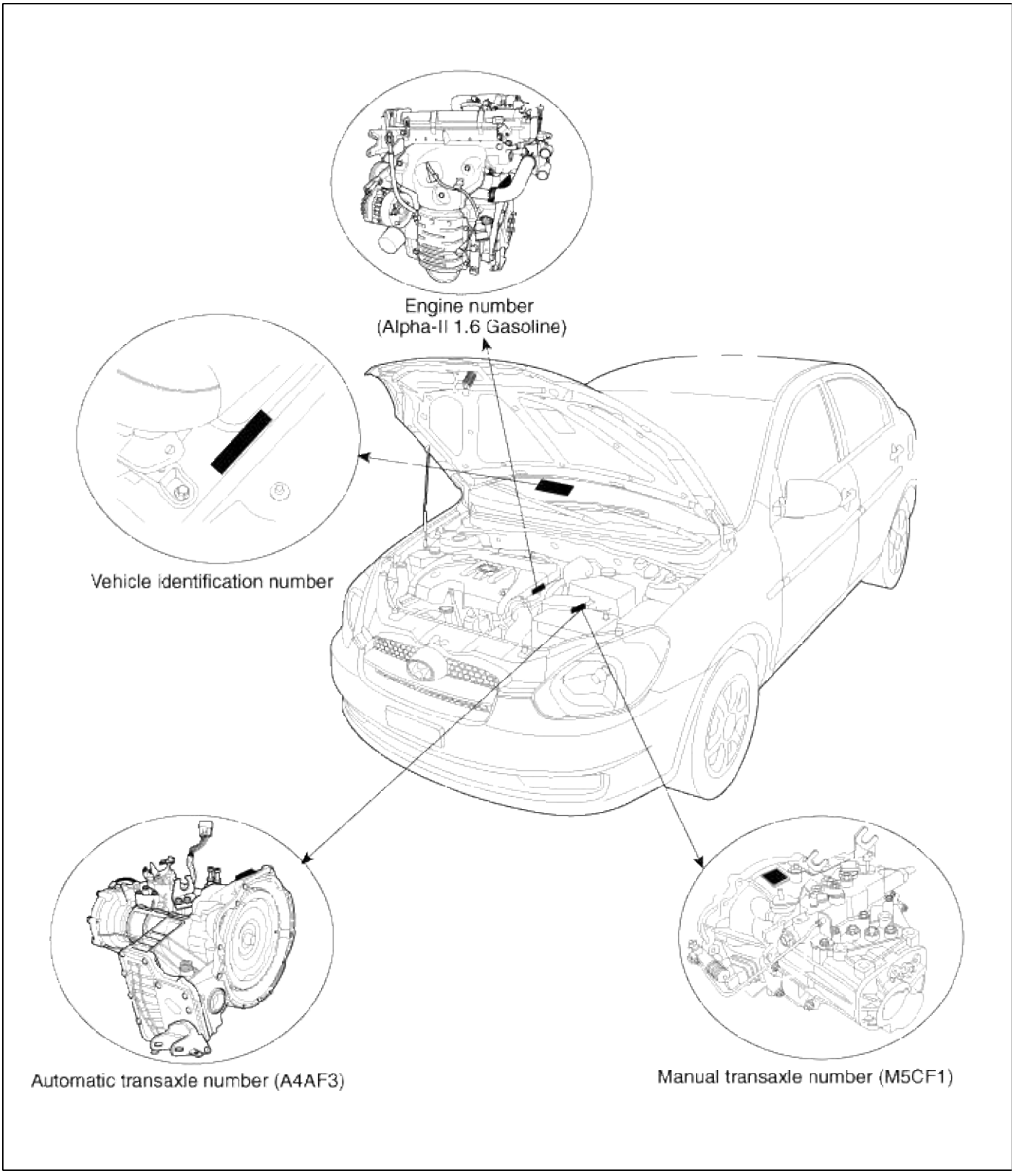
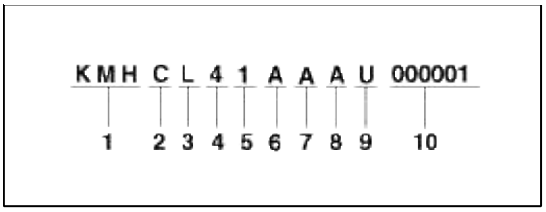
ACCENT(MC) > 2010 > G 1.6 DOHC > General Information

General Information > General Information > General Information

Identification Number Locations



Identification Number Description
Vehicle Identification Number



1. World Manufacturer Identifier (WMI)
   - KMF : Commercial vehicle (Van)
   - KMH : Passenger vehicle or MPV(Multipurpose Passenger Vehicle)/SUV(Sports Utility Vehicle)/RV(Recreational Vehicle)
   - KMJ : Van
   - KM8 : MPV/SUV/RV (For U.S.A, Canada, Mexico)
2. Vehicle line
   - C : ACCENT
3. Model & Series
   - L : Low grade (L)
   - M : Middle-Low grade (GL)
   - N : Middle grade (GLS, JSL, TAX)
4. Body/Cabin type, Gross Vehicle Weight Rating
   KMF (Commercial vehicle / Van)
   Except U.S.A, Canada, Mexico, Gulf Cooperation Council, China
   - X : Standard Cabin / Semi-Bonnet
   - Y : Double Cabin / Bonnet
   - Z : Super Cabin / Box
   For U.S.A, Canada, Mexico, Gulf Cooperation Council, China
   - 3 : Standard Cabin Class-E 4×2 / Semi-Bonnet Class-E 4×2
   - 4 : Standard Cabin Class-E 4×4 / Semi-Bonnet Class-E 4×4
   - 5 : Standard Cabin Class-F 4×2 / Semi-Bonnet Class-F 4×2
   - 6 : Standard Cabin Class-F 4×4 / Semi-Bonnet Class-F 4×4
   - 7 : Double Cabin Class-E 4×2 / Bonnet Class-E 4×2
   - 8 : Double Cabin Class-E 4×4 / Bonnet Class-E 4×4
   - 9 : Double Cabin Class-F 4×2 / Bonnet Class-F 4×2
   - 0 : Double Cabin Class-F 4×4 / Bonnet Class-F 4×4
   - A : Super Cabin Class-E 4×2 / Box Class-E 4×2
   - B : Super Cabin Class-E 4×4 / Box Class-E 4×4
   - C : Super Cabin Class-F 4×2 / Box Class-F 4×2
   - D : Super Cabin Class-F 4×4 / Box Class-F 4×4
   KMH
   - 1 : Limousine
   - 2 : Sedan - 2 door
   - 3 : Sedan - 3 door
   - 4 : Sedan - 4 door
   - 5 : Sedan - 5 door
   - 6 : Coupe
   - 7 : Convertible
   - 8 : Wagon
   - 9 : Commercial Van
   - 0 : Pick-Up
   KMJ
   - 1 : Box
   - 2 : Bonnet

- 3 : Semi-Bonnet

KM8

- 1 : Wagon 4×2 Class-A
- 2 : Wagon 4×2 Class-B
- 3 : Wagon 4×2 Class-C
- 4 : Wagon 4×2 Class-D
- 5 : Wagon 4×2 Class-E
- 6 : Wagon 4×2 Class-F
- 7 : Wagon 4×2 Class-G
- A : Wagon 4×4 Class-A
- B : Wagon 4×4 Class-B
- C : Wagon 4×4 Class-C
- D : Wagon 4×4 Class-D
- E : Wagon 4×4 Class-E
- F : Wagon 4×4 Class-F
- G : Wagon 4×4 Class-G

5. Restraint system, Brake system

KMH, KM8

Except U.S.A, Canada, Mexico

- 0 : Both side - None
- 1 : Both side - Active belt
- 2 : Both side - Passive belt

For U.S.A, Canada, Mexico

Code	Seat belt	Front air bag		Knee air bag		Side air bag			Curtain air bag		
		Driver's	Passenger's	Driver's	Passenger's	1st row	2nd row	3rd row	1st row	2nd row	3rd r
A	○	○	○	×	×	○	×	×	○	○	×
B	○	○	○	×	×	×	×	×	×	×	×
C	○	○	○	×	×	○	×	×	○	○	○
D	○	○	○	×	×	○	○	×	○	○	×
E	○	○	×	×	×	×	×	×	×	×	×
F	○	○	○	×	×	○	×	×	×	×	×
N	○	×	×	×	×	×	×	×	×	×	×

KMJ

Except U.S.A, Canada, Mexico

- 7 : Hydraulic brake system
- 8 : Pneumatic brake system
- 9 : Mixed brake system

For U.S.A, Canada, Mexico

- X : Hydraulic brake system
- Y : Pneumatic brake system
- Z : Mixed brake system

KMF

Except U.S.A, Canada, Mexico

- 7 : Hydraulic brake system
- 8 : Pneumatic brake system
- 9 : Mixed brake system

For U.S.A, Canada, Mexico

Code	Restraint system											Brake system		
	Seat belt	Front air bag		Knee air bag		Side air bag			Curtain air bag			Hydrauric	Pneumatic	Mi
		Driver's	Passenger's	Driver's	Passenger's	1st row	2nd row	3rd row	1st row	2nd row	3rd row			
X	○	×	×	×	×	×	×	×	×	×	×	○	-	-
V	○	○	×	×	×	×	×	×	×	×	×	○	-	-
W	○	○	○	×	×	×	×	×	×	×	×	○	-	-

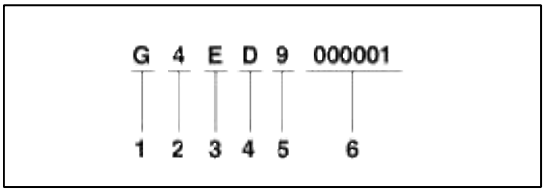
6. Engine type
   - C: Gasoline engine 1.6
7. Check digit or Driver's side & Transmission
   Except U.S.A, Canada, Mexico, Gulf Cooperation Council, China, Yemen
   - A : LHD & MT
   - B : LHD & AT
   - C : LHD & MT+Transfer
   - D : LHD & AT+Transfer
   - E : LHD & CVT
   - L : RHD & MT
   - M : RHD & AT
   - N : RHD & MT+Transfer
   - S : RHD & AT+Transfer
   - T : RHD & CVT

   For U.S.A, Canada, Mexico, Gulf Cooperation Council, China, Yemen
   - Check digit : 0 ~ 9, ×
8. Production year
   - A : 2010, B : 2011, C : 2012, D : 2013 …
9. Plant of production
   - A : Asan (Korea)
   - C : Cheonju (Korea)
   - U : Ulsan (Korea)
10. Vehicle production sequence number
    - 000001 ~ 999999

Paint Code

Code	Color
NW	NOBLE WHITE
EB	EBONY BLACK
HL	HIPHOP RED
5S	SPACE SILVER
2B	SKY BLUE
9G	GOLD BEIGE
3E	BLUE ONYX
3W	SHEER YELLOW
2M	MIDNIGHT GRAY
8N	LEAF GREEN
5R	RUBY RED

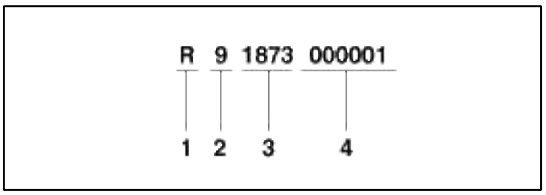
Engine Number



1. Engine fuel
   - G = Gasoline
2. Engine range
   - 4 = 4 cycle 4 cylinder
3. Engine development order
   - E = ALPHA Engine
4. Engine capacity
   - D = 1,599cc
5. Production year
   - 9 : 2009, A : 2010, B : 2011, C : 2012, D : 2013...
6. Engine production sequence number
   - 000001 ~ 999999

Transaxle Number

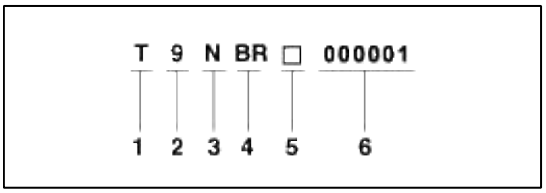
Manual



1. Model
   - R = M5CF1
   - P = M5CF2

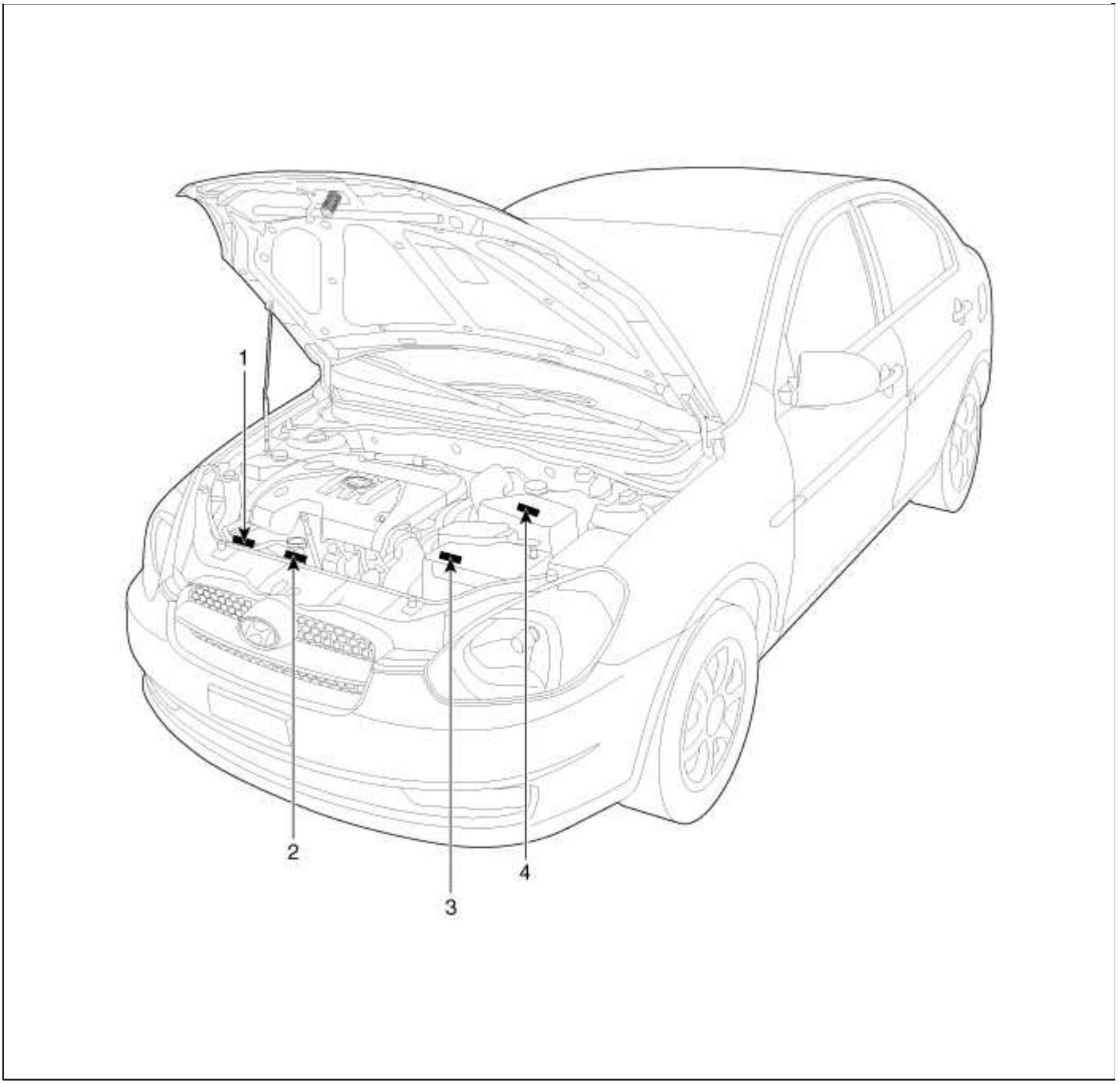
2. Production year
   - 9 : 2009, A : 2010, B : 2011, C : 2012, D : 2013...
3. Gear ratio(Tooth number)
   <Differential drive gear tooth number / Output shaft gear tooth number>
   - 1873 = 73/18 = 4.056
4. Transaxle production sequence number
   - 000001 ~ 999999

Automatic



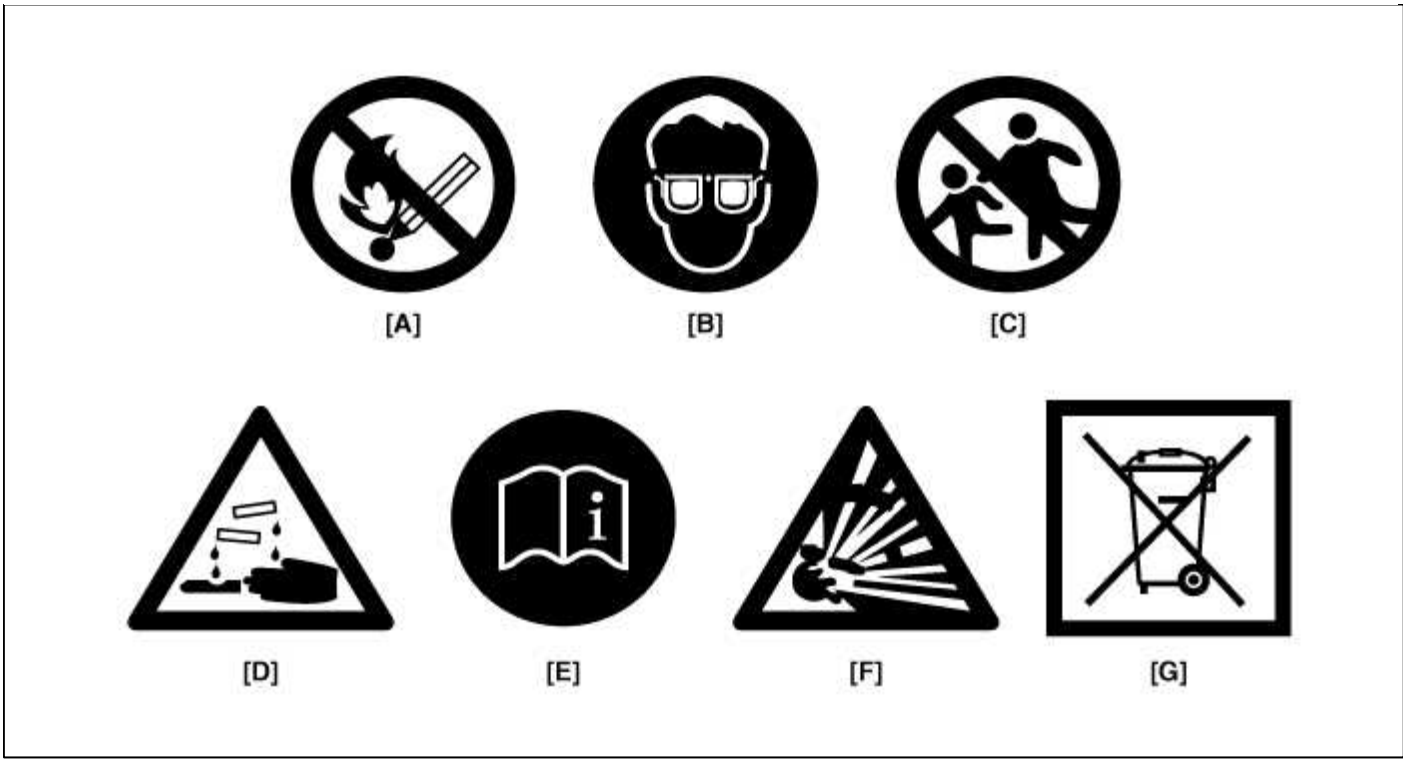
1. Modle
   - T = A4AF3
2. Production year
   - 9 : 2009, A : 2010, B : 2011, C : 2012, D : 2013...
3. Gear ratio
   - N = 4.041
4. Detailed chassification
   - BR = 1.6 CVVT
5. Spare
6. Transaxle production sequence number
   - 000001 ~ 999999

Warning / Caution Label Locations



1. Radiator Cap Caution 2. Fan Caution	3. Battery Caution 4. Airduct Warning

Battery Caution Label Describtion



Warning / Caution Label (Cont'd)

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

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

- When lifting a plastic-cased battery, excesive pressure on acid to leak resulting in personal injury. Lift with a battery carrier or with your hands on opposite corners.
- Never attempt to change 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.

C.
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.

D.
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, throughly wash the contacted area. If you feel a pain or a burning sensation, get medical attention immediately.

E.
Always read the following instructions carefully when handing a battery.

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

G.
An improperly disposed battery can be harmful to the environment and human health.
Always confirm local regurations for battery disposal.

Handling And Storage The Battery

Battery Itself	• Batteries should be stored in cool, dry (27 degrees Celsius) places and out of direct sunlight. • MF batteries are tightly sealed to prevent acid leakage. However, tilting the battery to an angle of 45 degrees can cause acid to leak through the vents on the sides. Therefore, batteries should always be stored in their upright positions. Prevent placing any aqueous or solid (i.e. conductors) bodies on top of the battery. • It is extremely dangerous to use tools, such as hammers, on the battery terminals when connecting cables to the mounted battery.
Battery on Vehicle	• When storing the vehicle for long periods of time, make sure to remove the memory fuse at junction box to prevent natural discharging. • Also, run the engine for battery charging within 1 month if the memory fuse wasn't removed from the start of vehicle storing. If the memory fuse was removed, run the engine for battery charging within 3 months from the start of vehicle storing.

NOTE

After reconnecting or recharging a discharged battery, the ESP OFF indicator may illuminate.
In this case, turn the handle half way to the left and right whilst the ignition switch is in the ON position.
Then, restart the engine after the ignition is OFF.
The ESP OFF indicator may turn OFF.
If the ESP OFF indicator does not turn OFF, have the system checked refering to DTC. (Refer to the BR group.)

Lift And Support Points

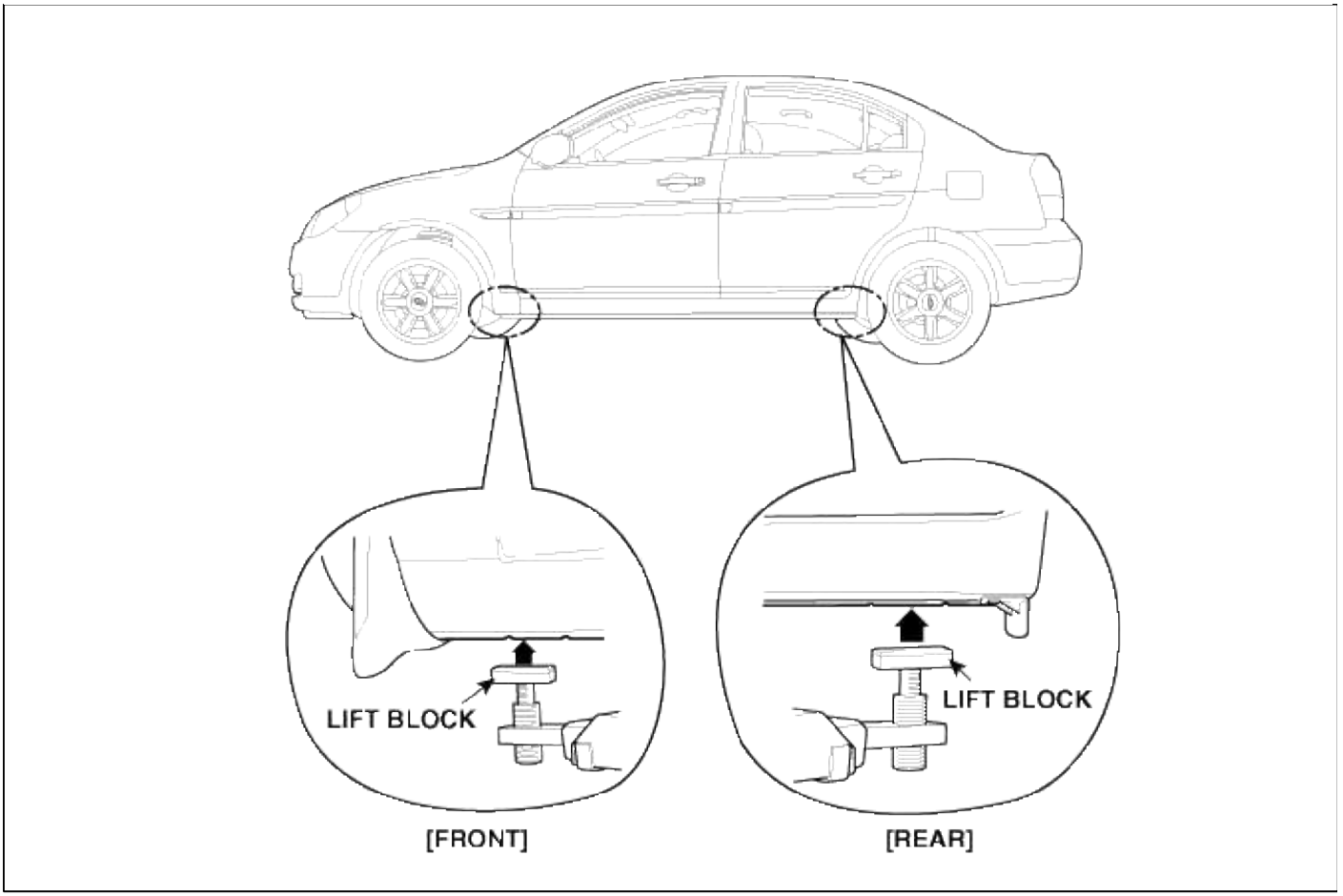
WARNING

When heavy rear components such as suspension, fuel tank, spare tire, tailgate and trunk lid are to be removed, place additional weight in the luggage area before hoisting. When substantial weight is removed from the rear of the vehicle, the center of gravity may change and cam cause the vehicle to tip forward on the hoist.

NOTE

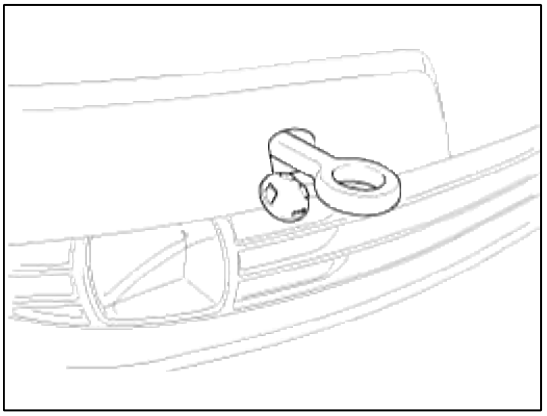
- Since each tire/wheel assembly weights approximately 30lbs (14kg), placing the front wheels in the luggage area can assist with the weight distribution.
- Use the same support points to support the vehicle on safety stands.

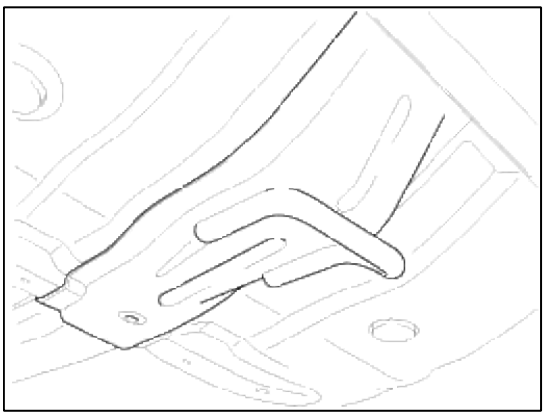
1. Place the lift blocks under the support points as shown in the illustration.
2. Raise the hoist a few inches (centimeters) and rock the vehicle to be sure it is firmly supported.
3. Raise the hoist to full height to inspect the lift points for secure support.



Towing

If the vehicle needs to be towed, call a professional towing service. Never tow vehicle with just a rope or chain. It is very dangerous.





Emergency Towing

There are three popular methods of towing a vehicle :

- The operator loads the vehicle on the back of truck. This is best way of transporting the vehicle.
- The tow truck uses two pivoting arms that go under the tires of the driving axle and lift them off the ground. The other two wheels remain on the ground."
- The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension, and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted."
  "If the vehicle cannot be transported by flat-bed, should be towed with the wheels of the drivig axle off the ground and do the following :"

Manual Transaxle

- Release the parking brake.
- Shift the Transaxle to neutral

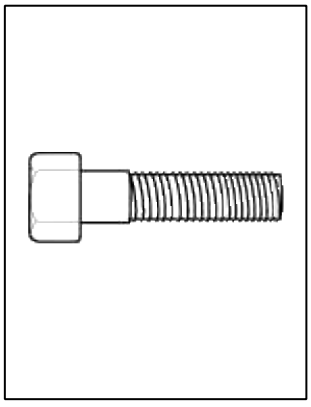
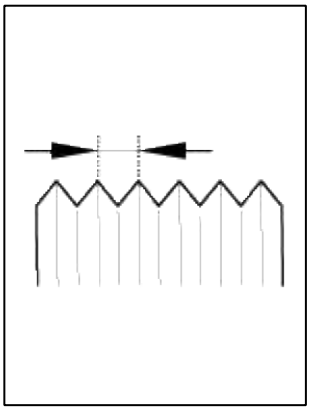
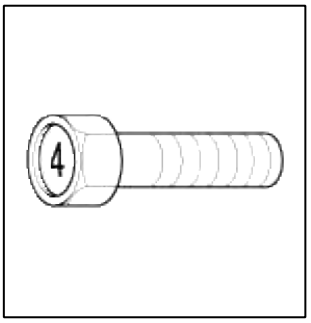
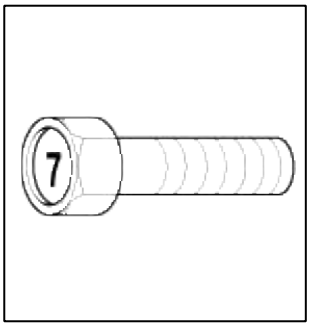
Automatic Transaxle

- Release the parking brake.
- Start the engine.
- Shift to [D] position, then [N] position.
- Turn off the engine.

CAUTION

- The vehicle equipped with full-time 4WD should be only transported on a flat-bed.
- Improper towing preparation will damage the transaxle. follow the above procedure exactly. If you cannot shift the transaxle or start the engine(automatic transaxle), your vehicle must be transported on a flatbed. "
- It is the best to tow vehicle no farther than 30km (19miles), and keep the speed below 50km/h (30mph). (For the full-time 4WD vehicle, limit the towing to 1.5km (1mile) and 15km/h (10mph) "
- Trying to lift or tow your vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight."

Tightening Torque Table Of Standard Parts

Bolt nominal diameter (mm)	**Pitch (mm)**	**Torque Nm (kg.cm, lb.ft)**	
		Head Mark 4	**Head Mark 7**
			
M5	0.8	3 ~ 4 (30 ~ 40, 2.2 ~ 2.9)	5 ~ 6 (50 ~ 60, 3.6 ~ 4.3)
M6	1.0	5 ~ 6 (50 ~ 60, 3.6 ~ 4.3)	9 ~ 11 (90 ~ 110, 6.5 ~ 8.0)
M8	1.25	12 ~ 15 (120 ~ 150, 9 ~ 11)	20 ~ 25 (200 ~ 250, 14.5 ~ 18.0)
M10	1.25	25 ~ 30 (250 ~ 300, 18 ~ 22)	30 ~ 50 (300 ~ 500, 22 ~ 36)

M12	1.25	35 ~ 45 (350 ~ 450, 25 ~ 33)	60 ~ 80 (600 ~ 800, 43 ~ 58)
M14	1.5	75 ~ 85 (750 ~ 850, 54 ~ 61)	120 ~ 140 (1,200 ~ 1,400, 85 ~ 100)
M16	1.5	110 ~ 130 (1,100 ~ 1,300, 80 ~ 94)	180 ~ 210 (1,800 ~ 2,100, 130 ~ 150)
M18	1.5	160 ~ 180 (1,600 ~ 1,800, 116 ~ 130)	260 ~ 300 (2,600 ~ 3,000, 190 ~ 215)
M20	1.5	220 ~ 250 (2,200 ~ 2,500, 160 ~ 180)	360 ~ 420 (3,600 ~ 4,200, 260 ~ 300)
M22	1.5	290 ~ 330 (2,900 ~ 3,300, 210 ~ 240)	480 ~ 550 (4,800 ~ 5,500, 350 ~ 400)
M24	1.5	360 ~ 420 (3,600 ~ 4,200, 260 ~ 300)	610 ~ 700 (6,100 ~ 7,000, 440 ~ 505)

NOTE

1. The torques shown in the table are standard values under the following conditions :
   - Nuts and bolts are made of galvanized steel bar.
   - Galvanized plain steel washers are inserted.
   - All nuts, bolts and plain washers are dry.
2. The torques shown in the table are not applicable:
   - When spring washers, toothed washers and the like are inserted.
   - If plastic parts are fastened.
   - If self-tapping screws or self-locking nuts are used.
   - If threads and surfaces are coated with oil.
3. If you reduce the torques in the table to the percentage indicated below, under the following conditions, if will be the standard value.
   - If spring washers are used : 85%
   - If threads and bearing surfaces are stained with oil : 85%

General Service Information

Protection Of The Vehicle

Always be sure to cover fenders, seats, and floor areas before starting work.

CAUTION

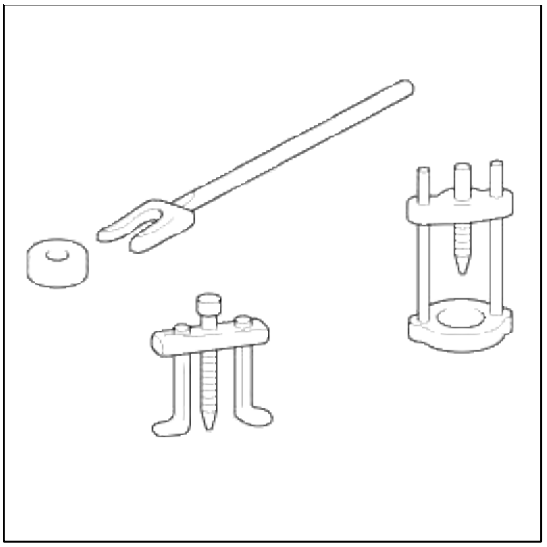
The support rod must be inserted into the hole near the edge of the hood whenever you inspect the engine compartment to prevent the hood from falling and causing possible injury.
Make sure that the support rod has been released prior to closing the hood. Always check to be sure the hood is firmly latched before driving the vehicle.

Preparation Of Tools And Mesuring Equipment

Be sure that all necessary tools and measuring equipment are available starting work.

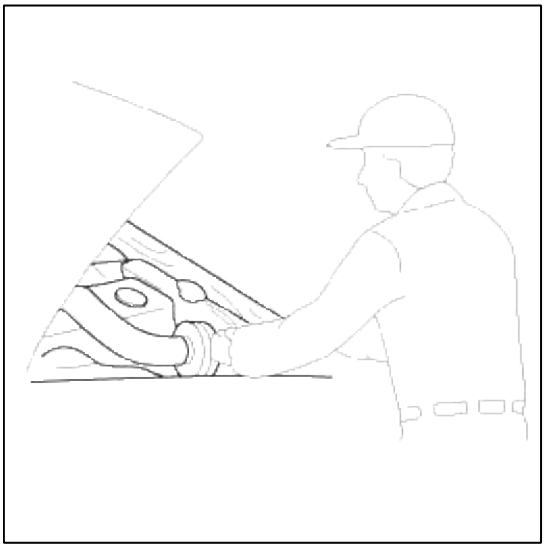
Special Tools

Use special tools when they are required.



Removal Of Parts

First find the cause of the problem and then determine whether removal or disassembly before starting the job.

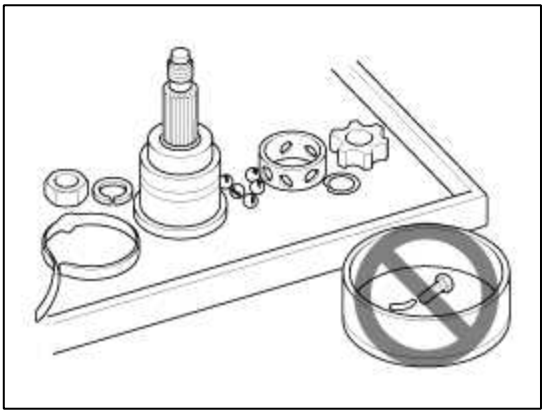


Disassembly

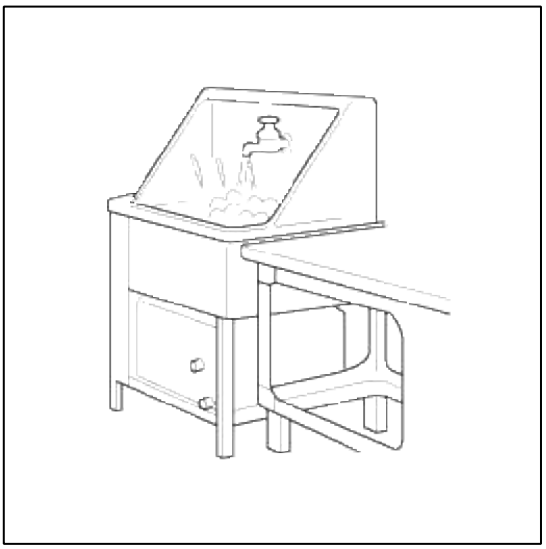
If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance.

1. **Inspection of parts**
   Each part, when removed, should be carefully on suspected for malfunction, deformation, damage, and other problems.

2. **Arrangement of parts**
   All disassembled parts should be carefully arranged for effective reassembly.
   Be sure to separate and correctly identify the parts to be replaced from those that will be used again.



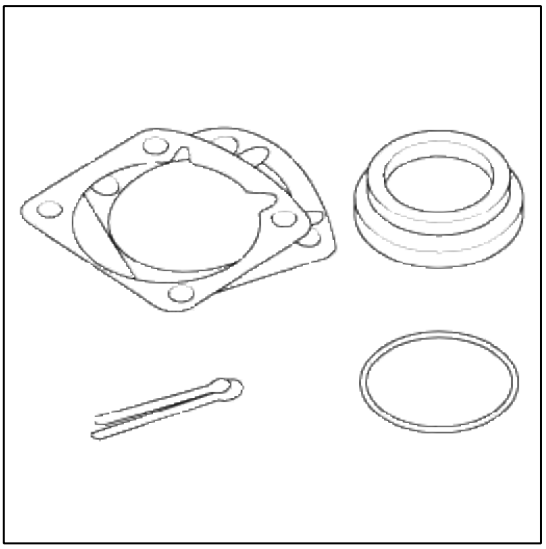
3. **Cleaning parts for reuse**
   All parts to be used again should be carefully and thoroughly cleaned by an appropriate method.



Parts
When replacing parts, use KIA MOTORS genuine parts.

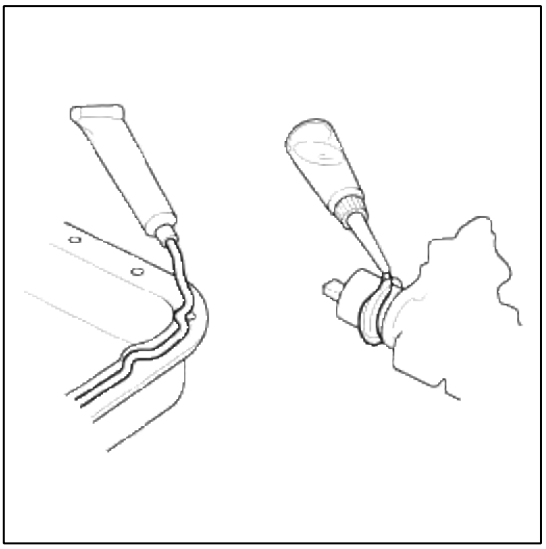
Replacement
Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.
If removed, the following parts should always be replaced with new ones.

1. Oil seals
2. Gaskets
3. O-rings
4. Lock washers
5. Cotter pins (split pins)
6. Plastic nuts



Depending on their location.

7. Sealant should be applied to gaskets.
8. Oil should be applied to the moving components of parts.
9. Specified oil or grease should be applied to the prescribed locations (oil seals, etc.) before assembly.



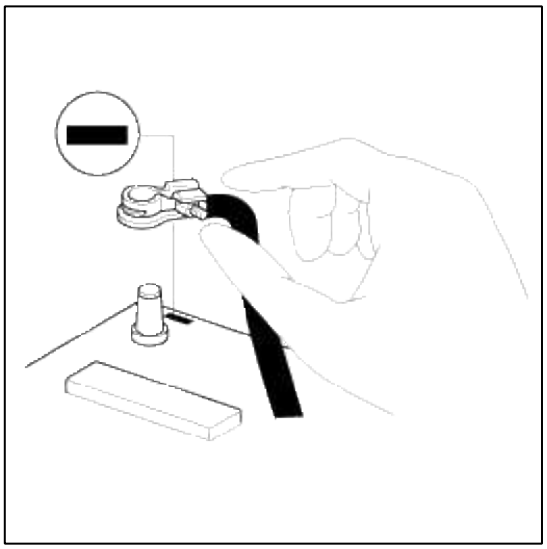
Adjustment

Use gauges and testers to adjust correctly the parts to standard values correctly.

Electrical System

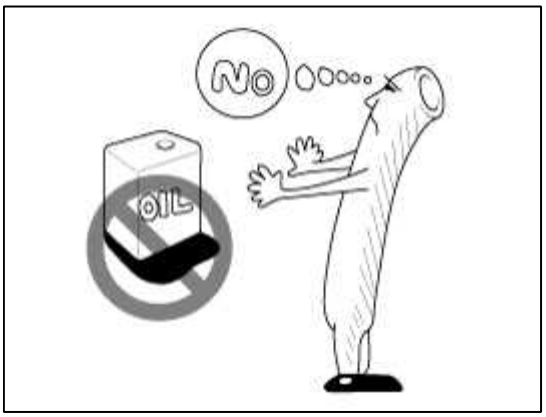
1. Be sure to disconnect the battery cable from the negative (-) terminal of the battery.
2. Never pull on the wires when disconnecting connectors.
3. Locking connectors will click when the connector is secure.

4. Handle sensors and relays carefully. Be careful not to drop them against other parts.



Rubber Parts And Tubes

Always prevent gasoline or from touching rubber parts or tubing.



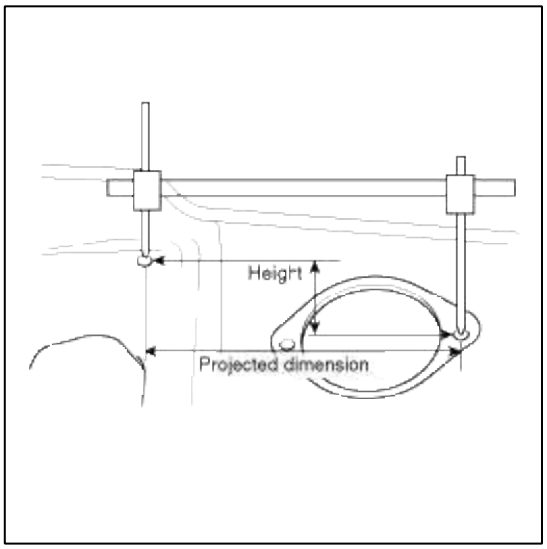
Measuring Body Dimensions

1. Basically, all measurements in this manual are taken with a tracking gauge.
2. When a measuring tape is used, check to be sure there is no elongation, twisting or bending.
3. For measuring dimensions, both projected dimensions and actual - measurement dimensions are used in this manual.

Dimensions Projected

1. These are the dimensions measured when the measurement points are projected from the vehicle's surface, and are the reference dimensions used for body alterations.

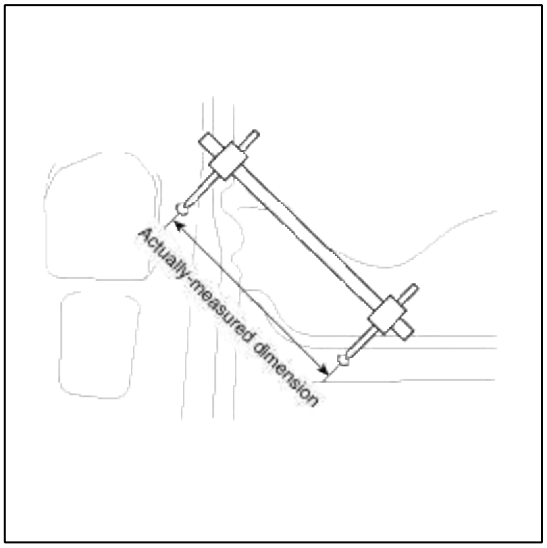
2. If the length of the tracking gauge probes is adjustable, measure it by lengthening one of two probes as long as the different value in height of the two surface.



Measuring Actual Dimensions

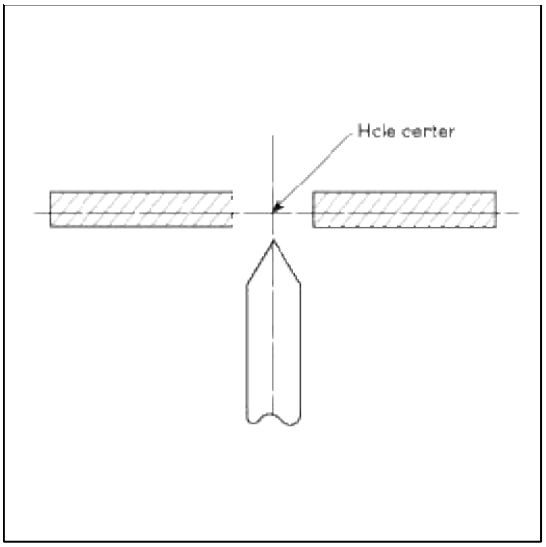
1. These dimensions indicate the actual linear distance between measurement points, and are used as the reference dimensions when a tracking gauge is used for measurement.
2. First adjust both probes to the same length (A=A') before measurement.

> NOTE
>
> Check the probes and gauge itself to make sure there is no free play.



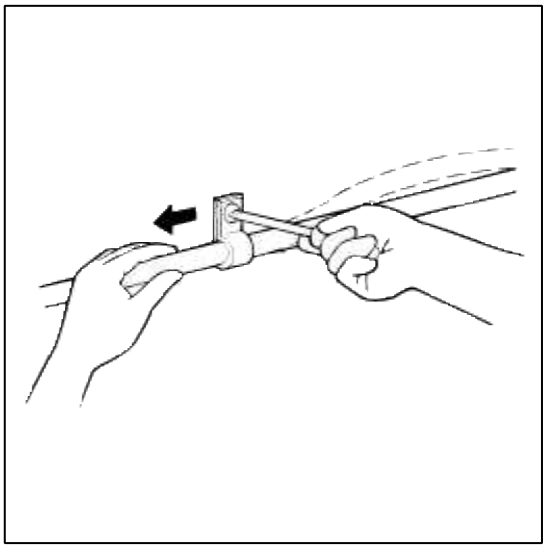
Measurement Point

Measurements should be taken at the center of the hole.



Checking Cables And Wires

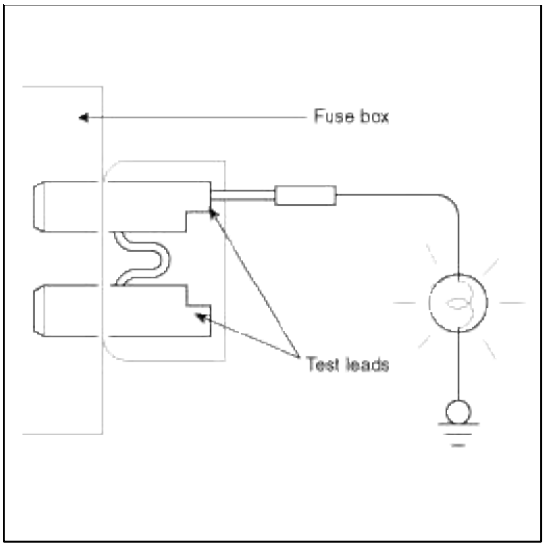
1. Check the terminal for tightness.
2. Check terminals and wires for corrosion from battery electrolyte, etc.
3. Check terminals and wires for open circuits.
4. Check wire insulation and coating for damage, cracks and degrading.
5. Check the conductive parts of terminals for contact with other metallic parts (vehicle body and other parts).
6. Check grounded parts to verify that there is complete continuity between their attaching bolt(s) and the vehicle's body.
7. Check for incorrect wiring.
8. Check that the wiring is so clamped to the prevent contact with sharp corners of the vehicle body, etc. or hot parts (exhaust manifold, etc.)
9. Check that the wiring is clamped firmly to provide enough clearance from the fan pulley, fan belt and other rotating or moving parts.
10. Check that the wiring has a little space so that it can vibrate between fixed and moving parts such as the vehicle body and the engine.



Check Fuses

A blade type fuse test taps provided to allow checking the fuse itself without removing if from the fuse box. The fuse is good if the test lamp lights up when one lead is connected to the test taps (one at a time) and the other lead is grounded.

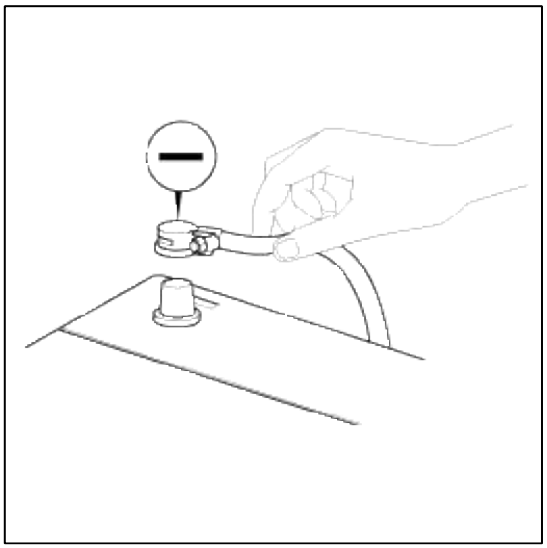
(Turn the ignition switch so that the fuse circuit becomes operative)



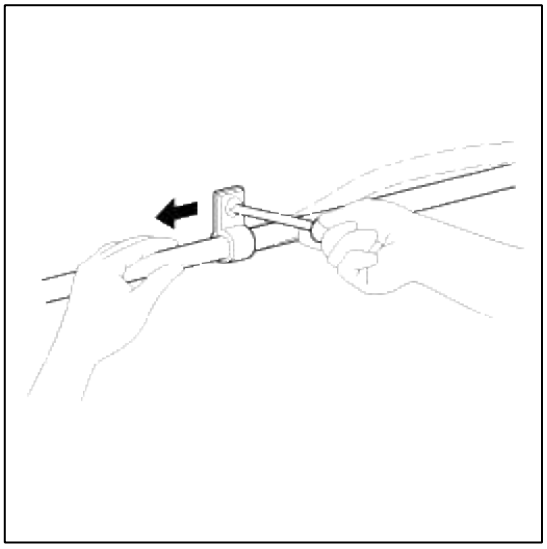
Serivicing The Electrical System

1. Prior to servicing the electrical system, be sure to turn off the ignition switch and disconnect the battery ground cable.

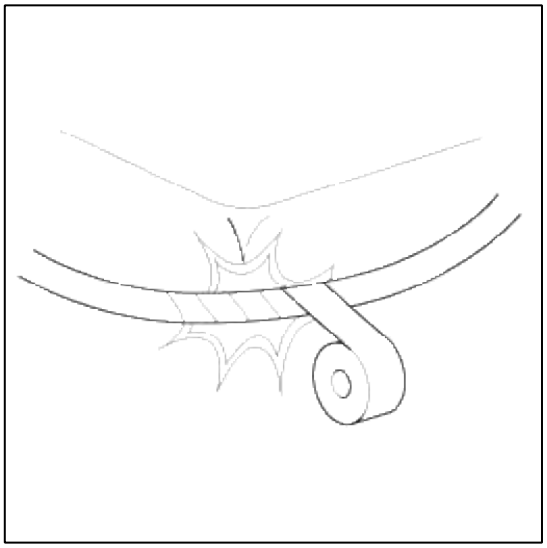
> NOTE
>
> In the course of MFI or ELC system diagnosis, when the battery cable is removed, any diagnostic trouble code retained by the computer will be cleared. Therefore, if necessary, read the diagnostic before removing the battery cable.



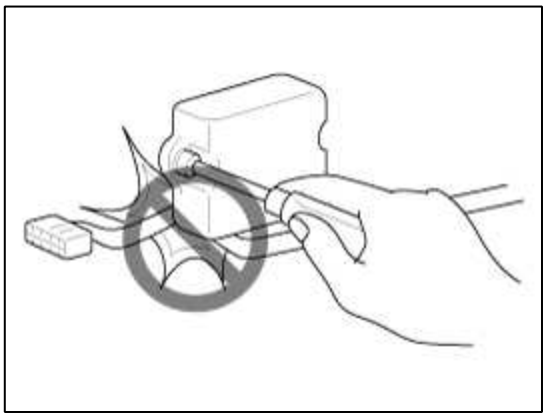
2. Attach the wiring harnesses with clamps so that there is no slack. However, for any harness which passes the engine or other vibrating parts of the vehicle, allow some slack within a range that does not allow the engine vibrations to cause the harness to come into contact with any of the surrounding parts and then secure the harness by using a clamp.



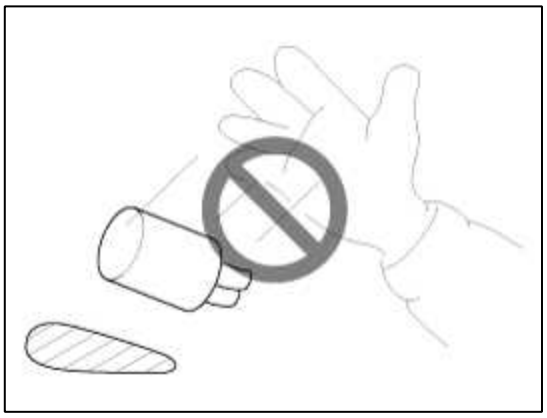
3. If any section of a wiring harness interferes with the edge of a parts, or a corner, wrap the section of the harness with tape or something similar in order to protect if from damage.



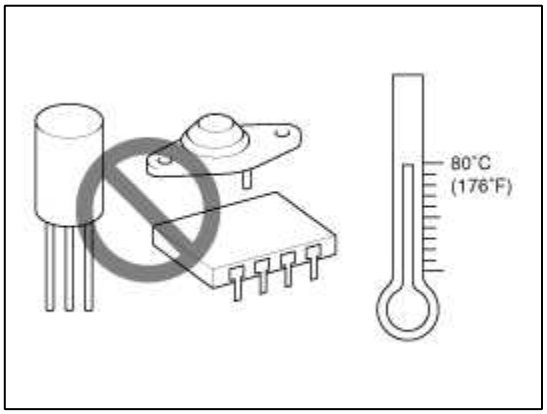
4. When installing any parts, be careful not to pinch or damage any of the wiring harness.



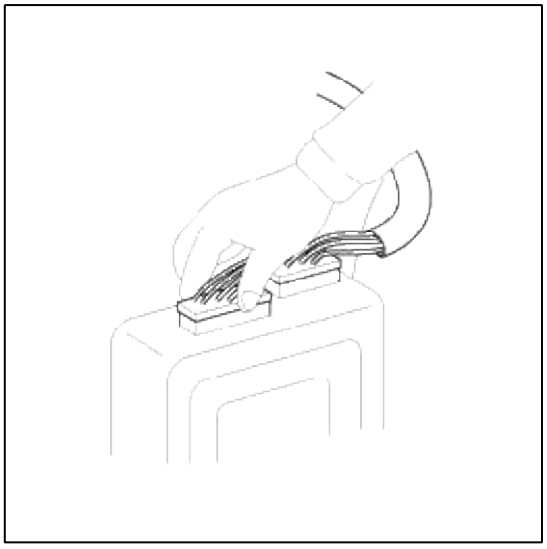
5. Never throw relays, sensors or electrical parts, or expose them to strong shock.



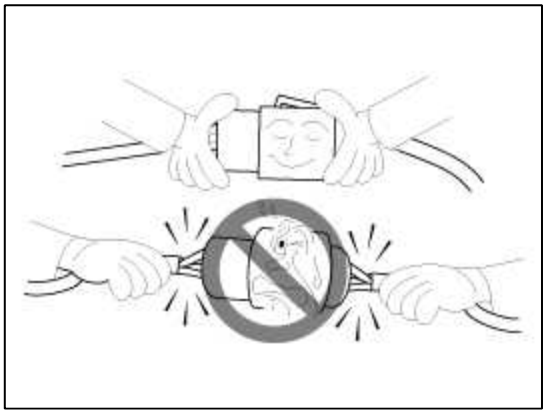
6. The electronic parts used in the computer, relays, etc. are readily damaged by heat. If there is a need for service operations that may cause the temperature to exceed 80°C (176°F), remove the electronic parts before hand.



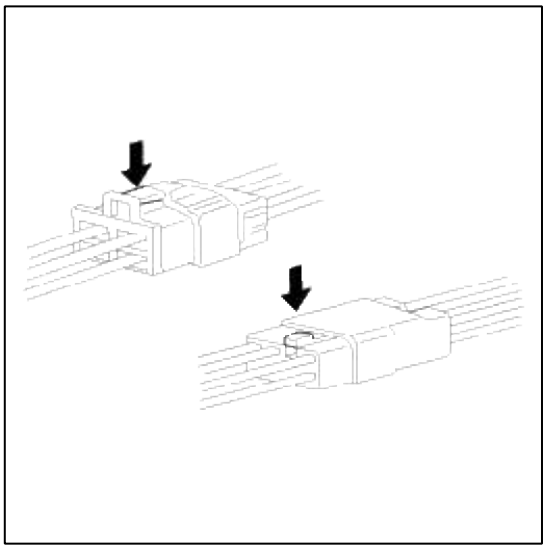
7. Loose connectors cause problems. Make sure that the connectors are always securely fastened.



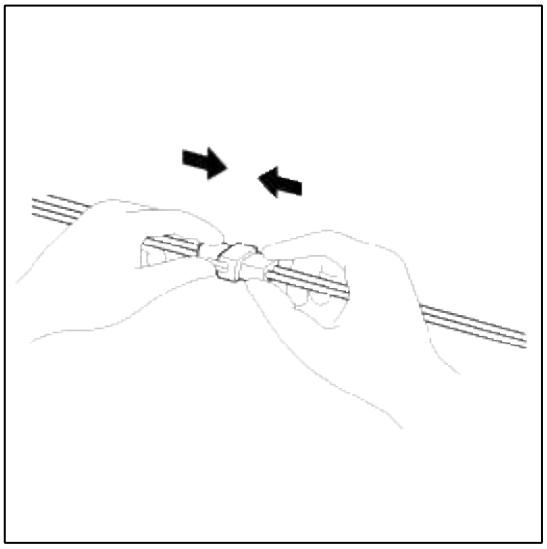
8. When disconnecting a connector, be sure to grip only the connector, not the wires.



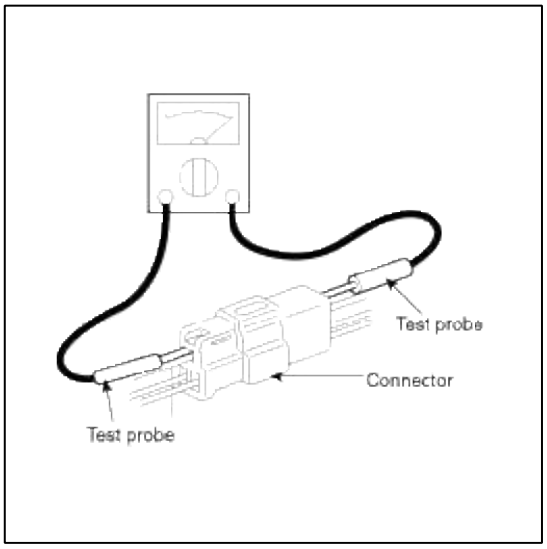
9. Disconnect connector which have catches by pressing in the direction of the arrows shown the illustration.



10. Connect connectors which have catches by inserting the connectors until they make a clicking sound.



11. When using a circuit tester to check continuity or voltage on connector terminals, insert the test probe into the harness side. If the connector is a sealed connector, insert the test probe through the hole in the rubber cap until contacts the terminal, being careful not to damage the insulation of the wires.



12. To avoid overloading the wiring, take the electrical current load of the optional equipment into consideration, and determine the appropriate wire size.

Noeminal size	SAE gauge No.	Permissible current	
		In engine compartment	Other areas
0.3mm²	AWG 22	-	5A
0.5mm²	AWG 20	7A	13A
0.85mm²	AWG 18	9A	17A
1.25mm²	AWG 16	12A	22A
2.0mm²	AWG 14	16A	30A
3.0mm²	AWG 12	21A	40A
5.0mm²	AWG 10	31A	54A

Precautions For Catalytic Converter

CAUTION

If a large amount of unburned gasoline flow into the converter, it may overheat and create a fire hazard. To prevent this observe the following precautions and explain them to your customer.

1. Use only unleaded gasoline.
2. Do not run the engine while the car is at rest for a long time. Avoid running the engine at fast idle for more than 10minutes and idle speed for more than 20 minutes.
3. Avoid start-jump tests. Do start-jumps only when absolutely necessary. Perform this test as rapidly as possible and, while testing, never race the engine.
4. Do not measure engine compression for and extended time. Engine compression tests must be made as rapidly as possible.
5. Avoid coasting with the ignition turned and during prolonged braking.
6. Do not dispose of used catalytic converter together with parts contaminated with gasoline or oil.

ACCENT(MC) > 2010 > G 1.6 DOHC > Automatic Transaxle System

Automatic Transaxle System > General Information > Specifications (A4AF3)

Specifications

Item		Contents
Engine displacement		G4ED(1.6)
Torque converter	Type	3 elements, 2 phases, 1 stage
	Engine stall speed(rpm)	2400~2800
	Stall torque ratio	1.9
Transaxle	Type	Electronically controlled automatic transaxle with four-speed
Gear ratio	1st	2.846
	2nd	1.581
	3rd	1.000
	4th	0.685
	Reverse	2.176
Final gear ratio		4.041(G4ED)
Speedometer gear ratio		Driven 32
Friction elements		3C2B1F (3Clutches 2Brakes 1OWC): 1-band, 4-multiple disc type 3 Clutches: Front clutch, Rear clutch, End clutch 2 Brakes: Low&reverse brake, Kick-down brake (Band type)
Planetary gear		1 Ravigneaux type planetary gear set with long and short pinion
Solenoid valve		6 Solenoid valves (3-PWM, 3-ON/OFF) 2-Pressure control solenoid valves (PWM) 1-Damper clutch control solenoid valve (PWM) 3-Shift control solenoid valve (ON/OFF)

Tightening Torques

Items	Nm	kgf.cm	lb-ft
Oil pan bolt	10-12	100-120	7-8
Select lever assembly mounting bolt	9-14	90-140	6.5-10
Starter motor mounting bolt	27-34	270-340	19-24
Oil cooler hose connector	15-22	150-220	11-16
Hose bracket	3-5	30-50	2-4
Bell housing cover to engine	8-10	80-100	6-7
Transaxle mounting lower bolt(dia.10mm)	43-55	430-550	32-41
Transaxle mounting upper bolt(dia.12mm)	60-80	600-800	43-58

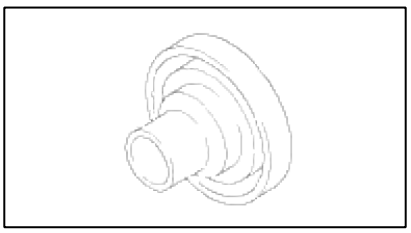
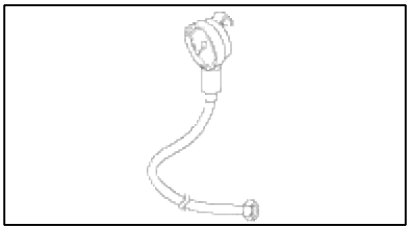
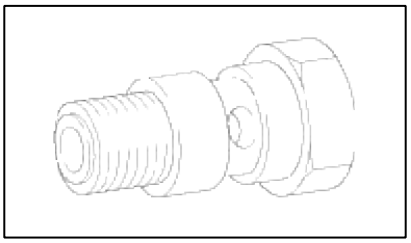
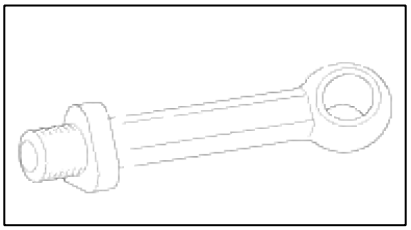
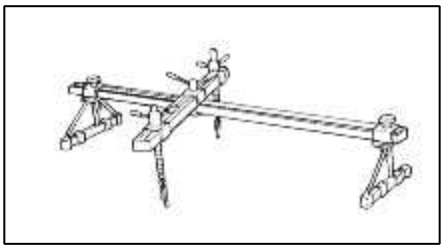
Torque converter mounting bolt		46-53	460-530	33-38
Control cable to body		8-11	80-110	6-7.5
Lever assembly to bracket assembly		14-22	140-220	10-16
Oil drain plug		35-45	350-450	25-32
Pressure check plug		8-10	80-100	6-7
Pulse generator		10-12	100-120	7-8
Bearing retainer		17-22	170-220	13-16
Transfer drive gear		16-21	160-210	12-15
One-way clutch inner race		35-45	350-450	25-32
Differential drive gear		130-140	1300-1400	94-101
Manual control lever		17-21	170-210	13-15
Manual control shaft lock screw		8-10	80-100	6-7
Inhibitor switch		10-12	100-120	7-8
Sprag rod support bolt		20-27	200-270	14-19
Pump housing to reaction shaft support bolt		10-12	100-120	7-8
Oil pump assembly mounting bolt		19-23	190-230	14-17
Valve body cover		10-12	100-120	7-8
Valve body assembly mounting bolt		10-12	100-120	7-8
Oil filter		5-7	50-70	4-5
Speedometer driven gear sleeve		3-5	30-50	2-4
Kickdown adjusting screw		15-22	150-220	11-15
End cover bolt		19-23	190-230	14-17
Differential cover	M8	20-27	200-270	14-19
	M10	43-55	430-550	32-41
Differential bearing cap		60-80	600-800	43-58
Differential bearing retainer		43-55	430-550	32-41
Locking nut(M38)-Input		180-210	1800-2100	130-152
Locking nut-Output		200-230	2000-2300	146-166
Shift cable bracket bolt		19-23	190-230	14-17
Rear roll supt bracket	M12	60-80	600-800	43-58

Lubricants

Items	Specified lubricant	Quantity
Transaxle fluid liter (U.S. lmp.qts.)	GENUINE DIAMOND ATF SP-III or SK ATF SP-III	6.1ℓ (6.4 US qt, 5.4 lmp.qt)
Drive shaft and oil seal lip bushing sliding parts	GENUINE DIAMOND ATF SP-III CHASSIS GREASE SAE J310, NLGINO.0	As required
Select lever sliding parts	SAE J310, NLGINo.2	

Automatic Transaxle System > General Information > Special Service Tools (A4AF3)

Special Service Tools

Tool (Number and name)	Illustration	Use
09431-22100 Oil seal installer		Installation of the differential oil seal. (Use with 09231-H1100)
09452-21500 Oil pressure gauge		Measurement of the oil pressure. (Use with 09452-21001 and 09452-21002)
09452-21002 Oil pressure gauge adapter		Measurement of the oil pressure. (Use with 09452-21500 and 09452-21001)
09452-21001 Oil pressure gauge adapter		Measurement of the oil pressure. (Use with 09452-21500 and 09452-21002)
09200-38001 Engine support fixture		Removal and installation of the transaxle.

Automatic Transaxle System > Automatic Transaxle System > Description and Operation (A4AF3)

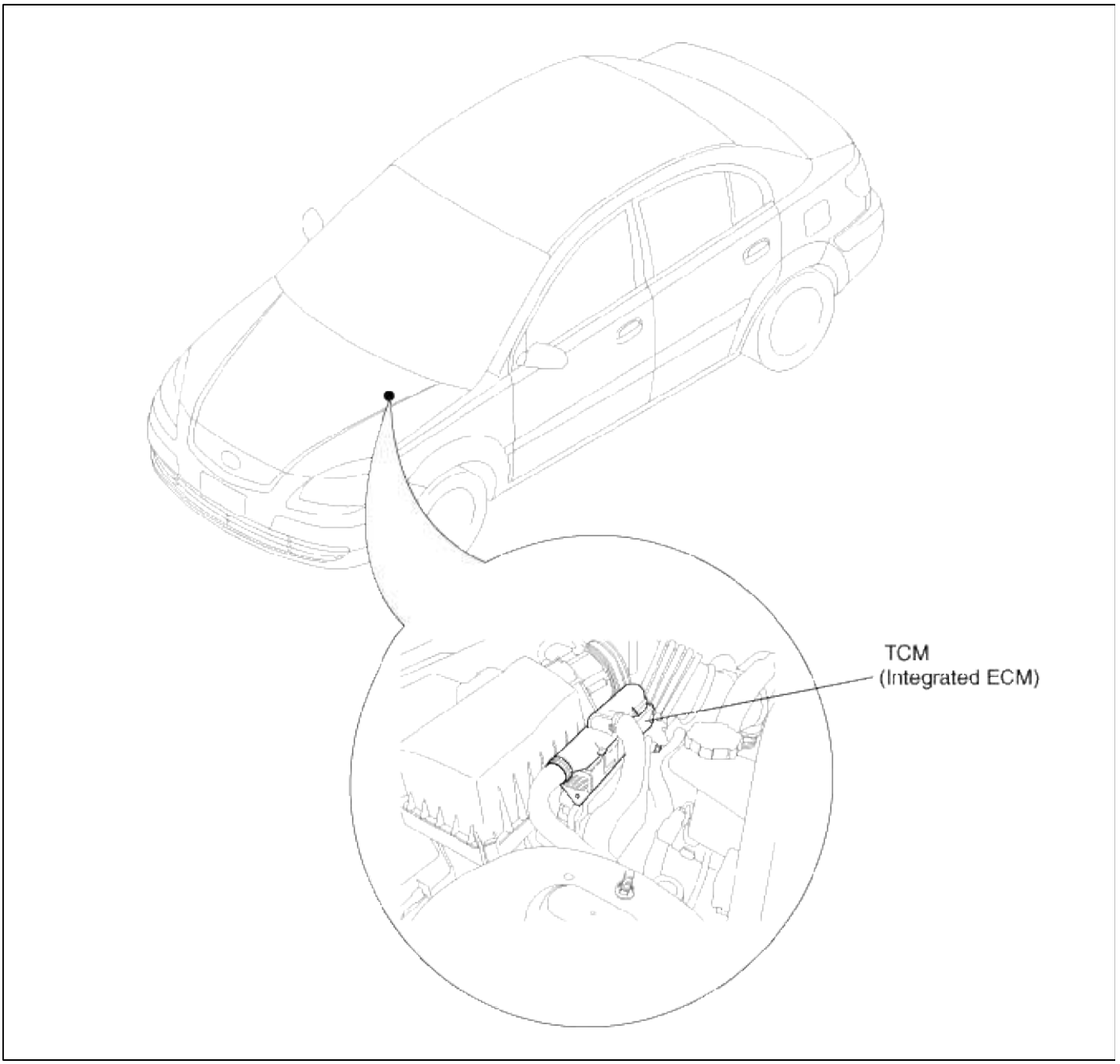
Description

The advanced alpha automatic transaxle is for a 1.4/ 1.6 DOHC engine. The advanced alpha AT is popularly used among small sized vehicles.

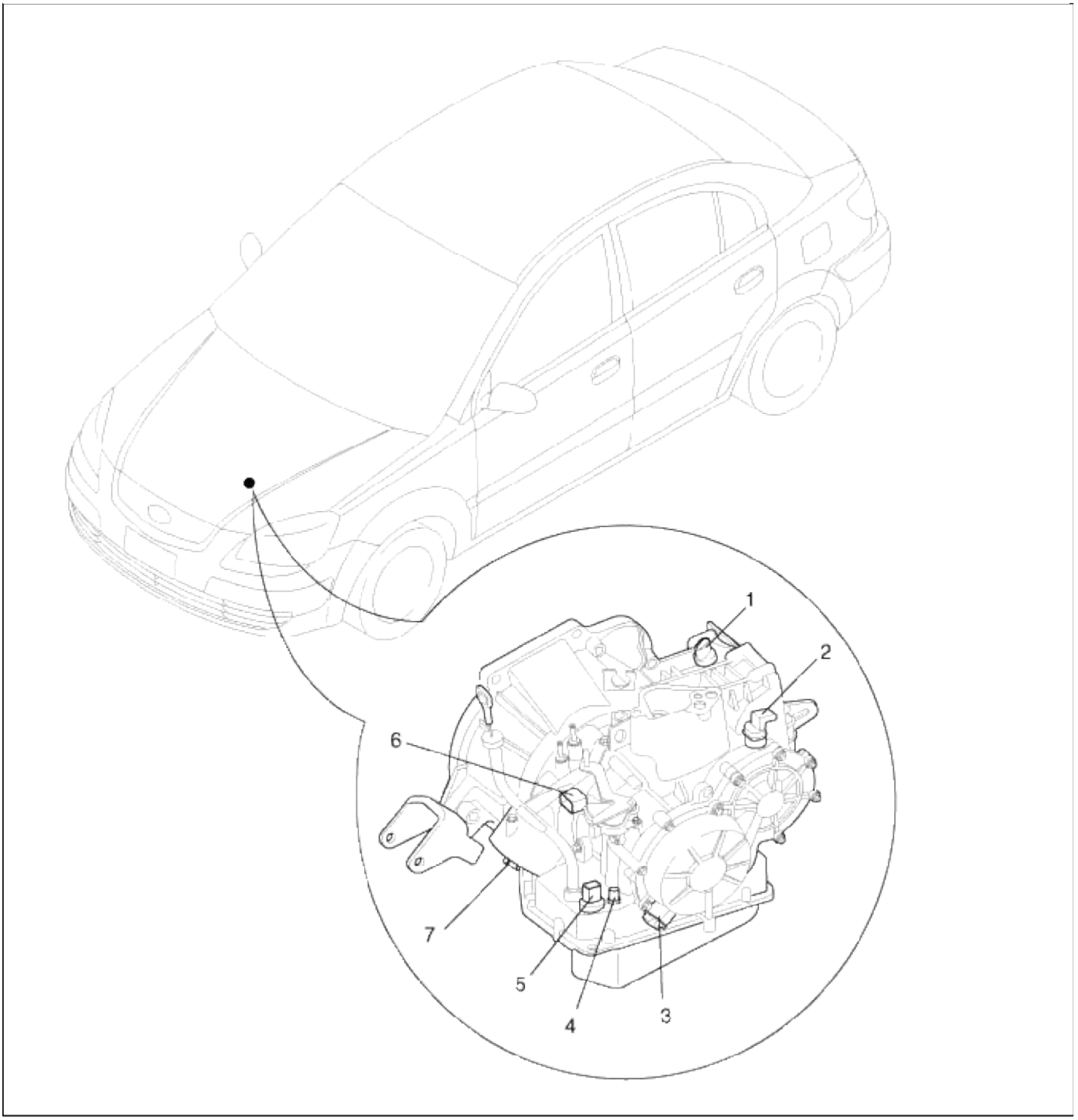
Nowadays PCM(power-train control module), which integrates the ECU and TCU inside, is the new trend of the power-train system.

The merge of two system guarantees stable quality of the AT as well as better shift feeling and faster response to ECU information.

Components(1)

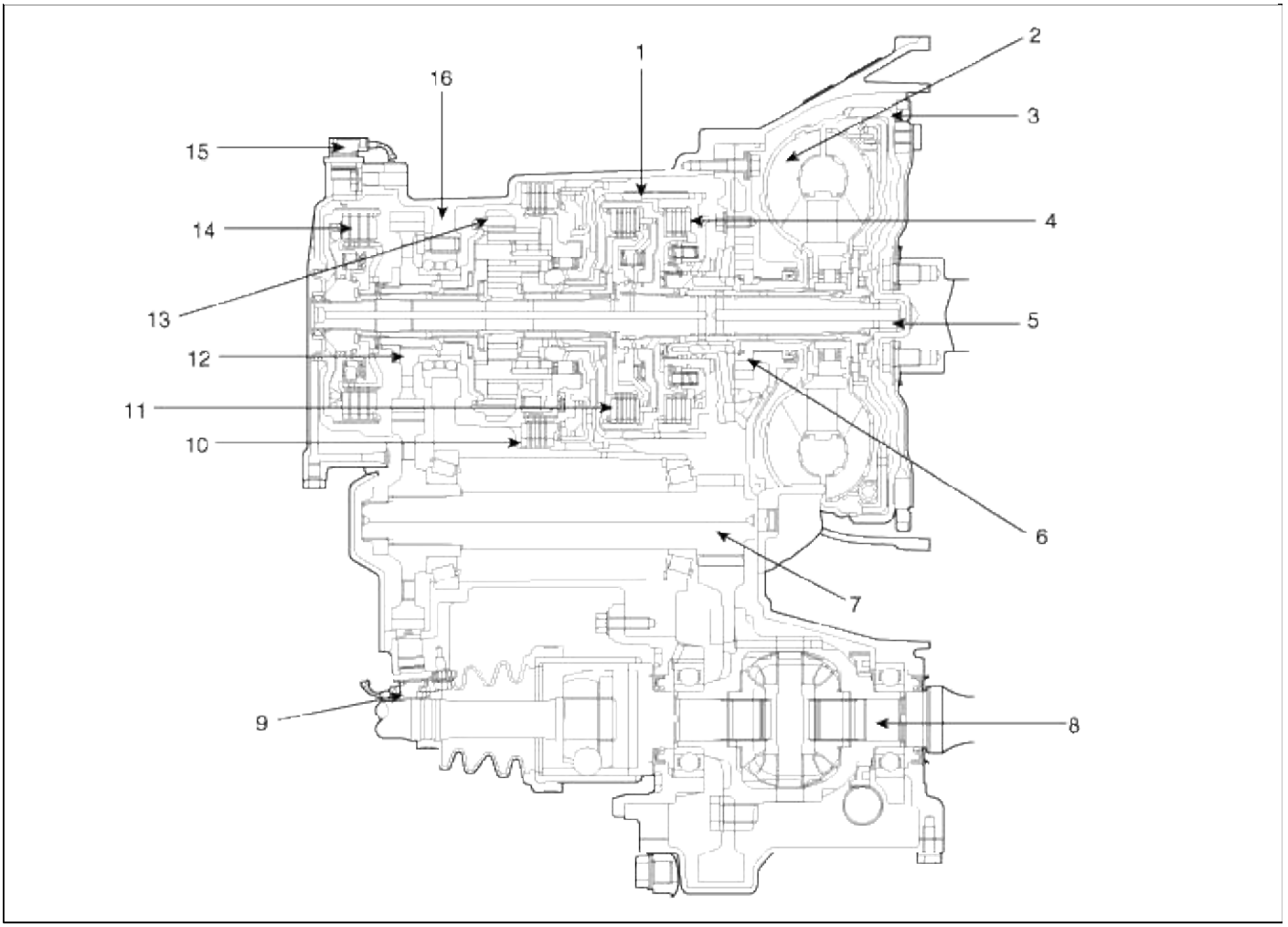


Components(2)



1. Vehicle speed sensor 2. Output shaft speed sensor 3. Input shaft speed sensor 4. Fluid temperature sensor	5. Solenoid valve 6. Inhibitor switch 7. Kickdown servo switch

Mechanical System
Components



1. Kickdown band 2. Torque converter 3. Damper clutch 4. Front clutch 5. Input shaft 6. Oil pump 7. Transfer drive gear 8. Transfer driven gear	9. Pulse generator B 10. Low&Reverse brake 11. Rear clutch 12. Output shaft 13. Planetary gear set 14. End clutch 15. Pulse generator A 16. Transaxle case

Function

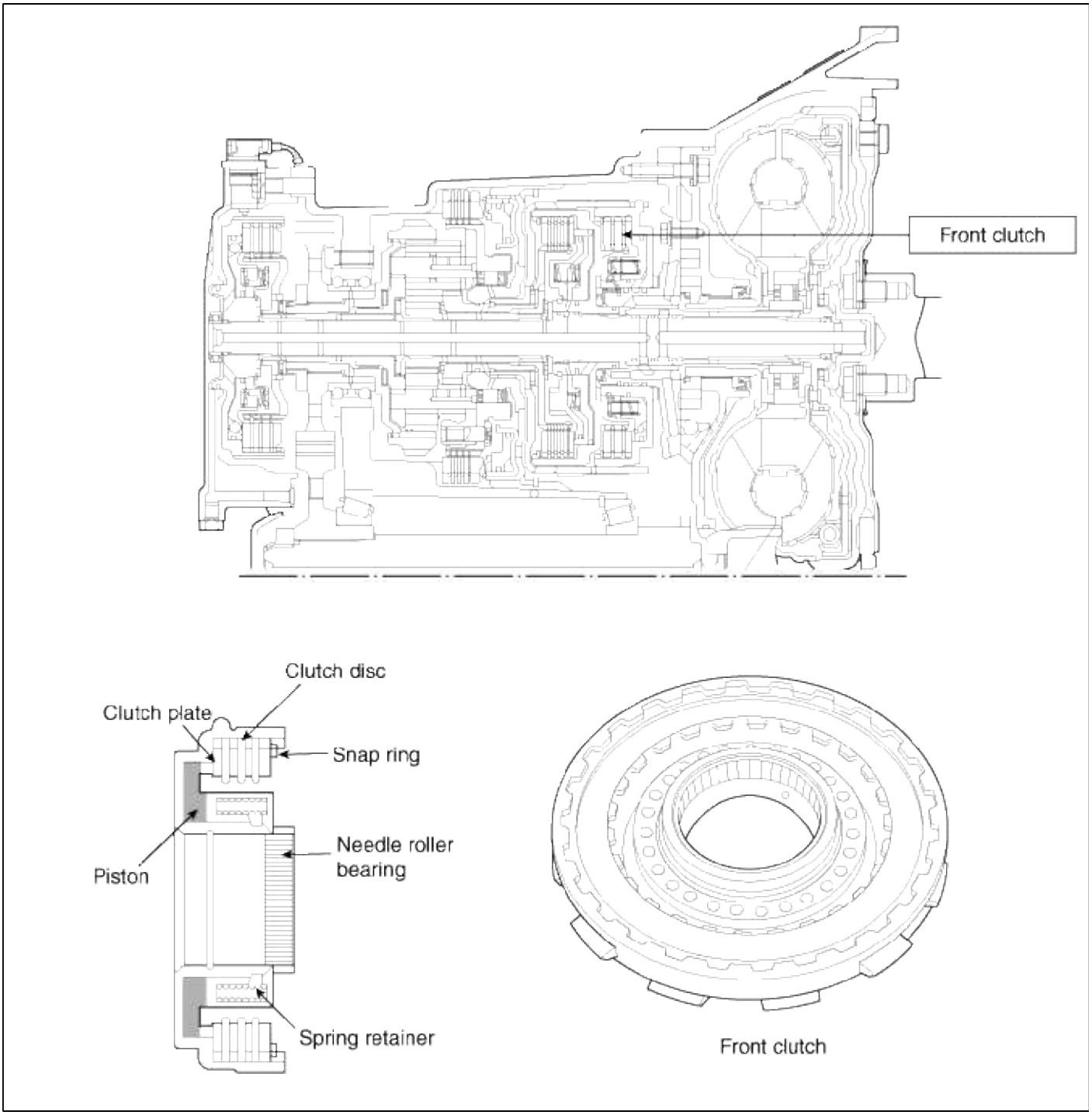
Component	Symbol	Function
Front clutch	F/C	Connect input shaft and reverse sun gear
Rear clutch	R/C	Connect input shaft and forward sun gear
End clutch	E/C	Connect input shaft and planetary carrier
Kick down brake	K/D	Hold reverse sun gear
Low&Reverse clutch	L/R	Hold planetary carrier
One way clutch	OWC	Restrict planetary carrier turning direction

Front Clutch

Front clutch is engaged at 3rd gear of D range and R range. When it is engaged, reverse sun gear of the planetary gear rotates.

Power Flow:

Input shaft→ Rear clutch retainer→ Front clutch→ Kick-down drum→ Reverse sun gear→ Long pinion→ Ring gear→ Transfer driven gear

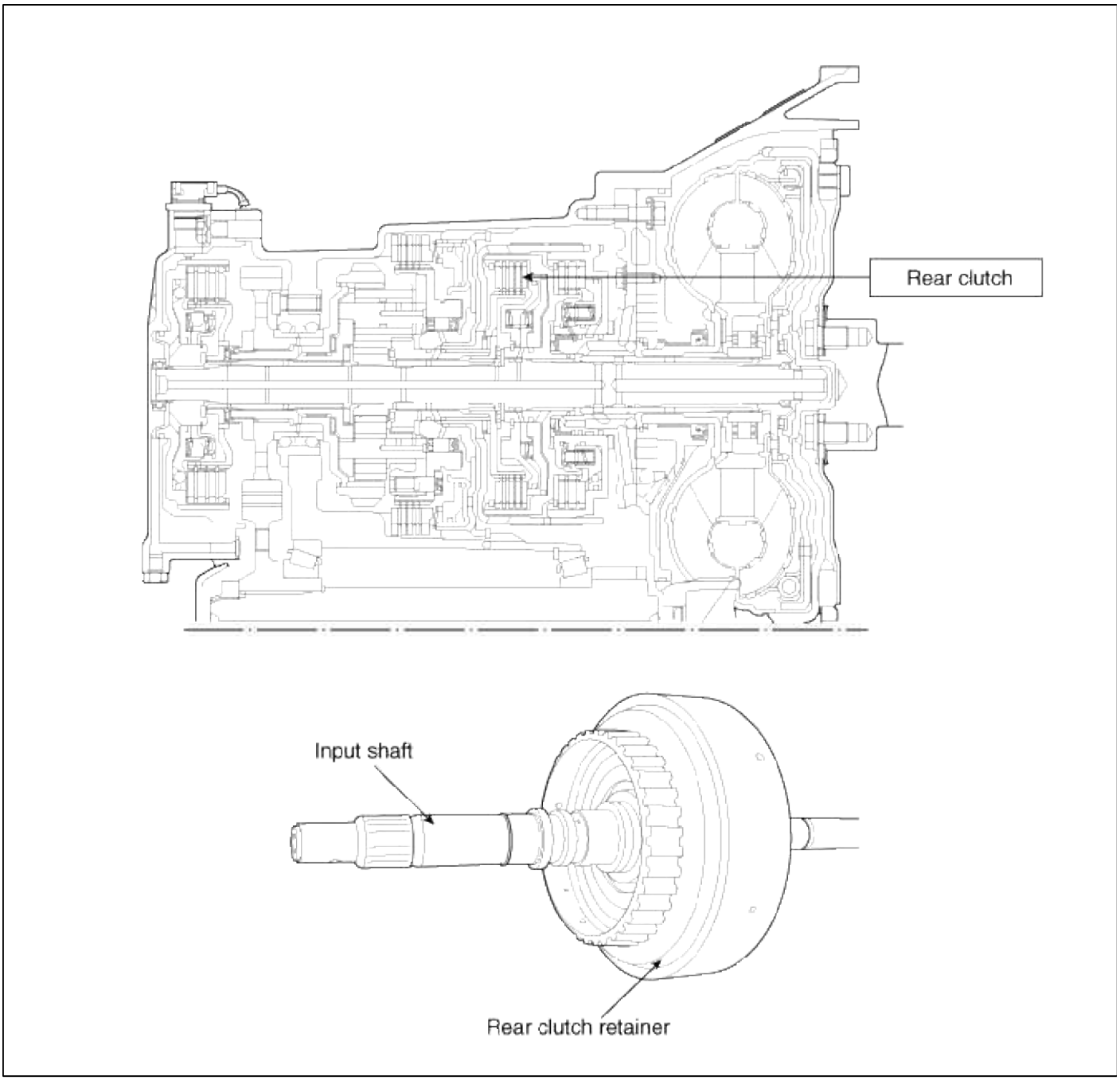


Rear Clutch

Rear clutch is engaged at 1st~3rd gear of D/2/L range. When it is engaged, forward sun gear of the planetary gear rotates.

Power Flow:

Input shaft→ Rear clutch retainer→ Rear clutch→ Rear clutch hub→ Forward sun gear→ Short pinion

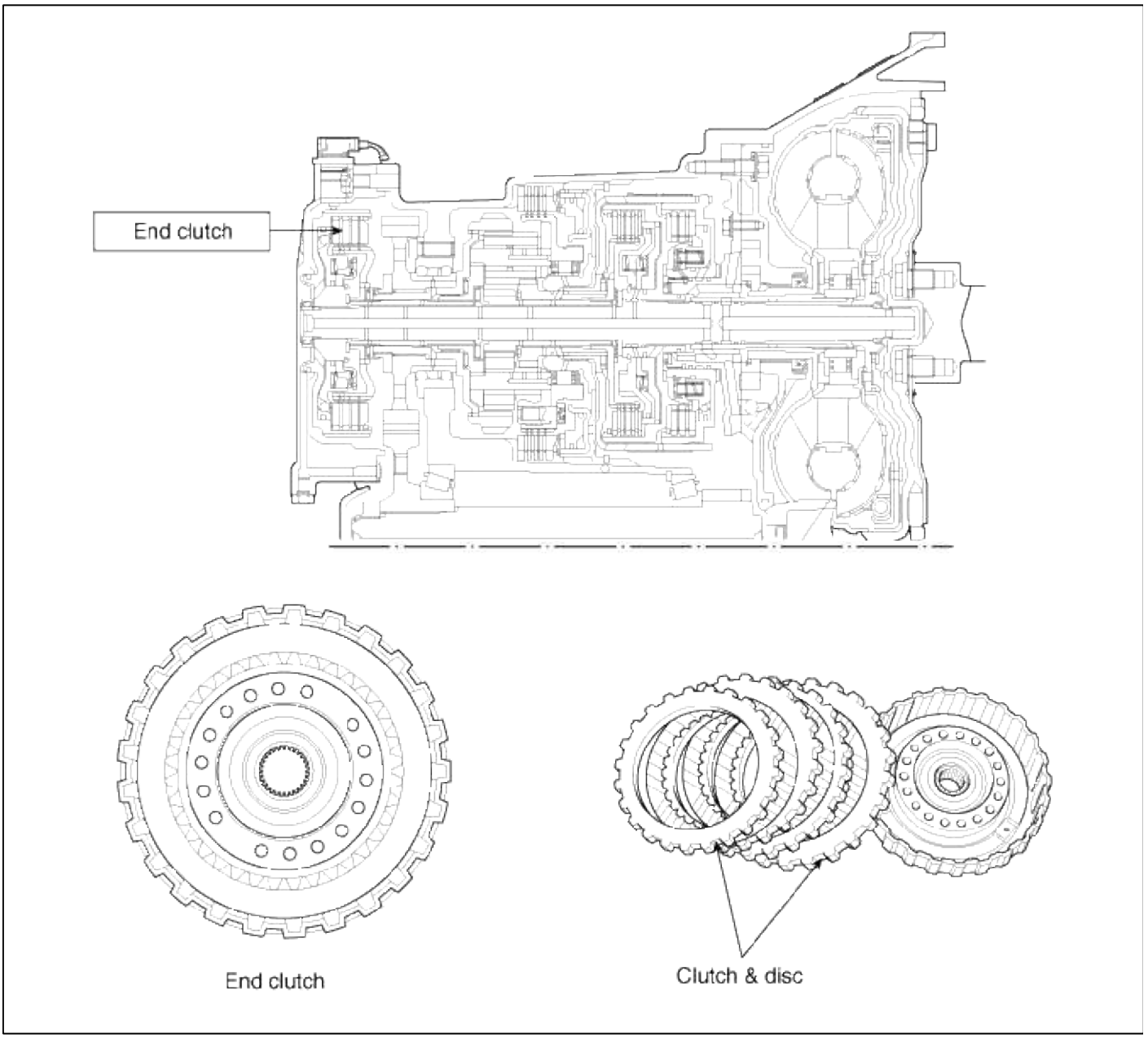


End Clutch

End clutch is engaged at 4th gear (Actually, end clutch is being engaged from 3rd gear. This is only for smooth shifting to 4th gear). When it operates, planetary carrier rotates.

Power Flow:

Input shaft→ End clutch retainer→ End clutch→ End clutch hub→ End clutch shaft→ Planetary carrier→ Ring gear→ Transfer driven gear

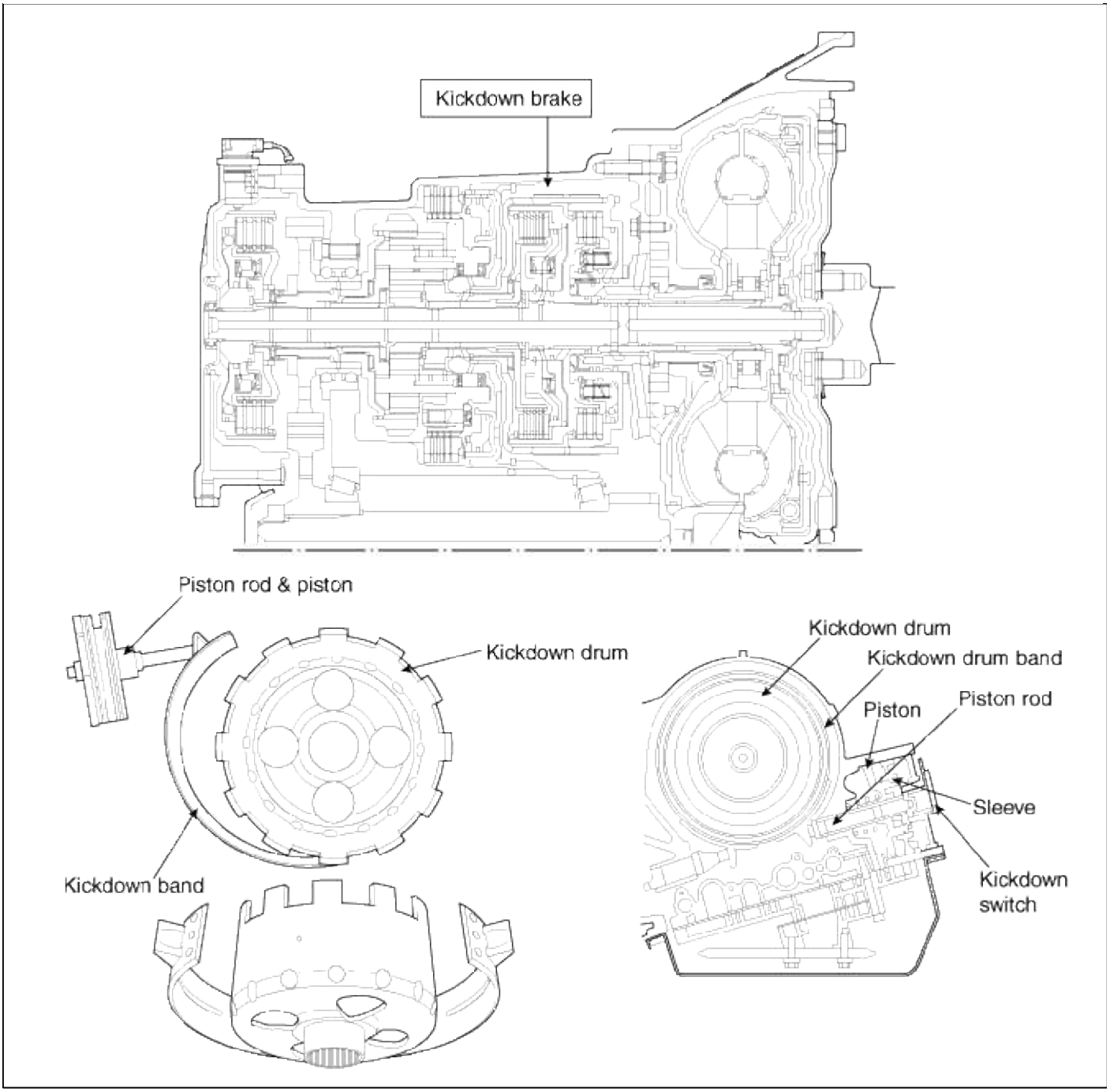


Kick Down Brake

End clutch is composed of a kick down brake band, drum, servo piston and servo switch. It is engaged at 2nd&4th gear. When it operates, reverse sun gear of the planetary gear is held.

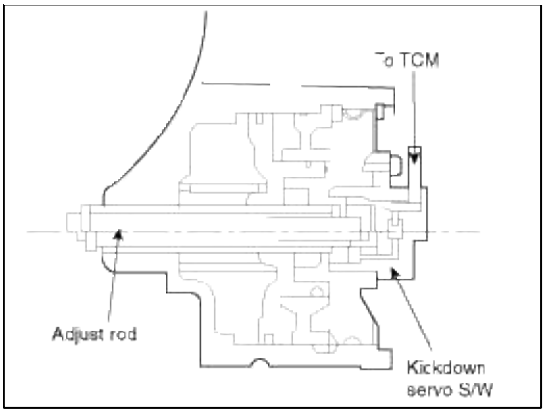
Power Flow:

Kick down brake→ Kick down drum hold→ Reverse sun gear hold



The kickdown brake is a band type brake; it is composed of a kickdown band, drum, kickdown servo, switch and anchor. When the 2nd pressure is admitted to the apply side chamber of kickdown servo cylinder, the kickdown piston and rod moves toward the left, tightening the brake band to hold the kickdown drum. As a result, the reverse sun gear (interlocked with the kickdown drum) is held. This brake functions during 2nd gear and during overdrive.

The kickdown servo switch detects the position of the kickdown piston just before the brake is applied, and sends the signal to the transaxle control module. Using this signal, the transaxle control module controls the 2nd pressure both before, and during application of the brake. In the initial control stage or until just before the kickdown brake is applied, a higher 2nd pressure is supplied to the kickdown servo so that the kickdown piston con move quickly for faster response to the kickdown condition that has been initiated. In the second control stage or while the brake is being applied, the 2nd pressure is regulated at an optimum level so that the band is tightened on the drum the proper amount for good kickdown "feeling".



Low&reverse Brake

Low&Reverse brake is engaged at 1st gear of L range and R range. When it operates, the planetary carrier is held.

Power Flow:

Low & Reverse brake→ Planetary carrier hold