Drill string compensator

The normal drill string compensator can carry a load from 300000 lbs to 600000 lbs. And the cylinders can travel from 15 to 25 feet depending on the model.

To calculate how much pressure you need, it is a must to know the weight you want to put on the bit.

\[
\text{Force} = \text{Pressure} \times \text{Area}
\]

The hole drill string weight is 350000 lbs and the driller wants 30000 lbs on the bit.

The cylinders area is 19” and there are 2 of them.

Force = Drill string weight - weight on bit

\[
\text{Force} = 3500000 - 30000 = 3200000
\]

\[
\text{Area} = \frac{D^2 \times \pi}{4}
\]

Area cylinder so it

\[
\text{Area} = (19^2 \times \frac{\pi}{4}) \times 2 = 566.7
\]

So the the pressure is

\[
P = \frac{\text{Force}}{\text{Area}}
\]

\[
P = \frac{320000}{566.7} = 564 \text{ psi}
\]

This example is low load, and only one bottle is needed online, but normally, to make sure that you have enough air to bottles would be online.

On a Rucker Shaffer DSC 400

Are 2 oil filled cylinders mounted on the system, their purpose, is to lubricate and to work as a break in case the drill string snaps.

Between the 2 cylinders is an orifice installed.

It will slow to movement of the HP air cylinders.

The oil is a silicon based, because normal oil in a HP system is a No No. It will kill you if you try!

The Rucker Shaffer DSC 400

Normally as a configuration like this.

6 active bottles on 275 gallons max. pressure 2400 psi
3 standby bottles on 275 gallons max. pressure 2400 psi
All the bottles have a PSV set at 2500 psi
The HP hose is a 2” hose.

The Rucker Shaffer DSC 600

can handle 600000 lbs and has 10 bottles online and 5 standby
The hose is a 3” hose

So the bigger the more power is needed logic!
The layout off the operation off a Rucker shaffer DSC 400 or 600

The HP air has 2 valves one off the valves is a hose break valve is shutt automatic in case the HP hose blows. The valve is mounted in each end of the hose so the hose can be changed without stopping the operation.

There is a hydrostatic position indicator installed in the dog house, filled with a non-compressible oil.