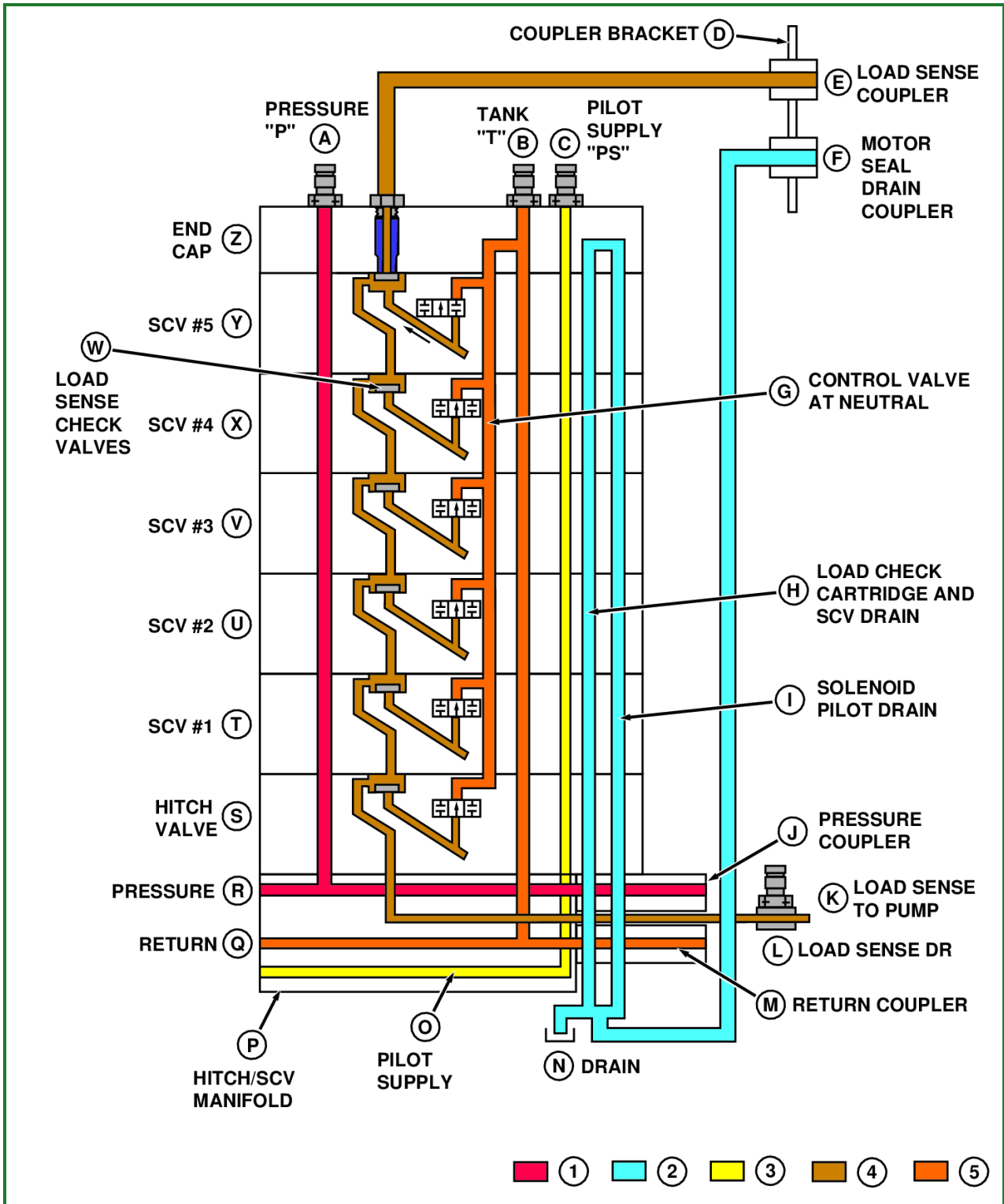


Reference 270-20-010, Load Sense Shuttle System

The shuttle check valves are designed to direct the highest load sense pressure to the secondary pump when more than one function is being operated.

Below are examples of how the load sense shuttle check valves work.



RXA0071387-UN: Load Sense Shuttle System With Power Beyond

LEGEND:

- A - Pressure DR "P"
- B - Tank DR "T"
- C - Pilot Supply DR "PS"
- D - Coupler Bracket

E - Load Sense Coupler
F - Motor Seal Drain Coupler
G - Control Valve at Neutral
H - Load Check Sump Passage
I - Pilot Sump Passage
J - Pressure Coupler
K - Load Sense to Pump
L - Load Sense DR
M - Return Coupler
N - Drain
O - Pilot Supply
P - SCV/Hitch Manifold
Q - Return Oil
R - High Pressure Oil
S - Hitch Valve
T - SCV 1
U - SCV 2
V - SCV 3
W - Load Sense Check Valve
X - SCV 4
Y - SCV 5
Z - End Cap
1 - High Pressure Oil
2 - Return Oil
3 - Pilot Oil
4 - Load Sense
5 - Return Oil

If SCV No. 4 requires 3500 kPa (35 bar) (500 psi), the load sense pressure moves the shuttle check valve up, blocking any lower load sense pressure from SCV No. 5. Load sense pressure also holds the shuttle check valve in SCV No. 3 down. This blocks any lower load sense pressure from SCV No. 3.

Next, the 35 bar load sense pressure comes up against shuttle check valve in SCV No. 2. If SCV No. 2 has a load sense pressure of 7000 kPa (70 bar) (1000 psi), the 70 bar acting on the bottom of the shuttle check overcomes the 35 bar acting on top of the shuttle check and moves the shuttle check valve to seal off the bottom of SCV No. 3.

Now the 70 bar load sense pressure from SCV No. 2 continues to shuttle check in SCV No. 1 and shuttle check in the hitch valve, moving them down. This blocks any lower load sense pressure from SCV No. 1 and the hitch valve.

The 70 bar load sense pressure goes to the secondary pump control valve. The valve is set to provide approximately 2070 kPa (20.7 bar) (300 psi) more than load sense. Therefore oil entering the entire stack from the secondary pump is at 9000 kPa (90 bar) (1300 psi).

The compensator valve in SCV No. 4 will move slightly to maintain constant flow from inlet to workport and maintain the 3500 kPa (35 bar) (500 psi) required. Each hitch / SCV valve has a compensator to reduce maximum inlet pressure to whatever is needed to operate that function.

Using the example above, if a shuttle check did not block load sense pressure from an SCV or hitch valve, the load sense pressure would leak off before reaching the secondary pump. In this example, SCV No. 1 is not being used (in neutral). If the load sense pressure from SCV No. 2 had not been blocked by the shuttle check in SCV