

SCREEN VORTEX DESANDER™

Vortex Sand Shield is designed especially for wells with high lifting costs associated with sand problems. The use of centrifugal force to separate sand particles makes it an absolute success in downhole applications. To improve separation efficiency, the Vortex Sand Shield technology is combined with the Tubing Screen or the Super Perf to obtain a 2 stage solid separation system that has been successfully applied in multiple wells worldwide.

The versatility of this system allows to combine it with OSI tools for the control of solids and gas separation and create a complete and efficient optimization system that improves the performance of the lifting systems.

BENEFITS

- Total elimination of sand problems
- Two filtration stages
- Maximum efficiency of solid control: Large and fine solids separation
- Easy installation design, less operating time.

Screen Vortex Desander™ Patent No.: US 8,881,803 B1



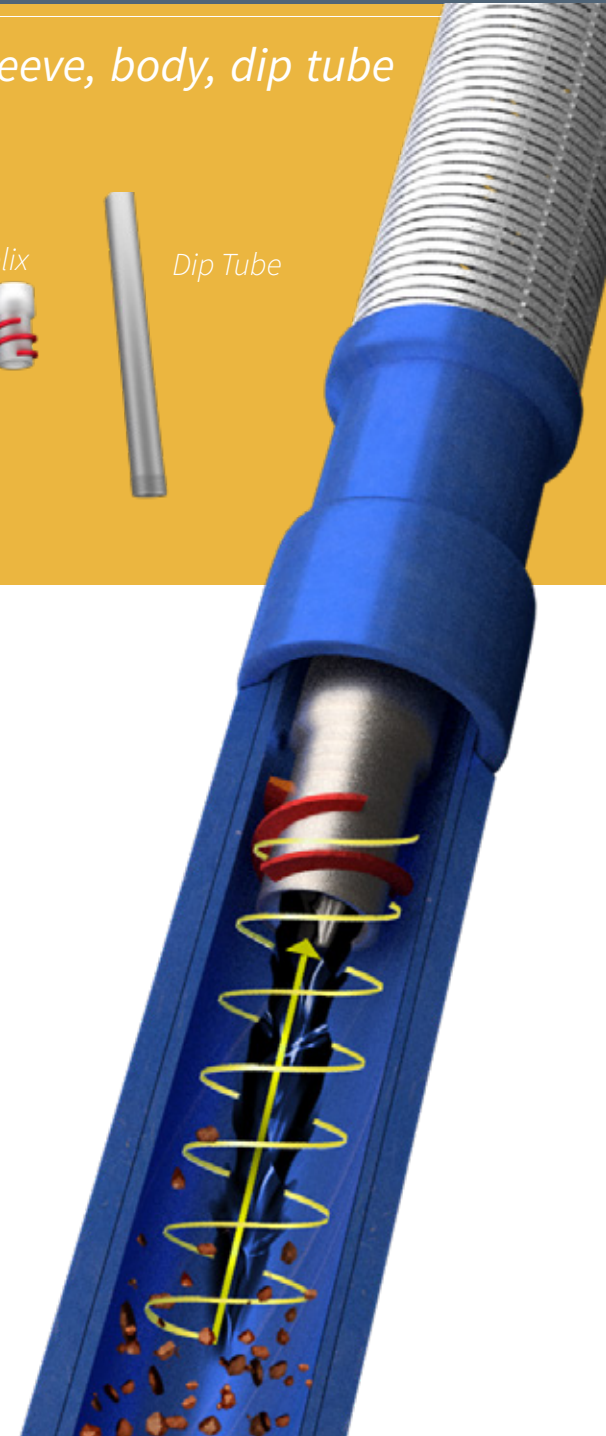
The Screen Vortex Desander is made up of 4 components, they are: The sleeve, body, dip tube and vortex helix.

1. **The Sleeve:** Is the outside portion of the tool, it is slotted to eliminate the possibility of dropping tubing in the event of severe sand cutting.
2. **Body:** The inner portion of the tool, just inside the sleeve, that houses the components and directs solids downward into the tail pipe (mud joint); it is designed to allow long tool life by resisting sand cutting. The length of this section is 22 in.
3. **Dip Tube:** The steel pipe connected to the helix that allows cleaned fluid to enter the production line and be produced up the tubing, while also assisting in the separation of gas.
4. **Vortex Helix:** The inside portion of the tool, with spiral shaped fins, that directs fluid in a circular motion. This is called a vortex, and it separates solids by using centrifugal force to sling solids to the outside of the body.



Flow Chart (Approx. US BFPD)				HELIX SIZES		
ESP/PCP		ROD PUMP		EUE TUBING SIZE		
MIN	MAX	MIN	MAX	2-3/8	2-7/8	3-1/2
96	192	48	96	HE1.1	HE2.1	HE3.1
132	252	66	126	HE1.2	HE2.2	HE3.2
216	440	108	220	HE1.3	HE2.3	HE3.3
330	610	165	305	HE1.4	HE2.4	HE3.4
410	850	205	425	HE1.5	HE2.5	HE3.5
780	1480	390	740	HE1.6	HE2.6	HE3.6
1150	1910	575	955	HE1.7	HE2.7	HE3.7
1480	2800	740	1400	HE1.8	HE2.8	HE3.8
2100	3900	1050	1950	HE1.9	HE2.9	HE3.9

Available
 -2-3/8"
 -2-7/8"
 -3-1/2"

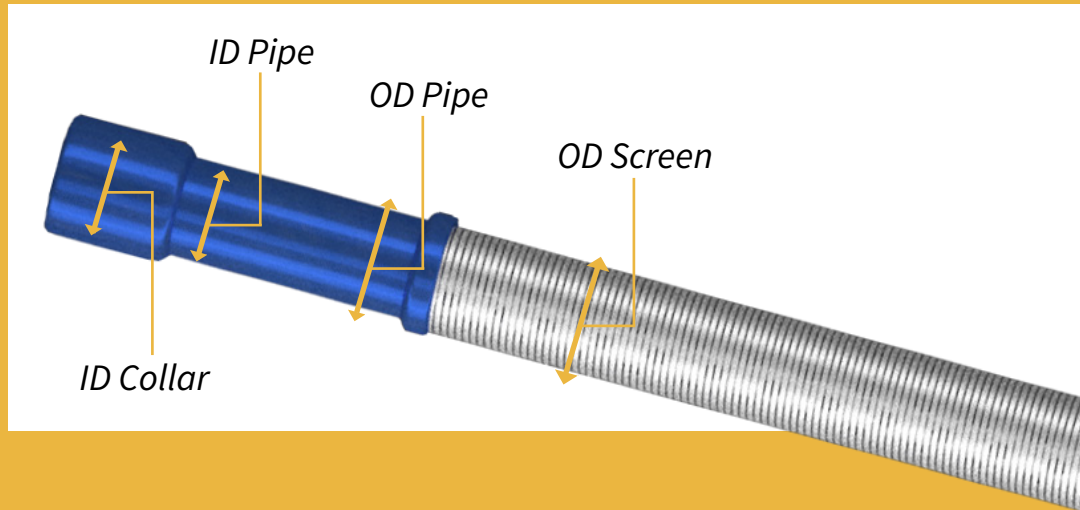


The Tubing Screen is manufactured in three nominal diameters:

2-3/8”, 2-7/8”, 3-1/2” and 2 lengths: 8’ and 23.5’. Each one of these diameters and lengths could be designed with different slot sizes. The size and length of the system for sand management downhole is designed based on the production and mechanical conditions of each well.

23.5ft

Size	Slot	Open Area
2 3/8	8	176.0
2 7/8		207.3
3 1/2		242.4
2 3/8	10	216.2
2 7/8		253.2
3 1/2		253.9
2 3/8	12	254.4
2 7/8		298.7
3 1/2		349.3
2 3/8	15	308.9
2 7/8		362.8
3 1/2		424.2
2 3/8	20	393.2
2 7/8		461.8
3 1/2		539.9
2 3/8	50	772.4
2 7/8		907.0
3 1/2		1060.4
2 3/8	75	983.1
2 7/8		1154.4
3 1/2		1349.6



Technical Specifications

Size	Pipe (in)		Screen (in)	Collar (in)	
	OD	ID	OD	OD	ID
2-3/8”	2.375	1.941	2.87	3.063	2.375
2-7/8”	2.875	2.441	3.27	3.668	2.875
3-1/2”	3.5	3.066	3.94	4.5	3.5

Thread Connection

Size	Top Connection	Bottom Connection
2-3/8”	2-3/8” EUE box	2-3/8” EUE box
2-7/8”	2-7/8” EUE box	2-7/8” EUE box
3-1/2”	3-1/2” EUE box	3-1/2” EUE box