



Fig 1.



Section E - Hydraulics Hydraulic Pump

Description

Item	Description
P	Pump
1	Cylinder barrel
2	Drive shaft
3	Port plate
4	Spring
5	Axial pistons
6	Swashplate
7	Shoe plate
8	Stroking piston
9	Control piston
10	Pump control valve block
11	Pressure compensator valve
12	Flow compensator valve
13	Torque Limiter (Horsepower Control) valve
RED	Pressure Generated by Operation of a Service
GREEN	Exhaust

Load Sensing - Maximum Flow

When a service is operated, the load sensing signal pressure from the valve block **13** increases. This increase in pressure combined with the force of springs **6** moves spool **4** up allowing oil in control piston **7** to drain back to tank via gallery **10**.

The force of spring **1** on swash plate **2** is now sufficient to increase the angle. The increased angle of the swashplate increases the output of the pump.

As the pump output pressure continues to rise, it will eventually lift flow-regulating spool **4** against the force of springs **6**. Pump output pressure is now sensed via spools **4** and **3** through port **A** to control piston **7**. This in turn overcomes return spring force **1** causing the swashplate angle to reduce and decrease pump output. Eventually the pressure in the load sense line **LS** and the force of springs **6** moves spool **4** down and the 'metering' cycle starts again.

This up and down movement of the spool **4** keeps the pressure sensed at both ends of the spool equal. Spring **6** is equivalent to 15 bar (220 lbf/in²), therefore the pump pressure should be this amount greater than the signal pressure (except when at maximum system pressure).
See Maximum Pressure (No Flow).

RED	Pressure Generated by Operation of a Service
GREEN	Exhaust
PINK	Sensing Pressure