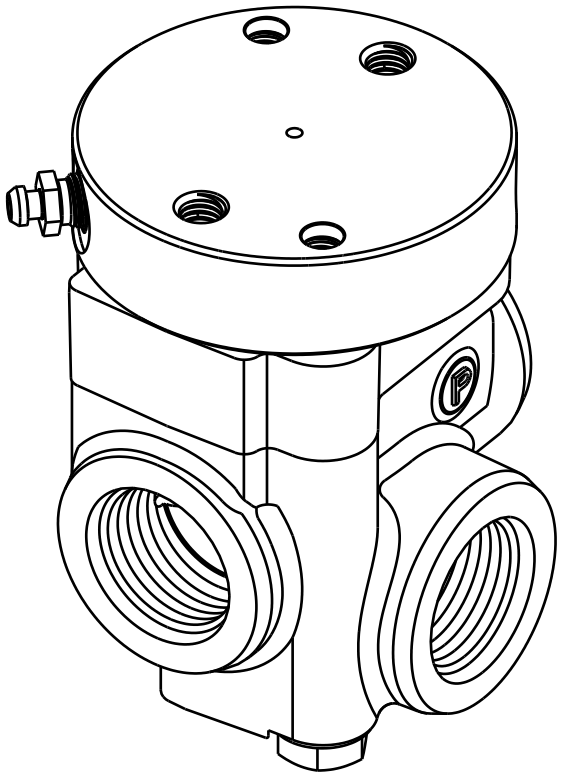
RELAY VALVE

Theory of Operation



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Theory of Operation

Neutral Position

(See Figure 1)

With no pilot pressure at the pilot port, the valve is maintained in the neutral position by bias spring (2). Hydraulic system pressure at the pressure port is blocked by lower spool (1). The brake port is open to tank through the tank port.

Pilot Applied Position

(See Figure 2)

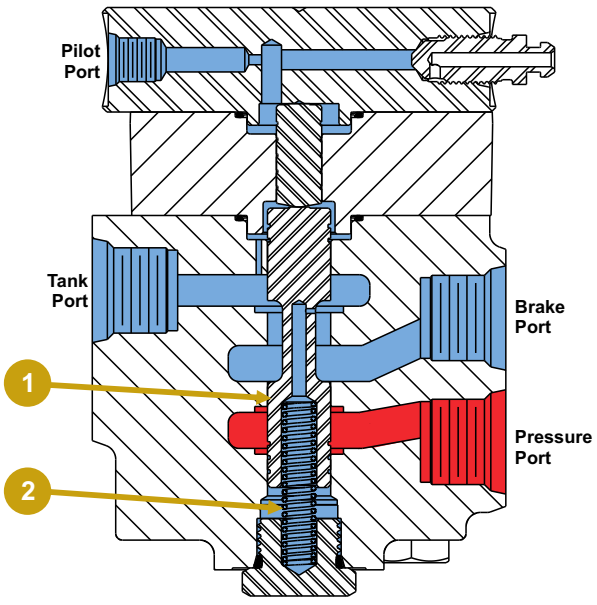
As pilot pressure enters the pilot port it causes upper spool (3) to move down, which forces lower spool (1) down allowing pressurized fluid to flow past land (5) and to the brake port. When the pressure in cavity (4) plus the force of bias spring (2) equal the force of the pilot pressure, spool (1) is balanced and assumes a closed position, stopping fluid flow at land (5). Any change in the pilot pressure is countered by change in the opposing force which ultimately controls the amount of pressure in the brake system. The area of upper spool (3) is smaller than the area of lower spool (1), therefore, pressure to the brake system is lower than pilot pressure. When all pilot pressure is released, the valve will return to the condition shown in Figure 1.

Callout Key

(1) Lower Spool
(2) Bias Spring
(3) Upper Spool
(4) Cavity
(5) Land

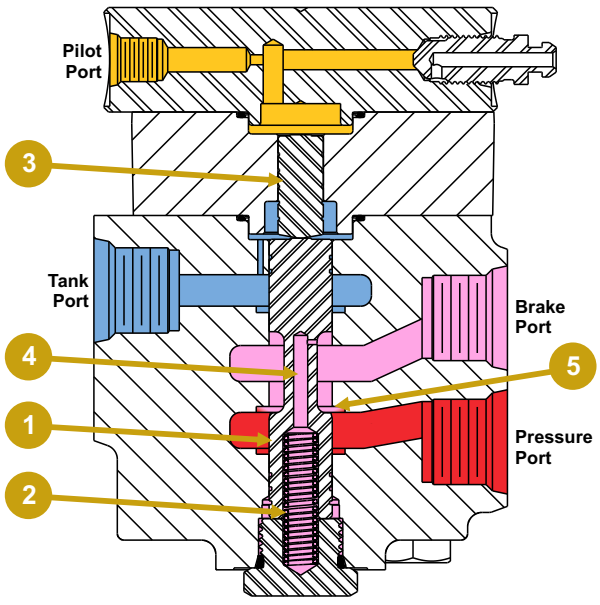
Color Key

- Return Line Pressure
- Hydraulic System Pressure
- Pilot Pressure
- Brake System Pressure



Neutral Position

FIGURE 1



Pilot Applied Position

FIGURE 2