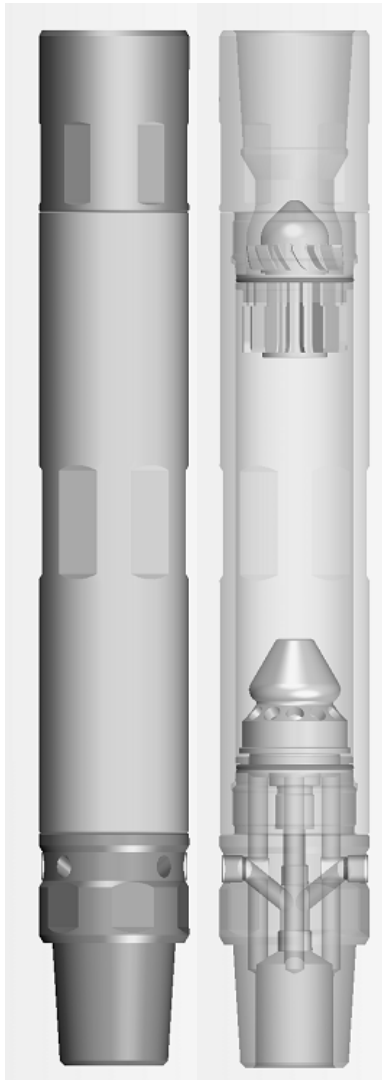


Motor Gas Separator



Patent Pending

The motor gas separator incorporates a turbine-powered rotary drum centrifuge to bypass gas above a PDM motor. Fluid flow is ported through the motor. Without a separator, the combined fluid and gas flow rate are limited by the equivalent flow capacity of the motor. Bypassing the gas allows operation of the motor at the design fluid flow rate. A replaceable gas port in the separator allows the nitrogen bypass rate to be set independently.

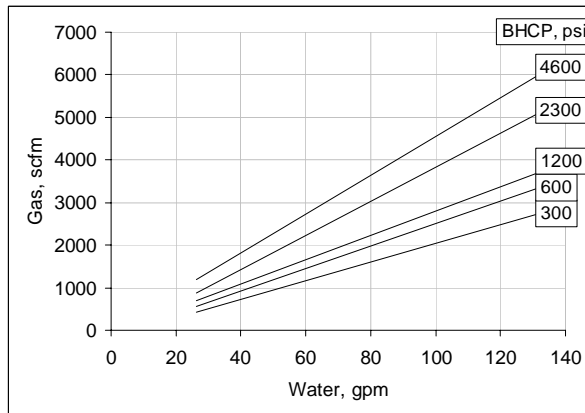
The separator enables increased fluid rates in the motor for:

- Higher motor torque and fewer stalls
- Better cooling and lubrication for longer motor runs
- Enhanced hole cleaning in inclined wells

Higher gas flow rates provide:

- Enhanced well circulation
- Higher velocity in casing

The maximum separator gas capacity is determined by fluid rate and bottom hole circulating pressure (BHCP) as indicated on this chart:



Maximum Gas Capacity of Separator

Specifications	
Outside Diameter	2.875"
Length (connected)	17.62" (20.00" overall)
Connections	2-3/8" PAC
Maximum flow capacity	260 gpm (1000 lpm) commingled flow equivalent
Internal pressure capacity	3000 psi differential (20 MPa)
Maximum torque	2500 ft-lbf (3400 N-m)
Maximum overpull	50000 lbf (220 kN)
Pressure loss through tool	70 psi (0.5 MPa)
Temperature (maximum)	400° F (200° C)
Fluid compatibility	Clear fluids: water, 1% acid, 3% KCl, scale dissolvers, frac oil
Gas compatibility	Nitrogen or air