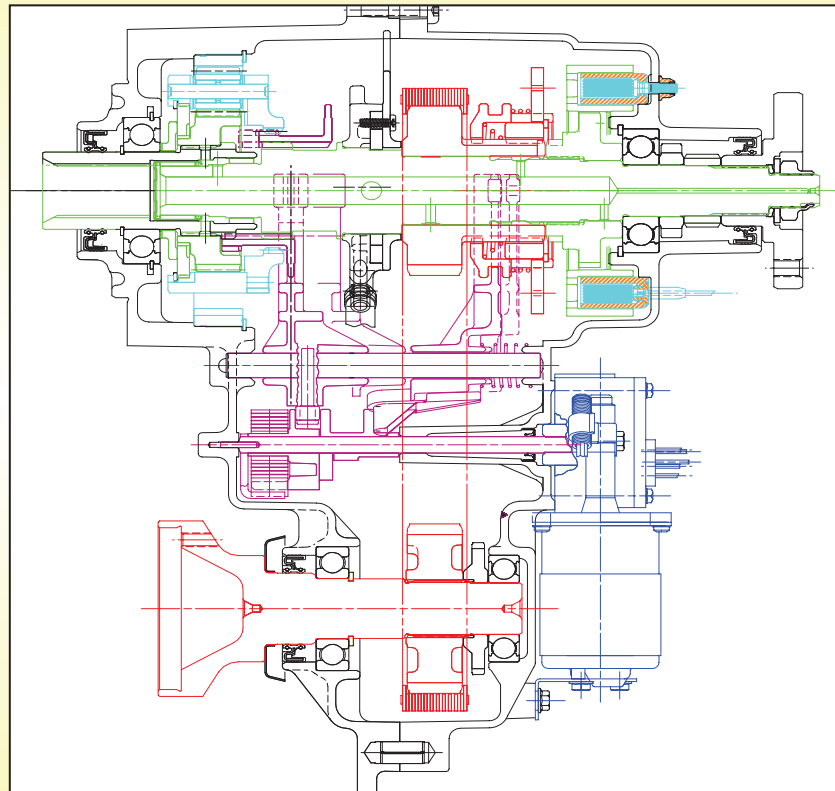
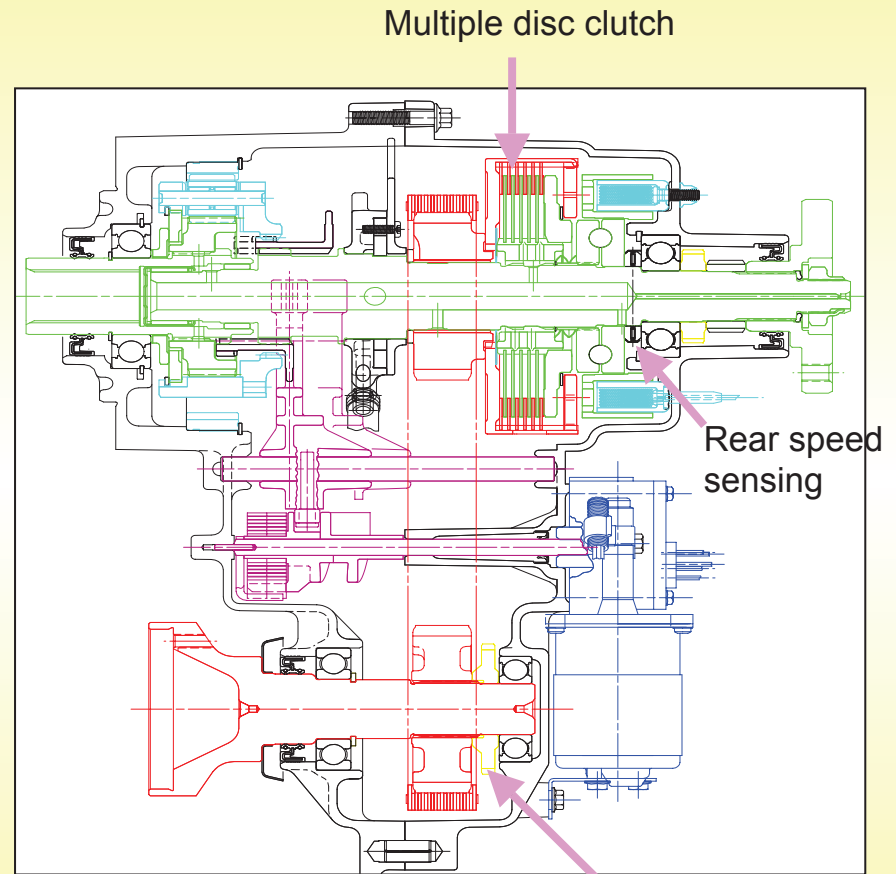


BL 4WD SYSTEM

EST & TOD



Electronic Shift Transfer



Multiple disc clutch

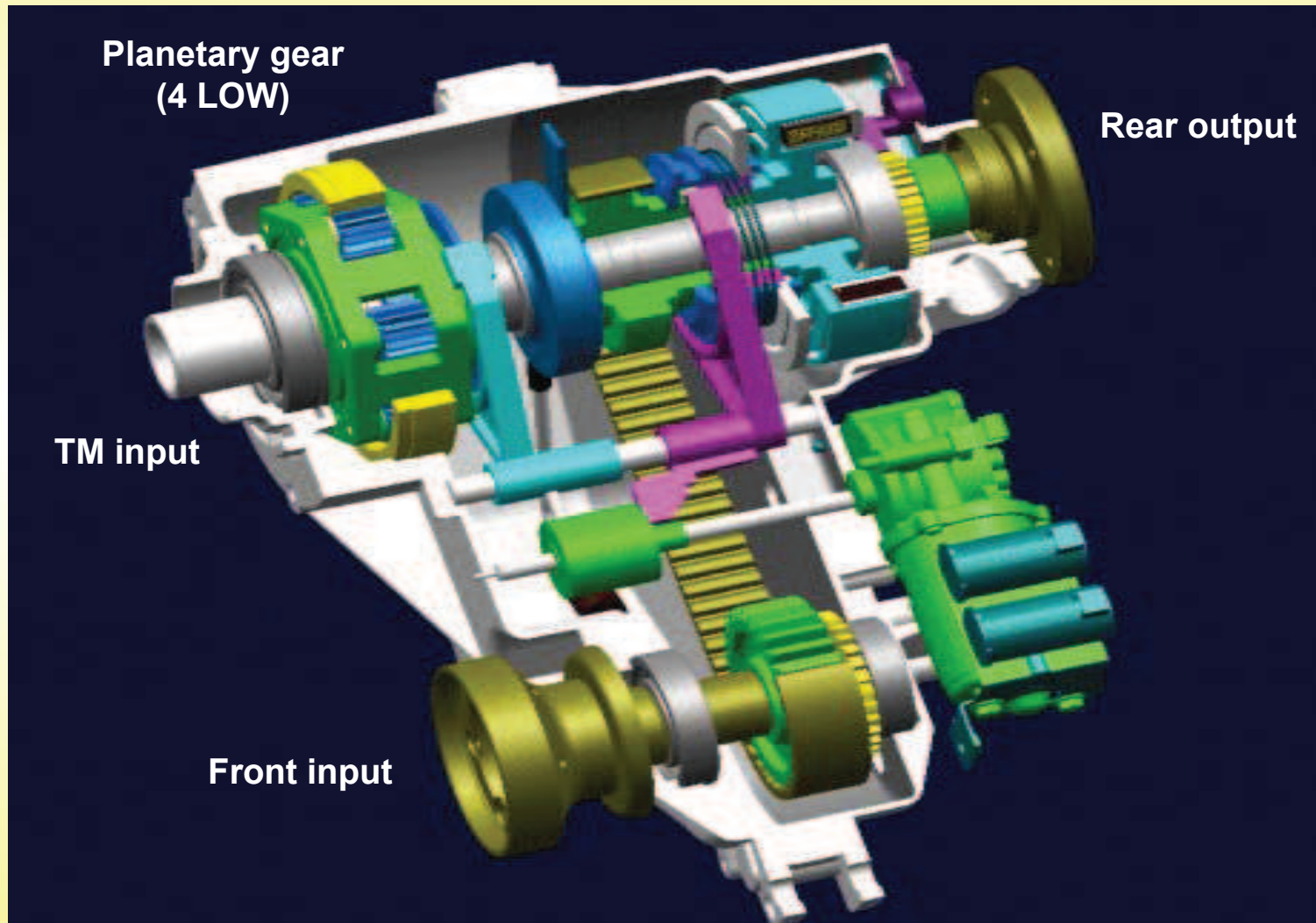
Rear speed sensing

Front speed sensing

Torque On Demand

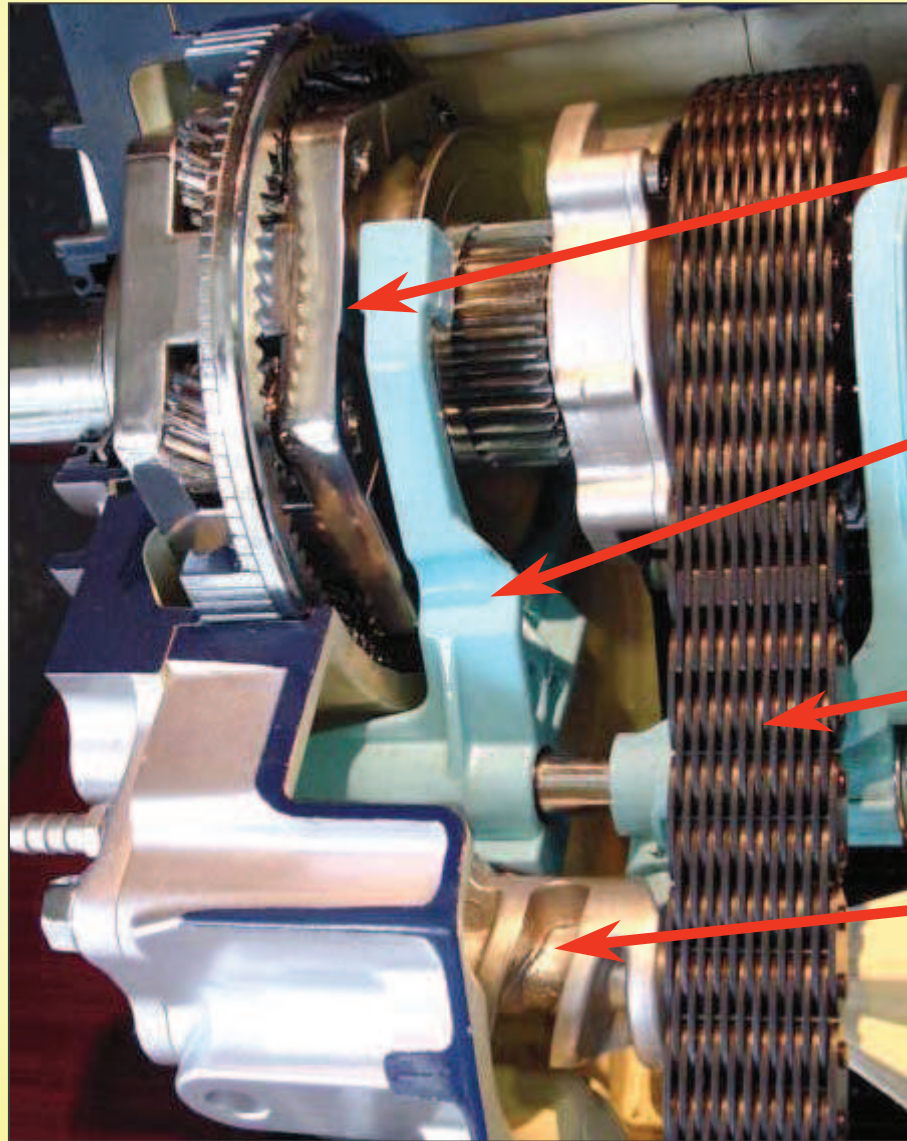
EST

Components



EST

Components



4LOW operation

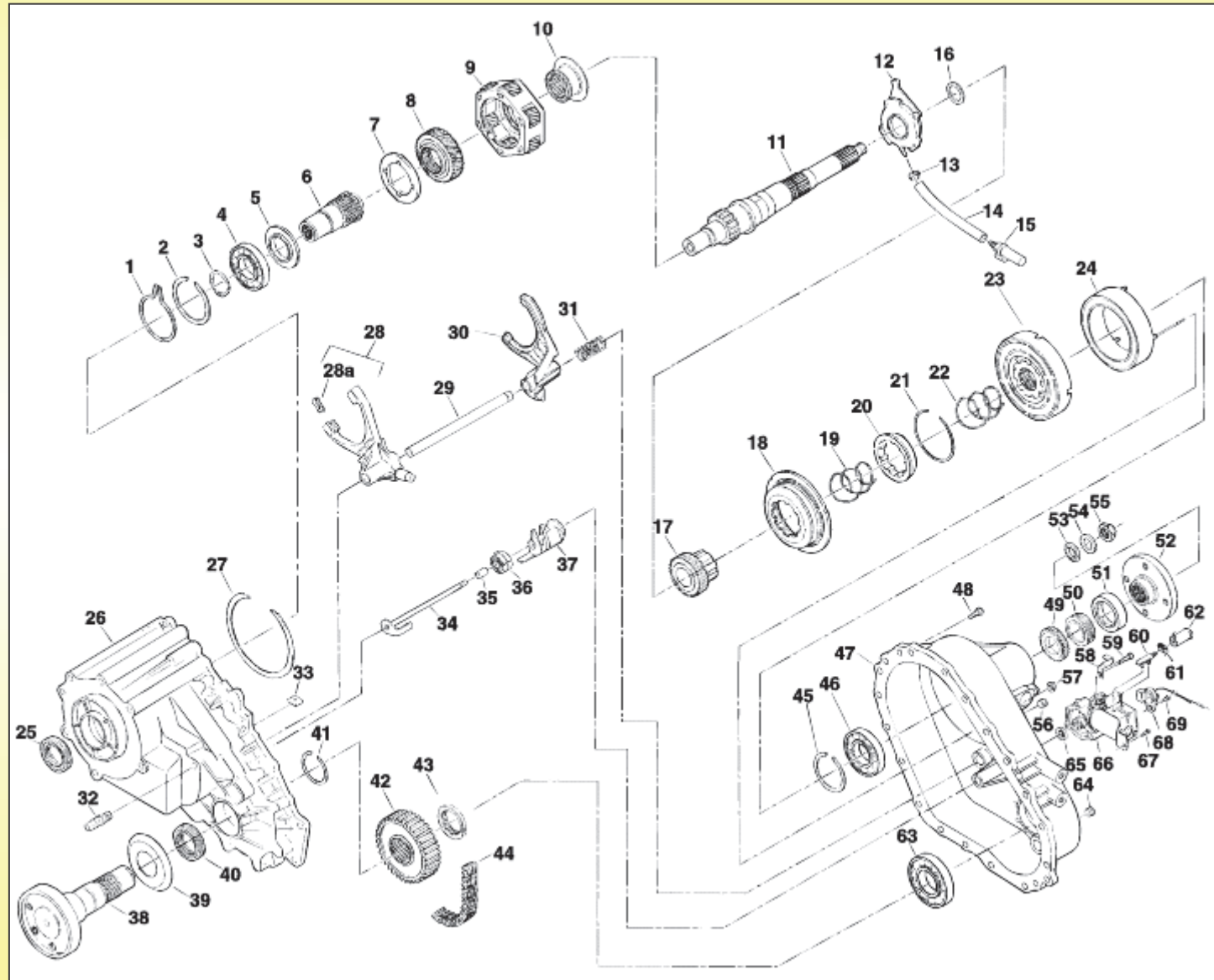
Shift fork

Driving chain

Shift cam

EST

Components



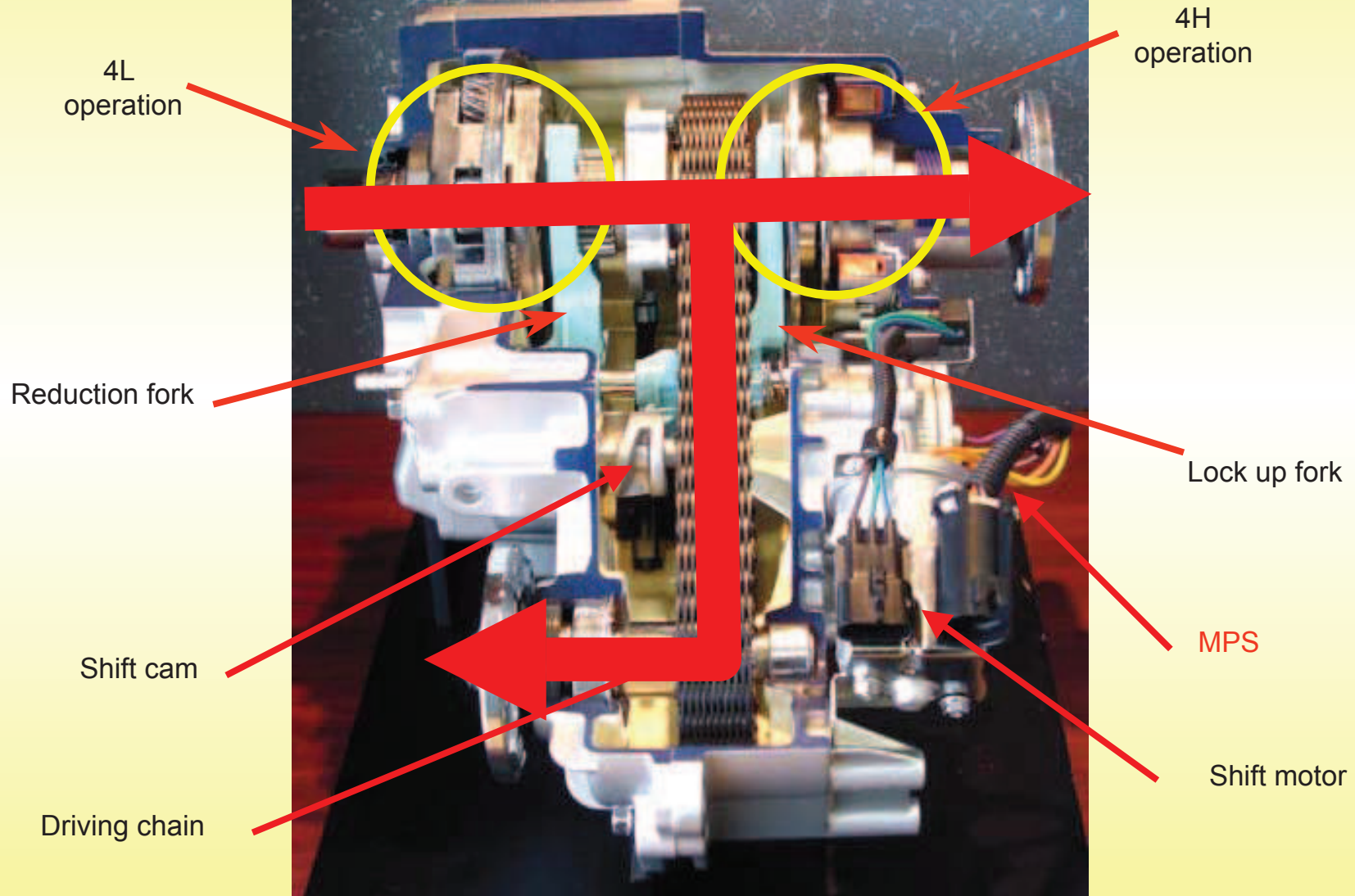
EST

Components

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

EST

Power Flow

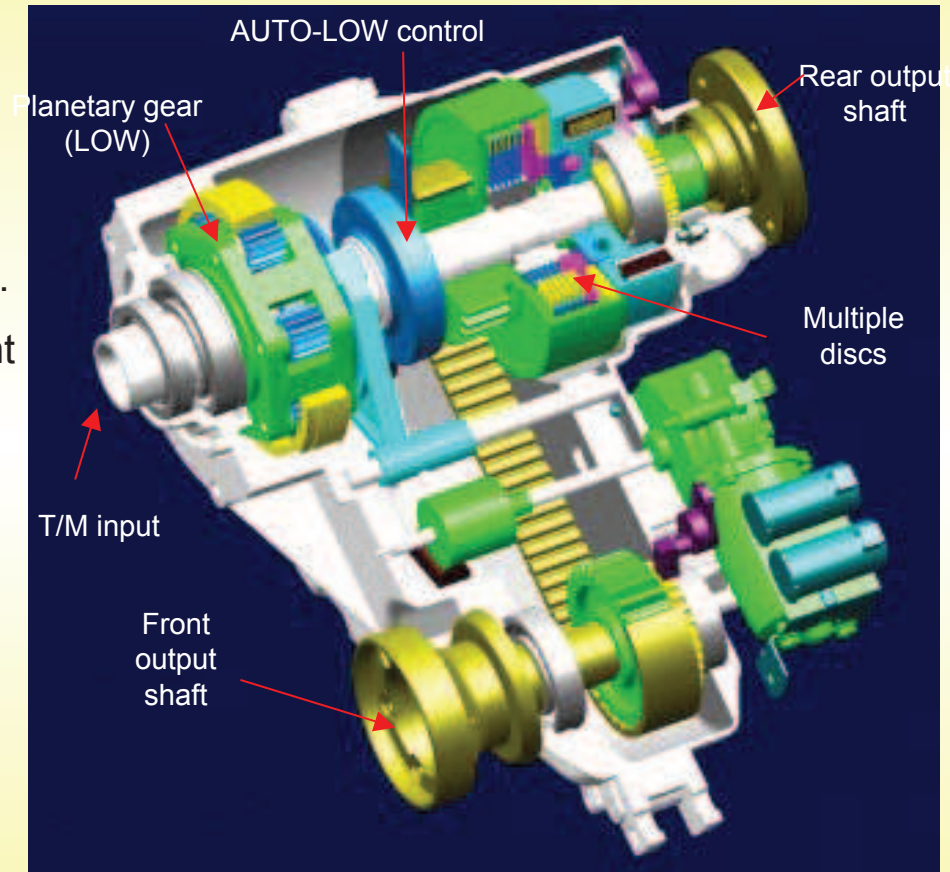


TOD

Introduction

According to the speed signal of front and rear wheel from each sensor, the engine torque information from engine ECM, EMC (Electro magnetic clutch) will be activated and it will result the change of depressing force to the multiple disc clutch. If the force is high, more engine torque will be transmitted to front wheel.

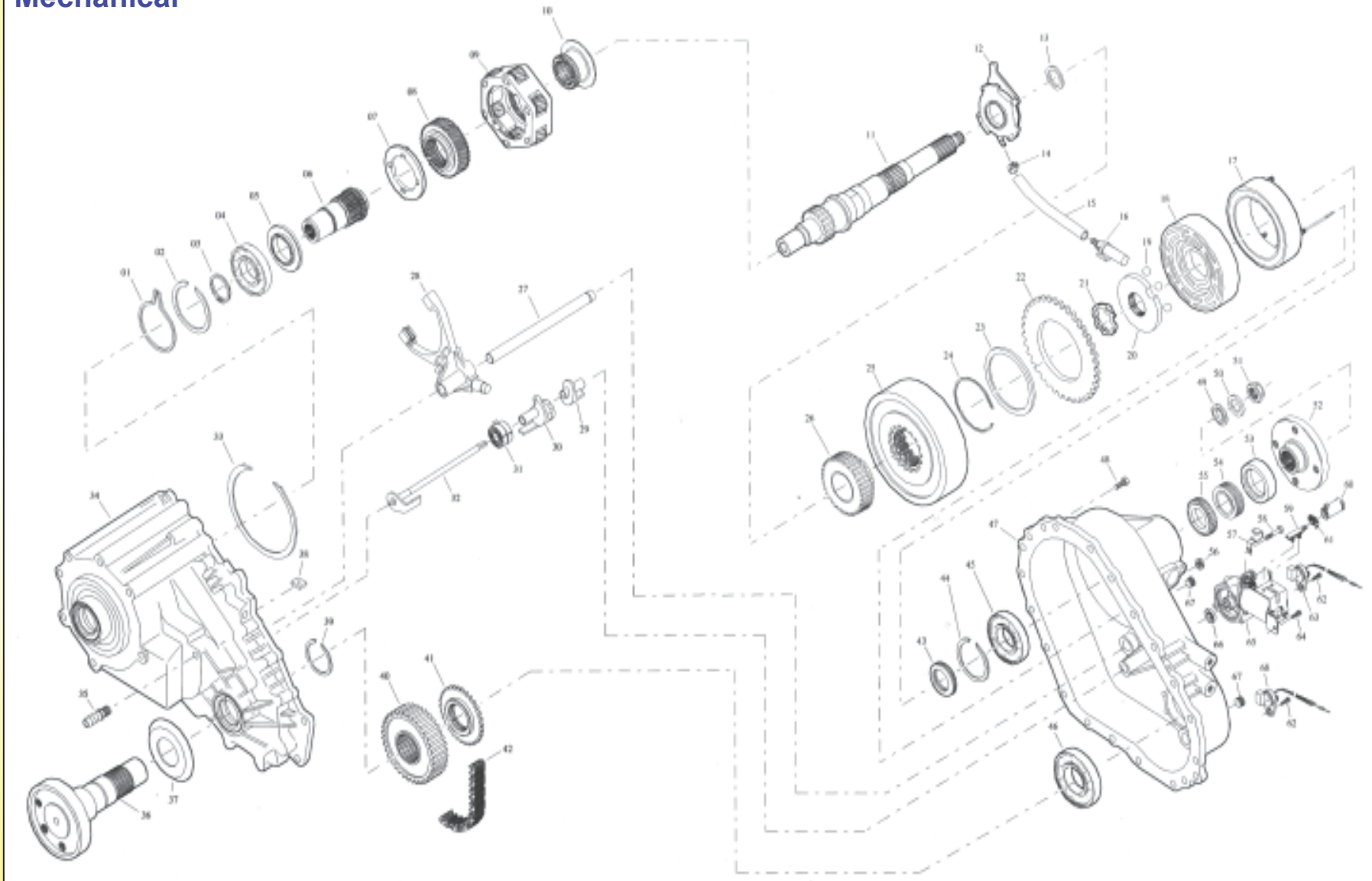
Oppositely, if it becomes low, the torque to front side also will be decreased. It means the slip inside of multiple disc clutch will be increased also. Therefore the oil pump for lubrication of clutch is installed and very important for the overall system durability.



TOD or ATT (Active torque transfer)

TOD

Mechanical

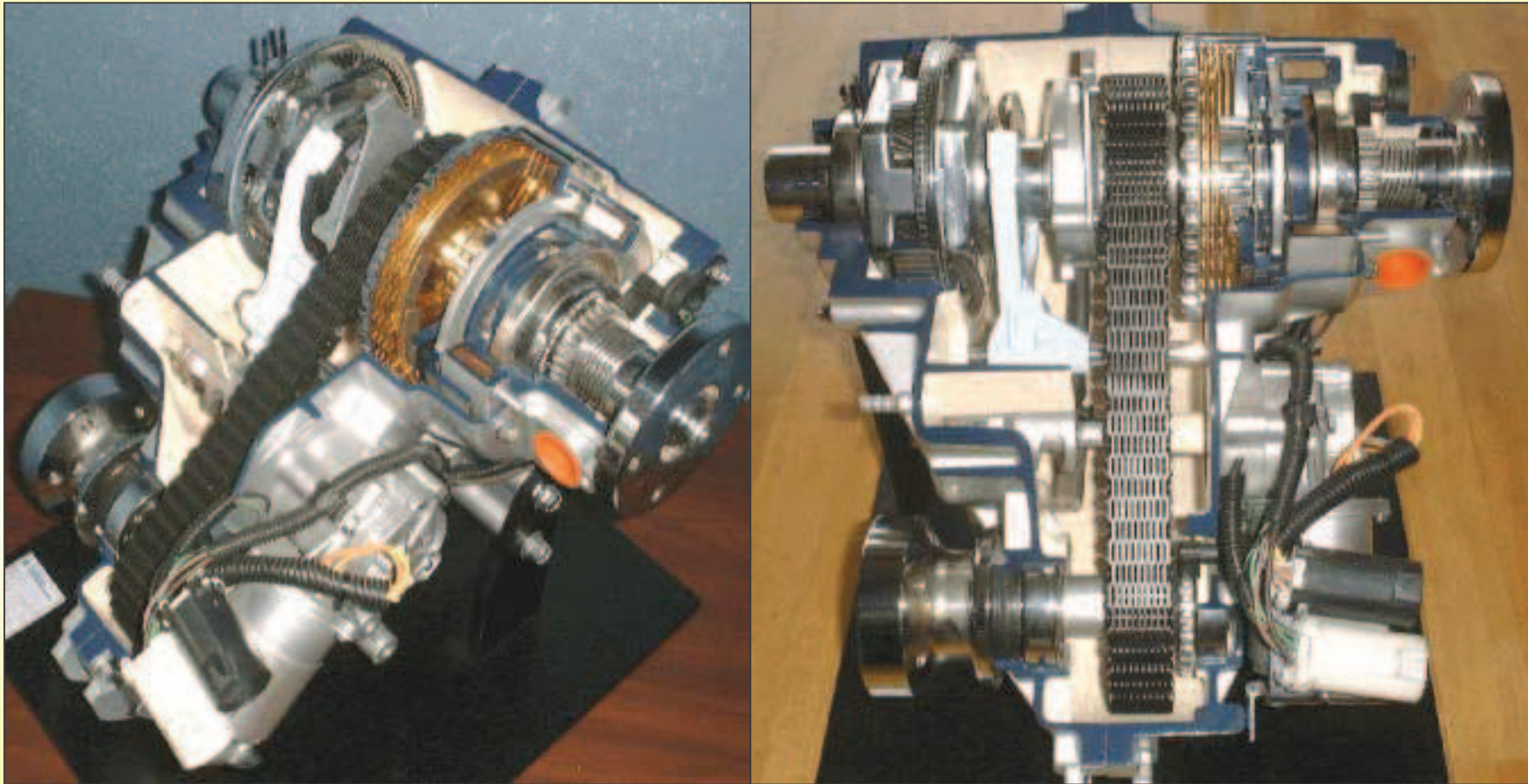


TOD

NO	PART NAME	NO	PART NAME
1	RING-SNAP	36	SHAFT-OUTPUT
2	RING-SNAP	37	DEFLECTOR-DUST
3	RING-SNAP	38	MAGNET
4	BEARING	39	RING-SNAP
5	HUB-CIRCLULA	40	SPROCKET-LOWER
6	SHAFT ASSY- INPUT	41	TOE WHEEL-LOWER
7	PLATE-THRUST	42	CHAIN
8	GEAR-SUN	43	ASSY-BEARING THRUST
9	ASSY-CARRIER	44	RING-RETAINING
10	HUB-REDUCTION	45	BEARING
11	SHAFT-MAIN	46	BEARING
12	ASSY-GEROTOR PUMP	47	COVER
13	WASHER-THRUST	48	BOLT-METRIC
14	CLAMP-HOSE	49	SEAL-OIL
15	HOSE	50	WASHER
16	FILTER	51	NUT-METRIC
17	COIL ASSY-ELECTRIC	52	FLANGE-COMPANION
18	HOUSING ASSY-CAM COIL	53	SEAL-OIL
19	BALL	54	GEAR-SPEEDO
20	CAM APPLY	55	TOE WHEEL-UPPER
21	SPRING-WAVE	56	NUT-METRIC
22	ARMATURE	57	CLIP-J
23	WASHER-INSULATOR	58	BOLT-HEX HEAD
24	RING-RETAINING	59	CLIP
25	ASSY-CLUTCH PACK	60	CONNECTOR
26	SPROCKET ASY-DRIVE	61	LOCK-CONNECTOR
27	RAIL-SHIFT	62	BOLT-HEX HEAD
28	FORK ASSY-SHIFT	63	SENSOR-SPEED,UPPER
29	CAM-ELECTRIC SHIFT	64	CAP SCREW-HEX HEAD
30	CAM-ELECTRIC SHIFT	65	MOTOR ASSY-ELECTRIC
31	SPRING-TORSION	66	SEAL-OIL
32	SHAFT-SHIFT	67	PLUG-PIPE
33	RING-RETAINING	68	SPEED SENSOR-LOWER
34	CASE ASSY-TRANSFER		
35	BARB-BREATHER		

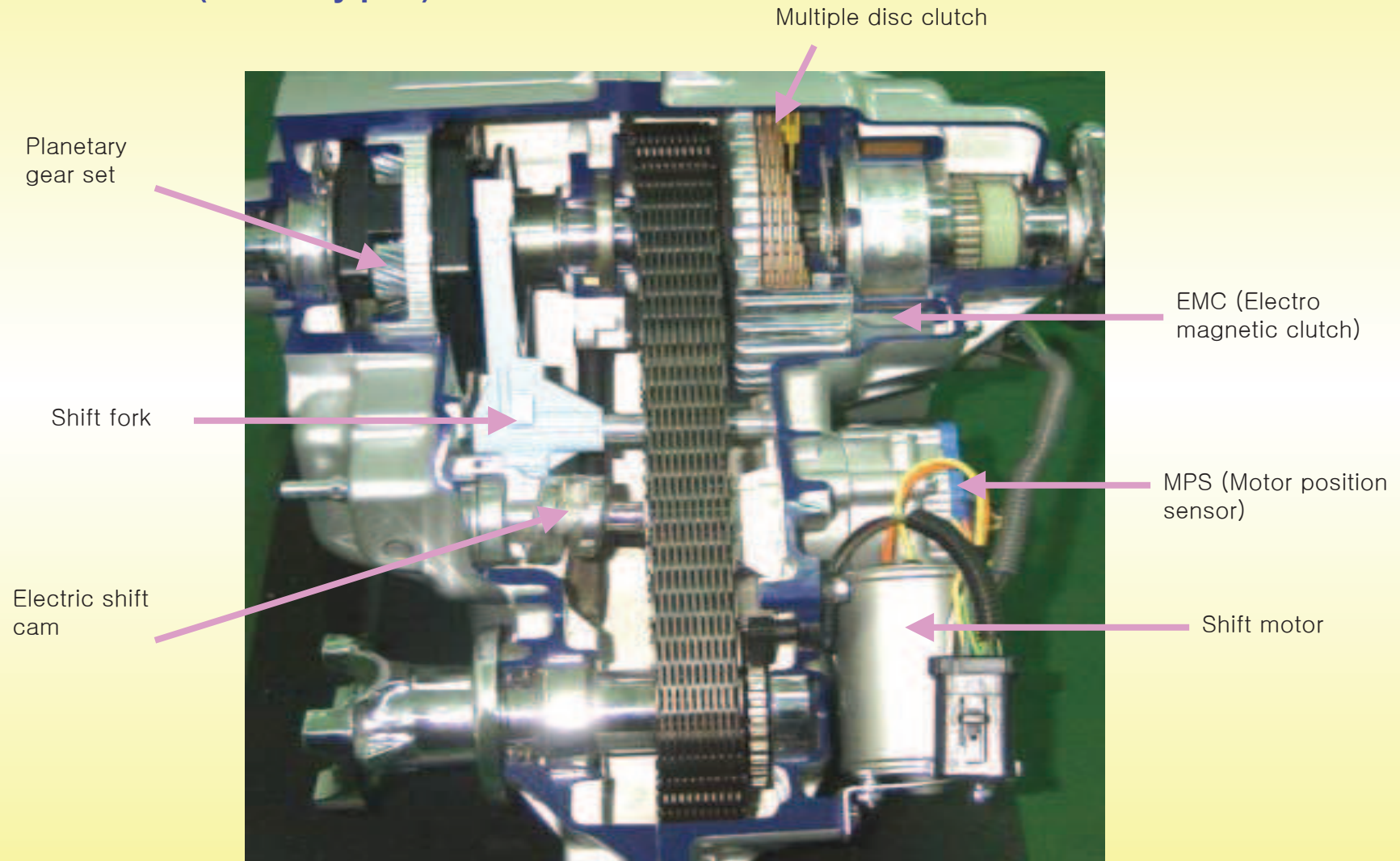
TOD

Construction (Cut-away part)



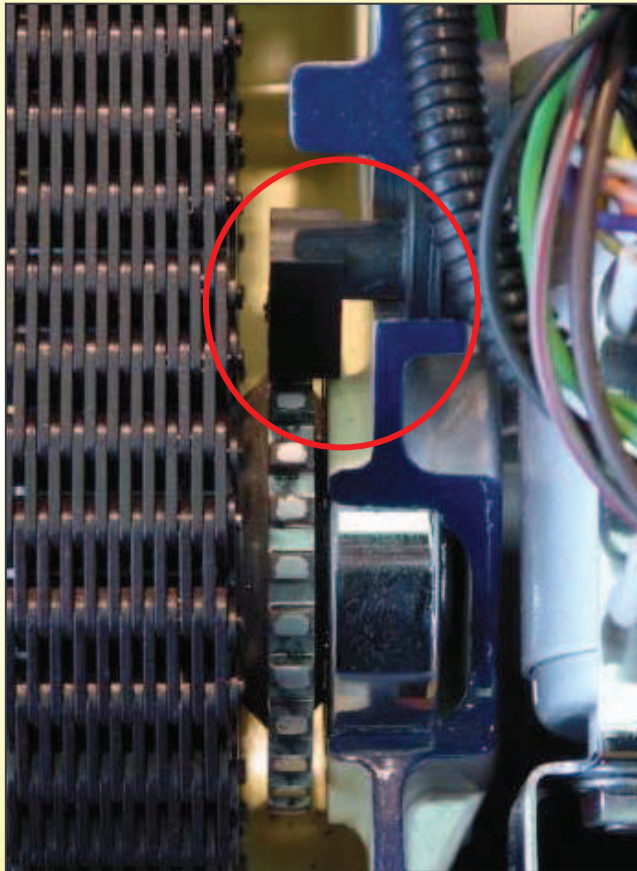
TOD

Construction (Cut-away part)

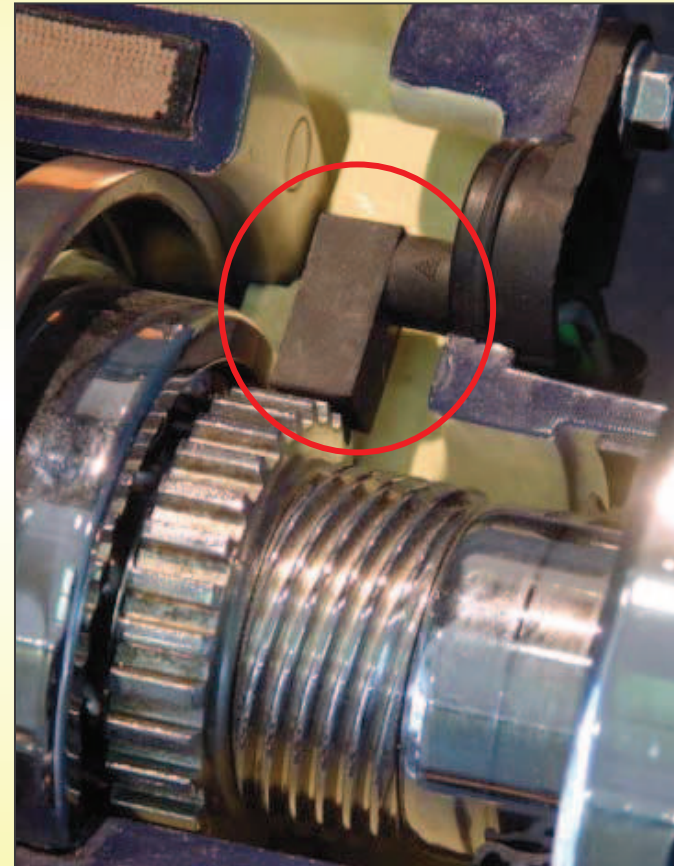


TOD

Speed sensors



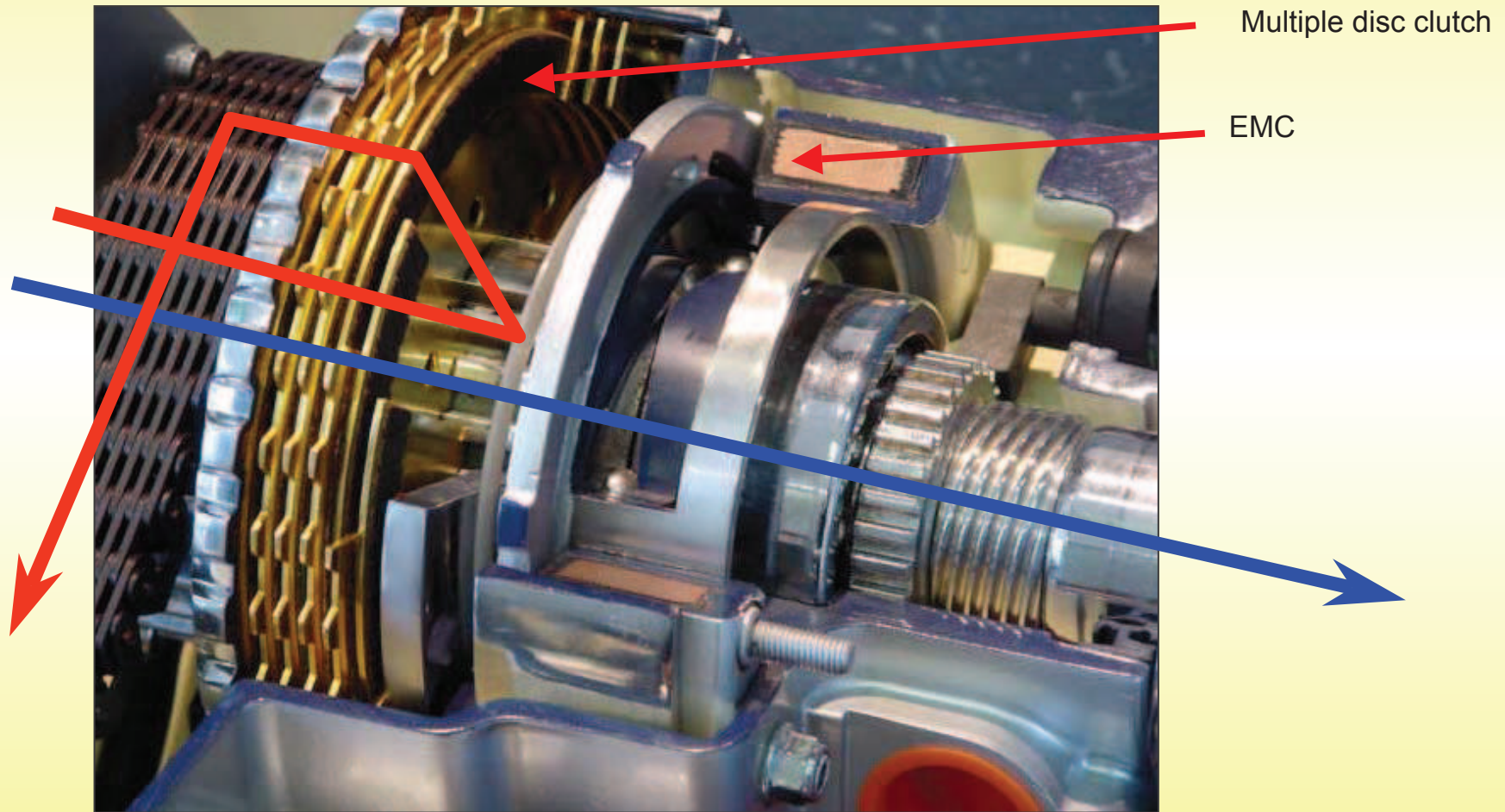
[Front Speed Sensor]



[Rear Speed Sensor]

TOD

Power Flow



TOD

Components – EMC (Electronic magnetic clutch)



EMC

Multiple disc clutch

If EMC is energized, the multiple disc clutch is engaged so the torque is transmitted to front wheel. Depends on EMC duty ratio, the amount of transmitted torque to front side is changed.