

Special Pump-Heavy Oil Pump

In the process of oil field exploitation, people usually call crude oil with a relative density greater than 0.9 and a viscosity of more than 100mpa*s when the surface is degassed at 50°C as a heavy oil or a heavy crude oil. The characteristic of high viscosity crude oil is poor liquidity, high resistance and difficult to exploit. If conventional oil pumps are used to exploit heavy oil, the following problems will occur:

1. Suspension weight of the sucker rod changes greatly, that is, the maximum load on the upstroke increases and the minimum load on the down stroke decreases;
2. The torque of pumping unit gearbox increases and engine power increases;
3. Sucker rods have worse working conditions, which can easily cause fatigue damage to sucker rods;
4. Due to the heavy oil resistance, the valve ball close slowly by gravity. The flow resistance is large, and the speed of opening the valve ball is slow. Therefore, in heavy oil production, the inlet valve and the outlet valve are often delayed to open and close, cause to pump efficiency reduced.

From the above, it can be known that the use of conventional oil pumps for heavy oil wells may cause a reduction of pump efficiency or inability of pumping. For this reason, the special pump we designed must have the ability to overcome viscous resistance. According to the characteristics of heavy oil wells, Weima uses the pressure of the tubing liquid column to assist the sucker rod to descend, and has designed several special heavy oil pumps.