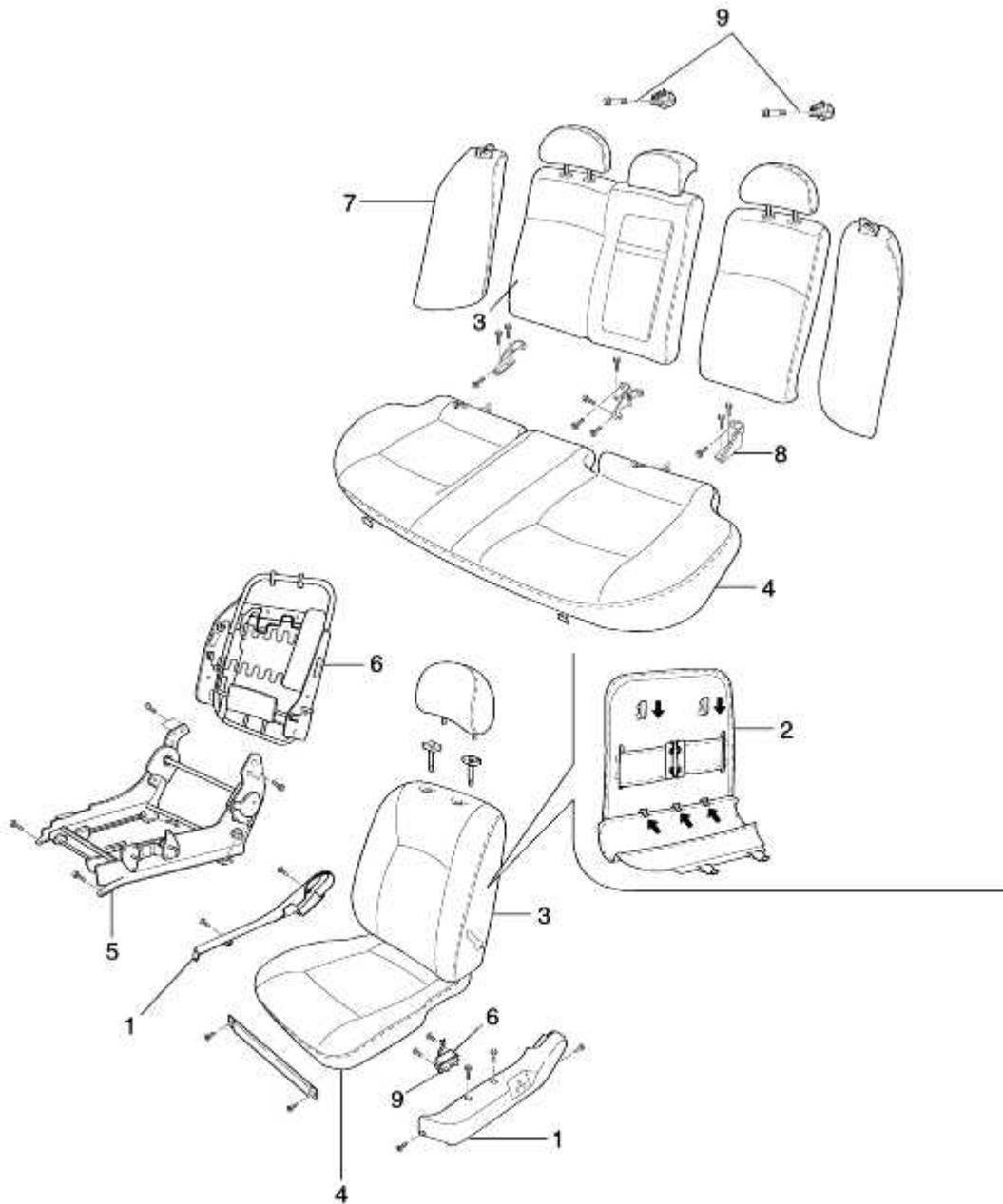


Torque: N-m (kg-cm, lb-ft)

Disassembly steps

- | | |
|---|-------------------------------------|
| 1. Solenoid valve support | 11. Still ball (Orifice check ball) |
| 2. UD clutch solenoid valve | 12. Spring |
| 3. 2nd brke solenoid valve | 13. Plate |
| 4. Damper clutch control solenoid valve | 14. Damping valve |
| 5. OD clutch solenoid valve | 15. Damping valve spring |
| 6. L&R brake solenoid valve | 16. Steel ball (line relief) |
| 7. Manual valve | 17. Spring |
| 8. Cover | 18. Steel ball (Orifice check ball) |
| 9. Plate | 19. Spring |
| 10. Outside valve body assembly | 20. Inside valve body assembly |

INSIDE VALVE BODY



1. Seat side cover
2. Seatback plate
3. Seatback assembly
4. Seat cushion
5. Seat adjuster

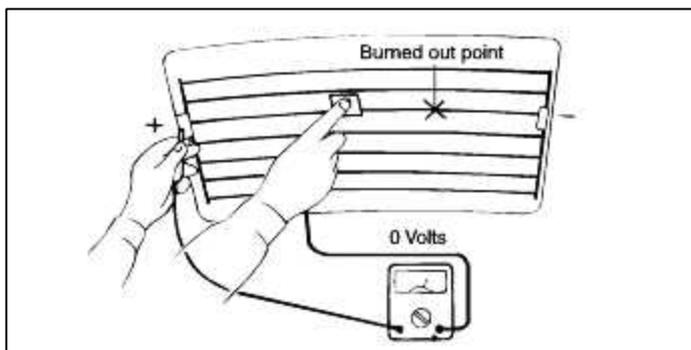
6. Seatback frame
7. Seat bolster
8. Seat hinge bracket
9. Seat striker

Body (Interior and Exterior) > Seat & Power Seat > front seat > Repair procedures

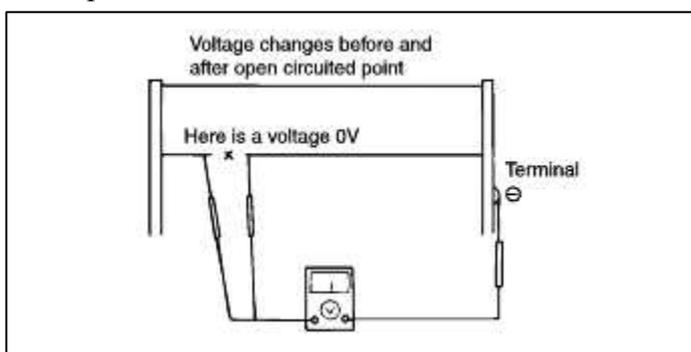
REMOVAL

1. Pull reclining lever and let seatback spring forward.
2. Pull seat adjuster and push seat all of the way back.

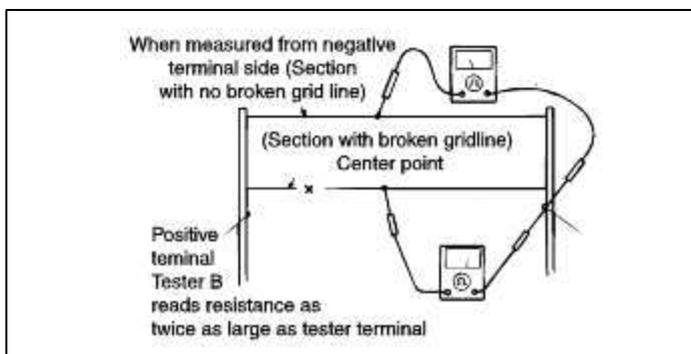
3. If a heater line is burned out between the center point and (-) terminal, the voltmeter will indicate 0V.



4. To check for open circuits, slowly move the test lead in the direction that the open circuit seems to exist. Try to find a point where a voltage is generated or changes to 0V. The point where the voltage has changed is the open-circuit point.



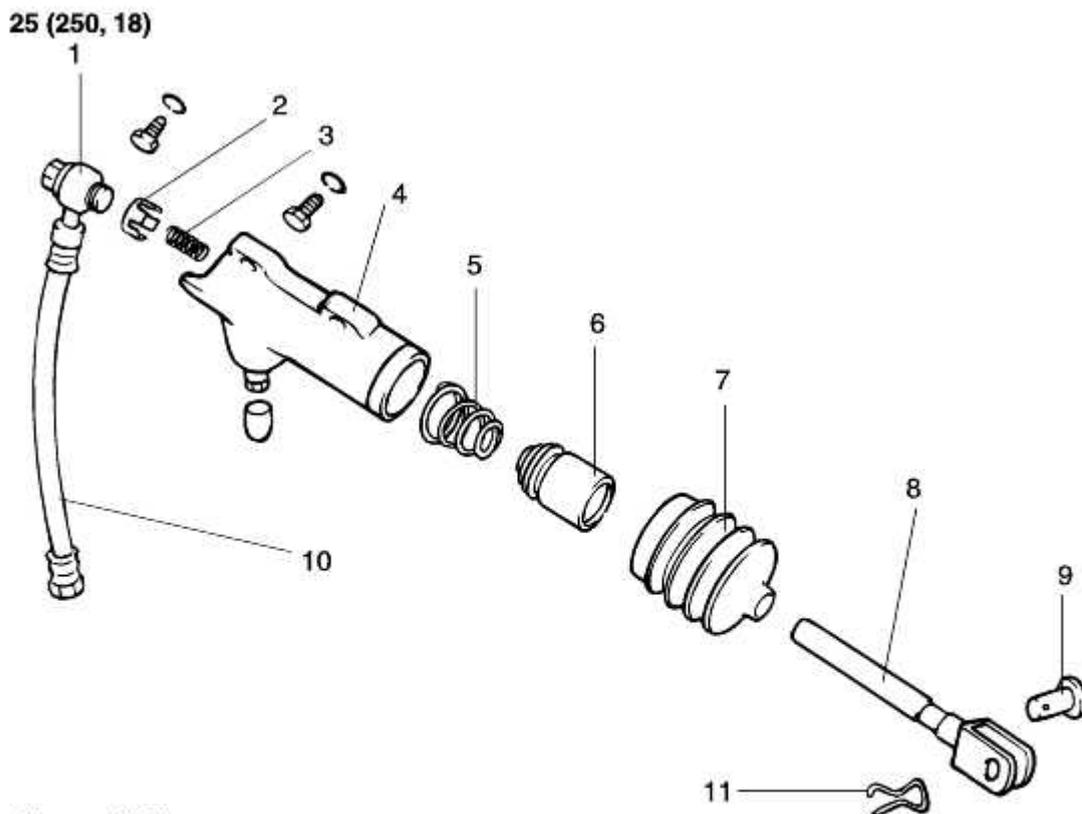
5. Use an ohmmeter to measure the resistance of each heater line between a terminal and the center of a grid line, and between the same terminal and the center of one adjacent heater line. The section with a broken heater line will have a resistance twice as that in other sections. In the affected section, move the test lead to a position where the resistance sharply changes.



Repair of broken heater line

Prepare the following items:

1. Conductive paint.
2. Paint thinner.
3. Masking tape.
4. Silicone remover.



TORQUE : Nm (kg.cm, lb.ft)

- | | |
|---------------------|-----------------|
| 1. Union bolt | 7. Boot |
| 2. Valve plate | 8. Push rod |
| 3. Valve spring | 9. Clevis pin |
| 4. Release cylinder | 10. Clutch tube |
| 5. Return spring | 11. Snap ring |
| 6. Piston | |

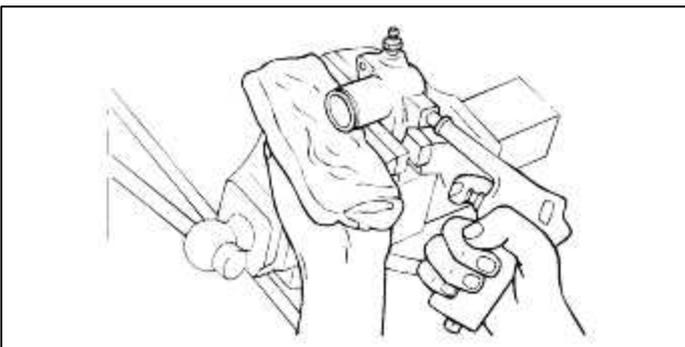
Clutch System > Clutch System > Clutch Release Cylinder > Repair procedures

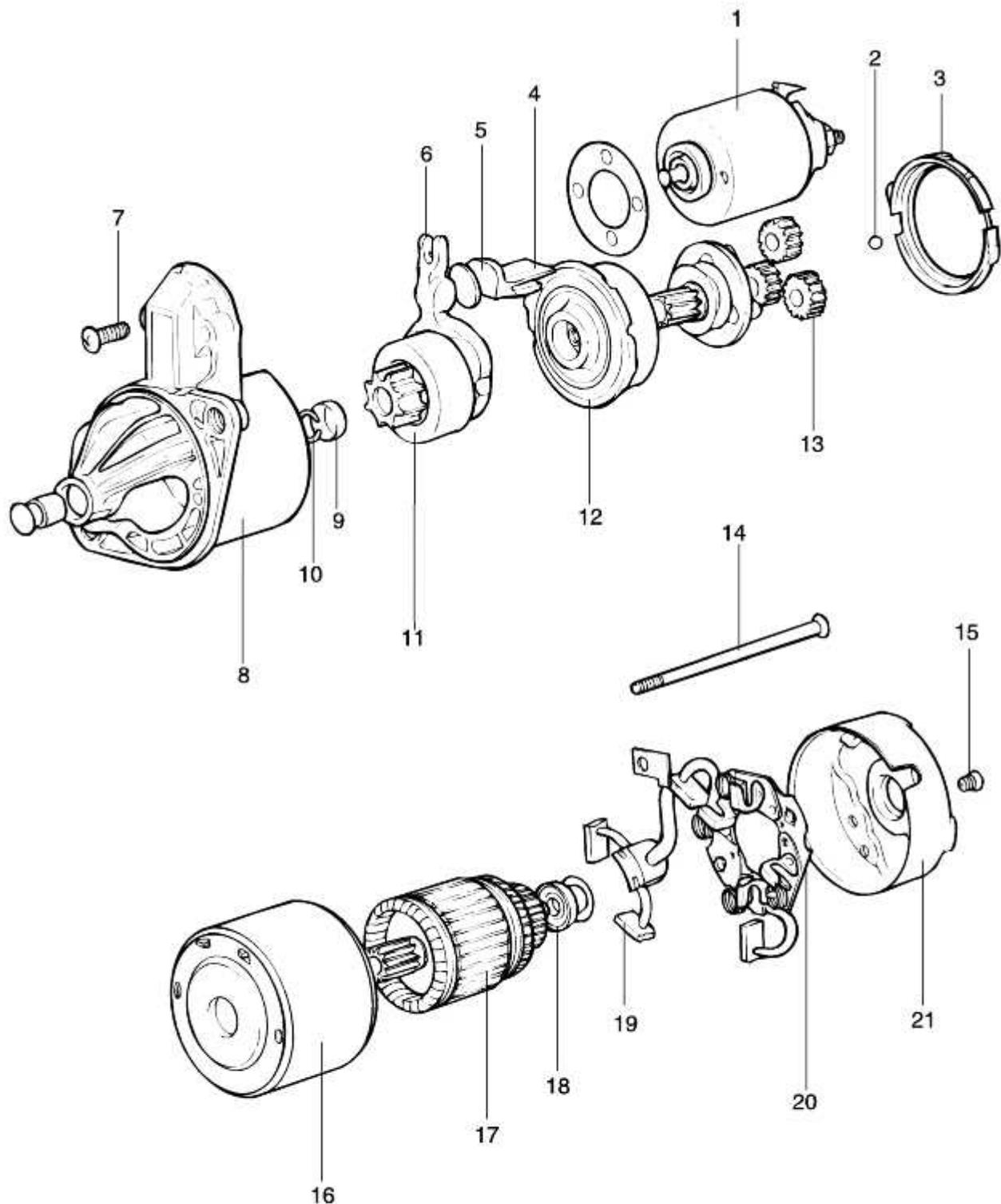
REMOVAL

1. Remove the clutch hose, valve plate, spring, push rod and boot.
2. Remove any dirt from the piston bore opening of the release cylinder.
3. Remove the piston from the release cylinder using compressed air.

CAUTION

1. Cover with rags to prevent the piston from popping out and causing injury.
2. Apply compressed air slowly to prevent the fluid from splashing in your eyes or on your skin.





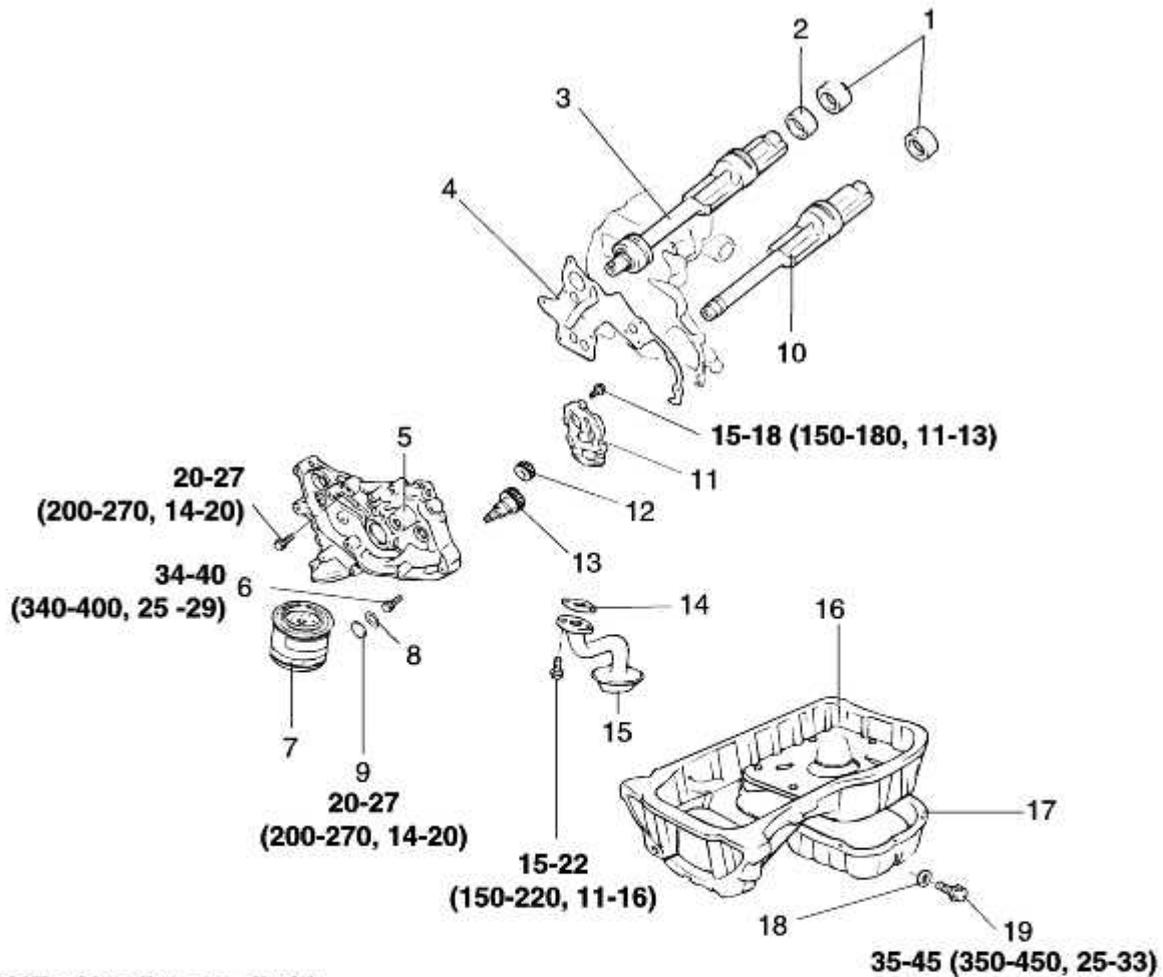
1. Magnetic switch
 2. Bal
 3. Packing A
 4. Packing B
 5. Plate
 6. Lever
 7. Screw

8. Front bracket
 9. Snap ring
 10. Stop ring
 11. Overrunning clutch
 12. Internal gear
 13. Planetary gear
 14. Screw

15. Screw
 16. Yoke assembly
 17. Armature
 18. Rear bracket
 19. Brush
 20. Brush holder
 21. Rear bearing

Engine Electrical System > Starting System > Starter > Repair procedures

REMOVAL (SNAP RING AND STOP RING)



TORQUE : Nm (kg.cm, lb.ft)

- | | |
|--------------------------------|--------------------|
| 1. Rear bearing | 11. Oil pump cover |
| 2. Front bearing | 12. Driven gear |
| 3. Right counter balance shaft | 13. Drive gear |
| 4. Gasket | 14. Gasket |
| 5. Oil pump case | 15. Oil screen |
| 6. Driven gear bolt | 16. Upper oil pan |
| 7. Oil filter | 17. Lower oil pan |
| 8. O-ring | 18. Gasket |
| 9. Plug cap | 19. Drain plug |
| 10. Left counter balance shaft | |

Engine Mechanical System > Lubrication System > Front Case > Repair procedures

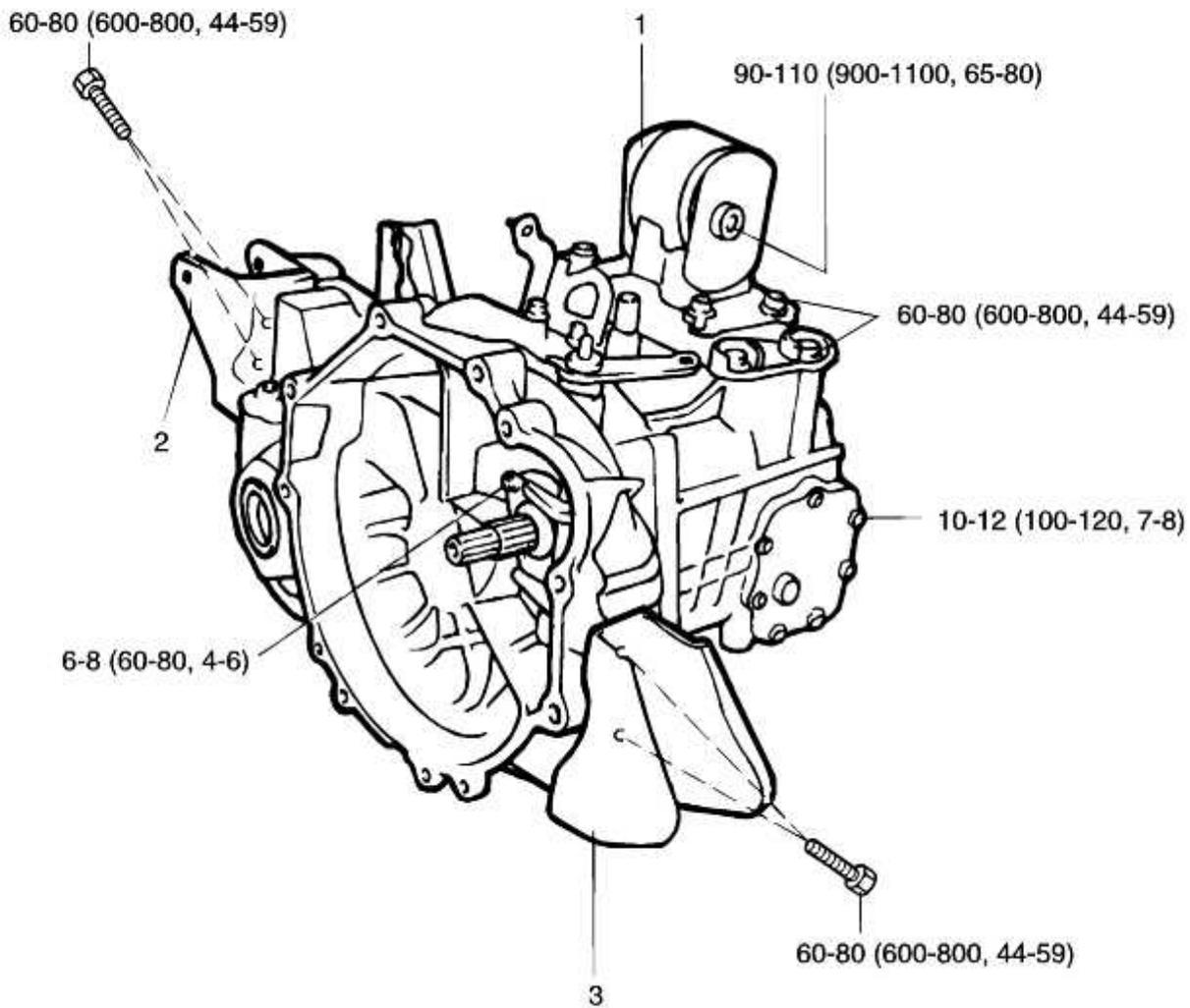
REMOVAL

1. Remove the timing belt. Refer to "Timing Belt".
2. Remove all the oil pan bolts.
3. Remove the oil pan.
4. Remove the oil screen and gasket.
5. Remove the relief plunger and gasket, and then take off the relief spring and relief valve from the oil filter bracket.

OPTIMA(MS) > 2005 > G 2.4 DOHC > Manual Transaxle System

Manual Transaxle System > Manual Transaxle System > Manual Transaxle > Components and Components Location

COMPONENTS



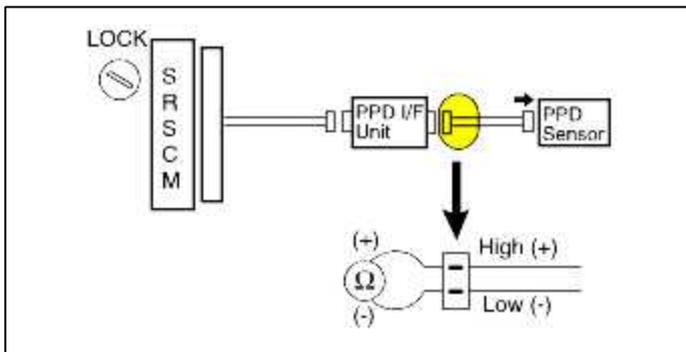
TORQUE : Nm (kg-cm, lb-ft)

1. Transmission mounting bracket
2. Rear roll stopper bracket

3. Front roll stopper bracket

COMPONENTS(CONTINUED)

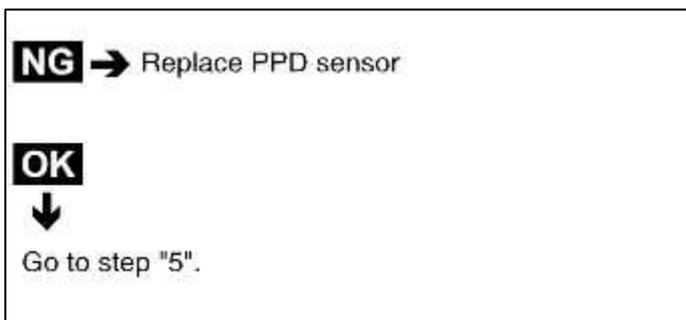
4. Check PPD sensor (Defect).



[CHECK]

Check the resistance in accordance with the changed weight.

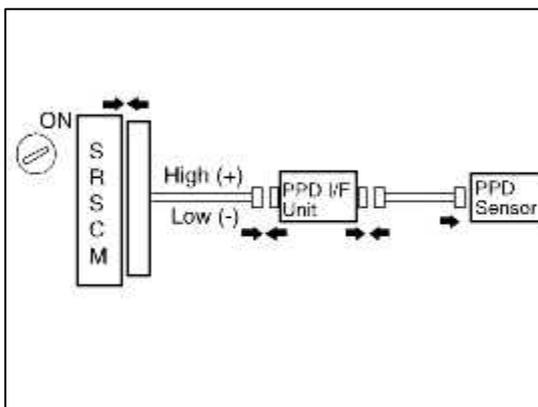
 $R \leq 50 \text{ k}\Omega$ for $W \geq 15 \text{ kg}$
 $R > 50 \text{ k}\Omega$ for $W \leq 0.6 \text{ kg}$



5. Check PPD squib.

[PREPARATION]

- (1) Turn ignition switch to LOCK.
- (2) Disconnect negative (-) terminal cable from the battery, and wait at least 30 seconds.
- (3) Connect the SRSCM connector and the PPD connector.
- (4) Connect negative (-) terminal cable to battery, and wait at least 30 seconds.



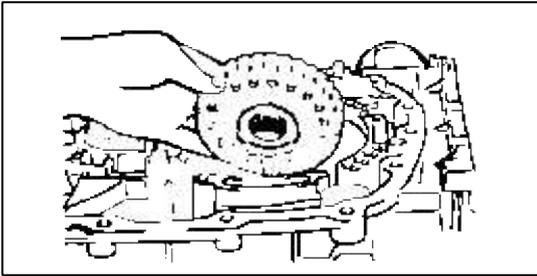
[CHECK]

- (1) Turn ignition switch to ON, and wait at least 30 seconds.
- (2) Clear malfunction code stored in memory with Hi-scan.
- (3) Turn ignition switch to LOCK, and wait at least 30 seconds.
- (4) Turn ignition switch to ON, and wait at least 30 seconds.

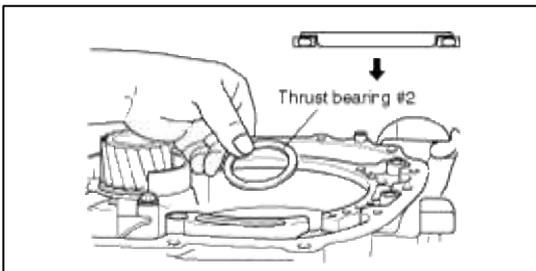
57. Install the underdrive clutch hub.

CAUTION

Be sure to install the thrust bearing in the proper direction.



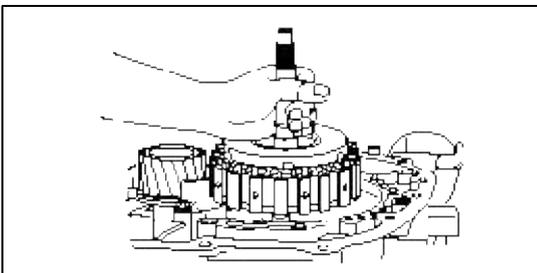
58. Install thrust bearing #2.



59. Grasp the input shaft and lower the underdrive clutch into position.

NOTE

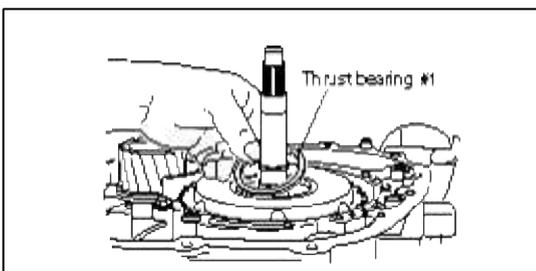
Looking into the hole where the input speed sensor mounts to the case will help you ensure that the underdrive clutch is fully seated.



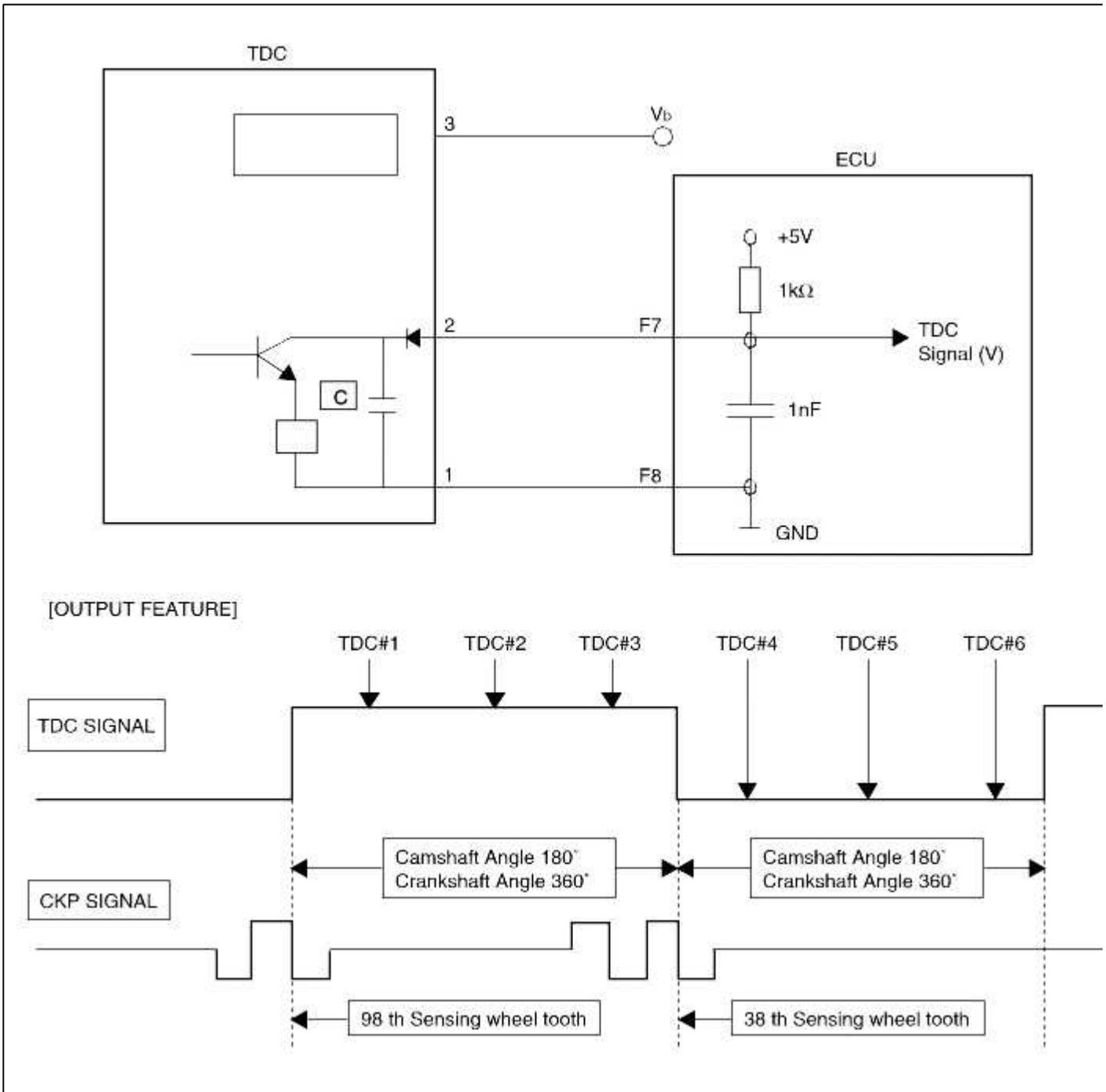
60. Install the used thrust bearing #1.

CAUTION

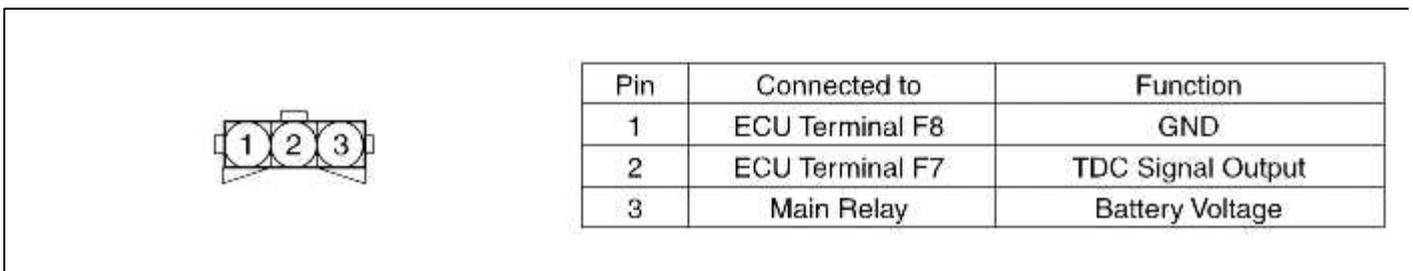
Be sure to use a new oil pump gasket.



[CIRCUIT DIAGRAM AND OUTPUT FEATURE (TDC)]



[HARNESS CONNECTOR]



TROUBLESHOOTING HINTS

If the TDC Sensor does not operate correctly, sequential injection is may not occur and the engine may stall or run irregularly at idle or fail to accelerate normally.

2. Replace packing with a new one and install the magnet plug.
3. Supply transaxle oil (through the filler plug part) until the oil level is the same level as the plug hole.

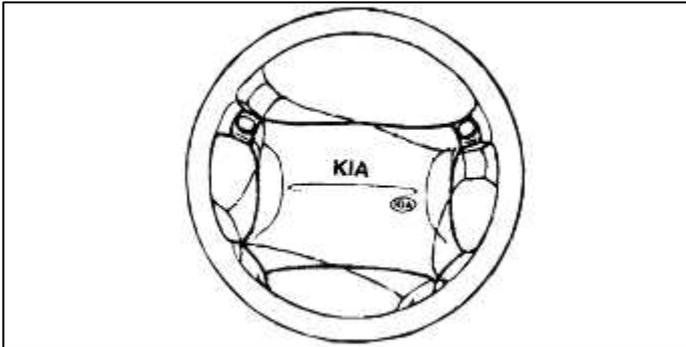
Transaxle oil total capacity :

2.1 liters (2.2 U.S. qts., 1.8 Imp. qts.)

INSPECT STEERING LINKAGE

1. Check steering wheel freeplay.

Maximum steering wheel freeplay : 30 mm (1.181 in.)



2. Check steering linkage for looseness and damage as follows.
 - (1) Tie rod ends do not have excessive play.
 - (2) Dust seals and boots are not damaged..
 - (3) Boot clamps are not loose

POWER STEERING FLUID LEVEL

(Inspect fluid level)

1. Park the vehicle on a flat, level surface, start the engine, and then turn the steering wheel several times to raise the temperature of the fluid to approximately 50°C (122°F).
2. With the vehicle still idling, turn the wheel all the way to the left and right several times. Check the fluid in the oil reservoir for foaming, check the fluid level, and replenish the fluid in the oil reservoir through the oil filter if necessary.

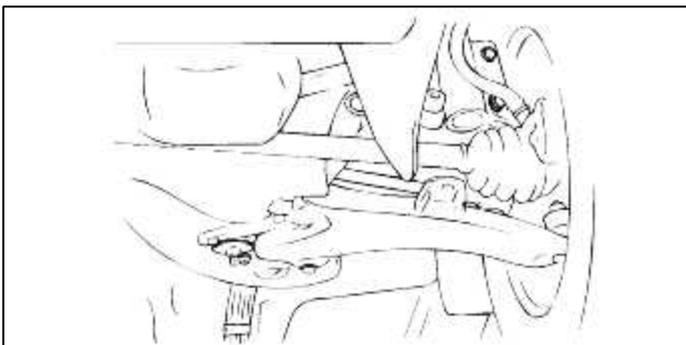
POWER STEERING HOSES

(Check for deterioration or leaks)

1. Check the hose connections for fluid leaks.
2. The power steering hoses should be replaced if there are severe surface cracking, pulling, scuffing or worn steps. Deterioration of the hoses could cause premature failure.

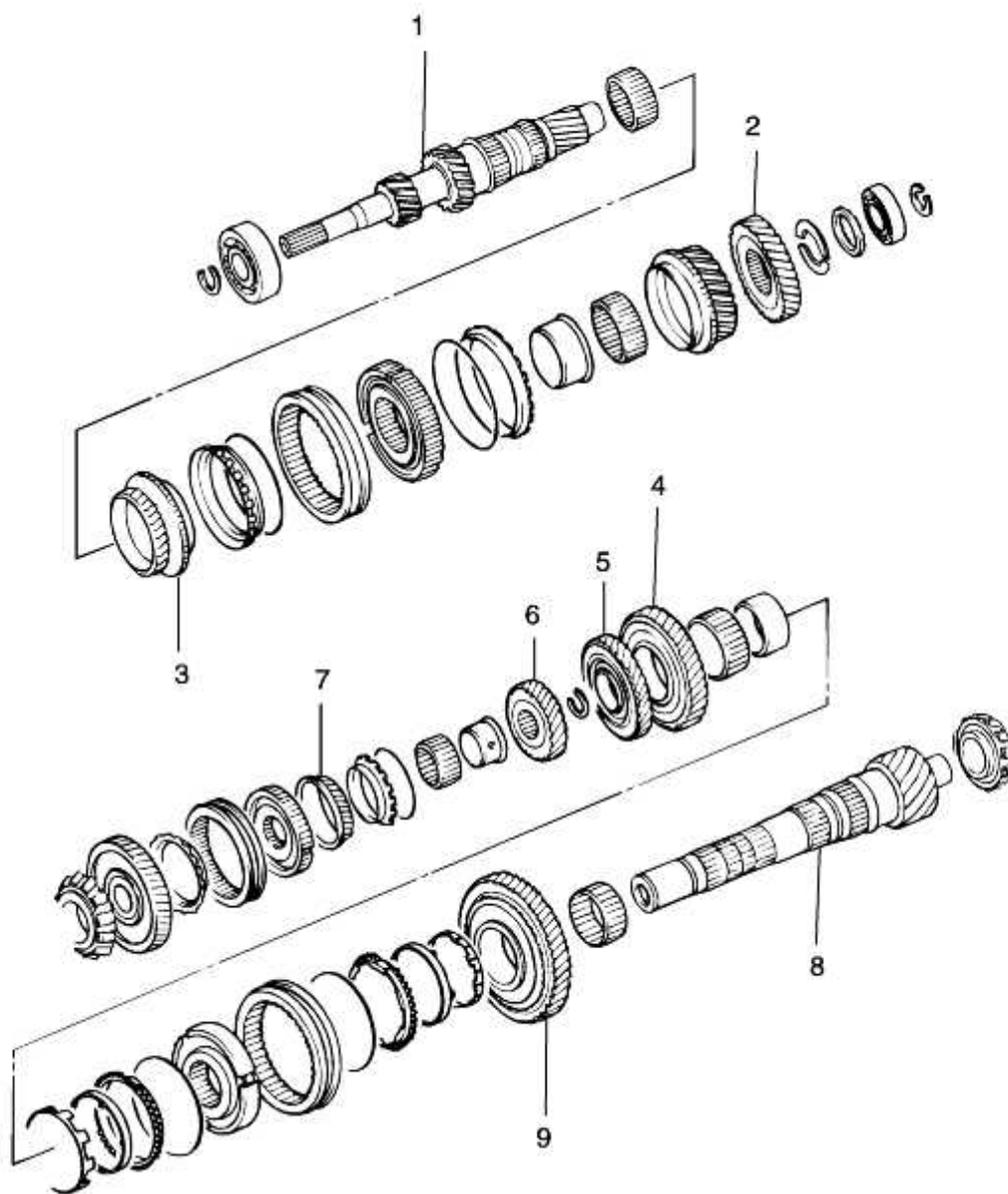
BALL JOINT AND STEERING LINKAGE SEALS, STEERING AND DRIVE SHAFT BOOTS

1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and boots should be replaced to prevent leakage or contamination of the grease.



2. Inspect the dust cover and boots for proper sealing leakage and damage. Replace them if defective.

INSPECT BRAKE LINE



- 1. Input shaft
- 2. 4th speed gear
- 3. 3rd speed gear
- 4. 2nd speed gear
- 5. 3rd speed gear

- 6. 4th speed gear
- 7. 5th speed gear
- 8. Output shaft
- 9. 1st speed gear

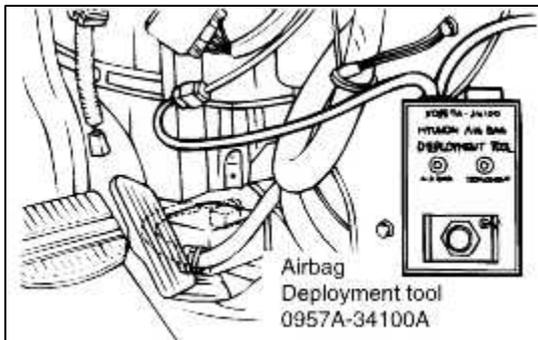
MANUAL TRANSAXLE DIAGRAM

- Disconnect the negative (-) and positive (+) battery cables from the battery terminals, and then remove the battery from the vehicle

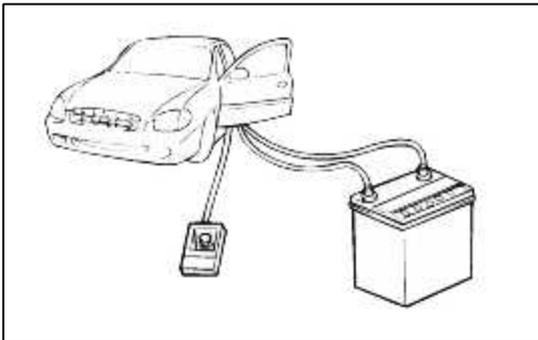
CAUTION

Wait at least 30 seconds after disconnecting the battery cable before doing any further work.

- Remove the center crash pad side cover.
- Remove the Airbag SRSCM connector.
- Connect the deployment tool to the connector of each module.



- As far away from the vehicle as possible, press the push button on the deployment tool to deploy the airbag.

**CAUTION**

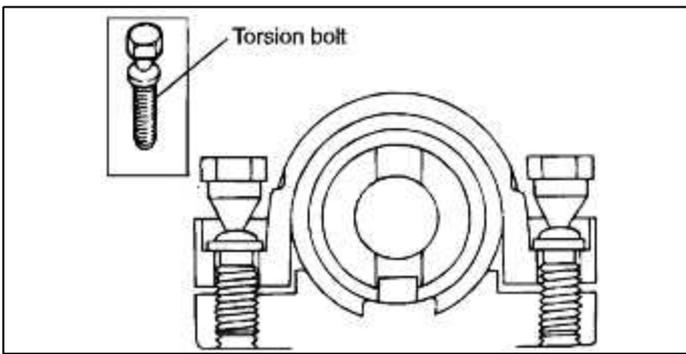
- Before deploying the airbag in this manner, first check to be sure that there is no one in or near the vehicle. Wear safety glasses.
- The inflator will be quite hot immediately following the deployment, so wait at least 30 minutes to allow it to cool before attempting to handle it. Although not poisonous, do not inhale gas from airbag deployment. See the Deployed Airbag Module Disposal Procedures for post-deployment handling instructions.
- If the airbag fails to deploy when the procedures above are followed, do not go near the module. Contact your DPSM.

DEPLOYED AIRBAG MODULE DISPOSAL PROCEDURES

After deployment, the airbag module should be disposed of in the same manner as any other scrap part, except that the following points should be carefully noted during disposal.

- The inflator will be quite hot immediately following deployment, so wait at least 30 minutes to allow it to cool before attempting to handle it.
- Do not put water or oil on the airbag after deployment.
- There may be adhered to the deployed airbag module, material that could irritate the eyes and/or skin, so wear gloves and safety glasses when handling a deployed airbag module. If despite these precautions, the material does get into your eyes or on your skin, immediately rinse the affected area with a large amount of clean water. If any irritation develops, seek medical attention.

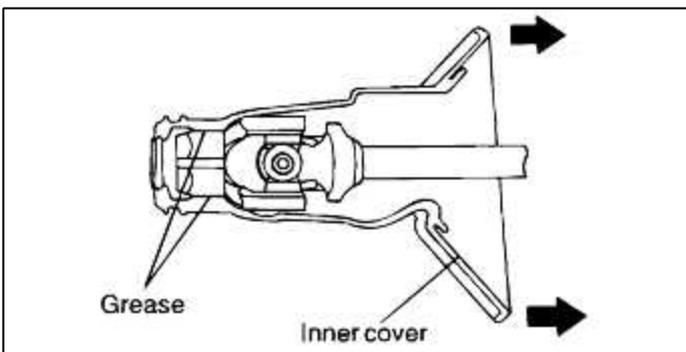
- After checking that the lock works properly, tighten the special bolts until the head twists off.



CAUTION

The steering lock bracket and bolts must be replaced with new ones when the steering lock is installed.

- Cover the inside lip of the inner cover with grease and pull the outside of the cover onto the joint.
- Fill the inside of the bearing with multipurpose grease.
- Install the bearings to the shaft on the joint assembly.

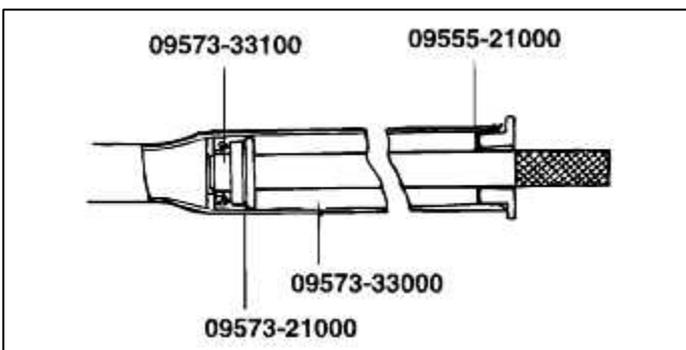


ASSEMBLY

- Apply the specified fluid to the entire surface of the oil seal and gear housing.

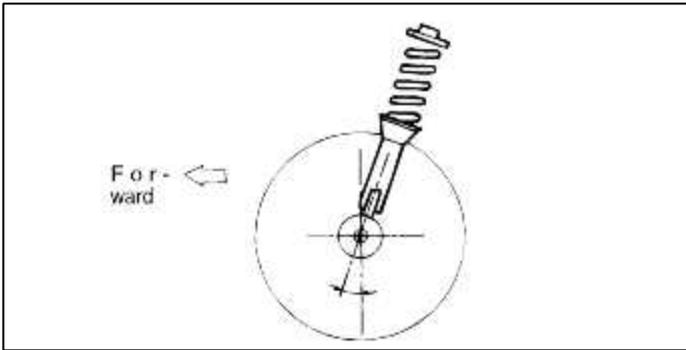
Recommended fluid : Power steering fluid (PSF-3)

- Using the special tools (09555-21000, 09573-21000, 09573-33000, 09573-33100), install the backup washer and oil seal to the specified position in the gear housing.



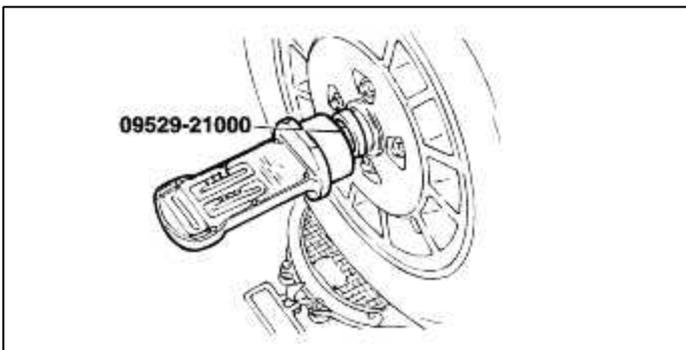
3. Caster

Caster is pre-set at the factory and can not be adjusted. If caster is not within standard value, replace the bent or damaged parts.



NOTE

1. The front suspension assembly must be free of worn, loose or damaged parts prior to measuring front wheel alignment.
2. Measure wheel alignment by using the special tool (09529-21000).
3. Camber and caster are pre-set at the factory and cannot be adjusted.
4. If camber and caster are not within specifications, replace bent or damaged parts.



REAR WHEEL ALIGNMENT INSPECTION

1. Toe-in

Standard value : 2 ± 2 mm

NOTE

The assist arm mounting bolt (crossmember side) should be turned an equal amount on both sides when adjusting.

