

Quadruple Protection Valve (Air/Hyd.)

QUADRUPLE PROTECTION VALVE

Description

The quadruple protection valve is located in the air system between the sensing reservoir and the service and park brake systems. The valve distributes compressed air to the vehicle braking systems in the required sequence, and protects each system against loss of pressure in the other systems. The valve also enables all sound systems to be charged to a pre-determined minimum operating pressure following failure of a delivered system due to air leakage.

The valve incorporates four elements three of which feed the brake circuits. The fourth element is available for the fitment of additional air operated equipment.

Each element consists of:-

A valve which acts as an inlet valve when the compressor is charging, and as a non-return valve when the compressor cuts-out.

A piston and spring which will hold the inlet valve shut if the reservoir is empty.

A cap and adjusting screw which allows adjustment of the pressure needed to initially lift the inlet valve.

Non-return valves are located between the elements. These seal off the passage of air from an intact reservoir to a leaking reservoir.

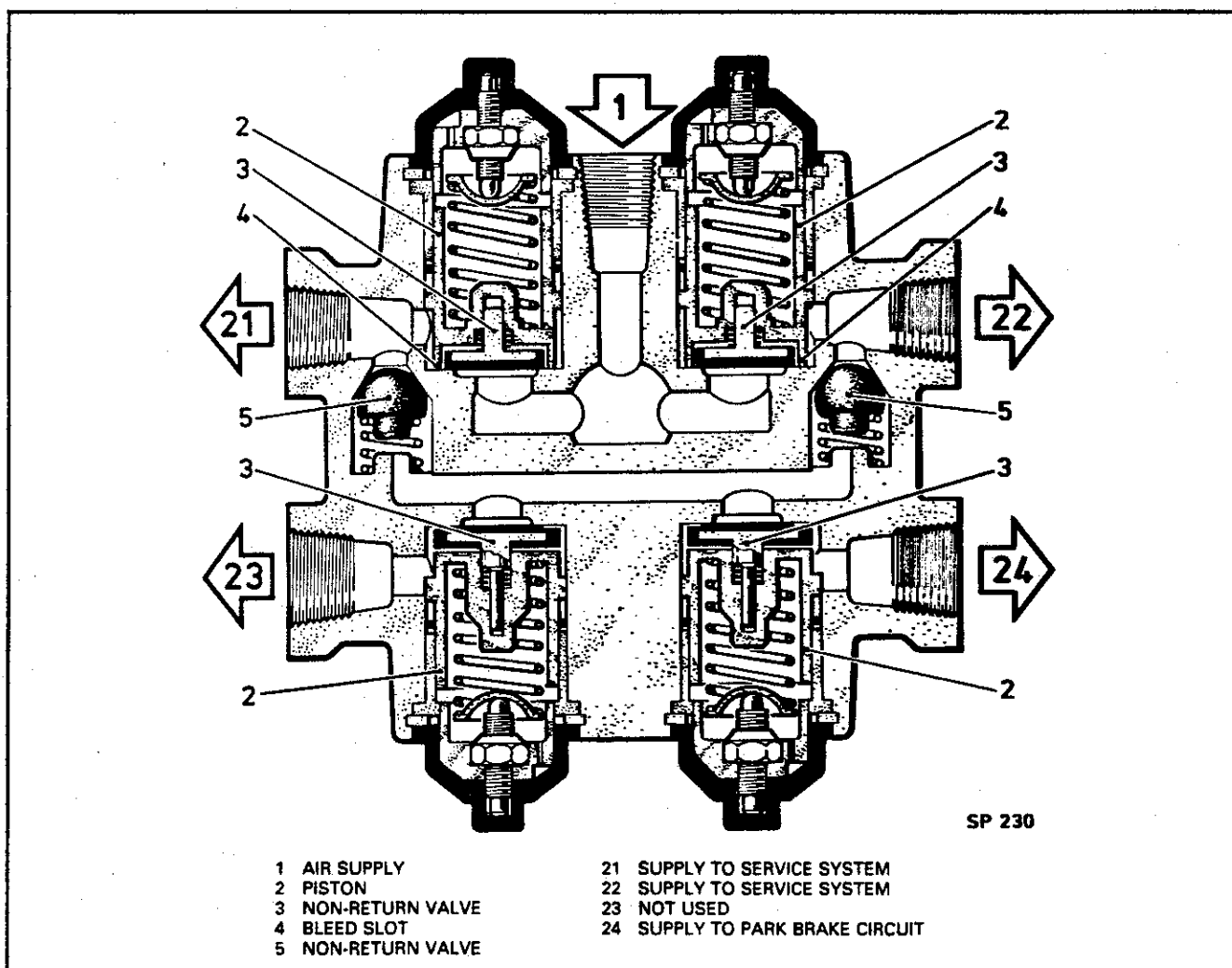


Fig. 1 Quadruple protection valve - schematic section

Quadruple Protection Valve (Air/Hyd.)**Operation*****Charging***

When the compressor charges the system, compressed air enters the unit and unseats the spring-loaded non-return valves in the elements in the service system. Air then passes through a bleed slot in each of these elements to the service reservoirs and through two non-return valves to a passage connecting the elements in the supplementary systems. When the supply air pressure reaches the opening pressure of the elements in the service systems the pressure unseats the spring-loaded pistons thus increasing the air flow to the service reservoirs. The air compressor then charges all the reservoirs to the governor or unloader valve cut-out pressure. Before this pressure is reached, all the pistons are held in the fully-open position by air pressure opposing the pre-set springs. When charging ceases, all the non-return valves reseat and the pistons remain unseated by back pressure in the systems. The non-return valves in the elements in the service systems isolate the service systems in the event of fall in air pressure in the air supply system.

Service System Failure

Excessive loss of air pressure in one of the service systems causes the appropriate piston to reseat by spring force thus isolating the failed system. Should this occur, the remaining systems could still be charged but only to the opening pressure of the element in the failed system. The elements in the service systems are set so that their opening pressures are sufficient to enable the remaining service system to provide secondary or residual braking.

Supplementary System Failure

Excessive air leakage in one of the supplementary systems causes air pressure in the service systems to fall to the closing pressure of the element in the failed system. The air in the remaining supplementary system is retained by the non-return valve in the piston. The elements in the supplementary systems are set so that their opening pressures are sufficient to enable the service systems to provide secondary or residual braking in the event of supplementary system failure due to air leakage.

To Remove

Depressurise the system by operating the foot brake.

Identify and disconnect the air unions at the valve.

Protect all air pipes and valve parts from contamination.

Remove two nuts and setscrews securing mounting brackets to chassis.

Disconnect and remove valve from mounting bracket.

Note: Any valve that fails in service (outside the normal warranty period) should be returned to the valve manufacturers (less fittings) for an exchange unit. Special test equipment is required for setting up the valve.

To Refit

If a new valve is to be fitted, transfer the pipe unions, adaptor and filter from the old valve, ensuring the correct angles are maintained.

Refit the valve to the mounting bracket, secure the bracket to the chassis using two nuts and setscrews.

Reconnect the air pipes.

Recharge the system and check for leaks.

DESCRIPTION AND MODIFICATIONS

This may seem a little out of place but I have heard about problems with people stealing work and selling it - for example on eBay.

If you're reading this and you bought this manual anywhere then you have been ripped off.

Please contact me via my email mikejamson@hotmail.com Otherwise I can be found on the dodge50 facebook page, if not then get in contact with Greg and he can pass the message on to me.

I have not done this pdf manual for my own personal gain and wish to see the community of 50 series owners benefit from the information here, and I do not want to see the community get taken advantage of and somebody else gain from it unfairly.

The information in pdf format will hopefully allow more of these wonderful trucks to stay on the road by providing information to everybody.

This has been quite a long and involved process to scan the manual and to convert it into a pdf format. I do apologise as I have used several different scanners and several different computers to do it, so there are no doubt some errors hidden throughout, as well as some editing errors.

I have aimed to balance quality and file size and hope that this balance meets to everybody's approval.

If you see an error please let me know and I will fix it as soon as I can.