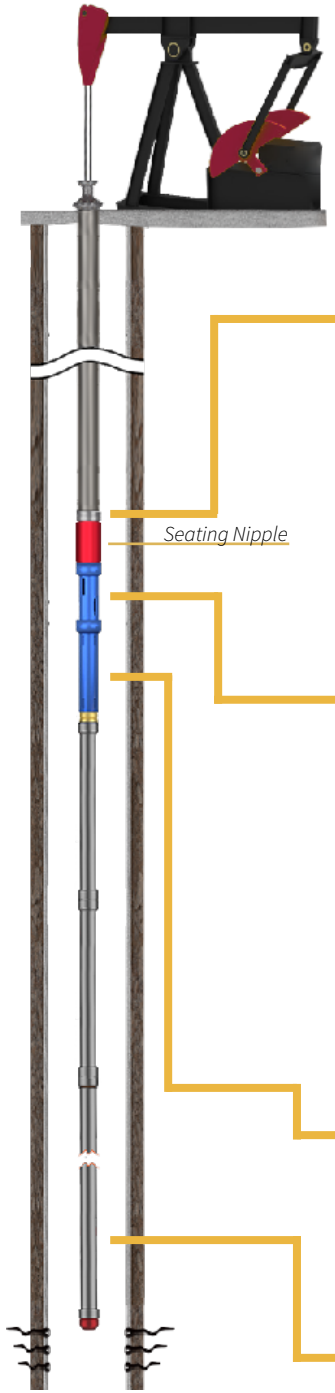
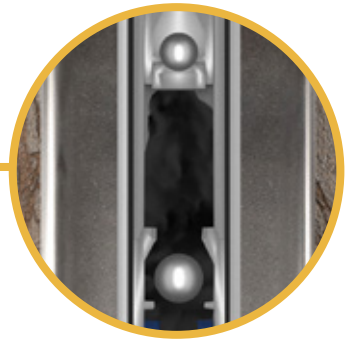
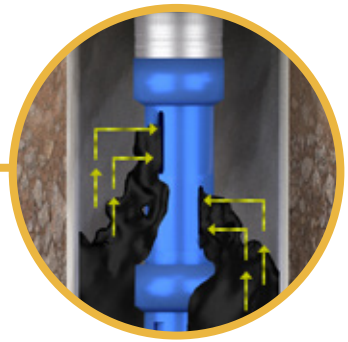
VORTEX DESANDER ™

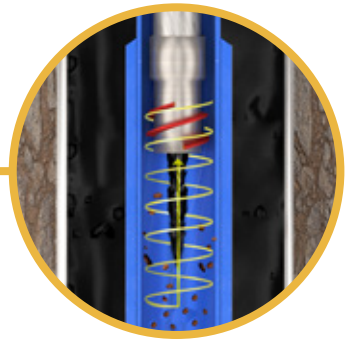




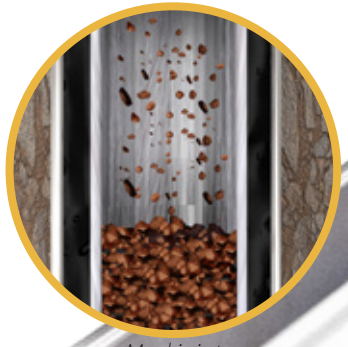
(3) Pump operation



(1) Fluid in



(2) Vortex separator



Mud joint

The intake consists of a specifically engineered slotted design. These slots are cut using a plasma cutter which creates smoother cut surfaces than other cutting methods. Smooth surfaces are less likely to be affected by corrosion.

The helix creates the vortex using centrifugal force, which separates the smaller solids and deposits them into the tail pipe[s] (mud joint[s]).

This improved version of the vortex sand shield was designed to withstand the high speed of the vortex sand shield in the tool and the failure of the solid separation system.

BENEFITS

- *Reduced the downtime due to solid issues.*
- *Fewer interventions and less investment in CAPEX.*
- *Avoid the premature failures of the pump components caused by the solids.*
- *Avoid problems such as sand cutting.*

The Slotted Vortex consists of an intake and an embodied helix (vortex creator)

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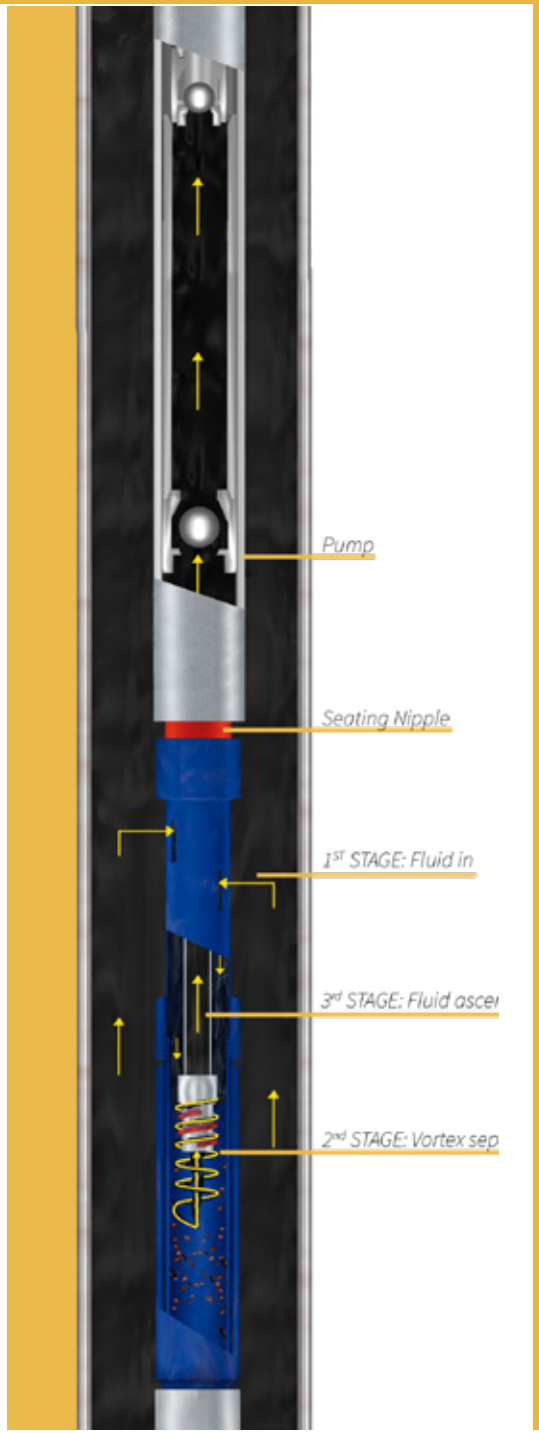

Features:

- Separate the solid particles before reaches the pump.
- New Vortex Separator design.
- Could be use either with slotted intake or screen intake.

Vortex Desander Size	Max. OD	Length
2-3/8"	3.125"	6'
2-7/8"	3.625"	6'
3-1/2"	4.25"	6'

Principle of Operation

The ESP Vortex Desander consists of an intake and an embodied helix (vortex creator).

***The intake** consist of a specifically engineered slotted design. These slots are cut using a plasma cutter which creates smoother cut surfaces than other cutting methods. Smooth surfaces are less likely to be affected by corrosion.*

***The helix** creates the vortex through the use of centrifugal force, which separates the smaller solids and deposits them into the tail pipe[s] (mud joint[s]) enclosed with a bull plug.*