, the fuse is good.
   The headlamp circuit should be checked with the head light switch at ≡D lighting position.
5. Replace the defective fuse.

CAUTION:

- **Use of a fuse out of specification or wire could be dangerous. Be sure not to use a substitute fuse. Make sure that a blown fuse is replaced with a genuine fuse.**
- **If a defective point cannot be located, have inspection made at your nearest service shop.**
- **Do not pour water over the relay and fuse box. Do not put your foot on the box or kick it. When the inside of the cab was cleaned with water, remove the water completely through the drain hole in the floor and then tilt the cab.**

NOTE:

Inside the cover, you can find the fuse label describing fuse name and capacity.

G941837D-FOT

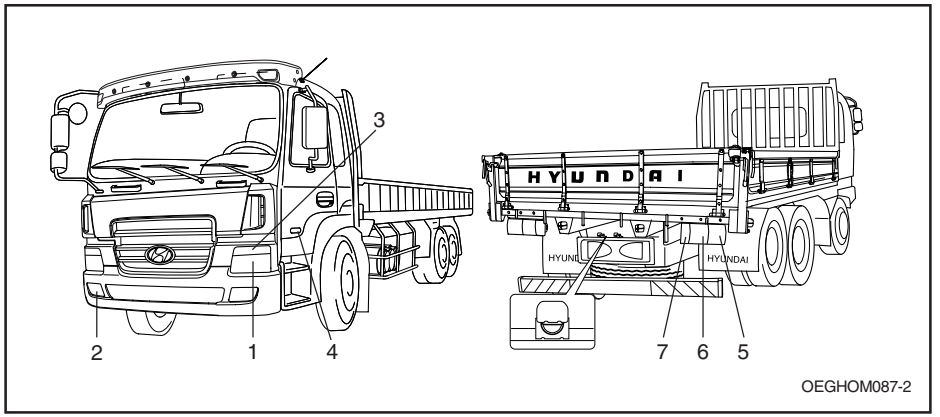
REPLACING LIGHT BULBS

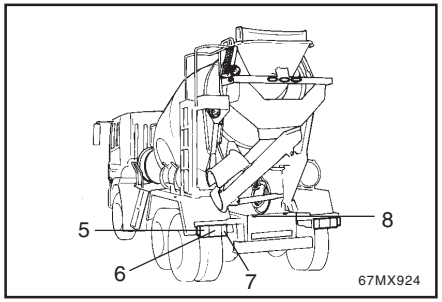
Before attempting to replace a light bulb, be sure the switch is turned to the "OFF" position and place the ignition switch in the "LOCK" position. Be sure to replace the burned-out bulb with one of the same number and wattage rating.

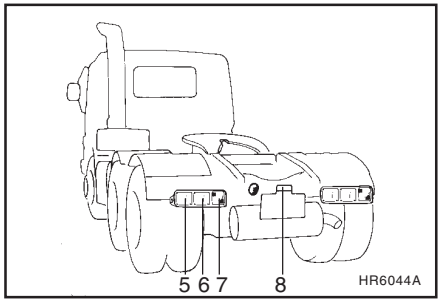
G0001587D-FOT

Outside the vehicle

Lamp Name	Wattage
1. Head lamp	70/70
2. Fog lamp	70
3. Turn signal lamp	21
4. Side turn signal lamp	21
5. Turnsignal lamp	21
6. Tail/Stop lamp	5/21
7. Backup lamp	21
8. License lamp	5







F3920055-FOT

CENTRALIZED LUBRICATION SYSTEM (If equipped)

C.L.S(Centralized Lubrication System) is the device to lubricate a proper quantity of grease into all major chassis parts(except propeller shaft) automatically at regular interval of time through an exclusive lubrication pipe with a control unit during driving.

Inspecting & Replenishing Grease

Pour grease to the MAX remarked on the reservoir tank.

- o Inspect or add grease every 2 months
- o Recommended grease : NGL 100,000

CAUTION:

- **o When the grease is poured into the reservoir tank it must be a pure thing.**
- **o Replenish grease through the exclusive lubrication inlet to avoid entering foreign material.**

NOTE:

- **o Lubricate manually with pressing the manual lubrication switch beside the timer as required especially in rainy time or after washing a vehicle.**
- **o Lubricating interval has specified 6 hour when the vehicle is delivered. Do not necessary to adjust again.**

CLS Inspection

1. Pour grease into the reservoir tank. Turn the ignition key to the ON position and push the manual button.
2. Check the operating condition of the pump. If it is normal open a plug on the end of the fractionators. The pump should be operated continuously until the grease is flowed.
3. Turn the main switch off after bleeding air completely from the main pipe and then lock the plug.
4. Turn the battery switch on for 15 seconds and off for 5 repeatedly and then check whether the grease lubricates.
5. Check the indicator lamp is off when the pump is operated.

CAUTION:

Do this procedure once a day before driving.

NOTE:

- **o The auto grease indicator light is turned on at the same time with operation of the pump, and after 3 seconds the light is off. The pump is operated for 154 seconds at one time.**
- **o If the auto grease indicator light is illuminated continuously even after 3 seconds there is a malfunction in the CSL. Have the CLS inspected and repaired by an authorized Hyundai dealer.**

CAUTION:

- **o Turn the main switch off after having the pump worked for 154 seconds although the lamp is off after 3 seconds normally.**
- **o Inspect the tightening condition of leakage of the conjunction part and grease line.**

Management of CLS

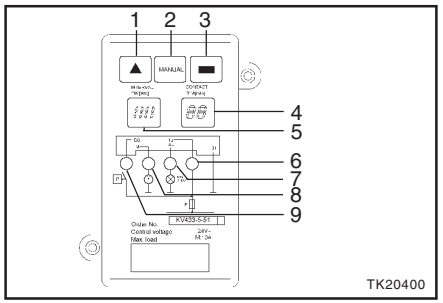
- o Check that there is the grease lubricated at a necessary part around the refueling hole and leaking grease at connecting part of the lubricator and fractionators, periodically.
- o Wash the grease container with benzene or mineral oil. Never use trichloroethylene or equivalent solvent.
- o Maintain the main switch is OFF when the vehicle is not working for a long time.
- o If you work the CLS when the tank is empty, it may be damaged. Inspect frequently.

G3920055-FOT

AUTO GREASE LUBRICATION SYSTEM (If equipped)

Liquid grease (kumho)

Proper lubrication is automatically provided by the electric gear pump and control unit of the piston fractionator. If lubrication quantity is small or excessive, check time of the control unit and adjust as required.



- ▲ Lubrication time adjustment switch
- MANUAL Manual motor switch
- ▬ Motor operation time adjustment switch
- 88 Lubrication time indication lamp
- 88 Motor revolution indication lamp
- 6 Power supply confirmation lamp (turned off in case of low voltage (DC 15V and less))
- 7 LS indicator lamp
- 8 Illuminated while motor is operating.
- 9 Pressure sensing lamp

▲ **Adjusting lubrication time**
(Maintain the established value when a vehicle is delivered)

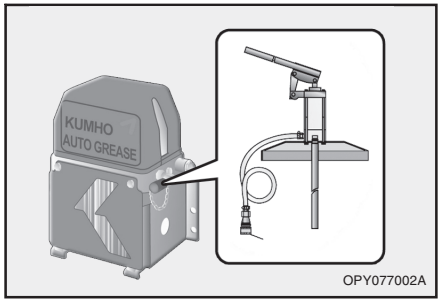
- o Adjust time of pouring grease
- o Lubrication time : 0.5-1.0-1.5 ~ 9.0-9.5-10 ~ 24 (In case of 10 or less, it consists of 34 sections by 30 minutes)
- o When pressing down the lubrication time adjustment method switch ▲ once, 88 4 lamp shows lubrication time and 88 5 lamp shows motor operation.
  Whenever pressing down, 88 4 lamp shows the established period in ascending powers. (When pressing down in succession, it shows three times per a second automatically in ascending powers.)

▬ **Motor operation time is established 2.5 minutes when a vehicle is delivered.**
(None can't control except the manufacturer.)

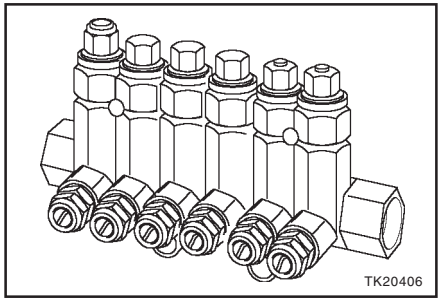
MANUAL **Manual function:**
When pressing down this switch, lubrication is occurred. (When the motor stops, accumulated time returns to first, After it works, motor operation time is accumulated.)

G3920155-FOT

Replenishing grease & bleeding air



- o Pour grease to the "MAX" position of the storage container using a specified tool.
- o When bleeding air, perform following procedures.
  1. After replenishing grease, turn on the main switch.
  2. Press down the manual control switch and operate the pump.
  3. Open the plug of the fractionator end part and bleed air from the main pipe until the grease is flowed.
  4. Turn the main switch off and then lock plug of it.

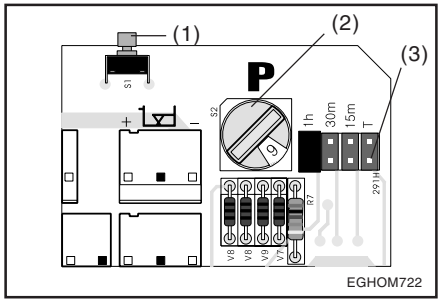


CAUTION:

- **o Check the grease container often and maintain the grease quantity not to be under the "MIN" position of it.**
- **o When pouring the grease, be careful water, dust, foreign material and soon not to enter the container and pump.**
- **o Check that there is the grease lubricated at a necessary part around the refueling hole and leaking grease at connecting part of the lubricator and fractionator, periodically.**
- **o Wash the grease container with benzene or mineral oil. Never use trichloroethylene or equivalent solvent.**
- **o When it raining or after washing, lubricate manually as required.**
- **o If any problem is occurs in the system of a lamp and instrument lamp, they are illuminated continuously. In this case, check or ask the designated agency.**

G3920255-FOT

Liquid grease (Lincoln)



1. Manual switch
2. Rotary switch
3. Jumper switch

- o Proper lubrication is automatically provided by the electric gear pump and control unit of the piston fractionator. If lubrication quantity is short or excessive, check time of the control unit and adjust it as required.
- o Lubrication period is optionally adjusted from thirty minutes to eleven hours according to selection of the control timer in the pump.

Adjusting time : 15 minutes ~ 3 hours 45 minutes(15 steps) 30 minutes~7 hours(15 steps)/hour ~ 15 hours(15 steps) optional adjustment.

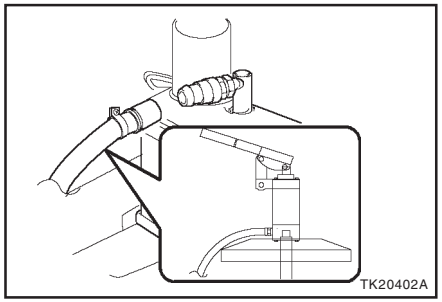
- o If you want to know position of the built-in control unit, disconnect the cover and protection cap of the unit.
- o When the location of jumper is "1h" the lubrication period of timer is set 6 hour.

G3920355-FOT

15m	hour	-	-	-	1	1	1	1	2	2	2	2	3	3	3	3
	minute	15	30	45	-	15	30	45	-	15	30	45	-	15	30	45
30m	hour	-	-	1	2	2	3	3	4	4	5	5	6	6	7	7
	minute	30	-	30	-	30	-	30	-	30	-	30	-	30	-	30
1h	hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

G3920455-FOT

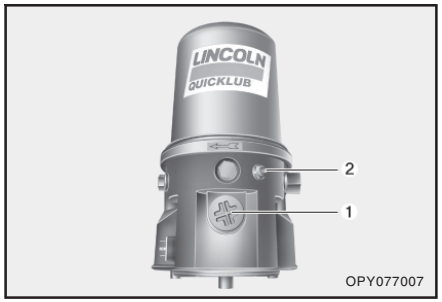
Replenishing grease & bleeding air

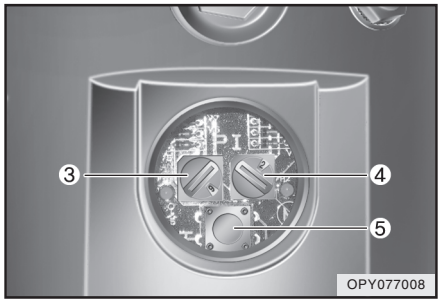


- o Pour grease to the "MAX" position of the storage container using a specified tool.
  1. After replenishing grease, turn on the main switch.
  2. Press down the manual control switch and operate the pump.
  3. Open the plug of the fractionator end part and bleed air from the main pipe until the grease is flowed.
  4. Turn the main switch off and then lock plug of it.
- o Lubrication period is optionally adjusted according to selection of the control timer in the pump. When adjusting, open the cap of the grease container and then you will find the device.

Hard grease (Lincoln)

Automatic lubrication system is grease filling system which supplies all lubrication points of vehicle by using digital controller (Time) depending on adjusted time & suitable quantity of grease. You can adjust lubrication time depending on vehicle model, even if it is adjusted as factory default.





1. Control PCB cap
2. Grease refill nipple
3. Pause timer
4. Operation timer + B22
5. Manual switch

How to operate the pump

Factory default pause time : Blue switch (66 hours) : See above illustrations (3)
Operation time : Red switch (24 minutes) : See above illustrations (4)

Pause time is adjusted as 15 steps upon blue rotation timer

Switch location	1	2	3	4	5	6	7	8	9
Time	1	2	3	4	5	6	7	8	9
Switch location	A	B	C	D	F				
Time	10	11	12	13	14				

Operation time is adjusted as 15 steps upon red rotation timer

Switch location	1	2	3	4	5	6	7	8	9
Minute	2	4	6	8	10	12	14	16	18
Switch location	A	B	C	D	F				
Minute	20	22	24	26	28				

It can be adjusted from 1 hour to 14 hours upon input timer of lubrication pump.

Owner's setting
Pause time (Blue timer) = 6 Operation time (Red switch) =2
➡Grease pump operates for 4 min. every 6 hours.

Manual refill
While the main switch of vehicle is on, by pushing manual switch on pump then pump is operated and grease is filled through all grease points. (But operation time is based on minutes setted by red timer.)

Grease refill
Fill the grease before grease indicates MIN line of grease pump. When filling the grease, fill the grease by the MAX line.

NOTE:
Use NLGI 1,2 grade grease which can be used under -25°C.