

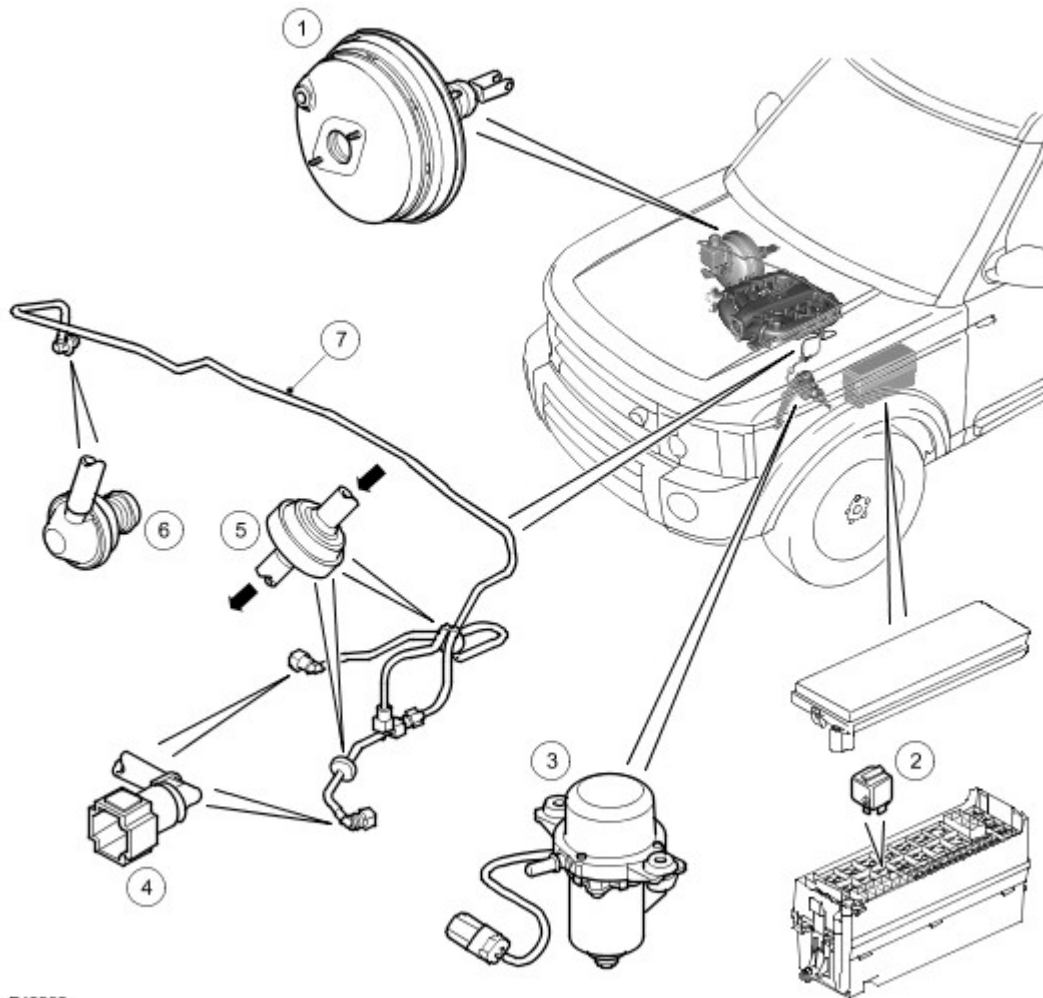


Brake Booster

COMPONENT LOCATIONS - 4.0L

NOTE :

RHD shown, LHD similar



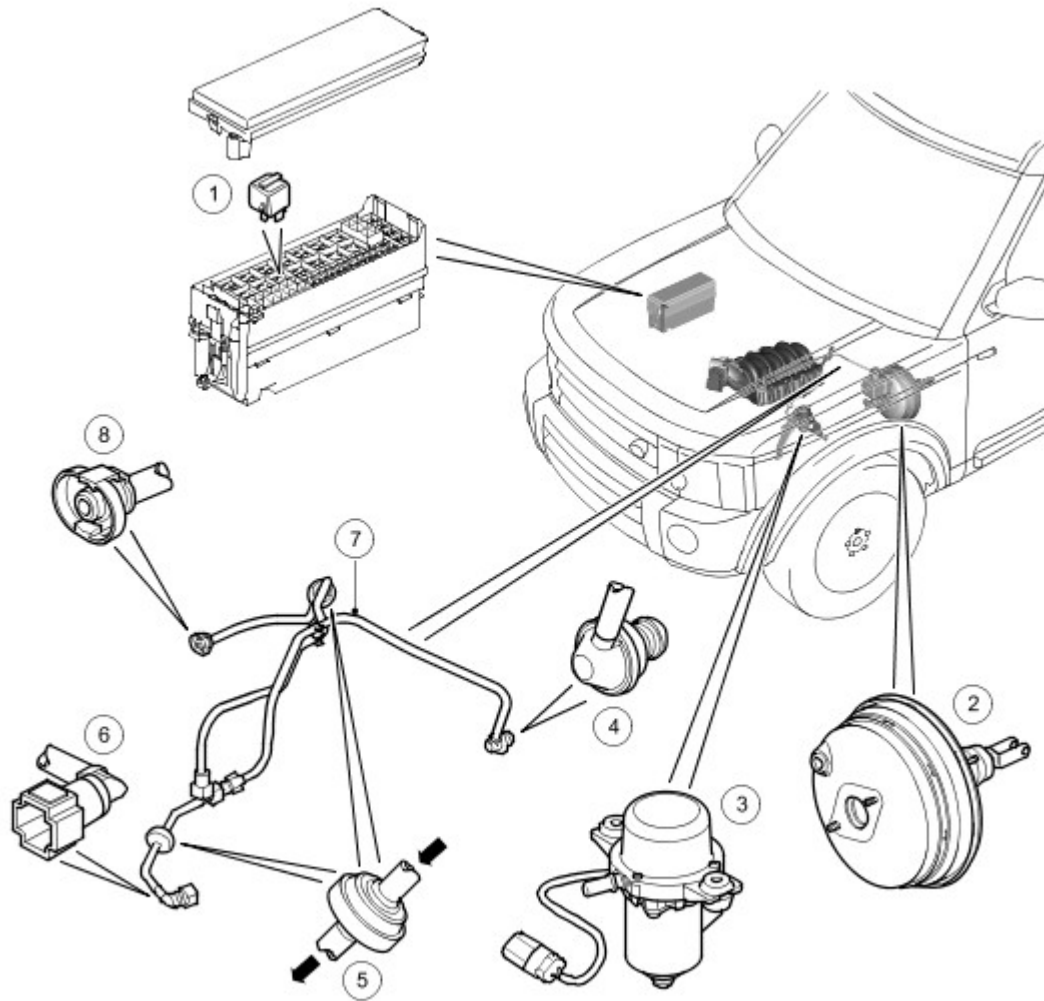
E49902

Item	Part Number	Description
1	-	Brake booster
2	-	Vacuum pump relay
3	-	Vacuum pump
4	-	Vacuum pipe connections to vacuum pump and inlet manifold
5	-	Check valve
6	-	Vacuum pipe connection to brake booster
7	-	Vacuum pipes

COMPONENT LOCATIONS - 4.4L

NOTE :

LHD shown, RHD similar



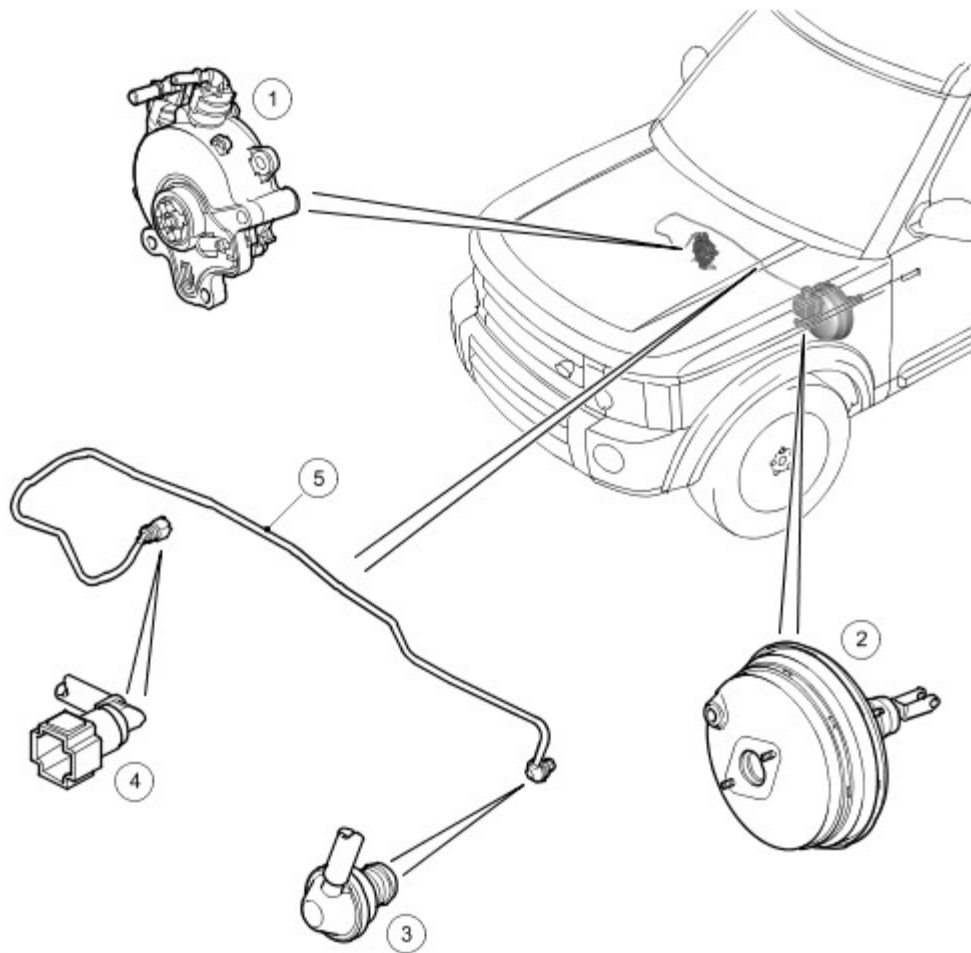
E49903

Item	Part Number	Description
1	-	Vacuum pump relay
2	-	Brake booster
3	-	Vacuum pump
4	-	Vacuum pipe connection to brake booster
5	-	Check valve
6	-	Vacuum pipe connection to vacuum pump
7	-	Vacuum pipes
8	-	Vacuum pipe connection to inlet manifold

COMPONENT LOCATIONS - 2.7L DIESEL

NOTE :

LHD shown



E49904

Item	Part Number	Description
1	-	Vacuum pump
2	-	Brake booster
3	-	Vacuum pipe connection to brake booster (includes check valve)
4	-	Vacuum pipe connection to vacuum pump
5	-	Vacuum pipes

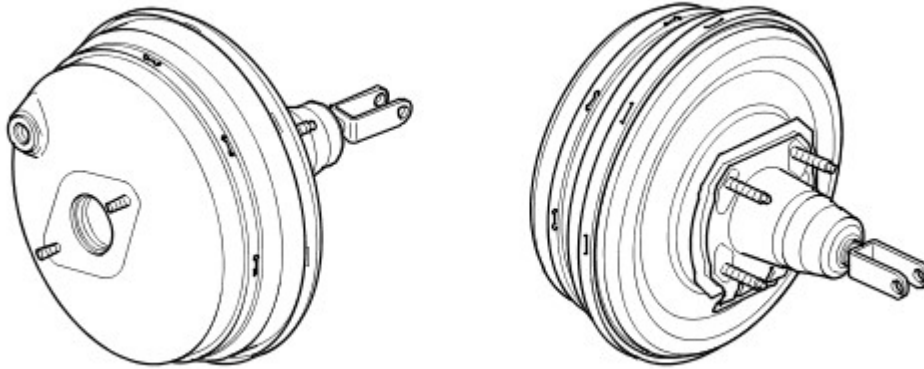
GENERAL

Power assistance for the brakes is provided by a vacuum operated brake booster. On petrol models, the vacuum is produced by the intake manifold and an electric vacuum pump. On diesel models, the vacuum is produced by an engine driven vacuum pump.

VACUUM PIPES

Plastic vacuum pipes connect the brake booster to the vacuum source. Check valves are incorporated into the vacuum pipes. On petrol models there are two in-line check valves, to maintain the vacuum in the brake booster when the throttle is open and the vacuum pump is not running, and prevent fuel vapor entering the brake booster. On diesel models there is a single check valve integrated into the vacuum pipe connection with the brake booster, to maintain the vacuum in the brake booster when the vacuum pump is operating at less than the optimum.

BRAKE BOOSTER

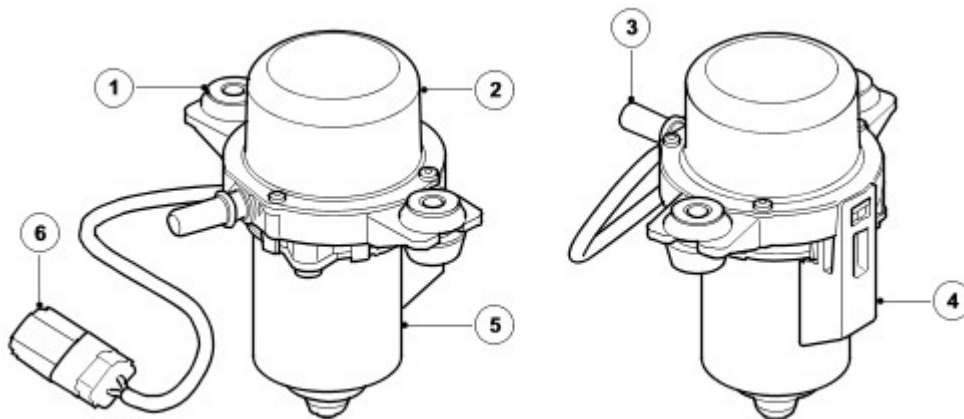


E49905

The brake booster is installed in the driver side of the engine compartment, on the engine bulkhead.

The brake booster is a dual diaphragm unit with a boost ratio of 7.0 : 1. The input push rod is connected to the brake pedal. The output push rod locates in the primary piston of the brake master cylinder. A vacuum pipe, installed in a grommet in the front face of the housing, connects the brake booster to the intake manifold and electric vacuum pump (petrol models) or the engine driven vacuum pump (diesel models).

VACUUM PUMP (4.0L AND 4.4L)



E49906

Item	Part Number	Description
1	-	Anti-vibration mount
2	-	Pump cover
3	-	Vacuum pump inlet
4	-	Rubber shroud for exhaust port
5	-	Motor cover
6	-	Electrical connector

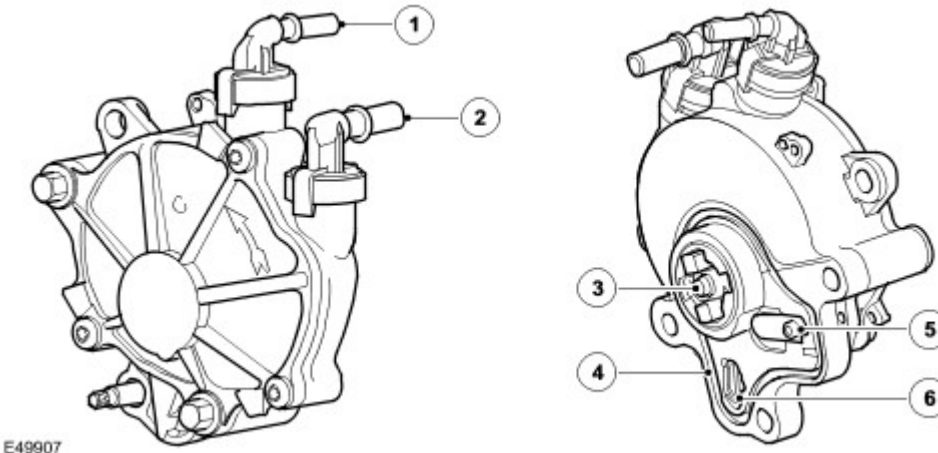
On petrol models the electric vacuum pump supplements the main vacuum supply from the engine manifold.

The vacuum pump is installed on a mounting bracket in the front left corner of the engine compartment. Two anti-vibration mounts on the vacuum pump are located on studs on the mounting bracket and secured with nuts.

The vacuum pump consists of a radial vane pump driven by an electric motor. The rotor and vanes of the pump are made from a self-lubricating carbon based material. A stub pipe is installed in the inlet of the pump to provide a connection point for the vacuum pipe from the brake booster. A second stub pipe, which is covered by a rubber shroud, is installed in the outlet from the pump.

Operation of the vacuum pump is controlled by the Engine Control Module (ECM), which uses the brake vacuum pump relay in the Battery Junction Box (BJB) to switch power to the vacuum pump. The ECM controls the time for which the vacuum pump is switched on and has in-built safeguards to protect the pump from overuse, e.g. continuous running is not allowed so a minimum delay time is specified between applications.

VACUUM PUMP (2.7L DIESEL)



Item	Part Number	Description
1	-	Vacuum connection (not used)
2	-	Vacuum connection for brake booster
3	-	Drive dog
4	-	Seal
5	-	Oil inlet port
6	-	Oil return/air vent

A vacuum pump is installed on diesel models as the air inlet system does not produce sufficient vacuum for satisfactory operation of the brake booster.

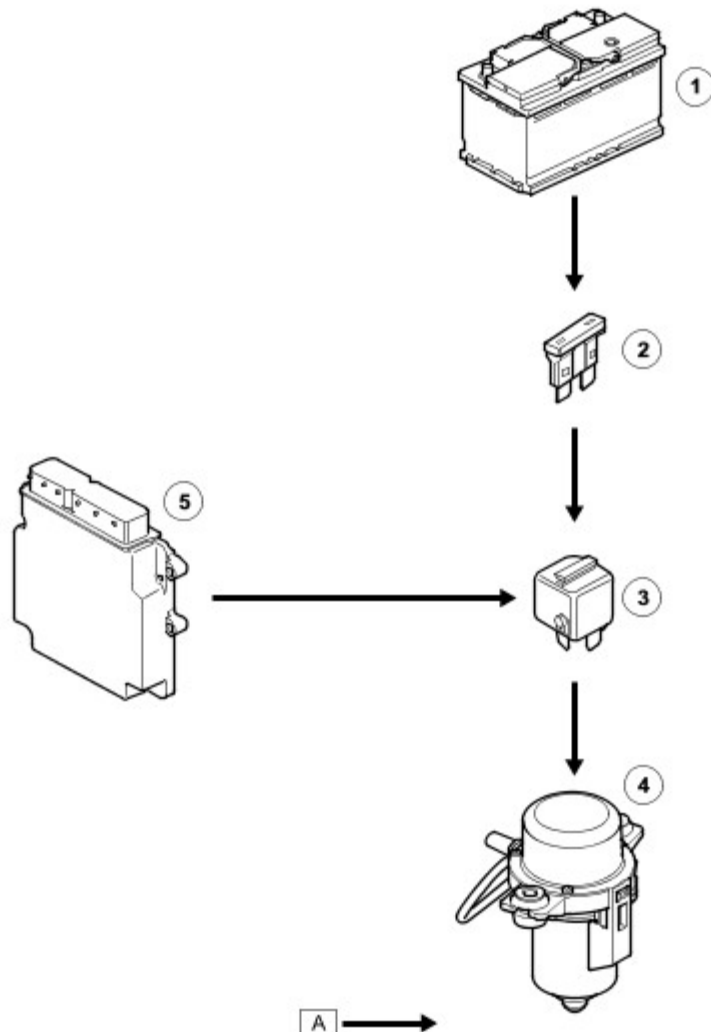
The vacuum pump is a radial vane pump which is attached to the rear of the RH cylinder head and driven at half engine speed by the exhaust camshaft. The vacuum pipe from the brake booster connects to an elbow on the rim of the vacuum pump.

The vacuum pump is lubricated and cooled by engine oil supplied to a port in the front face of the vacuum pump from a gallery in the cylinder head. The oil return is through a vent in the front face of the pump into a drain cavity in the cylinder head. Air extracted from the brake booster is vented into the drain cavity with the returning engine oil.

VACUUM PUMP CONTROL DIAGRAM (4.0L AND 4.4L)

NOTE :

A = Hardwired connection



E49908

Item	Part Number	Description
1	-	Battery
2	-	Fuse 24E, battery junction box
3	-	Vacuum pump relay
4	-	Vacuum pump
5	-	Engine control module