

PERMCO DUMP-PUMP TWO AND THREE LINE OPERATION

In applying the Permco Dump Pump, an understanding of the 2-line and 3-line circuits is essential for proper operation and maximum unit life.

In the two line operation, one line is connected from the oil tank to the inlet of the pump and one line is connected from the cylinder port of the valve to the cylinder. With the pump engaged and the valve spool in the neutral position, oil will recirculate inside the unit. **It has been determined through testing that the rise in temperature per every minute of operation in this mode is 7.5°F.** If operation is allowed to continue beyond the recommended 5 minute time interval, a reduction in clearances of the rotating group due to excessive heat and subsequent expansion will occur. The result may lead to the unit locking up and premature failure of the drive shaft or other internal components.

In a three line application, one line is connected from the oil tank to the inlet of the pump, one line is connected from the cylinder port to the cylinder and one line is connected from the pumps return port back to the oil tank. To connect this port, a 1' pipe plug must be removed for hose connection and a metal sleeve, Permco P/N RZ-0206 (DM-512, DM-640, DMD-20 and DMD-25) P/N 400-00870 (DMR-300, DMR-400, DMD-300 and DMD-400), must be inserted into the inlet port of the valve. By inserting the sleeve into the inlet port, flow from either the cylinder retracting or with the spool in neutral will be diverted directly back to the oil tank.

It should be noted that the operation of the Dump Pump with the 3-line circuit will reduce the possibility of premature failure due to excessive heating but will not eliminate it. It is therefore recommended that the unit be run in this mode of operation for no longer than 10 minutes.

General Comments Concerning the Application and Operation of the Dump Pump

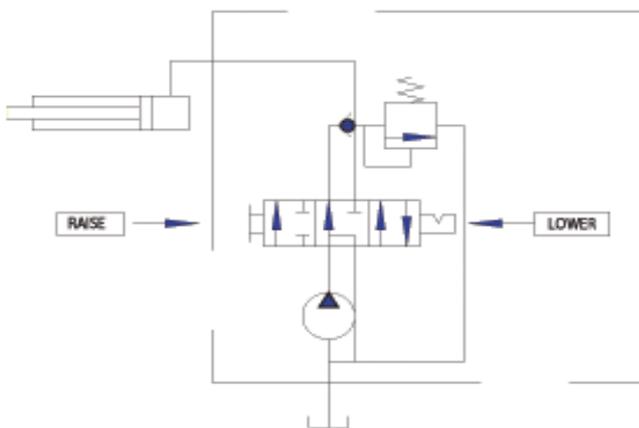
As discussed earlier with the 3-line operation, the metal sleeve inserted in the inlet port of the pump diverts flow back to the oil tank. With this sleeve installed in a 2-line system, only a minimal amount of oil will pass across it. The majority of the oil will be blocked from recirculating internally. If the pump is engaged and the spool is in the neutral position, flow may be directed back, into the cylinder port and extend the cylinder.

CAUTION: Operation with the sleeve installed in a 2-line application is potentially hazardous. Because the factory is unaware of which return line circuit the customer will choose the sleeve is never installed at the factory.

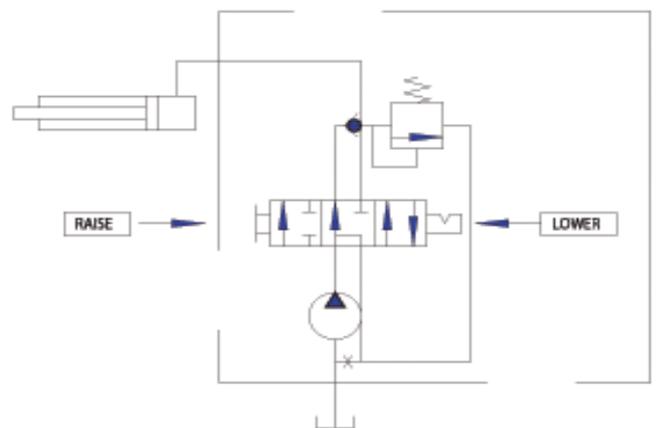
Like any control valve, there are inherent pressure drops within the dump pump due to internal core configurations. During cylinder retraction, fluid velocities may increase to the point that excessive back pressures may be seen at the pump seal area. For this reason, Permco installs high pressure motor seals in all Dump Pump units to prevent premature seal failure. It is also suggested that movement of the valve spool from the neutral to the raise position in rapid succession be avoided as this may also contribute to the premature failure of the shaft seal.

NOTE: The pump should be primed with spool in raise position.
It may be required to crack a fitting to bleed lines of air.

Circuit Schematics of 2-Line and 3-Line Operation



2 LINE OPERATION



3 LINE OPERATION