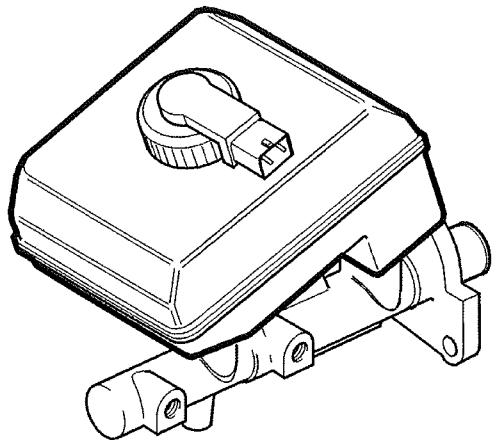
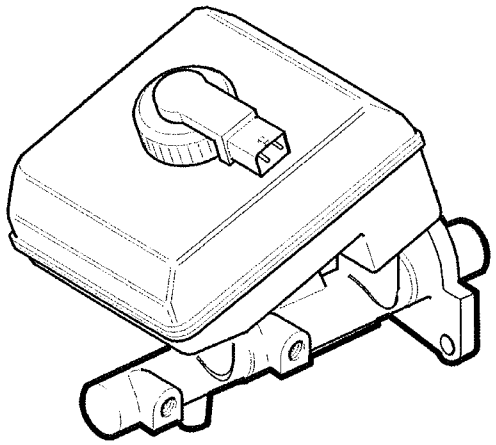
Hydraulic brake system

Brake fluid reservoir



The brake fluid reservoir is divided into three chambers, two of which are for the brake circuits: one for the primary and one for the secondary circuit. The chambers are separate from one another. This is for safety reasons. If there is a leak in one circuit (e.g. the secondary circuit) there is still brake fluid in the primary circuit. This means that the intact circuit will continue to provide full braking power.
In shiftstick (manual) models, the third chamber is used for connecting to the hydraulic clutch.
The reservoirs have MIN and MAX markings. The brake fluid level must always be between these two marks. The reservoir cap contains the brake fluid level sensor whose warning indicator comes on if the brake fluid level is too low.
The reservoirs are connected direct to the brake master cylinder primary and secondary circuit. There are also two return hoses from the hydraulic system and a hose to the clutch master cylinder.

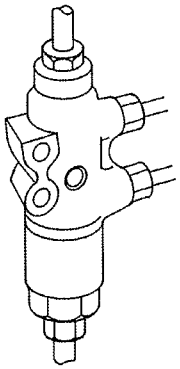
Master cylinder



The master cylinder is designed as a tandem cylinder. It has two pistons, a primary piston (for the primary circuit) and a secondary piston (for the secondary circuit) and connectors for the brake fluid reservoir and brake circuits.
There are two center valves in each piston instead of the return channels normally used. The center valves close the connections to the brake fluid reservoirs to allow pressure to build up in each circuit. The primary circuit works the front wheels and the secondary circuit the rear wheels.
The brake fluid reservoir connectors have safety valves which are normally open. If the brake fluid reservoir comes loose, the safety valves will shut to prevent brake fluid escaping.
If either brake circuit fails, the brake pedal position will be rather lower than usual (with

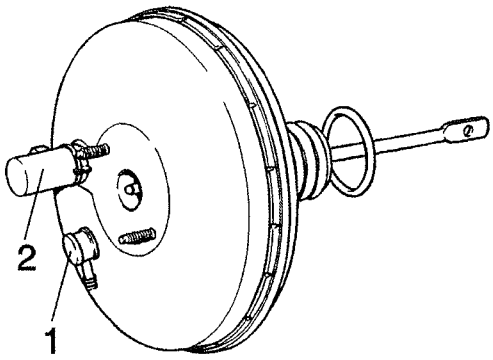
both circuits intact).

Reducing valve



The reducing valve is located between the master cylinder and the hydraulic system, and is connected to both brake circuits. It works independently of the ABS system. The reducing valve is designed to reduce the hydraulic pressure in the rear brake circuit if the pressure gets too high when the car is braked hard, and so prevent the wheels locking. This also allows more braking power to be applied to the rear wheels in normal braking. This reduces the load on the front wheels and reduces wear and tear.
The valve also has a built–in safety function. If there is a hydraulic fault in the front circuit, it prevents the pressure in the rear wheel braking system falling and keeps the brake pressure at full.

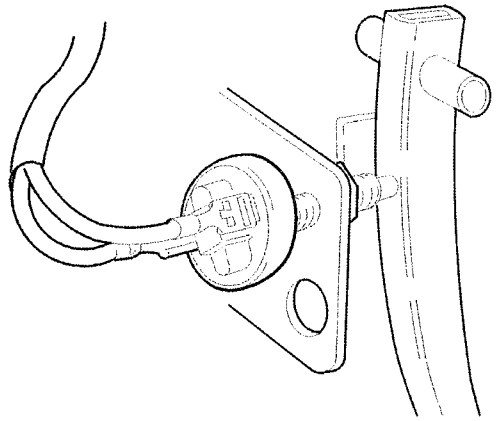
Power brake booster overload relay



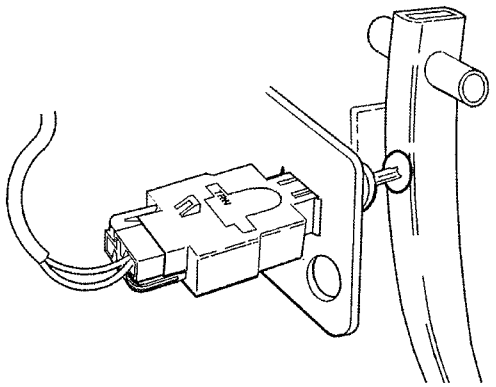
The power brake booster overload relay is located between the brake pedal and the master cylinder.
The power brake booster overload relay is of the vacuum–assisted type and enhances the force the driver exerts on the pedal when braking. The enhancement ratio is 4.5:1. The vacuum is derived from the partial vacuum in the engine inlet manifold. The connection between the engine inlet manifold and power brake booster overload relay has a non–return valve (1). This prevents air flowing back into the power brake booster overload relay if there is no partial vacuum in the inlet manifold.
The pedal sensor (2) is mounted on the power brake booster overload relay.

Brake pedal and brake light contact

The brake light switch is located by the brake pedal. It is activated by the brake pedal arm and switches the car's brake lights on when braking. It also sends a signal to the control module telling it that braking has started so the control module aborts any TRACS control sequence and reverts to standby for possible ABS commands.
When braking, the brake light switch cuts in



before the TRACS pressure sensor (cars with TRACS only).



There are two brake light switch models. The older one has to be adjusted manually. The newer one is self–adjusting.