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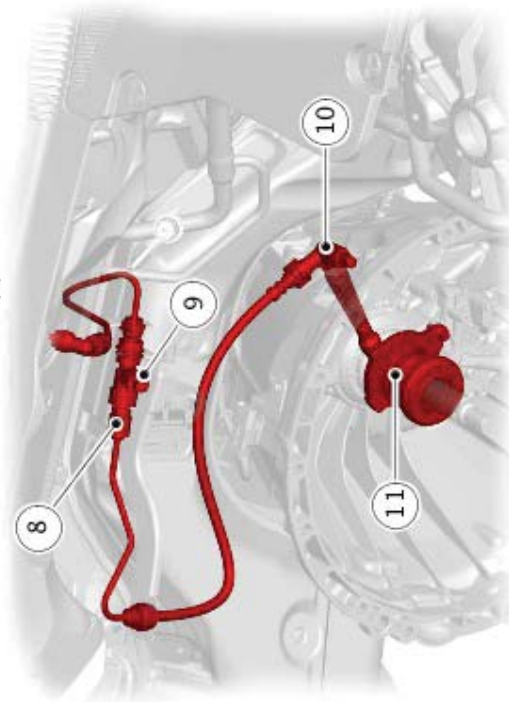
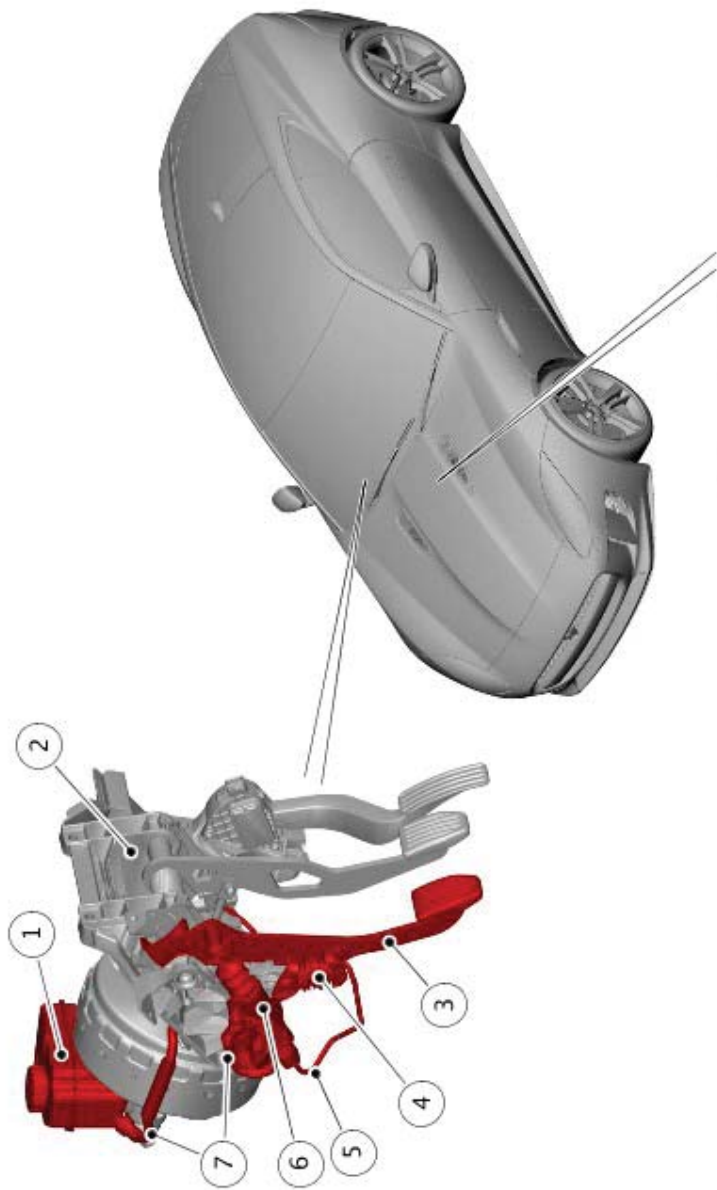
Clutch Controls - Clutch Controls

Description and Operation

COMPONENT LOCATION



NOTE: Right Hand Drive (RHD) vehicle is shown, Left Hand Drive (LHD) vehicle is similar.



Item	Description
1	Brake fluid reservoir
2	Pedal bracket
3	Clutch pedal
4	Clutch pedal spring
5	High Pressure (HP) pipe upper section
6	Clutch master cylinder and linear clutch sensor
7	Low Pressure (LP) pipe
8	High Pressure (HP) pipe lower section and anti-vibration damper
9	Bleed screw
10	Hydraulic adaptor and peak torque limiter
11	Clutch slave cylinder and release bearing

OVERVIEW

The clutch controls is a manually-operated mechanism which regulates how the engine's power is transmitted. The mechanism interrupts power transmission between the engine and the rest of the powertrain and puts the gearbox in a temporary neutral position. This allows the driver to change gear as well as gradually taking up drive from when the vehicle is at rest.

The clutch is a conventional type, with a solid type clutch driven plate and a clutch cover assembly which is hydraulically activated from the clutch pedal.

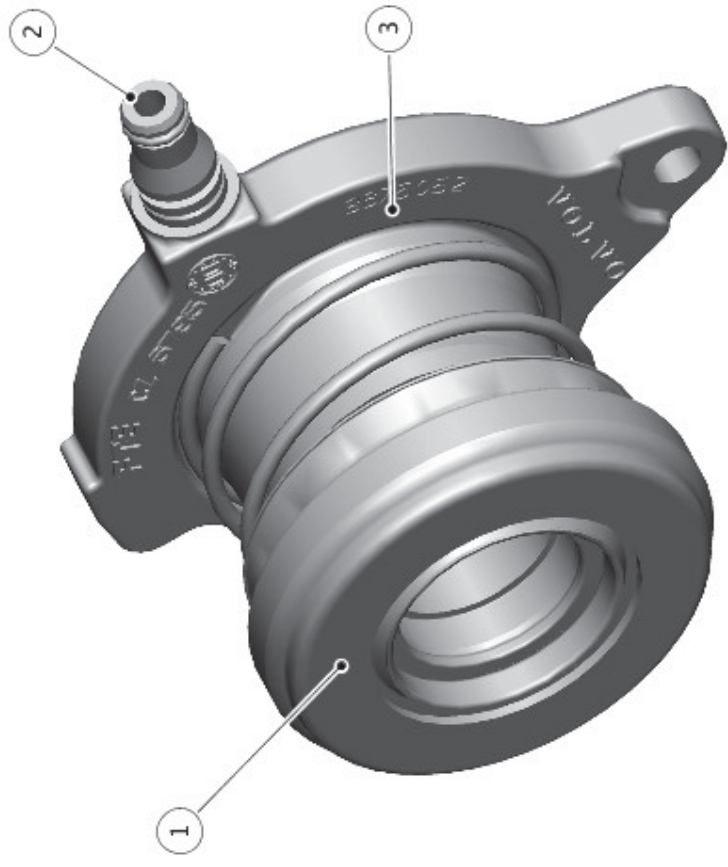
DESCRIPTION

The clutch controls consist of a clutch pedal, a master cylinder, a slave cylinder, a LP (Low Pressure) pipe and a HP (High Pressure) pipe assembly.

The clutch uses a fluid reservoir shared with the brake system. The LP pipe provided hydraulic fluid from the brake fluid reservoir to the clutch master cylinder. A four-piece HP pipe is connected from the clutch master cylinder to the slave cylinder. The upper HP pipe section comprises rigid pipes, an anti-vibration damper and a bleed screw, which is attached to the bulkhead panel with a bracket, behind the engine. The damper is used to reduce pedal roar/vibrations during the clutch operation. The bleed screw provides to purge the clutch hydraulic system of air after service replacement of one of the hydraulic components.

The lower HP pipe section comprises a flexible hose and a hydraulic adaptor, which passes through a sealed hole in the transmission housing and provides the connection between the flexible hose and the clutch slave cylinder with quick release connectors. The hydraulic adaptor contains a peak torque limiter to prevent instant clutch engagement if the driver accidentally releases the clutch pedal quickly to prevent damage to the driveline components.

Slave cylinder



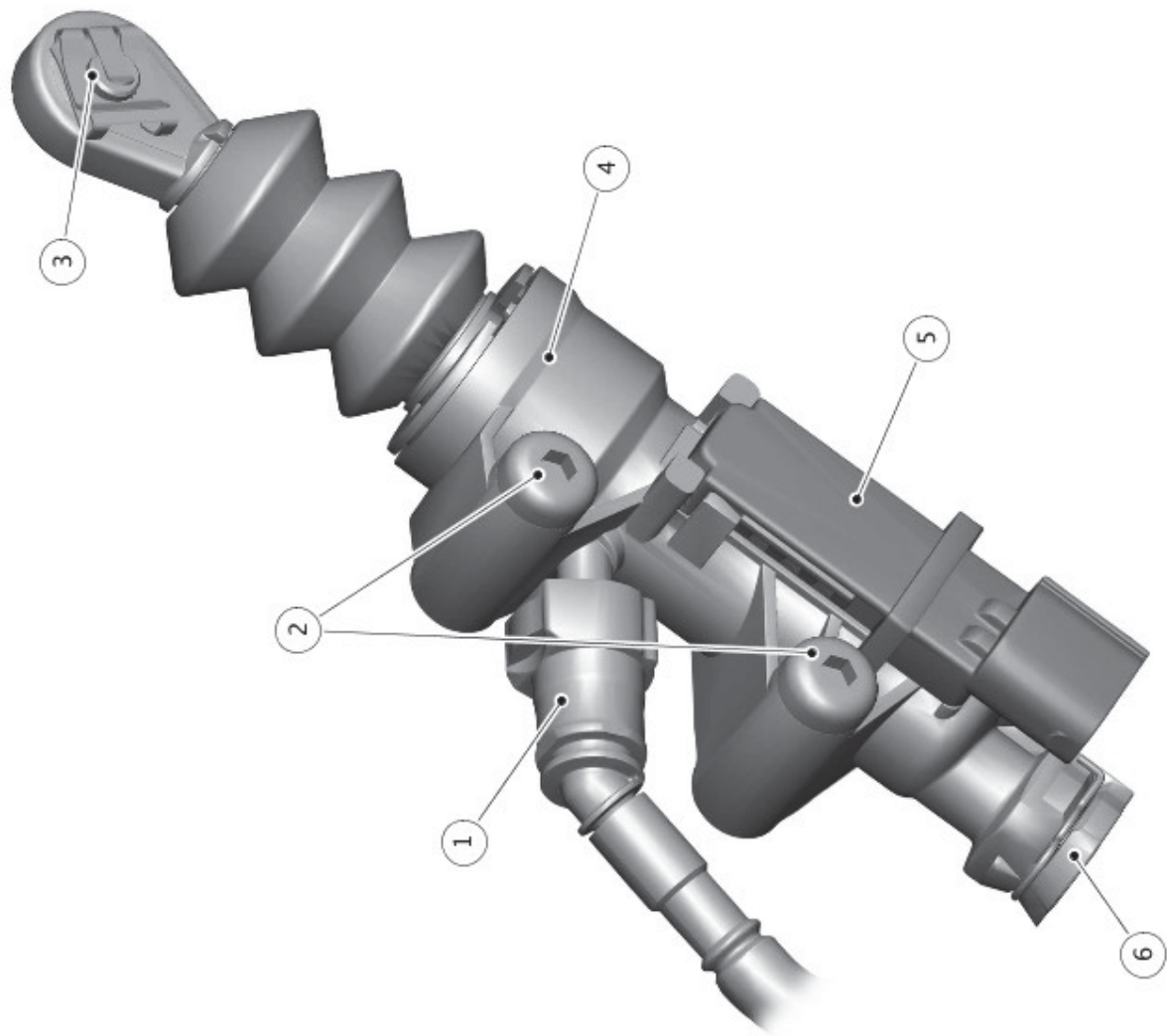
Item	Description
1	Bearing
2	Hydraulic connector
3	Clutch slave cylinder

The slave cylinder is located in the transmission housing and is attached to the transmission housing with a bolt. The slave cylinder has an internal bearing which locates over the transmission output shaft, which passes over the center of the slave cylinder. In its free condition the slave cylinder is fully extended, but it positions itself automatically as the transmission housing is fitted to the engine. The assembly requires no setting or adjustment.

Master cylinder and linear clutch sensor for Stop/start system



NOTE: The master cylinder and sensor are supplied as an assembly.



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Item	Description
1	Low Pressure (LP) pipe connector
2	Bolts
3	Clutch pedal connection
4	Cutch master cylinder
5	Linear clutch sensor
6	High Pressure (HP) pipe connection

The clutch master cylinder is fitted with a linear clutch sensor for the stop/start system. A magnet inside the clutch master cylinder gives the position indicator for the linear clutch sensor. The sensor is hardwired to the CJB (Central Junction Box) and is used to sense the position of the clutch pedal. It is used in conjunction with other sensor outputs to initiate the engine restart, engine stop or engine stall recovery for the stop/start system. It is also used in conjunction with the first gear and reverse gear switches to complete clutch plausibility.

OPERATION

Operation of the clutch produces hydraulic pressure in the master cylinder which is passed through pipes to the slave cylinder which disengages the clutch. The clutch shares a common fluid reservoir with the brake system. It is connected using a LP pipe from the clutch master cylinder.

Pressing the clutch pedal operates the clutch master cylinder which pressurizes the hydraulic fluid. The fluid pressure is transferred via a HP pipe from the master cylinder to the slave cylinder. The fluid pressure operates the slave cylinder, which in turn pushes the leaf springs of the clutch cover, releasing the driven plate and disengaging the drive from the engine crankshaft to the transmission.