

Subsurface Pump-Working Principle

Subsurface pump is a special form of reciprocating pump. The power which can let plunger of subsurface pump do reciprocating motion was transported from ground to underground through sucker rod. That motion can lift oil to the ground.

When the piston upstream, the traveling valve will lock powered by tubing pressure liquid column and discharge liquid produced in the process of movement of piston stroke. At same time, the pressure in pump barrel behind piston is lower. The liquid in the well unlock the fixed valve and enter the space caused by movement of pump piston under the pressure of liquid column in the annular space.



When the piston down, the liquid in pump is compressed followed by its higher pressure which equal to the pressure of liquid column in the annular space. Fixed valve will closed by its gravity. When the piston down continuously, the pressure in pump continues to rise. Until it is higher than column pressure, will the liquid lock traveling valve and enter the oil pump.

With the up and down movement of piston, the traveling valve and fixed valve continuously open and close alternately which make the liquid level in the pipe rise until it reached wellhead into oil pipeline.

Subsurface pump is made up of pump barrel and plunger, oil inlet valve (suction valve and fixed valve), valve (discharge valve or traveling valve). When the electric oil pump stroke up, volume of pump under piston become more bigger and its pressure is smaller. Oil inlet valve open under the action of the upper and lower pressure. And crude oil enters into the inferior pump. At same time, valve lock powered by the pressure difference. When stroke down, it operates with same principle.