Internal Sleeve Drain

Republic Oil Tools Tubing Internal Sleeve Drain (ISD) is a pressure actuated sleeve drain that allows fluid to be drained from the tubing to avoid pulling wet.

Typical applications include Permanent Magnet Motor ESPs.

In the PMM-ESP configuration, the ISD is used as a fluid path of least resistance to prevent the permanent magnet motor from spinning. This provides a reliable alternative to perforating the tubing string which can damage the motor lead extension or power cable.

The Internal Sleeve Drain differentiates from the External Sleeve Drain in that it is pressure balanced. This eliminates premature shearing of the pins. This enables the operator to have peace of mind that there will not be a premature workover. Only once the PMM Dart is dropped and lands inside the drain, there is a positive barrier in either direction that prevents fluid from progressing up or down the tubing string. At this point, positive pressure above the dart will shear the pins opening the drain. If a dart is undesirable, the ISD can be actuated with a ball. Furthermore, if the tubing is to be pressure tested, a dissolvable ball can be landed on the drain to conduct a pressure test as long as the pressure test is below the shear pin value.

Size	**2-3/8"**	**2-7/8"**	**3-1/2"**
Housing Metallurgy	4140 w/ Black Oxide		
Thread Size	2-3/8" EUE 8rd	2-7/8" EUE 8rd	3-1/2" EUE 8rd
Outside Diameter (in)	3.063	3.668	5.000
Inside Diameter (in)	1.5	1.65	2.5
Length (in)	18.1	17.3	22.4
Maximum Working Pressure (psi)	7500	7500	7500
# of Pins	10	11	14
Pressure/Pin (psi, +/- 10%)	1500	750	550
Min Shear Pressure (psi, +/- 10%)	3000	1500	1100
Max Shear Pressure (psi, +/- 10%)	15000	8250	7700
Shear Pin Material	316L		
Max Pull Force (lb)	55000	65000	70000
M/U Torque (ft-lbs)	1760	2300	2280
Temp Rating (F)	400		
Actuation Mechanism	Ball, Dart		

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ISD Dart

Republic Oil Tools Tubing Internal Sleeve Drain (ISD) Dart is dropped from surface to provide the barrier that allows the ISD to be opened and thereby allows fluid to be drained from the tubing to avoid pulling wet. Simultaneously, the dart provides a positive barrier to prevent wellbore fluid from moving through the ESP during pull out of hole operations.

Typical applications include Permanent Magnet Motor ESPs.

In the PMM-ESP configuration, the ISD is used as a fluid path of least resistance to prevent the permanent magnet motor from spinning. This provides a reliable alternative to perforating the tubing string which can damage the motor lead extension or power cable.

Size	**2-3/8"**	**2-7/8"**	**3-1/2"**
Outside Diameter (in)	1.625	1.875	2.625
Length (in)	18.038	18.19	20.594
Sucker Rod Connection (in)	5/8" API	7/8" API	3/4" API
Sucker Rod Cplg OD (in)	1.500	1.811	1.625

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