PRODUCT CATALOGUE

GRADWELL OILFIELD

Safety, Excellence & Quality with Integrity

Manufacture, Supply & Services of Oilfield Drilling, Cementing & Completion Equipment

Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers

COMPLETION EQUIPMENT
PACKER
&
BRIDGE PLUG
CEMENT RETAINER

TABLE OF CONTENT

COMPLETION EQUIPMENT- PACKER & BRIDGE PLUG CE MENT RETAINER

FLOW CONTROL EQUIPMENT

LINER HANGER SYSTEM & RUNNING TOOLS

LINER HANGER SYSTEM & RUNNING TOOLS

CEMENTING EQUIPMENT- FLOAT SHOE & COLLAR

DRILLING & CEMENTING EQUIPMENT CASING CENTRALIZERS & STOP COLLARS

HYDRAULIC SET RETRIVABLE PRODUCTION PACKER
MODEL: GR-HPR-1

GR-HPR-1

The Model GR-HPR-1 Double-Grip Hydrostatic Single String Packer is a retrievable packer set by either the hydrostatic head of the well, tubing pressure, or both and retrieve by straight pull at a specified shear vale.

The Model GR-HPR-1 Hydrostatic Packer is set by pressurizing the string to obtain a pressure differential in the packer.

Temporary plugging below the packer is necessary. Plugging is typically done with a Pressurization Sub, E-Hydro-Trip Sub, Sliding Sleeve or Landing Nipple used with Blanking Plug or another Hydraulic Setting Device.

Application:

- Production, injection and zonal isolation.
- Single-string selective completions or dual-string completions with multiple packers.
- Deviated wells or other applications when rotation for installation or removal is not beneficial.

Features:

- Hydraulically activated, hydrostatic-set, low-pressure, rig-pump-capable activation.
- Field-adjustable shear release.
- No tubing manipulation required to set the Packer.
- Operationally simple.
- Triple-seal multi-durometer elements ensure pressure integrity over a wide range of temperatures and conforms easily to casing irregularities.
- Hydraulic Hold-Down Buttons activated by well pressure enables the bidirectional gripping of Packer to withstand high differential pres sure from below the packer.
- Ability to withstand high hydrostatic pressure.
- Setting mechanism ensures sustained pack off force throughout the life of the packer.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification Guide (GR-HPR-1) :

Casing		Casing ID Size (In.)	Size	Gauge OD of Packer (In.)	Min. ID of Packer (In.)	Thread connection
Size (In.)	Weight (lbs/ft)					
4-1/2	9.5-13.5	3.910 - 4.090	GR 43A	3.771	1.995	2-3/8” EU
5	15-18	4.250 - 4.408	GR 43B	4.125		
	11.5-15	4.408 – 4.560	GR 43C	4.250		
5-1/2	13.0-15.5	4.950 - 5.190	GR 45B	4.781		2-3/8” EU
	15.5-20.0	4.778- 4.950	GR 45A4	4.641		
	20.0-23.0	4.625- 4.778	GR 45A2	4.500		
6-5/8	20 - 24	5.921- 6.049	GR 47A2	5.661	2.441	2-3/8” & 2-7/8” EU
	24 - 28	5.791- 5.921	GR 46A4	5.625		
	28 - 32	5.675 - 5.791	GR 45E4	5.484		
7	17.0-20.0	6.456- 6.578	GR 47C2	6.266	1.995 or 2.441	2-7/8” & 3-1/2” EU
	20.0-26.0	6.276- 6.456	GR 47B4	6.078		
	26.0-32.0	6.094- 6.276	GR 47B2	5.968		
	32.0-35.0	5.938- 6.135	GR 47A4	5.812		
7 5/8	20-24	7.025- 7.125	GR 47D4	6.812	2.441 or 2.992	2-7/8” & 3-1/2” EU
	24-29.7	6.798-7.025	GR 47D2	6.672		
	33.7-39	6.579- 6.797	GR 47C4	6.453		
9-5/8	40-47	8.681 – 8.835	GR 51A4	8.437	2.992 or 3.958	3-1/2”& 4-1/2” EU
	47-53.5	8.343 - 8.681	GR 51A2	8.281		

HYDRAULIC SET HIGH ANGLE PRODUCTION PACKER
MODEL: GR-HPR-2

GR-HPR-2

HPR-2 Hydraulic Set High Angle Production packer is designed for low to medium pressure applications. The short body length makes it ideal for high angle deviations and horizontal applications. This compact, economical packer requires no mandrel movement. Straight pull release, pressure equalization, and shear out features provide quick release and easy retrieval.

Application:

- Production, injection, and zonal isolation.
- Single-string selective completions or dual-string completions with multiple packers.
- Deviated wells or other applications when rotation for installation or removal is not beneficial.

Features:

- No downward mandrel movement makes this tool ideal for stacked packer completions.
- Straight-pull release, adjustable up to 50,000 lb (22,680 kg), eliminates the need to rotate the tubing to release the packer, saving valuable rig time.
- Shear screws, isolated from the hydraulic pressure, require low shear-out force, making the tool easy to release, even at full pressure differential.
- Built-in bypass ports equalize pressure across the packer for easy retrieval.
- Short overall length allows packer to negotiate highly deviated wells and severe doglegs for shorter run-in.
- Highly deviated wells and severe.
- Offshore oil and gas wells with low to medium pressure.

Specification Guide (GR-HPR-2) :

Casing		Casing ID Size (In.)	Size	Gauge OD of Packer (In.)	Min. ID of Packer (In.)	Thread connection
Size (In.)	Weight (lbs/ft)					
4-1/2	9.5-13.5	3.910 - 4.090	GR 43A	3.771	1.995	2-3/8” EU
5	15-18	4.250 - 4.408	GR 43B	4.125		
	11.5-15	4.408 – 4.560	GR 43C	4.250		
5-1/2	13.0-15.5	4.950 - 5.190	GR 45B	4.781		
	15.5-20.0	4.778- 4.950	GR 45A4	4.641		2-3/8” EU
	20.0-23.0	4.625- 4.778	GR 45A2	4.500		
6-5/8	20 - 24	5.921- 6.049	GR 47A2	5.661	2.441	2-3/8” & 2-7/8” EU
	24 - 28	5.791- 5.921	GR 46A4	5.625		
	28 - 32	5.675 - 5.791	GR 45E4	5.484		
7	17.0-20.0	6.456- 6.578	GR 47C2	6.266	1.995 or 2.441	2-7/8” & 3-1/2” EU
	20.0-26.0	6.276- 6.456	GR 47B4	6.078		
	26.0-32.0	6.094- 6.276	GR 47B2	5.968		
	32.0-35.0	5.938- 6.135	GR 47A4	5.812		
7 5/8	20-24	7.025- 7.125	GR 47D4	6.812	2.441 or 2.992	2-7/8” & 3-1/2” EU
	24-29.7	6.798-7.025	GR 47D2	6.672		
	33.7-39	6.579- 6.797	GR 47C4	6.453		
9-5/8	40-47	8.681 – 8.835	GR 51A4	8.437	2.992 or 3.958	3-1/2”& 4-1/2” EU
	47-53.5	8.343 - 8.681	GR 51A2	8.281		

MECHANICAL SET SINGLE & DOUBLE GRIP PRODUCTION PACKER
MODEL: GR-MPP-1 & GR-MPP-2

GR-MPP-1 GR-MPP-2

The GR-MPP-1 & GR-MPP-2 Packer is a Mechanical compression-set production packer intended for a broad range of production applications. It is a compression-set packer, suitable for stimulation and treating applications in a single/double-grip configuration. Applications in which excessive bottom hole pressures have been depleted, a single-grip. version can be used as an economical production packer.

It is set by applying a quarter turn to the right at the packer followed by set down weight. The packer is released by straight pick up to open the large by-pass allowing equalization. After equalization, the packing elements release reducing tendency of swabbing when pulling out of wellbore.

Application:

- Squeeze Cementing.
- Acidizing
- Formation fracturing.
- Well Testing & Servicing.

Features:

- Holds high pressure differentials from above or below.
- The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, and straight pull release.
- Reliable Three-piece, Dual durometer sealing elements provide better pack off Bypass valve is below upper slips so the debris is washed from slips when the valve is opened Benefits.
- Bypass valve opens before upper slips are released.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well Environment services requirements.
- Available in All API & premium thread connections and Elastomers type.

Specification Guide (GR-MPP-1 & MPP-2) :

Casing				Packer			
Size (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	SIZE	Nominal ID (In.)	Gage & Guide Ring OD (In.)	Thread Specification Box Up & Pin Down
4-1/2	9.5-13.5	3.920	4.090	GR 43A	1.89	3.771	2-3/8" EU
5	15-18	4.276	4.408	GR 43B		4.125	
	11.5-15	4.408	4.560	GR 43C		4.250	
	26						
5-1/2	20-23	4.670	4.778	GR 45A2	1.995	4.500	2-3/8" EU
				GR 45A2 X 2-3/8	2.375		2-7/8" EU
	15.5-20 14-20	4.778	4.950	GR 45A4	1.995	4.641	2-3/8" EU
	17-20	4.778	4.892	GR 45A4 X 2-3/8	2.375		2-7/8" EU
7	38	5.791	5.921	GR 46A4	2.441	5.588	2-7/8" EU
		5.830	5.937	GR 47A2		5.656	
	32-35	6.004	6.094	GR 46B		5.781	
	26-29	6.184	6.276	GR 47B2	2.441	5.968	2-7/8" EU
				GR 47B2 X 3	3.000		3-1/2" EU
	20-26	6.276	6.456	GR 47B4	2.441	6.078	2-7/8" EU
				GR 47B4 X 3	3.000		3-1/2" EU
	17-20	6.456	6.538	GR 47C2	2.441	6.266	2-7/8" EU
				GR 47C2 X 3	3.000		3-1/2" EU
9-5/8	47-53.5	8.343	8.681	GR 51A2	3.968	8.218	3-1/2" EU
	40-47	8.681	8.835	GR 51A4		8.437	

MECHANICAL SET PRODUCTION PACKER
MODEL: GR-MPP-3

GR-MPP-3

The GR-MPP-3 Mechanical Production Packer is a retrievable, double-grip compression or tension set production packer that can be left in tension, compression, or in a neutral position, and will hold pressure from above or below. A large internal bypass reduces the swabbing effect during run-in and retrieval, and closes when the packer is set. When the packer is released, the bypass opens first, allowing the pressure to equalize before the upper slips are released. The GR-MPP-3 also features a patented upper-slip releasing system that reduces the force required to release the pacer. A non-directional slip is released first, making it easier to release the other slips.

An On-Off Tool Stinger with a Wireline Plug installed can be attached to the top of this packer. This packer can then be lubricated in the hole and set under pressure. Once set, casing pressure can be bled off, and the tubing with an On-Off Tool Overshot can be run and latched onto the packer. The Wireline Plug can then be removed.

Application:

- Zonal Isolation, Injection and Production.
- Shallow wells.
- Holds high pressure differentials from above or below.
- The J-slot design allows easy setting and releasing; 1/4 turn right-hand set, 1/4 turn right-hand release.
- Can be set using tension or compression Only.
- One-quarter right rotation is required to set and release.
- Field-proven releasing system.
- Optional safety-release features available upon request.
- Bypass valve is below upper slips so the debris is washed from slips when the valve is opened Benefit.
- Field-proven design meets most production and stimulation.

Features :

- Injection needs.
- Can be run with a Model T-2.
- On-Off Tool Can be left in tension. Compression, or neutral position.
- By pass valve opens before upper slips are released.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well Environment services requirements.
- Available in All API & premium thread connections and Elastomers type.
- Validated to withstand 7,500 psi differential pressure and 300° F Temperature.

Specification Guide (GR-MPP-3) :

Casing				Packer		
Size (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	Gage & Guide Ring OD (In.)	Nominal ID (In.)	Thread Specification Box Up & Pin Down
4-1/2	9.5-13.5	3.920	4.090	3.750	1.938	2-3/8” EU
5	11.5-15	4.408	4.560	4.140	1.938	2-3/8” EU
	15.0-18.0	4.276	4.408	4.125	1.938	
5-1/2	20-23	4.670	4.778	4.500	1.938	2-3/8” EU
	14-20	4.778	5.012	4.625	1.938	
	20-23	4.670	4.778	4.500	2.375	
	15.5-17	4.892	4.950	4.625	2.375	
	9.0-13.0	5.044	5.192	4.875	2.359	
7	26-35	5.875	6.276	5.813	2.441	2-7/8” EU
	17-26	6.276	6.538	6.000	2.441	
	26-35	6.004	6.276	5.875	2.441	
	17-26	6.276	6.538	6.000	3.000	3-1/2” EU
9-5/8	40 - 47	8.681	8.835	8.375	2.990	
	43.5-53.5	8.535	8.755	8.250	4.000	4-1/2” EU
	32.6-43.5	8.755	9.001	8.500	4.000	

10K MECHANICAL SET PRODUCTION PACKER
MODEL: GR-MPP-10

GR-MPP-10

Gradwell Mechanical Set Packer is a high performance Full Bore Single String Retrievable Packer. It is specifically designed to perform reliably in high pressure fracturing and production applications. It is compression set and can be landed in compression, tension or neutral condition.

Enhancements of field proven design features combining rugged simplicity, economy and ease of operation, result in a new and test proven standard of performance. It now makes available reliable performance in a retrievable packer under combined conditions of 350°F and 10,000 psi differential above or below the packer.

Releasing Procedures

Set down a minimum of 500 lb then rotate 1/4 turn to the right and pick up at the same time. This will disengage upper J and release the packer. The bonded seal will unload and equalize the upper and lower annulus. Then the Upper Slips will be loaded. It will take between 15,000 - 25,000 lb to retrieve the Slips. Packing Element will be stretched out and the Lower Cone will disengage the Lower Slips. Running J will engage and tool can be reset or retrieved at this point.

Features :

- Ease of operation - 1/4 turn to right to set 1/4 turn to right to release.
- High performance three-piece element system for high pressure sealing and pressure reversal loads.
- Independent lower and upper Jay Assemblies contributing to short, compact design.
- Tubing can be landed in tension, compression or neutral
- Full opening ID for stimulation and thru-tubing perforating
- Built in un loader with bonded seal for bypass.
- Bypass opens before release of upper slips for safety and ease of release.
- Staged loading of upper slips for ease of release.
- Solid upper slip cone for added strength and elimination of release sleeve.
- Reliable and rugged rocker type lower slip assembly.

Specification Guide (GR-MPP-10) :

Casing			
Size (In.)	Wt. (ppf)	Min ID (In.)	Max ID (In.)
4-1/2	15.1	3.752	3.904
	11.6-13.5	3.853	4.069
	9.5-10.5	3.996	4.154
5	21.4-23.2	3.943	4.220
	11.5 – 15	4.408	4.560
	15 - 18	4.276	4.408
5-1/2	20-23	4.578	4.868
	17-20	4.696	4.976
	15.5-17	4.819	5.031
5-3/4	15.0 – 19.4	5.080	5.238
7	29-32	5.990	6.293
	26-29	6.174	6.381
	23-26	6.266	6.466
	20-23	6.239	6.570
7-5/8	45.3-47.1		

TENSION SET PACKER
MODEL: GR-TP-1

GR-TP-1

The GR-TP-1 Tension Packer is a compact, economical, retrievable packer. Primarily used in waterflood applications, it can also be used for production, treating operations, and when a set-down packer is impractical. And because the GR-TP-1 is tension-set, it is ideally suited for shallow wells where set-down weight is not available.

The packer can be set by applying right hand torque to the tubing. While the right hand torque applied, the tubing is picked up and appropriate amount of tension is applied to set the Packer. Packer can be released by simply picking up the tubing. The shear release mechanism uses slotted brass shear screws which can be easily accessed for adjustment in the field.

Application:

- Production
- Injection
- Completion, Well servicing and treating operation.

Features :

- Case Hardened Drag blocks make for extended life.
- Full bore Mandrel.
- Automatic J-slot provides for easy release.
- Incorporates both a rotational and a field adjustable shear safety release.
- Uses proven one-piece packing element.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal / H2S, CO2 well Services requirements.
- Available in All API & Premium thread connections.

Required Up Strain To SET PACKER	
Packer Size	Lbs.
41	2,000
43 & 45	5,000
47	7,500
49-55	15,000

Specification Guide (GR-TP-1) :

Casing				Packer			
OD (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	SIZE	Nominal ID (In.)	Gage & Guide Ring OD (In.)	Thread Specification Box Up & Pin Down (In.)
5-1/2	20-23	4.625	4.778	GR 45A2	1.97	4.500	2-3/8 EU
	15.5-20	4.778	4.950	GR 45A4		4.641	
	13-15.5	4.950	5.190	GR 45B		4.781	
7	38	5.830	5.921	GR 47A2	2.42	5.588	2-7/8 EU
	32-35	5.922	6.135	GR 47A4		5.781	
	26-29	6.136	6.276	GR 47B2		5.968	
	20-26	6.276	6.456	GR 47B4		6.078	
	17-20	6.456	6.538	GR 47C2		6.266	
9-5/8	47-53.5	8.300	8.681	GR 51A2	4.00	8.218	4-1/2 EU
	40-47	8.681	8.835	GR 51A4		8.437	

COMPRESSION SET PACKER
MODEL: GR-CP-1

GR-CP-1

The GR-CP-1 compression packer is a Compact economical,retrievable packer. Primarily used in waterflood applications, it can also be used for production, treating operations, and when a set-down packer is impractical. And because the GR-CP-1 is compression-set, it is ideally suited for shallow wells where set-down weight is not available.

The packer can be set by applying right hand torque to the tubing. While the right hand torque applied, the tubing is lowered and appropriate amount of set down weight is applied to set the Packer. Packer can be released by simply picking up the tubing. The shear release mechanism uses slotted brass shear screws which can be easily accessed for adjustment in the field.

Application:

- Production
- Injection
- Completion, Well servicing and treating operation.

Features :

- Case Hardened Drag blocks make for extended life.
- Full bore Mandrel.
- Automatic J-slot provides for easy release.
- Incorporates both a rotational and a field adjustable shear safety release.
- Uses proven one-piece packing element.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

SET DOWN WEIGHT	
Packer Size	Minimum Set Down Weight Required (Lbs.)
43, 45	6,000
46 & 47	10,000
49-55	15,000

Specification Guide (GR-CP-1):

Casing				Packer			
OD (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	SIZE	Nominal ID (In.)	Gage & Guide Ring OD (In.)	Thread Specification Box Up & Pin Down
5-1/2	20-23	4.625	4.778	GR 45A2	1.995	4.500	2-3/8" EU
	15.5-20	4.778	4.950	GR 45A4		4.641	
	13-15.5	4.950	5.190	GR 45B		4.781	
7	38	5.830	5.921	GR 47A2	2.441	5.656	2-7/8" EU
	32-35	5.922	6.135	GR 47A4		5.812	
	26-29	6.136	6.276	GR 47B2		5.968	
	20-26	6.276	6.456	GR 47B4		6.078	
	17-20	6.456	6.538	GR 47C2		6.266	
9-5/8	47-53.5	8.300	8.681	GR 51A2	3.968	8.218	4-1/2" EU
	40-47	8.681	8.835	GR 51A4		8.437	
	29.3-36	8.836	9.062	GR 51B		8.593	

WIRELINE SET SINGLE & DOUBLE BORE PERMANENT PACKER
MODEL: GR-WSPP & GR-WDPP

GR-WSPP

GR-WDPP

The GR-WSPP & GR-WDPP Permanent Seal Bore Production Packer is a versatile tool that can be used for single or multiple zone completions. The GR-WSPP & GR-WDPP is ideally suited for wells where high pressure, temperatures and corrosive fluids are anticipated. The packer is available in a variety of elastomers and seal bore materials to meet the most hostile downhole environments. The GR-WSPP & GR-WDPP is recommended for injection, stimulation, testing

Application:

- Permanent Gravel-Pack Packing.
- Vertical, Deviated and Horizontal wellbores.
- Permanent seal bore production or isolation packing.

Packer Setting

- Electric Line.
- Wireline Adaptor Kit.
- Tubing.

Features :

- Designed for ease of milling.
- Components keyed for milling.
- Wireline set.
- Unique interlocking expandable metal backup rings contact casing, creating a positive barrier to packing element extrusion.
- Smooth continuous ID sealing bore.
- Two opposed sets of full-circle, full-strength slips ensure packer will remain properly set.
- Packing element resists swab-off and packs off securely when packer is set.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification Guide (GR-WSPP):

Casing		Recommended casing ID size (In.)	Packer max OD (In.)	Min Seal bore ID of Packer (in.)	Min ID thru Seals Assy. (In.)	Setting Tool
Size (In.)	Weight (lbs/ft)					
4 1/2	9.5-13.5	3.920-4.090	3.812	2.687	1.938	Size #10
	11.6-15.1	3.826-4.000	3.593	1.968	0.984	
5	11.5-13	4.494-4.560	4.250	2.687	1.938	Size #20
	15-20.8	4.156-4.408	3.960	2.687		Size #20
5-1/2	13-17	4.892-5.044	4.560	2.687	1.938	Size #20
	20-23	4.670-4.778	4.430	2.687		
	23-26	4.548-4.670	4.330	2.687		
6-5/8	20-32	5.675-6.049	5.468	2.687	1.938	Size #20
	24-32	5.675-5.921	5.350			
7	17-20	6.456-6.538	6.187	3.250 & 2.687	2.375 & 1.938	Size #20
	20-29	6.184-6.456	5.875			
	23-32	6.094-6.366	5.687			
	32-42.7	5.750-6.094	5.468			
	38-46.4	5.626-5.920	5.350			
7 5/8	24-33.7	6.765-7.025	6.375	3.250 & 2.687	2.375 & 1.938	Size #20
	33.7-39	6.625-6.765	6.187			
	45.3-51.2	6.251-6.435	5.875			
8-5/8	24-36	7.825-8.097	7.500	3.875 & 4.000	2.468 & 2.985	Size #20
	36-49	7.511-7.825	7.125			
9-5/8	36-53.5	8.535-8.921	8.125	4.750 & 4.000	3.875 & 2.985	Size #20

Specification Guide (GR-WDPP):

Casing Size (In.)	Upper Seal Bore (In.)	Min ID Through seal assy. (In)	Lower Seal Bore (in)**	Min ID Through seal assy. (In.)
4-1/2	2.500	1.875	1.968	1.312
5-1/2	3.250	2.500	2.688	1.968
6-5/8	4.000	3.250	3.250	2.406
7	4.000	3.250	3.250	2.406
7-5/8	4.000	3.250	3.250	2.406
9-5/8	6.000	4.875	4.750	3.875

**Packer for these casing sizes also available with other seal bore and Seal assembly bore on order.

HYDRAULIC SET SINGLE & DOUBLE BORE PERMANENT PACKER
MODEL: GR-HSPP & GR-HDPP

GR-HSPP

GR-HDPP

The GR-HSPP is a hydraulic-set is permanent packer set by applied hydraulic pressure against a temporary plugging device set below the packer.

The GR-HDPP has a large upper seal bore allowing the use of an anchor latch to create the largest possible ID Through the packer and seals for completions requiring large tubing sizes

It is ideal for highly deviated and/or single-trip production and injection applications. This packer includes a one-piece mandrel, which eliminates a potential leak path. It has a low profile for greater running clearance to help reduce problems that may occur when running in highly deviated and horizontal wells.

Applications:

- Permanent Gravel-Pack Packing
- Vertical, Deviated and Horizontal wellbores.
- Permanent sealbore production or isolation packing..

Features :

- Designed for ease of milling.
- Components keyed for milling.
- Hydraulic set Solid construction enables faster run-in without fear of impact damage or premature setting, making significant rig-time savings possible.
- Unique interlocking expandable metal backup rings contact casing, creating a positive barrier to packing element extrusion.
- Smooth, continuous ID sealing bore.
- Two opposed sets of full-circle, full-strength slips ensure packer will remain properly set.
- Packing element resists swab-off and packs off securely when packer is set.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification Guide (GR-HSPP):

Casing				Packer		
OD (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	SIZE	ID (In.)	OD (In.)
5-1/2	13-17	4.812	5.044	44 X 25	2.500	4.500
7	20-32	6.049	6.456	84 X 32	3.250	5.687
9-5/8	32.3-58.4	8.435	9.001	194 X 47	4.750	8.125

Specification Guide (GR-HDPP):

Casing				Packer			
OD (In.)	Weight (lbs/ft)	Min. ID (In.)	Max. ID (In.)	SIZE	Lower Bore ID (In.)	Upper ID Bore (In.)	OD (In.)
5-1/2	13-17	4.812	5.044	44 X 32 X 25	2.500	3.250	4.500
7	20-32	6.049	6.456	84 X 40 X 32	3.250	4.000	5.687
9-5/8	32.3-58.4	8.435	9.001	194 X 60 X 47	4.750	6.000	8.125

HYDRAULIC RETRIEVABLE SEAL BORE PACKER
MODEL: GR-HRSBP

GR-HRSBP

The GR-HRSBP Packer is a retrievable seal bore packer run on Hydraulic Setting Tool with a wireline adapter kit and setting tool or on tubing using a hydraulic setting tool. All the load. the bi-directional slips prevent any movement after set- ting. It is retrieved by a straight pull release mechanism using a GR-RT Retrieving Tool.

Application:

- High pressure production or injection.
- Suitable for ERD wells.
- Anchored or floating seal Completions Vertical, Deviated and Horizontal wellbores.
- Seal bore production or isolation packing.
- Liner Top installation and straddle packer installation.

Features :

- Designed for use in vertical, deviated or horizontal well completion applications.
- Bi-directional slips prevent any movement after setting.
- An internal locking device maintains pack off.
- Retrieved by a straight pull shear release using a retrieving tool.
- Retrieving tool has an emergency shear release feature in the event that the packer does not release.
- Wireline or Hydraulic set.
- Smooth, continuous ID sealing bore.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification Guide (GR-HRSBP):

Casing		Recommended casing ID size	Gauge OD of Packer (In.)	Min. Sealbore ID of Packer (In.)	Min ID thru Seals (In.)
Size (In.)	Weight (lbs/ft)				
5	11.5-15	4.408-4.560	4.250	2.688	1.968
5-1/2	14-15.5	4.950-5.012	4.765	2.688	1.968
	17-20	4.778-4.892	4.593	2.688	
	20-23	4.670- 4. 778	4.485	2.688	
7	17-20	6.456-6.538	6.250	3.250	1.995 or 2.406
	23-29	6.184 - 6.366	6.000	3.250	
	29-32	6.094 - 6.184	5.820	3.250	
	35-38	5.920 - 6.004	5.735	3.250	
7-5/8	24-29.7	6.875-7.025	6.690	4.000	2.406 or 3
	29.7-33.7	6.765-6.875	6.580	4.000	
9-5/8	36-40	8.835-8.921	8.619	4.750	3 or 3.875
	40-47	8.681- 8.835	8.465	4.750	
	47-53.5	8.535- 8.681	8.319	4.750	

HYDRAULIC RETRIEVABLE SEAL BORE PACKER WITH PBR
MODEL: GR-HRSBP-P

GR-HRSBP-P

The GR-HRSBP-P Packer is a hydraulic set retrievable seal bore packer. It is run on tubing using an Anchor Seal Nipple and set by applying tubing pressure. It includes Large Upper bore of the Packer allows maximum flow through the completion string for high volume applications.

All the load bearing parts are designed to withstand high tensile loads and the bi-directional slips prevent any movement after setting. It is retrieved by a straight pull release mechanism using a GR-RT Retrieving Tool.

Application:

- High pressure production or injection.
- Anchored or floating seal.
- Completions Vertical, Deviated and Horizontal wellbores.
- Seal bore production or isolation packing.
- Liner Top installation and straddle packer installation.

Features :

- Designed for use in vertical, deviated or horizontal well completion applications.
- Bi-directional slips prevent any movement after setting.
- An internal locking device maintains pack off.
- Retrieved by a straight pull shear release using a retrieving tool.
- Retrieving tool has an emergency shear release feature in the event that the packer does not release.
- Wireline or Hydraulic set.
- Smooth, continuous ID sealing bore.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2, well services requirements.
- Available in All API & Premium thread connections.

Specification Guide (GR-HRSBP-P):

Casing		Recommended casing ID size	Gauge OD of Packer (In.)	Upper Bore (In.)	Min. Sealbore ID of Packer (In.)	Min ID thru Seals (In.)
Size (In.)	Weight (lbs/ft)					
5	11.5-15	4.408-4.560	4.250	3.000	2.688	1.968
5-1/2	14-15.5	4.950-5.012	4.765	3.000	2.688	1.968
	17-20	4.778-4.892	4.593	3.000	2.688	
	20-23	4.670- 4. 778	4.485	3.000	2.688	
7	17-20	6.456-6.538	6.250	4.000	3.250	1.995 or 2.406
	23-29	6.184 - 6.366	6.000	4.000	3.250	
	29-32	6.094 - 6.184	5.820	4.000	3.250	
	35-38	5.920 - 6.004	5.735	4.000	3.250	
7-5/8	24-29.7	6.875-7.025	6.690	4.750	4.000	2.406 or 3
	29.7-33.7	6.765-6.875	6.580	4.750	4.000	
9-5/8	36-40	8.835-8.921	8.619	4.750	4.750	3 or 3.875
	40-47	8.681- 8.835	8.465	4.750	4.750	
	47-53.5	8.535- 8.681	8.319	4.750	4.750	

WIRELINE RETRIEVABLE SEAL BORE PACKER
MODEL: GR-WRSP

GR-WRSBP

The GR-WRSP Packer is a retrievable seal bore packer run on Electric line with a wireline adapter kit and setting tool or on tubing using a hydraulic setting tool. All the load. Bearing parts are designed to with stand high tensile loads and the bi-directional slips prevent any movement after set- ting. It is retrieved by a straight pull release mechanism using a GR-RT Retrieving Tool.

Application:

- High pressure production or injection.
- Suitable for ERD wells.
- Anchored or floating seal Completions Vertical, Deviated and Horizontal wellbores.
- Seal bore production or isolation packing.
- Liner Top installation and straddle packer installation.

Features :

- Designed for use in vertical, deviated or horizontal well completion applications.
- Bi-directional slips prevent any movement after setting.
- An internal locking device maintains pack off.
- Retrieved by a straight pull shear release using a retrieving tool.
- Retrieving tool has an emergency shear release feature in the event that the packer does not release.
- Wireline or Hydraulic set.
- Smooth, continuous ID sealing bore.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

SPECIFICATION GUIDE [FOR MODEL:

CASING		PACKER SIZE	PACKER DIMENSION		* ID THRU SEALS	ACCESS. SIZES
OD	WEIGHT		SEAL BORE	PACKER OD		
In	LBS/FT		inch	inch	inch	
5	13-18	1.938 X 5”	1.938	4.125	1.313	30 - 19
5 1/2	17-20	2.688 X 5 1/2”	2.688	4.567	1.995	40 - 26
7	23-29	3.250 X 7”	3.250	5.955	2.406	80 -32
	32-35			5.810		
	23-29	4.000 X 7”	4.000	5.955	3.000	80 - 40
	32-35			5.810		
9-5/8	40-47	4.000 X 9 5/8”	4.000	8.425		80 - 40
		4.750 X 9 5/8”	4.750			190 - 47
		4.875 X 9 5/8”	4.875		4.000	190 - 48
	43.5-53.5	4.000 B X 9 5/8”	4.000	8.335	3.000	190 - 40
		4.750B X 9 5/8”	4.750			190 - 47
		4.875B X 9 5/8”	4.875		4.000	190 - 48
	32-43.5	6.000 X 9 5/8”	6.000	8.539	4.875	190 - 60

MECHANICAL SET RETRIEVABLE CEMENT SQUEEZE PACKER
MODEL: GR-MRSP

GR-MRSP

The Gradwell Retrievable squeeze packer is designed to perform all the tasks required of a retrievable simulation and over packer, and with stand high pressures from above or below. it can be used in all types of squeeze cementing, fracturing, and acidizing, with subsequent testing. The hydraulically actuated hold down slips and mechanical lower slips are carbide tipped for long, dependable service. The packing element system is the proven three-section type, but heavier and more reliable then systems on packers with an integral bypass. This packer is run with a separate, positive locking unloaded, eliminating the possibility of pumping open, as on many equalizing valves.

Specification Guide (GR-MRSP):

Size (in.)	Casing Wt. (ppf.)	Gauge O.D (in.)	Packing element (in.)	Packer bore (in.)	Connections
4 1/2	9.5-13.5	3.750	3.62	1.94	2 3/8” EU
5	15-18	4.125	3.94		
	11.5-15	4.250	4.12		
5 1/2	17-23	4.500	4.38		
	14-17	4.641	4.50		
	13-15.5	4.781	4.69		
	17-23	4.500	4.38	2.38	2 7/8” EU
	14-17	4.641	4.50		
	13-15.5	4.781	4.69		
6 5/8	20-24	5.687	5.56	2.42	2 7/8” EU
7	29-38				
	23-29	6.000	5.75		
	17-23	6.188	6.12		
7 5/8	43-47				
	33-39	6.453			
	24-30	6.672	6.50		
8 5/8	40-49	7.312	7.00	3.00	3 1/2” EU
	28-36	7.625			
9 5/8	43-53	8.250	7.00	4.00	4 1/2” EU
	32-53	8.500	4.00		

WIRELINE SET RETRIEVABLE BRIDGE PLUG
MODEL: GR-RBP-W

GR-RBP-W

The GR-RBP-W Retrievable Bridge Plug is a premium quality high performance WR style bridge plug. The WR Retrievable Bridge Plug is a product designed to isolate the wellbore when performing treatments such as fracturing, acidizing, surface equipment maintenance or temporary suspension of a producing formation. The WR is generally set using electric line wireline. This allows the plug to be logged on depth and accurately placed in the well. With the use of the GR-HST Hydraulic Setting Tool the WR can also be conveyed into the well by Jointed or Coiled Tubing. This method allows the operator to place the plug in a deviated well where wireline is not an option. The WR can be retrieved using Tubing, Coiled Tubing or in some cases Wireline by using the WR Retrieving Head. To retrieve the WR simply requires a set down force then pull tension to release there is not rotation required to pull the plug. Our WR Bridge Plugs are pressure tested by top quality third party consultants to the most exacting standards of the industry to ensure reliability for your operation.

Features :

- Can be set by hydraulic setting Tool / Wireline set.
- Bidirectional Slip.
- Three element sealing system to provide superior pressure containment.
- Built in differential pressure.
- Equalizing system.
- WR will not release unless equalizing sleeve has been shifted.
- Ability to hang pressure recorders.
- One piece double acting slips to prevent movement in the casing Multiple retrieving option.

Specification Guide (GR-RBP-W):

Casing		Setting Range	Plug OD. (In.)	Setting Tool	Elastomer
Size (In.)	PPF (lbs/ppf)				
4	9.5 - 11.0	3.476 - 3.548		HST #10	NITRILE/ HNBR/ VITON/ AFLAS
	10.46 - 12.95	3.340 - 3.476	3.187		
4-1/2	9.5 - 13.5	3.920 - 4.090	3.750		
	13.5 - 15.1	3.826 - 3.920	3.650		
	15.1 - 16.6	3.754 - 3.826	3.625		
5	11.5 - 15.0	4.408 - 4.560	4.125	HST #20	
	18.0 - 21.0	4.154 - 4.276	3.969		
5-1/2	13.0 - 20.0	4.778 - 5.156	4.625		
	20.0 - 23.0	4.670 - 4.778	4.500		
	23.0 - 26.0	4.548 - 4.670	4.406		
7	17.0 - 26.0	6.276 - 6.538	5.969		
	26.0 - 32.0	6.094 - 6.276	5.875		

MECHANICAL SET RETRIEVABLE BRIDGE PLUG
MODEL: GR-RBP-M

GR-RBP-M

RBP-M Retrievable production packer meets several zone isolation, production and injection requirements. Full opening designed gives unrestricted flow and allows.
Wireline tools to pass. Substantial pressure from above or below without tubing weight or tension. No hydraulic anchor is required to prevent packer movement, even with differential pressures.

Packer's ability to absorb tubing expansion or contraction forces makes the model: RBP-M right for the pumping and injection wells. The large internal bypass reduces swabbing effect when running-in or retrieving. When packer is set, by pass is automatically sealed.

RBP-M also features an upper slip releasing system that reduces the strain required to release the slips by dislocating a key non-directional slip first which automatically replaces the slips. This mechanical feature replaces the hold down system found in other tools making it independent of pressure variations.

Features :

- Tension set of shallow application.
- Three assemblies are available; small bore, large bore and high pressure.
- Can leave the tubing in a tension compression or neutral condition.
- Hold pressure from above or below.
- Right hand set, right hand release.
- Jay setting and releasing mechanism.
- Internal bypass internal pressure downloaded seal is located below the upper slips; this allows debris to be flushed away from hold down slips before releasing.

Specification Guide (GR-RBP-M):

Casing		Casing ID Range		Max OD (In.)	Packer Bore (In.)	THD. Conn.
Size (In.)	Weight (ppf)	Min (In.)	Max (In.)			
5 1/2	20-23	4.629	4.852	4.500	2.000	2 3/8” EU
	14-17	4.851	4.075	4.625		
	15.5-17	4.851	5.016		2.375	2 7/”8 EU
	20-23	4.629	4.852	4.500		
7	29-35	4.952	6.237	5.812	2.500	2 7/8” EU
	26-32	6.042	6.342	5.875		
	17-26	6.224	6.611	6.000		
	26-32	6.042	6.361	5.875	3.000	3 1/2” EU
	17-26	6.224	6.611	6.0008		
9 5/8	43.5-53.5	8.463	8.866	8.250	4.000	4 1/2” EU
	32.343.5	8.683	9.101	8.500		

HYDRAULIC SETTING TOOL
MODEL: GR-HST

GR-HST

Gradwell Hydraulic Setting Tools translate hydraulic pressure applied to the tubing to a force transmitted through the wireline adapter kit to the seal bore packer, plug, or cement retainer to fully set the slips and pack-off the rubber element.

Gradwell Hydraulic setting tool and wireline adapter kit are assembled to a packer bridge plug, or cement retainer that is commonly set with a wireline deployed pressure setting tool.

Use of Gradwell Hydraulic setting tool is particularly well suited for installation of packer, plug or retainer in highly deviated or horizontal well bores where wireline operation are impractical.

Features :

- Application where wireline setting tool are not recommended.
- Tubing is drained after setting packer or plug.
- Tandem application possible
- Auto-fill and tubing-drained features able to be deactivated.
- Push and pull of assembly is possible.

Application:

As the piston moves downwards, the cross link, which connect the lower piston rod and cross like sleeve, forces the cross link sleeve downward. While the setting mandrel which is attached to the lower end of the packer body by means of adapter kit remains stationary, the cross link sleeve forces the adapter sleeve of the adapter kit and upper end of the packer body, downward. In this manner a squeeze action is applies to the packer, forcing the slips and the packing elements to set and pack off.

Approximately 800 psi pressure is required to set the upper slips. After the top slips are set, the packer setting and release can be completed either by applied tension, by pump pressure, or by any combination of two. The adapter kit and setting assembly may then be removed from the well.

As the upper piston moved downward to the cylinder connector, ports in lower end of the upper cylinder are uncovered, allowing the fluid in the tubing to unload as the setting assembly is retrieved.

Specification Guide (GR-HST):

Casing Size	Tool OD (In.)	Thread connection		Max Setting Force(Lbs)
		Top	Bottom	
4 - 4-1/2”	3.5	2-3/8” EUE	BAKER #10	75,000
≥ 5”	3.88	2-7/8” EUE	BAKER #20	1,00000
≥ 6-5/8”	5	3-1/2” EUE		

PUMP OUT PLUG
MODEL: GR-POP & GR-POP-H

GR-POP

The Pump-Out Plug is installed to the bottom of the tubing string below the Packer to isolate the tubing from the annulus. To remove the plug, drop the Ball and apply pressure the Pump-Out Plug is removed to allow full opening. Also available with blank seat sub. The plug is available with the half Mule Full mule and beveled lower end to aid the re-entry of Slick line/Wireline Entry Tools.

Features :

- Field Adjustable shear screws to achieve desired pressure rating.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well Environment services requirements.
- Available in All API & premium thread connections and O-Ring type.
- High chamfered Lower End aid the re-entry of Slickline / Wireline Entry Tools.

GR-POP-H

Specification Guide (GR-POP & POP-H):

Tubing Size (In.)	Tool OD (In.)	Tool Id after shear the Ball Seat (In.)	Ball Size (In.)	ID of Ball Seat (In.)
2-3/8	3.062	1.937	1 1/4	1.000
2-7/8	3.668	2.375	1 1/2	1.250
3-1/2	4.500	2.937	2 1/2	2.250
4-1/2	5.563	3.937	3 1/2	3.250
5-1/2	6.050	4.500	3 1/2	3.250

LOCATOR TUBING SEAL ASSEMBLY
MODEL: GR-LTSA

GR-LTSA

The GR-LTSA Locator Tubing Seal assemblies are used with Seal Bore packer to provide leak-proof seal.

Seal Type: Chervon, Bonded, A-Ryte & V-Ryte.

The Bonded Seal is tolerant to damage from debris, tubing move maintained unloading of seals under pressure. Standard Seal material is nitrile which is recommended for non H2S environments.

Between the Packer Bore and production tubing string. environment Viton, HNBR and Aflas Sealing system can be supply on request LTSA have No Go locator Sub which allow the LTSA to land over the top of the packer. The LTSA supplied standard length 6, 10, 15 feet can be vary on request.

Features :

- Seal are debris and movement tolerant.
- Bonded seals can be unloaded under differential pressure.
- Seal unit used with anchors and Locators optimize seal placement in polished bores.
- Provides with Concentric coupling and Bottom Sub to connect with Bottom tail pipe.
- Provides with one feet seal length.
- Provides necessary ID for other Wireline Tool.
- Available in All API and premium Top connection.
- Can be supply with the Blank, Half Mule, Locater latch type, and Threaded type Bottom Sub.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal / H2S, CO2 well services requirement.
- Have same pressure and temperature rating with tubing.

Specification Guide (GR-LTSA):

Recommended Min Seal bore ID of Packer (In.)	OD of seal unit (In.)	Min ID thru Seals Assy. (In.)	Pressure Rating (Psi)	Tubing Thread Connection
1.968	1.875	1.000	9,000	2 3/8” EU
2.687	2.673	1.963	9,000	
3.000	2.985	2.250	12,000	2 7/8” EU
3.250	3.234	2.375	10,000	
3.875	3.859	2.875	10,000	
4.000	3.984	3.030	10,000	3-1/2”EU
4.750	4.734	3.875	9,500	
6.000	5.984	4.875	9,200	4-1/2”EU

AUTO ORIENTING BOTTOM SUB SEAL ASSEMBLY
MODEL: GR-LTSA-AO

GR-LTSA-AO

The bottom sub of GR-LTSA-AO is provided with double start helical groove and two Guide Pins. Half Mule Shoe as shown in the accompanying illustration. The double start helix provides for uniform self-orienting action of the Half Mule Shoe to permit easy entry in the Packer bore.

Muleshoe guides provide a means to guide the end of the tubing away from the casing wall, and then enter liner tops or the packer bores. The length of the mule shoe varies with the application, from centralization, to seal guide and protection, to flow isolation sleeve.

Self-aligning mule shoe guides allow the end of the guide to rotate and orient with the liner top without rotation of the tubing. This tool is especially useful in dual wellbore or horizontal completions where control of tubing rotation down hole is difficult.

Features :

- Can be supply with the Blank, Half Mule, Locater latch type, and Threaded type Bottom Sub.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirement.
- Have same pressure and temperature rating with tubing.

EXPANSION JOINT
MODEL: GR-EJ

GR-EJ

The GR-EJ Expansion Joint is cutting through debris. The Overshot automatically Jays up on Stinger when lowered into well. contraction of the tubing during injection, treating and production operations. The Expansion Joint is designed to transmit torque throughout the stroke of the tool. Pressure is contained with a bonded seal system as standard equipment. Premium seals are available upon request.

Features :

- Can be supply with the Blank, Half Mule, Locater latch type, and Threaded type Bottom Sub.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirement.
- Have same pressure and temperature rating with tubing.
- Temperature rating up to 325°
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections.

Specification Guide (GR-EJ):

Tubing Size (In.)	Tool OD (In.)	Tool ID (In.)
2-3/8	3.260	1.995
2-7/8	4.000	2.441
3-1/2	5.010	2.992
4-1/2	6.375	3.958

SEAL BORE EXTENSION
MODEL: GR-SBE

GR-SBE

Seal Bore Extension can be run below Seal Bore Packer. A Seal bore extension is run to provide additional sealing bore when a long seal assembly is run to accommodate considerable tubing movement.

The Seal Bore Extension has the same I.D. as corresponding Packer seal bore.

it is run with. Thus all seals of a long seal assembly seal off in in the Seal Bore Extension. If the top set seals, normally sealing in the packer bore should get damaged, the seal bore extension still get provide sealing surfaces for the lower seals

MILL OUT EXTENSION
MODEL: GR-MOE

GR-MOE

Mill Out Extension can directly run directly below model Seal Bore production Packers when a Seal Bore Extension or other tailpipe is run below the Packer. Mill out Extension has ID slightly more than the seal bore id of Packer and Seal Bore Extension. The mill Out Extension is required to accommodate the Mandrel

and catch the Sleeve of the Packer Milling Tool when the Packer milled up. The Mill out extensions should always be run directly below the Packer.

Features :

- Connects below the Seal Bore Packer.
- Having smooth ID equals to the Seal Bore of Packer provide better sealing.
- provide with Concentric coupling and Bottom.
- Sub to connect with Bottom tail pipe.
- O-ring with Teflon Back up Ring provides high pressure and temperature.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal / H2S, CO2 well services requirement.
- Have same pressure and temperature rating with Packer Body.

ON - OFF TOOL
MODEL: GR-T-2

GR-T-2

The GR-T-2 On-Off Tool is tubing disconnect device that has an internal blanking plug locking profile with seal bore for utilizing flow control equipment. The Overshot has a box looking up which connects to tubing string and a pin looking down off the Stinger which connects to the packer. The WT has two basic components that comprise the Overshot. The Top Sub which contains two Bonded rubber steel seals and the Jay Latch which has a J Slot configuration to locate and latch the On-Off Tool Stinger. The Jay Latch also has a wash over shoe configuration which allows cutting through debris. The Overshot automatically Jays up on Stinger when lowered into well.

Applications:

- Mechanical, hydraulic or Wire line -set packer completions.
- Zonal isolation above the packer.
- Temporary abandonment of lower zones.
- Tubing retrieval without disturbing the packer.

Features:

- The tool enables the packer to be used as a bridge plug for zonal isolation or the temporary abandonment of lower zones, saving rig costs.
- The tool can be full-pressure tested at the surface to save rig time.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections.

Specification Guide (GR-T-2):

Casing Size (In.)	Washover Shoe OD (In.)	Thread connection	Stinger or Slick joint Locking profile
4 1/2	3.750	2 3/8 EU	1.812, 1.875, X, XN, R, RN, F, R
5 1/2	4.516	2 3/8” & 2 7/8” EU	1.812, 1.875, 2.125 X, XN, R, RN, F, R
7	5.875	2 3/8”, 2 7/8” & 3 1/2” EU	2.313, 2.250, 2.750, 2.813 X, XN, R, RN, F, R
9 5/8	8.255	3 1/2” & 4 1/2 EU	2.750, 2.813, 3.312 X, XN, R, RN, F, R

ROTATIONAL SHEAR OUT SAFETY JOINT
MODEL: GR-SOS-R

GR-SOS-R

The model GR-SOS-R Rotational Safety Joint provides for emergency release of the tubing string. The RH Rotational Safety Joint uses larger square left-hand threads to separate the upper and lower subs with right-hand rotation abandoning any production equipment below.

Features:

- The shear value is field adjustable.
- Field proven deign.
- Additional sizes available on request.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections.

Specification Guide (GR-SOS-R):

Tubing size (In.)	Tool OD (In.)	Tool ID (In.)
2 3/8	3.062	1.985
2 7/8	3.640	2.485
3 1/2	4.500	2.985
4 1/2	5.563	3.985

ANTI-ROTATIONAL SHEAR OUT SAFETY JOINT
MODEL: GR-SOS -AR

GR-SOS-AR

GR-SOS-AR Shear out Safety Joint provides a means of releasing the tubing string from the rest of the completion in an emergency. A straight pull separates the tool at a predetermined shear value. The Shear Safety Joint allows torque to be transmitted through the tool without affecting the shear screws.

Features:

- The shear value is field adjustable.
- Allows the application of torque without affecting the shear screws.
- Field proven design.
- Additional sizes available on request.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections

Specification Guide (GR-SOS-AR):

Tubing Size (In.)	Tool OD (In.)	Tool ID	Max Shear (Lbs.)
2 3/8	3.062	1.985	54,000
2 7/8	3.640	2.485	54,000
3 1/2	4.500	2.985	60,000
4 1/2	5.563	3.985	108,750

ANCHOR LATCH SEAL ASSEMBLY
MODEL: GR-ALA

GR-ALA

The Anchor latch seal Assembly positions the seal units in the polished bore of the packer at the bottom of the available stroke. With a slight amount of set-down weight, the anchor latch will snap into the top thread of the packer mandrel or polished bore receptacle. This feature allows an upward pull to be applied to the tubing string to positively confirm proper location and operation.

To release the anchor latch, an upward pull combined with right-hand rotation of the tubing at the latch, release the anchor from the packer bore. The releasing mechanism of the anchor makes it ideal for completions where tubing movement is not desirable.

Features:

- Field proven design.
- Easy string-in and release procedure.
- Available in Bonded, and V-type chevron seal units.
- Debris-tolerant standard bonded seal unit.
- Prevention of Seal movement.
- Available in All API material grades.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections

Specification Guide (GR-ALA):

Size (in.)	Max OD (In.)	Min ID (In.)	Standard Top Connection
5.000 x 2.688	3.500	1.950	2-3/8” EU
5.500 x 3.000	3.820	2.350	2-7/8” EU
7.000, 7.625 x 3.250	4.630	2.410	2-7/8” EU
7.000, 7.625 x 4.000	5.290	3.040	3-1/2” EU
9.625 x 4.750	7.000	3.280	3-1/2” EU
9.625 x 6.000	7.000	4.870	4-1/2” EU

PERFORATED / NON - PERFORATED SPACER TUBE
MODEL: GR-PT/GR-PT-N

GR-PT

GR-PT-N

The Perforated Spacer Tube is used at the end of a tubing string to provide an alternate flow path in cases where wire line measuring devices are used. The Perforated Spacer Tube is made of low grade material and its assembly consists of a perforated nipple with standard tubing thread, a crossover coupling up, and a crossover sub down. Perforated Spacer Tube are available with special box thread up and pin thread down, upon request.

The Non-Perforated Production Tube is made-up at the bottom of the production string. Its basic purpose is to act as a stinger (or extension) to keep the packer flapper valve open when producing or when working below the packer.

* Perforated / Non Perforated spacer tube are available in all API Grade Material & API threads. Other Material & threads are also available upon request.

BLAST JOINT / FLOW COUPLING
MODEL: GR-BJ

GR-BJ

Blast joints or Flow coupling are installed in the tubing opposite perforations in wells with two or more zones. These are heavy walled and are sized to help prevent tubing damage from the jetting action of the zone perforations. It should be installed above and below landing nipples or other restrictions that may cause turbulent flow. Help to extend the life of the well completion.

Basic applications are to help inhibit erosion caused by jetting action near perforations, installed opposite perforations in one or more zones. Furnished in various grades of materials with required end connections and different lengths to meet our customer's as well as API standard requirements.

* Blast joint are available in all API grade material and API threads other thread & material is available up on request

WIRELINE ENTRY GUIDE
MODEL: GR-WEG

GR-WEG

The Wireline Entry Guide are use for safe re-entry of wireline tool from the casing into the tubing string. The internal bevel guides the wireline or slick line tool string back into the tubing. Mule shoe guide is a standard guide for all the of completion equipments.

Application :

- Safe re-entry of wireline or slickline tools into the tubing string.
- Lowest component in the tubing string.

Features:

- Rugged one piece construction.
- Available in low alloy steel and premium materials.
- Available in beveled, full or half mule shoe configurations.
- Reliable and easy to install.
- Thread sizes range from 2-3/8'' and onwards.
- Service H2S/CO2/Standard/Sour.

CROSSOVER
MODEL: GR-CR-PP, CR-BB & CR-PB

GR-PP

GR-BB

GR-PB

Gradwell Crossovers provide safe connections between joints of different sizes and types. Crossover subs are used when it is necessary to have frequent disconnection points whether Box x Pin, Box x Box or Pin x Pin.

These tool are useful for drilling,tubing,and wash over string section with different end connections.

Gradwell crossover subs are machined from high-grade heat-treated alloy steel.

Although An extensive variety is available in stock, generally Crossovers are custom designed and manufactured to suit specific applications.
All type of premium or standard threads can be ordered.

Application :

- Drilling.
- Tubing.
- Washovers.
- Connections.

Features:

- Full range of connections are available.
- Stock available.
- Custom designs and sizes also available.

WIRELINE ADAPTER KIT FOR BRIDGE PLUG & CEMENT RETAINER MODEL: GR-WAK-BP / CR

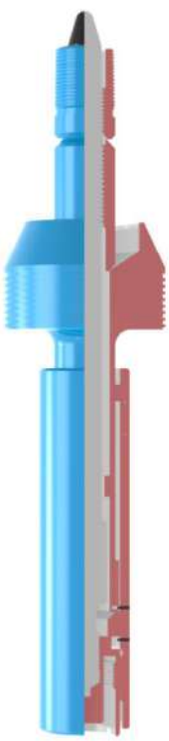
GR-WAK-BP / CR

This WIRELINE ADAPTER KIT is use to set bridge plug and cement retainers GR-BP-W or GR-BP-CR by coupling them with wireline pressure setting assembly while set thru wireline and with hydraulic setting tool while by drill pipe or tubing string in the well bore.

Application:

- The WIRELINE ADAPTER KIT is use to couple an electric line or hydraulic setting, tool assembly to the (GR-WAK-BP/CR)

WIRELINE ADAPTER KIT FOR PERMANENT PACKER MODEL: GR-WAK-PP



GR-WAK-PP

The Wireline Adapter kit is used to set permanent/retrievable packers and bridge plugs with the aid of appropriate Wire Line string or pressure setting assembly else with hydraulic setting tool as per varying requirement/operations. In its most common use with a wireline setting tool, the system allows for a substantial reduction in rig me over setting on tubing with release/shear stud of different shear values.
e.g.: 35000 lbs, 55000lbs etc. as per the setting mechanism and requirements.

Features:

- Substantial rig time saving over hydraulically setting packer.
- Mates to size #10 or #20 wireline pressure setting assembly.
- Mates to hydraulic-setting tool.
- Long field life & rugged design.

RETRIEVING TOOL
MODEL: GR-RT

GR-RT

The 'RT' Retrieving tool is used for retrieving. Retrievable hydraulic seal bore packer.

The latch of the retrieving tool is engaged in the top box thread of the seal bore packer, which is a left hand sq. thread. Put set down weight 3000-5000 Lbs. on the packer and turn to the right to engaged the collet of the retrieving tool under the supporting sleeve of the packer.

PULL! In principal the packer should release with a pull of 5-10 tons. Once the screws have sheared the support sleeve move upwards freeing the support breath the finger of the collet the latter can then flex and detach itself from the thread linking it to the base of the packer the compression of the packing element are released and the slips retracted. The setting sleeve is supported by the ring, which rests on the top of the piston above the o-ring.

To disengage the retrieving tool from the packer at the bottom or on the surface, a safety release feature is also provided. A Shear Ring with 6 nos. of brass shear screws having shear value 3565 lbs. per screw provided for emergency release of tool should be accomplished by giving 10 ~ 15 right hand rotation followed by a straight pull of 22,000 lbs.

HYDRAULIC SETTING TOOL
MODEL: GR-HSHK

GR-HSHK

GR-HSHK Hydraulic setting tool is a single chamber, tubing pressure actuated setting tool used in gravel pack operations in conjunction with the gravel pack crossover tool or hydro-set adapter kit to run and set drillable type production packers on tubing.
Economical GR-HSHK hydraulic setting tool, with the appropriate setting sleeve, adapter sleeve, is made up above the gravel pack crossover tool or hydro-set adapter kit. This unit is stabbed into the well. The technical literature for proper adjustment of the setting tool.
Pump ball to seat and set the packer.

Features:

- Short and compact-increases the efficiency of handling,shiping, and storing as well as operations on the rig.
- Simple construction-constructed of a minimum number of working parts, making it economical to maintain.

HYDRAULIC SETTING TOOL FOR RETRIEVABLE SEAL BORE PACKER MODEL: GR-RSBP-ST

GR-RSBP-ST

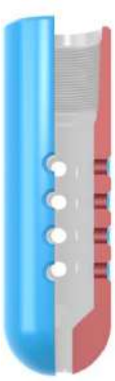
The Packer Setting Tool Nipple for the Single String Hydraulic Packer is a connecting device for running the tool string into the well on the service string. The running tool is attached to the packer by a standard anchor latch with LEFT-HAND square thread, and released by a straight-pull shear release. In an emergency, after the shear ring has been sheared, rotational release can be accomplished by right- hand turn.

Features:

- Pressure Rating Equivalent to that of the Hydraulic set Single-String Hydraulic Packer.
- 300° F. working temperature.
- 50,000 lb. straight-pull release.
- Chevron seals for improved life.
- Rotationally locked to packer to enhance running in Horizontal Wells.

If the Packer Setting Tool Nipple cannot be released by straight pull (shear release), assure that at least 50,000 lbs. has been pulled at the packer (to shear the ring), then rotate the tubing to the right fifteen [15] turns while holding a slight up strain.

BALL CATCHER SUB MODEL: GR-BCS



GR-BCS

Ball catcher sub provides a means of catching the ball and sheared out ball seat from a hydro trip pressure subs or pump out plugs. It has multiple sets of large diameter holes those allow fluid passage
without restriction.

Features:

- Large bypass area in the catcher sub is made with multiple sets of large diameter holes. These holes are sized to catch the ball and seat, but allow fluid to pass through the tool without plugging.

MILLING TOOL FOR BRIDGE PLUG & PERMANENT PACKER
MODEL: GR-BP-MT & GR-PP-MT

GR-BP-MT GR-PP-MT

The Model: GR-BP-MT & GR-PP-MT Milling Tool, was formerly called the Packer Milling Tool with automatic J-slot. It is the same tool in all respect except for the name, model designation, and product number. The Model: GR-BP-MT & GR-PP-MT Milling Tool is used to mill over and retrieve retainer production packers. It contains a Catch Sleeve with J-pins which is used to retrieve the body of the packer after the outside portion of the packer has been milled up.

Packer Milling Tool

Three different but related models of the Gradwell packer milling tool are available for milling over retainer production packers, cement retainers and bridge plugs. The basic model is the GR-BP-MT & GR-PP-MT The Model GR-BP-MT & GR-PP-MT Milling Tool, essentially a Model GR-BP-MT & GR-PP-MT with a thread protector installed in place of the body assembly.

Features:

- Minimum Drill-Out Time. The time required to mill over a retainer production packer with a Gradwell packer milling tool generally runs from 2 to 4 hrs. Smaller retainers and plugs require even less time.

Mills Effectively for Hours.

To ensure longer cutting life, the milling shoe (and the bottom sub on the Model GR-BP-MT & GR-PP-MT and GR-BP-MT & GR-PP-MT is dressed with crushed tungsten carbide chips contained in the special Gradwell Milling Carbide Compound No. 1. The size and type of chip used, as well as the method of application, are the result of extensive Gradwell research. When one chip becomes dull and ineffective, another sharp chip is ready to take over its job. Milling action remains effective throughout the entire job. The milling tool can easily mill up the largest packer in one round trip.

CASING SCRAPER
MODEL: GR- CS

GR-CS

The Gradwell Casing Scraper is designed to remove scale, mud cake, cement sheath, embedded bullets, and other foreign material from the inside of the casing wall. Maintaining a clean casing ID is vital for the efficient operation of down-hole tools used in the well. The resulting smooth surface makes the casing for subsequent down-hole operations such as packer's installation and squeeze tools operations.

Applications:

- Clean out paraffin, hardened cement and mud.
- Remove burrs from perforations.
- Remove imbedded bullets from casing.
- Remove burrs and nicks caused by bits or fishing tools.
- Remove tight spots in casing caused by dents from tool.

Features:

- Rugged Construction. The body of the Scraper is machined from solid bar stock, and blade blocks are of case hardened steel for absolute maximum ruggedness and strength.
- Rotating or Reciprocal Action. The Casing Scraper operates successfully either when rotated or reciprocated vertically on Drill Pipe or Tubing. It can also be run on cable-tool drilling line with jars and sinkers when ordered with a cable-tool joint pin up.
- Cannot "Screw" Down During Rotation. The angle and direction of shear of the scraping edges of the blades are such that the Scraper cannot "screw" down past burrs as it rotates.
- Special Design also available for Inconel Casings.

Specification Guide (GR-CS):

Casing				Scraper Specification			
SIZE (In.)	Wt. (ppf)	Min ID (In.)	Max. ID (In.)	Thread Connection	ID (In.)	Min. Blade OD (In.)	Max. Blade OD (In.)
4-1/2	9.5-13.5	3.920	4.090	2-3/8 API IF	1-1/8	3-5/8	4-1/4
5	13.0-23.2	4.044	4.494	2-7/8 API Reg.	1-1/4	3-3/4	4-5/8
5-1/2	15.5-23	4.670	4.950	2-7/8 API Reg.	1-1/4	4-3/8	5-1/8
5-1/2	13-14	5.012	5.240	2-7/8 API Reg.	1-1/4	4-3/4	5-3/8
7	35-38	5.920	6.004	3-1/2 API Reg.	1-1/2	5-5/8	6-1/4
7	23-38	5.920	6.366	3-1/2 API Reg.	1-1/2	5-5/8	6-1/2
7	17-32	6.094	6.538	3-1/2 API Reg.	1-1/2	5-7/8	6-5/8
9-5/8	32.0-58.4	8.435	9.001	4-1/2 API Reg.	2-1/4	8-1/4	9-3/8

WIRELINE & MECHANICAL SET BRIDGE PLUG
MODEL: GR-BP-W & GR-BP-M

GR-BP-W

GR-BP-M

These plugs are run and set on Tubing or Drill Pipe. It also incorporates the seal element lock to allow faster, safer run-in. Its materials are also subject to the same stringent specifications and quality control procedures and hence provide improved easy drill feature and are suitable for higher pressure ratings.

It can easily be converted to a Cement Retainer. Its Simple design allows the upper portion of the body and the bridging plug to be drilled out, generating pressure equalization across the tool before drilling out the upper slips.

Changing the upper slip enable the bridge plug to be set mechanically or on a wire line setting tool assembly. It is easily converted to a cement retainer.

Features:

- Choice In Setting - Wireline and mechanical Remove burrs from perforations.
- High Performance - 10,000 psi and 400 deg.F in most.
- Superior Running Characteristics - Increased clearance and locked construction for faster, safer run-in with packing element locked against swab-off forces.
- Body Lock Ring - Traps setting force in element to maintain pack-off during pressure reversals.
- Adaptable - Bridge Plug consist of a basic unit which can easily be converted to mechanical or wireline set or cement retainer.

WIRELINE & MECHANICAL SET CEMENT RETAINER
MODEL: GR-CR-W & GR-CR-M

GR-CR-W GR-CR-M

Wireline set cement retainer is a high quality tool for squeeze cementing. The sleeve valve is controlled from the surface by simply picking up to close and setting down to open. The valve is automatically closed when the stinger is removed from the retainer. This retainer plug sustains high pressure and temperature. It may be set on a Wireline/ Hydraulic setting tool or mechanically by changing the top slips. It can also converts to a bridge plug by replacing the sliding sleeve by solid plug.

Features:

- Choices of setting by wireline and mechanical.
- High Performance - 10,000 psi and 400 Deg F.
- Enormous annulus clearance for faster & safer run-in.
- With simple kit Cement Retainer easily converted to bridge plug.
- Simple conversion to cement retainer, reducing inventory.
- Body Lock Ring: Traps setting force in element to maintain pack-off during pressure reversals.
- Rotationally locked, cast-iron components enable a fast & easy drill out to save rig time.
- Easily PDC drillable.

Specification Guide (GR-BP-W/M & GR-CR-W/M) :

Casing / Tubing		Tool		Preferred casing ID Range		Differential
OD (In.)	Wt. (lbs/ft)	Size	Max OD (In.)	Min (In.)	Max (In.)	Pressure (psi)
4-1/2	9.5-16.6	BX1	3.593	3.826	4.090	10,000
5	11.5-20.8	BY1	3.937	4.154	4.560	
5-1/2	26.0-32.3					
	14-23	BX2	4.312	4.580	5.044	
6	18-26	BY2	4.937	5.140	5.552	
7	49.5					
6-5/8	20-32	BX3	5.410	5.595	6.135	
7	32-44					
	17-35	BY3	5.687	6.000	6.538	
7-5/8	45.3					
	20-39	BX4	6.312	6.625	7.125	
7-3/4	46.1					
8-5/8	24-49	BX5	7.125	7.511	8.097	
8-3/4	49.7					
9-5/8	32.3-58.4	BX6	8.125	8.435	9.063	8,000
9-3/4	59.2					
9-7/8	62.8					
10-3/4	60.7-81	BY6	9.000	9.250	9.660	5,000
	32.75-60.7	BX7	9.437	9.660	10.192	
11-3/4	60.0-83.0	BY7	9.937	10.192	10.772	4,000
	42-60	BX8	10.437	10.772	11.150	
13-3/8	85-102	BY8	11.562	11.633	12.159	3,000
	48-80.7	BX9	12	12.175	12.715	
13-1/2	81.4					
13-5/8	88.2					
16	109.0-146.0	BX11	13.915	14.000	14.750	P110 2000
	55.0-84.0	BY11	14.585	14.700	15.400	N80 1450

HYDRO MECHANICAL BRIDGE PLUG
MODEL: GR-BP-H-BB

GR-BP-H-BB

Hydro-Mechanical bridge plug is hydraulically actuated and mechanically set. Compact with small OD this tool can withstand high pressure and is designed for easily drill out. It can be used in zone isolation for squeeze cementing, fracturing, and plug and abandonment either temporary or permanent.

Features:

- The setting mechanism and control are contained in the bridge plug eliminating the need for a complex mechanical setting tool.
- Eliminates the expense of wire line setting tool and equipment.
- Full tubing bore is available for unobstructed passage of fluids and wire line run perforating and logging equipment after the plug is set and tubing released.
- Can be run and set in tandem with retrievable production packers or squeeze packers.
- Top equalizing during drill-out without the plug coming up the hole due to pressures contained below the plug.
- Set securely in most casing, including many premium grades.

WIRELINE SET BIG BOY BRIDGE PLUG
MODEL: GR-BP-W-BB

GR-BP-W-BP

The Big Boy Bridge Plug has proven to be a product that can be depended on. It has excellent running characteristics and secure sets. The plug can be set on different types of wireline pressure setting tools. The Big Boy is designed for rapid drill-out while maintaining sufficient strength during the set. This plug sustains high pressures and temperatures.

Features:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force

WIRELINE SET MID GET BRIDGE PLUG
MODEL: GR-BP-W-MG

GR-BP-W-MG

The Midget Bridge Plug Series provides an economical means of zone isolation for fracturing or other treatments. The plugs are compact and require less drilling time when being removed. The plug can be set on different types of wireline pressure setting tools. This plug sustains moderate pressures and temperatures.

Features:

- Electric wireline set.
- Drillable.
- Cast iron construction.
- One piece slips - hardened to depth of wicker only.
- Sets in any grade casing including P-110.
- For temporary or permanent service.
- Ratcheting lock ring holds setting force.
- Small OD for speed and safety when running.
- For temporary or permanent service.
- Ratcheting lock ring holds setting force.
- Small OD for speed and safety when running.

Specification Guide (GR-BP-W-MG):

Casing		Plug	Setting Range (In.)	Setting Tool	Elastomer
Size (In.)	PPF	OD (In.)			
3 1/2	5.7-10.2	2.75	2.867-3.258	HST #10	NITRILE/ HNBR / VITON/ AFLAS
4 1/2	9.5-15.1	3.50	3.826-4.090	HST #10	
5 1/2	13.0-25.0	4.24	4.580-5.047	HST #20	
7	17.0-35.0	5.61	5.989-6.655	HST #20	
9 5/8	29.3-53.5	7.71	8.435-9.063	HST #20	
13 3/8	48.0-72.0	12.0	12.347-12.715	HST #20	

SNAP LATCH & MECHANICAL SETTING TOOL
MODEL: GR-SLST & GR-MST

GR-SLST GR-MST

Snap latch tool is a mechanical setting tool used for setting Bridge Plugs and Cement Retainers. It comprises a snap latch mechanism for setting the tool. By putting the weight on it, it latches in product for setting. This essentially allows the setting tool to function as a snap latch stinger sub which provides an upward stop as the tubing is raised. At this stop the valve is closed but the stinger sub seal is still in the bore of the retainer. At this position in the running string internal pressure test could be carried out. For releasing the tool, up strain and rotate it.

Features:

- One trip system. Mechanically sets tool with rotation and
- Up strain and functions as a stinger for subsequent cementing operations
- Easily converted to set either Cement Retainers or Bridge Plugs.
- Safe run in. Upper slip is securely locked in place and latch is solidly threaded into the body of the retainer
- Snap latch feature latches into the retainer with set down weight and is released with tension.
- Controls retainer valve. The stinger opens the sleeve valve with set down weight and closes it with up strain.
- Tubing pressure test is possible with latch sleeve valve retainers by pulling up to close retainer valve prior to snapping out of retainer.

Specification Guide (GR-SLST & GR-MST):

Casing/Tubing		Tool			Tubing Setting Tools	
OD (in.)	Wt. (lbs/ft)	Size	Seal Bore (in.)	Max OD (in.)	Model	Setting Sleeve OD (in.)
4-1/2	9.5 - 16.6	BX1	1.345	3.593	BX1-BY1	3.594
5	11.5 - 20.8	BY1		3.937		
5-1/2	13 - 23	BX2		4.312	BX2	4.312
6	14 - 26	BY2		4.937	BY2	4.938
	10.5 - 12					
6-5/8	17 - 34	BX3	2.000	5.410	BX3	5.375
7	32 - 44					
	17-35	BY3		5.687	BY3	
7-5/8	20 - 39	BX4		6.312	BX4	6.312
8-5/8	24 - 49	BX5		7.125	BX5	7.125
9-5/8	29.3 - 53.5	BX6		8.125	BX6	8.120
10-3/4	60.7 - 81	BY6		9.000	BY6	8.875
	32.75 - 60.7	BX7		9.437	BX7	9.437
11-3/4	60.0 - 83.0	BY7		9.937	BY7	9.930
	38 - 60	BX8		10.437	BX8	10.438
13-3/8	85 - 102	BY8		11.562	BY8	11.562
	48 - 72	BX9		12.000	BX9	12.000
16	109.0 - 146.0	BX11		13.915	BX11	13.900
	55.0 - 84.0	BY11		14.585	BY11	14.570

STINGER SUB & CONTROL UNIT
MODEL: GR-SS & GR-CU

GR-SS GR-CU

Gradwell Stinger Assembly is a tubing conveyed latching seal assembly that is used to operate the sliding valve in a wireline set GR-BP-W cement retainer.
Gradwell Stinger Sub is connected to Control Unit Assembly may be run with a tubing centralizer or a modified star guide, to provide a centralized entry into the cement retainer.
The Snap-In and Snap-Out collet serves as an indicator. Providing positive control when the work string is picked up to close the solid valve.
The snap out indicator re-engages each time the work string is lowered to open the valve. The snap out indicator helps prevent the seal from pumping out during pumping operations or tubing testing.
The snap out indicator may be removed from the cement retainer by straight pull or by rotation serving additional safety feature.

Features:

- Squeeze cementing.
- Multiple uses by replacing inexpensive redress kit.
- Can also be used with preset Gradwell GR-BP-M mechanical cement retainer.
- Built in snap out indicator provides positive control when the work string is picked up to closed the inside valve. Re- engages each time the work string is lowered to open slide valve.
- Snap in designed helps prevent seal from pumping out during pumping operations or tubing testing.
- One size operates several sizes of retainers.
- Released by straight pull or rotation.

Specification Guide (GR-SS & GR-CU):

Casing		Tool	
Size (in.)	Weight (lbs/ft.)	Size	Thread spec.
4-1/2	9.5-15.1	BX1	2 3/8 EU
5	11.5-20.8	BY1	
5-1/2	13-23	BX2	
6-5/8	17-32	BX3	2 7/8 EU
7	17-35	BY3	
7-5/8	20-39	BX4	
8-5/8	24-49	BX5	
9-5/8	29.3-58.4	BX6	
10-3/4	32.75-60.7	BX7	
11-3/4	38-60	BX8	
13-3/8	48-80.7	BX9	

PACKER & BRIDGE PLUG

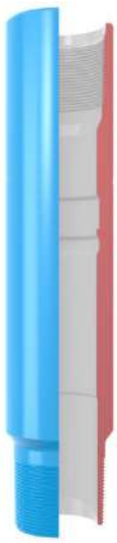
MANUFACTURED BY :

Address : 57/58 Km Stone NH-48,
Industrial Area Binola, post.
Bhorakalan, Dist. Gurugram,
Haryana India
Pin Code : 122413
Contact Us : **www.gradwelloilfield.com**
Ph : 0124-2271100

Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers

FLOW CONTROL EQUIPMENTS

SELECTIVE NIPPLE
MODEL: GR-LNP-GX



GR-LNP-GX

"GX" Landing Nipples are fully selective nipples, used to land, lock and seal X-type locking mandrels with attached flow control devise in the production tubing string. The internal profile of GX Landing Nipples includes a selective profile a locking recess and a polished seal bore. When installed, the locking dogs in the X-type lock move out into the recess of the nipple, anchoring the lock and positioning the lock packing in the polished sealbore section of the nipple Blanking Plugs Standing Valves Instrument Hangers Bottom Hole Chokes..

Applications :

- Inserting Blanking Plugs for shutting in or testing.
- Setting a packer or testing tubing.
- Installing instrument hangers for temperature and pressure recorders.
- Velocity-type safety valves for shutting off flow.

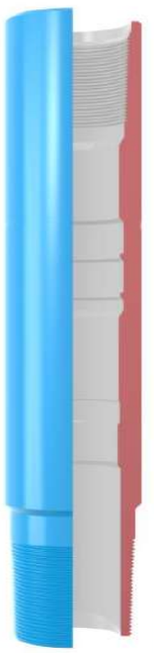
Features :

- Internal locking groove fits various other Flow Control tools.
- Selective locking devices allow more than 1 GX Landing Nipple of the same sealbore diameter to be used in the same tubing string.
- Seal bore area packs off various Flow Control devices.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification guide :

Tubing size	Seal bore (In.)	Min. OD (In.)	Length (In.)
2-3/8"	1.875	3.063	12-17
2-7/8"	2.312	3.668	13-18
3-1/2"	2.750	4.500	15-20
	2.812		
4-1/2"	3.812	5.563	15-20

NON-SELECTIVE NIPPLE
MODEL: GR-LNP-GXN



GR-LNP-GXN

"GXN" Landing Nipples are fully selective nipples, used to land, lock and seal X-type locking mandrels with attached flow control devise in the production tubing string. The internal profile of GXN Landing Nipples includes a selective profile a locking recess and a polished sealbore. When installed, the locking dogs in the X-type lock move out into the recess of the nipple, anchoring the lock and positioning the lock packing in the polished sealbore section of the nipple Blanking Plugs Standing Valves Instrument Hangers Bottom Hole Chokes.

Applications :

- Inserting Blanking Plugs for shutting in or testing.
- Setting a packer or testing tubing.
- Installing instrument hangers for temperature and pressure recorders.
- Velocity-type safety valves for shutting off flow.

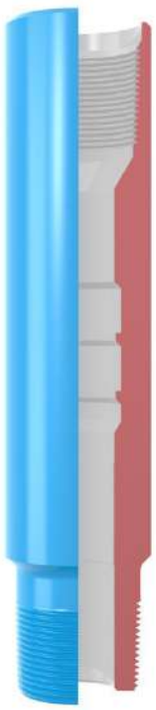
Features :

- Internal locking groove fits various other Flow Control tools.
- Selective locking devices allow more than 1 GXN Landing Nipple of the same sealbore diameter to be used in the same tubing string.
- Sealbore area packs off various Flow Control devices.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification guide :

Tubing size	Seal bore (In.)	Min. OD (In.)	No-Go ID (In.)	Length (In.)
2-3/8"	1.875	3.063	1.796	12-17
2-7/8"	2.312	3.668	2.348	13-18
3-1/2"	2.750	4.500	2.210	15-20
	2.812			
4-1/2"	3.812	5.563	3.730	15-20

LANDING NIPPLE SELECTIVE TYPE
MODEL: GR-LNP-GR



GR-LNP-GR

Gradwell model “GR” Landing Nipple is a tubing nipple for use with Bottom No-Go locking devices only. It has a Polished Sealbore, Bottom No-Go shoulder, and a locking groove. GR Nipple locates seals and retains flow control accessories that have a bottom no go locking device accessories are run and retrieved on slick line.

The Gradwell “GR” Landing Nipple is a full bore, non-selective nipple that allows for the location of many wireline-run and retrieved Flow Control devices, such as:

- Blanking Plugs.
- Check Valves (Standing Valves).
- Instrument Hangers.
- Bottom Hole Chokes.

Applications :

- Inserting blanking plugs for shutting in or testing.
- Setting a packer or testing tubing.
- Installing instrument hangers for temperature and pressure recorders.
- Velocity-type safety valves for shutting off flow.

Features :

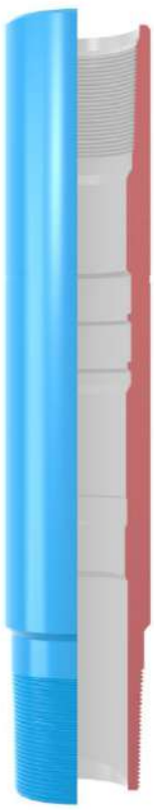
- Internal locking groove fits various other Flow Control tools.
- Selective locking devices allow more than 1 CR Landing Nipple of the same sealbore diameter to be used in the same tubing string.
- Sealbore area packs off various Flow Control devices.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification guide :

Tubing size	Seal bore (In.)	Min. OD (In.)	No Go ID (In.)	Length (In.)
2-3/8”	1.781	2.560	1.728	12-17
	1.812		1.760	
	1.875		1.822	
2-7/8”	2.062	3.109	1.978	13-18
	2.125		2.075	
	2.250		2.197	
	2.312		2.259	
3-1/2”	2.562	3.687	13-18	15-18
	2.750			
	2.812			
4-1/2”	3.688	5.200	3.625	15-20
	3.750		3.700	
	3.812		3.759	

* Length may vary depending on thread size and type. Available in All API & Premium thread connections on request.

NON-LANDING NIPPLE SELECTIVE TYPE
MODEL: GR-LNP-GRN



GR-LNP-GRN

"GRN" Landing Nipples are fully selective nipples, used to land, lock and seal GRN" Landing Nipples are fully selective nipples, used to land, lock and seal "RN" Bottom No-Go locking devices only. It has a Polished Sealbore, Bottom No-Go shoulder, and a locking groove

The "GR" Nipple is designed to be used in the heaviest weight, higher rated pressure tubing. It has a Polished Sealbore and a locking groove.

The internal profile of "GRN" Landing Nipples includes a selective profile a locking recess and a polished seal- bore. When installed, the locking dogs in the RN-type lock move out into the recess of the nipple, anchoring the lock and positioning the lock packing in the polished sealbore section of the nipple.

- Blanking Plugs
- Standing Valves
- Instrument Hangers
- Bottom Hole Chokes

Applications:

- Inserting blanking plugs for shutting in or testing.
- Setting a packer or testing tubing.
- Installing instrument hangers for temperature and pressure recorders.
- Velocity-type safety valves for shutting off flow.

Features :

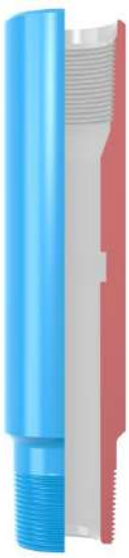
- Internal locking groove fits various other Flow Control tools.
- Selective locking devices allow more than 1 CR Landing Nipple of the same sealbore diameter to be used in the same tubing string.
- Seal bore area packs off various Flow Control devices.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirement.
- Available in All API & Premium thread connections.

Specification guide :

Tubing size	Seal bore (In.)	Min. OD (In.)	No-Go ID(In.)	Length (In.) *
2-3/8"	1.500	3.063	1.345	15-18
	1.710		1.560	
	1.781		1.640	
2-7/8"	1.875	3.668	1.716	15-18
	2.000		1.881	
	2.125		1.937	
	2.188		2.010	
3-1/2"	2.188	4.500	2.010	13-18
	2.313		2.131	
	2.562		2.329	
4-1/2"	3.437	5.563	3.260	15-20
	3.688		3.456	
	3.813		3.725	

- Length may vary depending on thread size and type. Available in All API & Premium thread connections on. request

TOP NO GO NIPPLE
MODEL: GR-LNP-GF



GR-LNP-GF

Gradwell model “GF” Landing Nipple is a tubing nipple for use with Top No-Go locking devices only. It has a Polished Seal bore, Top No-Go shoulder, and a locking groove.GF Nipple locates seals and retains flow control accessories that have a top no go locking device accessories which are run and retrieved on slick line.

The Gradwell “GF” Landing Nipple is a full bore, selective nipple that allows for the location of many wire line-run and retrieved Flow Control devices, such as:

Blanking Plugs Check Valves (Standing Valves) Instrument Hangers Bottom Hole Chokes.

Applications :

- Inserting blanking plugs for shutting in or testing.
- Setting a packer or testing tubing.
- Installing instrument hangers for temperature and pressure recorders.
- Velocity-type safety valves for shutting off flow.

Features :

- Internal locking groove fits various other Flow Control tools.
- Selective locking devices allow more than 1 CF Landing Nipple of the same sealbore diameter to be used in the same tubing string.
- Sealbore area packs off various Flow Control devices.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S,CO2 well services requirements.
- Available in All API & Premium thread connections.

Specification guide:

Tubing size	Seal bore (In.)	Min. OD (In.)	Length (In.)
2-3/8”	1.781	2.560	12-17
	1.812		
	1.875		
2-7/8”	2.062	3.109	13-18
	2.125		
	2.188		
	2.250		
	2.312		
3-1/2”	2.562	3.687	13-18
	2.750		
	2.812		
4-1/2”	3.688	5.200	15-20
	3.750		
	3.812		

**Length may vary depending on thread size and type.

LOCK MANDRELS (BLANKING PLUGS)
MODEL: GR-LM-R,GR-LM-X & GR-LM-RN,GR-LM-XN

The Gradwell Locking Mandrels are selective and Non Selective set lock mandrels designed to be landed down hole in a respective GX, GXN, GR, GRN Landing Nipple profile. The "GX" Lock is available with various sub surface plug assemblies and flow control accessories.

These Lock mandrels are runs with respective size model "GX" and "GR" Running Tools and can be retrieve by using model "GS" pulling Tool.

Applications :

- Selected zones can be produced or shut in.
- To pressure test tubing.
- To isolate tubing for wellhead repair or removal.
- To set hydraulic actuated Packers.
- Gauge hangers for bottom hole pressure/temperature surveys.
- Positive locator for straddle systems.
- Plugging under pressure.
- Almost unlimited locations for setting and locking subsurface flow controls.

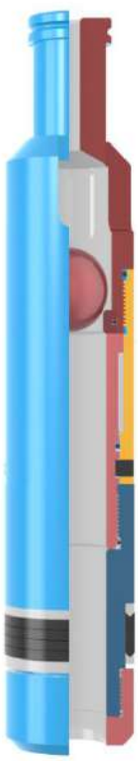
Features :

- Retractable locking keys
- Locks designed to hold pressure from above or below or from sudden reversals
- Extra large ID for higher flow volumes Available in All API material grade.
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements

Specification guide :

Tubing size	Seal bore (In.)	Min. OD (In.)	Lock Mandrel ID(In) (GX and GXN type)	Lock Mandrel ID(In) (GR and GRN type)
2-3/8"	1.500	3.063	1.00	0.62
	1.710			0.75
	1.781			0.88
2-7/8"	1.875	3.668	1.38	0.88
	2.000			
	2.125			1.12
	2.188			
3-1/2"	2.188	4.500	1.75	1.12
	2.313			
	2.562			1.38
4-1/2"	3.437	5.563	2.62	1.94
	3.688			2.38
	3.750			NA
	3.813			2.12

EQUALIZING CHECK VALVES
MODEL: GR-GF-2 & GR-GR-2



GR-ECV

The Gradwell Model 'GF-2' and 'GR-2' Equalizing Check Valves are complete equipment units, without any Locking Device. They are utilized in the following Tubing Mounted Equipment.

GF-2: run in all Model 'F' Nipples and all Model 'L' Sliding Sleeves GR-2: run in Bottom No-Go 'R' Nipples Both models are run into a Nipple Profile and hold pressure from above only. The 'FB-2' model lands on the top of a 'F' Nipple Profile seal bore. The'RB2' model seats on the Bottom No-Go Shoulder of a 'R' Nipple a 'C-1' Running Tool is used to run both valve assemblies. Both models can be equalized prior to retrieval, by shifting open the Equalizing Mandrel Ports. Standard Pulling Tool model "JDC"/"JUC" is utilized for retrieval of these valves.

Applications :

- Can be used as a plug to pressure test tubing.
- To set hydraulically actuated packer with the check valve positioned below the packer.
- For gas lift operations.
- To be used as a standing valve in wells which have down hole electric pumps

Specification guide:

Tubing size	Seal bore (In.)	Min. OD (In.)	To Run model "C-1" Pulling	To retrieve model "JDC/JUC Pulling Tool
2-3/8"	1.781	1.865	2-3/8"	
	1.812	1.865		
	1.875	1.905		
2-7/8"	2.250	2.302	2-7/8"	
	2.312	2.364		
3-1/2"	2.750	2.802	3-1/2"	
	2.812	2.865		
4-1/2"	3.668	3.740	4-1/2"	
	3.750	3.802		
	3.812	3.875		

RUNNING TOOL
MODEL: GR-RTX

GR-RTX

The X-Line Selective Running Tool is designed to install subsurface controls using a type X Locking Mandrel. The selective features of the X Running Tool allow the operator to install the down hole device in a pre-determined GX Landing Nipple by adjusting the tool into the selective position. If the sub surface control is to be installed in the upper most landing nipple, the locking mandrel may be run with the keys in the control or location position.

In addition to setting the X Locking Mandrel, the Running Tool may be used to locate WX Landing Nipples.

The R Selective Running Tool, similar in design, is available in a wide range of sizes to install Type R Locking Mandrels in heavy weight tubings.

Specification guide:

Sizes	1.710	1.781	1.875	2.125
Fishing neck OD	1.188	1.375	1.375	1.375
Connection	15/16-10	15/16-10	15/16-10	15/16-10
Bottom thread	3/8-16	1/2-13	1/2-13	1/2-13
Length	30.063	29.313	29.313	29.313
Shear Pin	3/16 x 11/8”	1/4x 1-1/2”	1/4 x 1-1/2”	1/4x 1-1/2”
OD Dogs retracted	1.640	1.750	1.750	2.063
OD Dogs Expanded	1.760	1.828	1.937	2.165
Fishing Neck Engages	1-1/16	1-3/4	1-3/4	1-3/4

Sizes	2.188	2.313	2.562
Fishing neck OD	1-3/4	1-3/4	1-3/4
Connection	15/16-10	15/16-10	15/16-10
Bottom thread	5/8-11	5/8-11	5/8-11
Length	29.313	29.313	30.250
Shear Pin	1/4” x 1-7/8”	1/4” x 1-7/8”	1/4” x 1-7/8”
OD Dogs retracted	2.175	2.175	2.500
OD Dogs Expanded	2.297	2.359	2.671
Fishing Neck Engages	1.812	1.812	1.812

PULLING TOOL
MODEL: GR-PTGS

The “PTGS” Pulling Tool is a wire line service tool designed to retrieve flow control devices from well bore. The “PTGS” Pulling Tool is designed to engage an internal type fishing neck. The tool is available in a wide range of sizes, for standard or H2S service. The “PTGS” Pulling Tool is designed to be released from the down hole device by downward jarring.

GR-PTGS

Specification Guide:

Nominal Size (in)	Prong Conn.	Fishing Neck	Max. O.D. (in)	F/N O.D. (in)	Top Conn.	Reach (in)
	Box	I.D. Guide (in)				
1-1/4	3/8 -16	0.880	1.160	1.000	5/8-11 UNC	1.08
1-1/2-1-3/4	1/2-13	1.060	1.470	1.187	15/16-10 UN	1.62
2	1/2-13	1.380	1.750	1.375	15/16-10 UN	1.62
2	1/2-13	1.380	1.810	1.375	15/16-10 UN	1.62
2-1/2	5/8-11	1.810	2.160	1.750	15/16-10 UN	1.62
2-1/2	5/8-11	1.810	2.160	1.750	15/16-10 UN	1.62
3	5/8-11	2.310	2.720	2.313	1-1/16-10 UN	1.62
3-1/2	1-3/8-12	2.620	3.110	2.313	1-1/16-10 UN	1.62
4	2-1/8-12	3.120	3.620	2.313	1-1/16-10 UN	1.62
5	2-1/2-10	4.000	4.500	3.125	1-1/16-10 UN	1.82
6	2-3/4-10	4.750	5.560	3.125	1-1/16-10 UN	1.86
7	3-5/8-10	5.250	5.830	3.125	1-1/16-10 UN	1.86
7	3-5/8-10	5.250	5.880	3.125	1-1/16-10 UN	1.86

NON ELASTOMERIC SLIDING SLEEVE
MODEL: GR-SSD

GR-SSD

The Sliding Sleeve is a Down hole Tool normally screwed into the production tubing, allowing for communication between the tubing and the casing. It is used to selectively produce zones in a multi-zone completion, stimulate and test zones, displace tubing or casing once the wellhead is installed, kill the well by circulation and allows for the circulation of treatment chemicals or agents. The closing sleeve has replaceable, v type upper and lower seals to ensure maximum sealing integrity for extended periods of time down hole. The upper sub is available in selective/Non Selective and Otis (X, XN, R, RN)/Baker (F&R) type Nipple profile machined into it. This feature provides a profile to locate and lock into place various flow control devices which may be required from time to time.

The Sliding Sleeve is shift down to open and closes with the B Shifting Tool. The Shifting Tool can be dressed to either release automatically or to shear a pin to release.

Downward jarring opens the sleeve and upward jarring closes it. The Sliding Sleeve is designed so that normal wire line operations will not open or close it inadvertently.

Applications:

- A specially designed diffuser ring made of high-strength thermoplastic is critically spaced between the flow ports and the upper packing unit. This prevents damage to the upper packing unit during shifting by controlling the rush of fluid or gas, and lessens the likelihood of tool string damage by providing for slow equalization of high differentials.
- Mill slots replace drill holes as flow ports on both the housing and the insert to allow more flow area, reduce erosion and allow higher torque and tensile strength through the sleeve.
- The threat of galling is further reduced by coating critical metallic components with proprietary surface treatments.
- Available in All API material grades
- Available in material conforming to NACE MR 0175 or H2S, CO2 well environment services requirements.
- Available in All API & premium thread connections and Elastomers type
- High chamfered smooth Equalizing Port does not damage the seals during the shifting of Inner Sleeve
- Top and Bottom Sub having High Finish seal Bore ID to accommodate isolation sleeve and other sealing devices.

Specification guide:

Seal bore (Inch)	Flow area (Ports) Sq. In.	Flow Area (Min ID) Sq. In.	Max OD (Inch)	Thread connection	Shifting Tool	Pressure Rating (Psi)
1.625	0.919	2.073	2.625	2-3/8”	1.625 “B”	9,000
1.875	2.355	2.762	3.063	2-3/8”	1.875 “B”	9,000
2.313	2.974	4.199	3.668	2-7/8”	2.313 “B”	
2.750	7.212	5.940	4.281	3-1/2”	2.750 “B”	8000
2.812		6.211	4.281		2.812 “B”	
3.312	11.426	8.611	5.680	4-1/2”	3.250“B”	7,500
3.813		11.413	5.680		3.813 “B”	
4.312	10.598	14.596	6.400	5-1/2”	4.312 “B”	6,500
4.562		16.337	7.500		4.562 “B”	

SHIFTING TOOL
MODEL: GR-BO

GR-SSD

Gradwell Model “GR-BO” shifting tool is designed to selectively locate and shift most sliding sleeves and/or tubing-conveyed perforating (TCP) disconnect subs. This is accomplished by the tool’s keys
engaging the inner sleeve; and, depending on the direction that the tool requires (up or down), the sleeve is shifted.

Model BO Shifting Tool

Gradwell Model “GR-BO” shifting tool is designed to selectively locate and shift sliding sleeves only to the down position. The tool is made selective by the lower locating section.

Application:

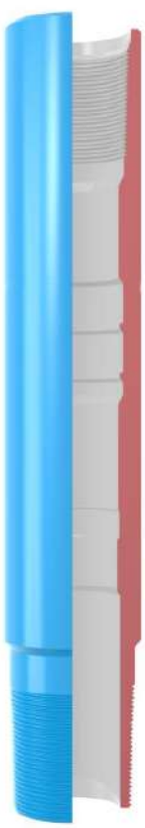
- Any application where selective actuation of sliding sleeves is needed.
- Actuating disconnect sub applications.
- Wells assisted by sucker-rod pumps.

Features:

- Selectively locates and shifts most sliding sleeves and/or TCP Disconnect subs.
- The Type “GR-BO” Shifting Tool is used to position the closing sleeve or sliding side doors to the open position or to the closed position.

Specification guide:

Sliding Side Door ID	Fish Neck Size	O.D. Keys Expended	O.D. Keys Retracted	Threads	Overall Length
1.500	1.187	1.69	1.49	15/16-10UN	12.44
1.625	1.187	1.89	1.62	15/16-10UN	12.75
1.710	1.187	-	1.69	15/16-10UN	-
1.781	1.375	2.07	1.75	15/16-10UN	12.50
1.875	1.375	2.11	1.84	15/16-10UN	13.30
2.125	1.375	2.35	1.97	15/16-10UN	13.30
2.313	1.750	2.59	2.16	15/16-10UN	13.94
2.562	1.750	3.00	2.53	15/16-10UN	13.94
2.750	2.313	2.9	2.73	1 -1/16-10UN	14.19
2.813	2.313	3.01	2.72	1-1/16-10UN	14.19
3.688	3.125	4.13	3.66	1-1/16-10UN	15.75
3.813	3.125	4.09	3.12	1-1/16-10UN	13.88



MANUFACTURED BY :

Address : 57/58 Km Stone NH-48,
Industrial Area Binola, post.
Bhorakalan, Dist. Gurugram,
Haryana India
Pin Code : 122413
Contact Us : **www.gradwelloilfield.com**
Ph : 0124-2271100

Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers

LINER HANGER SYSTEM
&
RUNNING TOOLS

HYDRAULIC ROTATING LINER HANGER
MODEL: GR-RHLH

GR-RHLH

Hydraulic Liner Hanger is used to hang a liner in the well. It is set hydraulically by applied pressure through the run-in string, and is designed to support medium to heavy liner loads. The hanger is widely used in deep and high angle wells, where actuation of mechanical-set hangers may not be preferred. A setting ball is dropped and/or circulated to a ball seat in the landing collar or running string. Differential pressure acts on the hydraulic cylinder, moving slips up to the set position.

This LH has two types Multi cone pocket slip type or Dovetail type with rotating or non-Rotating mechanism. Multi cone design provides excellent fluid bypass for proper cementing. Hydraulic liner hanger is couple with running tools, pack off bushing, hydraulic landing collar, float collar (if required), and float shoe and other tools. In this document we include dimensional details of liner hanger, parts of liner hanger and operation of liner hanger.

Application :

- Offshore and Deviated Wells with tight turns.
- High pressure and High temperature wells.
- Well application requiring hanging heavy liners.
- Drill down applications.
- Vertical and horizontal wells.

Features:

- No tubing manipulation required during setting.
- Large multi slot design provides excellent bypass area for proper cementing.
- Available in Single Cone, Double Cone, and multi cone Dovetail type.
- Available in Non Rotating type design.
- High performance Roller bearing enables rotation during running and Cementing for proper cementing operation.
- Faster Running speed with Dovetail design.
- Dovetail Slip cone Design delivers lower and more uniform stresses on Casing and mandrel enhance hanging capacity.
- Manufactured from a heavy walled integral Tube which eliminates the no. of internal connections and provide maximum differential pressure rating and liner hanging capacity.
- Case hardened Slips having 50-56 HRc hardness are suitable to set inside all API casing grade.
- Protected type Slips are suitable for highly deviated well operations.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections and type.
- High Burst and collapse pressure ratings.

Specification guide (GR- NRHLH-PS) :

Liner x Casing Size	Casing Weight (lbs/ft)	Liner Hanger Max OD	**Liner Thread connection
4-1/2" x 7"	17-26	6.21"	4-1/2", 9.5-15.10# casing thread
	29-38	5.680"	
5" x 7"	23-26	6.050"	5", 11.5-24.1# casing thread
	29-32	5.780"	
	35-38	5.680"	
5-1/2" x 7"	17-26	4.781"	5-1/2", 14-23# casing thread
	29-32	4.641"	
5" x 7-5/8"	33.7 - 39	6.250"	5", 11.5-24.1# casing thread
5-1/2" x 7-5/8"	24.0-29.70	6.620"	5-1/2", 14-23# casing thread
	33.70-39	6.370"	
7"x 9-5/8""	36-43.5	8.430"	7", 17-35# casing thread
	40-47	8.380"	
	47-53.5	8.250"	
	58.40	8.120"	
7-5/8" x 9-5/8"	36-43.50	8.5"	7-5/8", 24-47.10# casing thread
	47-53.50	8.310"	
9-5/8" x 13-3/8"	54.50-68	12.00	9-5/8", 32.30-58.40# casing thread

** Threads shown above are standard for the respective Liner Hanger Mandrel sizes other threads Can be supply on request when ordering.

HYDRAULIC SET DOUBLE CONE NON-ROTATING LINER HANGER
MODEL: GR-NRHLH-2

GR-NRHLH-2

Hydraulic Liner Hanger is used to hang a liner in the well. It is set hydraulically by applied pressure through the run-in string, and is designed to support medium to heavy liner loads. The hanger is widely used in deep and high angle wells, where actuation of mechanical-set hangers may not be preferred. A setting ball is dropped and/or circulated to a ball seat in the landing collar or running string. Differential pressure acts on the hydraulic cylinder, moving slips up to the set position.

This LH has two types single cone / double cone type with rotating or non-Rotating mechanism. Hydraulic liner hanger is couple with running tools, pack off bushing, hydraulic landing collar, float collar (if required), and float shoe and other tools. In this document we include dimensional details of liner hanger, parts of liner hanger and operation of liner hanger.

Application:

- Offshore and Deviated Wells with right turns.
- High pressure and High temperature wells.
- Well application requiring hanging heavy liners.
- Drill down applications.
- Vertical and horizontal wells.

Features:

- No tubing manipulation required during setting.
- Large bypass area for proper cementing.
- Available in Single Cone, Double Cone.
- Available in Rotating Non Rotating type design.
- High performance Roller bearing enables rotation during running and Cementing for proper cementing operation.
- Manufactured from a heavy walled integral Tube which eliminates the no. of internal connections and provide maximum differential pressure rating and liner hanging capacity.
- Case hardened Slips having 50-56 HRc hardness are suitable to set inside all API casing grade.
- Slips are protected with Split rings suitable for highly deviated well operations.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections and type.
- High Burst and Collapse pressure ratings.

Specification guide (GR-NRHLH-2) :

Liner x Casing Size	Casing Weight (lbs/ft)	Liner Hanger Max OD	**Liner Thread connection
4-1/2" x 7"	17-26	6.21"	4-1/2", 9.5-15.10# casing thread
	29-38	5.680"	
5" x 7"	23-26	6.050"	5", 11.5-24.1# casing thread
	29-32	5.780"	
	35-38	5.680"	
5-1/2" x 7"	17-26	4.781"	5-1/2", 14-23# casing thread
	29-32	4.641"	
5" x 7-5/8"	33.7 - 39	6.250"	5", 11.5-24.1# casing thread
5-1/2" x 7-5/8"	24.0-29.70	6.620"	5-1/2", 14-23# casing thread
	33.70-39	6.370"	
7"x 9-5/8""	36-43.5	8.430"	7", 17-35# casing thread
	40-47	8.380"	
	47-53.5	8.250"	
	58.40	8.120"	
7-5/8" x 9-5/8"	36-43.50	8.5"	7-5/8", 24-47.10# casing thread
	47-53.50	8.310"	
9-5/8" x 13-3/8"	54.50-68	12.00	9-5/8", 32.30-58.40# casing thread

** Threads shown above are standard for the respective Liner Hanger Mandrel sizes other threads can be supply on request when ordering.

MECHANICAL SET DOUBLE CONE NON-ROTATING LINER HANGER MODEL: GR-MLHD

GR-MLHD

Gradwell Liner Hanger is set mechanically with either right or left-hand rotation, depending on the type of setting tool or design. Staggered cone design gives maximum bypass area to ease running in and circulation. Automatic J- cage allows hanger to re-turn to the run-in position, should the hanger set prematurely while running in the well. The slip cage contains a “J” slot and high strength drag springs to manage the movement of the slips into contact with the cones. Mechanical Set Liner Hanger are set through manipulation of the work string (pick-up & 1/4 right hand turn) line up the cones and the slips, and a further slack off sets the slips onto the casing wall.

This LH has two types Single cone / Double cone type with rotating or non-Rotating mechanism. Hydraulic liner hanger is couple with running tools, pack off bushing, float collar (if required), and float shoe and other tools.

Features:

- Automatic J- cage, allows hanger to return to run-in position constraining hanger preset while running in.
- Open-bottom J-cage, available in right or left-hand set.
- Large bypass area in run-in and set position.
- Slips profile provide more biting area to increase hanging capacity and reduce the possibility of dam age while running in.
- Single or multiple cone designs available to match hanging capacity with liner strength, minimizing stress in supporting casing.
- Complete wells with less weight landed on wellheads.
- Give rise to improved cementing jobs.
- Prevent lost circulation.
- Provide good well control while drilling and completing.
- Impart more completion flexibility.
- Afford low-cost liner on appraisal wells.
- Liner Hangers are available with all API and premium thread connections.
- Case hardened Slips having 50-56 HRc hardness are suitable to set inside all API casing grade.
- Slips are protected with Split rings suitable for highly deviated well operations.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections and type.
- High Burst and Collapse pressure ratings.

Specification guide (GR-MLHD) :

Liner x Casing Size	Casing Weight (lbs/ft)	Liner Hanger Max OD	**Liner Thread connection
4-1/2" x 7"	17-26	6.21"	4-1/2", 9.5-15.10# casing thread
	29-38	5.680"	
5" x 7"	23-26	6.050"	5", 11.5-24.1# casing thread
	29-32	5.780"	
	35-38	5.680"	
5-1/2" x 7"	17-26	4.781"	5-1/2", 14-23# casing thread
	29-32	4.641"	
5" x 7-5/8"	33.7 - 39	6.250"	5", 11.5-24.1# casing thread
5-1/2" x 7-5/8"	24.0-29.70	6.620"	5-1/2", 14-23# casing thread
	33.70-39	6.370"	
7"x 9-5/8""	36-43.5	8.430"	7", 17-35# casing thread
	40-47	8.380"	
	47-53.5	8.250"	
	58.40	8.120"	
7-5/8" x 9-5/8"	36-43.50	8.5"	7-5/8", 24-47.10# casing thread
	47-53.50	8.310"	
9-5/8" x 13-3/8"	54.50-68	12.00	9-5/8", 32.30-58.40# casing thread

** Threads shown above are standard for the respective Liner Hanger Mandrel sizes other threads can be supply on request when ordering.

TIE BACK RECEPTACLE
MODEL: GR-TBR

The Polished Bore Receptacle (PBR) is run as a part of the liner. This PBR comes as a means to tie-back to and existing liner with either a seal assemble or tie-back packer for remedial work.

This PBR is a means to Tie-Back to the liner system should it be needed. This can be accomplished with a seal nipple or with a Tie-Back packer

GR-TBR

SETTING COLLAR
MODEL: GR-SC-HR

Setting Collar can be provided with HR profile to run the spring with HRT Running tool, Setting Collar having receptacle profile for retrieval pack off bushing. The model “SC” setting collar is used to carry the liner into the well. It is used when using a rotating liner hanger. The setting collar has right hand releasing threads which are made up with the threads of the setting tool.

The Setting Collar is made up on top of the Liner Hanger and generally used when a liner extension is not planned.

The fluted top guide assures centering of the liner in the hole and its shape provides an internal guide for smooth running of the tools into the liner

GR-SC-HR

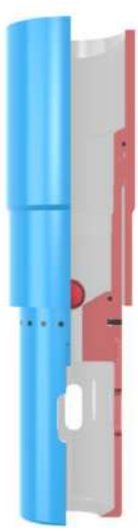
LANDING COLLAR
MODEL: GR-LCL-BC

Landing Collar is used when setting liner hanger prior to cementing. A setting ball seat in the shear seat allowing pressure to be applied to the hanger to set the slips. Increasing the pressure after setting the hanger shears the ball seat allowing full circulation for cementing operations. The shear rating of the ball seat is adjustable to meet the requirements of the hanger. It incorporates a latch with Non- rotational Mechanism to accept, lock and seal the Liner Wiper Plug upon completion of cementing. Internal components are manufacture from

PDC drillable Material and are compatible for drill out. We retained ball seat design prevents the sheared out cage and ball assembly from interfering with float equipment run below the landing collar. Large, milled slots provide an unrestricted flow area while cementing. Shears/setting balls are available in bronze, aluminum or phenolic materials of varying specific gravity for use in vertical, high angle or horizontal wells or for specific cement weights. All seals are of standard.

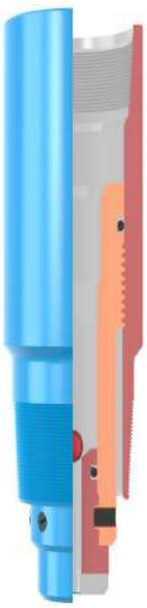
Features:

- Anti-rotation feature for wiper plugs.
- Available in thread connection per ordered.
- Available in all API material grades.
- PDC drillable material use for drill out items.
- Brass shear pins loaded Ball seat.
- Suitable for H2S & CO2 service.
- High Burst and collapse pressure.



GR-LCL-BC

HYDRAULIC LATCH LANDING COLLAR
MODEL: GR-LHA



GR-LHA

Gradwell Landing Collar provide a means to both set hydraulic tools and to catch a liner wiper plug in a string of pipe.

Application :

When hydraulically actuated tools are incorporated in the liner, Landing Collar is used as a ball seat to facilitate the setting of these tools. It is also used to catch and lock (rotationally) the liner wiper plug.

A ball dropped from surface seats on the ball seat in the Landing Collar and allows the hydraulic tool to actuate by applied pressure. The ball and seat are then sheared and fall to a Ball Catcher Sub.

Features:

- Ceramic Ball Seat - A ceramic insert has been incorporated into the ball seat of most standard sizes in order to eliminate erosion of the critical sealing area during high rates of circulation.
- Drillable - The inserts in these tools are made of drillable cast aluminium for easy drill out, and are compatible with all bit types including PDC.
- Shear Pin Visibility - Shear pins can be adjust after tool assembled.
- Thread Integrity Maintained – for premium threads manufacturer's outside and inside diameters can be maintained.
- Positive Latch - A latch thread in the insert assures that the wiper plug will not move after it has bumped.

CONVENTIONAL SINGLE VALVE FLOAT COLLAR
MODEL: GR-CFC-1

GR-CFC-1

Float Collar is a cylindrical steel section with box and pin threads. Float Collar generally uses one string above the Float Shoe. It contains a check valve to permit fluid to pass downward but not upward through the casing and provides a flat landing surface for cementing plugs.

Features:

- Fast Drill Out.
- Internal Parts are PDC drillable.
- Float Collar is available in all API grade material.
- Float Collar can be furnished in API threads as well as in Premium threads.
- Float Collar can be furnished with non rotating feature.
- Valve is tested as per API RP 10F Category III C.
- Maximum Back Pressure rating 5000 psi @400°F.
- Tubing Float Collar for high pressure up to 10000 PSI.
- Orifice float collar for Tie-back application.
- Ball Catcher/Ball Deflector is avail able upon request.
- Flat surface provides platform to bump the bottom plug.
- Baffle plate float collar is available upon request.
- Inner String float collar is available for larger size casing.

DOUBLE VALVE FLOAT SHOE WITH DOWN JET PORTS
MODEL: GR-DJFS-2

GR-DJFS-2

This design ensures positive sealing in vertical, deviated & horizontal well. They have a back-pressure valve that prevents fluids from entering the casing while the pipe is lowered into hole and prevents cement from flowing back into the casing after displacement, while enabling circulation down through casing. Double Valve helps maximum protection against back flow of cement.

There are three down-jet ports located below float valve in side of the float shoe shell to help to increase cement bonding strength due to swirl effect by cementing.

Sometimes, it provides landing point for cementing plugs when Collar is not used.

It is available with Down-jet, Up-jet & Side-jet ports as well.

Features:

- Down-jet ports increase bonding strength of cement.
- Provide passage of fluid with added assurance that flow will not be interrupted when casing rests at bottom.
- Easy PDC drillable.
- Cost effective.
- Maximum protection against back flow of cement.

Note: It is available in Single & Double Valve design.

HANDLING NIPPLE
MODEL: GR-HN

GR-HN

The Handling Nipple is a heavy weight Drill Pipe Pup Joint for handling the Liner Hanger assembly and for using the Slips and elevator once the assembly below table. It is located above Packer Setting Tool usually the Handling Nipple is equipped with Junk Bonnet

Features:

- Available in all API drill pipe thread connections.
- Available in different lengths from 10 feet to 20 feet
- Suitable for H2S & CO2 service
- Better Cementing wiping

DEBRIS JUNK SCREEN
MODEL: GR-DSC

GR-DSC

The Junk Bonnet Sub consists of two metal cups installed around Lifting Sub with two bolts.

The Liner Hanger junk screen should be run as part of the setting tool assembly to prevent debris from damaging the polished bore of Tieback Receptacle.

HYDRAULIC RELEASE RUNNING TOOL
MODEL: GR-HRT

GR-HRT

Gradwell - HR Running Tool connects with the HR Liner Setting sleeve and provides a means to carry a Liner Down hole, set a Liner Hanger and release from the liner prior to or, if desired after cementing. The primary releasing mechanism is hydraulic with an emergency mechanical back-up release system. This tool carries the weight of the liner on a fully supported collet assembly with no threads that could back off and drop the liner while running in the hole.

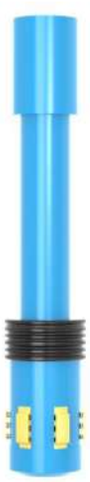
Application :

- Offshore and Deviated Wells with tight turns.
- High pressure and High temperature wells.
- Well application requiring hanging heavy liners.
- Vertical and horizontal wells.

Features :

- Push Pull and rotate while running the liner down hole. The design of this tool allows right hand rotation of the work string and liner with the tool in tension, compression or neutral.
- Rotation after release when running a rotating liner hanger. Multiple torque fingers permit rotation of the liner during cementing after the hanger is set and the running tool released from the liner.
- Easy stub-up to load the HR setting tool into the HR liner Setting sleeve. Simply push straight in and setting tool automatically latches into the profile. Maximum 1/3 turn engages the torque fingers.
- No Rotation to release after actuating the hydraulic cylinder, the tool is retrieved by straight pick-up. The collet is retained in the released position by an internal body lock ring to prevent re-engagement into the setting sleeve profile.
- Emergency mechanical release in the event the primary hydraulic releasing mechanism fails to operate, the setting tool may be released mechanically by 1/4 turn to left.

SETTING TOOL ROTATING FOR LINER HANGER
MODEL: GR-STLH



GR-STLH

The Model GR-STLH ,Setting Tool is used in setting Rotating Liner Hanger. The Setting Tool is provided with spring loaded Rotating Dog Sub that mates with splines located in the setting collar. This dog sub transfers torque from drill string, to the liner, while in tension or compression for the purpose of setting Mechanical liner Hanger, Rotating liner Hanger during cementing operation, or insuring setting tool engagement during run-in. the model GR_STLH also utilizes the retrievable Pack off bushing and seal Joint.

MECHANICAL RELEASE RUNNING TOOL
MODEL: GR-RTRM

GR-RTRM

Mechanical release setting tool is a full feature, mechanical release running tool and packer setting assembly. With no rotational drive capability, this simply conveys the liner assembly and then is released with right-hand rotation after the hanger has been set. Designed to release in compression, this tool may be run in vertical, high-angle or horizontal wells with a high degree of confidence. The bearing system facilitates both easy release of the liner, and also aids in the setting of weight set, liner top packer assemblies by allowing the weight to be applied under a rotational load, more evenly distributing weight and ensuring that maximum setting force reaches the packer assembly.

As a service tool, the mechanical release setting tool features heavy-duty design and construction for a long, usable service life. Standard configuration is with API drill pipe box for direct connection to a retrievable seal joint, drillable seal joint, solid bushing or inverted cup tool.

PACKER SETTING TOOL
MODEL: GR-RPST

GR-RPST

The Gradwell - Packer setting tool is used to set the Liner top Packer after setting of Liner Hanger. Setting Dog Section is spring loaded to set on top of the Packer to allow setting force to be transmitted to the Packer.

Features :

- High strength Spring loaded Dogs Apply set down weight to set Liner Top Packer.
- Available in all API material grades.
- Available in all API Drill Pipe Threads.
- Suitable for H2S & CO2 service

RETRIEVABLE PACK OFF BUSHING
MODEL: GR-RPOB

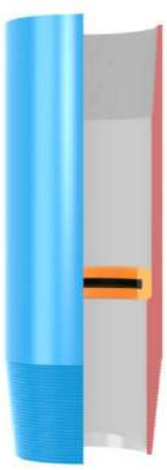
GR-RPOB

The Gradwell Retrievable Packoff Bushing provides a positive seal between the setting tool and the liner, securely holding all cementing and plugs bumping pressures. It features temperature and pressures resistant seals which are designed to hold differential pressure from either direction. It also reduces piston force on the drill pipe during cementing operations. After the completion of the cementing, it is retrieved with the setting tool, leaving the liner top unrestricted. The Retrievable Packoff Bushing with polished nipple is installed in the setting collar and then the setting tool can be made up. When installed, the polished extension nipple locks the retaining dogs into the RPOB Profile. When the setting tool is retrieved, a recessed/undercut section on the bottom of the

Features:

- Eliminates reverse differential failures.
- Redressable in the field.
- Reduces the piston effect due to the small cross sectional area of the Polished Nipple end.
- Provides a positive seal for high pressure and/or for high temperature.

DRILLABLE PACK OFF BUSHING SUB
MODEL: GR-DPOB



GR-DPOB

Drillable Pack Off Bushing Sub Provide the seal between stinger and Liner Hanger body to set the liner Hanger.

Features:

- Available in thread connection on order
- Available in all API material grades
- PDC drillable material use for drill out items
- Suitable for H2S & CO2 service
- High Burst and collapse pressure

SLICK JOINT
MODEL: GR-SJ

GR-SJ

Seal stinger with grounded ODs is to provide a sealing surface for the retrievable/drillable Pack-off Bushing. These are manufactured from higher group of API 5CT standard materials as well as furnished with end connections in compliance to API standard and CRA materials suited for H2S or CO2 service are available on request.

A groove is provided at the bottom end to attach the Liner Wiper Plug. Our seal joint manufactured from high grade alloy material and surface would be chrome platted so as to possess resistance for corrosive environments.

Features:

- Available in all API thread connections
- Available in different lengths from 10 feet to 20 feet
- Polished Bore high finished OD for better sealing with Pack Of Bushing Seals
- Suitable for H2S & CO2 service Better Cementing wiping

TIE BACK SEAL NIPLLE
MODEL: GR-TSN

GR-TSN

The Tieback Seal Nipple with Chevron seal is designed for high pressure liner tieback completions. This honed bore, Tieback seal nipple allows for future extension of the liner casing string to surface for production, testing or remedial operations during the life of the well. This provides mono bore access to the reservoir.

It may be used temporarily or permanently. To facilitate both ease of entry and cementing operations. It is equipped with a standard mule guide nose with circulations ports. Standard seal configurations is four units in fabric reinforced NBR with optional seals in HNBR. Nipples are designed with ODs compatible for Liner Tieback Packers and Tieback Receptacles with varying in lengths form 6 feet to 40 feet depending on the applications.

Features :

- One-piece mandrel for high burst and collapse properties.
- Glass filled chevron seals rated at 10,000 PSI at 400 F
- Available in lengths from 6 ft to 40 ft.
- Optional seal packages available for severe well conditions.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API thread connections and type.
- High Burst and Collapse pressure ratings.

DRILL WIPER PLUG
MODEL: GR-DWP

GR-DWP

Gradwell inner-string Pump Down Plug is pumped behind cement and wipes the inside of drill pipe or tubing strings, providing a mechanical barrier between cement and spacer fluids or between mud and cement.

It wipes cement from the drill pipe and lands in Liner Wiper Plug. When this happen the pressure increases and shears the LWP. Allowing both plug to be displaced as an unit to the Landing Collar.

The “PDP” is designed for use with Gradwell inner-string stab-in float equipment to cement large-diameter casing strings. The stinger dart is launched from cementing head, displacing fluids through the drill pipe or tubing string while preventing cement contamination.

LINER WIPER PLUG
MODEL: GR-LWP

GR-LWP

The Liner Wiper Plug, commonly shear pinned to the Liner setting Tool, has a hollow internal diameter that allows fluids and cement to pass through the plug until the PDP latches into the Upper part of the LWP.

The PDP is then mechanically and hydraulically sealed to the LWP, and the two plugs are sheared from the Liner setting Tool. After wiping the liner, the LWP is latched and sealed to the landing collar preventing the back flow of cement.

Application:

- Wiping drill pipe or tubing in conjunction with Gradwell inner-string float equipment.
- Large-diameter casing strings requiring inner-string cementing Features

Features:

- Composed entirely of PDC-(polycrystalline diamond composite) drillable materials, the stinger dart enables trouble-free drill out, conserving rig time.
- Seal ring provides a positive bidirectional seal when latched into float quipment with the corresponding aluminum snap ring, enabling the device to withstand exceptionally high backpressures.
- PDP acts as a mechanical barrier between displacement fluids to prevent cement contamination, resulting in a clean pipe ID.
- Angled, aluminum nose prevents the dart from hanging up in the drill pipe or tubing string, ensuring proper functionality of the device.
- Polyurethane fins offer superior abrasion resistance and excellent wiping action, resulting in a clean casing ID after passage.
- Fin design enables versatility, sta bility, and superior wiping action for drill pipe and tubing strings, providing operational flexibility.

LINER TOP PACKER
MODEL: GR-LTP-IS

GR-LTP-IS

Gradwell Liner top Packer is used to prevent gas migration through the cement as it begins to set stopping any micro-annulus that may form without the packer in the well bore. It is run as an integral part of the original liner string. Designed to be set after the liner is cemented, the packer is set by picking up the running string, placing the setting dogs in the setting tool assembly above the liner top / TBR and slacking off weight. Excess cement above the liner top packer can be circulated out after the packer is set.

Gradwell LTP is available with or without hold down slips and with or without clutch profile on the top of the packer used with Rotating or Non rotating Liner Hanger

Application :

- Offshore and Deviated Wells with
- tight turns.
- High pressure and High temperature wells.
- Well application requiring hanging heavy liners.
- Liner Hanger application requiring Drill down Capabilities.
- Vertical and horizontal wells.

Features :

- Can be rotated during run-in and cementing operation.
- Available with or without hold down slips and can be pulled if needed in heavy oil applications.
- Optimizes chemical resistance to completion and production fluids with a variety of elastomer options for packer element and seal assemblies.
- Maintains element setting with mandrel lock ring.
- Facilitates high circulating rates with enhanced packer element de-sign without risk of element washout.
- Anti-swab while running or reciprocating allows to achieve high running speeds.
- Eliminates extra components and connections with integral retrievable cementing bushing profile.
- Available in Rotating Non Rotating Clutch type design features.
- Manufactured from a heavy walled integral Tube which eliminates the no. of internal connections and provide maximum differential pressure rating and liner hanging capacity.
- Case hardened Slips having 50-56 HRc hardness are suitable to set inside all API casing grade.
- Hold down Slips prevents upward movement against differential pressure.
- Available in all metallurgical and Elastomers conforming to NACE MR 0175 or H2S, and suitable for standard normal/H2S, CO2 well services requirements.
- Available in All API & Premium thread connections and type.
- High Burst and Collapse pressure ratings.

specification guide (GR-LTP-IS) :

Liner x Casing Size	Casing Weight (lbs/ft)	Liner Hanger Max OD	Liner Top Packer Min ID*	**Liner Thread connection
4-1/2" x 7"	17-26	6.21"	3.826	4-1/2", 9.5-15.10# casing thread
	29-38	5.680"		
5" x 7"	23-26	6.050"	4(24.1ppf)	5", 11.5-24.1# casing thread
	29-32	5.780"		
	35-38	5.680"		
5-1/2" x 7"	17-26	4.781"	4.670(23ppf)	5-1/2", 14-23# casing thread
	29-32	4.641"		
5" x 7-5/8"	33.7 - 39	6.250"	4(24.1ppf)	5", 11.5-24.1# casing thread
5-1/2" x 7-5/8"	24.0-29.70	6.620"	4.670(23ppf)	5-1/2", 14-23# casing thread
	33.70-39	6.370"		
7"x 9-5/8""	36-43.5	8.430"	6.276(26ppf) 6.184(29ppf)	7", 17-35# casing thread
	40-47	8.380"		
	47-53.5	8.250"		
	58.40	8.120"		
7-5/8" x 9-5/8"	36-43.50	8.5"	6.875(29.7ppf) 6.375(47.10ppf)	7-5/8", 24-47.10# casing thread
	47-53.50	8.310"		
9-5/8" x 13-3/8"	54.50-68	12.00	(8.435ppf	9-5/8", 32.30-58.40# casing thread

TIE BACK SEAL NIPPLE PACKER
MODEL: GR-TSNP-IS

GR-TSNP-IS

The Model “TSNP” is used mostly in vertical well application. It can be used as Liner Top isolation Packer in case of annulus leakage. It commonly used when there is a leak in the exiting packer or casing. It provides secondary seal to prevent annular gas migration and protect sensitive zones. It is a weight set packer and packing elements are locked in place by the internal ratchet The mandrel of the tie back packer seals into the polished bore receptacle of an existing liner top packer or liner. The seal mandrel provides a pressure competent sealing by engaging in the tie back receptacle. There are different seal material available for different well conditions.

The Seal O.D is compatible with Tie back Receptacle. It is provided with a bottom mule shoe with circulation ports for circulation and cementing if required.

Features :

- To isolate the liner top after the hanger is set and cementing operations are completed
- Isolate formation pressure below the liner top from the casing ID above
- Isolate treating pressures below the liner-top during fracture or acid work
- It can be used as a tie-back completion or production packer.

Specification guide (GR-TSNP-IS) :

Packer Size (Casing X Packer) (In.)	Casing Weight (lbs/ft)	Packer Max. OD (In.)
5 3/4 X 4	18	4.940
7 X 4	35	5.819
7 X 4 1/2	23.0 -26.0	6.061
	29.0 – 32.0	5.910
	35.0 – 38.0	5.705
7 X 5	23.0 – 26..0	6.061
	29.0 - 32.0	5.910
7 5/8 X 5	33.7 -39	6.440
9 5/8 X 7	40.0 – 47.0	8.435
	47.0 – 53.5	8.312
	53.5 - 58.4	8.188
9 5/8 X 7 5/8	53.5	8.334
10 3/4 X 7	55.5 – 60.7	9.445
10 3/4 X 7 5/8	45.1 – 51.0	9.625
	55.5 - 60.7	9.438
	65.7 – 73.2	9.160
	79.2 – 86.36	8.937
11 3/4 X 9 5/8	60.0 – 65.0	10.375
13 3/8 X 9 5/8	61 -72	12.125
13 3/8 X 10 3/4	54 -61	12.300
	61 - 72	12.130
16 X 13 3/8	75 – 84	14.700
	84 - 109	14.375

SWAB CUP ASSEMBLY
MODEL: GR-SWAB

GR-SWAB

Gradwell Swab Cup Assembly Run together with a hanger setting ball seat, the swab cup pack off. Assembly allows for a hanger to be set an Released Running Tool without increasing the risk of formation damage which occurs when pressuring the entire liner for setting the hanger and expending the setting ball. The ball seat in the running tool string, in concert with the swab cup packoff assembly, allows for pressure to be maintained only in the work-string, therefore decreasing surge on the formation when the setting ball is expended. The Ball Seat assembly consist of Ball seat which is supported by Shear Pins. The shear value of Seat sub is always keep higher than the Setting pressure of Liner hanger and releasing pressure of Running Tool by changing the No. of shear pins. After shearing of Ball seat the Flo rate can be establish for cementing or wash over operation.

Features:

- Available in NBR, HNBR, Viton elastomers
- All Rubber cup designed for maximum lifting capacity and extra-long life.
- Abrasion resistant
- High swabbing speeds, Deep wells, rough tubing.
- Ball seat catcher hold the Ball seat and Ball no need to left in well
- Setting Ball is available in Steel and Brass material.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API thread connections and type.
- High Burst and Collapse pressure ratings.

LINER SWIVEL SUB
MODEL: GR-LSS

GR-LSS

The liner Swivel Sub is normally used when running mechanical set liners in highly deviated wells in which rotating to set the liner may be a problem. The swivel allows rotation of the hanger without rotating the total liner. A clutch system in the swivel (feature may be detected if required) allows easy re- lease of running nut from the liner, if the liner has to be set on bottom.

Features :

- The Liner Swivel allows rotation of the anger without having to rotate the total Liner.
- A clutch system in the swivel allows easy release of the running nut from the liner, if the liner has to be set on bottom.
- Available in all metallurgical con forming to NACE MR 0175 or H2S, and suitable for standard normal/ H2S, CO2 well services requirements.
- Available in All API & Premium thread connections and type.
- High Burst and Collapse pressure ratings.

TOP DRESS MILL
MODEL: GR-TDM

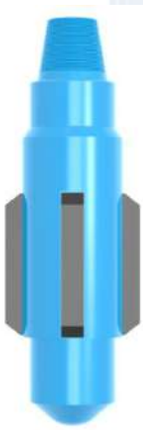
GR-TDM

The Top Dress Mill has a tungsten carbide NO-go which dresses off the TBR top very effectively. It has 4-1/2'' regular Pin x Box connections.

All parts are made of AISI 4140 ht high tensile material for heavy duty.

The Polish / Dress Mill assembly is normally spaced out and made up in the Gradwell Workshop

CLEAN OUT BLADE MILL
MODEL: GR-CBM



GR-CBM

The Clean Out Mill assembly is used to clean the excess cement from the tie back receptacle after the cement job is performed. This is to prevent seal damage for and allow for good sealing of the seal stem run in thereafter.

The POLISH Mill is designed with metal blade, which measure 1/16'' less than the I.D of the TBR sleeve. It has an REG pin up and 2-7/8'' REG 3-1/2'' REG or 4-1/2'' REG down depending on the size.

HYDRAULIC STAGE CEMENTING TOOL
MODEL: GR-HSC

GR-HSC

Operation Sequence :

- Installation of Gradwell Baffle Plate (When thread connection is 8RD or Buttress) or Gradwell Baffle Collar (When thread connection is premium) along with Hydraulically Operated stage cementing tool in the casing string.
- Run the casing string to the bottom Establish circulation. Mix and pump first stage cement.
- Launch First Stage Cementing Plug : it lands on Baffle plate or Baffle Collar. It displaces the cement.
- First Stage Cementing Plug seals the ID of Baffle collar.
- Increment of pressure upto opening pressure breaks.
- Down screws, thus opening sleeve is moved downwards.
- As opening sleeve is moved downwards, cementing ports are now in open state.
- Establish circulation. Mix and pump second stage cement.
- Launch Closing Plug, it lands upon closing seat.
- It displaces cement.
- Apply closing pressure, Closing sleeve moves down and main sleeve slips down with it to close cementing ports.

Features:

- Hydraulically Operated Stage Cementing Tool overcomes the drawback of Mechanically Operated Stage Cementing Tool as it can be used in Horizontal wells too.
- Hydraulically Operated Stage Cementing Plug can be converted into mechanically operated stage cementing plug by using a free fall opening plug.
- Adjustable Opening and Closing Pressure.
- It is featured with Anti-rotation features for reducing drilling time.
- No fluid is trapped during any operation.

Specification guide :

Casing Size	Max Diameter	Weight	Drill-out I.D	Overall Length	Opening		Closing		Opening Pressure W/Free-fall Device(p.S.I)
					Pressure (Psi)	Force (L.B.S)	Pressure (Psi)	Force (Lbs)	
5''	6.125	15-18	4.400	29''(approx)	3000	14.000	1500	25,000	1100
7''	8.275	26-29	6.200	31'' (approx)	2600	28,000	1500	57,000	1000
9 5/8''	11.125	43.5-53.5	8.600	32'' (approx)	2400	50,000	1500	111,000	1000
13 3/8''	15.000	61-72	12.375	35'' (approx)	2100	83000	1500	19500	900

MECHANICAL STAGE CEMENTING TOOL
MODEL: GR-MSC

GR-MSC

Operation Sequence :

- Installation of Gradwell Baffle Plate (When thread connection is 8RD or Buttress) or Gradwell Baffle Collar (When thread connection is premium) along with Mechanically Operated stage cementing tool in the casing string.
- Run the casing to the bottom at desired location.
- Location of Cementing Tool depends upon the depth of the well, location of lost circulation zones or weak formations etc.
- Establish circulation. Mix and pump first stage cement.
- Launch First Stage Cementing Plug to displace cement. It sits on Gradwell Baffle Float Collar.
- Launch Free Fall Opening Plug. It sits on Opening Sleeve.
- Apply Opening Pressure, Opening Seat slips down and cementing ports are opened.
- Establish circulation, Mix and pump second stage cement.
- Launch Closing Plug, it sits on closing seat and displaces the cement.
- Apply closing pressure; closing seat is adjusted to close cementing ports.

Features:

- Mechanically Operated Stage Cementing Tool is designed to be used in vertical wells.
- Opening and closing pressure is adjustable by changing no. of screws.
- Its design is featured such that no hydraulic locking is there during opening and closing phase of the tool.
- Both Opening and Closing Seats consist of anti- rotation features which makes it easier to drill during drilling operation.
- It is a non-welded tool.
- O-ring Seals are provided for prevention of leakage of fluid.
- Snap Ring is provided to lock closing seat in closing position.
- Stage Collar is a proven design that is manufactured in sizes 4 1⁄2" through 20" .

Specification guide :

Casing Size	Max Diameter	Weight	Drill-out I.D	Overall Length	Opening		Closing		Opening Pressure W/Free-fall Device(p.S.I)
					Pressure (Psi)	Force (L.B.S)	Pressure (Psi)	Force (Lbs)	
5''	6.125	15-18	4.400	29''(approx)	3000	14.000	1500	25,000	1100
7''	8.275	26-29	6.200	31'' (approx)	2600	28,000	1500	57,000	1000
9 5/8''	11.125	43.5-53.5	8.600	32'' (approx)	2400	50,000	1500	111,000	1000
13 3/8''	15.000	61-72	12.375	35'' (approx)	2100	83000	1500	19500	900

TWO STAGE THREE PLUG CEMENTING

CLOSING PLUG

TRIP PLUG

SHUT OFF PLUG

The standard two stage cementing procedure uses conventional floating equipment, either standard valve or filling float valves on the bottom of the casing string. The rubber baffle plate is installed on top of the float collar. The stage collar is installed in the casing string at the position where second stage cement is to be pumped into the annulus. If a casing packer is being used the stage collar will be located above the packer. The operation of the stage collar is illustrated in sequence.

- Running in and First Stage Cementing, Flexible First Stage Plug will pass through stage collar while displacing first stage cement, landing on Baffle Plate located in Float Collar.
- Second Stage Cement Opening Trip Bomb has landed in and opened Stage Cementing Collar allowing second stage cement to be displaced.
- Second Stage Cement complete, Second Stage Closing / Displacement Plug landed in Stage Collar. Application of pressure will close the Stage Collar Ports. Two Stage Cementing job is complete.

TWO STAGE FOUR PLUG CEMENTING

CLOSING PLUG

TRIP PLUG

SHUT OFF PLUG

BAFFLE PLATE

BY PASS PLUG

Two Stage Wiper plug system is a very effective means of wiping in two stages with liner hanger & ECP Packer. Top Liner Wiper Plug is a flexible type rubber plug, which is assembled with the Top Liner Wiper Plug with the help of shear pins. The plugs have Non-Rotational features, which allow easy PDC drilling after cementing. The Bottom Liner Wiper Plug releases from the Top Liner Wiper Plug by bumping of lower releasing dart and it travels through the Hydraulic Stage.

Cementing Collar without any effect and seats into the BFC Landing Collar. The pressure rises against Bottom Liner Wiper Plug which actuate ECP Packer then opens the ports of the stage tool. The upper dart bump in to Top Liner wiper plug and release the Top Liner Wiper Plug, seats in the closing seat of the hydraulic stage-cementing collar. It closes the ports by shearing the shear pin and shifting the closing sleeve after second stage cementing job.

SEQUENCE OF OPERATION

Step-1 Stage collar in 'running-in' and first stage cementing position. First stage shut-off plug will pass through stage cementing collar while displacing first stage cement, landing on baffle plate located in float collar.

Step-2 HYDRAULIC opening: Opening sleeve is shifted down by applying hydraulic casing pressure, allowing second stage cement to be displaced through the ports.

Step-2 MECHANICAL opening: Opening dart is dropped (free-fall), and landed in the opening seat. casing pressure is applied, the opening sleeve is shifted to the open position allowing second stage cement to be displaced through the ports.

Step 3 Once the second stage cement job is complete, the closing plug lands in the stage cementing collar closing seat. Application of casing pressure shears the shear screws and pushes the closing sleeve to the closed and locked position, sealing off the ports. This completes the two stage cement job. (Hydraulic operation works the same, but no opening dart will be present).

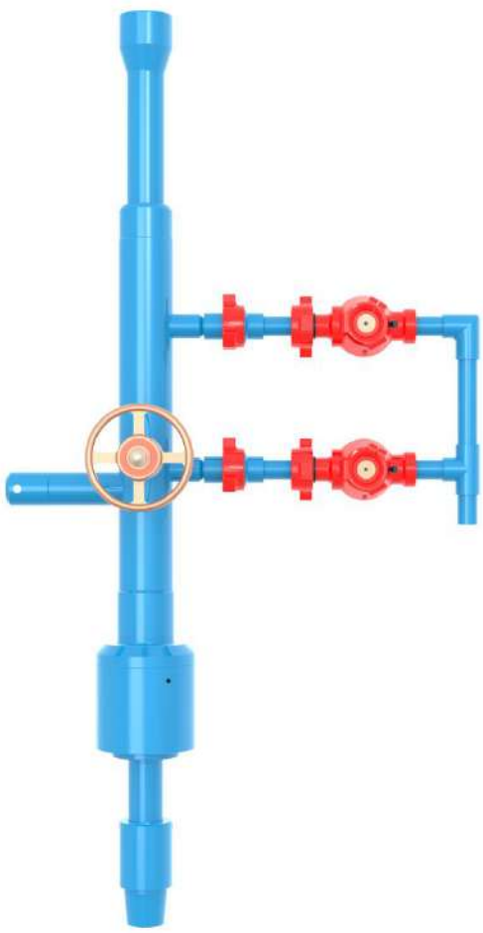
BAFFLE COLLAR

Baffle Collar is used for landing cementing plugs at specific points in the casing string. It is used when no float collar on shoe is being run and for linear cementing application. It is easily drillable.

BAFFLE PLATE

Baffle Plate is used for landing cementing plugs and is designed to be installed in the center of a casing coupling. These are available in both aluminum and plastic materials, and come in threaded and flush outside diameter configurations. Baffle Plates are available in sizes 4 1⁄2" through 13 3⁄8".

CEMENTING HEAD
MODEL: GR- CTHD



This type cementing head is used when the rigs are not equipped with a top drive. It is commonly used with drilling and service rigs which are conventional land based, and also with offshore rigs that using a conventional manifold.

The Cementing Manifold connects the cementing lines to the running string during liner operations. It consists of an integral heavy duty swivel which allows easy drill pipe string manipulation with the cementing lines connected to the manifold.

For unobstructed operation, the swivel mechanism and drill pipe plug retainer are built in below the elevators
Cementing Manifold is available with single or multi plug drop capabilities.

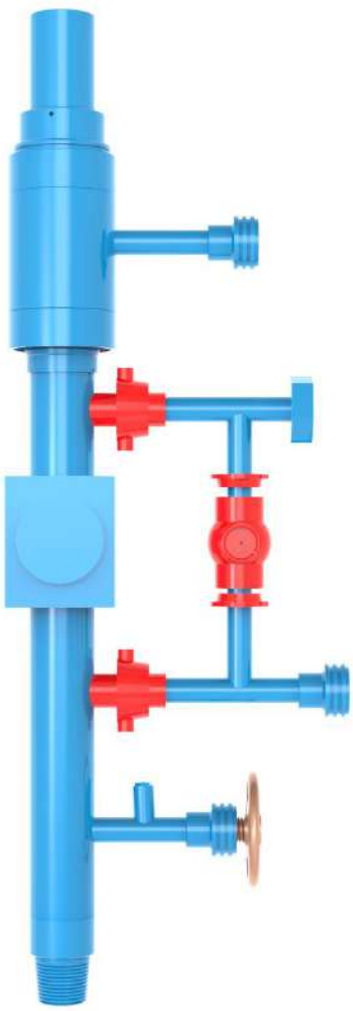
Application:

- Used for cementing liner and inner string.
- It consist of built-in rotary swivel for rotating applications
- Designed for high pressure applications up to 10,000 PSI
- It's Small bore makes it is suitable for drill pipe cementing and liner wiper plugs.
- It consist of Pick-up sub for handling and installing cement head and Replaceable bottom sub

Configuration:

- Ball dropping Sub.
- Plug release Plunger Assembly.
- Manifold, Downward union.
- Plug valves threaded connection.
- The cement heads are available in sizes 2 7/8” through 5 ½”

TOP DRIVE CEMENTING HEAD
MODEL: GR-TDHD



A power swivel or a top-drive drilling system as the drill string power source is required if, Top Drive Cementing head is to be used. It is most beneficial to use Top drive cementing head with rotational and reciprocating liner assemblies for best results during cementing operations. It consist of integral swivel which allows rotation.

Top Drive Cementing Head commonly have 4-1/2" I.F. Box up and Pin down connections for 10,000 PSI Cementing Line and Tensile Strength of400 Ton.
It is also available in 3-1/2" IF B X P connections.

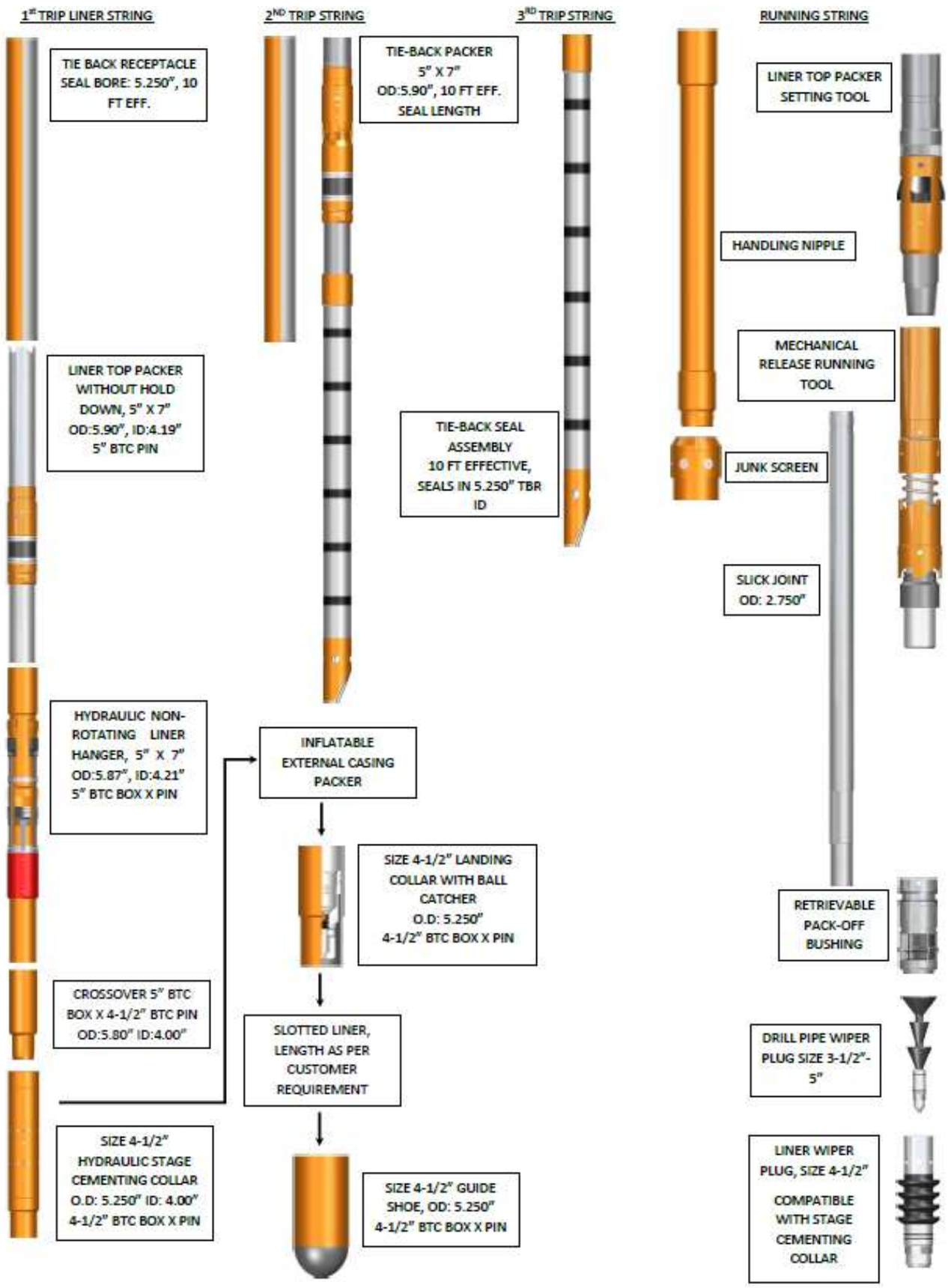
Application:

- Used for liner and inner string cementing where top drive is available.
- It is reliable when high circulation and rotation at high RPMs for longer periods of time is required.
- Designed for high pressure applications up to 10,000 PSI
- Indication of successful landing of ball or plug is got at the Flag sub indicator .
- It consist of Ball Dropping Sub from which various sizes of setting
- balls can be released
- It consist of small bore which makes it suitable for drill pipe cementing and liner wiper plugs.

Configuration:

- Ball dropping Sub.
- Plug release Plunger Assembly.
- Flag sub indicator.
- Plug valves threaded connection.
- The cement heads are available in sizes 2 7/8" through 5 ½"

HOOK – UP : HYDRAULIC NON-ROTATING WITH LINER HANGER W / LINER TOP PACKER, STAGE COLLAR,LCHB,ECP NAD MECH RELEASE RUNNING TOOL



MANUFACTURED BY :

Address : 57/58 Km Stone NH-48,
Industrial Area Binola, post.
Bhorakalan, Dist. Gurugram,
Haryana India
Pin Code : 122413
Contact Us : **www.gradwelloilfield.com**
Ph : 0124-2271100

Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers

PRIMARY CEMENTING EQUIPMENT

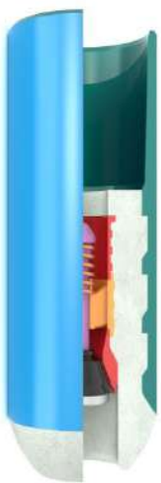
-

FLOAT SHOE

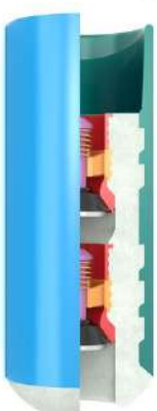
&

FLOAT COLLAR

CONVENTIONAL SINGLE & DOUBLE VALVE FLOAT SHOE
MODEL : GR-CFS-1 & GR-CFS-2



GR-CFS-1



GR-CFS-2

Float Shoe is a cylindrical steel section with a rounded nose which guides the casing toward the that is attached to the bottom of the casing string towards the centre of the hole. It contains a check valve to permit fluid to pass downward but not upward through the casing.

Features:

- Fast Drill Out.
- Internal Parts are PDC drillable.
- Float Shoe is available in all API grade material.
- Float shoe can be furnished in API threads as well as in Premium threads.
- Jet port/Nose configuration is available upon request. Gradwell offers Side Jet Ports, Down Jet Ports and Up Jet Ports.
- Valve is tested as per API RP 10F Category III C.
- Float Shoe is available in Single and Double valve Configuration.
- Maximum Back Pressure rating: 5000 psi @400°F.
- Tubing Float Shoe for high pressure up to 10000 PSI.
- Float Shoe is available in different type of nose as per the application.
- Chip breaker features are in all type of aluminum nose as well as Phenolic nose.

Types of Nose :

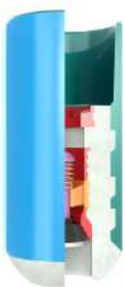
Bullet Nose

Spade Nose

Eccentric Nose

Phenolic Nose

NON-ROTATITING SINGLE & DOUBLE VALVE FLOAT SHOE
MODEL : GR-NRFS-1 & GR-NRFS-2



GR-NRFS-1

Non Rotating profile

GR-NRFS-2

Non-rotating Float shoe attaches to the end of the casing string and they are use to stop slurry from flowing back. Float Shoe serves as the backbone of casing equipment used during primary cementing operations. It guides the casing to total depth and prevents contaminated mud from entering the casing. Also it provides a landing point for casing wiper plugs, reinforces the lower end of the casing string, and ensures greater accuracy of cement slurry displacement. Non-rotating insert helps to engage the connecting plugs in it and locks the rotation when PDC drill bit is used.

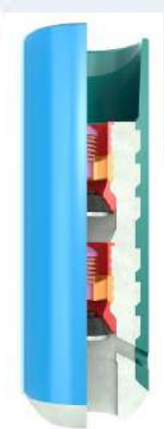
Features:

- PDC Drillable.
- Inverted Poppet valve has greater strength.
- Can withstand high temperatures & pressure.
- Non-Metallic parts prevent damage to PDC Drill Bit.
- Controlled buoyancy- regulated by filling casing cum surface.

Note: It is available in Single & Double Valve design.

SINGLE & DOUBLE VALVE FLOAT SHOE WITH DOWN JET PORTS
MODEL : GR-DJFS-1 & GR-DJFS-2

GR-DJFS-1



GR-DJFS-2

This design ensures positive sealing in vertical, deviated & horizontal well. They have a back-pressure valve that prevents fluids from entering the casing while the pipe is lowered into hole and prevents cement from flowing back into the casing after displacement, while enabling circulation down through casing. Double Valve helps maximum protection against back flow of cement. There are three down-jet ports located below float valve in side of the float shoe shell to help to increase cement bonding strength due to swirl effect by cementing.

Sometimes, it provides landing point for cementing plugs when Collar is not used.

It is available with Down-jet, Up-jet & Side-jet ports as well.

Features:

- Down-jet ports increase bonding strength of cement.
- Provide passage of fluid with added assurance that flow will not be interrupted when casing resets at bottom.
- Easy PDC drillable.
- Cost effective.
- Maximum protection against back flow of cement.

Note: It is available in Single & Double Valve design.

DIFFERENTIAL FILL-UP FLOAT SHOE
MODEL : GR-DFS

GR-DFS

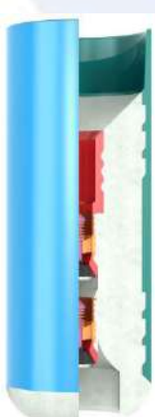
Differential fill-up Float Shoe allows 90% casing fill-up during run-in, reducing surge pressures caused by the piston effect of running in restricted I.D. Use of differential shoe provides additional buoyancy by allowing only 81% casing fill-up further enhancing works efficiency.
Circulating can be established at any time while running in. Dropping a ball converts the differential valve to a regular back-pressure valve. When collar and shoe are run together, dropping one ball converts both units. After allowing sufficient time for ball to reach the equipment conversion can be achieve by applying approximately 600-800 psi of pump pressure (adjustable).

Features:

- 90% casing fill-up during run in.
- Reduce surge pressure.

STAB IN SINGLE & DOUBLE VALVE FLOAT SHOE
MODEL : GR-SIFS-1 & GR-SIFS-2

GR-SIFS-1



GR-SIFS-2

Gradwell Stab-in Float Shoes are provided with features where the drill pipe is stabbed directly into the float shoe. Stab in float shoe resists high temperature, good sealing and drill ability, convenient connection. This kind of shoe is used for inner string cementing operations. Stab-in cementing is an improved method for cementing large diameter casing. It improves displacement accuracy, and cement volume and net rig time. Gradwell provide Single as well as with Double Valve Stab-in Float Shoe..

Features:

- Reduced cement volume, rig time for cementing operations.
- Use of Drill Pipe Dart instead of large dia. cementing plugs.
- Cementing pressure confined to Drill pipe as in squeeze cementing jobs.

Note: It is available in Single & Double Valve design.

STAB IN LATCH FLOAT SHOE
MODEL : GR-SILFS-1

GR-SILFS-1

These Float Shoes are provided with latch in profile & allow the drill pipe to be stabbed directly into the float shoe. These float shoe resists high temperature, good sealing and drill ability, convenient connection. This kind of shoe is used for inner string cementing operations. Stab-in cementing is an improved method for cementing large diameter casing. It improves displacement accuracy, and cement volume and net rig time. Gradwell provide Single as well as with Double Valve Stab-in Latch Float Shoe..

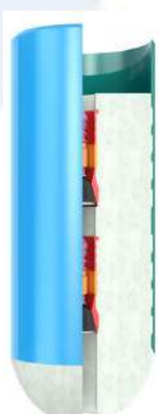
Features:

- Receptacle has ratcheting left hand threads to lock the stringer into the float equipment.
- Drill pipe and stringer can be easily pulled out of the float equipment when cement job is completed.
- Recommended when reciprocation of the casing is required.
- Stab-in Latch-in Stinger required.
- PDC drillable.

Note: It is available in Single & Double Valve design.

BUTT WELD SINGLE & DOUBLE VALVE FLOAT SHOE
MODEL : GR-BWFS-1 & GR-BWFS-2

GR-BWFS-1



GR-BWFS-2

In Butt-Weld type of cement float shoe the casing collar O.D matches with the casing O.D and upper end is only beveled, not recessed for directly welding to the casing pipe.

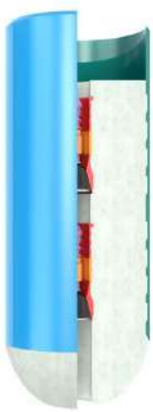
Features:

- Hold back flow pressure of cement.
- Operator-controlled buoyancy-regulated by filling casing at surface.
- Bottom round nose of the shoe helps for easy entry of the string into the hole.
- They are mostly run with float collars and must perform the primary function of guiding the casing to total depth while also serving as the primary valve when the cementation displacement is completed.

Note: It is available in Single & Double Valve design.

SLIP ON CEMENT SINGLE & DOUBLE VALVE FLOAT SHOE
MODEL : GR-SOFS-1 & GR-SOFS-2

GR-SOFS-1



GR-SOFS-2

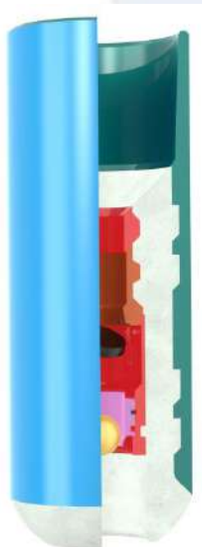
In Slip on type of cement float shoe the casing collar O.D matches with the casing O.D and upper end is only beveled, not recessed for directly welding to the casing pipe.

Features:

- Hold back flow pressure of cement.
- PDC Drillable.
- Provide casing buoyancy during running & act as internal bop during running and casing cementing.

Note: It is available in Single & Double Valve design.

AUTO FILL FLOAT SHOE
MODEL : GR-AFFS



GR-AFFS

Differential fill-up Float Shoe allows 90% casing fill-up during run-in, reducing surge pressures caused by the piston effect of running in restricted I.D. Use of differential shoe provides additional buoyancy by allowing only 81% casing fill-up further enhancing works efficiency.

Circulating can be established at any time while running in. Dropping a ball converts the differential valve to a regular back-pressure valve. When collar and shoe are run together, dropping one ball converts both units. After allowing sufficient time for ball to reach the equipment conversion can be achieve by applying approximately 600-800 psi of pump pressure (adjustable).

Features:

- 90% casing fill-up during run in.
- Reduce surge pressure.

SINGLE & DOUBLE VALVE REAMER SHOE
MODEL : GR-RS-1 & GR-RS-2

Reamer Shoe is a cylindrical steel section with an eccentric nose which guides the casing toward the that is attached to the bottom of the casing string towards the centre of the hole.

It contains a check valve to permit fluid to pass downward but not upward through the casing. Reamer shoe is the single and double valve available.

Features:

- Carbide spiral vanes and diamond shapes structure provides full-bore coverage in rotating and reciprocating applications, which provides easy passage to total depth.
- The eccentric nose can climb ledges and negotiate other well bore obstructions while the cutting structure reams out tight spots.
- Reamer shoe enables both rotating and reciprocating reaming action while running casing and liners.
- Flow ports provide full-bore coverage while rotating and reaming, and they prevent channeling while cement is pumped.
- All internal parts and standard aluminum alloy nose are PDC drillable.
- Reamer Shoe is available in all API grade material.
- Reamer shoe can be furnished in API threads as well as in Premium threads.
- Reamer Shoe is available in Single and Double valve Configuration.
- Maximum Back Pressure rating: 5000 psi @400°F.
- Reamer shoe is available in welded design as well as single piece design.

GR-RS-1

GR-RS-2

CONVENTIONAL SINGLE & DOUBLE VALVE FLOAT COLLAR
MODEL : GR-CFC-1 & GR-CFC-2

Float Collar is a cylindrical steel section with box and pin threads. Float Collar generally uses one string above the Float Shoe. It contains a check valve to permit fluid to pass downward but not upward through the casing and provides a flat landing surface for cementing plugs.

Features:

- Fast Drill Out.
- Internal Parts are PDC drillable.
- Float Collar is available in all API grade material.
- Float Collar can be furnished in API threads as well as in Premium threads.
- Float Collar can be furnished with non rotating feature.
- Valve is tested as per API RP 10F Category III C.
- Maximum Back Pressure rating 5000 psi @400°F.
- Tubing Float Collar for high pressure up to 10000 PSI.
- Orifice float collar for Tie-back application.
- Ball Catcher/Ball Deflector is available upon request.
- Flat surface provides platform to bump the bottom plug.
- Baffle plate float collar is available upon request.
- Inner String float collar is available for larger size casing.

GR-CFC-1

GR-CFC-2

NON-ROTATITING SINGLE & DOUBLE VALVE FLOAT COLLAR
MODEL : GR-NRFC-1 & GR-NRFC-2

GR-NRFC-1

Non-Rotating Float Collar attaches to one or two casing joints above Float Shoe and they are use to stop slurry from flowing back. Float collar also serves as the backbone of casing equipment used during primary cementing operations.

Also it provides a landing point for casing wiper plugs, reinforces the lower end of the casing string, and ensures greater accuracy of cement slurry displacement. Non-rotating insert helps to engage the connecting plugs in it and locks the rotation when PDC drill bit is used.

GR-NRFC-2

Non Rotating profile

Features:

- PDC Drillable.
- Inverted Poppet valve has greater strength.
- Can withstand high temperatures & pressure.
- Non-Metallic parts prevent damage to PDC Drill Bit.
- Controlled buoyancy- regulated by filling casing cum surface.

Note: It is available in Single & Double Valve design.

DIFFERENTIAL FILL-UP FLOAT COLLAR
MODEL : GR-DFC

GR-DFC

Differential fill-up Float Collar allows 90% casing fill-up during run-in, reducing surge pressures caused by the piston effect of running in restricted I.D. Use of differential collar provides additional buoyancy by allowing only 81% casing fill-up further enhancing works efficiency.

Circulating can be established at any time while running in. Dropping a ball converts the differential valve to a regular back-pressure valve. When collar and shoe are run together, dropping one ball converts both units. After allowing sufficient time for ball to reach the equipment conversion can be achieve by applying approximately 600-800 psi of pump pressure (adjustable).

Features :

- 90% casing fill-up during run in.
- Reduce surge pressure.

STAB IN SINGLE & DOUBLE VALVE FLOAT COLLAR
MODEL : GR-SIFC-1 & GR-SIFC-2

GR-SIFC-1

GR-SIFC-2

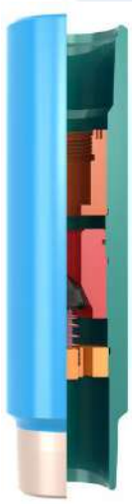
Gradwell Stab-in Float Collars are provided with features where the drill pipe is attached to Stab-in stinger or directly stab into the float collar. It resists high temperature, good sealing and drill-out ability & convenient connection. This kind of collars is used for inner string cementing operations. Stab-in cementing is an improved method for cementing large diameter casing. It can also improve displacement accuracy, and cement volume and net rig time. Gradwell provide Single as well as with double valve Stab-in Float Collar.

Features:

- Reduced cement volume, rig time for cementing operations.
- Use of Drill Pipe Dart instead of large dia. cementing plugs.
- Cementing pressure confined to Drill pipe as in squeeze cementing jobs.

Note: It is available in Single & Double Valve design.

STAB IN LATCH FLOAT COLLAR
MODEL : GR-SILFC-1



GR-SILFC-1

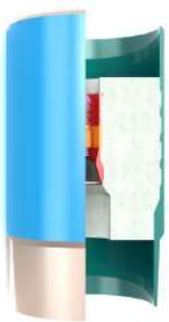
These Float Shoes are provided with latch in profile & allow the drill pipe to be stabbed directly into the float shoe. These float shoe resists high temperature, good sealing and drill ability, convenient connection. This kind of shoe is used for inner string cementing operations. Stab-in cementing is an improved method for cementing large diameter casing. It improves displacement accuracy, and cement volume and net rig time. Gradwell provide Single as well as with Double Valve Stab-in Latch Float Shoe..

Features:

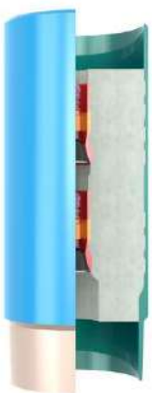
- Receptacle has ratcheting left hand threads to lock the stringer into the float equipment.
- Drill pipe and stringer can be easily pulled out of the float equipment when cement job is completed.
- Recommended when reciprocation of the casing is required.
- Stab-in Latch-in Stinger required.
- PDC drillable.

Note: It is available in Single & Double Valve design.

BUTT WELD SINGLE & DOUBLE VALVE FLOAT COLLAR
MODEL : GR-BWFC-1 & GR-BWFC-2



GR-BWFC-1



GR-BWFC-2

In Butt-Weld type of cement float collar the casing collar O.D matches with the casing O.D and upper end is only beveled, not recessed for directly welding to the casing pipe.

Features:

- Hold back flow pressure of cement.
- We consider all point of hole geometry, operation process.

Note: It is available in Single & Double Valve design.

SLIP ON CEMENT SINGLE & DOUBLE VALVE FLOAT COLLAR
MODEL : GR-SOFC-1 & GR-SOFC-2

GR-SOFC-1

GR-SOFC-2

In Slip on type of cement float collar the casing collar O.D matches with the casing O.D and upper end is only beveled, not recessed for directly welding to the casing pipe.

Features:

- Hold back flow pressure of cement.
- We consider all point of hole geometry, operation process.

Note: It is available in Single & Double Valve design.

AUTO FILL FLOAT COLLAR
MODEL : GR-AFFC

GR-AFFC

Auto fill float collar permits the casing to fill automatically while being run into the hole. The valve is always in open position, allowing maximum filling of the casing as it running in the well bore. This is especially effective on liner job and sensitive hole conditions.

Features:

- Casing can be automatically filled up during running-in
- Casing can be circulated at any time at low rates, without having to convert the valve from the fill-up to the back-pressure mode.
- It can be provided in conventional as well as with non rotating profile.
- PDC Drillable.

CEMENT GUIDE SHOE
MODEL : GR-CGS

GR-CGS

Guide Shoe is a cylindrical steel section with a rounded nose which guides the casing toward the that is attached to the bottom of the casing string towards the centre of the hole.

Features:

- Guide Shoe is available in all API grade material.
- Guide shoe can be furnished in API threads as well as in Premium threads.
- Jet port configuration is available upon request. Gradwell offers Side Jet Ports, Down Jet Ports and Up Jet Ports.

Down Jet Float Shoe

Side Jet Float Shoe

Up Jet Float Shoe

STAB IN STINGER & STAB IN LATCH STINGER
MODEL : GR-SIS & GR-SILS

GR-SIS

GR-SILS

Gradwell Stab-in Latch Stinger is used for cementing large diameter casings lowered on drill pipe. The string presents special cementing consideration due to high displacement volume of large diameter casing. Problem with high displacement are overcome by using Stab in Cementing Equipment to allow cementing through drill pipe.

Features:

- Small diameter inner string off drill pipe is used to displace cement which minimizes displacement volume behind cement and there by reduces contamination and save time.
- Drill out of cement inside large casing is minimized by controlling cement top with displacement fluid in drill pipe and Poppet valve in Stab in Shoe.
- Reduce cement volume conventional displacement requires calculation of excess cement factor, whereas with stab-in methods excess cement need be no greater than the volume of the drill pipe. No large plugs are needed. Flow ports provide full-bore coverage while rotating and reaming, and they prevent channeling while cement is pumped.
- Protect casing cementing pressures are confined to the drill pipe as in a squeeze job.

Available sizes 3 1/2” to 6 5/8” and any special sizes can be custom made as required.

CONVENTIONAL TOP & BOTTOM PLUG
MODEL : GR-TP & GR-BP

GR-TP

GR-BP

Cementing plug is used to separate cement slurry from other fluids, reducing contamination and maintaining expected slurry Performance. Gradwell provides two types of cementing plug which are generally used on a cementing operation.

- Conventional (Rotating) Type Cementing Top & Bottom Plug
- Non-Rotating Type Cementing Top & Bottom Plug The bottom plug (In Blue/Red) is launched ahead of the cement slurry to minimize contamination by fluids inside the casing prior to cementing. A rupture disk in the plug body ruptures to allow the cement slurry to pass through after the plug reaches the Float Collar.
- The Top Plug (In Black) has a solid body that provides positive indication of contact with the Float Collar and Bottom Plug through an increase in pump pressure.

Features:

- Internal core is available in Phenolic as well as aluminum.
- Oil Resistant.
- Plugs are available in Nitrile, Viton, Aflas and other elastomers.
- Plugs are available in conventional and Non Rotating Design.
- Plugs are PDC drillable.
- One plug can be used in range of PPF for same size of casing.
- Maximum temperature rating 400°F.
- Non Rotating profile reduces the drilling time.

ANTI-ROTATIONAL TOP & BOTTOM CEMENTING PLUG
MODEL : GR-TP-AR & GR-BP-AR

GR-TP-AR

GR-BP-AR

Gradwell ANTI-ROTATING CEMENTING PLUG is used with profile float collar. Both the cementing plug- Top cementing plug and bottom cementing plug are manufactured with auto lock profile which on plumbing automatically locks in each other, and restricts rotational of cementing plugs.

These plugs are made of phenolic core integral teeth which eliminates aluminum and large mass of rubber found in conventional cementing plugs. These are no metal parts are used and the plugs are completely PDC drillable. It consist of wiping fins are molded from natural rubber or hydrogenated nitrile (HNBR). They are suitable for standard and high temperature well conditions. After the top plug latches . Into the bottom plug, they provides anti-rotational feature to eliminate rotation during drilling and save drill out time

Note : The plugs available in 3-1/2'' to 30'' size.

COMBINATION TOP & BOTTOM CEMENTING PLUG
MODEL : GR-CTP & GR-CBP

GR-CTP

GR-CBP

Cementing plug involves wiping inner diameter of two or more casing string in one wiping action. These plugs allows tapered casing string to be cemented while ensuring efficient wiping of the cement from casing different IDs in the string.

They are designed and tested to withstand 5,000 psi differential pressure. The different sizes of rubber fins which help in wiping on the casing wall as well as assist in displacing the cement in one step. It is made of graded rubber. These plug are completely PDC drillable.

Note : The plugs available in 2-3/8'' to 13.3/8'' size.

ANTI-ROTATIONAL WIPER TOP & BOTTOM PLUG
MODEL : GR-CTP-AR & GR-CBP-AR

GR-CTP-AR

GR-CBP-AR

Cementing plug involves wiping inner diameter of two or more casing string in one wiping action. These plugs allows tapered casing string to be cemented while ensuring efficient wiping of the cement from casing different IDs in the string.

They are designed and tested to withstand 5,000 psi differential pressure. The different sizes of rubber fins which help in wiping on the casing wall as well as assist in displacing the cement in one step. It is made of graded rubber. These plug are completely PDC drillable.

Note : The plugs available in 2-3/8'' to 13.3/8'' size.

TOP PLUG & BOTTOM PLUG WITH ALUMINIUM CORE
MODEL : GR-TP-AL & GR-BP-AL

GR-TP-AL

GR-BP-AL

These plug are ideal for use in high temperature well condition. They are made of cast aluminum core and wiping fins are molded from natural rubber or Hydrogenated nitrile (HNBR). These plugs are PDC Drillable. The top plug is manufactured in black natural rubber and the bottom plug in orange with rapture diaphragm at 300 psi differential. Operating range is up to 275°F. Plugs can be ordered in viton.

Note : The plugs available in 16'' to 20'' size.

FLOAT SHOE & FLOAT COLLAR

MANUFACTURED BY :

Address : 57/58 Km Stone NH-48,
Industrial Area Binola, post.
Bhorakalan, Dist. Gurugram,
Haryana India
Pin Code : 122413
Contact Us : **www.gradwelloilfield.com**
Ph : 0124-2271100

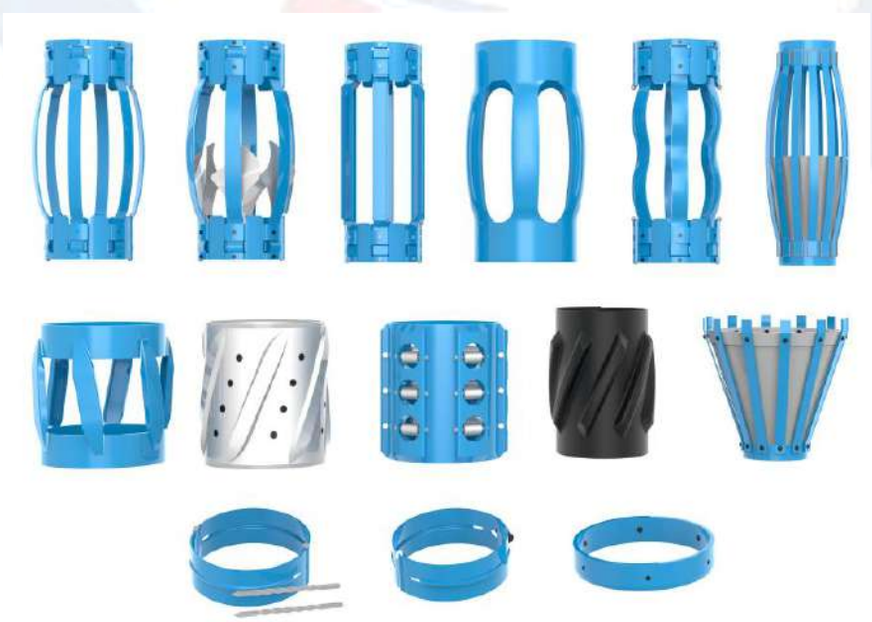
Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers

GRADWELL OILFIELD

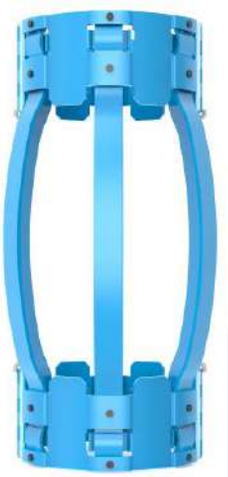
DRILLING & CEMENTING EQUIPMENT

-

CASING CENTRALIZERS & STOP COLLARS



HINGED NON WELDED BOW SPRING CENTRALIZER
MODEL : GR-01



GR-01

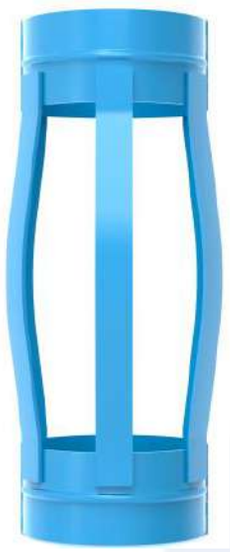
Gradwell - Non Welded Bow Spring Centralizers are designed for vertical, deviated and horizontal well for enhanced restoring force combined with low starting force ensuring good zone isolation. Bow springs are of high quality alloy steel, hot bent to shape using dies and then heat treated under controlled time cycles for consistent tensile strength and spring characteristics for “spring back” action.

Features:

- Extended profile prevents them from hitting against casing collars
- Five standard size Bows can be configured to any hole diameter
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED WELDED BOW SPRING CENTRALIZER
MODEL: GR-02



GR-02

Gradwell – Welded Bow Spring Centralizers has more Restoring Force as compare to Non Welded Centralizer. The Centralizers have Bow Spring strongly welded to the End Collar under required temperature and condition with extra low Hydrogen coated Electrodes. Integral hinge folded on the inside stay intact even under extreme stress. The End Collars are designed with a Reinforcing Rib stamped into the End Collar to give maximum structural toughness.

Features:

- These are shipped in half assembled condition for economical in freight and storage costs .
- Special Iron Phosphate coating process to prevent from Rust and ensure stocking in the open for a long time.
- Supplied with stop collar and hinge pin.
- Developed to exceeds API 10D standards.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON WELDED BOW SPRING CENTRALIZER
MODEL: GR-03

GR-03

Gradwell – Slip on welded centralizers are manufactured with solid end rings that can be easily slipped on the casing OD during installation. Slip-on welded centralizers are designed for high restoring force combined with low starting force for centralizing the casing pipe. High performance characteristics are combined with easy field assembly. Bow springs are manufactured of high quality alloy steel, hot bent to shape using dyes and then heat treated under controlled temp and time cycles for consistent spring characteristics to ensure a crack free weld with a minimum amount of distortion and maximum amount of rigidity.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Supplied with Sipped on set screw stop collar
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED NON WELD STAINLESS STEEL BOW SPRING CENTRALIZER
MODEL : GR-04

GR-04

Gradwell - Hinged Non Welded Stainless Steel Bow Spring Centralizers are special purpose centralizer, it's used where the chances of corrosion and contamination are present, or it can be use for water well also. It's a 100% stainless Steel Manufacturing along with stainless steel nails Premium quality Bows are made of stainless steel material and hot formed in totally controlled Heat Treatment Plant to achieve the uniform hardness all over and good spring action.

End Collars are designed with self-locking action, which are easy to assemble, time saver and having strong grip. The five standard size Bows can be configured to any hole dia. These Bows with extended profile prevent them from hitting against casing collars. These can be shipped in half assembled condition for economy in shipping and storage costs. These are available in 4 1/2" to 20" sizes. Any special sizes or combination can available on request.

Features:

- Extended profile prevents them from hitting against casing collars
- Five standard size Bows can be configured to any hole diameter
- Special Iron Phosphate coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON WELDED WITH SET SCREW BOW SPRING CENTRALIZER MODEL: GR-62

GR-62

Gradwell - Welded Slip On set crew Bow Spring Centralizers share all the operational and design features of Hinged Welded Centralizers. The key difference is that the End Collars do not have hinges and instead ‘slip’ onto the casing. The collars are specially designed with roll-formed peripheral ridges that provide extra rigidity and can be accompanied by set screws for elimination of Stop Collars.

- The Centralizers are available in a choice of seven standard bow heights for optimal starting and restoring force. All Centralizers undergo a special iron phosphate coating process to prevent corrosion and are then coated with a special polyester powder.
- Gradwell Slip On Welded Bow Spring Centralizers are shipped in assembled condition only.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Supplied with Sipped on set screw stop collar
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED NON WELDED BOW SPRING TURBOLIZER
MODEL: GR-05

GR-05

Gradwell – Non Welded Turbolizer has deflector blade fitted on standard bow spring which creates difference from the standard centralizers. These blades or Fins are specially made of Heat Treated spring steel. The metal fins are installed on the Bows, to help induce turbulence in the cement slurry during pumping operation. Spring action of blades makes them flexible, which minimize damage while moving down hole.

Features:

- Device improves the cleaning action of Drilling Fluids. Distribute the cement slurry into Well bore irregularities and minimizes channeling.
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED WELDED BOW SPRING TURBOLIZER
MODEL: GR-06

GR-06

Gradwell – Welded Turbolizer has deflector blade fitted on standard bow spring which creates difference from the standard centralizers. The End Collars are designed with a reinforcing Rib stamped into the End Collar to give maximum structural toughness Another special characteristic are built in Stop device on leading End Collar. The metal fins are installed on the bows, to help induce turbulence in the cement slurry during pumping operation. Spring action of blades makes them flexible, which minimize damage while moving down hole.

Features:

- Device improves the cleaning action of Drilling Fluids. Distribute the cement slurry into Well bore irregularities and minimizes channeling.
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON WELDED BOW SPRING TURBOLIZER
MODEL: GR-07

GR-07

Gradwell – slip on Welded Turbolizer has deflector blade fitted on standard bow spring which creates difference from the standard centralizers. These blades or Fins are specially made of Heat Treated spring steel. The metal fins are installed on the Bows, to help induce turbulence in the cement slurry during pumping operation. Spring action of blades makes them flexible, which minimize damage while moving down hole. Collars are specially designed with roll formed peripheral ridges which provide extra rigidity. Slip On Turbolizers are provided for direct installation on pipe by slipping on stop collar and can be provided with Setscrew for elimination of Stop collar.

Features:

- Device improves the cleaning action of Drilling Fluids. Distribute the cement slurry into Well bore irregularities and minimizes channeling.
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Developed to exceeds API 10D standards.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED NON WELDED POSITIVE BOW CENTRALIZER
MODEL: GR-08

GR-08

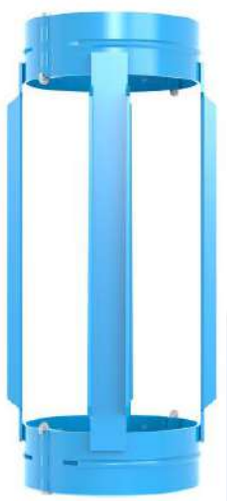
Gradwell – Non welded positive Centralizers are uniquely designed with flat bottom U profile of different depths. The Centralizers significantly reduce frictional drag while being used in deviated holes. They provide almost 100% Stand Off when run inside a cased hole. They are supplied 1/4" or 6 mm less than the inside diameter of the hole size in which Centralizer is to be run. This design eliminates weak (brittle) spots passage. The flat U profile is fitted in self-locking retaining lips for firm and positive hold.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs .
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED WELDED POSITIVE BOW CENTRALIZER
MODEL: GR-09



GR-09

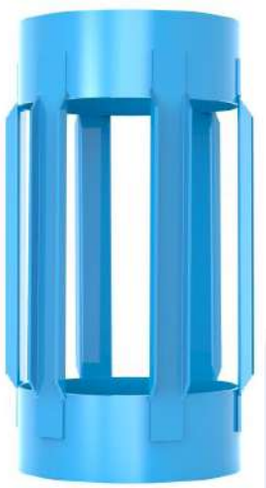
Gradwell – Hinged welded positive bow centralizers have strongly welded to the end collar under required temperature and condition with extra low hydrogen coated electrodes. Operational and general design features are the same as non-welded positive bow centralizer

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON WELDED POSITIVE BOW CENTRALIZER
MODEL: GR-10



GR-10

Gradwell - Slip-On Positive Bow Centralizer are manufactured with solid end rings that can be easily slipped on the casing OD during Installation. Centralizers bow have strongly welded to the end Collar under required temperature and Condition with extra low hydrogen coated electrodes. Operational and Design features is the same welded positive bow centralizer.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Supplied with slip on stop
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED NON WELDED STAINLESS STEEL POSITIVE BOW CENTRALIZER MODEL: GR-11

GR-11

Gradwell– Stainless Steel centralizers are special purpose centralizers it's used where the chances of corrosion and contamination are present, or it can be used for water well also. It's a 100% stainless Steel Manufacturing along with stainless steel nails Premium Quality Bows are made of stainless steel material and hot formed in totally controlled Heat Treatment Plant are uniquely designed with flat bottom U profile of different depths. The Centralizers significantly reduce frictional drag while being used in deviated holes. They provide almost 100% Stand Off when run inside a cased hole. They are supplied 1/4" or 6 mm less than the inside diameter of the hole size in which Centralizer is to be run. This design eliminates weak (brittle) spots passage. The flat U profile is fitted in self-locking retaining lips for firm and positive hold.

Features:

- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SINGLE PIECE BOW SPRING CENTRALIZER
MODEL: GR-12

GR-12

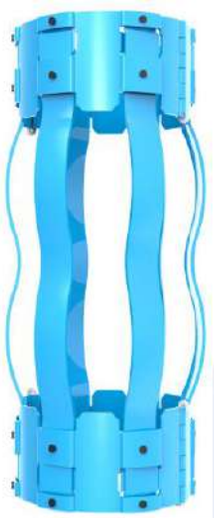
Gradwell–Single Piece Welded Bow Spring Centralizer is integrated steel flexible Centralizer used to centralizer casing during the cementing stage of oil wells. Single Piece Centralizers is designed for tight tolerance applications. It performs very well in open hole as well as in cased hole.

Features:

- Used in vertical, deviated and horizontal wells
- Low start and running forces
- Flexible and High restoring force
- Developed to have good stand-off
- Developed to meet or exceed API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED NON WELDED SEMI RIGID BOW SPRING CENTRALIZER MODEL: GR-13



GR-13

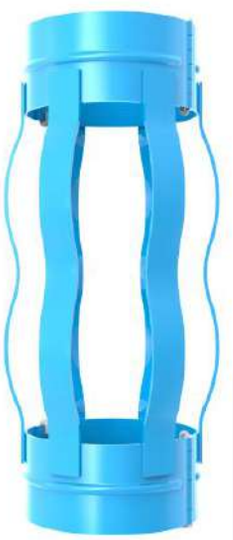
Gradwell –Semi Rigid Centralizers are designed to pass through tight spots and doglegs. This device ensures high efficiency in casing jobs on Deviated and Horizontal wells. This Design makes these Centralizers act as a rigid centralizer under high side loads. The construction is with Hinges and a Non Welded Bow.

Features:

- It has high Restoring force and high Stand Off with low Running Force.
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED WELDED SEMI RIGID BOW SPRING CENTRALIZER MODEL: GR-14



GR-14

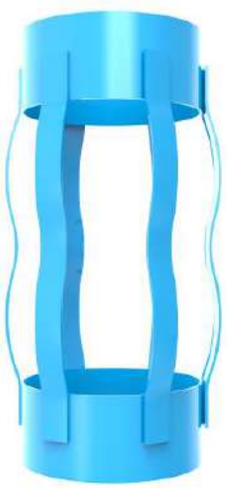
Gradwell – Hinged Welded Semi Rigid Centralizer ensures high efficiency in casing. Welded Centralizer has more Restoring Force as compare to Non Weld Centralizer. The Centralizers have double crested Bow Spring strongly welded to the End Collar under required temperature and condition with extra low Hydrogen coated Electrodes, which assures ultimate strength and uniformity in every weld. Integral hinge folded on the inside stay intact even under extreme stress. The End Collars are designed with a reinforcing Rib stamped into the End Collar to give maximum structural toughness.

Features:

- It has high Restoring force and high Stand Off with low Running Force
- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- These are shipped in half assembled condition for economical in freight and storage costs
- Supplied with stop collar and hinge pin
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON WELDED SEMI RIGID BOW SPRING CENTRALIZER
MODEL: GR-15



GR-15

Gradwell – Slip On Welded Semi-Rigid Centralizers share many of the same design and operational features as Hinged Welded Centralizers. They can be directly installed onto pipe and are provided with set screw style Stop Collars to increase the holding force. The Collars are innovatively designed with roll formed peripheral ridges that provide extra rigidity. The Centralizers are available in a variety of Bows configured from a choice of four standard Bow heights.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED WELDED CEMENT BASKET
MODEL: GR-17

GR-17

Gradwell – Hinged Welded Cement Basket is designed with Flexible Bow Springs, heat-treated under controlled conditions for maximum strength and uniformity are welded to slip-on collars and overlapping metal fins for flexibility and strength to support long columns of cement during primary cementing operations it is easily installed by sliding it over the pin end of a casing joint, prior to make-up of the joint.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Its design allows cement to flow in an upward direction, yet helps to prevent it from falling downward.
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON CEMENT BASKET
MODEL: GR-18

GR-18

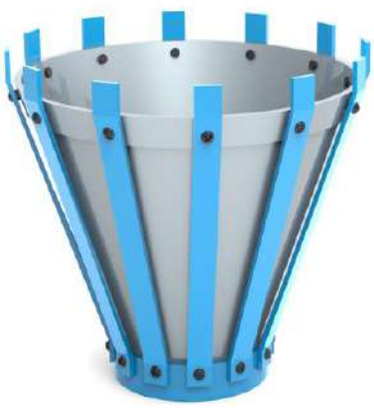
Gradwell– Hinged Welded Cement Basket is designed with Flexible Bow Springs, heat-treated under controlled conditions for maximum strength. The circulation is not restricted whenever in the process of running casing, during lifting and lowering or in the half way.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Can be used with relevant small casing
- Its design allows cement to flow in an upward direction, yet helps to prevent it from falling downward.
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

OPEN TOP CEMENT BASKET
MODEL: GR-19



GR-19

Gradwell – Open Top Cement Baskets consists of heavy duty liners concentrated to staves and fabricated using high strength, flexible steel bows that are mounted on the steel slip-on end collar. The baskets are not duplicated and occasionally allow traveling the length of the joint to allow pipe movement. The cement basket has better ability to adapt to the bore hole and can accommodate larger than nominal hole sizes.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Its design allows cement to flow in an upward direction, yet helps to prevent it from falling downward.
- Developed to exceeds API 10D standards

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

STAND OFF BAND (STRAIGHT , R IGHT & L EFT)
MODEL: GR-20 , GR-21, & GR-22

GR-20

GR-21

GR-22

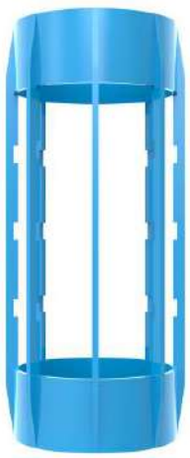
Gradwell – Slip On Stand Off Band rigid centralizer is designed.

To provide a positive stand off the for both cased and open Holes. The angled fins provide increased turbulent flow. These Slip On Stand Band is require where close tolerance between the casing and the hole is being encountered. Mainly it's designed for the liner applications.

Design of the stand off band allow for reciprocation and rotation during cementing and can be installed between Set Screw Stop Collar these Stand Off Band undergo a special Phosphate coating process to prevent from Rust then coated with special Polyester Powder. These are available in sizes ranging from 4 1/2" to 20"

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

CONDUCTOR PIPE CENTRALIZER
MODEL: GR-23



GR-23

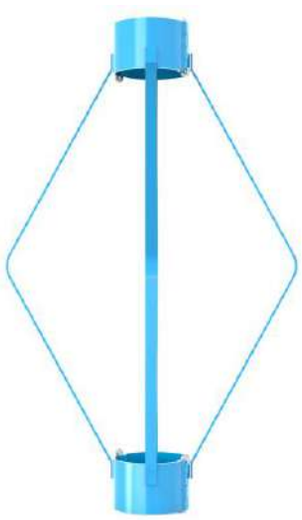
Gradwell – Conductor pipe centralizers provide the right features for getting a good primary cementing job with maximum casing and wellbore standoff. Conductor pipe centralizers are constructed of two-piece high strength corrosion resistant. Conductor Pipe centralizers provide ultimate drag and torque reduction with maximum fluid bypass with low friction factor. Conductor pipe centralizers with stand high wellbore temperatures while providing maximum horizontal standoff.

Features:

- Special zinc Phosphate and powder coating process to prevent from Rust and ensure stocking in the open for a long time.
- Low friction factor
- Developed to exceeds API 10D standards.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

DRILL PIPE WELDED CENTRALIZERS
Model : GR-24



GR-24

Gradwell – Drill Pipe Centralizer Runs freely into difficult well-bores while providing excellent standoff. The Bows of these Centralizers are heat treated in special furnace which gives it a peculiar ‘bow spring’ action. The Heat Treated bows enable these centralizers to provide best centralization as well as help in faster running of casing. In this type of Centralizers, the End Collars have hinges which makes it in two halves. The longer bow profile allows centralizers to be pulled into restrictions and into larger under reamed open hole.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SPIRAL VANE SOLID RIGID CENTRALIZER
MODEL: GR-26 (Aluminium)-L GR-32 (Steel)-L GR-38 (Zinc)-L GR-44 (Thermoplastic)-L

Gradwell - Spiral Vane solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Straight vane solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass. Available in different material grades.

Features:

- High axial load strength
- Construction provides superior toughness
- Spiral blades allow passage through unexpected under gauge open hole
- Units can be run between casing and less demanding wells

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SPIRAL RIGHT VANE SOLID RIGID CENTRALIZER
MODEL: GR-27 (Aluminium)-R GR-33 (Steel)-R GR-39 (Zinc)-R GR-45 (Thermoplastic)-R GR-47 (Welded)

Gradwell - Spiral Vane solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Straight vane solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass. Available in different material grades.

Features:

- High axial load strength
- Construction provides superior toughness
- Spiral blades allow passage through unexpected under gauge open hole
- Units can be run between casing and less demanding wells

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

STRAIGHT VANE SOLID RIGID CENTRALIZER
MODEL: GR-25 (Aluminium) GR-31 (Steel) GR-37 (Zinc) GR-43 (Thermoplastic) GR-46 (Welded)

Gradwell - Straight Vane solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Straight vane solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass. Available in different material grades.

Features:

- High axial load strength
- Construction provides superior toughness
- Spiral blades allow passage through unexpected under gauge open hole
- Units can be run between casing and less demanding wells

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination
can be made available on request.

SPIRAL VANE SET SCREW SOLID RIGID CENTRALIZER
MODEL: GR-29 (Aluminium)-L GR-35 (Steel)-L GR-41 (Zinc)-L

Gradwell - Spiral Vane set screw solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Spiral vane Set screw solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass. The vortex motion generated by the spiral vanes helps to increase the fluid velocity with reduced flow area

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SPIRAL RIGHT VANE SET SCREW SOLID RIGID CENTRALIZER
MODEL: GR-30 (Aluminium)-R GR-36 (Steel)-R
GR-42 (Zinc)-R

Gradwell - Spiral Vane set screw solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Spiral vane Set screw solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass. The vortex motion generated by the spiral vanes helps to increase the fluid velocity with reduced flow area

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

STRAIGHT VANE SET SCREW SOLID RIGID CENTRALIZER
MODEL: GR-28 (Aluminium) GR-34 (Steel)
GR-40 (Zinc)

Gradwell - Straight Vane set screw solid rigid centralizer provide the right feature for getting a good primary cementing job with maximum wellbore standoff with suitable functionality. Straight vane Set screw solid rigid centralizers provide ultimate drag and torque reduction with maximum fluid by pass.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HEAVY DUTY SPIRALIZER (L , R , S)
MODEL: GR-48 , GR-49 & GR-50

GR-48

GR-49

GR-50

Gradwell - Heavy Duty Welded Spiralizer is designed for high deviated horizontal well where casing centralization is the main consideration. The spiralizer system is made of steel, giving it a toughness advantage over other materials and alloys in different style, but normally straight or curved vane is used. Its ensures positive stand-off, maximum flow, maximum well bore stabilization, maximum holding strength, decreased drag. Both spiral and straight fin designs minimize drag forces while running pipe. The fins glide smoothly on the low side of horizontal boreholes. It can be made to float between casing stop collars or be secured to the casing OD, if it is required to rotate the casing while cementing. Due to inclined or spiral fins they help to create turbulence in the fluid which removes any wellbores debris or mud cake deposited and helps in smooth running in of the casing string.

Features:

- It helps for proper distribution of cement around the casing during the cementing.
- It also help to reduce the friction for inserting the casing in wellbore.
- It helps to improve strength of cement bond by evenly distributing the cement

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON HEAVY DUTY SPIRALIZER (L,R & S)
MODEL: GR-51

GR-51

GR-52

GR-53

Gradwell - Slip on Welded Spiralizer provide low coefficient of friction to reduce drag forces while running in pipe thus optimizing mud displacement and minimizing pressure drop across the Centralizer. In this the bow springs hardly welded to the end collars on suitable temperature with proper correct grade electrode. While giving maximum standoff these blades create vortex flow to optimize mud displacement. They are available with straight vane or spiral vane type options which resist high side loads. They are capable of providing maximum stand-off.

Features:

- It help for proper distribution of cement around the casing during the cementing.
- It also help to reduce the friction for inserting the casing in wellbore.
- It helps to improve strength of cement bond by evenly distributing the cement

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

ROLLER LD TYPE CENTRALIZER
MODEL: GR-55

GR-55

Gradwell - Roller Centralizer is a complete mechanical friction-reduction solution designed for extended-reach wells. It reduces torque, drag, casing wear, tool-joint wear and differential sticking while also improving directional control, ROP and hole cleaning. In Low Drag Roller Centralizer, all rollers are arranged in horizontal direction. This kind of arrangement of rollers efficiently reduces dragging force.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

ROLLER LT TYPE CENTRALIZER
MODEL: GR-56

GR-56

Gradwell - Roller Centralizer is a complete mechanical friction-reduction solution designed for extended-reach wells. It reduces torque, drag, casing wear, tool-joint wear and differential sticking while also improving directional control, ROP and hole cleaning. In Low Drag Roller Centralizer, all rollers are arranged in vertical direction. This kind of arrangement of rollers efficiently reduces dragging force.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

CROSS COUPLING PROTECTOR
MODEL : GR-CCP

GR-CCP

Gradwell manufactures the Cross Coupling Cable Protectors (Casted) to protect and support ESP cable, control lines and injection lines in the well bore for wells completed with artificial lift.

Features:

- The protector is designed and tested to support a minimum of 100 ft. of ESP cable and control/ injection line across the coupling without cable slippage and crimping.
- The protector is designed to effectively withstand high axial and rotational forces experienced while performing completion operations.
- The protector is designed to withstand axial load of 30 tons and lateral load of 20 tons without slipping on the production tubing.
- The protector is of one-piece design/assembly with captivated cap screw and pre-engaged bolts to eliminate potential for detachment of bolts from the main protector body.
- No loose parts to fall out during or after installation.
- The protector comes with an interlock feature as a standard which protects the bolts from shear stress.
- The protector is designed to have a low profile collar that gives increased clearance within casing and thus allows more standoff protection over cable.
- he protector is designed to have contoured profiles to deflect away impacts encountered while running the production string down-hole.
- All components used in the construction of the cable protector conform to NACE specifications MR-01-75 (latest edition) for sour service applications.
- All protectors are fully retrievable and reusable after minor refurbishment and replacement of few parts.

SIZE (In.)	ESP Cable Type	Control Line Size (In.)	Thread Connection
2-7/8	Flat or Round	1/4, 3/8	API/Premium
3-1/2	Flat or Round	1/4, 3/8	API/Premium
4-1/2	Flat or Round	1/4, 3/8	API/Premium

HINGED SPIRAL NAIL STOP COLLAR
MODEL: GR-57

GR-57

Gradwell - Hinged Spiral Nail types has internal grooves onto which the specially designed Spiral nail fasten onto the casing pipe. Collars are hinged at two places 180 degrees apart and one spiral nail in each half is driven between collar and the casing. It can be latched on the casing pipe without having to be slipped on. These are most effective where low annular clearance is encountered.

The spiral nail gives a firm grip to the stop collar and when tested as per API 10D-2 Specifications they provide high holding force.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

HINGED BOLTED STOP COLLAR
MODEL: GR-58

GR-58

Gradwell - Hinged Bolted types has cross bolt locking system with one go locking for easy installation. This is a single piece collar and the set crews are provided on the outer circle of the periphery which is meant for installing and is directly installed on the pipe by slipping on the casing without any hassle. It is fabricated using ductile iron therefore it has a good impact and fatigue capability. These kinds of collars are used in place where high axial loads are expected.

The bolt lock gives a firm grip to the stop collar and when tested as per API 10D-2 Specifications they provide high holding force.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

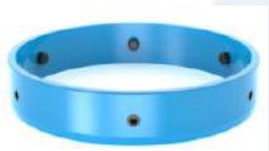
HINGED SET SCREW STOP COLLAR
MODEL: GR-59

GR-59

Gradwell - Hinged Set Screw are made up of two pieces and hinged at the two ends making it 180 degrees apart. The gripping force is applied by one of the row of Set screw which tightens the collar to the casing firmly. They can be fastened on to the casing pipe and much easy to install. They are most effective in conditions where there is low annual clearance. The screw lock gives a firm grip to the stop collar and when tested as per API 10D-2 Specifications they provide high holding force.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON SET SCREW STOP COLLAR
MODEL: GR-60



GR-60

Gradwell - Slip on Set Screw Stop Collar is of one-piece high strength corrosion resistant alloy collar and the gripping force is applied by one row of Set Screws. The outside ends of these collar are generally tapered to a degree which helps to hold the centralizer and avoid the ends to hit the Bows or Vanes when the centralizers are placed over them.

Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

SLIP ON SET SCREW STOP COLLAR SINGLE SIDE BEVELLED
MODEL: GR-61

GR-61

Gradwell - Slip on Set Screw Stop Collar single side beveled is of one-piece high strength corrosion resistant alloy collar and the gripping force is applied by one row of Set Screws. The outside ends of these collar are generally tapered to a degree which helps to hold the centralizer and avoid the ends to hit the Bows or Vanes when the centralizers are placed over them.

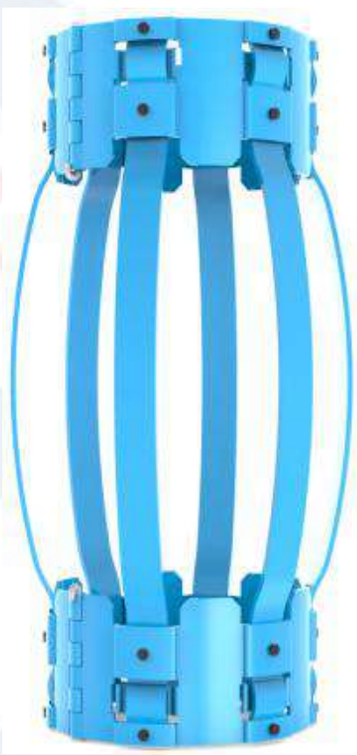
Note : Available in 4 1/2" to 20 " sizes. Any special sizes or combination can be made available on request.

CASING CENTRALIZERS & STOP COLLARS

GRADWELL OILFIELD

MANUFACTURED BY :

Address : 57/58 Km Stone NH-48,
Industrial Area Binola, post.
Bhorakalan, Dist. Gurugram,
Haryana India
Pin Code : 122413
Contact Us : **www.gradwelloilfield.com**
Ph : 0124-2271100



Liner Hanger System | Packer System | Bridge Plugs | Floating Equipment | Centralizers