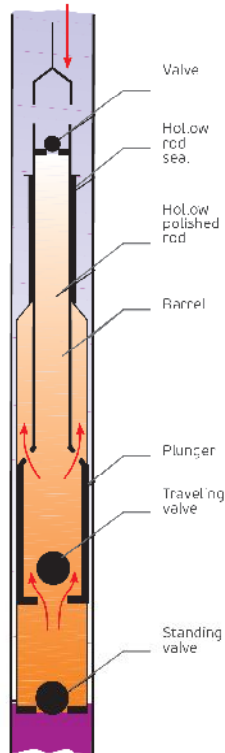


Double-stage (differential) pump 30-225/150 RHBM 12-4-2-2

Double-stage pump operation, schematically



CONSISTS OF:

- Barrel with standing valve. There is a hollow rod guide on the top of barrel for sealing upper chamber (high-pressure stage);
- Plunger with travelling valve and hollow polished rod with additional valve on the top of a rod. Rod is connected with plunger with the help of adapter with side holes connecting internal hollow of a plunger and a rod with upper chamber which is the space between rod and barrel.

Inner hollows of a plunger with travelling valve, rod with valve and upper chamber create high pressure stage. Under-plunger space (lower chamber) is a low pressure stage.

PUMP OPERATION:

- When plunger moves upwards, both plunger valves are closed; standing valve is opened, and well fluid flows in a lower chamber (low pressure stage);
- When plunger moves downwards, upper plunger valve remains closed and standing valve is closing. Fluid flows in upper chamber through open lower plunger valve;
- With following upstroke, lower plunger valve is closed by fluid pressure, which is achieved by diminishing upper chamber space;
- When pressure in upper chamber equals to fluid column pressure in tubing string, upper plunger valve opens and fluid flows in tubing string. At the same time fluid flows through opened standing valve into lower chamber.

Thus, lower chamber is filled and released without fluid column pressure in tubing. It creates favorable conditions for pumping gassed well fluid.



APPROXIMATE STROKE LENGTH OF ROD PUMP PLUNGER DEPENDING ON COMBINATION OF BARREL-PLUNGER-EXTENSION LENGTHS

COMBINATION OF BARREL-PLUNGER-EXTENSION LENGTHS	MAXIMUM LENGTH OF PLUNGER STROKE (FROM END TO END), M
7-4-1,5-1,5	1,4
9-4-1,5-1,5	2,0
10-4-1,5-1,5	2,3
12-4-1,5-1,5	2,9
12-4-2-2	3,2
14-4-1,5-1,5	3,5
14-4-2-2	3,8
14-5-1,5-1,5	3,2
22-4-2-2	6,2