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AUTOMATIC TRANSMISSION EXTERNAL CONTROLS

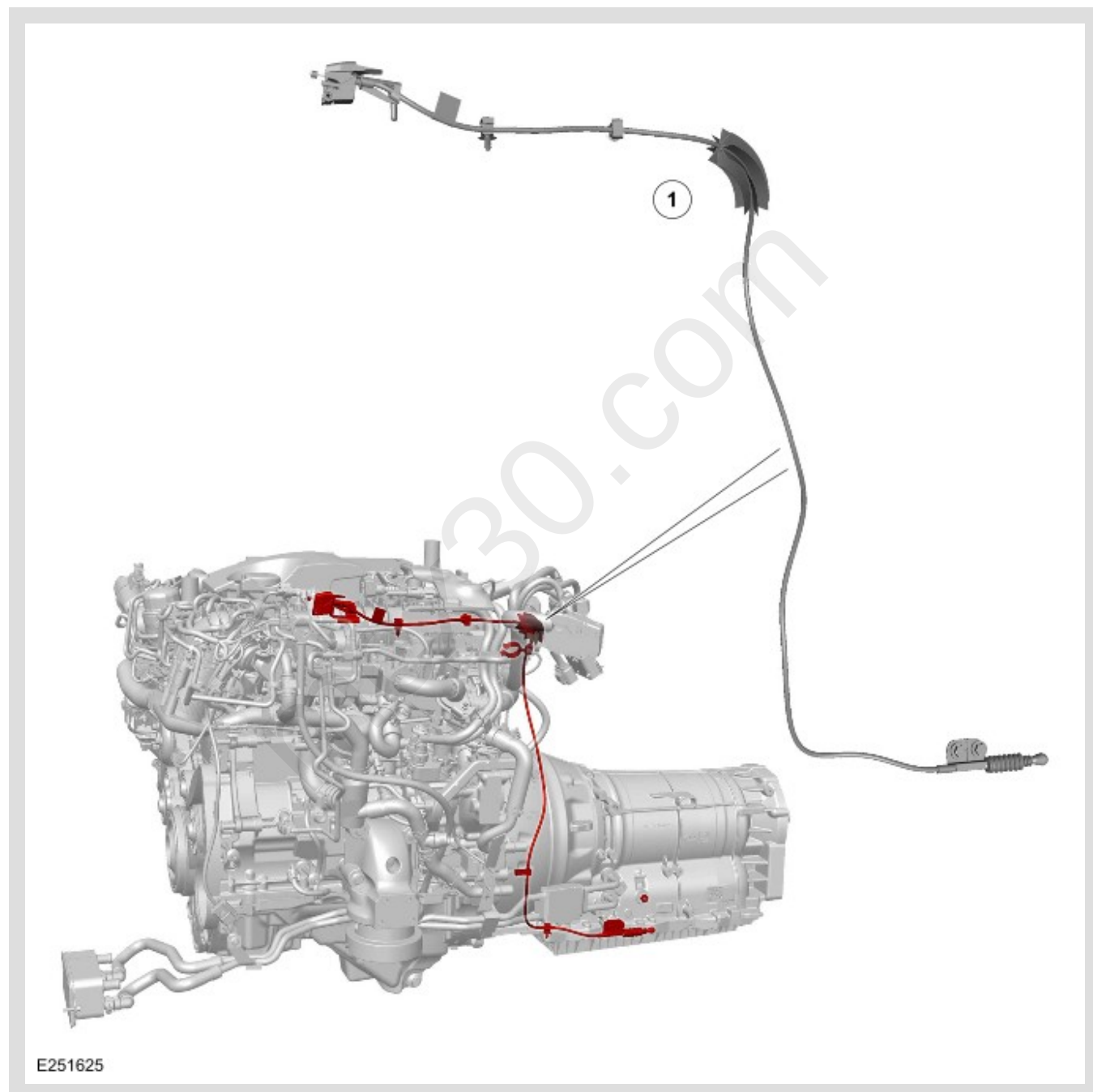
EXTERNAL CONTROLS - VEHICLES WITH: 8HP70 8- SPEED AUTOMATIC TRANSMISSION AWD [G2413250]

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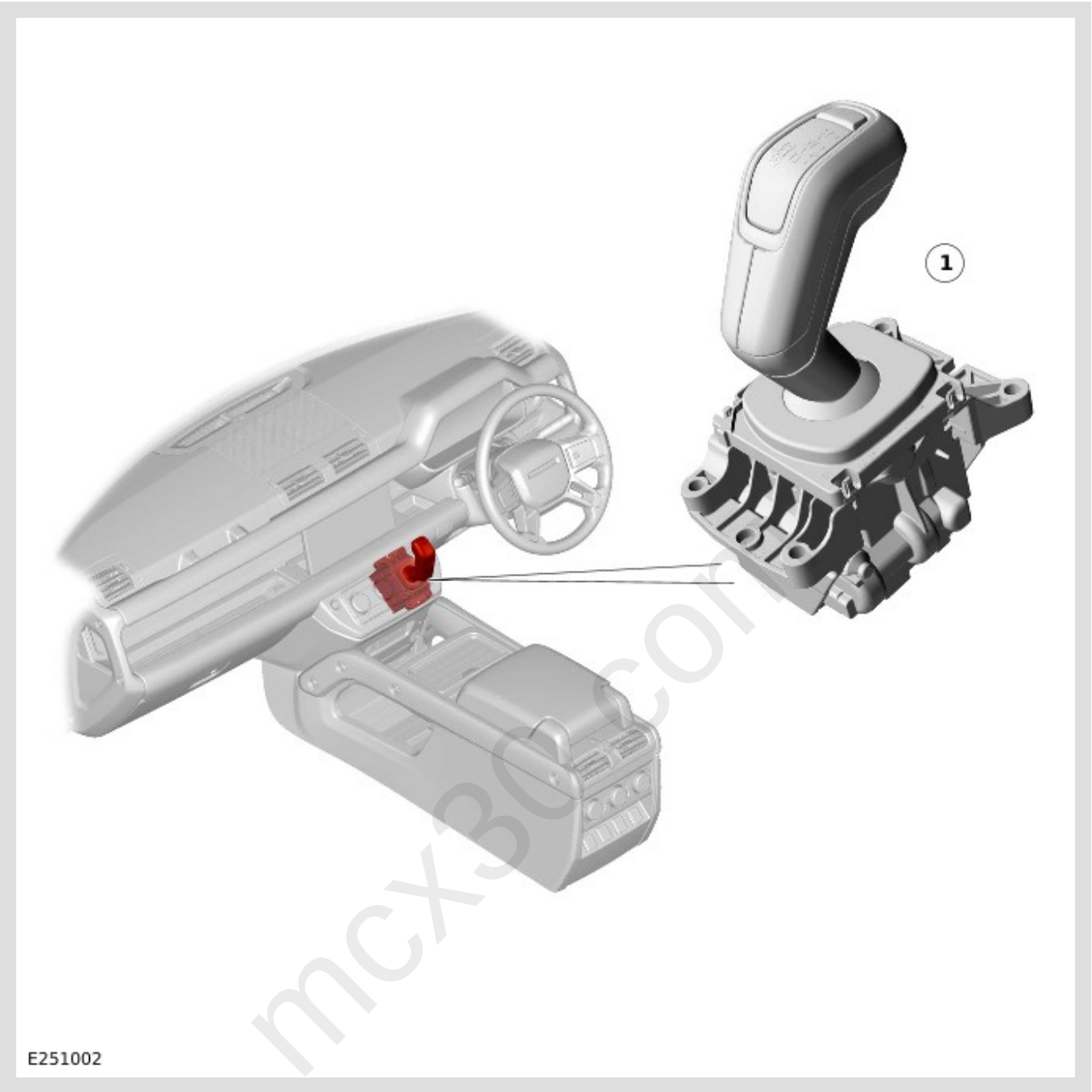
DESCRIPTION AND OPERATION

COMPONENT LOCATION

COMPONENT LOCATION - 1 OF 2 - EMERGENCY PARK RELEASE



ITEM	DESCRIPTION
1	Emergency Park Release (EPR) lever and cable assembly



E251002

ITEM	DESCRIPTION
1	Transmission Control Switch (TCS)

OVERVIEW



WARNING:

To prevent vehicle roll-away, before operation of the Emergency Park Release (EPR) mechanism the vehicle must be restrained either by use of:

- The Electric Park Brake (EPB)
- Wheel chocks.

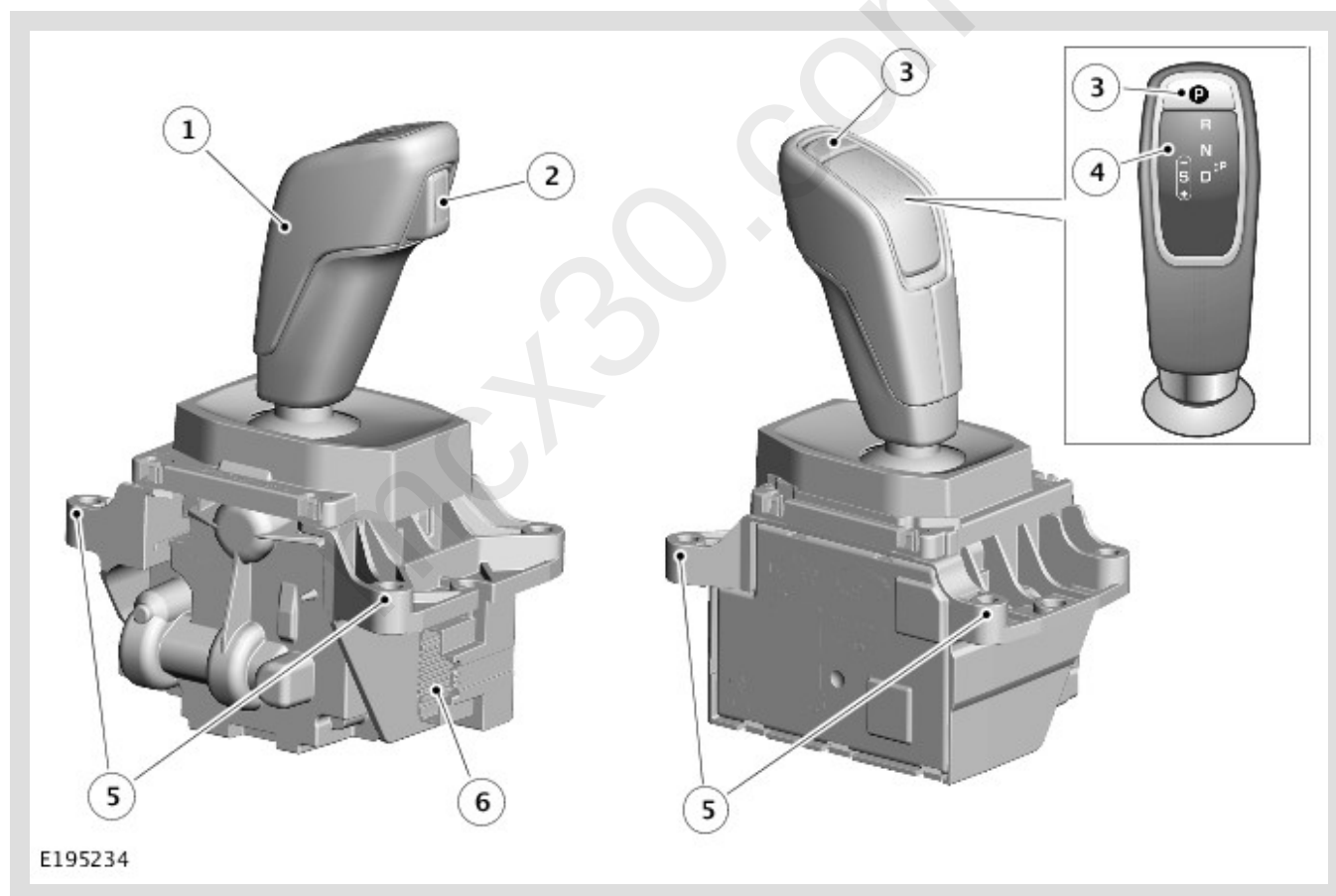
The 8HP70 transmission external controls comprise:

- A Transmission Control Switch (TCS)
- An Emergency Park Release (EPR) lever and cable.

The EPR system makes sure that the transmission park lock remains disengaged during vehicle recovery operations.

DESCRIPTION

TRANSMISSION CONTROL SWITCH



ITEM	DESCRIPTION
1	Selector lever
2	Unlock trigger
3	PARK (P) switch

ITEM	DESCRIPTION
4	Light Emitting Diode (LED) display
5	Mounting holes
6	Electrical connector



NOTE:

The Transmission Control Switch (TCS) is not a serviceable component. Repairs to the TCS must not be attempted. The TCS must be replaced as an assembly.

The Transmission Control Switch (TCS) is installed in the instrument panel and controls the driver transmission selections.

The TCS allows the transmission to be operated as a conventional automatic unit by selecting:

- PARK (P)
- REVERSE (R)
- NEUTRAL (N)
- DRIVE (D).

The TCS is fully electronic selector lever type transmission selector with no mechanical connection to the transmission.

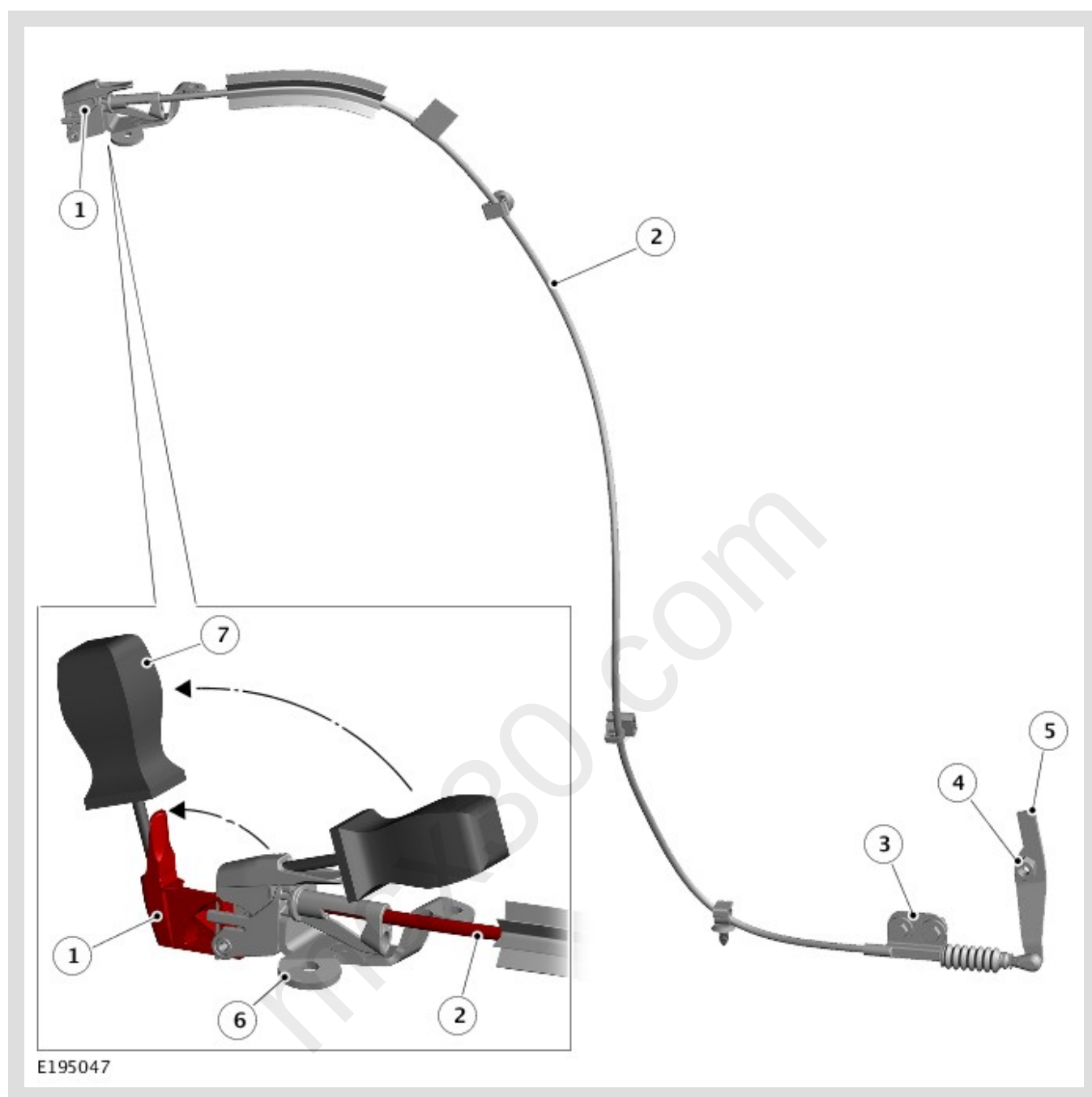
Movement of the TCS to any of the 4 positions, or operation of the P switch is sensed by the TCS. The TCM then reacts according to the new selection request made by the driver.

UNLOCK TRIGGER

The TCS unlock trigger must be pressed to select any gear, including NEUTRAL (N) from the PARK (P) position.

The unlock trigger must also be pressed to select any driving gear from the REVERSE (R), NEUTRAL (N) or DRIVE (D) positions. Pressing the unlock trigger is not required to select P.

EMERGENCY PARK RELEASE



ITEM	DESCRIPTION
1	Emergency Park Release (EPR) operating lever
2	Cable
3	Bracket
4	M8 nut
5	Park interlock lever
6	Engine mounting bracket
7	Screwdriver or suitable tool (if required)

If the vehicle requires recovery/transportation, the Emergency Park Release (EPR) mechanism is used to manually disengage the transmission park lock. Operation of the EPR engages the transmission in NEUTRAL (N).

The EPR mechanism consists of an operating lever that is connected to the park interlock lever on the transmission by a cable.

The EPR operating lever is located on a bracket attached to the top of the engine. The park interlock lever is attached to the transmission selector shaft and operated through a cable.

When operated, the EPR mechanism moves the transmission selector shaft to the neutral position.



WARNING:

To prevent vehicle roll-away, before operation of the Emergency Park Release (EPR) mechanism the vehicle must be restrained either by use of:

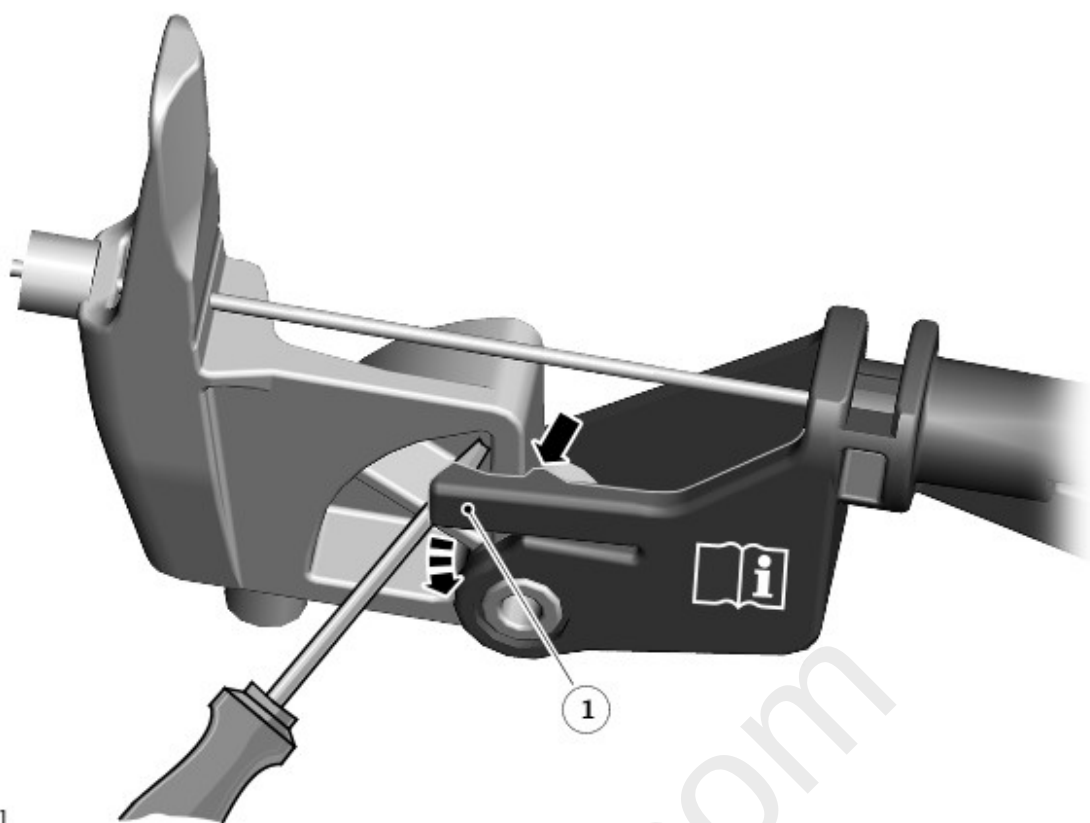
- The Electric Park Brake (EPB)
- Wheel chocks.

To disengage the park lock:

- 1** Make sure the Electric Park Brake (EPB) is engaged or wheel chocks are in place. This prevents vehicle roll-away when the park lock is disengaged.
- 2** Open the hood to access the engine compartment.
- 3** Remove the engine cover.
- 4** Move the EPR operating lever fully through 90 degrees.
- 5** If additional leverage is required, use a screwdriver or suitable tool and engage the tool in the EPR operating lever.
- 6** Makes sure that the EPR lever is locked by the locking tab on the lever bracket.

Moving the operating lever causes the EPR cable to rotate the park interlock lever on the transmission. This disengages the parking pawl in the transmission and engages neutral. This allows the vehicle to freewheel.

EPR Lever Locking Tab Release



ITEM	DESCRIPTION
1	Locking tab

To re-engage the park lock:

- Using a suitable tool, release the EPR lever locking tab.
- Move the operating lever through 90 degrees and if used, remove the screwdriver or tool.
- Replace the engine cover.
- Close the hood.

OPERATION

Shifting of the Transmission Control Switch (TCS) selector to any of the 5 positions is sensed by the Transmission Control Module (TCM). Signals from the TCS are passed to the Anti-lock Brake System (ABS) control module through the High Speed (HS) Controller Area Network (CAN) underbody systems bus. Then the 'Gear Shift Arbitrator (GSA)' software, which is integrated into the ABS control software, transmits the signal to the TCM through the Flexray. The TCM then reacts according to the selected position.

The TCS is a magnetic system using Hall effect sensors to determine the position of the selector. The SPORT (S) position selection allows the TCM to operate the transmission using the semi-automatic 'Commandshift' system.

When the TCS position is confirmed, the TCM outputs appropriate information on the FlexRay systems bus to the Body Control Module/Gateway Module (BCM/GWM). The information is received by the Instrument Cluster (IC) to display the gear selection information in the message center.

ROCKING FUNCTION (NOT APPLICABLE TO CHINA MARKET VEHICLES)

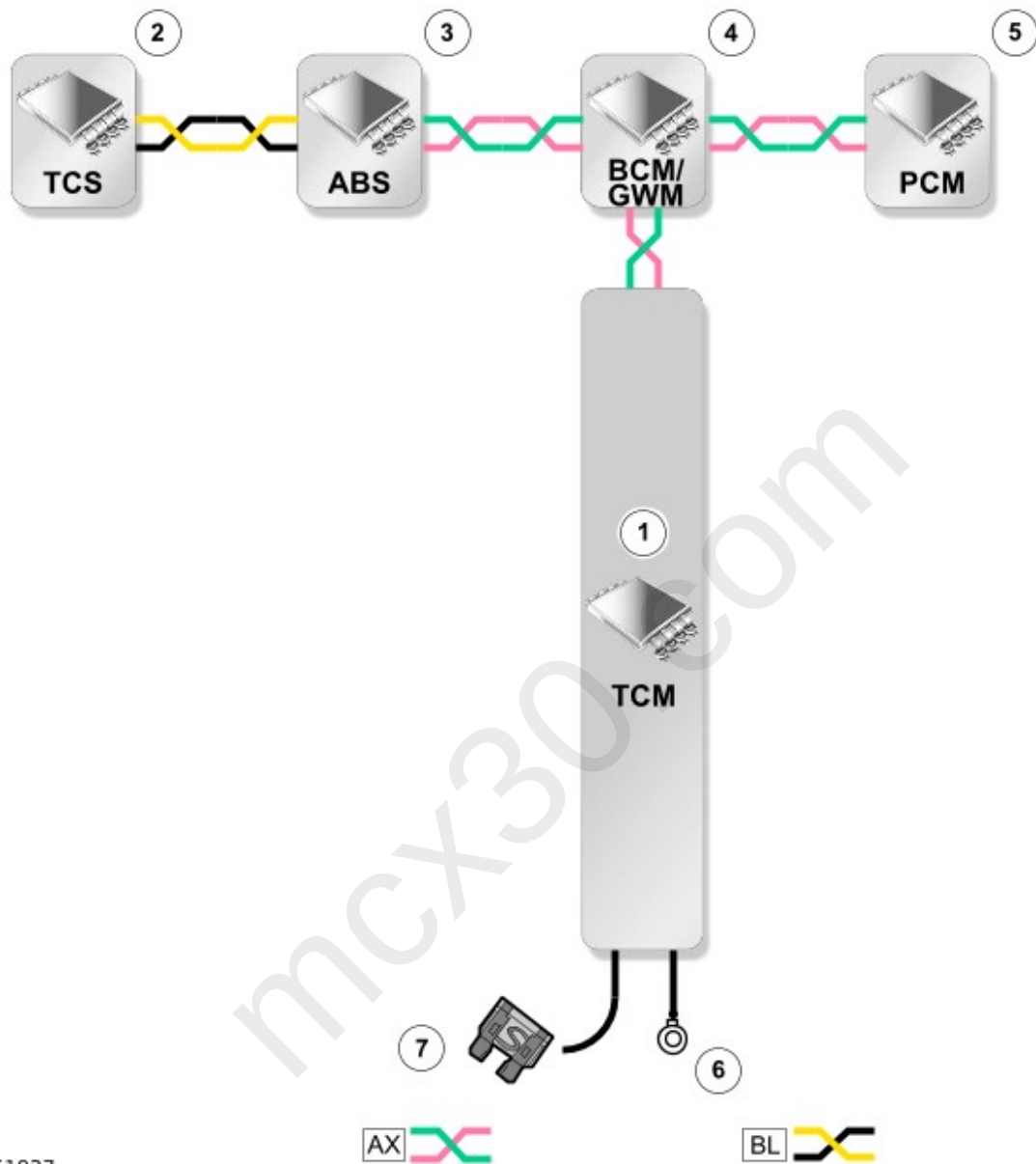
The rocking function compliments the neutral lock function. For all changes from a non-driving range to a driving range, it is necessary to press the brake pedal to release the neutral lock.

For use in situations where the driver requires to change the gear selection from REVERSE (R) to DRIVE (D), or from D to R, without brake pedal input. For example:

- Car park maneuvering
- Multiple point turns
- 'Rocking' the vehicle from a slippery surface.

The rocking function gives a 2 second lock delay when NEUTRAL (N) is selected on the Transmission Control Switch (TCS) and the brake pedal is not pressed.

CONTROL DIAGRAM



E251927

AX = FLEXRAY SYSTEMS BUS: BL = HIGH SPEED (HS) CONTROLLER AREA NETWORK (CAN) UNDERBODY SYSTEMS BUS.

ITEM	DESCRIPTION
1	Transmission Control Module (TCM)
2	Transmission Control Switch (TCS)
3	Anti-lock Brake System (ABS) control module
4	Body Control Module/Gateway Module (BCM/GWM)

ITEM	DESCRIPTION
5	Powertrain Control Module (PCM)
6	Ground
7	Power supply

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