

The Lease Pumper's Handbook

Chapter 8
Hydraulic Lift

Section B

THE ONE-WELL HYDRAULIC LIFT SYSTEM

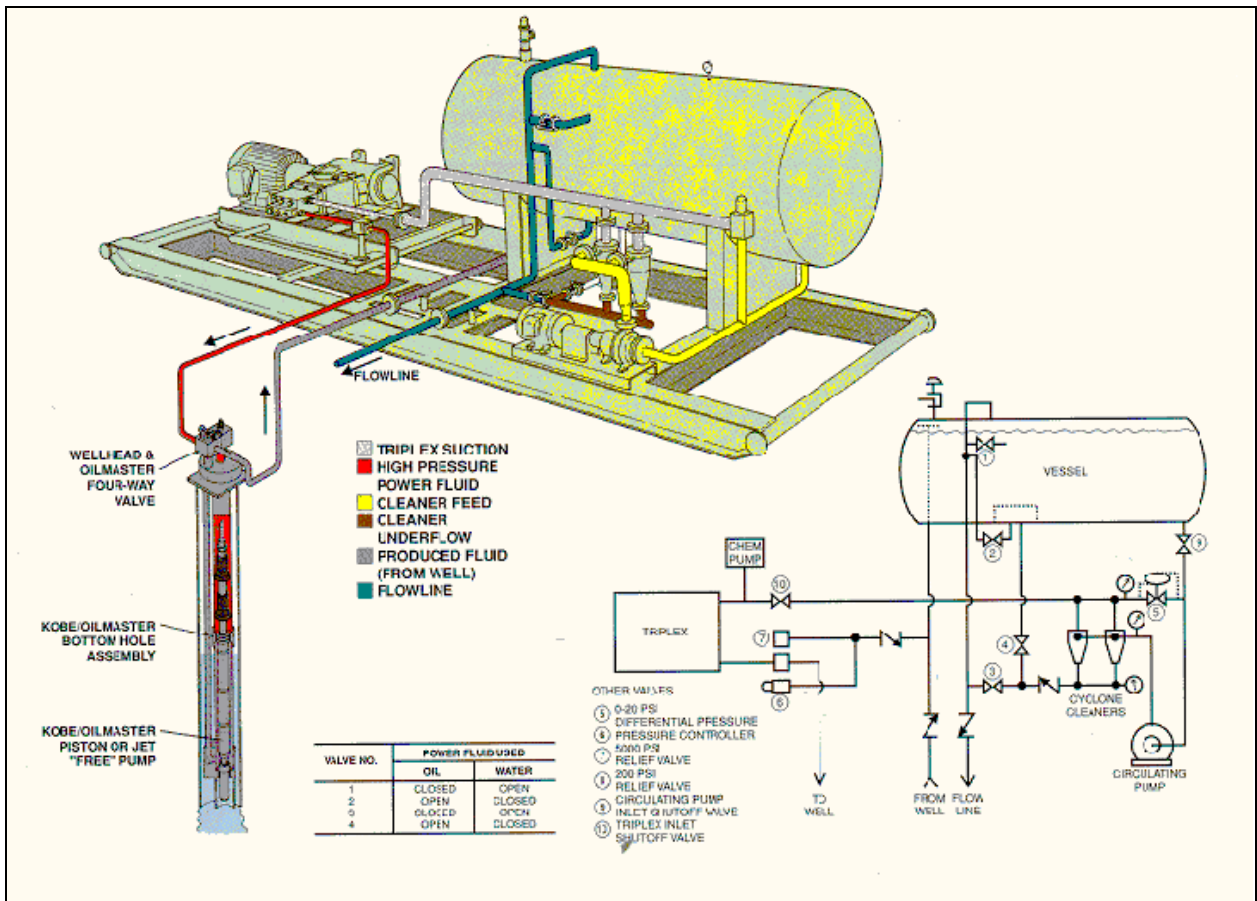


Figure 1. A single well unidraulic system.
(courtesy of Trico Industries, Inc.)

B-1. The One-Well Hydraulic System.

Hydraulic systems are available to serve a single well or as a central power system that serves two or more wells. With the one-well system (Figure 1), the hydraulic triplex system is placed on the edge of the location.

The power line is run from the hydraulic unit to the wellhead. The produced fluid line, including the commingled power oil, is returned to the hydraulic system vessel. The vessel is a three-stage separator. The water falls to the bottom and by line height automation is dumped into the flow line

along with the produced gas to be directed to the tank battery. The gas comes off the top of the vessel.

The oil in the vessel is first utilized to operate the hydraulic lift system through a special line from the vessel to the triplex pump. It is placed under high pressure by the triplex pump, piped from the edge of the location to the wellhead, and downhole to operate the pump. The downhole pump, which lifts oil on both the upstroke and the downstroke, pulls fluid from the formation, where it combines or commingles with the power oil, and is pumped back to the vessel at the edge of the location.

Any oil above the amount needed to operate the pump automatically flows out and is commingled with the produced gas and water into the flow line to flow to the tank battery.

To place the system into service, enough oil must be transported from the tank battery to fill the tubing with oil, operate the system until it is full of fluid, and send produced oil to the tank battery. A small truck transport will haul enough oil to activate the system. Manifold bypass systems can be installed at the tank battery and at the well to make the transport unnecessary.

After the system has been activated, a small horizontal vessel will separate the produced gas and excess liquid and dump it into the flow line. The vessel retains enough

liquid above the operating system needs to allow the system to operate for a short time without running out of liquid. This reduces the need for pumping or hauling oil back from the tank battery.

B-2. The Advantages and Disadvantages of the One-Well System.

Advantages. There are several advantages to operating a one-well system over the central power type. One is that the triplex equipment is smaller.

A second advantage is that when a triplex problem occurs and the unit must be shut in for repairs, only one well is shut in. The other wells on the lease are independent and continue as usual.

The length of the power oil line is reduced from the distance to the tank battery, to just the distance across the location.

Disadvantages. A disadvantage is that a triplex must be installed at each location. This also requires a prime mover at every location, either mechanical or electric. If it is electric, a power line must be run to every location.

Another disadvantage is the purchasing and maintenance of many pieces of identical equipment that will require maintenance and repairs.