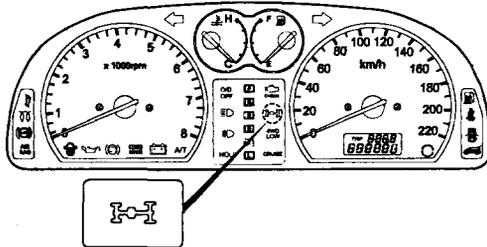


# TRANSFER CASE ASSEMBLY

## ELECTRIC SHIFT TRANSFER EMMB0330

1. If a malfunction occurs, the 4WD indicator lamp will blink to warn the driver.



KMMB033A

2. Following items will be indicated
  - 1) TCCM
  - 2) Shift motor
  - 3) Magnetic synchronizer clutch
  - 4) Speed sensor
  - 5) Hub solenoid
  - 6) Selector switch
  - 7) Motor position sensor
3. Diagnosis memory is erased by grounding the TCCM NO.22 pin or DLC NO.12 pin.
4. DTC Table

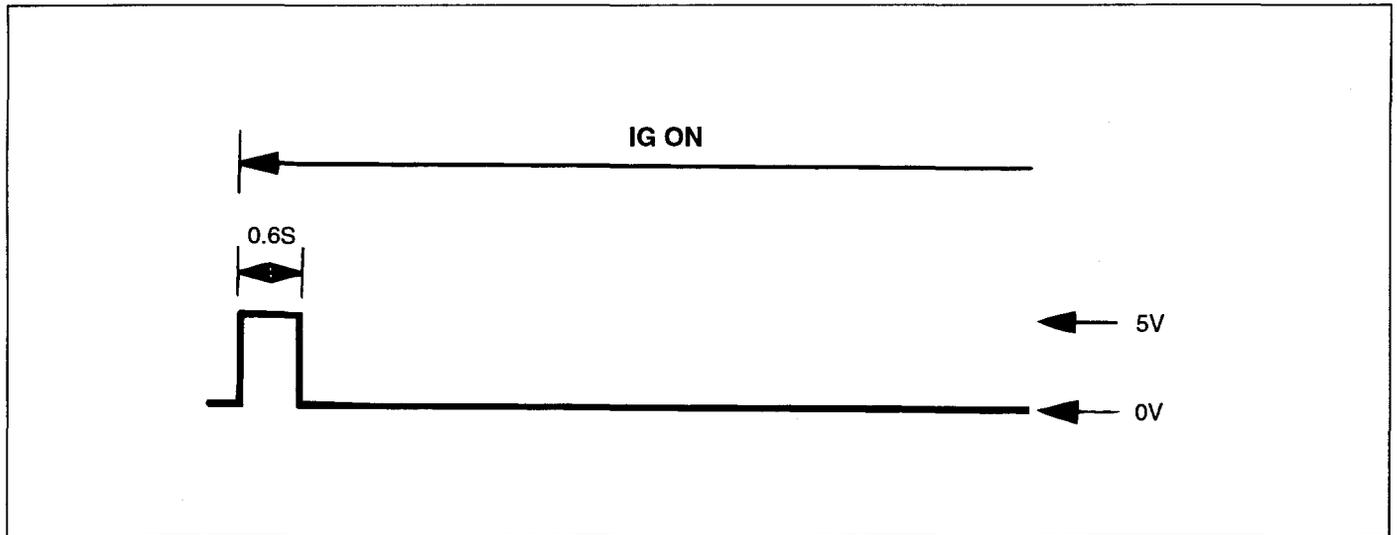
Code	Item
001	TCCM
010	Shift motor
011	Synchronizer clutch
100	Speed sensor
101	Hub solenoid
110	Selector switch
111	Motor position sensor

5. DTC Indication
  - 1) Indicator lamp check (0.6S)
  - 2) Lamp OFF (3S)
  - 3) DTC Indication

- 4) OFF (3S)
- 5) Repeat steps 3), 4)
- 6) Repeat steps 3), 4), 5) for additional faults.
6. Meaning of code
  - 0 : Lamp ON for 0.5 second
  - 1 : Lamp ON for 1 second
7. EX) TCCM Fault (DTC : 001)
  - 1) Indicator lamp check (0.6S)
  - 2) Lamp OFF (3S)
  - 3) Lamp ON (0.5S)
  - 4) Lamp OFF (0.5S)
  - 5) Lamp ON (0.5S)
  - 6) Lamp OFF (0.5S)
  - 7) Lamp ON (1S)
  - 8) Lamp OFF (3S)
  - 9) Repeat steps 3) ~ 8).

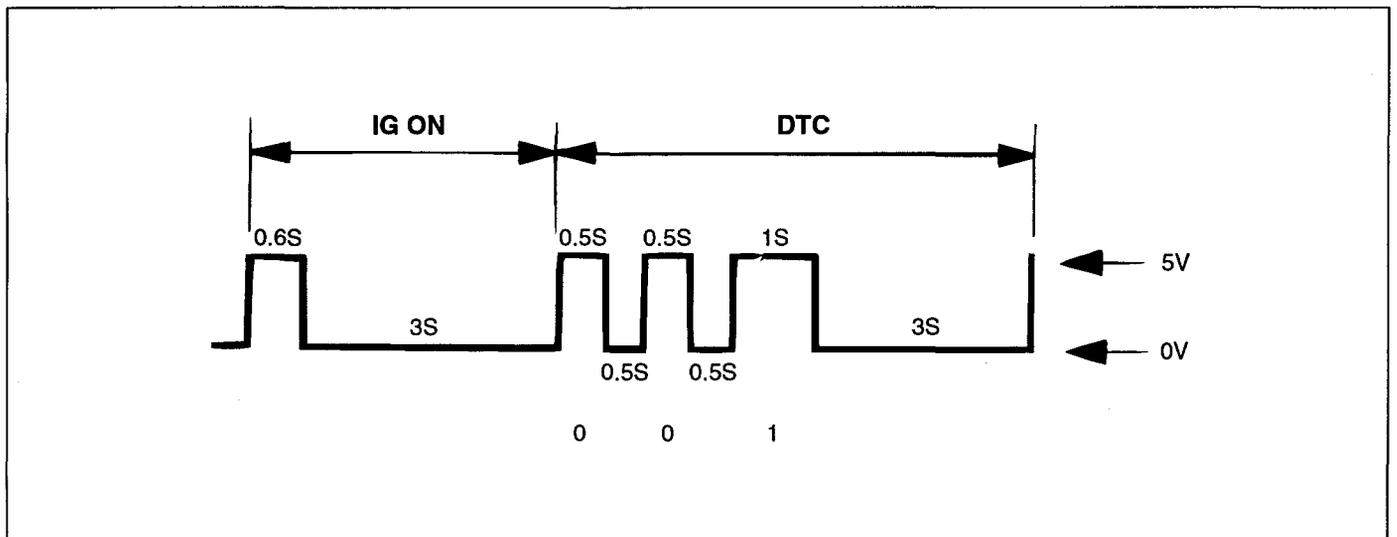
READING METHOD

NORMAL



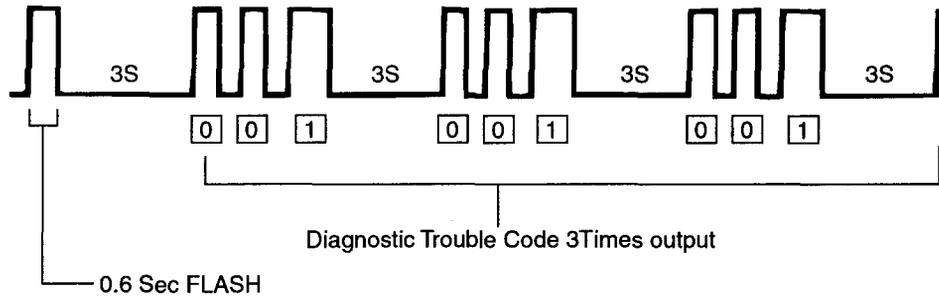
KMMB033B

FAULT



KMMB033C

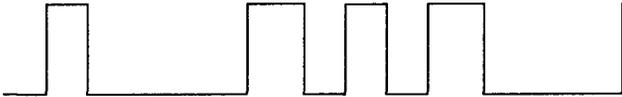
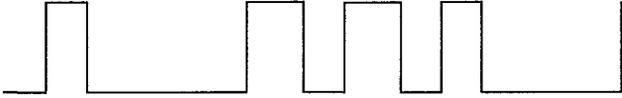
[Example]



EMMB033A

**DTC PATTERN**

Code	Output pattern	Item
001	<p>KMMB033E</p>	TCCM
010	<p>KMMB033F</p>	Shift motor
011	<p>KMMB033G</p>	Magnetic synchronizer clutch
100	<p>KMMB033H</p>	Speed sensor

Code	Output pattern	Item
101	 <p style="text-align: right; font-size: small;">KMMB033I</p>	Hub solenoid valve
110	 <p style="text-align: right; font-size: small;">KMMB033J</p>	Select switch
111	 <p style="text-align: right; font-size: small;">KMMB033K</p>	Motor position sensor

**ACTIVE TORQUE TRANSFER** EMMB0340

DTC	내 용
P1725	TOD CONTROL MODULE(CHECKSUM) ERROR
P1726	THROTTLE POSITION INPUT - LOSS OF SIGNAL
P1727	THROTTLE POSITION INPUT - OUT OF RANGE
P1728	EMC - OPEN/SHORT TO BATTERY
P1729	EMC - SHORT TO GROUND
P1730	FRONT SPEED SENSOR - LOW INPUT
P1731	FRONT SPEED SENSOR - HIGH INPUT
P1732	REAR SPEED SPEED SENSOR - LOW INPUT
P1733	REAR SPEED SPEED SENSOR - HIGH INPUT
P1734	SPEED SENSOR REFERENCE - LOW INPUT
P1735	SPEED SENSOR REFERENCE - HIGH INPUT
P1736	SHIFT MOTOR - OPEN
P1737	SHIFT MOTOR - OPEN/SHORT TO GROUND
P1738	SHIFT SYSTEM TIMEOUT
P1739	GENERAL POSITION ENCODER FAULT
P1740	POSITION 1 - SHORT TO GROUND
P1741	POSITION 2 - SHORT TO GROUND
P1742	POSITION 3 - SHORT TO GROUND
P1743	POSITION 4 - SHORT TO GROUND

**DTC Memory Erase**

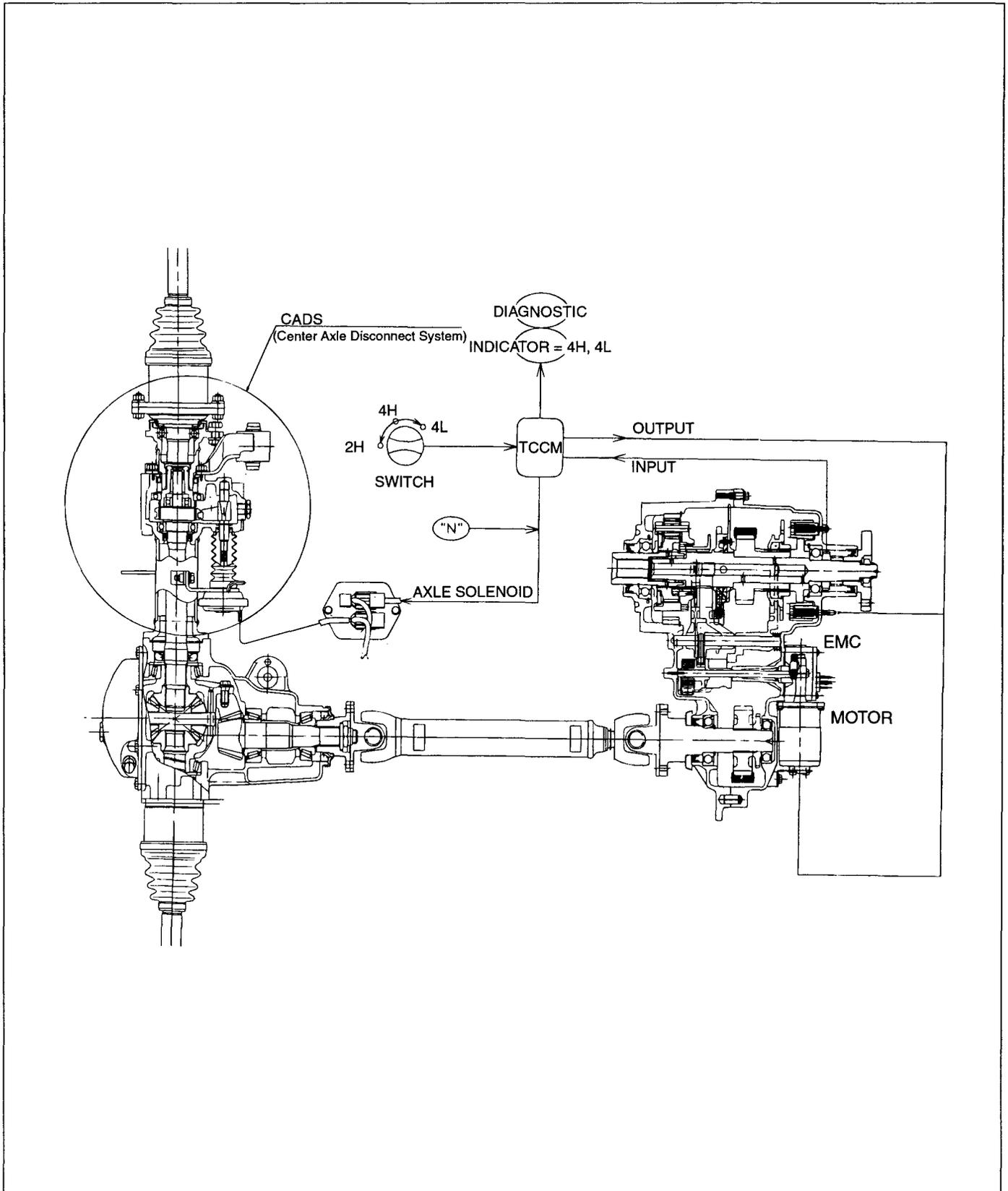
DTC memory in case of the Active Torque Transfer type is erased by the Hi-Scan.

## TRANSFER CASE

## 4WD SYSTEM DESCRIPTION EMMB0280

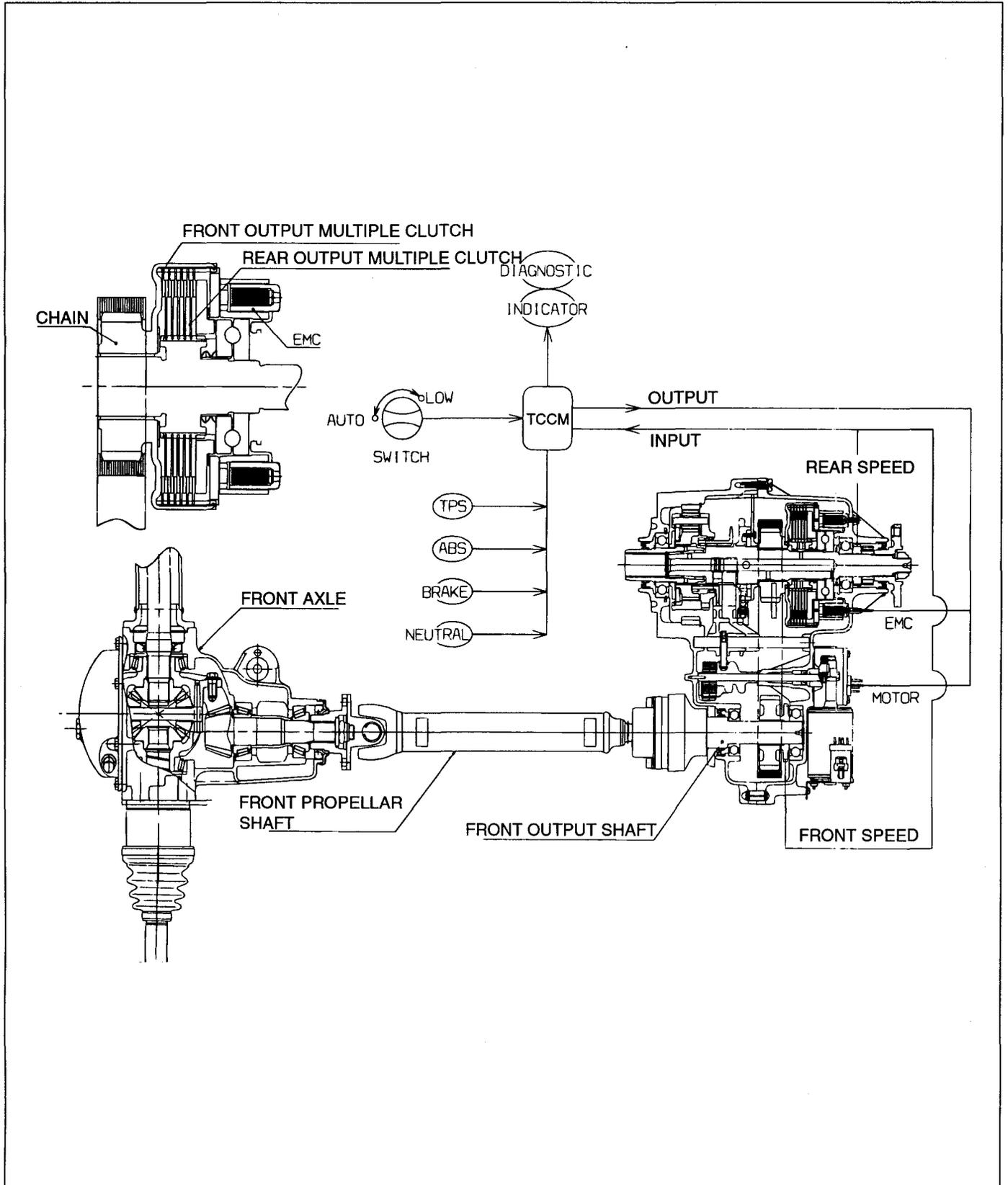
Drive type	Drive item	Drive mode	Drive status	Useful condition
Electroc Shift Transfer (EST type)	Drive mode	2H	2WD, Rear wheel drive	Use on the roadway.
		4H	4WD HIGH	<ul style="list-style-type: none"> <li>Use on the off-road or snowy and rainy road having slippery road surface.</li> <li>Impossible to drive on the roadway due to free of CENTER DIFF (absorbing revolution difference between front and rear wheels). When turning on the roadway at low speed, vibration and noise happens by tight corner braking.</li> </ul>
		4L	4WD LOW	Use in the condition which driving force is required like escaping from rough way and towing.
	Transfer	2H ⇔ 4H	2WD ⇔ 4WD	Possible to transfer 2WD into 4WD and vice versa at 80kph or below during driving.
		4H ⇔ 4WD(L)	4WD(H) ⇔ 4WD(L)	<ul style="list-style-type: none"> <li>Necessary to stop the vehicle for transfer <ul style="list-style-type: none"> <li>M/T vehicle : Transfer the switch after pressing the clutch pedal.</li> <li>A/T vehicle : Transfer the switch after positioning the A/T lever to "N".</li> </ul> </li> <li>All vehicles with 4L mode should stop the vehicle for transfer.</li> </ul>
Active Torque Transfer (ATT type)	Drive mode	AUTO	2WD ⇔ 4WD	<ul style="list-style-type: none"> <li>Use on the various road surfaces including roadway, off-roda, or snowy and rainy road haring slippery road surface.</li> <li>Using multiple clutch, control the revolution difference between front and rear wheels electronically. So this mode can conespond to the various road surfaces by controlling the CENTER DIFF. FREE and LOCKING automatically.</li> </ul>
		LOW	4WD LOW	Refer to 4L of part time.
	Transfer	AUTO ⇔ LOW	4WD(H) ⇔ 4WD(L)	<ul style="list-style-type: none"> <li>Necessary to stop the vehicle for transfer <ul style="list-style-type: none"> <li>M/T vehicle : Transfer the switch after pressing the clutch pedal.</li> <li>A/T vehicle : Transfer the switch after positioning the A/T lever to "N".</li> </ul> </li> <li>All vehicles with 4L mode should stop the vehicle for transfer.</li> </ul>

ELECTRIC SHIFT TRANSFER EMMB0290



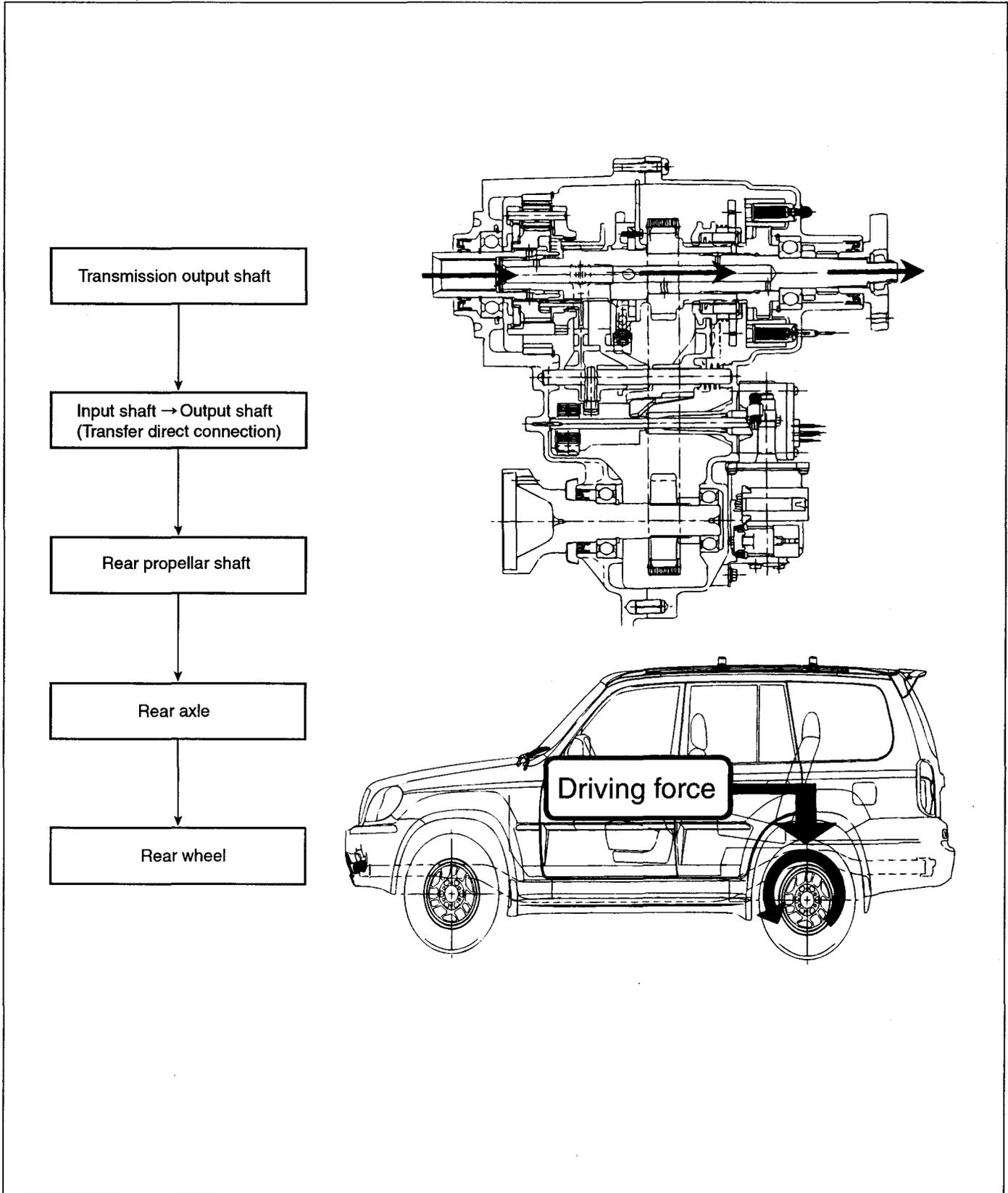
ACTIVE TORQUE TRANSFER

EMMB0300

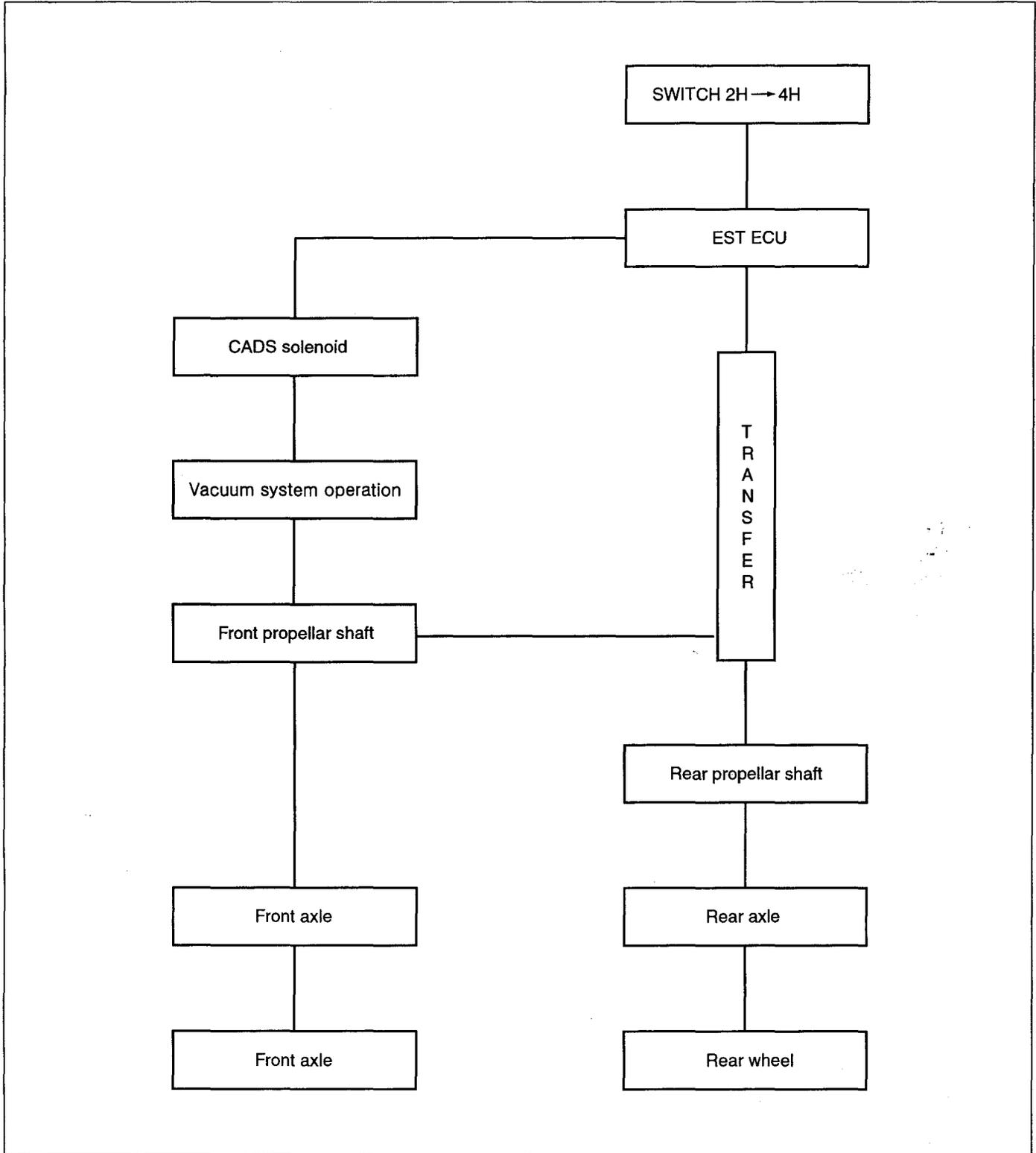


EST POWER FLOW EMMB0310

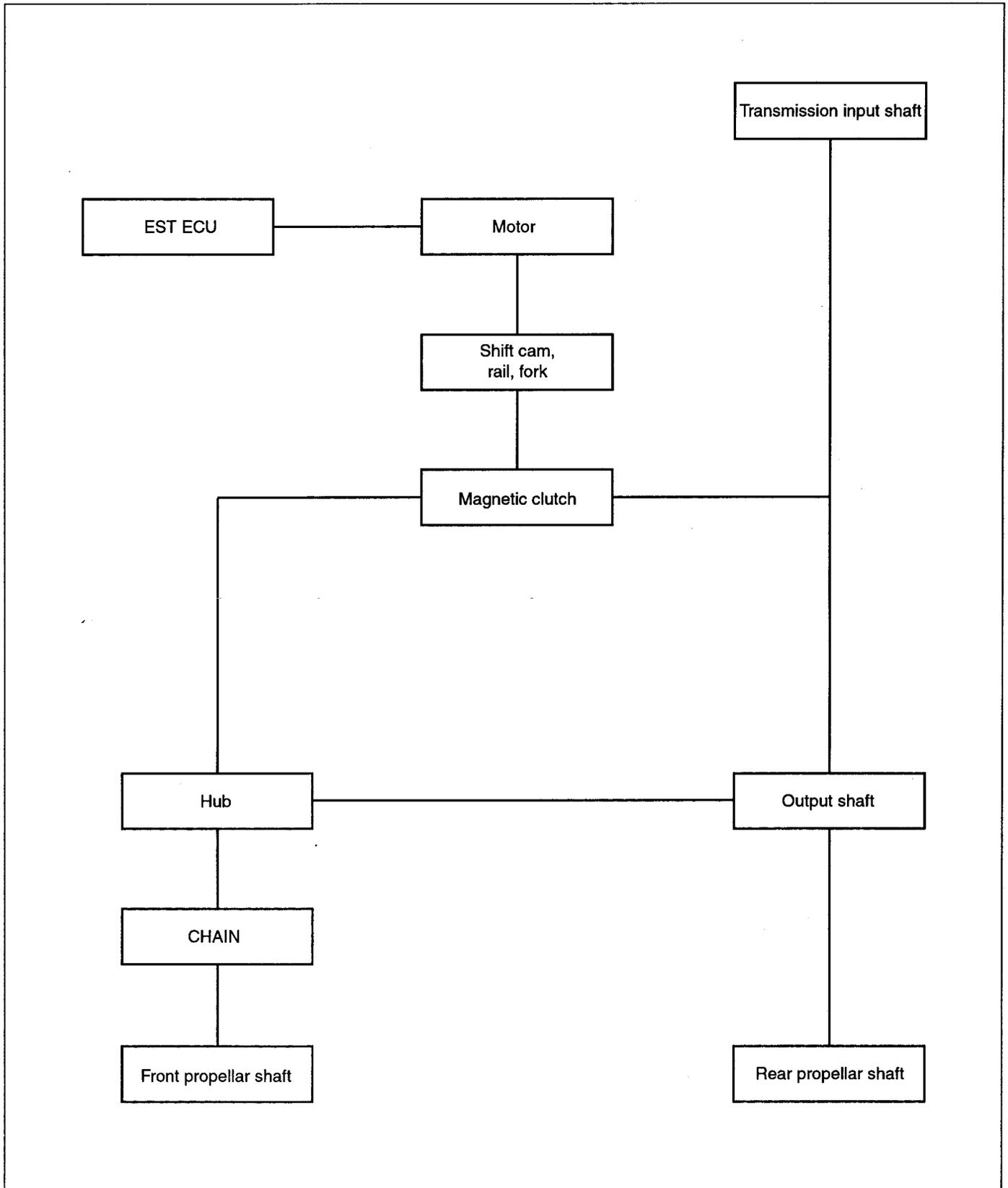
1. 2H Mode (Rear Wheel Drive)

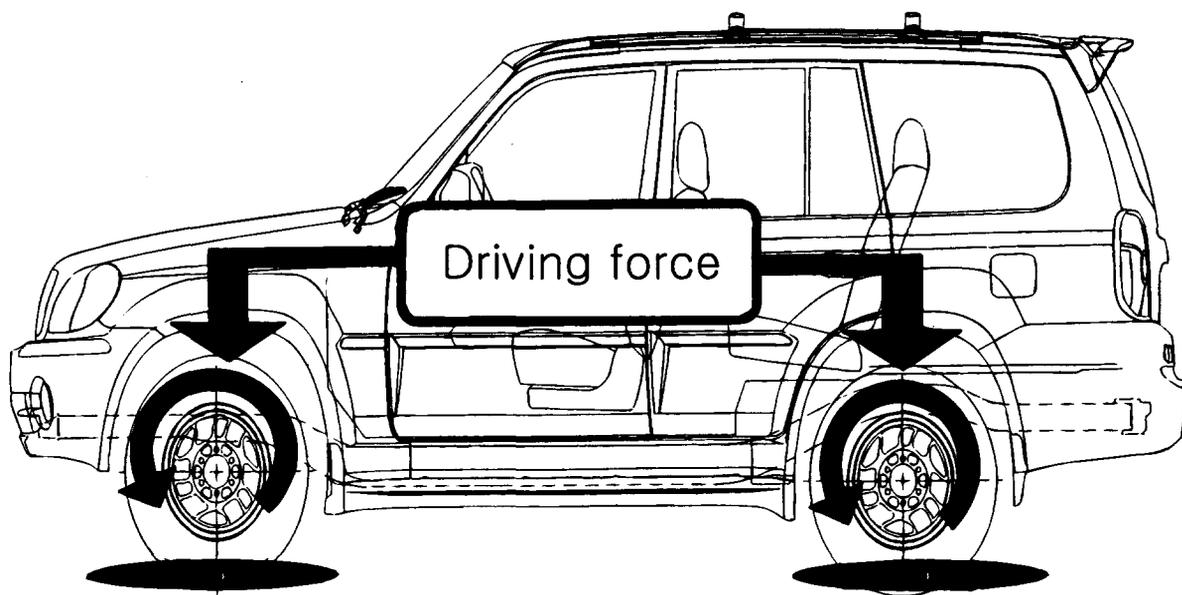
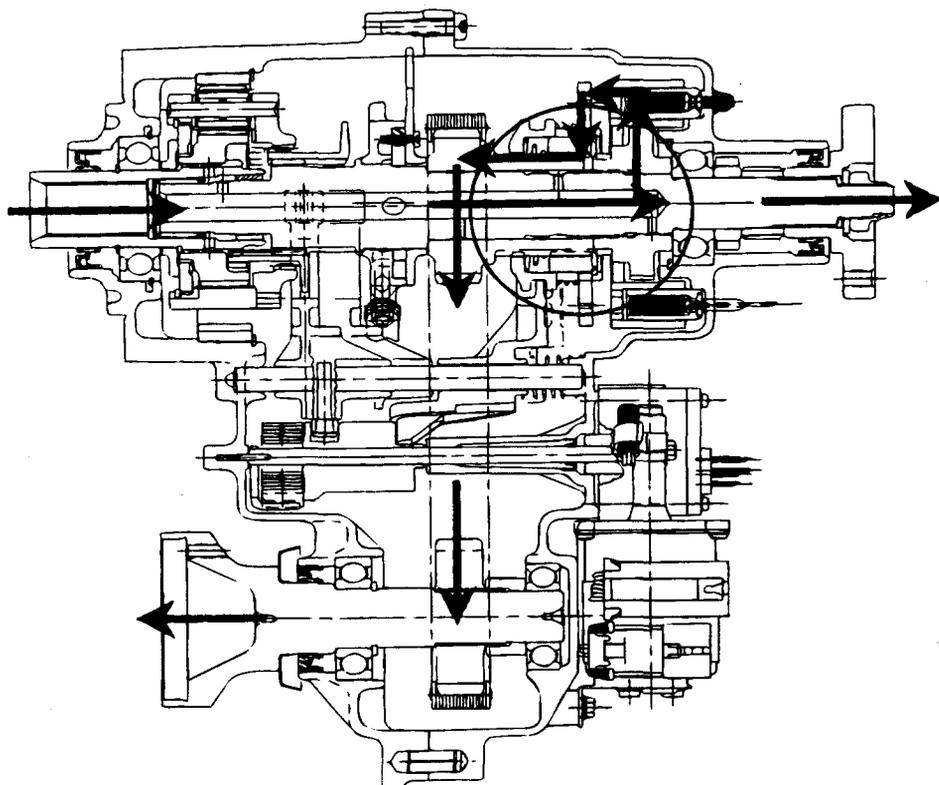


2. 4H Mode (Driving Force Transfer)

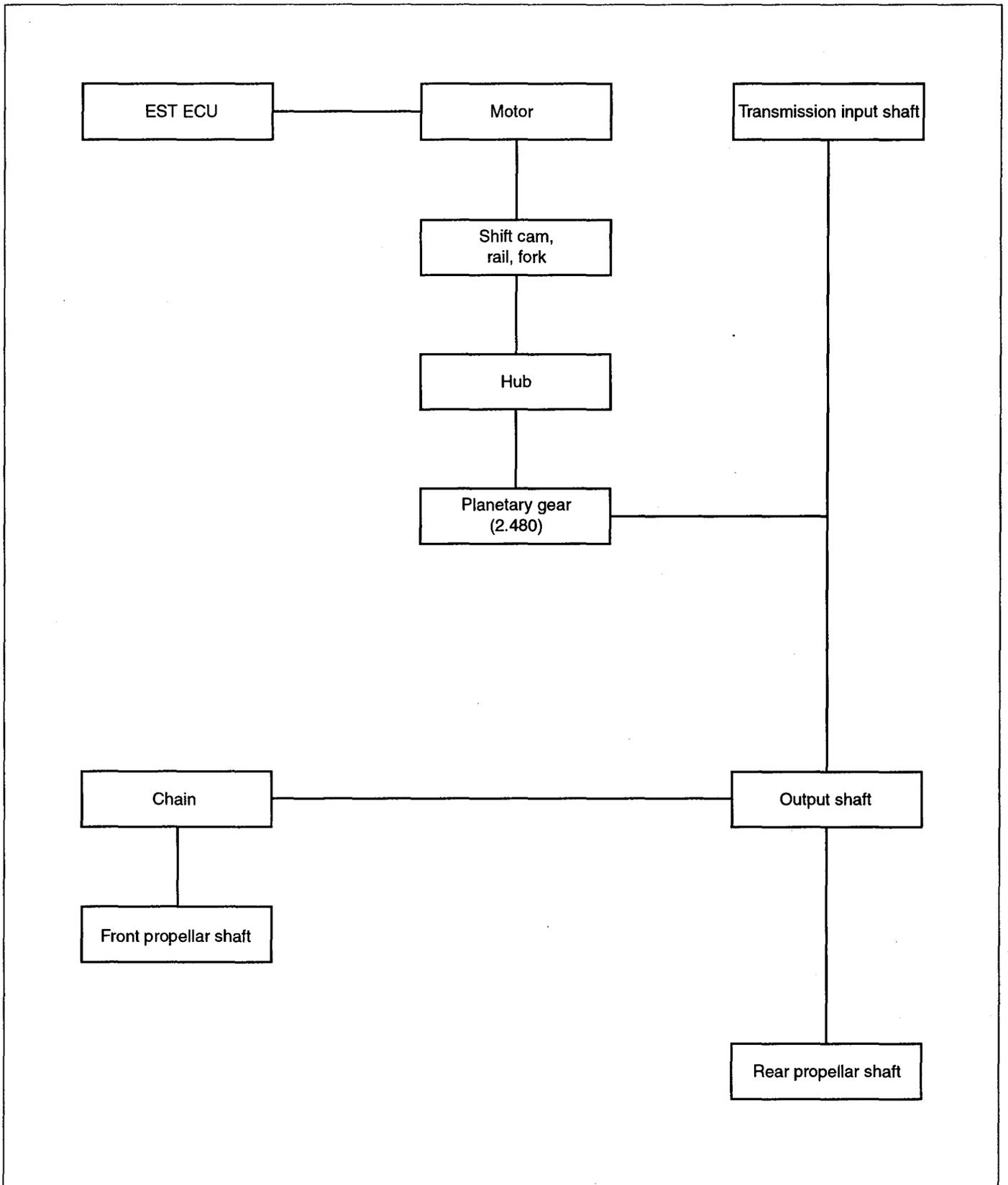


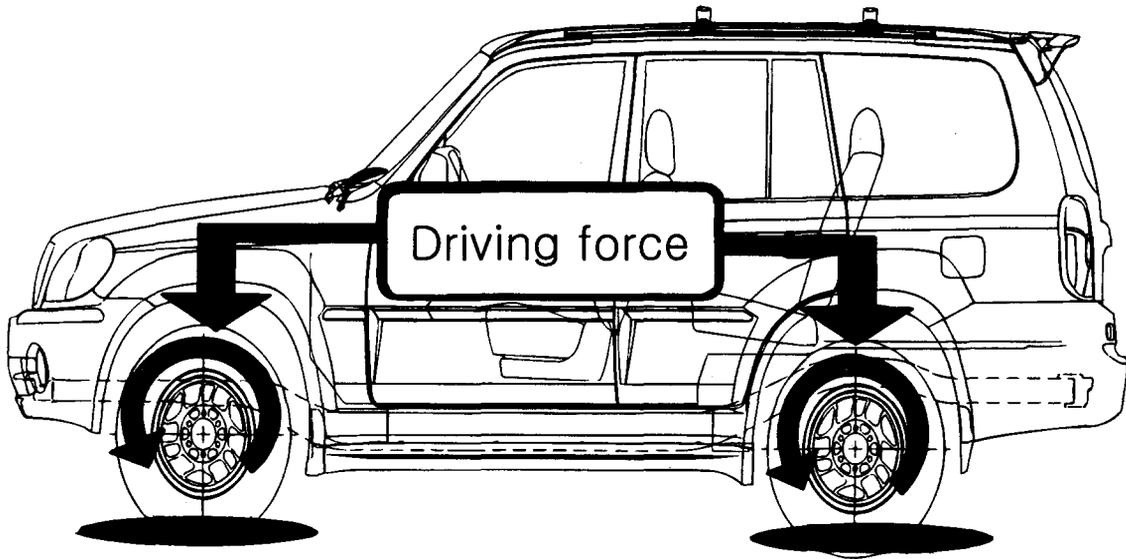
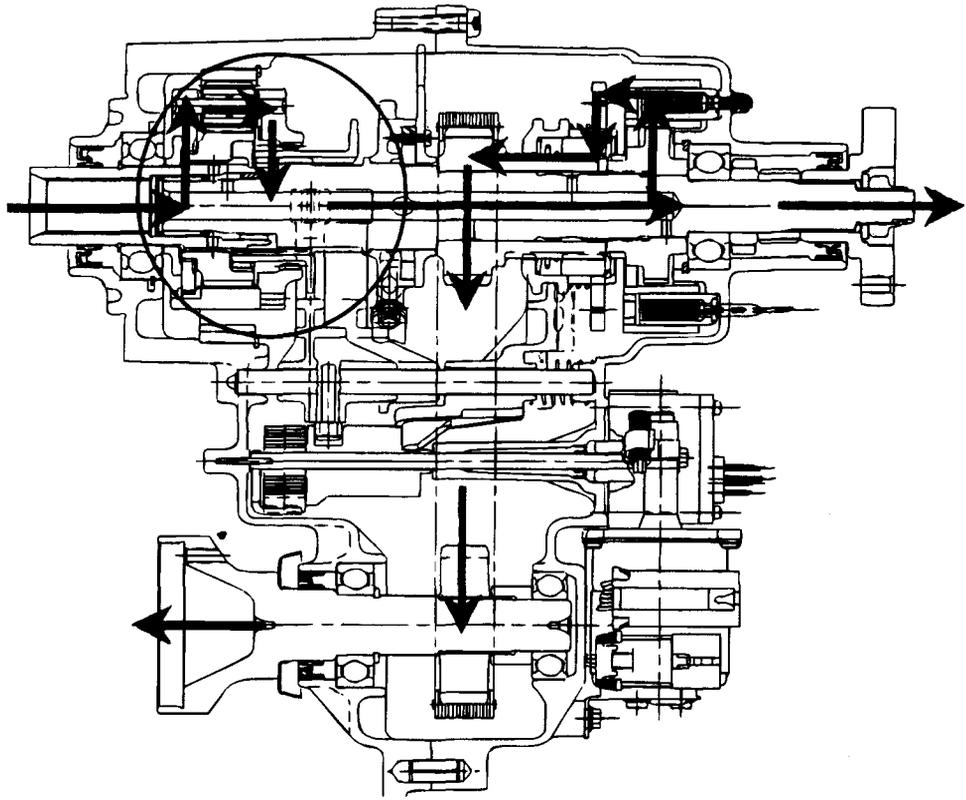
3. 4H Mode (transfer operation)





4. 4L Mode

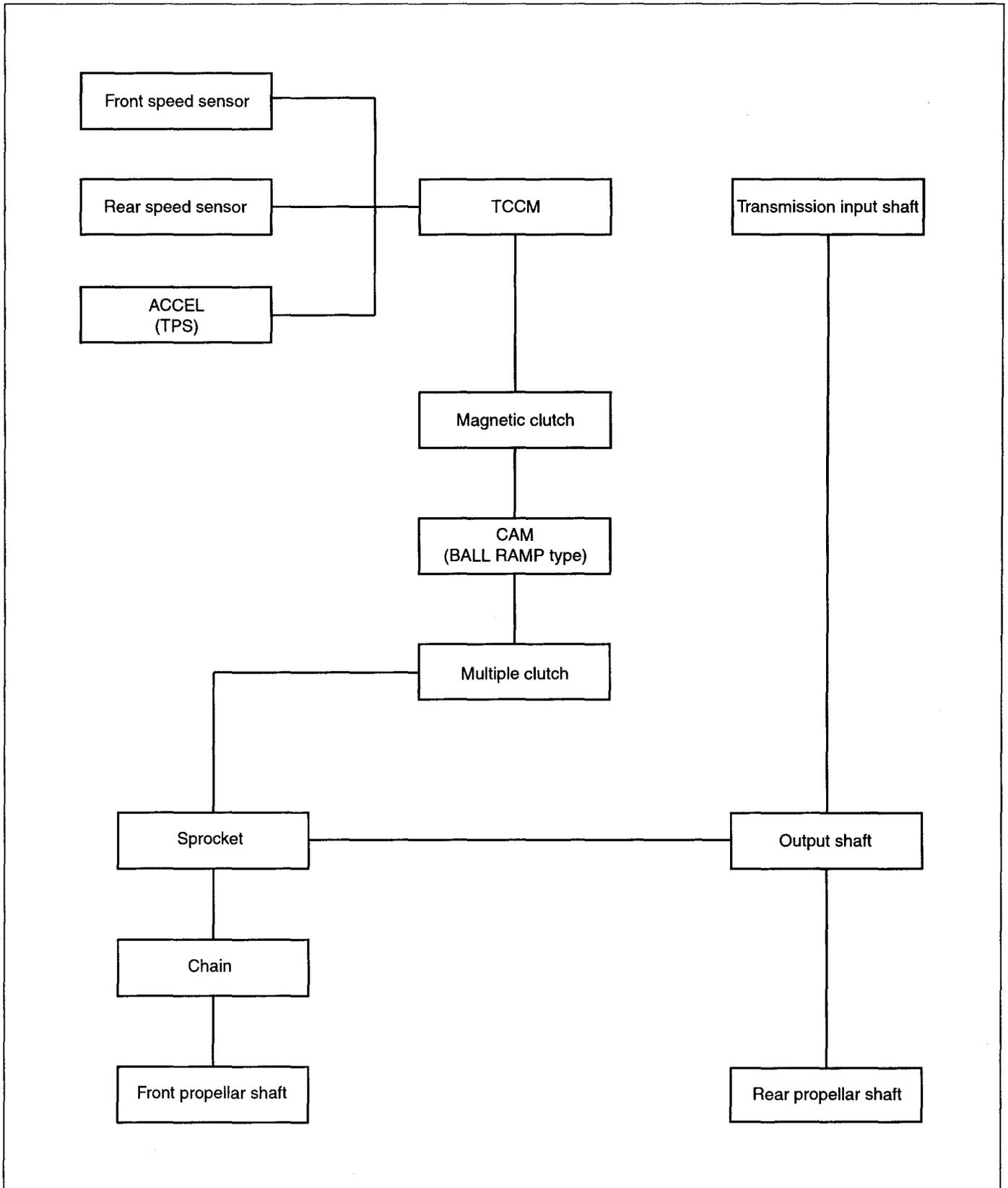


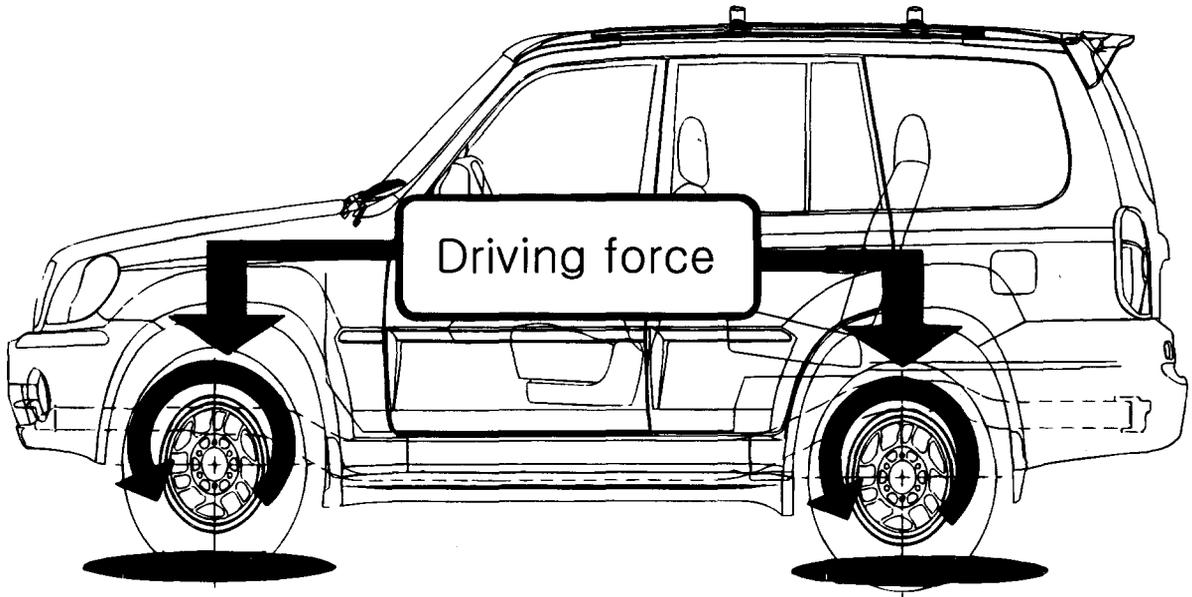
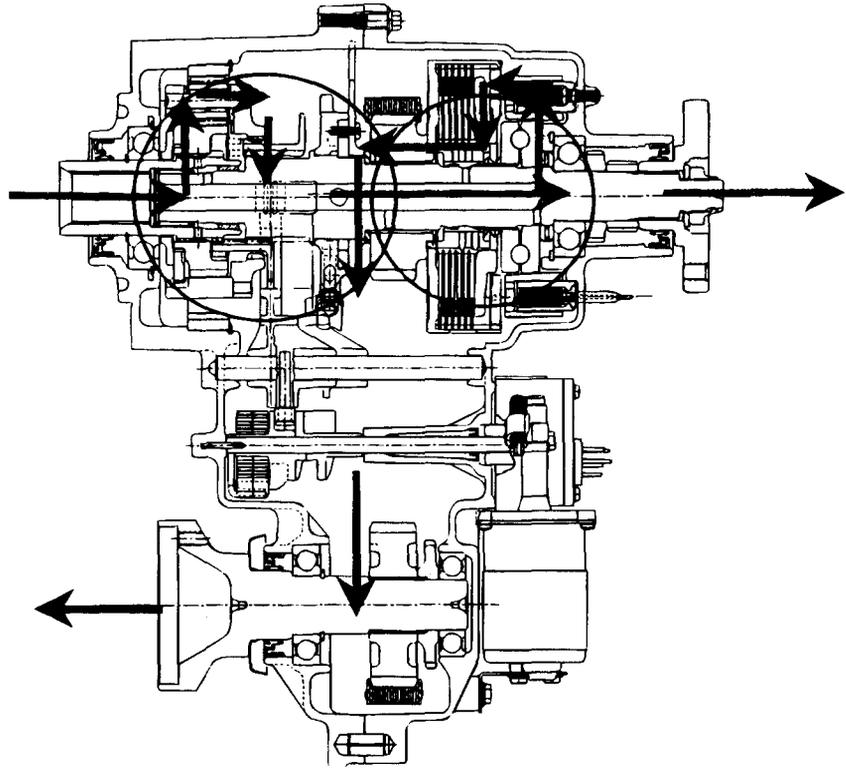


ATT(ACTIVE TORQUE TRANSFER)

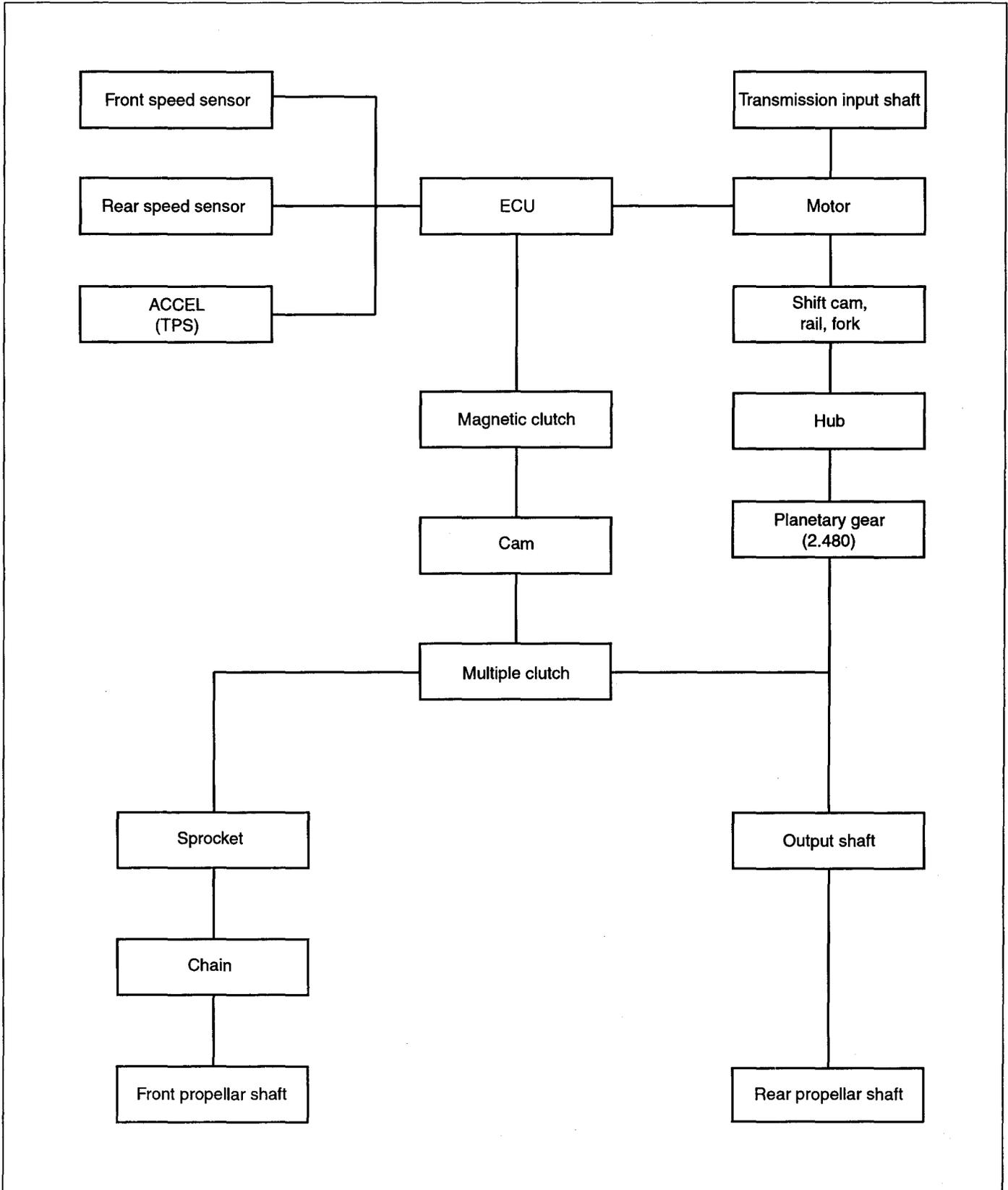
POWER FLOW EMMB0320

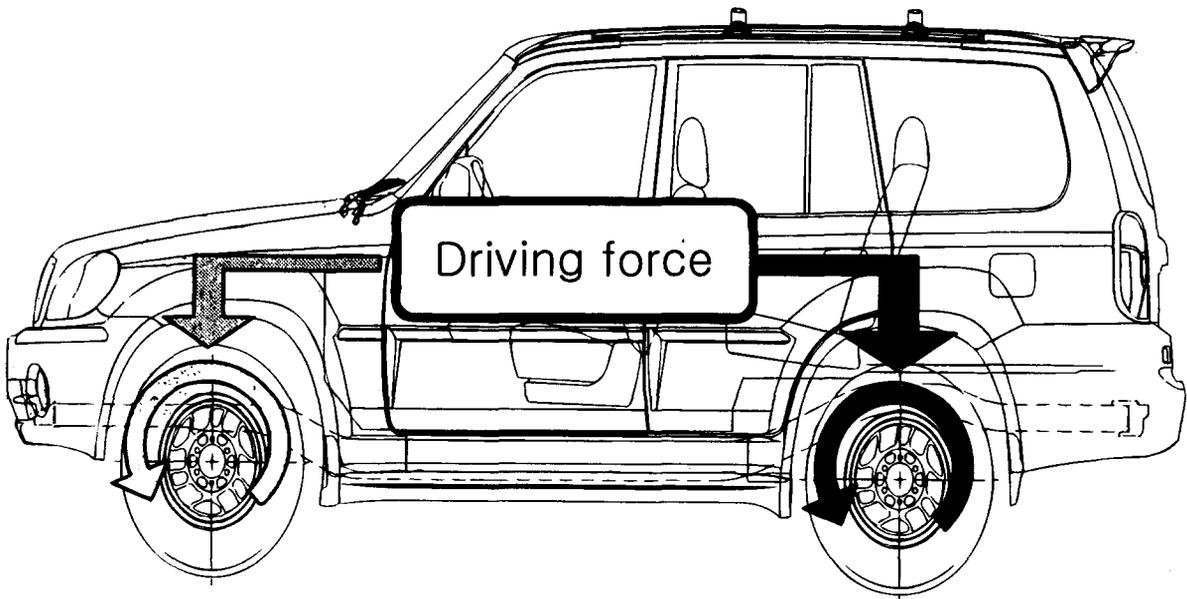
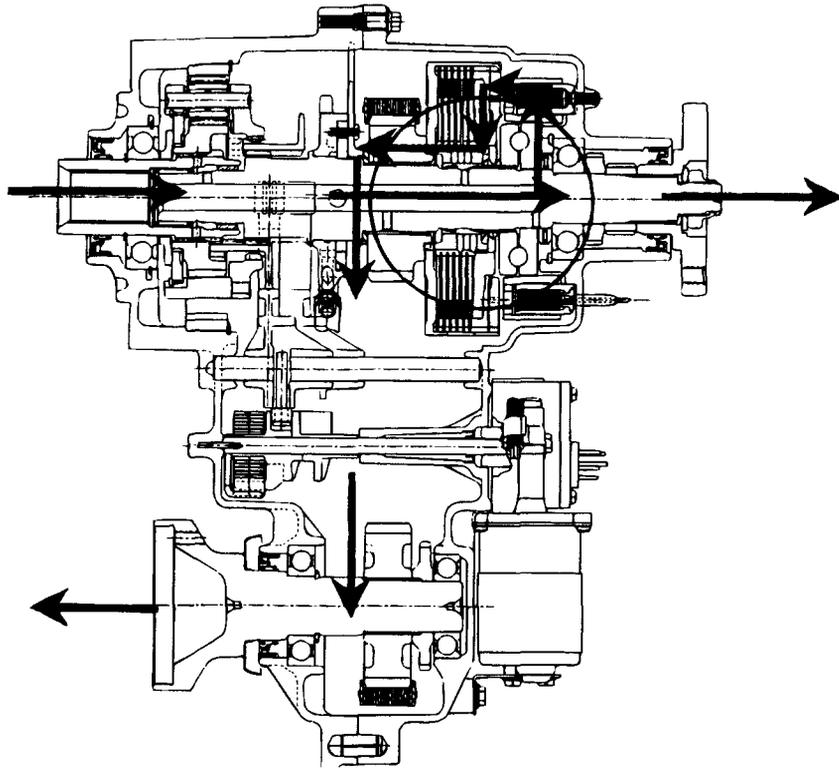
1. AUTO Mode





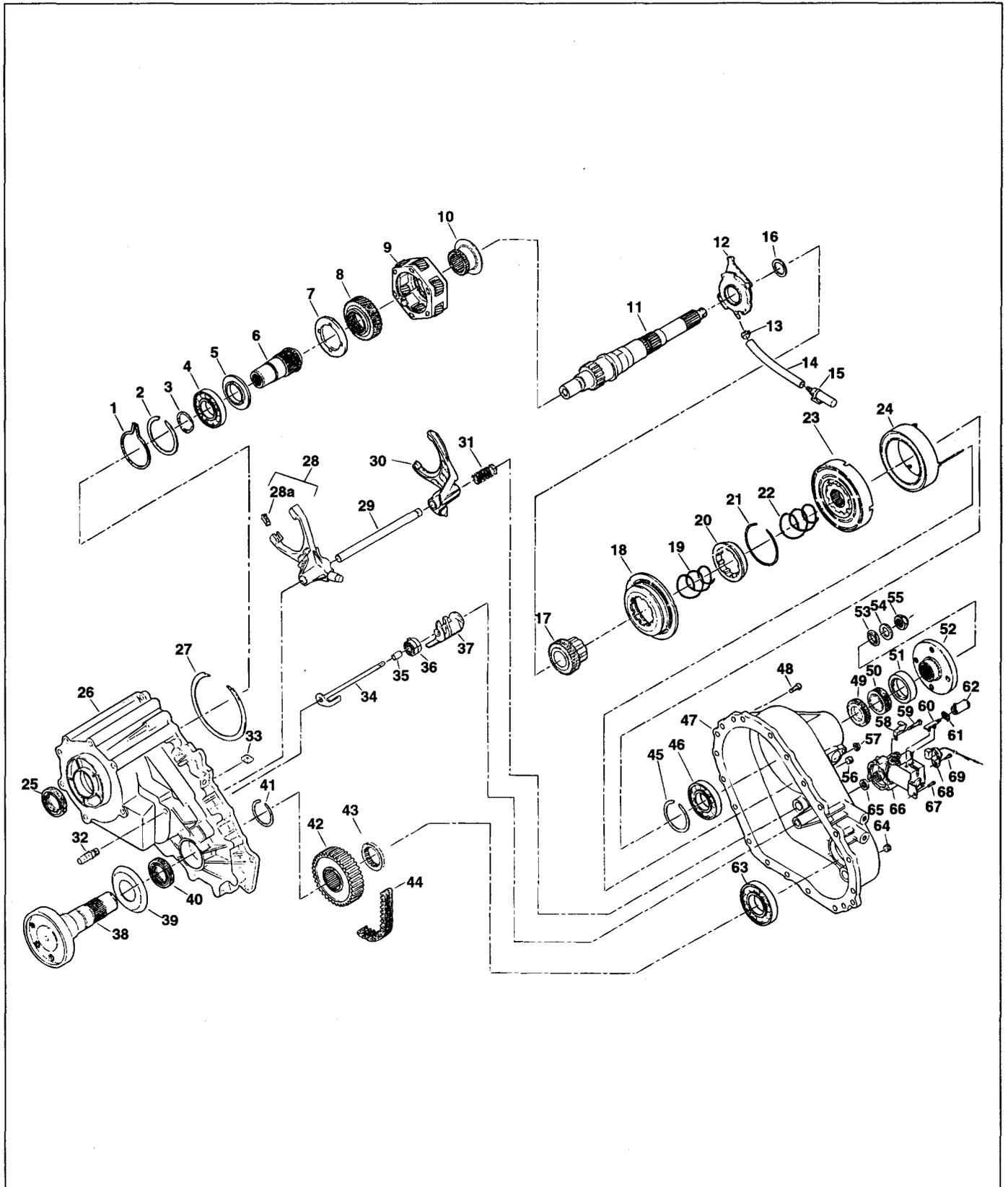
2. LOW Mode





EST EMMB0360

COMPONENTS (1)



## COMPONENTS (2)

1. Snap ring
2. Snap ring
3. Snap ring
4. Bearing
5. Hub
6. Input shaft
7. Thrust plate
8. Sun gear
9. Carrier
10. Reduction hub
11. Main shaft
12. Rotor pump
13. Hose clamp
14. Hose
15. Filter
16. Thrust washer
17. Upper socket
18. Lock-up collar
19. Sleeve return spring
20. Lock-up hub
21. Snap ring
22. Spring
23. Clutch housing
24. Electric coil
25. Oil seal
26. Transfer case
27. Retaining ring
28. Shift fork
- 28a. Shift fork pad
29. Shift rail
30. Lock-up fork
31. Return spring
32. Breather
33. Magnet
34. Shift shaft
35. Spacer
36. Torsion spring
37. Shift cam
38. Output shaft
39. Dust deflector
40. Oil seal
41. Snap ring
42. Lower sprocket
43. Spacer
44. Chain
45. Retaining ring
46. Bearing
47. Cover
48. Nut
49. Tone wheel
50. Speedo gear
51. Oil seal
52. Companion flange
53. Oil seal
54. Washer
55. Nut
56. Pipe plug
57. Nut
58. 'J' clip
59. Bolt
60. Clip
61. Connector lock
62. Connector
63. Bearing
64. Plug
65. Oil seal
66. Electric motor
67. Bolt
68. Speed sensor
69. Bolt

**DISASSEMBLY** EMMB0370

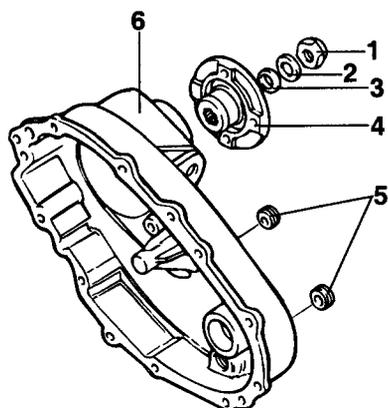
**COMPANION FLANGE**

**NOTE**

Position transfer case on work bench with rear or cover side up.

Use wooden blocks under front to keep assembly level.

1. Remove nut and washer.
2. Pull companion flange.
3. Remove oil seal.
4. If installed, remove two plugs from cover.

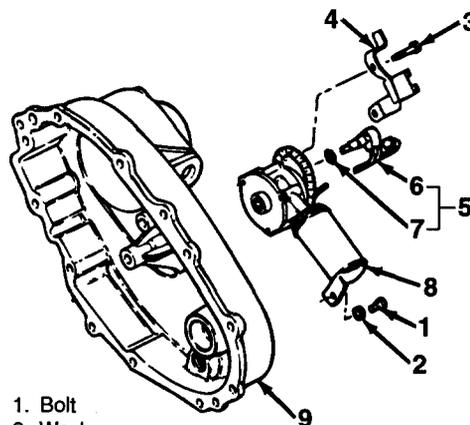


1. Nut
2. Washer
3. Oil seal
4. Companion flange
5. Plug
6. Cover

**EXTERNAL ELECTRIC SHIFT**

On electric shift units, remove components as follows.

1. Remove bolt (1).
2. Remove three bolts (3).
3. Remove sensor and harness bracket.
4. Remove speed sensor assembly.
5. Remove motor assembly.

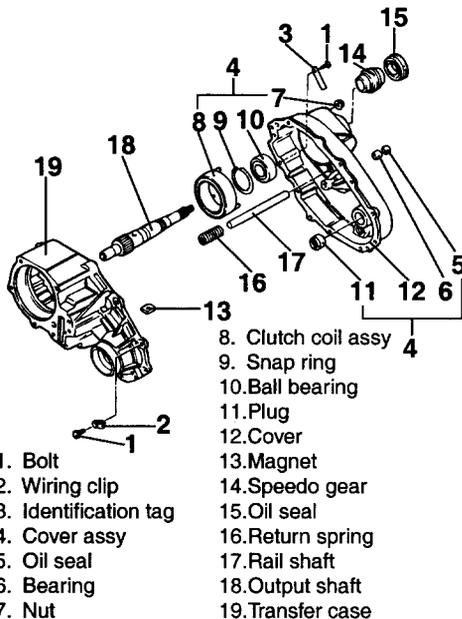


1. Bolt
2. Washer
3. Bolt
4. Harness bracket & sensor
5. Sensor assembly
6. Speed sensor
7. O-ring
8. Motor assembly
9. Cover

EMMB037A

**COVER ASSEMBLY**

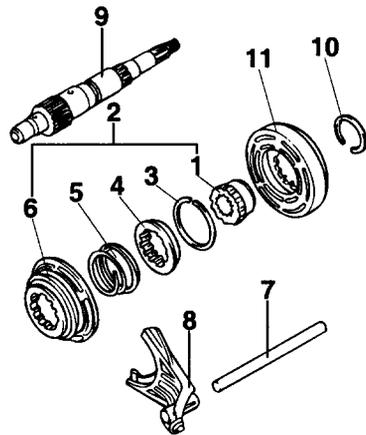
1. Remove nine bolts (1). This will free wiring harness clip and identification tag. Use care not to lose identification tag.  
It contains information required for ordering replacement parts.
2. Pry at the bosses provided on the cover and transfer case to break the sealant bond loose. Then, lift cover assembly straight up to remove.
3. On electric shift units, remove oil seal (5), bearing, three nuts and clutch coil assembly.
4. Remove snap ring and pull ball bearing from cover. This will free speedo gear.
5. Pull needle bearing from cover.
6. Pull oil seal (15) from cover.
7. Remove magnet from slot in case.
8. Remove return spring from rail shaft.
9. Scrap and clean sealant from mating faces of cover and transfer case. Use care not to damage metal faces or allow scrapings to fall into transfer case.



- |                       |                     |
|-----------------------|---------------------|
| 1. Bolt               | 8. Clutch coil assy |
| 2. Wiring clip        | 9. Snap ring        |
| 3. Identification tag | 10. Ball bearing    |
| 4. Cover assy         | 11. Plug            |
| 5. Oil seal           | 12. Cover           |
| 6. Bearing            | 13. Magnet          |
| 7. Nut                | 14. Speedo gear     |
|                       | 15. Oil seal        |
|                       | 16. Return spring   |
|                       | 17. Rail shaft      |
|                       | 18. Output shaft    |
|                       | 19. Transfer case   |

**LOCK SHIFT**

1. From electric shift only, remove retaining ring and slide clutch housing from shift collar hub.
2. Remove shift collar hub from output shaft.
3. Together, slide 2W-4W lockup assembly and lockup fork from output shaft and rail shaft. Separate assemblies and remove rail shaft.
4. To disassemble 2W-4W lockup assembly, remove snap ring, lockup hub and return spring from lockup collar.
5. One-piece, plastic lockup fork replaces earlier fork assembly with metal fork and separate roller parts.



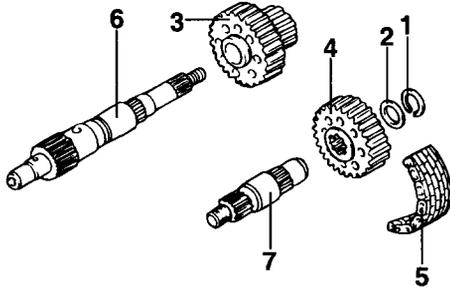
- |                      |                    |
|----------------------|--------------------|
| 1. Shift collar hub  | 7. Rail shaft      |
| 2. 2W-4W Lockup assy | 8. Lockup fork     |
| 3. Snap ring         | 9. Output shaft    |
| 4. Lockup hub        | 10. Retaining ring |
| 5. Return spring     | 11. Clutch housing |
| 6. Lockup collar     |                    |

H7MT1130

H7MT1120

**CHAIN DRIVE**

1. Remove snap ring and spacer from output shaft (front).
2. Together, slide drive sprocket, driver sprocket and drive chain from output shafts (rear and front). Separate sprockets and chain when out of assembly.

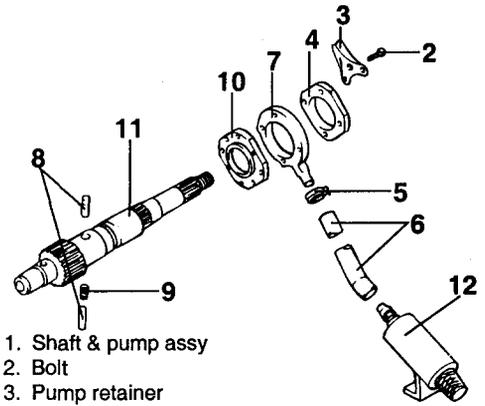


1. Snap ring
2. Spacer
3. Drive sprocket
4. Driven sprocket
5. Drive chain
6. Output shaft (rear)
7. Lockup collar

H7MT1150

**OIL PUMP**

1. Remove four bolts (2) and retainer. Slide rear pump cover off output shaft.
2. Loosen hose clamp and separate hose coupling from pump housing. Slide pump housing off output shaft.
3. Remove hose clamp, hose coupling and strainer.
4. Remove two pump pins and spring from output shaft.
5. Slide front pump cover off output shaft and remove output shaft.

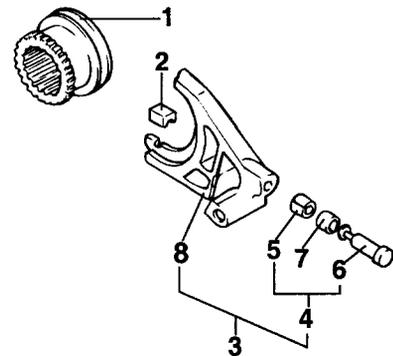


1. Shaft & pump Assy
2. Bolt
3. Pump retainer cover
4. Rear pump cover
5. Hose clamp
6. Hose coupling
7. Pump housing
8. Pump pin
9. Spring
10. Front pump cover
11. Output shaft
12. Strainer

H7MT1160

**REDUCTION SHIFT**

1. Remove reduction hub and reduction shift fork assembly from transfer case.
2. Remove two facings from shift fork assembly.
3. Disassemble fork assembly only if parts replacement is required.  
Cut plastic retainer to remove, freeing pin and cam roller.

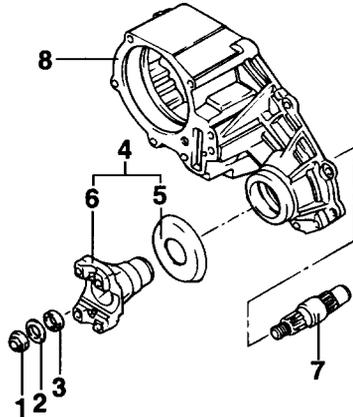


1. Reduction hub
2. Shift fork facing
3. Reduction shift fork Assy
4. Pin, roller and retainer Assy
5. Retainer
6. Pin
7. Cam roller
8. Reduction shift fork

H7MT1170

**FRONT OUTPUT SHAFT**

1. Hold yoke and remove nut and washer. Pull yoke assembly and oil seal.
2. Press deflector from yoke only if replacement is required.
3. Remove output shaft.



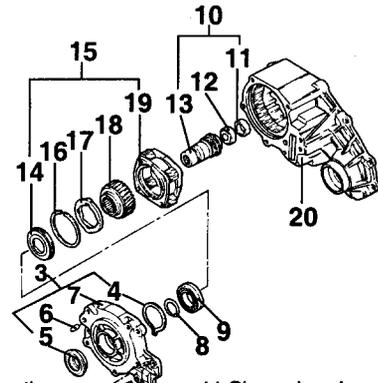
1. Nut
2. Washer
3. Oil seal
4. Yoke assy
5. Deflector
6. Yoke
7. Output shaft(front)
8. Transfer case

H7MT1180

**ADAPTER, INPUT SHAFT AND GEAR CARRIER**

1. Remove breather.
2. Remove six bolts (2). Carefully pry front adapter up to break sealant band with transfer case. Use care not to damage adapter or case.
3. Remove adapter assembly, input shaft assembly and gear carrier assembly as an assembled group.
4. Holding end of input shaft on workbench, press down on adapter while expanding long ends of snap ring.
5. Remove snap ring and pump oil seal from front adapter. Remove pin only if replacement is required.
6. Remove retaining ring (8). Pull bearing and thrust washer from end of input shaft assembly. Remove input shaft assembly from gear carrier assembly.
7. To disassemble input shaft assembly, pull sleeve bearing and needle bearing from input shaft.

8. Remove retaining ring (16), thrust plate end sun gear from planet carrier assembly.

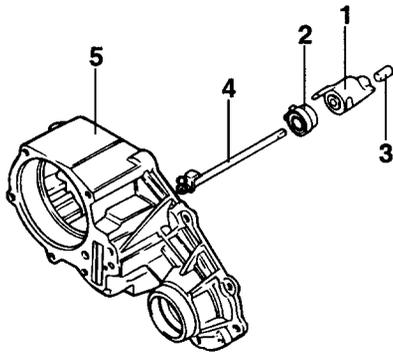


- |                      |                         |
|----------------------|-------------------------|
| 1. Breather          | 11. Sleeve bearing      |
| 2. Bolt              | 12. Needle bearing      |
| 3. Adapter assy      | 13. Input shaft         |
| 4. Snap ring         | 14. Thrust washer       |
| 5. Oil seal          | 15. Gear carrier assy   |
| 6. Spiral pin        | 16. Retaining ring      |
| 7. Front adapter     | 17. Thrust plate        |
| 8. Retaining ring    | 18. Sun gear            |
| 9. Bearing           | 19. Planet carrier assy |
| 10. Input shaft assy | 20. Transfer case       |

H7MT1190

**SHIFT CAM (ELECTRIC PARTS)**

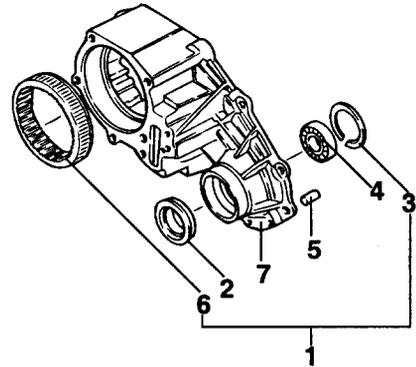
1. Remove electric shift cam group (1 through 4) from transfer case as an assembly.
2. Slide electric shift cam off shift shaft.
3. Clamp retainer end of shift shaft.  
Keeping fingers away from spring ends, pry torsion spring out of engagement with shaft drive tang using a screwdriver.
4. Remove torsion spring and spacer from shift shaft.



1. Electric shift cam
2. Torsion spring
3. Spacer
4. Shift shaft
5. Transfer case

**CASE ASSEMBLY**

1. Pull oil seal.
2. Remove retaining ring and pull ball bearing.
3. Remove dowel pins from transfer case only if they are loose or damaged.
4. Press ring gear out of transfer case only if ring gear must be replaced.

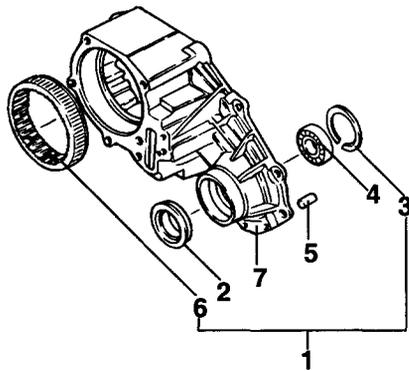


1. Transfer case assembly
2. Oil seal
3. Retaining ring
4. Ball bearing
5. Dowel pin
6. Ring gear
7. Transfer case

**REASSEMBLY** EMMB0380

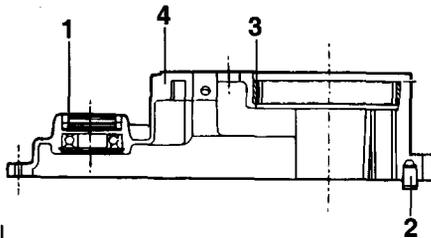
**CASE ASSEMBLY**

1. If ring gear was removed for replacement, align serrations on OD of new ring gear with those in transfer case. Press in ring gear, chamfered end first. Make sure gear is not cocked and is firmly seated in case.
2. If removed, press two new dowel pins into case.
3. Press in ball bearing to bottom in transfer case and install retaining ring.
4. Position new oil seal and press in to seat seal flange against transfer case.



1. Transfer case assembly
2. Oil seal
3. Retaining ring
4. Ball bearing
5. Dowel pin
6. Ring gear
7. Transfer case

H7MT1220

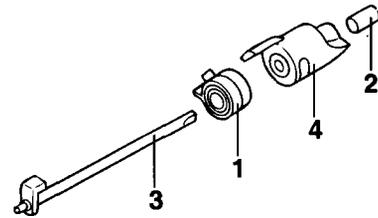


1. Oil seal
2. Dowel pin
3. Ring gear
4. Transfer case

H7MT1230

**SHIFT CAM (ELECTRIC PARTS)**

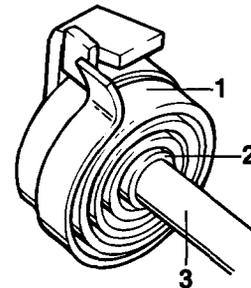
1. Insert spacer in torsion spring and install over free end of shift shaft.



1. Torsion spring
2. Spacer
3. Shift shaft
4. Electric shift cam

H7MT1240

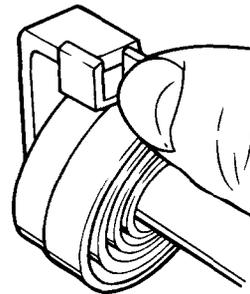
2. Slide torsion spring and spacer on shift shaft up to drive tang and position first spring end to left (Viewed from free end of shaft) of drive tang.



1. Torsion spring
2. Spacer
3. Shift shaft

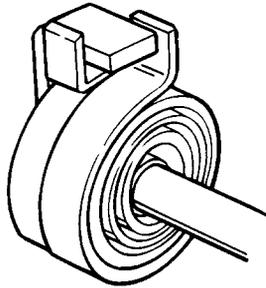
H7MT1250

3. Twist second spring end to right of drive tang on shift shaft.



H7MT1260

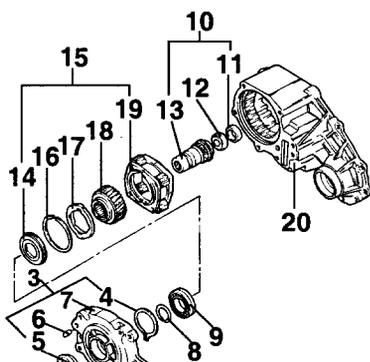
4. Push torsion spring and spacer together back as far as they will go.
5. Slide electric shift cam onto shift shaft, drive tang on cam first.  
Position drive tang on cam so that it will go under drive tang on shift shaft and between spring ends and slide cam as far as it will go.



H7MT1270

**ADAPTER, INPUT SHAFT AND CARRIER**

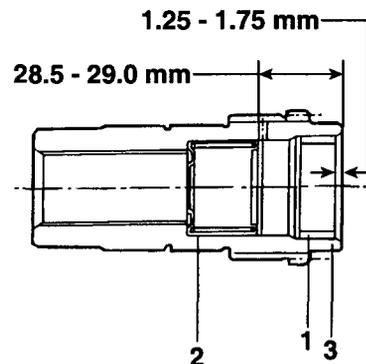
1. Lay planet carrier assembly on work bench with end having groove for retaining ring up.
2. Install sun gear with hub end up. Rotate gear of planet carrier assembly as required until sun gear is fully meshed.
3. Align tabs and install thrust plate into planet carrier assembly.
4. Install retaining ring (16) to complete gear carrier assembly.



- |                      |                         |
|----------------------|-------------------------|
| 1. Breather          | 11. Sleeve bearing      |
| 2. Bolt              | 12. Needle bearing      |
| 3. Adapter assy      | 13. Input shaft         |
| 4. Snap ring         | 14. Thrust washer       |
| 5. Oil seal          | 15. Gear carrier assy   |
| 6. Spiral pin        | 16. Retaining ring      |
| 7. Front adapter     | 17. Thrust plate        |
| 8. Retaining ring    | 18. Sun gear            |
| 9. Bearing           | 19. Planet carrier assy |
| 10. Input shaft assy | 20. Transfer case       |

H7MT1190

5. If removed, position needle bearing and press into input shaft to dimension shown. Press in new sleeve bearing to complete input shaft assembly.
6. Lift up gear carrier assembly and install input shaft assembly up through gear carrier assembly. Install thrust washer and press bearing over end of input shaft assembly. Retain bearing on input shaft with retaining ring in shaft groove.
7. If removed, press new pin into front adapter.
8. Position oil seal and press into front adapter to dimension shown.
9. Install snap ring in groove in front adapter with long ends of snap ring in adapter groove to complete front adapter assembly.
10. Position front adapter assembly with face that mates with transfer case up. Support on wood blocks to provide clearance for input shaft assembly. Position assembled input shaft and carrier group over front adapter with input shaft down. Lower shaft and carrier group while expanding long ends of snap ring until snap ring engages groove in outside diameter of bearing.

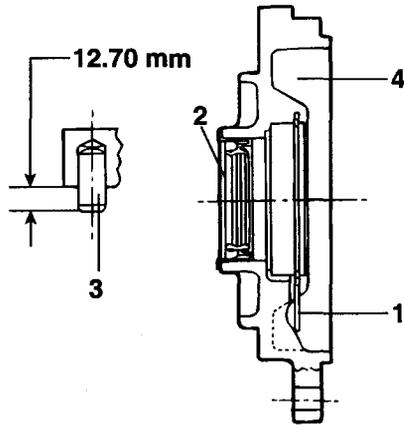


1. Sleeve bearing
2. Needle bearing
3. Input shaft

H7MT1280

11. Apply continuous 1/16 in. (1.6 mm) bead of sealant (Neutral Cure RTV, Loctite 598) all around transfer case mounting face for front, adapter. Center sealant bead between edges of face. Circle bolt holes.

12. Install assembled adapter, input shaft and carrier group on transfer case and attach with six bolts. Torque bolts to 20 - 34 lb.ft (27 - 46 Nm)
13. Install breather bard and torque to 6 - 14 lb.ft (8 - 19 Nm).

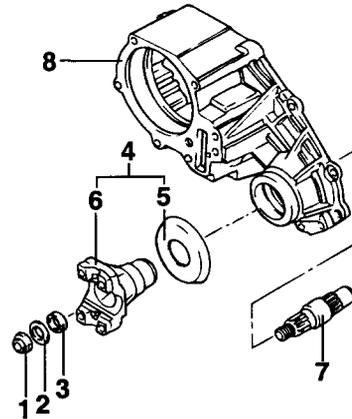


1. Snap ring
2. Oil seal
3. Spiral pin
4. Front adapter

H7MT1290

### FRONT OUTPUT SHAFT

1. If removed, press deflector onto yoke.
2. Position output shaft in transfer case and install yoke assembly, oil seal, washer and nut.
3. Hold yoke and torque nut to 150 - 180 lb-ft (203 - 244 Nm).

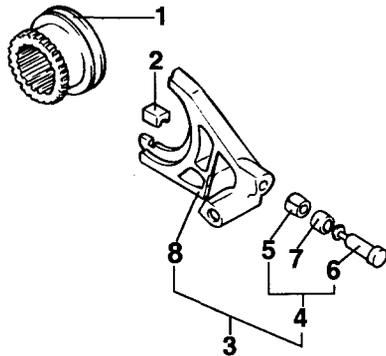


1. Nut
2. Washer
3. Oil seal
4. Yoke assy
5. Deflector
6. Yoke
7. Output shaft(front)
8. Transfer case

H7MT1180

**REDUCTION SHIFT**

1. If disassembled for parts replacement, assemble reduction shift fork assembly using new pin, roller and retainer assembly.  
Press pin, roller and retainer assembly into bore in reduction shift fork until retainer passes completely through and snaps in place. Make sure that cam roller turns freely.
2. Install two fork facings on reduction shift fork assembly.
3. Engage reduction shift fork assembly with reduction hub and position in transfer case, reduction hub in gear carrier assembly previously installed.
4. Install output shaft, engaging output shaft end with input shaft bearings and output shaft spline with reduction hub.



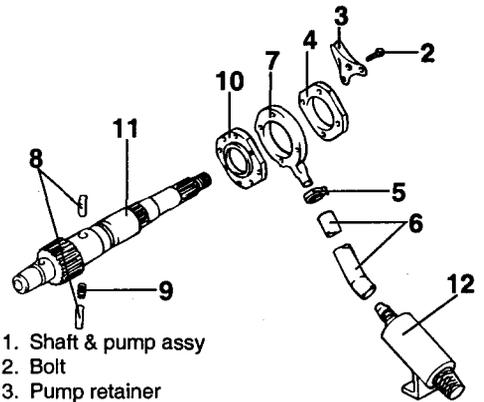
1. Reduction hub
2. Shift fork facing
3. Reduction shift fork assy
4. Pin, roller and retainer assy
5. Retainer
6. Pin
7. Cam roller
8. Reduction shift fork

H7MT1170

**OIL PUMP**

1. Locate pump front cover. Front pump cover has tapped holes.  
Position front cover so that word TOP faces down and turned so that it will be at top of transfer case when installed in vehicle.  
Install front pump cover over output shaft in this position.
2. Install two pump pins with spring between them in output shaft.  
Flat surface on both pins must point out and face up.  
Center pins and spring in output shaft.

3. Push hose coupling onto barb on strainer and install L shaped foot on filter in slot in transfer case. Hose coupling must point in direction of pump assembly.
4. Install pump housing so that word REAR marked on it is up and hose bard points toward hose coupling and strainer. Lower pump housing over upper output shaft, moving pump pins inward and compressing spring so that both pins are contained inside pump housing.
5. Slip hose clamp over free end of hose coupling and push onto hose bard on pump housing. Secure hose clamp over hose coupling on hose barb.
6. Position pump rear cover over assembly with words TOP REAR facing up and located to be at top of transfer case when installed.  
Position pump retainer on cover so that tab on retainer is in notch in transfer case. Clean threads on four bolts and apply Loctite 222. Align pump holes and install bolts. Torque bolts to 2.9 - 6.3 lb-ft (4.0 - 8.5 Nm) while turning output shaft by hand to insure that pump pins move freely.

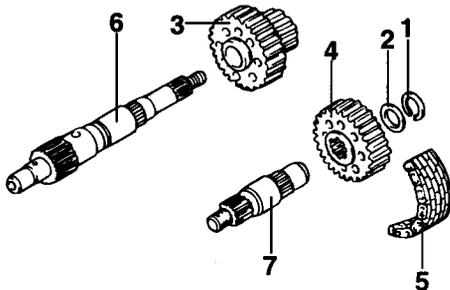


1. Shaft & pump assy
2. Bolt
3. Pump retainer
4. Rear pump cover
5. Hose clamp
6. Hose coupling
7. Pump housing
8. Pump pin
9. Spring
10. Front pump cover
11. Output shaft
12. Strainer

H7MT1160

**CHAIN DRIVE**

1. On work bench, next to transfer case assembly, position driven sprocket (with internal spline) at front output shaft end of case and drive sprocket (with smooth bore) at output shaft end.
2. Assemble drive chain around sprockets.
3. Grasp each sprocket, hold drive chain tight and parallel with transfer case, and install chain drive assembly over output shaft. It may be necessary to rotate driven sprocket slightly to engage splines on front output shaft.
4. Install spacer on front output shaft. Install snap ring in shaft groove over spacer.



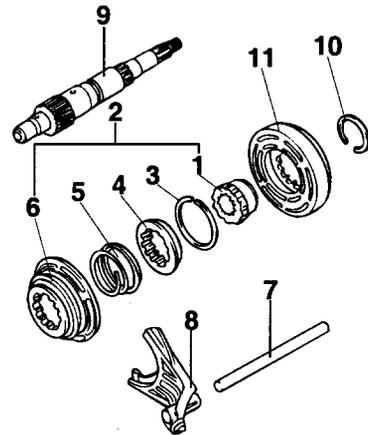
1. Snap ring
2. Spacer
3. Drive sprocket
4. Driven sprocket
5. Drive chain
6. Output shaft (rear)
7. Lockup collar

H7MT1150

**LOCKUP SHIFT**

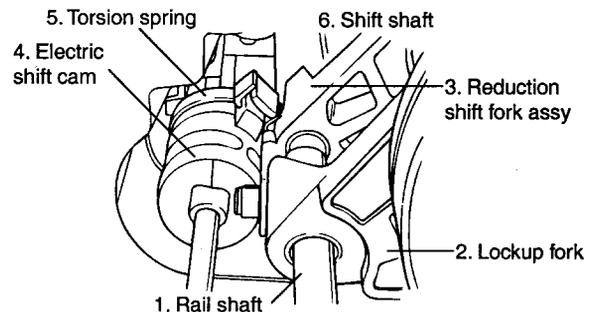
1. Assemble return spring and lockup hub in lockup collar and retain with snap ring, completing 2W-4W lockup assembly.
2. Install rail shaft in transfer case, through reduction shift fork assembly previously installed and into blind hole in case.
3. Engage lockup fork in groove in 2W-4W lockup assembly and slide this group down over output shaft and rail shaft.
4. Install shift collar hub, engaging splines on output shaft and in 2W-4W lockup assembly.

5. On electric shift units only, install electric shift cam group previously assembled and clutch housing as follow :
  - 1) Position electric shift cam group rotated so that end of torsion spring will contact side of reduction shift fork assembly that faces up, toward top of case.
  - 2) Holding rail shaft down, raise up fork assemblies slightly. Rotate electric shift cam group into position so that roller on reduction shift fork assembly is in groove in shift cam and button on lockup fork is on cam end. Then lower this group of parts into the transfer case engaging shift shaft on pin in transfer case.
  - 3) Position clutch housing in transfer case over shift collar hub. Attach with retaining ring in clutch collar hub groove.



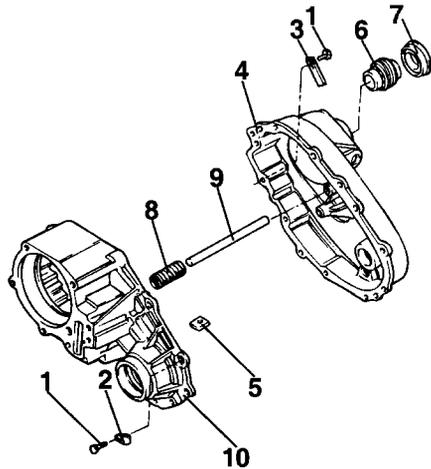
1. Shift collar hub
2. 2W-4W Lockup assy
3. Snap ring
4. Lockup hub
5. Return spring
6. Lockup collar
7. Rail shaft
8. Lockup fork
9. Output shaft
10. Retaining ring
11. Clutch housing

H7MT1130



H7MT1300

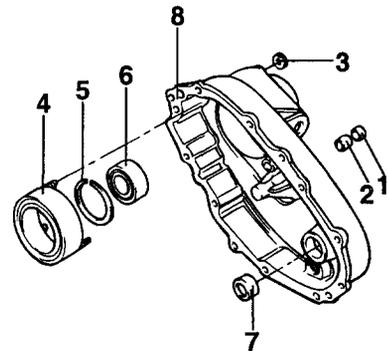
CASE COVER



- |                       |                   |
|-----------------------|-------------------|
| 1. Bolt               | 6. Speedo gear    |
| 2. Wiring clip        | 7. Oil seal       |
| 3. Identification tag | 8. Return spring  |
| 4. Cover assy         | 9. Rail shaft     |
| 5. Magnet             | 10. Transfer case |

H7MT1310

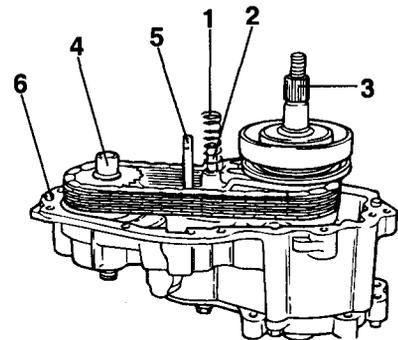
1. Position cover on bed of suitable press so that open face of cover is up and parallel with press bed.
2. Position end of needle bearing with identification marking up and press into cover until upper end of bearing is 1.593 - 1.603 in. (40.47 - 40.97 mm) below face of cover that mates with transfer case.
3. Press in ball bearing to bottom in cover and install snap ring.
4. On electric shift units only, install parts as follow :
  - 1) Verify that four O-rings (one on wire and one each on three studs) are in place on clutch coil assembly. Install clutch coil assembly in inside of cover, with electrical wire and studs extending through cover, with electrical wire and studs extending through cover. Use care not to kink or trap electrical wire under clutch coil assembly. Attach with three nuts and torque to 6 - 8 lb-ft (8 - 11 Nm).
  - 2) Install motor bearing and oil seal in cover.



- |                     |
|---------------------|
| 1. Oil seal         |
| 2. Bearing          |
| 3. Nut              |
| 4. Clutch coil assy |
| 5. Snap ring        |
| 6. Ball bearing     |
| 7. Needle bearing   |
| 8. Case cover       |

H7MT1320

5. Install return spring over rail shaft in transfer case to rest on shift fork.
6. Install magnet in slot in transfer case.
7. Apply continuous 1/16 in. (1.6 mm) bead of sealant (Neutral Cure RTV, Loctite 598) all around transfer case mounting face for cover assembly. Center sealant bead between edges of face. Circle bolt holes. Remove excess if sealant bead is larger than 1/16 in. (1.6 mm).



- |                       |
|-----------------------|
| 1. Return spring      |
| 2. Rail shaft         |
| 3. Output shaft       |
| 4. Front output shaft |
| 5. Shift shaft        |
| 6. Dowel pin          |

H7MT1330

8. Install cover assembly on transfer case. All of the following alignment conditions must be met for the cover assembly to seat on transfer case properly.

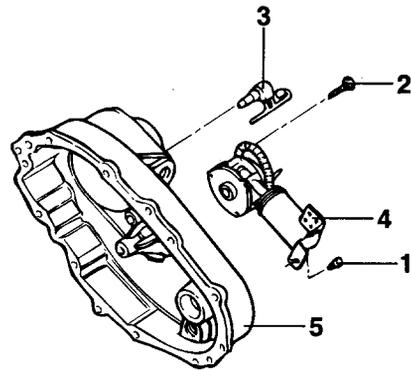
- 1) Cover holes with transfer case dowel pins.
- 2) Cover bearings with output shafts.
- 3) Blind hole in cover with rail shaft. Make sure spring is not cocked. On electric shift, check with pen light through cover hole for speed sensor.
- 4) On electric shift units, cover bearing with shift shaft.

9. Install nine bolts positioning identification tag and wiring clip under bolt heads at locations. Torque bolts to 20 - 34 lb-ft (27 - 46 Nm).

10. Install speedo gear over spline of output shaft into cover assembly.

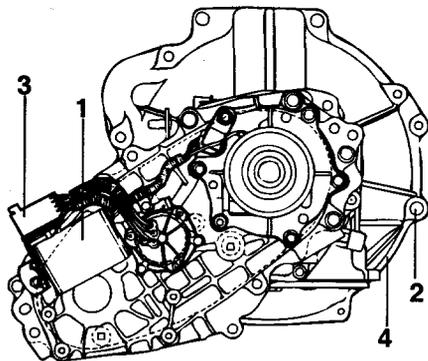
11. Press new oil seal into cover assembly.

3. Install bolt and washer at bracket end of motor assembly and torque to 6 - 8 lb-ft (8 - 11 Nm).



1. Bolt
2. Bolt
3. Speed sensor
4. Motor assembly
5. Cover

H7MT1110

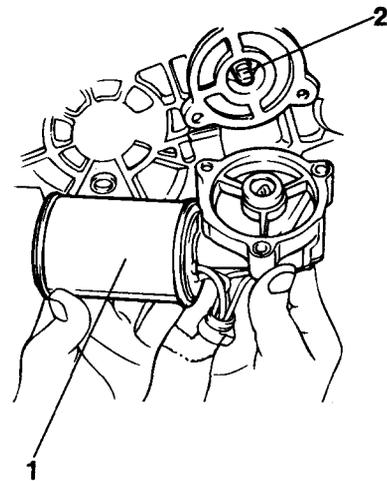


1. Motor assembly
2. Bolt
3. Wiring clip
4. Identification tag

H7MT1000

## EXTERNAL ELECTRIC SHIFT

1. Position motor assembly so that triangular slot in motor will align with shift shaft. Move motor in to engage shift shaft and contact cover. Then rotate motor in clockwise direction until motor is in correct position and mounting holes are aligned.
2. Fit O-ring on speed sensor and install speed sensor assembly in cover. Install bracket so that it is over speed sensor and install three bolts. Torque bolts to 6 - 8 lb-ft (8 - 11 Nm).



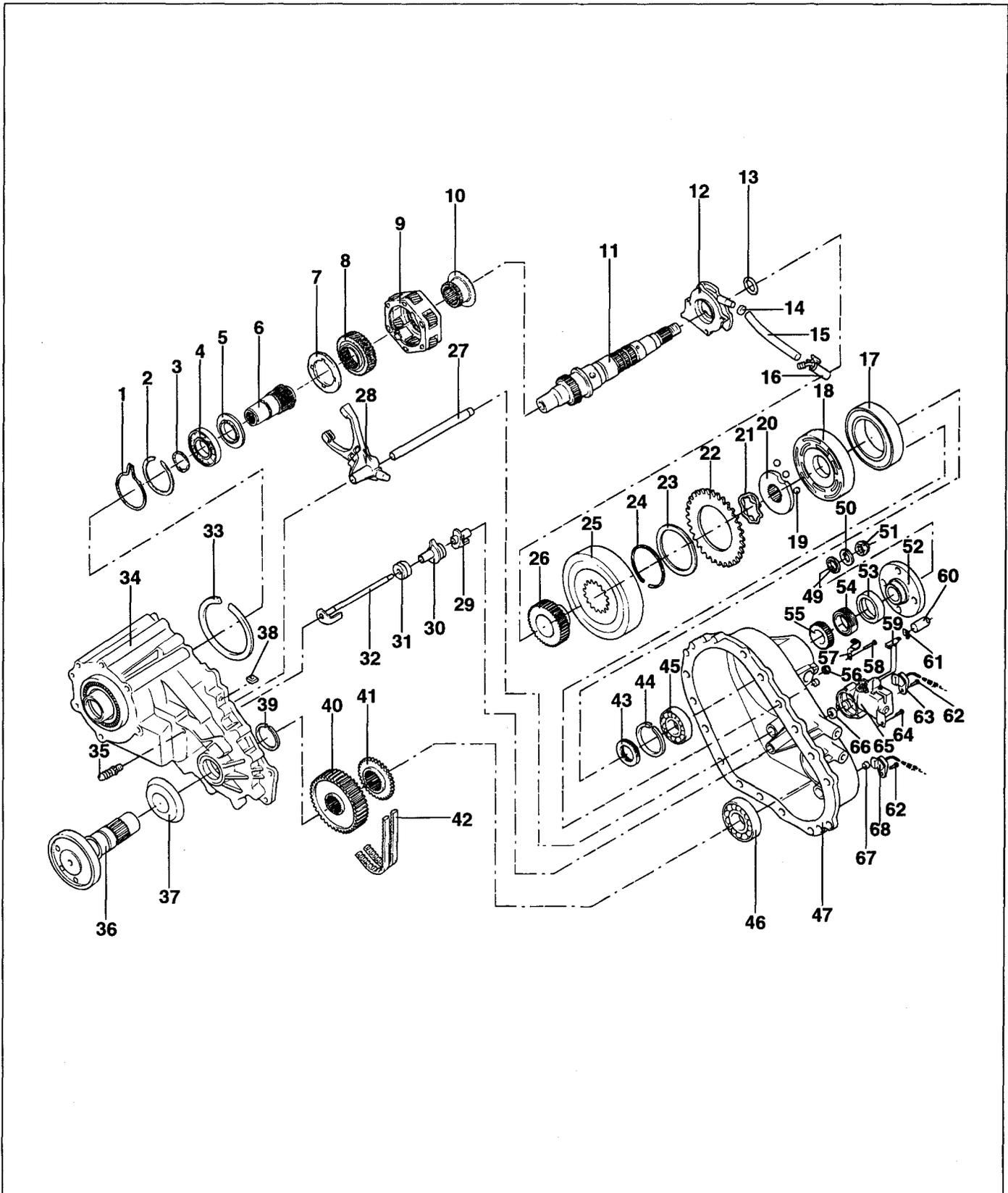
1. Motor assy
2. Shift shaft

H7MT1340

ATT (ACTIVE TORQUE TRANSFER)

EMMB0410

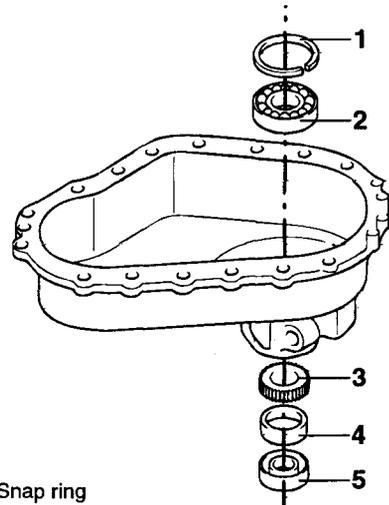
COMPONENTS



1. Snap ring
2. Snap ring
3. Snap ring
4. Bearing
5. Circula hub
6. Input shaft
7. Thrust plate
8. Sun gear
9. Carrier
10. Reduction hub
11. Main shaft
12. Pump
13. Thrust washer
14. Hose clamp
15. Hose
16. Filter
17. Electric coil
18. Cam coil housing
19. Ball
20. Cam apply
21. Wave spring
22. Amateur
23. Insulator washer
24. Retaining ring
25. Clutch pack
26. Drive sprocket
27. Shift rail
28. Shift fork
29. Electric shift cam
30. Electric shift cam
31. Torsion spring
32. Shift shaft
33. Retaining ring
34. Transfer case
35. Breather
36. Output shaft
37. Dust deflector
38. Magnet
39. Snap ring
40. Lower socket
41. Lower tone wheel
42. Chain
43. Bearing thrust
44. Retaining ring
45. Bearing
46. Bearing
47. Cover
48. Metric bolt
49. Oil seal
50. Washer
51. Metric nut
52. Companion flange
53. Oil seal
54. Speedo gear
55. Upper tone wheel
56. Metric nut
57. J-clip
58. Hex head bolt
59. Clip
60. Connector
61. Connector lock
62. Hex head bolt
63. Upper speed sensor
64. Hex head cap screw
65. Electric motor
66. Oil seal
67. Pipe plug
68. Lower speed sensor

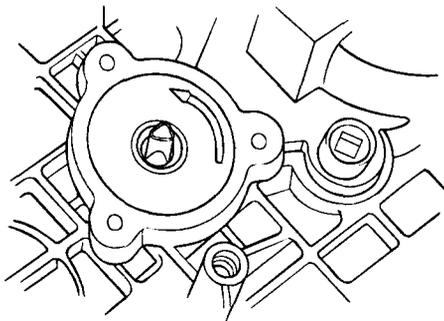
**DISASSEMBLY** EMMB0420

1. Remove the transfer case from the vehicle.
2. Remove the flange washer and nut.
3. Disconnect the shift motor/clutch coil connector and the speed sensor connector.
4. Remove the outer tube of the speed sensor connector wire.
5. Remove the wire fixing cap in the rear of the speed sensor connector.
6. Disconnect the speed sensor connector.
7. Remove the shift motor.



1. Snap ring
2. Bearing
3. Upper tone wheel
4. Speedometer drive gear
5. Flange seal yoke

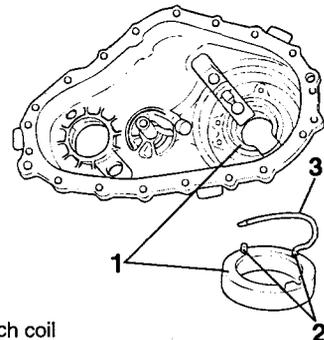
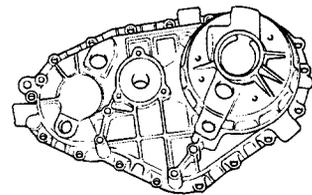
EMMB042A



KMMB042B

8. If necessary, remove the front and rear speed sensor.
9. Remove the mounting bolts for the rear and front case.
10. Make sure that the front case is facing downward so that the rear cover is facing upwards.
11. Separate the front case from the rear case.
12. Remove all traces of gasket sealant from the mating surfaces of the front case and rear case.
13. If the speedometer drive gear is to be replaced, first remove the flange seal or use the Impact Slide Hammer to pop off the flange seal.

14. Remove the speedometer drive gear and upper tone wheel.
15. If the rear output shaft bearing requires replacing, remove the internal snap ring that retains the bearing in the bore.
16. From the outside of the case, drive out the bearing.
17. Remove the three nuts and washers retaining the clutch coil assembly to the rear case.
18. Pull the coil assembly, along with the O-rings and wire, from the case.



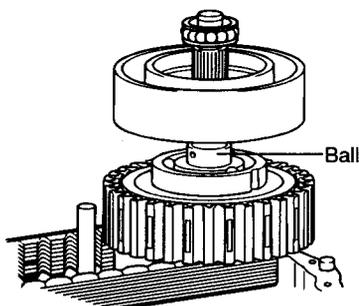
1. Clutch coil
2. Clutch coil retaining nut
3. Wire

**CAUTION**

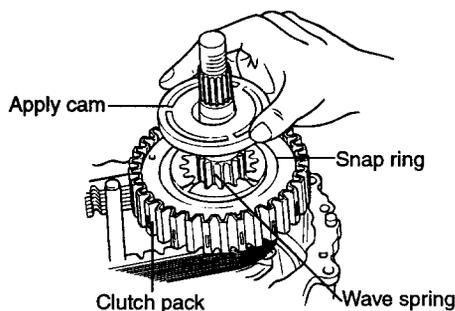
*Do not damage the bearing and the bearing case.*

EMMB042B

19. Remove the bearing assembly from the output shaft.
20. Remove the clutch housing from the output shaft.
21. Remove the balls and the apply cam and the waver washer from the output shaft.
22. Remove the snap ring from the output shaft.
23. Remove the clutch pack and lower tone wheel from output shaft.

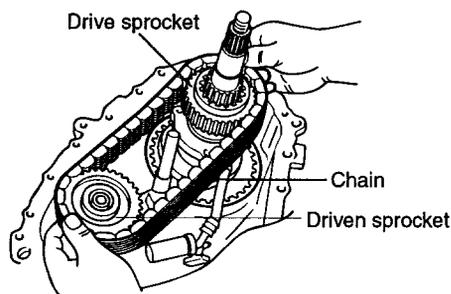


EMMB042C



EMMB042D

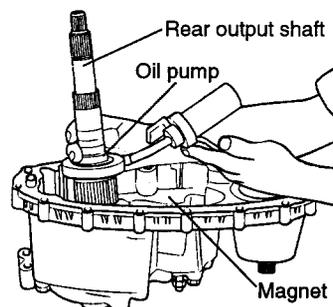
24. Remove the chain, the driven sprocket and the drive sprocket as an assembly.



EMMB042E

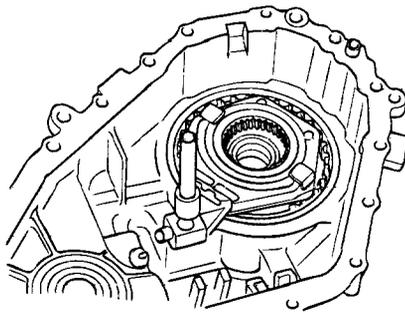
25. Remove the thrust washer from the output shaft.
26. Remove the oil pan magnet from the slot in the front of the case bottom.
27. Remove the output shaft and oil pump as an assembly.

28. If required, to remove the pump from the output shaft, rotate the pump to align.
29. Pull out the shift rail.
30. Remove the helical cam from the front case.
31. If required, remove the helical cam, torsion spring and sleeve from the shaft.



EMMB042F

32. Remove the high-low range shift fork and collar as an assembly.
33. Expand the tangs of the large snap ring in the case using the Ring Plier or equivalent.
34. With the input shaft against a bench, push the case down and slide the main drive gear bearing retainer off the bearing.
35. Lift the input shaft and front planet from the case.
36. If required, remove the oil seal from the case by prying and pulling on the curved-up lip of the oil seal or use the Slide Hammer to pop off the oil seal.
37. Remove the internal snap ring from the planetary carrier.
38. Separate the front planet from the input shaft.
39. Remove the external snap ring from the input shaft.
40. Place the input shaft in a vise and remove the bearing.
41. Remove the thrust washer, thrust plate and the sun gear off the input shaft.



KMMB042I

42. Inspect the bushing and needle bearing in the end of the input shaft for wear or damage.

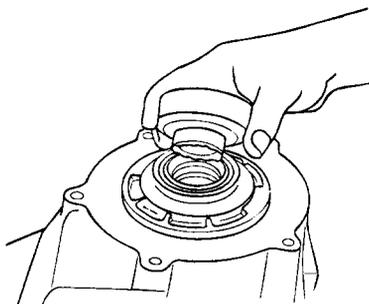
**CAUTION**

*Under normal use, the needle bearing and bushing should not require replacement. If replacement is required, the bushing and needle bearing must be replaced as a set.*

43. If required, remove the front yoke to flange seal by prying and pulling on the curved-up lip of the yoke to flange seal.
44. If required, remove the internal snap ring retaining the front output shaft ball bearing and remove the bearing.

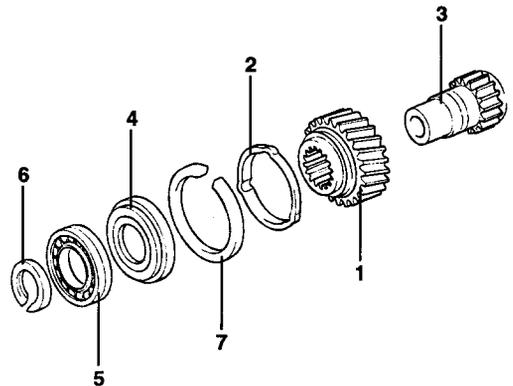
**REASSEMBLY** EMMB0430

1. Before assembly, lubricate all parts with the specified grease oil.
2. If removed, drive the bearing into the front output case bore.
3. Install the internal snap ring that retains the bearing to the front case.
4. If removed, install the front yoke to flange seal in the front case bore.
5. If removed, install the yoke to flange seal into the mounting adapter bore.



KMMB043Q

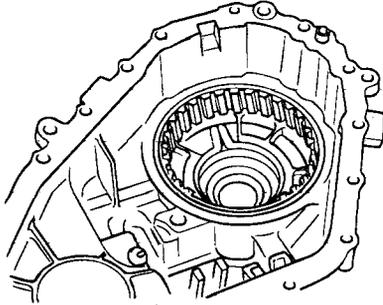
6. If the input shaft needle bearing and bushing were removed, install a new bearing and bushing.
7. The recessed face of the sun gear and the snap ring groove on the bearing outer race should be toward the rear of the transfer case.
8. The stepped face of the thrust washer should face toward the bearing.
9. Slide the sun gear, thrust plate and thrust washer into position on the input shaft.
10. Press the bearing over the input shaft.
11. Install the external snap ring to the input shaft.
12. Install the front planet to the sun gear and input shaft.
13. Install the internal snap ring to the planetary carrier.



- |                  |                    |
|------------------|--------------------|
| 1. Sun gear      | 5. Bearing         |
| 2. Thrust plate  | 6. Outer snap ring |
| 3. Input shaft   | 7. Inner snap ring |
| 4. Thrust washer |                    |

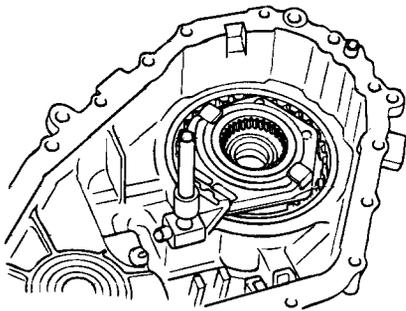
EMMB043A

14. Place the tanged snap ring in the case.  
Expand the snap ring with the snap ring pliers and install the planetary carrier assembly.  
Check the installation by holding the case and carefully tapping the face of the input shaft against a wooden block to make sure the snap ring is installed.
15. Remove all traces of gasket sealant from the front case and mounting adapter mating surfaces.



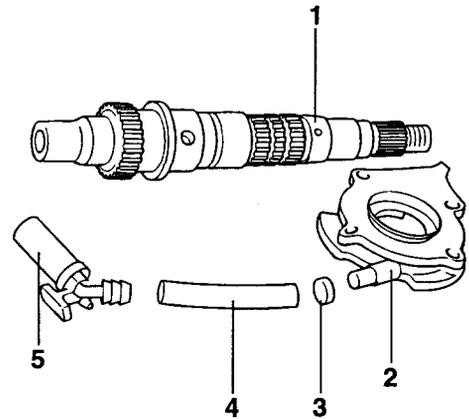
KMMB043C

16. Install the high-low shift fork and high-low collar as an assembly into the front planet.



KMMB043D

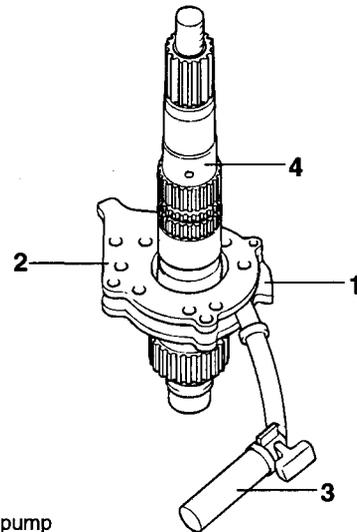
17. Check the pump to make sure the pump rotates freely.
18. Inspect the outside surfaces and bore of the oil pump.



1. Rear output shaft  
2. Pump body  
3. Clamp  
4. Hose  
5. Filter

EMMB043B

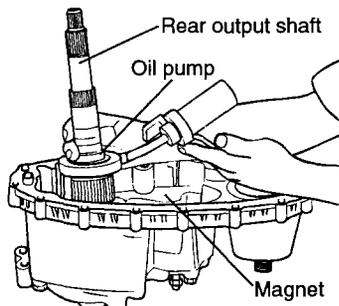
19. Install the output shaft and oil pump in the input shaft. Make sure that the internal splines of the output shaft engage the internal splines of the high-low shift collar. Make sure that the oil pump retainer arm and oil filter leg are in the groove and slot of the front case.



1. Oil pump  
2. Pump retainer  
3. Oil pump filter  
4. Output shaft

EMMB043C

20. Install the oil pan magnet in the slot in the front case just above the oil filter leg.
21. Install the front output shaft in the front case.

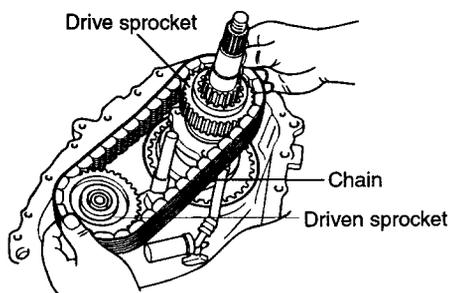


EMMB042F

22. Install the thrust washer on the rear output shaft.
23. Install the chain, drive sprocket and driven sprocket as an assembly over the output shaft.

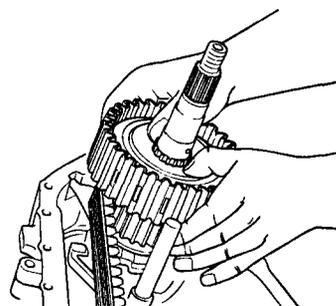
**CAUTION**

*The driven sprocket (on the front output shaft) must be installed with the marking REAR facing toward the rear case, if so marked.*



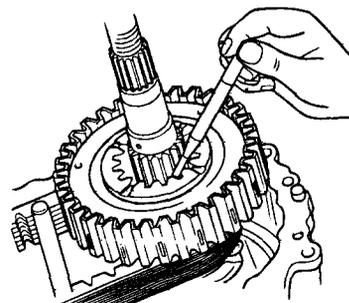
EMMB042E

24. Install tone wheel onto the front output shaft. Make sure the spline on the tone wheel engages the spline on the front output shaft.
25. Install clutch pack assembly onto the rear output shaft. Make sure that the spline on the clutch pack engages to the spline of the sprocket.



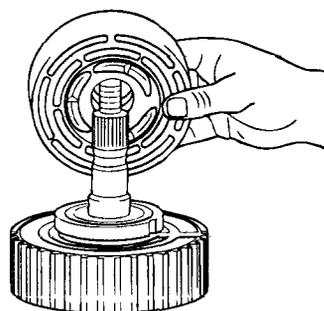
KMMB043G

26. Install snap ring onto the rear output shaft. Start the snap ring over the spline and use the wave spring to seat the snap ring in the snap ring groove. If the snap ring will not install, the thrust washer inside the clutch pack may not be seated properly.



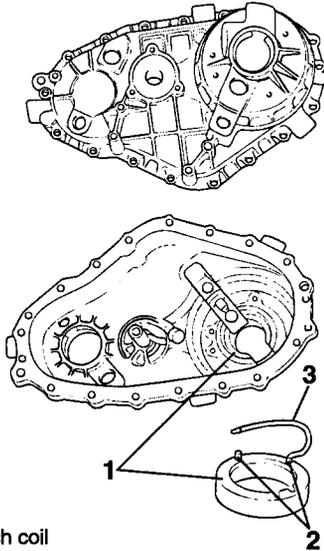
KMMB043H

27. Three slots on the thrust washer must be aligned with the three tabs on the clutch pack housing.
28. Install the apply cam onto the rear output shaft.
29. Install three balls into the apply cam.
30. Install cam and coil housing assembly onto rear output shaft.
31. Install thrust bearing assembly onto output shaft.



KMMB043I

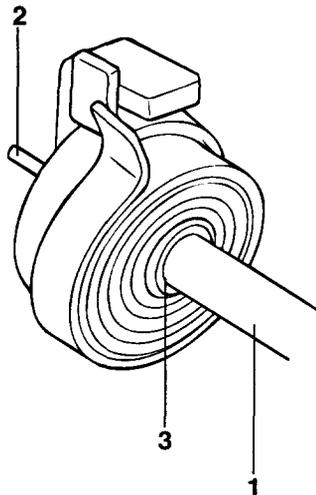
32. Install the clutch coil from inside the rear case until the wire and studs extend through the cover.
33. Install the washers and nuts and tighten to 8 - 11Nm



1. Clutch coil
2. Clutch coil retaining nut
3. Wire

EMMB042B

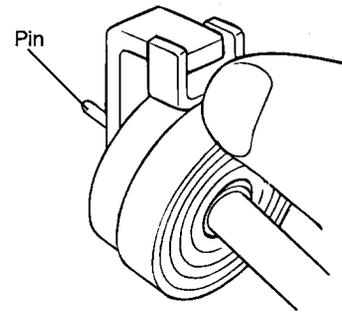
34. Slide the spring spacer on the cam shaft and position it beneath the drive tang.
35. Place the torsion spring on the cam shaft. Position the first spring tang to the left of the cam shaft drive tang.



1. Cam shaft
2. Pin
3. Spring spacer

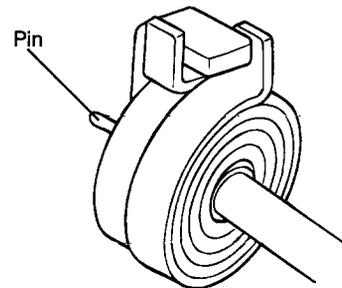
EMMB043D

36. Wind the second spring tang clockwise past the drive tang.



EMMB043E

37. Push the torsion spring and sleeve in as far as it will go.
38. Install the helical cam and slide the drive tang between the torsion spring tangs as far as it will go.



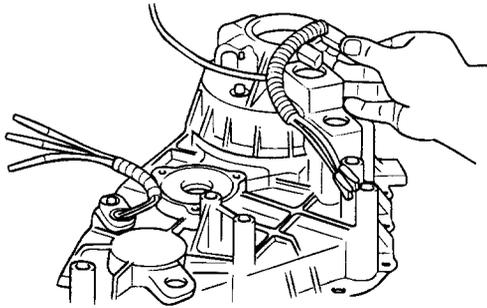
EKKB043F

39. Install the pin on the tang end of the helical cam into the hole in the front case. Position the torsion spring tangs so that they are pointing toward the top side of the transfer case and just touching the high-low shift fork.

**⚠ CAUTION**

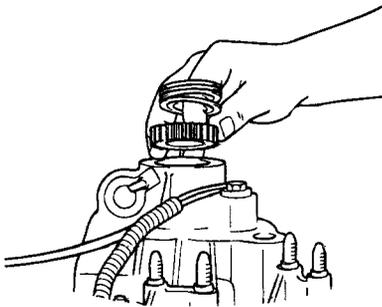
**Do not bend the helical cam during installation to the front case because of possible damage to the pin at the tang end of the motor shaft.**

40. Install the shift rail through the high-low shift fork and make sure that the reverse gear shift rail is seated in the front case bore.
41. Install upper and lower speed sensors into the cover. Feed the coil wire through the upper speed sensor wire shield.



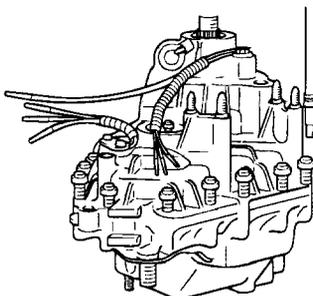
KMMB043M

42. Install upper tone wheel, speedometer gear and rear output seal.



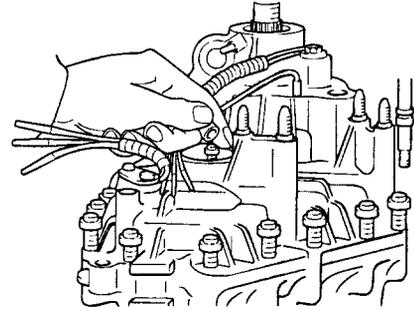
KMMB043N

43. Coat the mating surface of the front case with sealant.
44. The following procedure must be followed prior to installing the rear case onto the front case half :
- 1) Align the output shaft with the rear case output shaft bore.
  - 2) Align the helical cam with the rear case motor bore.  
If difficulty is encountered with seating the rear case, tap the rear output shaft with a sharp blow using a rubber mallet in a direction away from the triangular shaft while pushing down on the rear case.
45. Install the bolts retaining the case halves and tighten to 25 - 37 N·m (250 - 370 kg·cm, 19 - 25 lb·ft).



KMMB043O

46. Install shift shaft oil seal if it is not installed.



KMMB043P

47. Using pliers equipped with soft jaws, rotate the triangular shaft so it is aligned with the triangular slot in the transfer case shift motor. If triangular shaft will not rotate, rotate the rear output shaft.
48. Slightly loosen the two nuts that attach the slotted support bracket to the end of the motor house.
49. Apply the sealant to motor housing base and install on transfer case.
50. Install the transfer case shift motor.
51. Holding the slotted support bracket tight against the motor housing end secure the bracket to the transfer case, tightening the bolt with lockwasher to 8 - 11 N·m (80 - 110 kg·cm, 6 - 8 lb·ft)
52. Retighten the two nuts that attach the slotted support bracket to the end of the motor to 3 - 4 N·m (30 - 40 kg·cm, 2 - 3 lb·ft)

## SERVICE ADJUSTMENT PROCEDURES

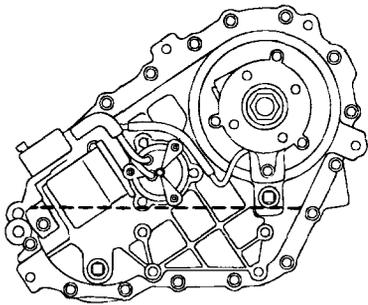
EMMB0450

### FLUID LEVEL INSPECTION

1. Wipe fluid level plug and surrounding area clean.
2. Remove fluid level plug.
3. When transfer case is full, lubricant will just drip out fluid level plug opening.
4. Add approved lubricant if required.
5. Install fluid level plug and torque to 20 - 30 N·m (14 - 22 lb·ft).

#### NOTE

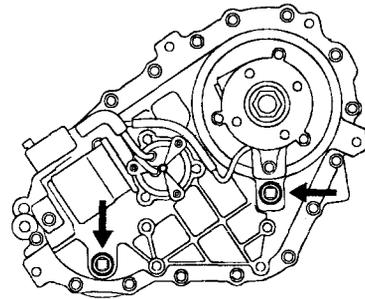
- To check or drain the lubricant, the transfer case should be warm.  
This is best done shortly after shutdown.
- Do not use an impact wrench to remove or install the fill or drain plugs since this will damage female threads in transfer case cover.



KMMB045B

### FLUID REPLACEMENT

1. Wipe fluid level and drain plug and surrounding areas clean.
2. Place suitable container under transfer case.
3. Remove drain plug.
4. Remove fluid level plug.
5. Allow all lubricant to drain.
6. Install drain plug and torque to 20 - 30 N·m (14 - 22 lb·ft).
7. Add approved lubricant through fluid level plug opening until lubricant just begins to drip back out of opening.
8. Install fluid level plug and torque to 20 - 30 N·m (14 - 22 lb·ft).

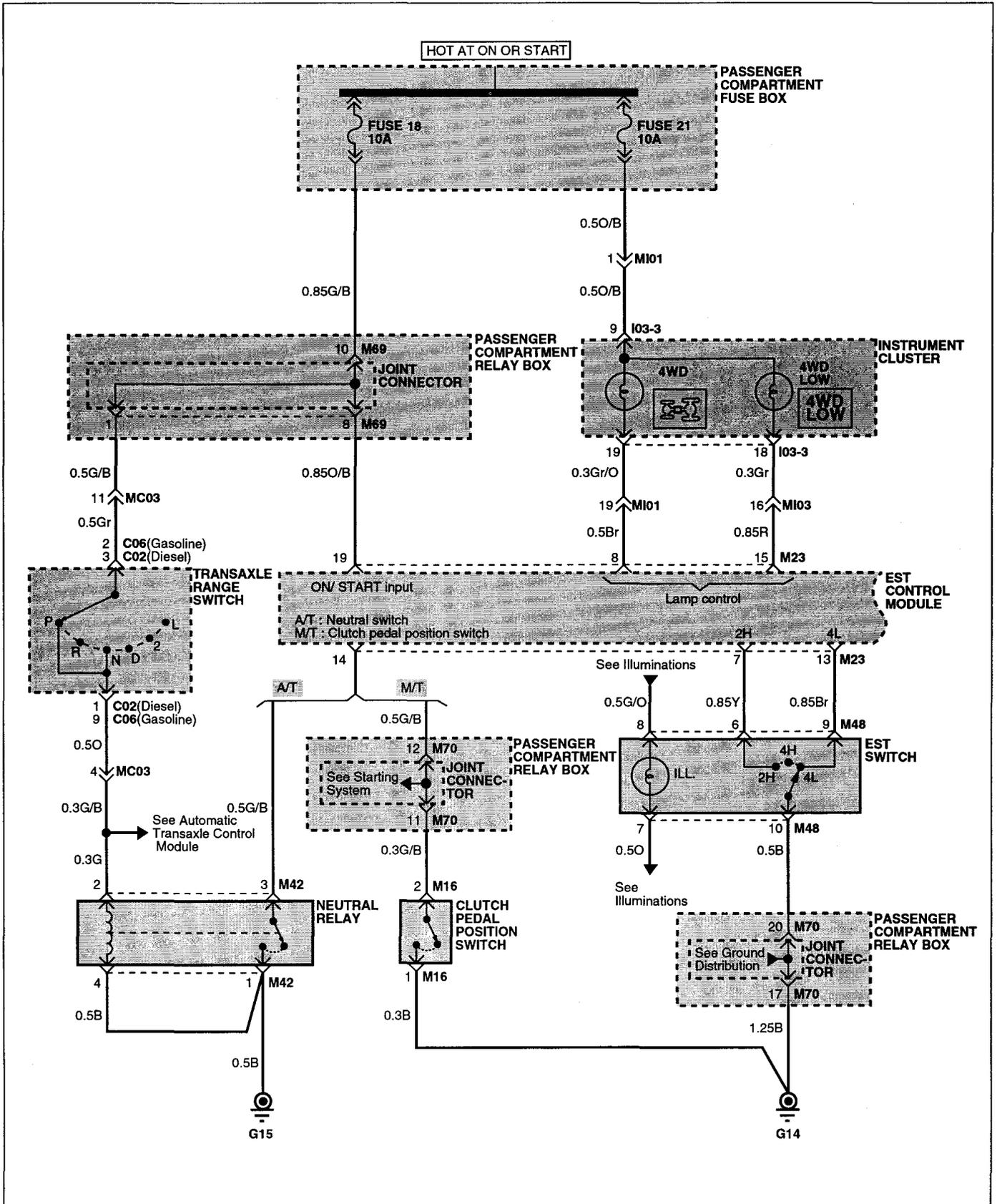


KMMB045C

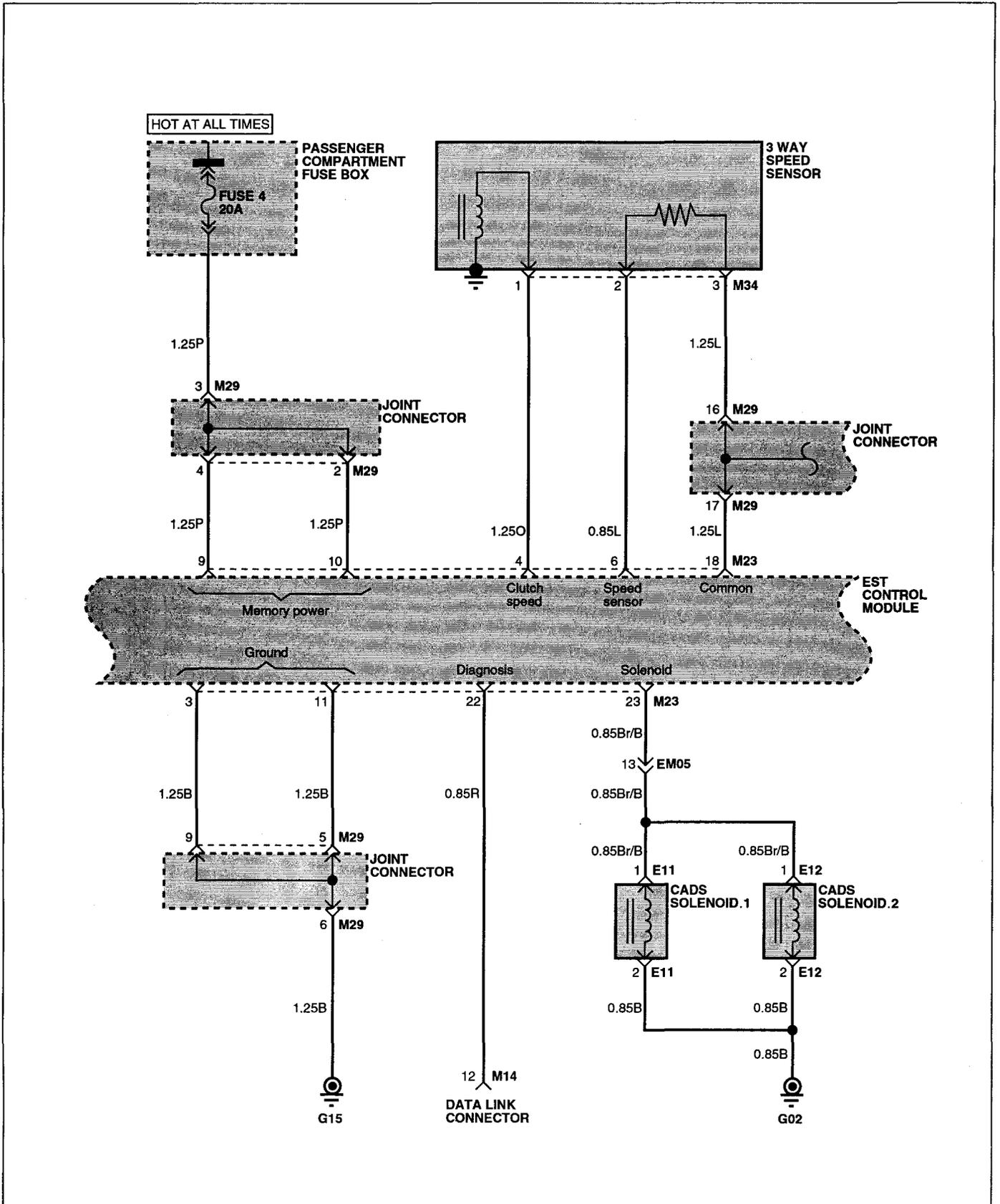
TCCM

EMMA0500

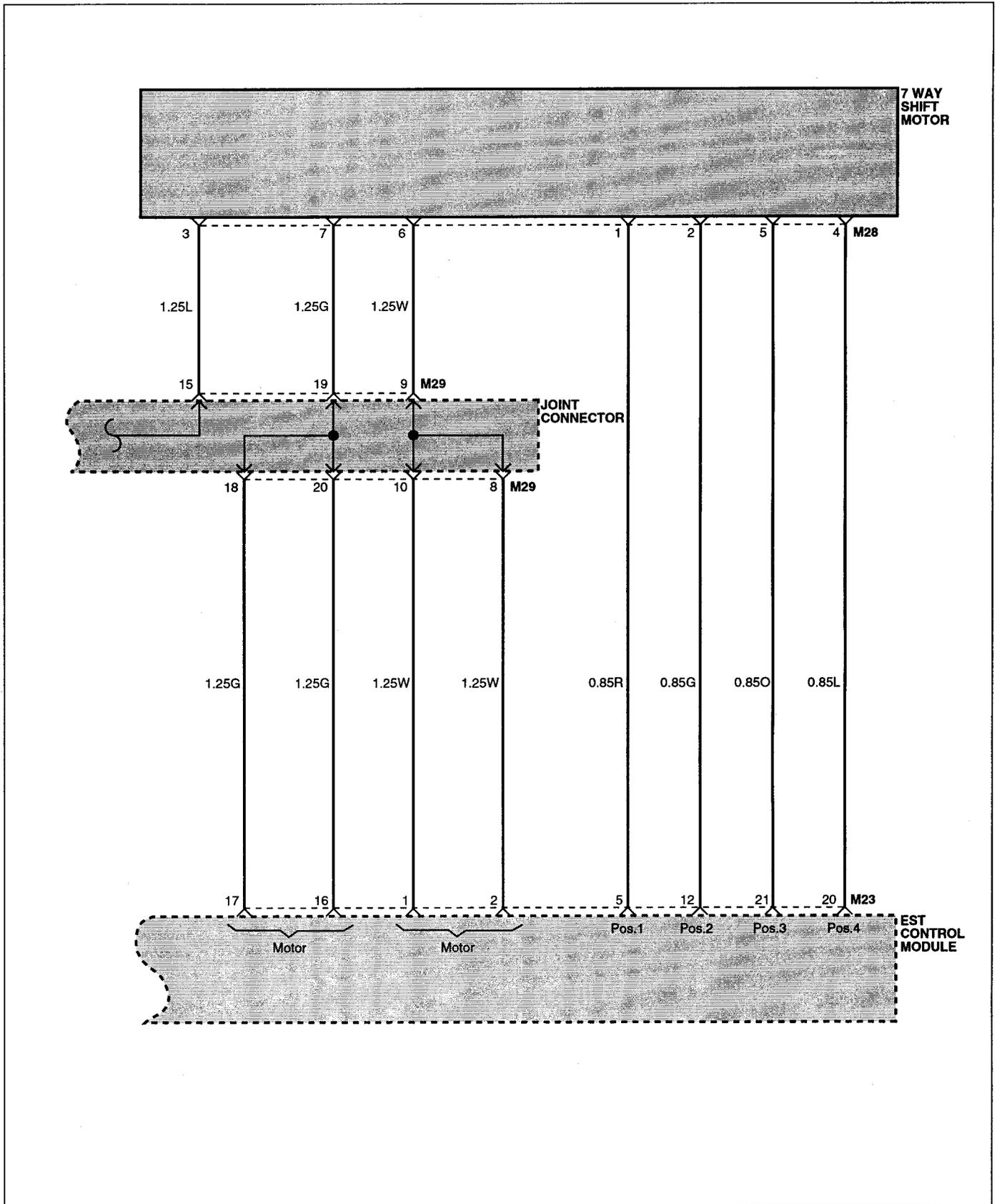
EST CIRCUIT DIAGRAM (1)



EST CIRCUIT DIAGRAM (2)

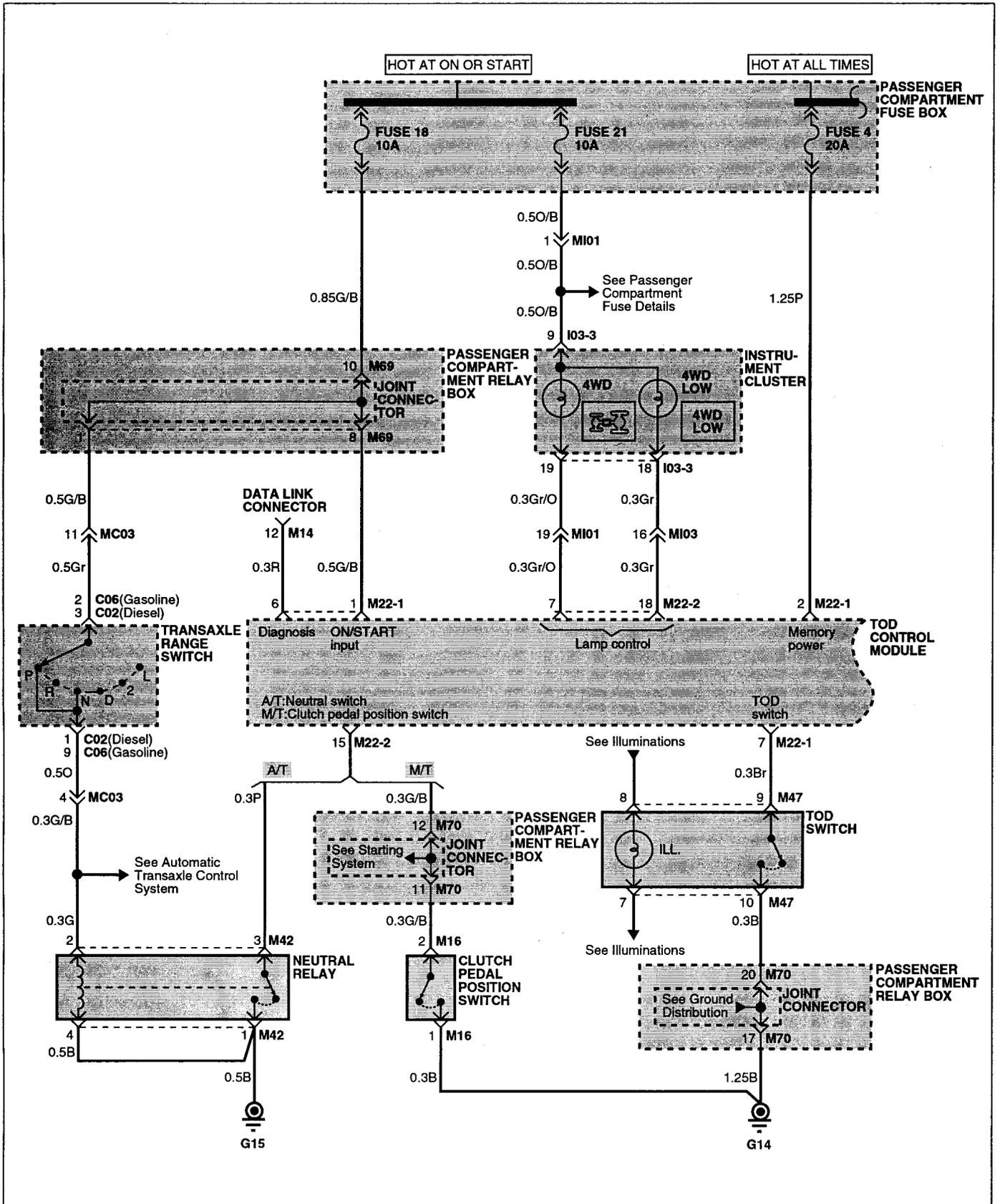


EST CIRCUIT DIAGRAM (3)



EMMB0510

ATT(OR TOD) CIRCUIT DIAGRAM (1)



ATT(OR TOD) CIRCUIT DIAGRAM (2)

