

PART TIME TRANSFER CASE & LOCKING HUB SYSTEM

3240-01

GENERAL

1. PART TIME TRANSFER CASE OVERVIEW

By using the planetary gear sets, two-gears shift type part time transfer case achieves direct connection when selecting 4WD "HIGH" and 2.48 of reduction gear ratio when selecting 4WD "LOW". The silent chain in transfer case transfers the output power to front wheels.

The simple operation of switches on instrument panel allows to shift between "2H" and "4H" easily while driving (for 4L: stop vehicle first). The warning lamp warns the driver when the system is defective.

The 4WD system integrated in KYRON does not have big difference in comparison to the conventional part time transfer case, but the changes in comparison to the conventional transfer case are as follows:

- No additional coding is required when replacing TCCU.
- Delete the devices (tone wheel speed sensor, wiring etc.) related to the speed sensor in the transfer case.
This system receives the speed signals from ABS/ESP HECU or instrument panel (for non-ABS vehicle(Note 1) through the CAN communication.
- The new TCCU is available to install on the vehicle with the conventional DI engine part time TCCU.



CAUTION

- In non-ABS vehicle, the vehicle speed sensor is installed on the rear drive axle. The engine ECU sends the speed signal to the instrument panel, and then the instrument panel provides the information to TCCU and other devices.

2. PART TIME TRANSFER CASE SPECIFICATIONS

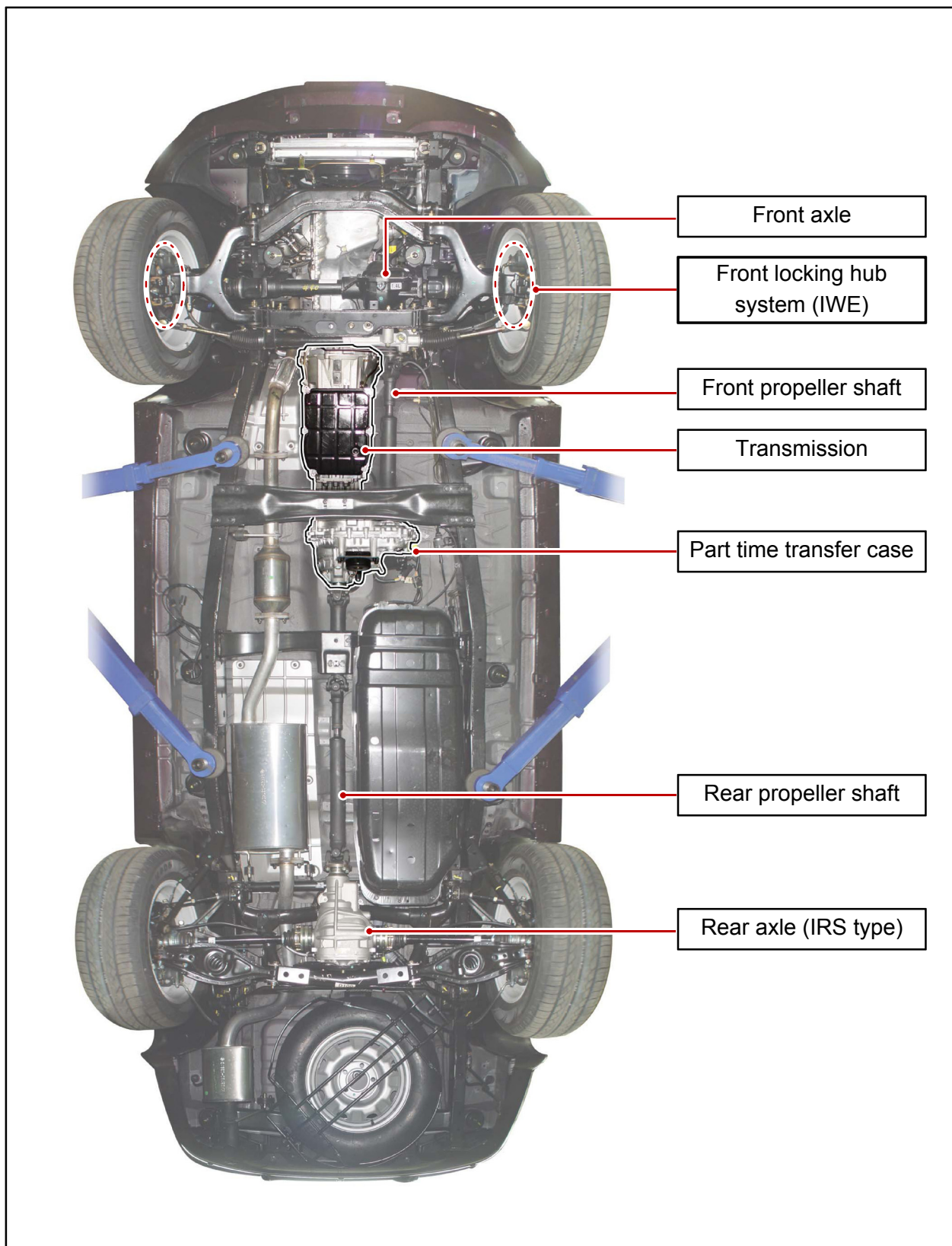
Description		Part Time T/C
Total length		343 mm
Mating surface of front flange		40 mm
Weight		33.9 Kg (without oil)
Oil capacity		1.4 L
Location		Transfer case
Major elements	Housing	Part time
	Tightening bolt	11EA, M8 x 1.25
	Input shaft	A/T: External spline M/T: Internal spline
	Ring gear	Inserted into housing groove
	Sun gear	Separated input shaft and sun gear

Modification basis	
Application basis	
Affected VIN	

ION 4-SPEED
DC 5-SPEED
DSLM78 6-SPEED
TGS LEVER
T/M LEVER
M/T
CLUTCH
AXLE
AXLE (OP)
T/C
PROPELLER
SUSPENSION
ESP
STEERING

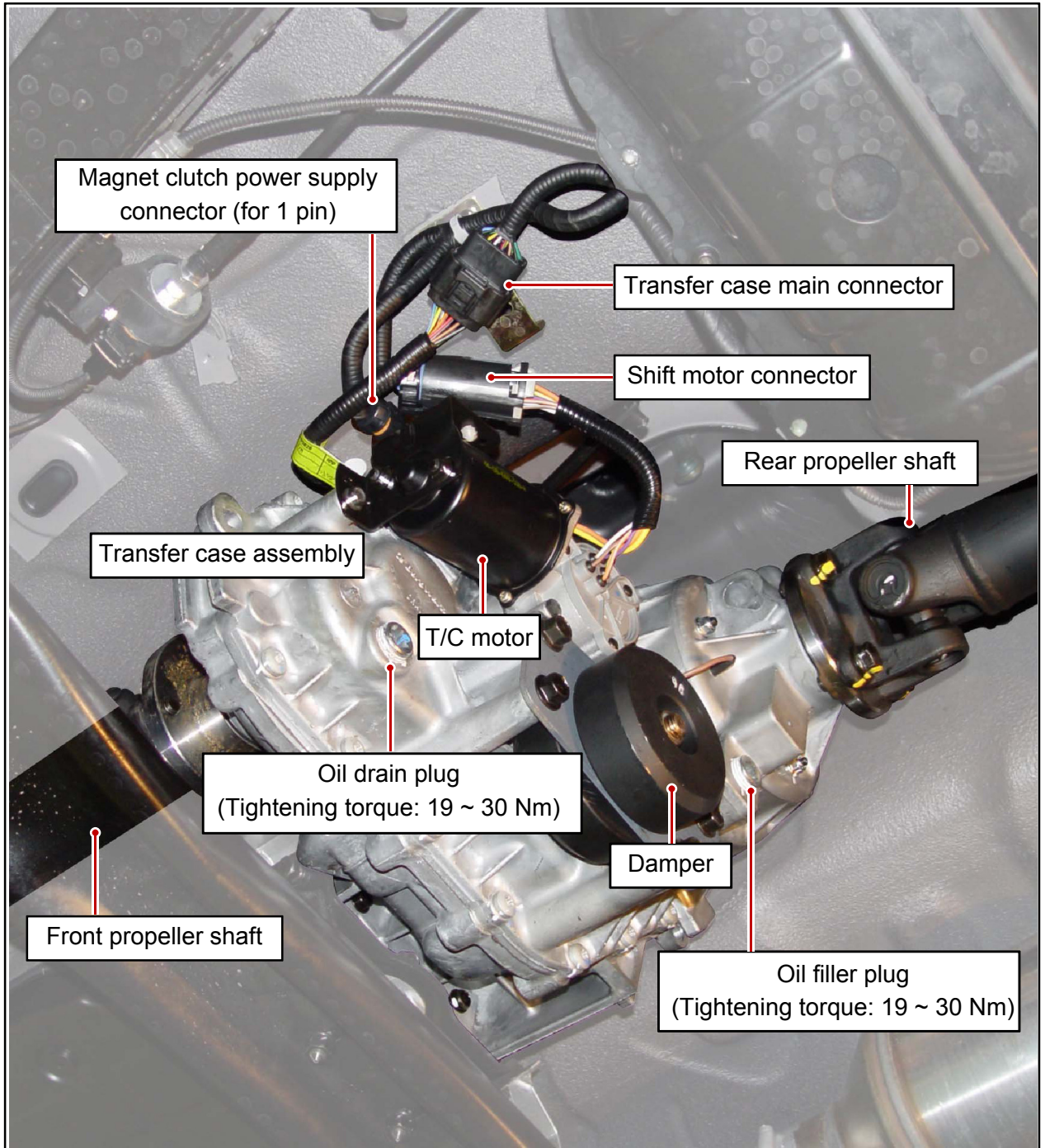
OVERVIEW AND OPERATION PROCESS

1. STRUCTURE



Modification basis	
Application basis	
Affected VIN	

1) Components Location

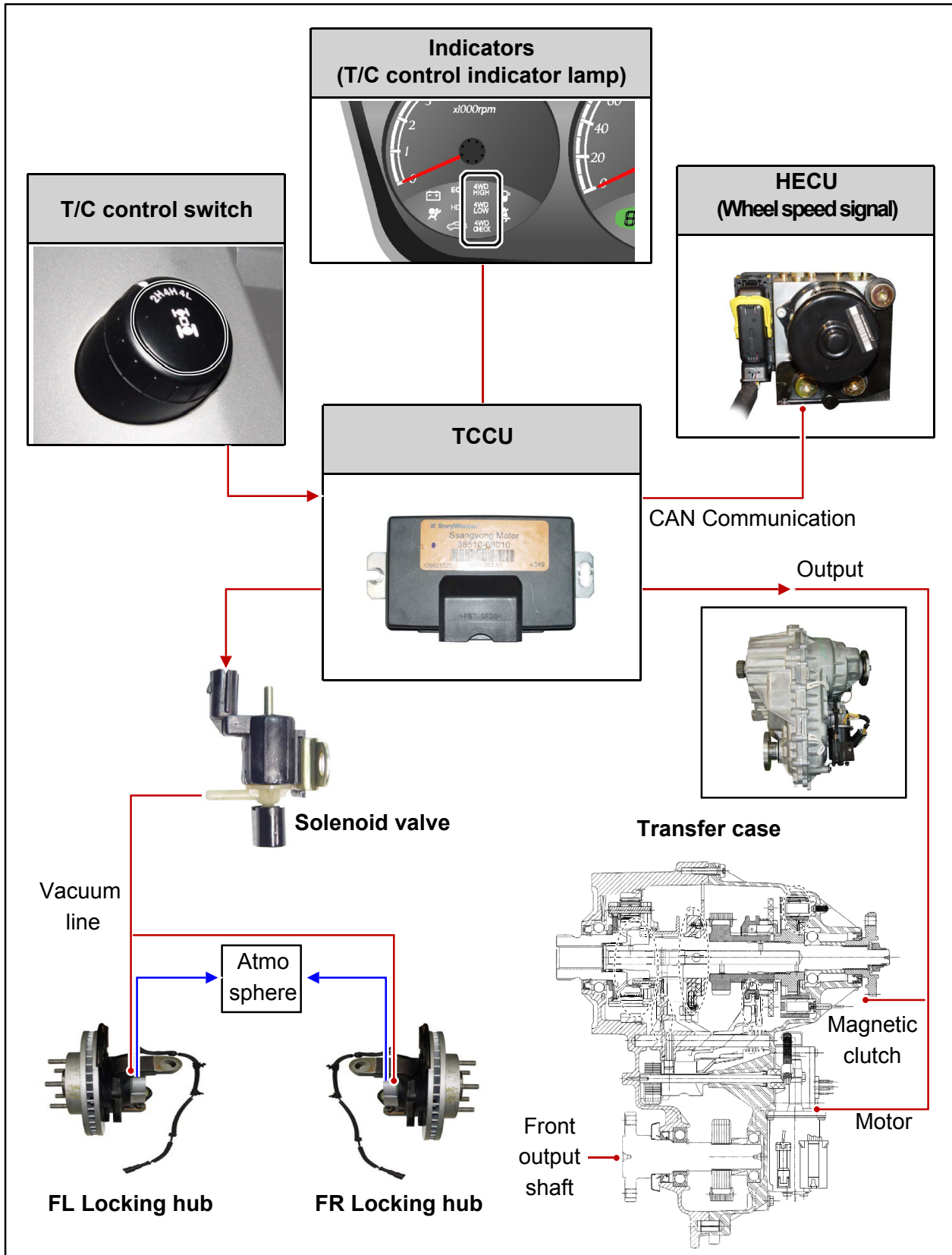


- ION 4-SPEED
- DC 5-SPEED
- DSLM78 6-SPEED
- TGS LEVER
- T/M LEVER
- M/T
- CLUTCH
- AXLE
- AXLE (OP)
- T/C
- PROPELLER
- SUSPENSION
- ESP
- STEERING

Modification basis	
Application basis	
Affected VIN	

2. SYSTEM LAYOUT AND FUNCTIONS

1) System Layout



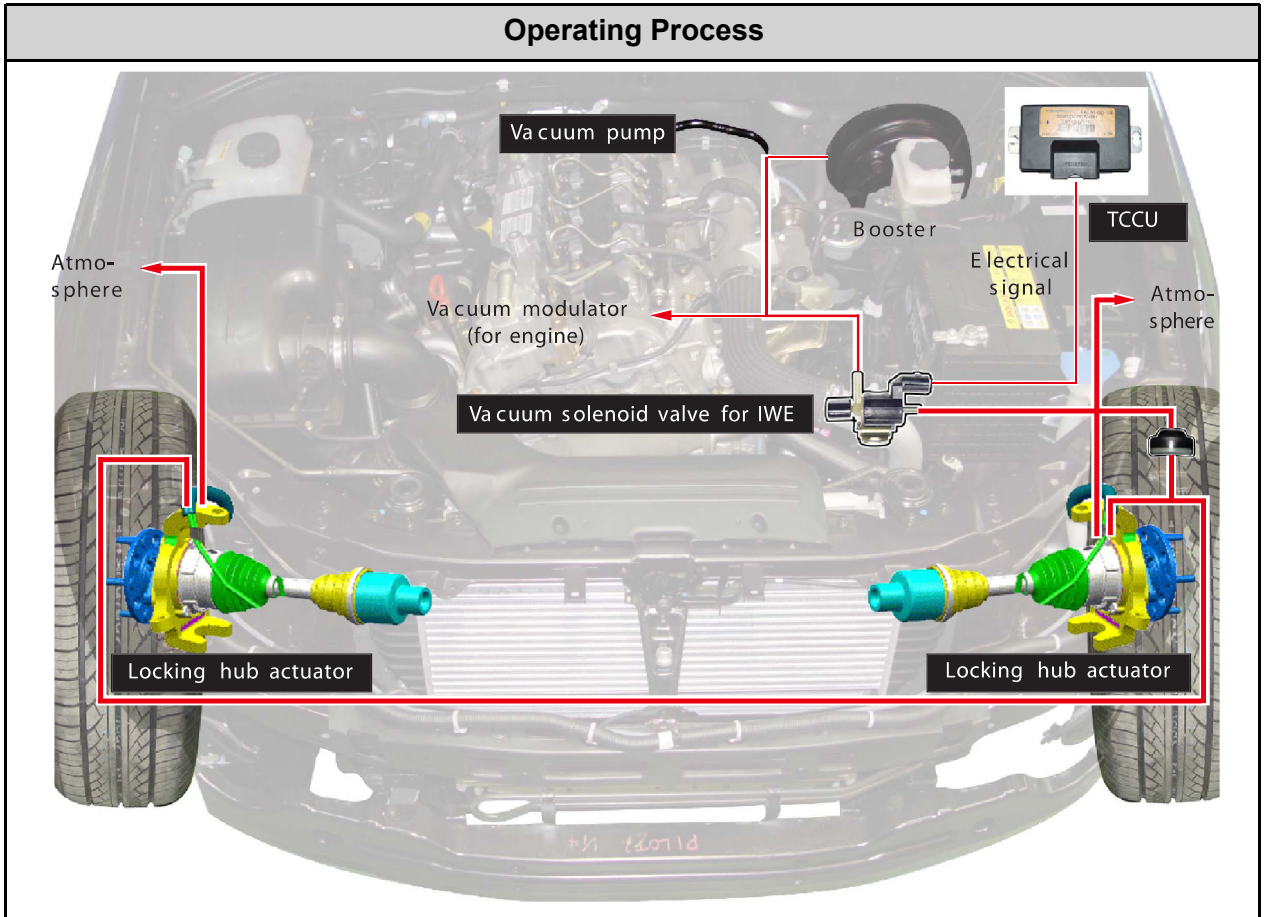
Modification basis	
Application basis	
Affected VIN	

3. LOCKING HUB SYSTEM

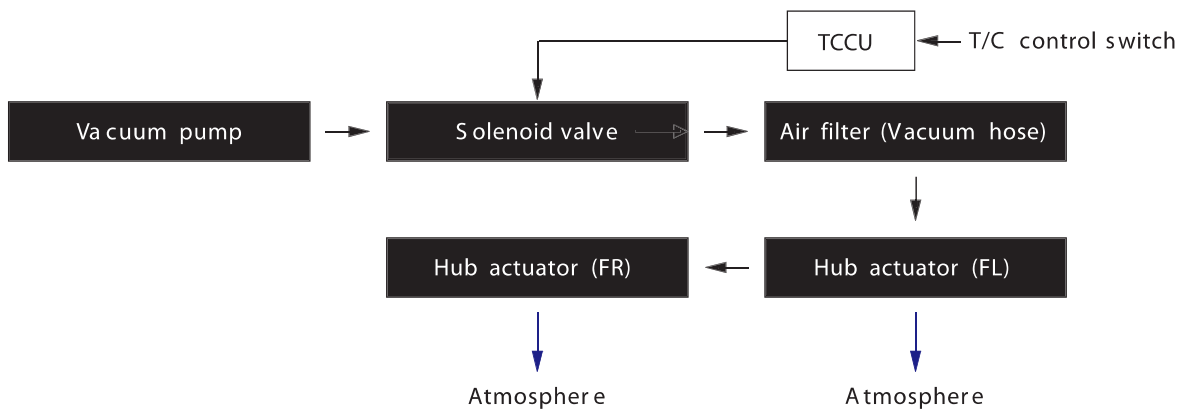
The transfer case and the TCCU differ from previous models only in the speed sensor related parts. However, the vacuum locking hub operation system works oppositely from previous models and its components also have changed.

The vacuum locking hub that is applied to Kyron uses the IWE (Integrated Wheel End) system, and in this system, the vacuum is generated only within the hub actuator.

It is structured to transmit power to the front section after the actuator hub is engaged following the release of vacuum from the drive shaft end gear and the hub end gear.



Vacuum generation process in front hub actuator:



Modification basis	
Application basis	
Affected VIN	

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- DSL M78 6-SPEED
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- T/M LEVER
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- CLUTCH
- AXLE
- AXLE (IOP)
- T/C
- SUSPENSION
- PROPELLER
- ION
- ESP
- STEERING

1) Vacuum System

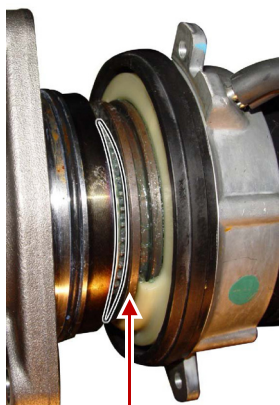
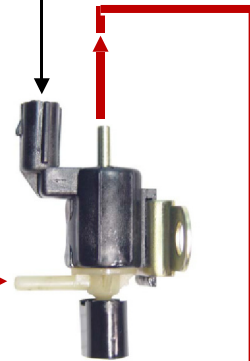


Vacuum operation during 2WD mode

During 2WD mode, the vacuum pressure from vacuum pump is continuously transmitted to the locking hub system. This vacuum pressure pulls in the locking hub actuator so that it will not be engaged with the front end hub gear.

Air filter

In 4WD mode, the TCCU blocks the transferring of vacuum pressure from vacuum pump to locking hub by supplying the power to solenoid valve.



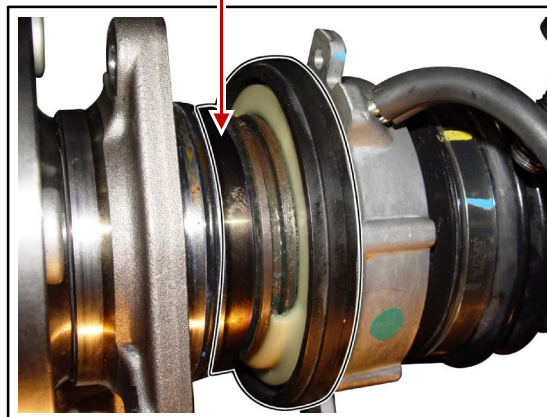
2WD (applying vacuum pressure to hub actuator)

The vacuum pressure pulls in the locking hub actuator so that it will not be engaged with the front end hub gear.

Atmosphere (in 4WD mode)

4WD (releasing vacuum pressure from hub actuator)

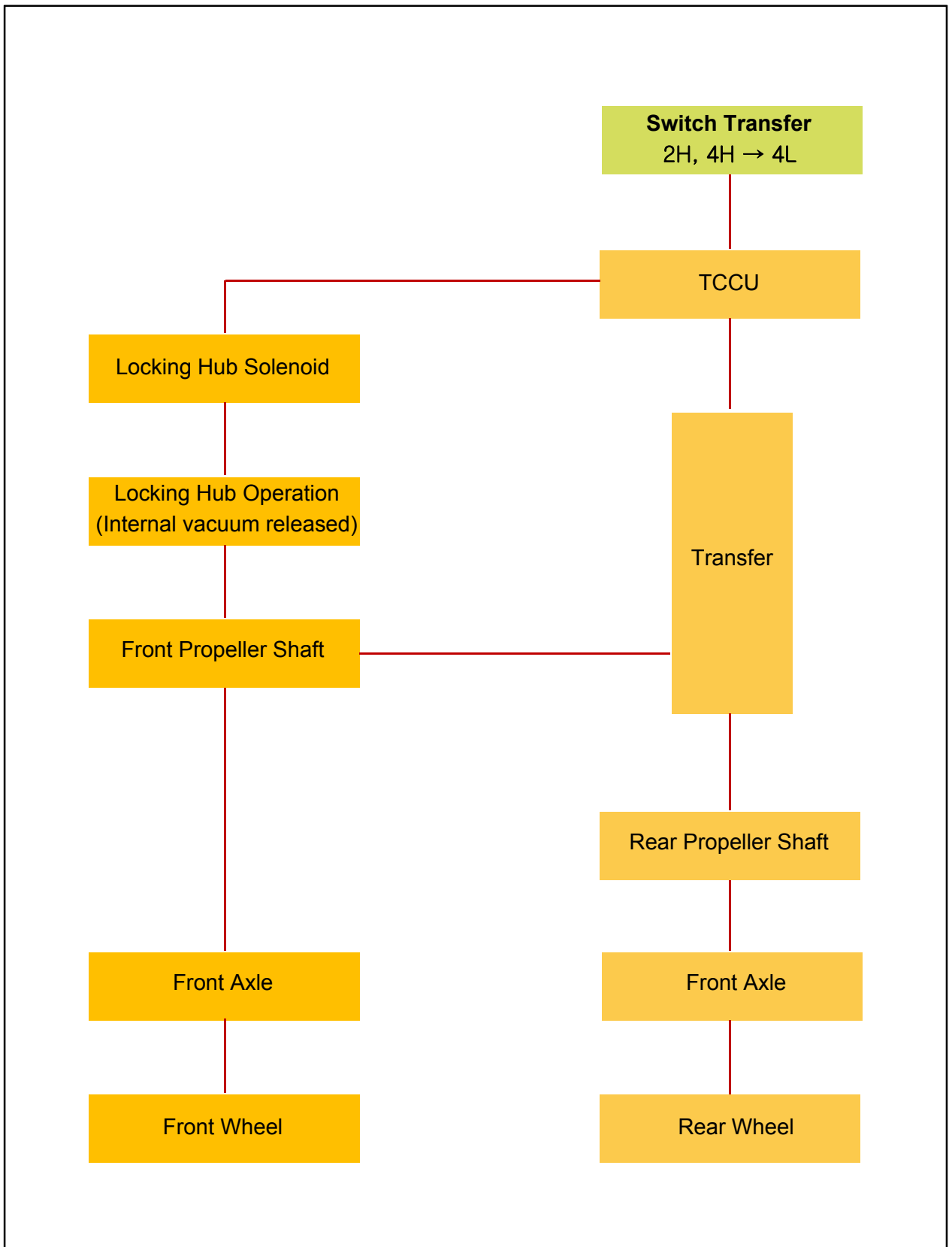
The vacuum pressure is released from the hub actuator. At this time, the front hub end gear is engaged.



Modification basis	
Application basis	
Affected VIN	

4. POWER FLOW

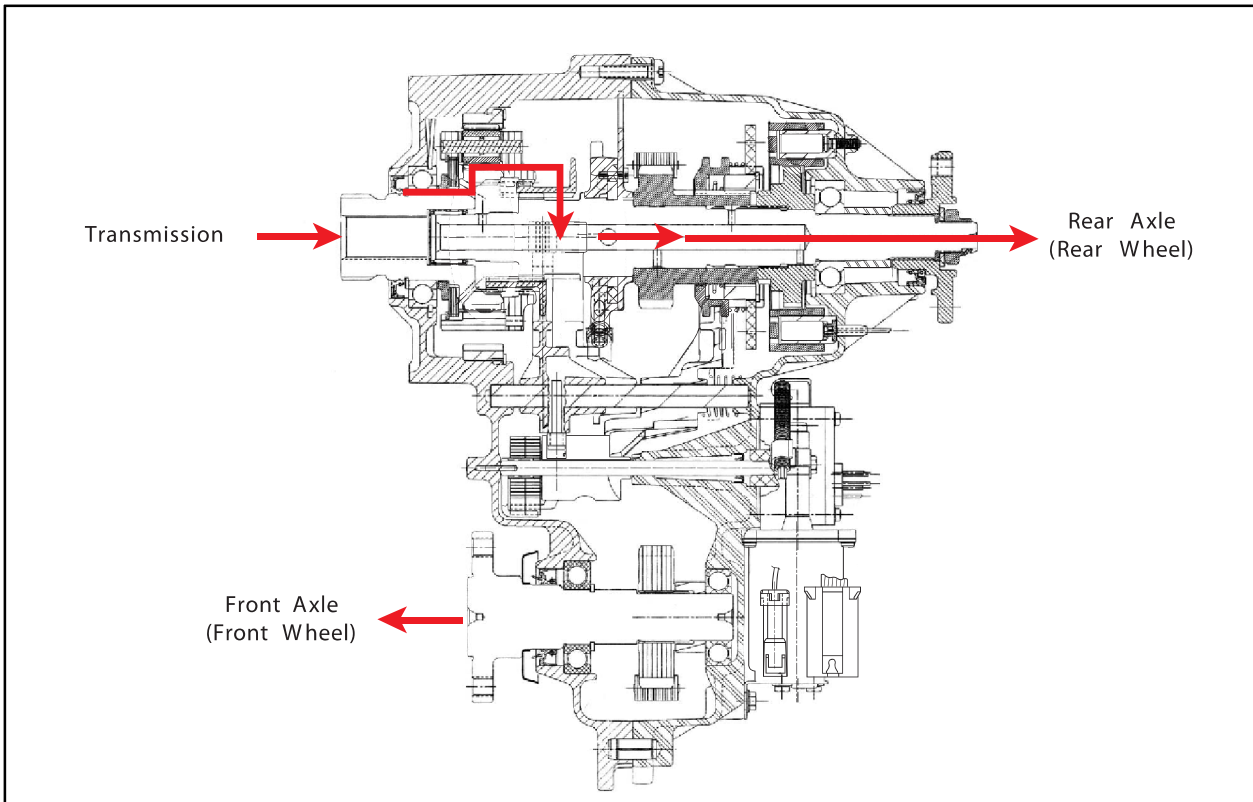
1) POWER FLOW



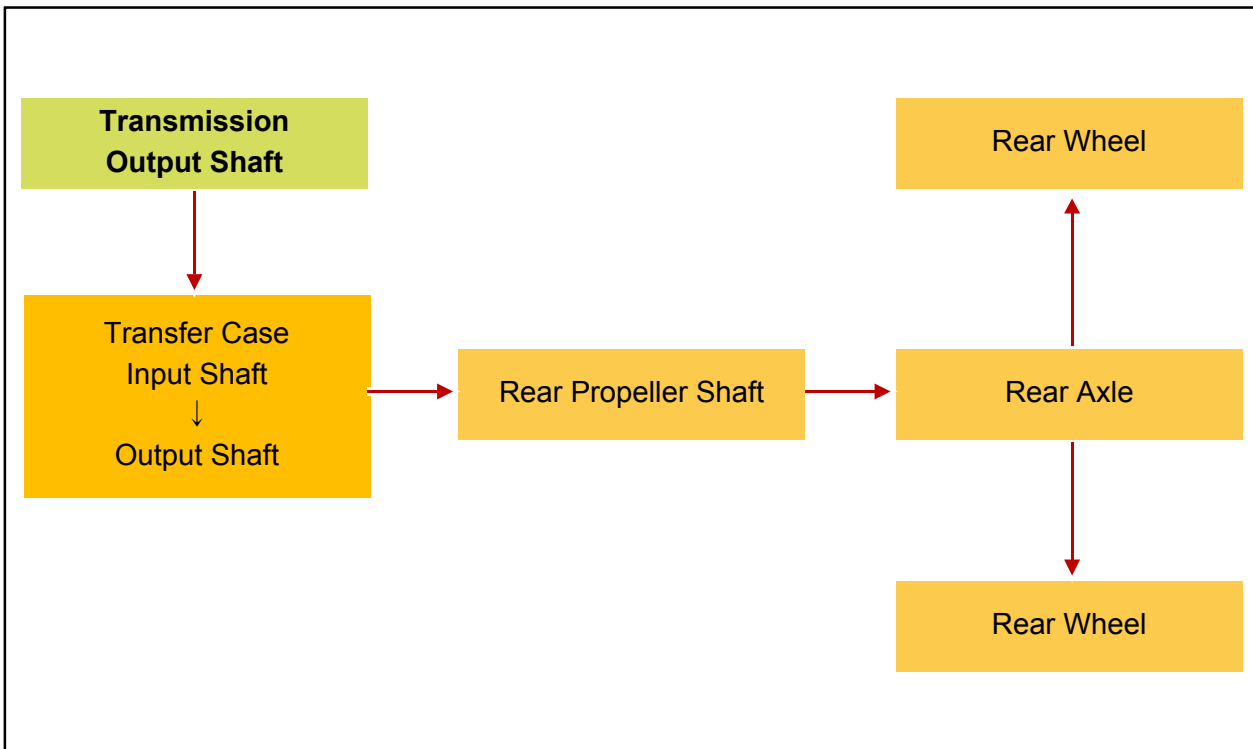
Modification basis	
Application basis	
Affected VIN	

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- ESP
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2) 2H MODE (2WD)

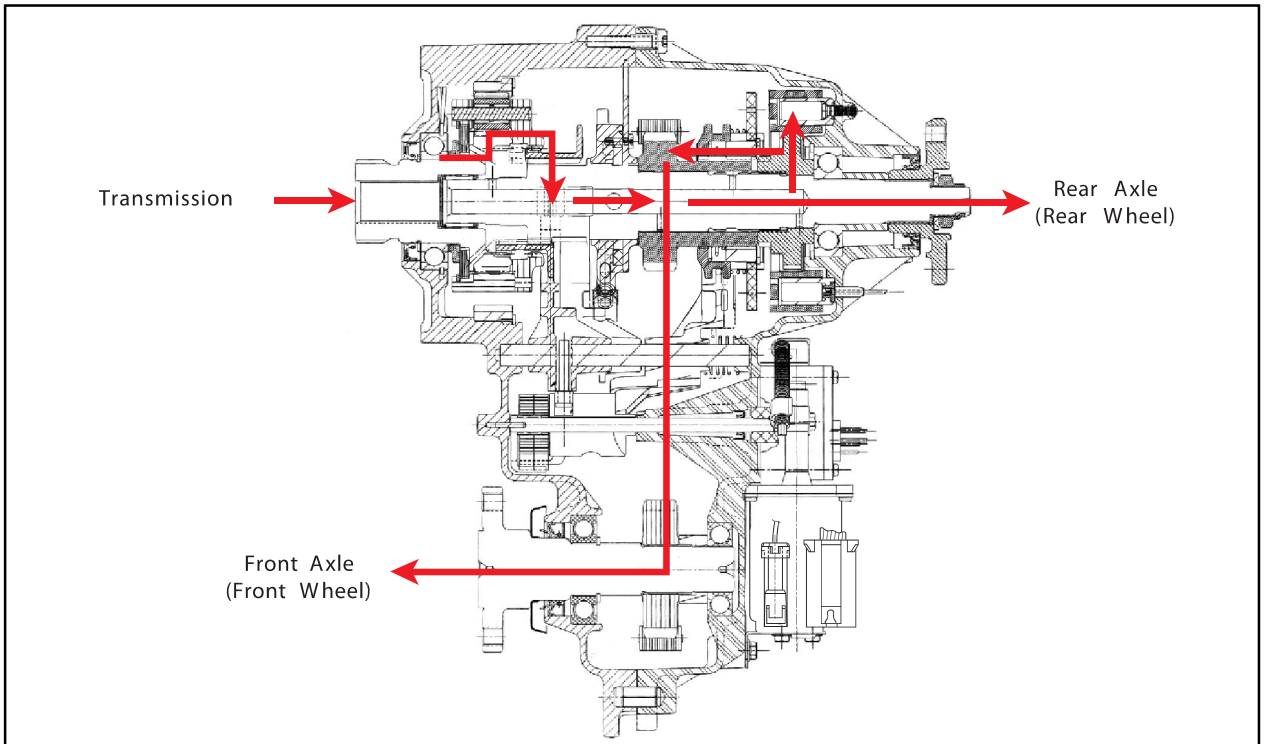


► Power Flow

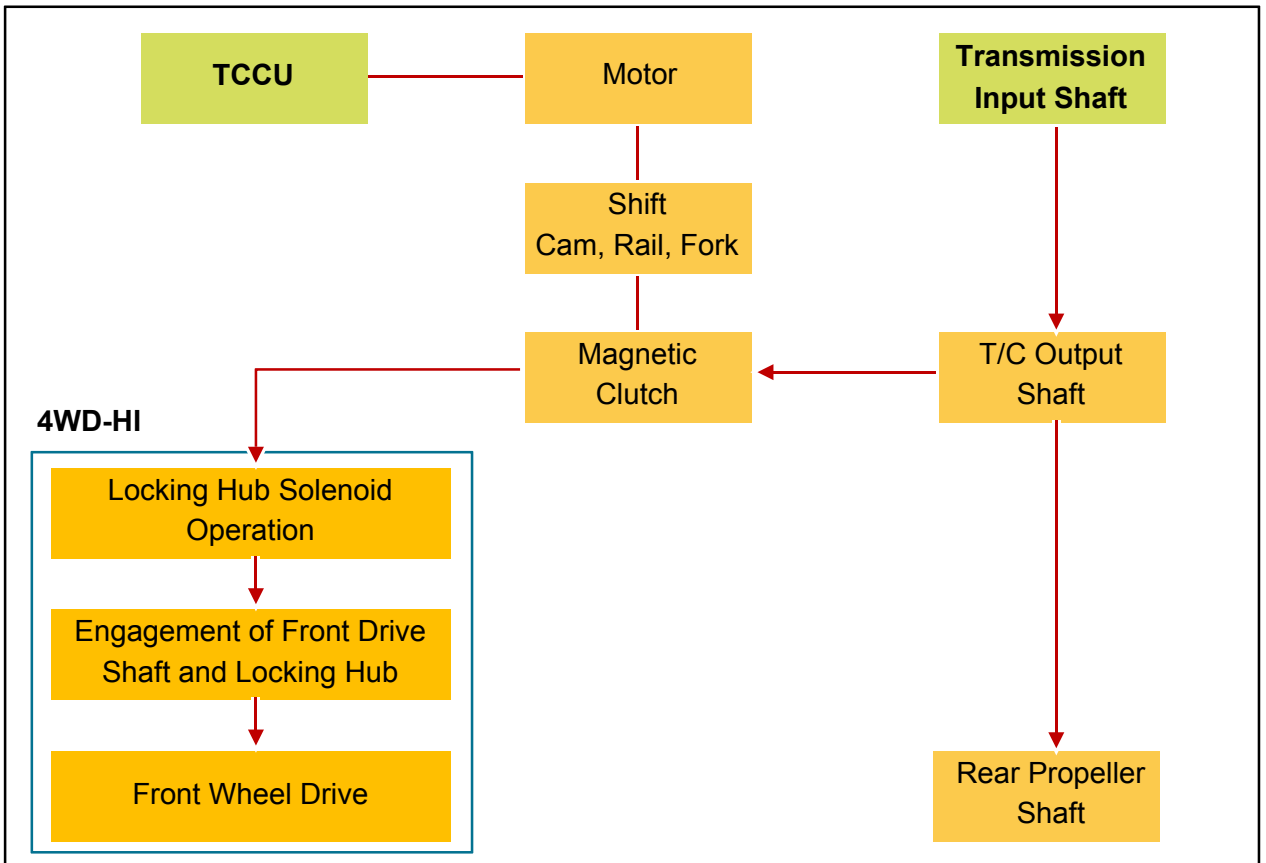


Modification basis	
Application basis	
Affected VIN	

3) 4H MODE (4WD - HIGH SPEED)



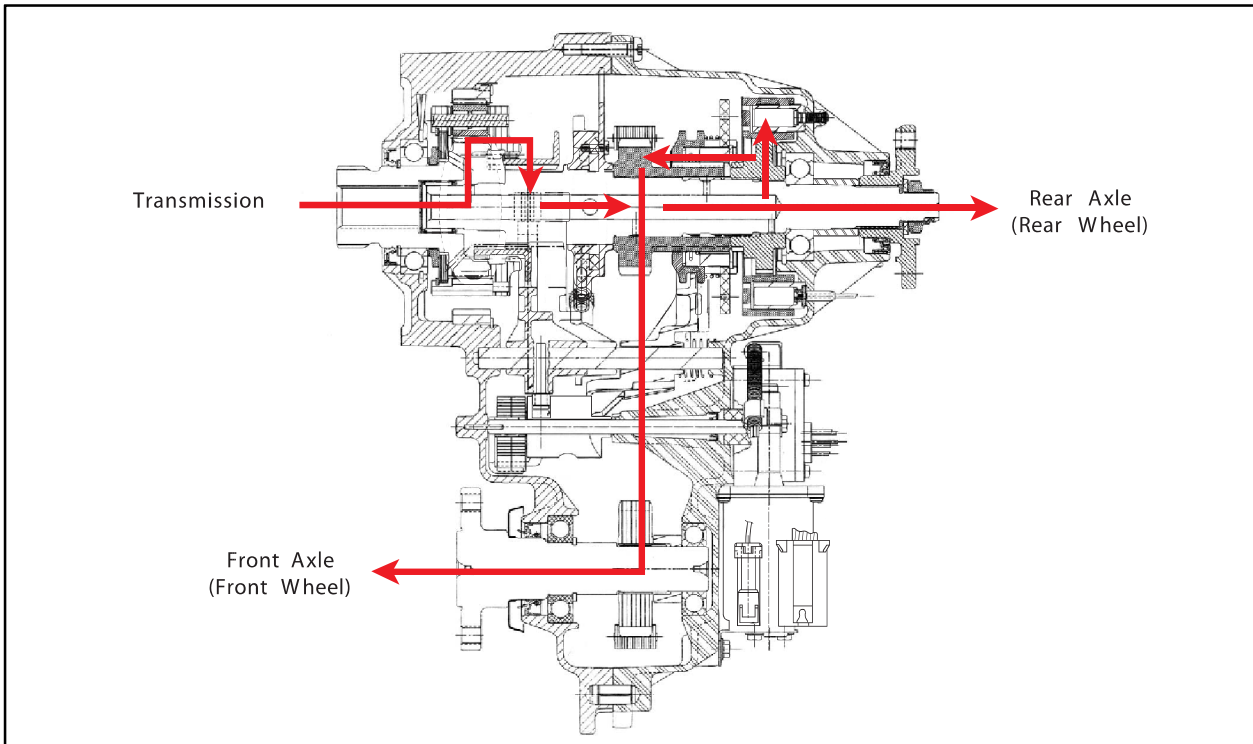
► Power Flow



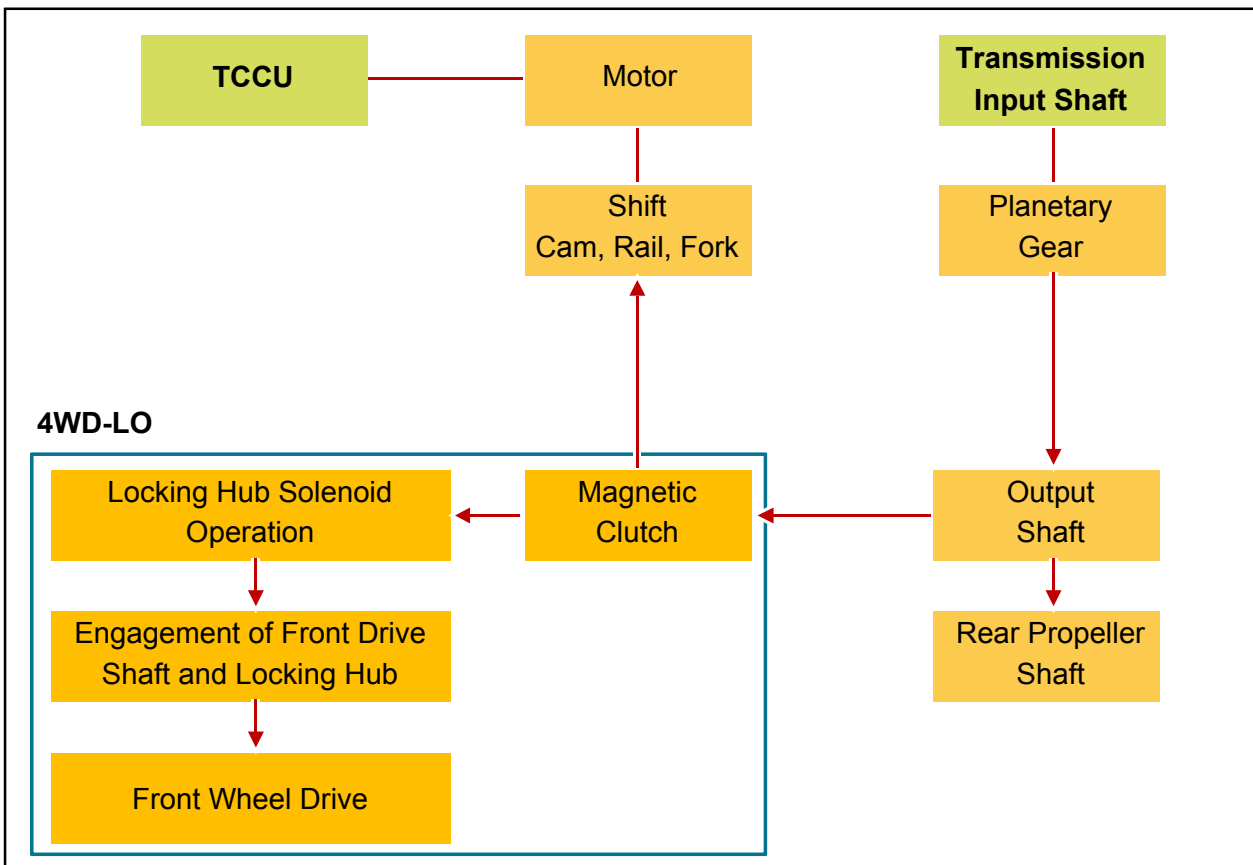
Modification basis	
Application basis	
Affected VIN	

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- STEERING

4) 4L MODE (4WD - LOW SPEED)



► Power Flow



Modification basis	
Application basis	
Affected VIN	