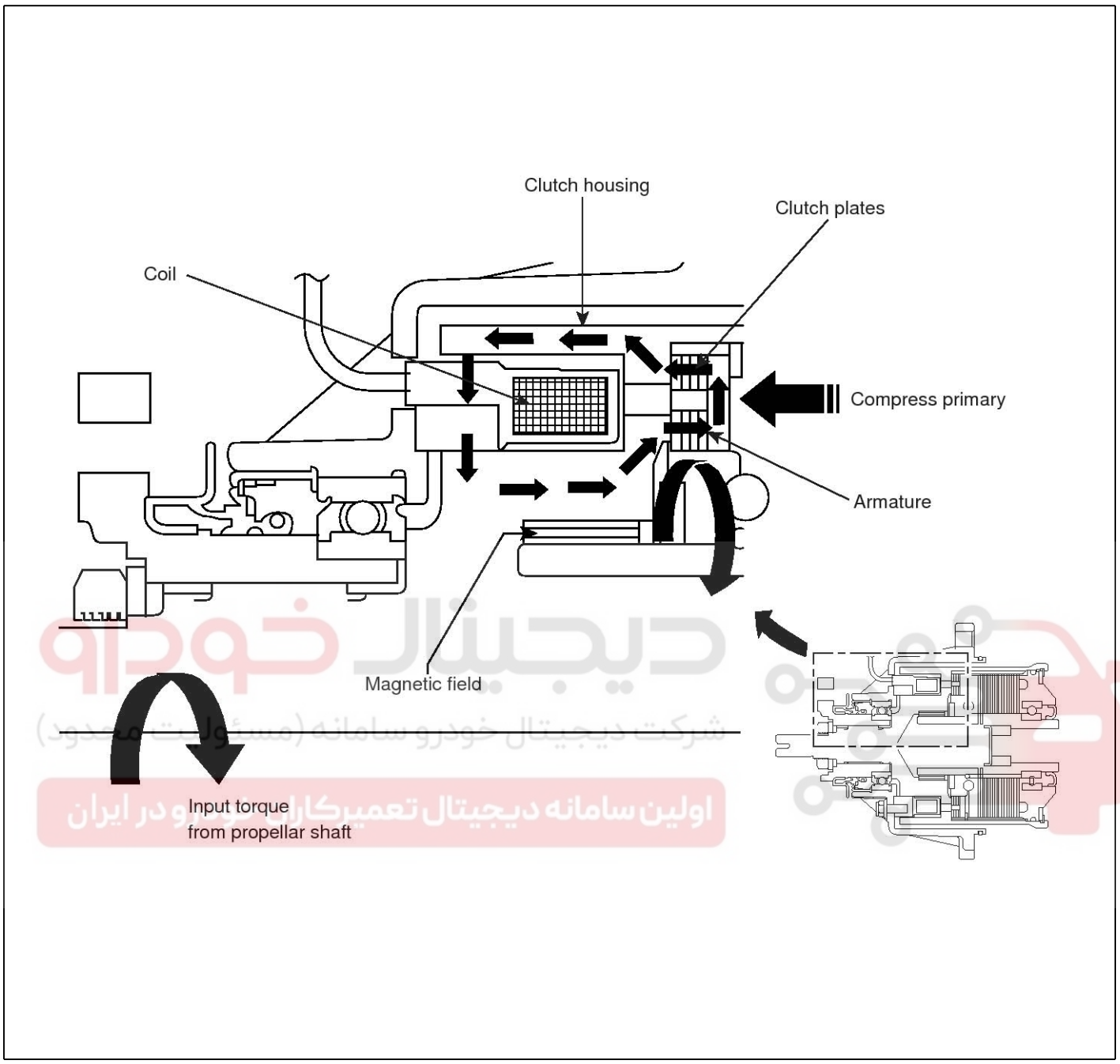
Transfer Case Assembly

POWER FLOW MECHANISM

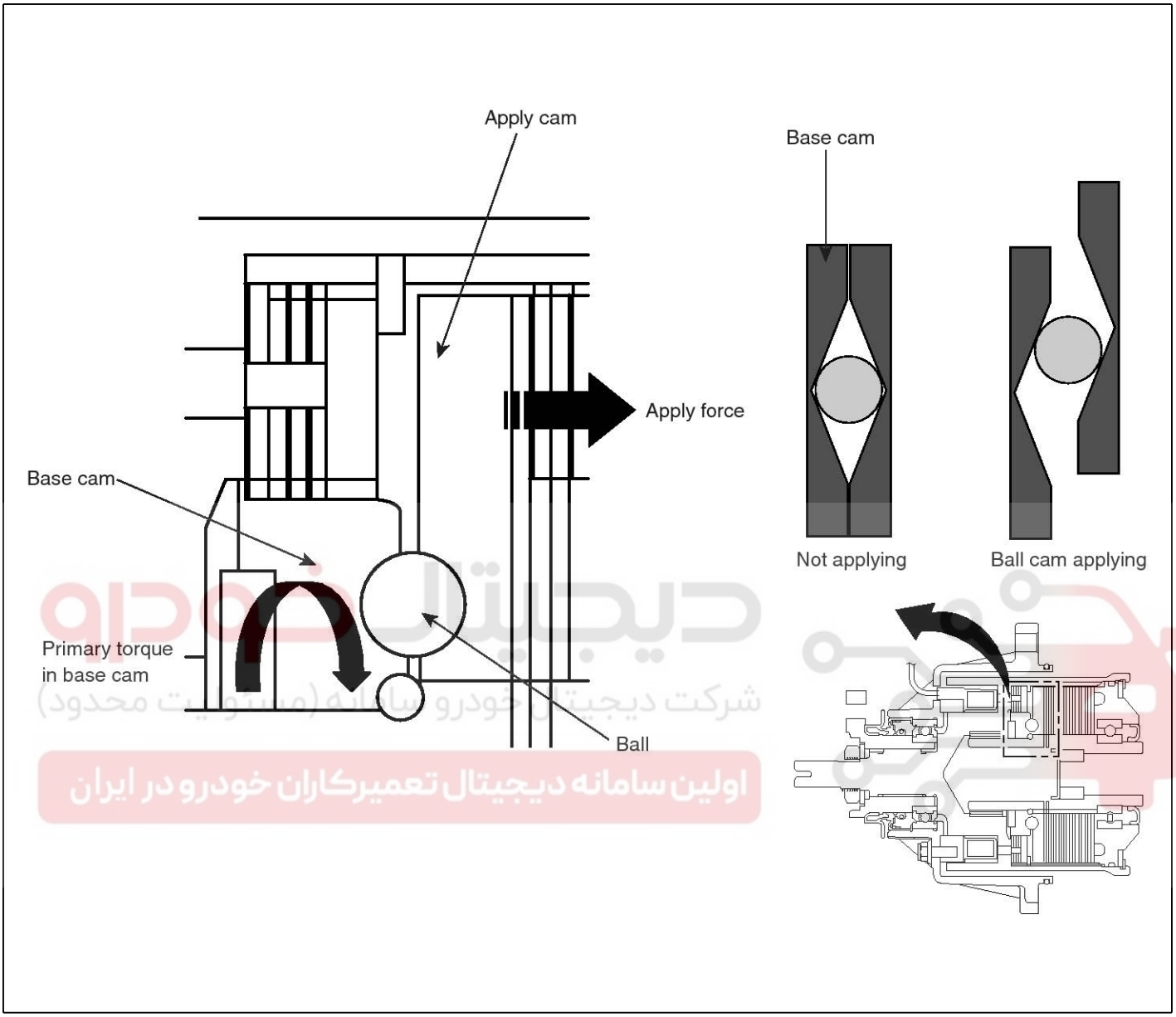
- Normal driving situation: 2WD base driving
- 4WD driving in driving situations (rapid activation, cornering etc.)

- Input the information from each sensor in vehicle
  - Input torque (Throttle position sensor)
  - Cornering situation (Steering angle sensor)
  - Vehicle speed and different wheel speed front & rear (Wheel speed sensor)
  - Braking situation (Brake signal and ABS signal)
- Distributed the required driving force after 4WD ECU operates.
- EMC (Electric Magnetic Clutch) operates the primary clutch.



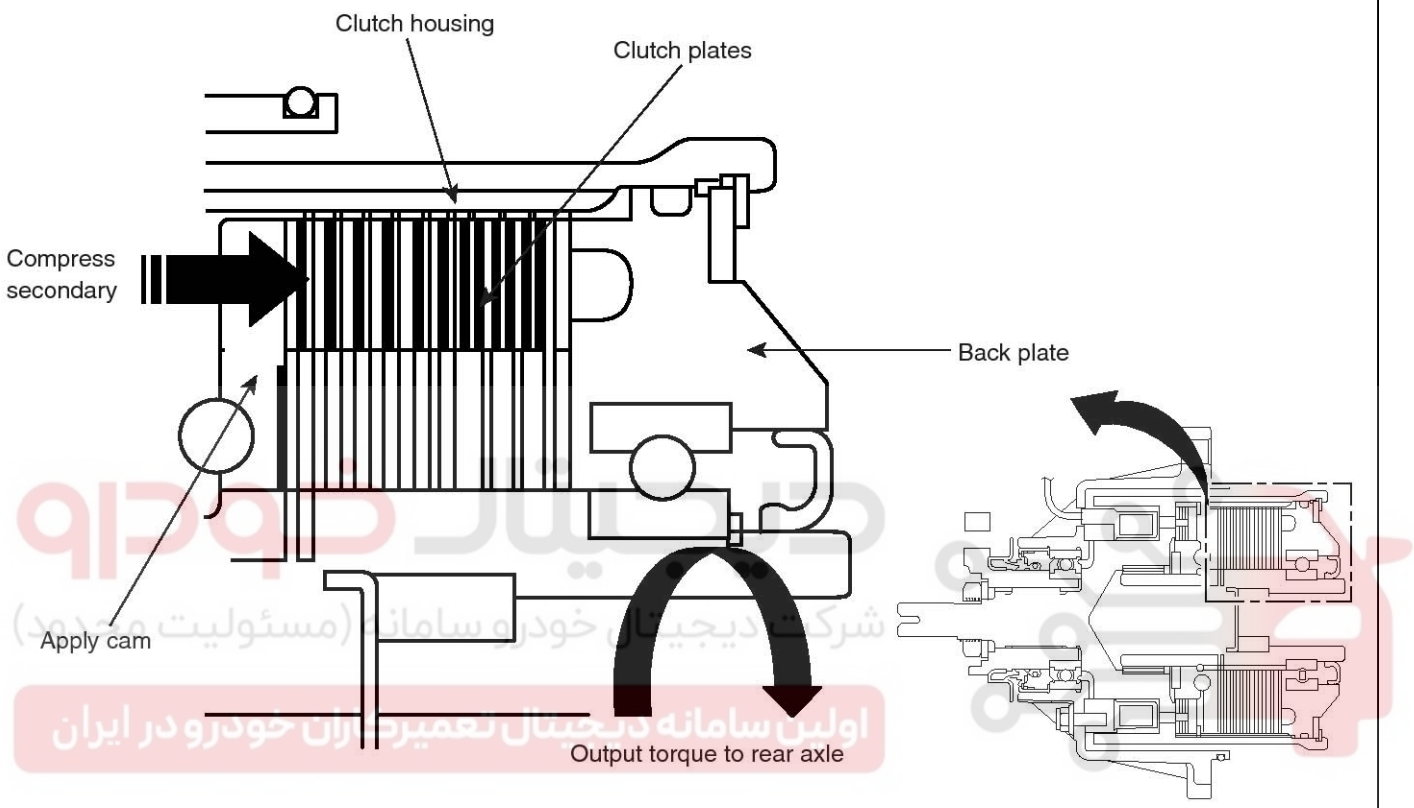
LMIF001V

- Control the cam's opening gap by operation of primary clutch.



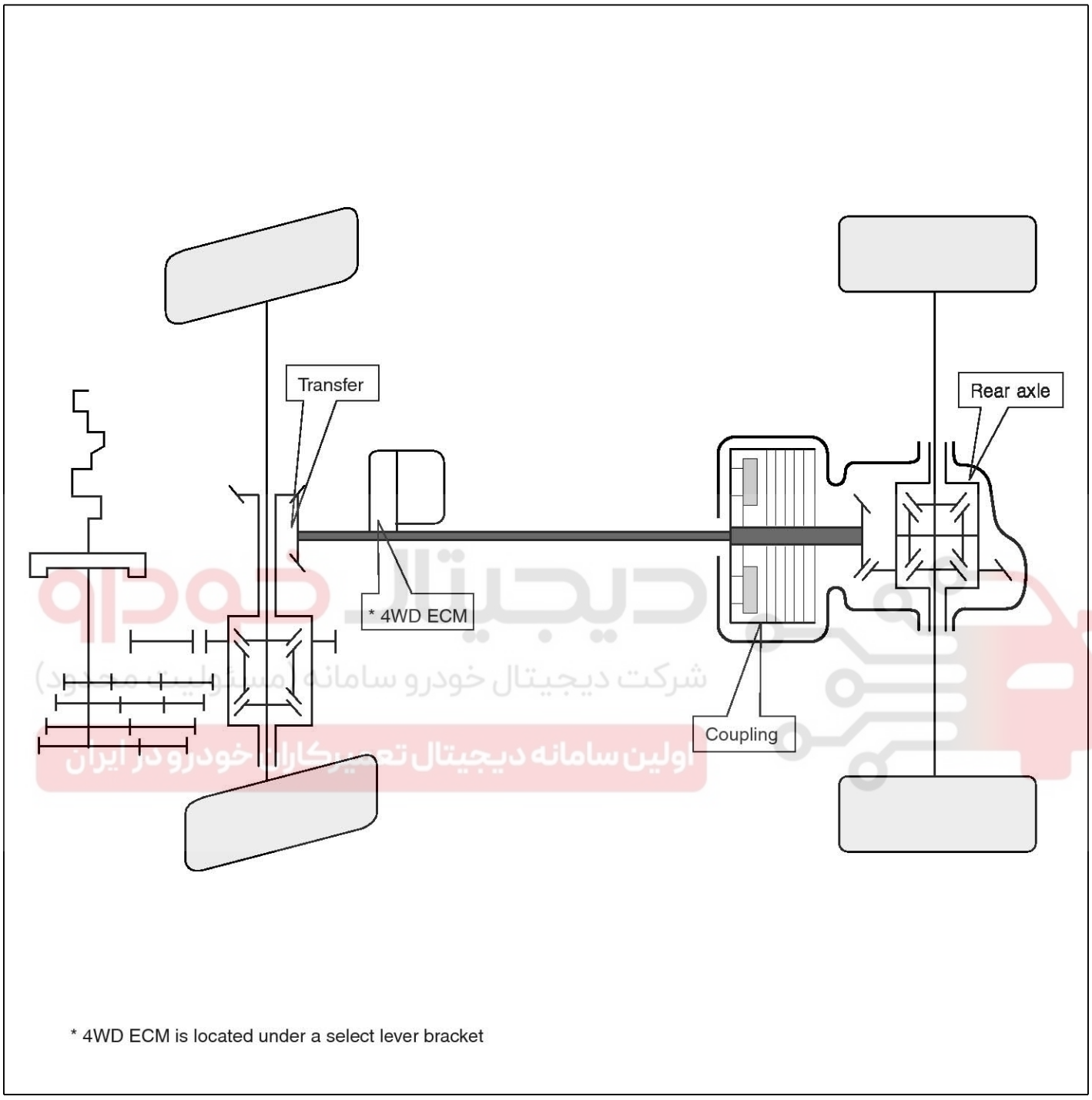
LMIF001W

- Control the slip of inner & outer plate.
  Control variably the driving force distribution to optimize front & rear driving force.



LMIF001X

SYSTEM SCHEMATICS

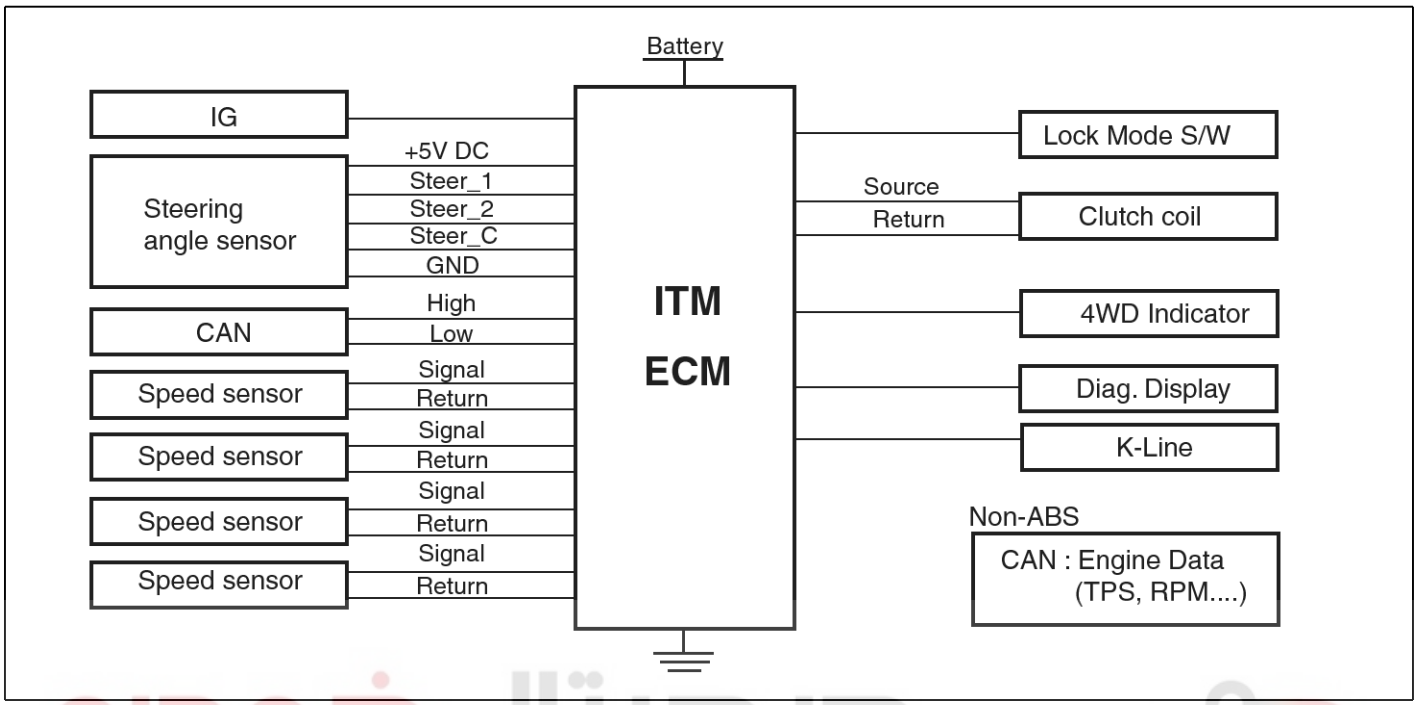


* 4WD ECM is located under a select lever bracket

LMIF001Y

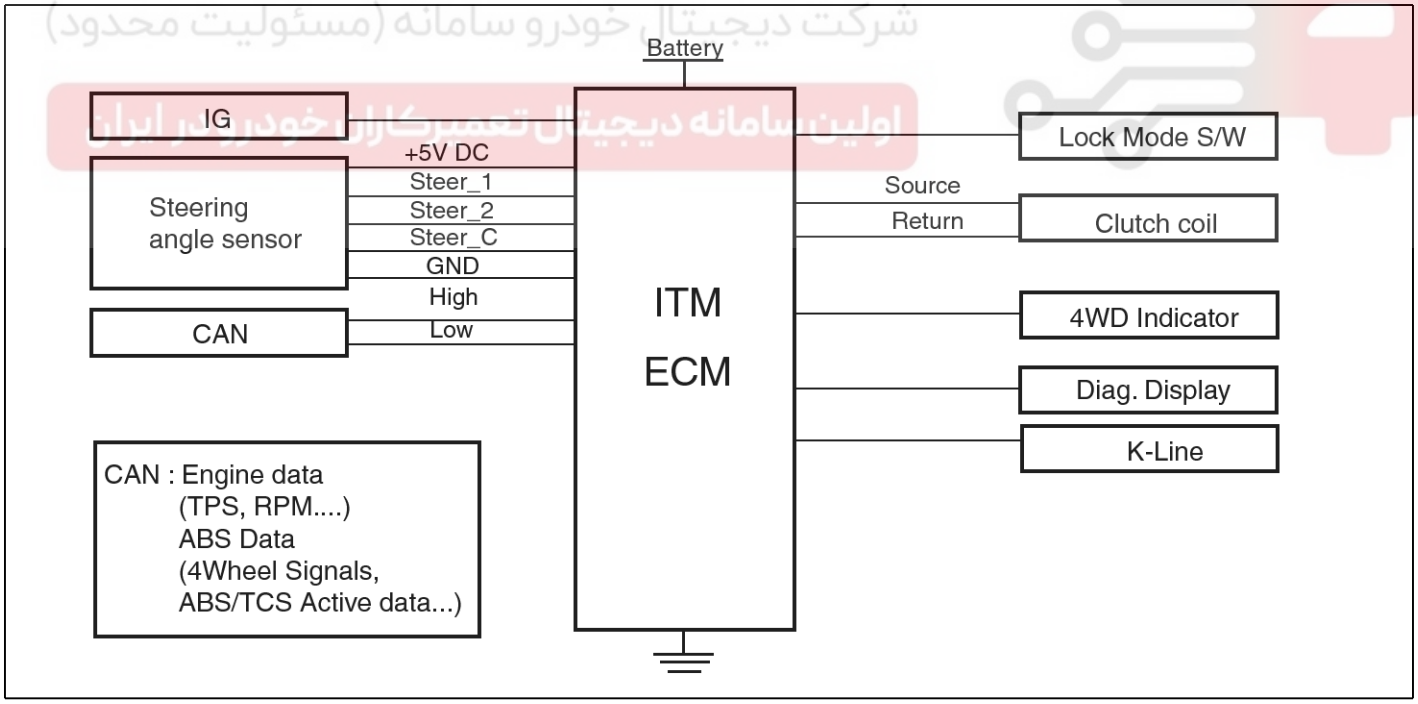
ITM confroller

1. NON-ABS controller



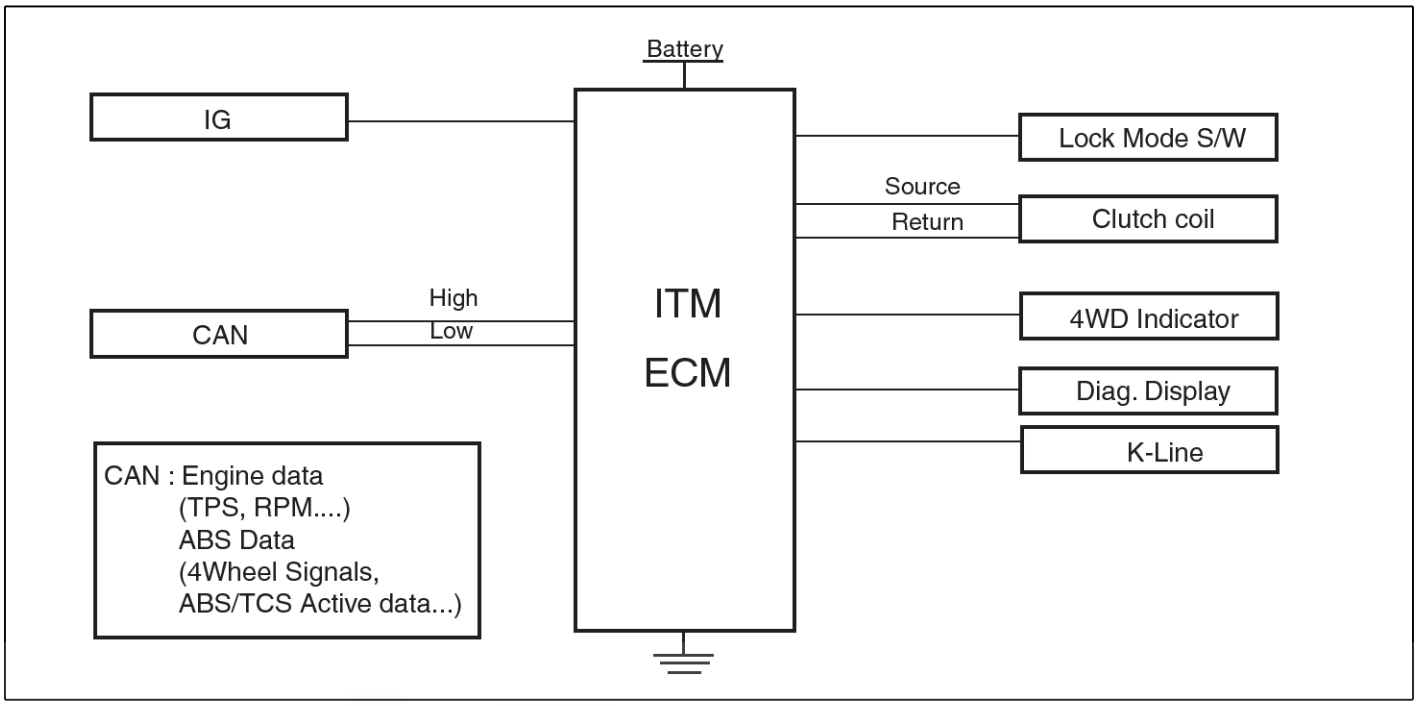
LMIF001Z

2. ABS/TCS controller



LMIF012A

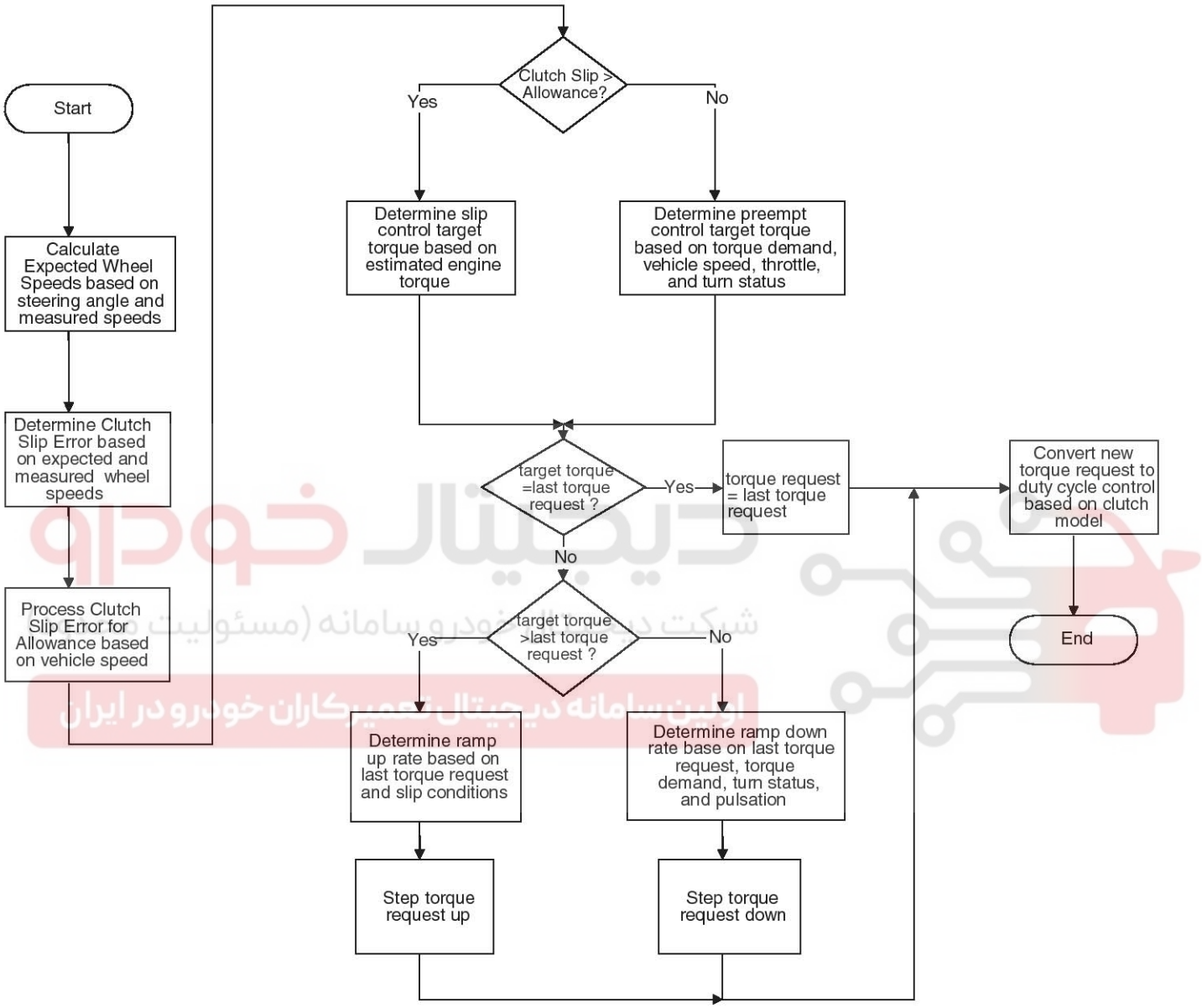
3. ESP controller



LMIF012B

Control Algorithm Flow Chart

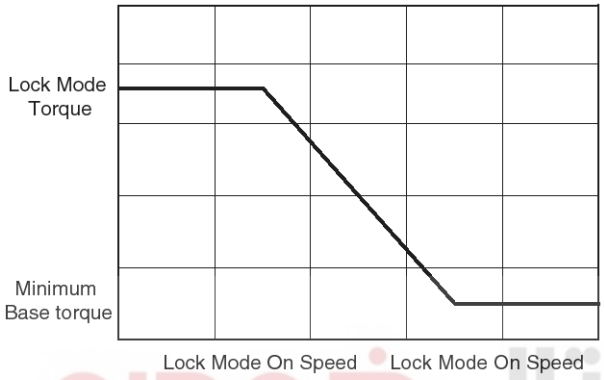
The base control algorithm of the ITM ECM is defined by the following flowchart:



LMIF012C

Lock Mode Description

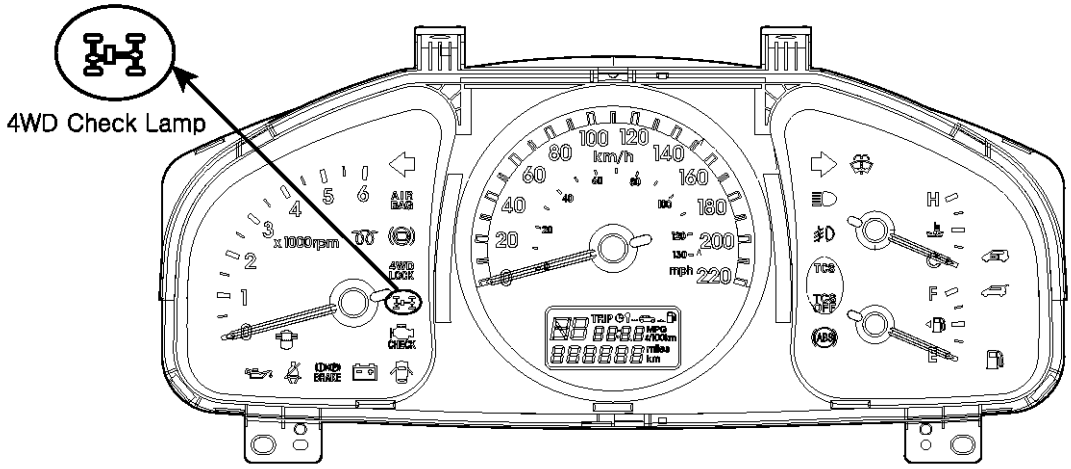
- Based on a driver request for lock mode, the system will supply a fixed torque to the ITM-I clutch.
- When the vehicle exceeds 30KPH the system will begin to disable lock mode by ramping down the ITM clutch torque. When the vehicle exceeds 40 KPH the ITM clutch is reduced to its minimum torque value. Lock mode is re-enabled following the same speed-to-torque map.
- Lock mode is activated based on part number.



LMIF012D

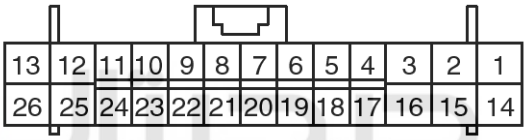
- Lock mode will override all other system requests except for during an ABS event. During an ABS event the ITM clutch is turned off.
- If there is a speed sensor signal fault, the speeds are no longer considered reliable and lock mode will be disabled.

DTC TROUBLESHOOTING



LMIF012E

4WD ECM PIN DESCRIPITION



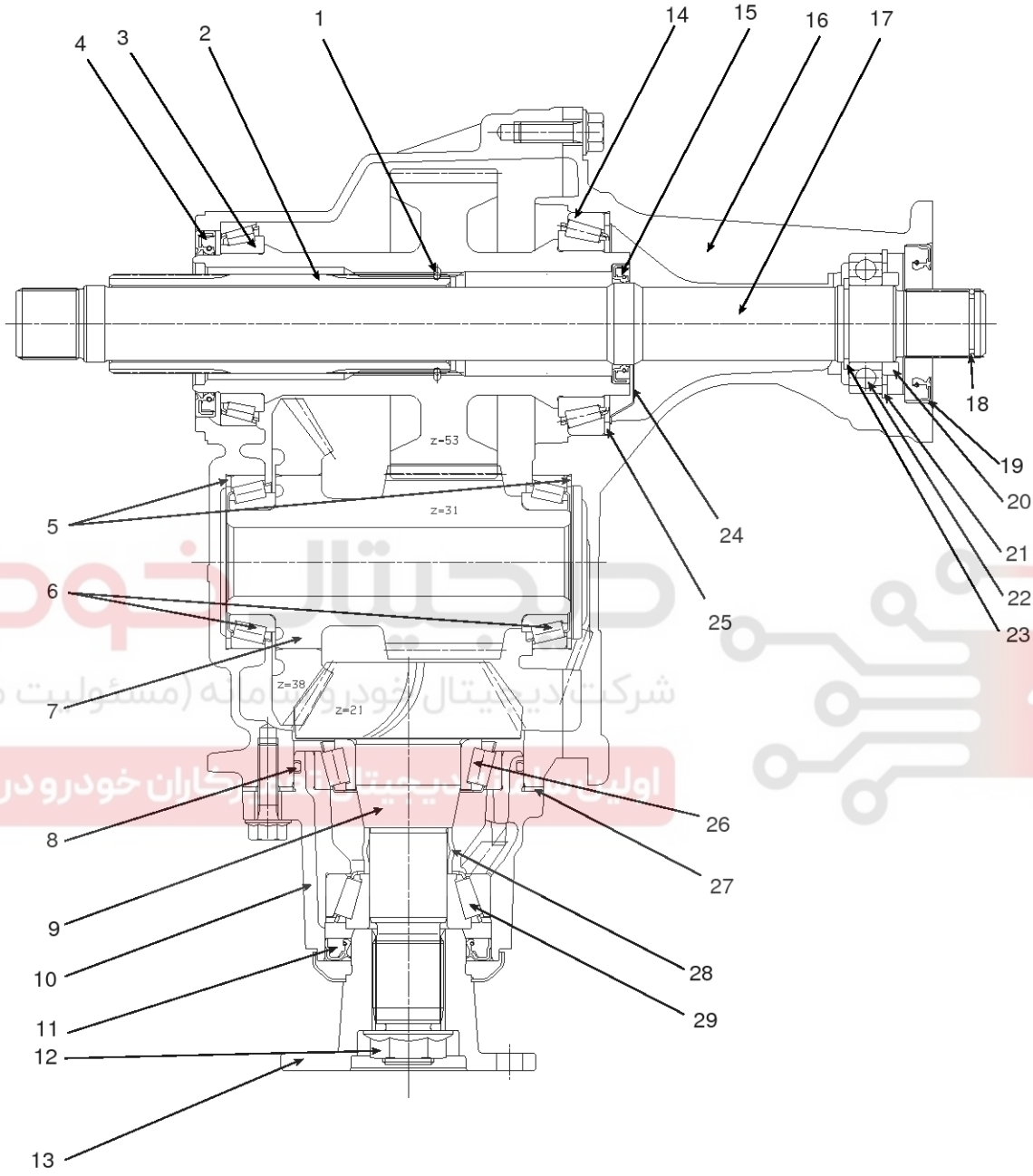
C01 (2.0 GSL)
C51 (2.7 GSL)
C101 (2.0 DSL)

LMIF012F

Terminal Number		Wire Color	Description
C01(2.0GSL) C51(2.7GSL) C101(2.0DSL)	1	R	BATTERY INPUT
	2	-	BRAKE INPUT
	3	B	ECU GROUND
	4	G	CAN L
	5	O	CAN H
	6	L	GND RTN 4
	7	Br	GND RTN 3
	8	L	GND RTN 2
	9	Br	GND RTN1
	10	R	LOCK SWITCH INPUT
	11	L/B	STEERING REF C
	12	B/O	STEERING REF RTN
	13	B	EMC RTN
	14	W	ISO9141 K LINE
	15	R/B	IGNITION INPUT
	16	Gr/O	4WHEEL DRIVE INDICATOR
	17	O	FRONT RIGHT SPEED SENSOR
	18	R	FRONT LEFT SPEED SENSOR
	19	R	REAR LEFT SPEED SENSOR
	20	O	REAR RIGHT SPEED SENSOR
	21	Y	DIAGNOSTIC OUT
	22	-	TPS INPUT
	23	Gr/O	STEERING 1 INPUT
	24	L	STEERING 2 INPUT
	25	Gr/B	STEERING REF 5V
	26	R	EMC OUTPUT

Transfer Case

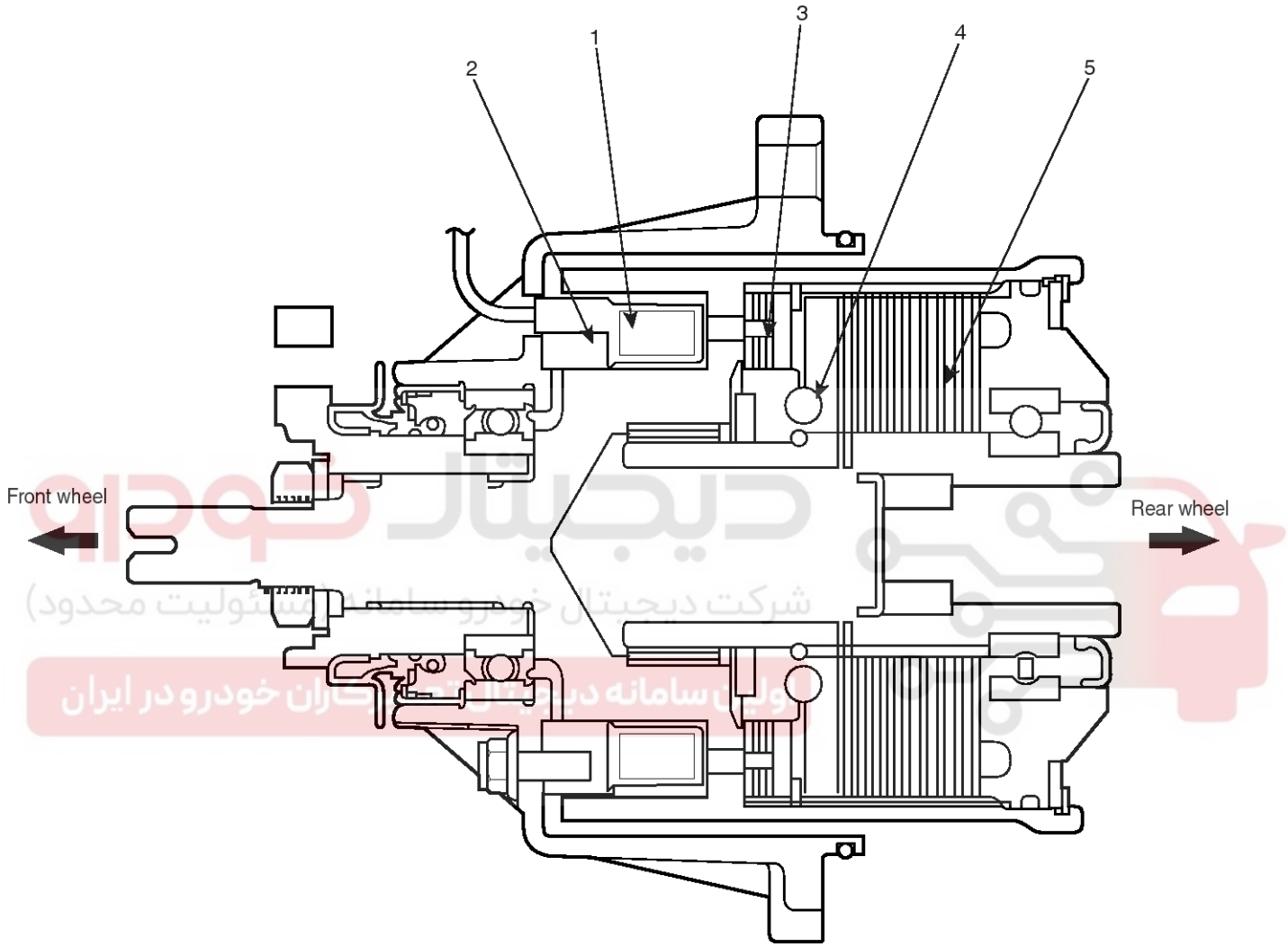
COMPONENTS(1)



1. Circlp
2. Hollow shaft
3. Typer roller bearing
4. Oil seal
5. Spacer set
6. Typer roller bearing
7. Hypoid gear shaft asseembly
8. O-ring
9. Pinion shaft
10. Pinion case
11. Oil seal
12. Lock nut
13. Rear plange
14. Typer roller bearing
15. Oil seal
16. Transfer corver
17. Inner drive shaft
18. Circlip
19. Oil seal
20. Hoop ring
21. Snap ring
22. Ball bearing
23. Snap ring
24. Oil guide
25. Spacer set
26. Typer roller bearing
27. Spacer set
28. Collapsible spacer
29. Typer roller bearing

LMIF012G

COMPONENTS(2)

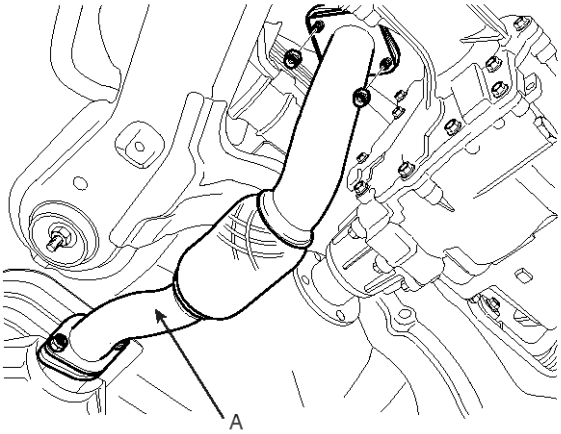


1. Coil
2. Rotor
3. Primary Clutch
4. Cam
5. Secondary clutch

LMIF012H

REMOVAL

1. Remove the battery (-) terminal.
2. Lift up the vehicle.
3. Remove the propellar shaft (See 'DS' group-'PROPELLAR SHAFT')
4. Remove the front muffler(A).



LMIF012I

5. Remove the RH driveshaft (See 'DS' group-'DRIVESHAFT').
6. Loosen the oil drain plug and drain the fluid.
7. After draining, re-tighten the oil drain plug.

Tightening torque:
39.2 ~ 58.8 Nm (400 ~ 600 kgf·cm, 28.9 ~ 43.4 lbf·ft)

8. Support the transfer assembly with a jack.
9. Remove the transfer assembly by loosening the mounting bolts.

CAUTION
Remove the transfer bracket mounting bolts(2EA) together.

REPLACEMENT

TRANSFER OIL

1. Replace the oil every 100,000km(62,137miles) in a general condition and every 40,000km(24,854miles) in severe usage conditions.

NOTICE

1. Severe usage (marked '') is defined as*

a. Frequent driving on rough road (Bumpy road, gravel road, snowy road, unpaved road . Etc.)

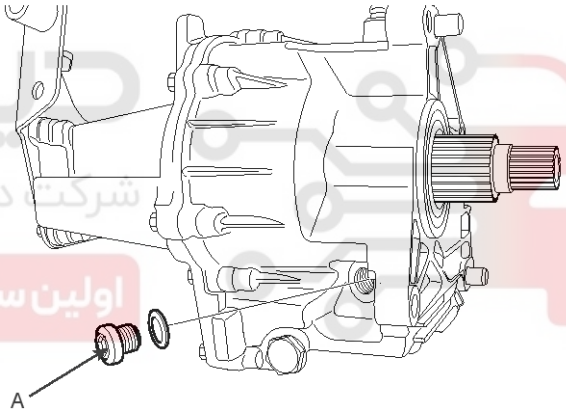
b. Frequent driving on mountain road, ascent/descent.

c. Police, taxi, commercial type operation or trailer towing. Etc.)

2. Transfer & diff carrier lubricants should be changed anytime transfer & diff carrier have been submerged in water.

INSTALLATION

1. Remove the filler plug(A).



LMIF012J

2. Refill the specification to the specified quantity.

Specification : SAE 80w/90
Quantity : 0.8L

3. Fix it in proper position with mounting bolts.

INSPECTION

TRANSFER OIL

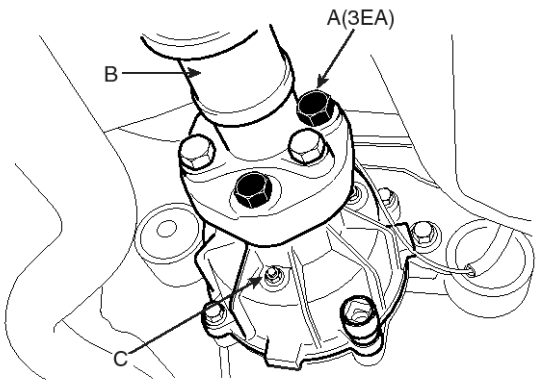
1. Check and replenish the transfer oil every 40,000km(24855 miles).

Coupling Assembly

REMOVAL

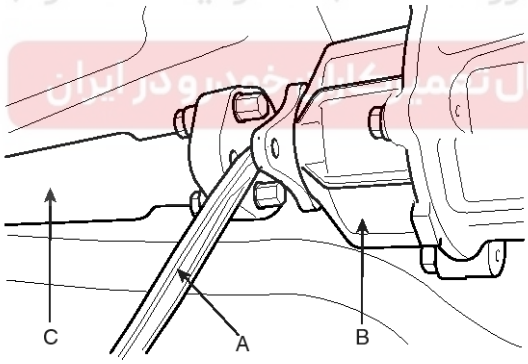
1. Remove the 4WD coupling bolts (A-3EA) mounted to the rear propellar shaft.

Tightening torque :
49.1~68.7N.m (5.0~7.0kgf.m, 36.2~50.6lb-ft)

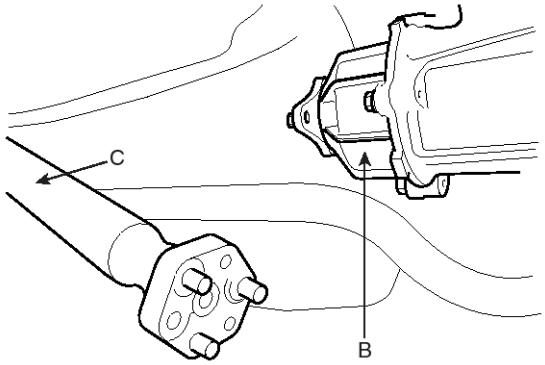


LMIF012L

2. Using a flat tool(A), separate the propellar shaft(C) from 4WD coupling(B).



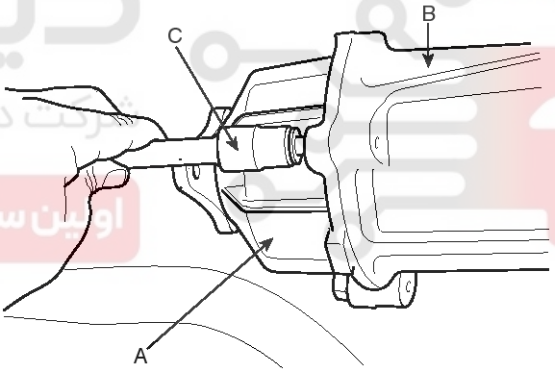
LMIF012M



LMIF012N

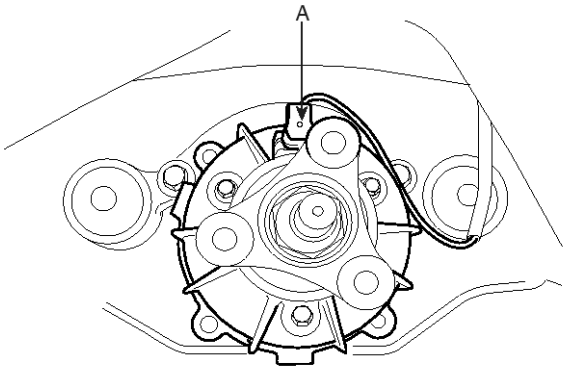
3. Remove the rear axle (B-Differential carrier) bolts mounted to the 4WD coupling(A) by a socket(C).

Tightening torque :
58.9~63.8N.m (6.0~6.5kgf.m, 43.4~47.0lb-ft)



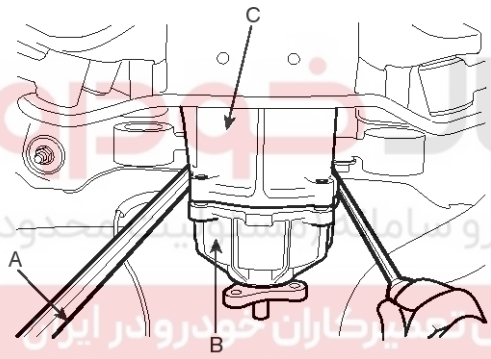
LMIF012O

4. Remove the electric magnetic clutch connector(A).



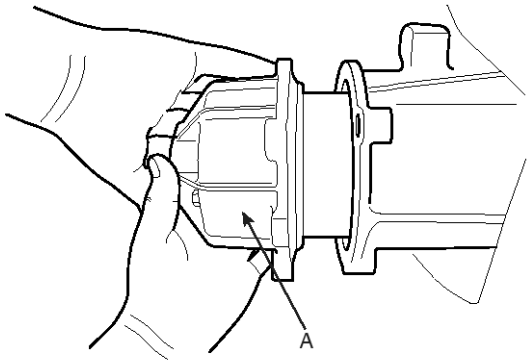
LMIF012P

5. Using a flat tool(A), separate the 4WD coupling assembly(B) from the rear differential carrier(C).



LMIF012Q

6. Remove the 4WD coupling assembly(A).



LMIF012R

INSTALLATION

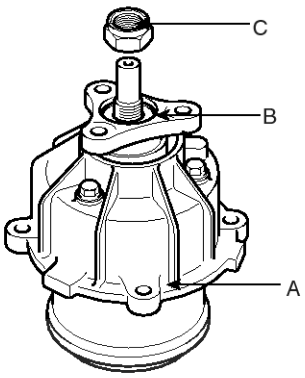
Installation is the reverse of the removal.

DISASSEMBLY

CAUTION

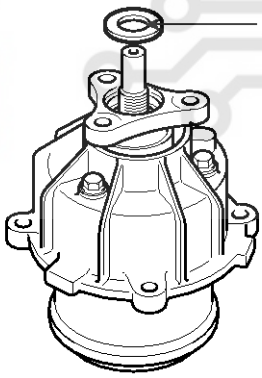
Don't disassemble the coupling assembly more than bleow procedure because its performance may get bad influence after disassembling.

1. Remove the coupling(A) flange(B) mounting nut(C).



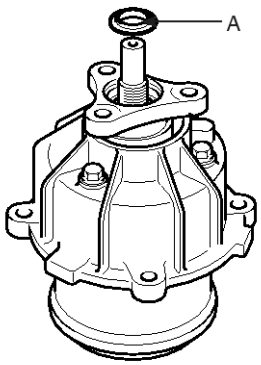
LMIF012S

2. Remove the flange spacer(A).



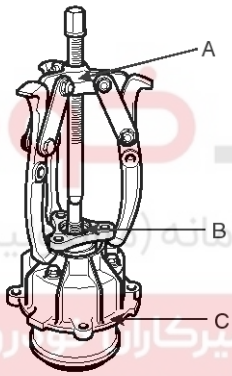
LMIF012T

3. Remove the coupling flange oil seal(A).



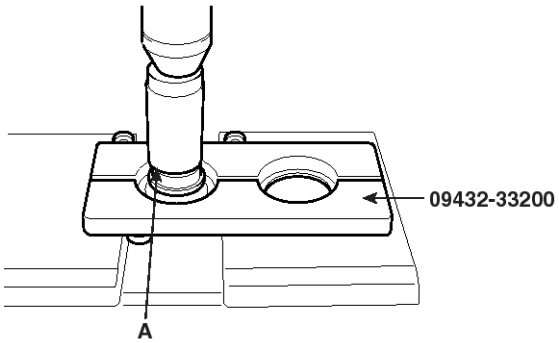
LMIF012U

4. Using a general tool, 3-way puller(A), remove the flange assembly(B) from the coupling(C).



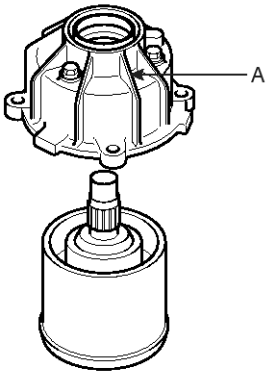
LMIF012V

5. Remove the flange oil seal(A) using special tool (09432-33200).



LMIF012W

6. Remove the coupling case assembly(A).



LMIF012X