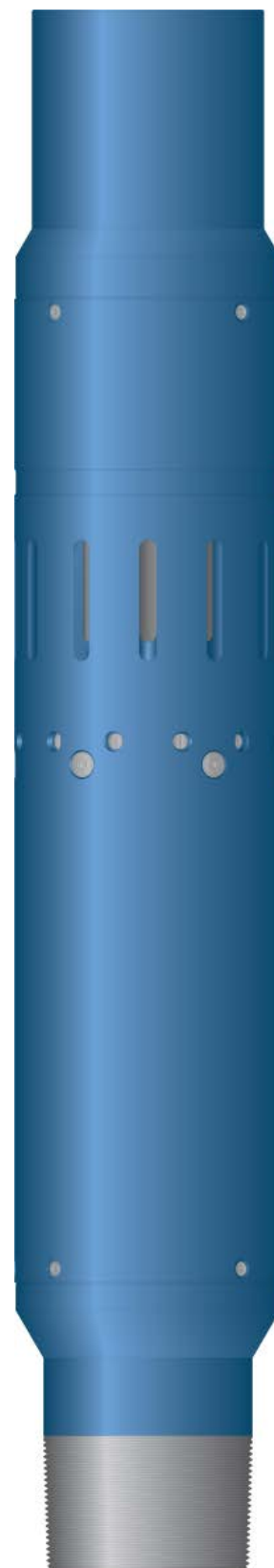


The Integral Clutch Millable Ball Valve is a ball activated fracturing sleeve designed for multiple frac stages in a well bore. High flow circumferential ports located on the housing of the sleeve permits continuous communication to the reservoir for high pressure fracturing operations and production. This system uses low specific gravity balls, which encourages flow back when the well is put on production. Specially designed anti-rotational features are incorporated into the sleeve to ensure reliable seat mill-out performance. Utilizing a designated shifting tool, the valve sleeve can be closed to shut-off water producing intervals or for interval production evaluation.

The Millable Ball Valve is available in 0.063, 0.094 and 0.125 in (1.60, 2.39 and 3.18 mm) ball increments, allowing for increased interval density to optimize production and to permit higher achievable fracturing pump rates.

Features and Benefits

- Compact design for ease of handling (no pup joints required)
- Improved ball seat geometric features to enhance production capability, ball on seat pressure rating, and ball off seat performance
- Locking design ensures sleeve cannot prematurely shift closed
- Flow port area designed to assist in preventing screen-outs
- Anti-rotational feature ensures reliable milling performance
- Available with re-closable or non-closable sleeve feature for production optimization
- Adjustable activation pressures for different down hole applications
- Ability to mill out ball seat with valve in closed position
- 10,000 psi (69 MPa) rated
- Rated to 400° F (204° C) with standard trim
- Premium threads and elastomers available on request



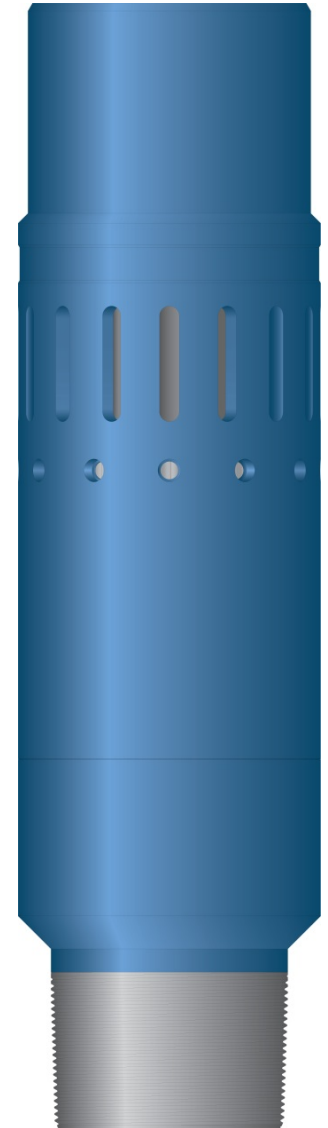
See specification table on next page

Specifications								
Size	Weight	Max. O.D.	Seat Increment	Post Millout I.D.	Max. Ball Size	Max. Seat I.D.	Min. Ball Size	Min. Seat I.D.
in mm	lb/ft kg/m	in mm	in mm	in mm	in mm	in mm	in mm	in mm
4-1/2 114.3	11.60 - 13.50 17.26 - 20.09	5.750 146.05	0.125 3.18	3.875 98.43	3.625 92.08	3.515 89.28	3.125 79.38	3.015 76.58
			0.094 2.39		3.750 95.25	3.671 93.24	3.375 85.73	3.296 83.72
			0.063 1.60		3.375 85.73	3.328 84.53	0.875 22.23	0.813 20.65
5-1/2 139.7	23.00 34.23	7.000 177.80	0.125 3.18	4.500 114.30	4.500 114.30	4.390 111.51	3.875 98.43	3.765 95.63
			0.094 2.39		3.750 95.25	3.671 93.24	3.469 88.11	3.390 86.11
			0.063 1.60		3.375 85.73	3.328 84.53	1.500 38.10	1.453 36.91
	20.00 29.76		0.125 3.18	4.625 117.48	4.625 117.48	4.515 114.68	3.875 98.43	3.765 95.63
			0.094 2.39		3.750 95.25	3.671 93.24	3.469 88.11	3.390 86.11
			0.063 1.60		3.375 85.73	3.328 84.53	1.500 38.10	1.453 36.91
	17.00 25.30		0.125 3.18	4.750 120.65	4.750 120.65	4.640 117.86	3.875 98.43	3.765 95.63
			0.094 2.39		3.750 95.25	3.671 93.24	3.469 88.11	3.390 86.11
			0.063 1.60		3.375 85.73	3.328 84.53	1.500 38.10	1.453 36.91

The Retrievable Ball Valve is a ball-activated fracturing sleeve, designed to allow for multiple frac stages in a horizontal well bore. Once the well has been fractured, it can either be shut in or flowed back depending on customer preference. Using a service rig or coiled tubing unit and a Gryphon retrieving tool, the seats are retrieved with a simple tag and release method. With its patented design, up to 36 seats can be retrieved in a single trip. Utilizing a designated shifting tool, the sleeve(s) can then be closed to shut-off water producing intervals or for interval production evaluation. This system utilizes low specific gravity balls which encourage flow back when the well is put on production.

Features and Benefits

- No milling or drilling
- Full drift inner diameter after seat retrieval
- Decrease post frac, pre-production time by up to 40%
- Flow port area designed to prevent screen out and reduce solids inflow
- Compact design for ease of handling (no pup joints required)
- Available in 3-1/2 and 4-1/2 inch (88.9 and 114.3 mm) sizes
- Available in 0.050 and 0.100 inch (1.27 and 2.54 mm) ball seat increments allowing for increased interval density to optimize production and to permit greater achievable fracturing pump rates
- Locking design ensures sleeve cannot prematurely shift closed
- Up to 37 stages in 4-1/2 inch (114.3 mm) size
- Closable sleeve feature for production optimization
- Adjustable activation pressure
- Circulation capability during retrieval improves wellbore clean-out
- 10,000 psi (69 MPa) rated
- Rated to 400° F (204° C) with standard trim
- Premium threads and elastomers available on request



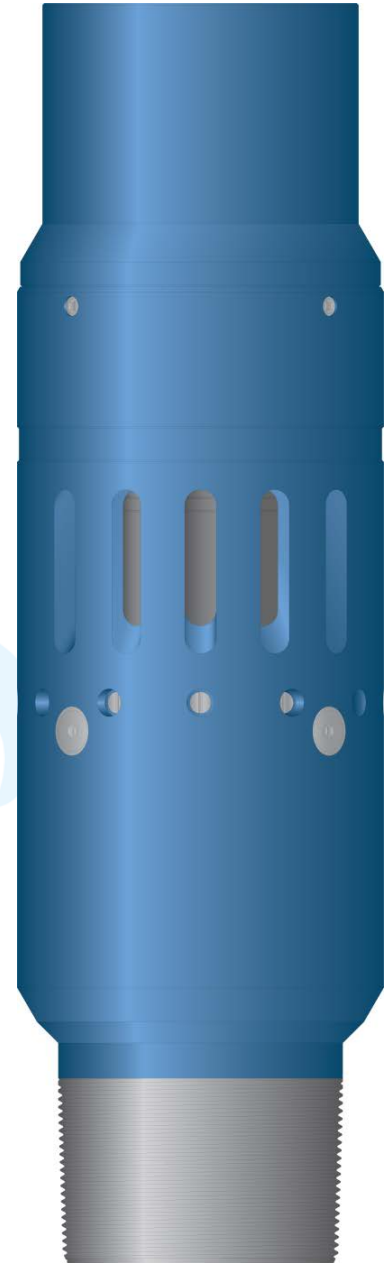
Specifications									
Size	Weight	Max. O.D.	Min. I.D. Post Retrieval	Seat Increment	Max. Ball Size	Max. Seat I.D.	Min. Ball Size	Min. Seat I.D.	Max. Stages
in mm	lb/ft kg/m	in mm	in mm	in mm	in mm	in mm	in mm	in mm	
3-1/2 88.9	9.30	4.625	2.867	0.050 1.27 or 0.100 2.54	1.750	1.715	0.850 21.59	0.815 20.70	20
	13.84	117.48	72.82		44.45	43.56			13
	12.95	4.500	2.625		1.400	1.365			37
	19.27	114.30	66.68		35.56	34.67			
4-1/2 114.3	11.60	5.750 146.05	3.875		2.600 66.04	2.565 65.15			35
	17.26		98.43						
	13.50		3.795						
	20.09		96.39						
	15.10		3.700		2.500	2.465			
	22.47		93.98		63.50	62.61			

The SUREstack™ cementable system is a revolutionary liner system for cemented well applications. The ball activated SUREstack™ cementable system is designed for installation in cased holes and is simple, yet economical to deploy, utilizing Gryphon's ball and seat technology. Balls are available in either a dissolvable or conventional millable style. The standard system is equipped with HNBR elastomers and LTC or BTC threads or can be ordered with premium elastomers and threads.

This system is intended to reduce the cost of a liner system by simplifying the valve as much as possible and by eliminating the requirement for open hole packers. Minimizing the equipment installed in the wellbore reduces not only the equipment cost, but also the time and risk associated with installation of any equipment.

Features and Benefits

- Compact design for ease of handling (no pup joints required)
- Improved ball seat geometric features to enhance production capability, ball on seat pressure rating, and ball off seat performance
- Simple valve with only 4 main components
- Extremely short valve, with no requirement for open hole packers, allowing for tighter stages
- Up to 20 stages when run with a SUREstart™ Valve
- Utilizes easy to mill ball seat from Gryphon's other millable valves
- Compatible with all types of Gryphon's fracturing balls including dissolvables
- Rated to 400° F (204° C) with standard trim, elastomer upgrades available



Specifications								
Size	Weight	Max. O.D.	Seat Increment	Post Millout I.D.	Max. Ball Size	Max. Seat I.D.	Min. Ball Size	Min. Seat I.D.
in mm	lb/ft kg/m	in mm	in mm	in mm	in mm	in mm	in mm	in mm
4-1/2 114.3	11.60 - 13.50 17.26 - 20.09	5.800 147.32	0.094 2.39	3.875 98.43	3.750 95.25	3.671 93.24	3.469 88.11	3.390 86.11
			0.063 1.60		3.375 85.73	3.328 84.53	2.250 57.15	2.203 55.96