

PRODUCT CATALOGUE



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



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**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.

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.

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.

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 pressure 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	2.441	2-3/8" & 2-7/8" 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	1.995 or 2.441	2-7/8" & 3-1/2" 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	2.441 or 2.992	3-1/2" & 4-1/2" 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	2.992 or 3.958	3-1/2" & 4-1/2" 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		
	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	2.441	2-3/8" & 2-7/8" 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	1.995 or 2.441	2-7/8" & 3-1/2" 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	2.441 or 2.992	3-1/2" & 4-1/2" 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	2.992 or 3.958	3-1/2" & 4-1/2" 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		
	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		
5-1/2	26	4.670	4.778	GR 45A2	1.995	4.500	2-3/8" EU	
	20-23			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 packer. A non-directional slip is released first, making it easier to release the other slips.

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.

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.

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	
	26-35	5.875	6.276	5.813	2.441	
7	17-26	6.276	6.538	6.000	2.441	2-7/8" EU
	26-35	6.004	6.276	5.875	2.441	
	17-26	6.276	6.538	6.000	3.000	3-1/2" EU
	40 - 47	8.681	8.835	8.375	2.990	
9-5/8	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**

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.



GR-CP-1

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 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.

Applications:

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

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.

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.

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.

the bi-directional slips prevent any movement after setting. It is retrieved by a straight pull release mechanism using a GR-RT Retrieving Tool.

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.

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.

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.

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.

**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**

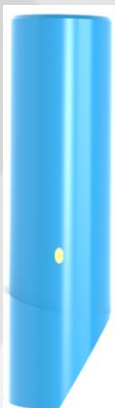


GR-POP

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 Jaws 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 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-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.

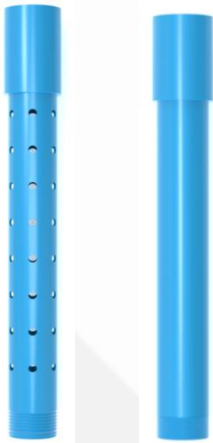
Features:

- 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

**WIRELINER 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.

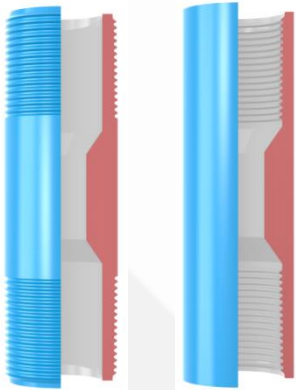
Application :

- 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**



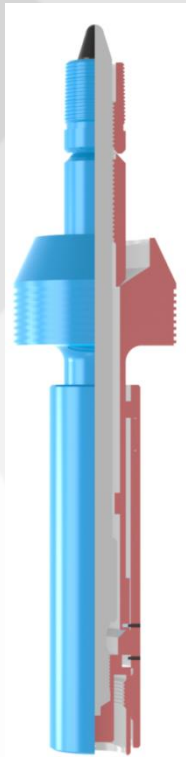
GR-WAK-BP / CR

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

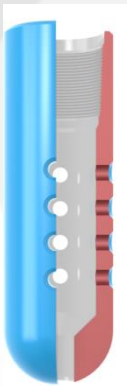
The Packer Setting Tool Nipple for the Single String Hydraulic Packer is a connecting device for running the tool string into the well on the service string. The running tool is attached to the packer by a standard anchor latch with LEFT-HAND square thread, and released by a straight-pull shear release. 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**



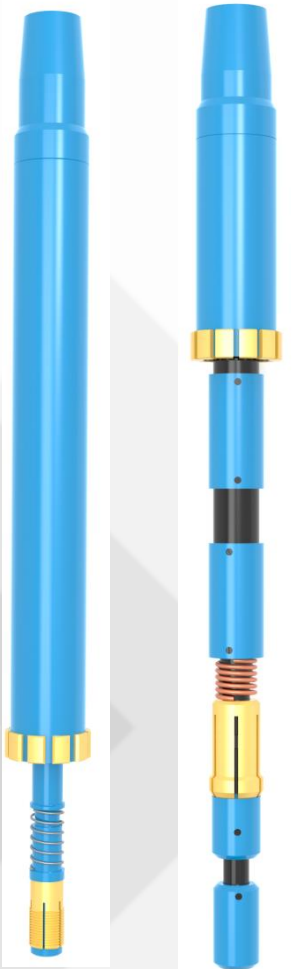
GR-BCS

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.

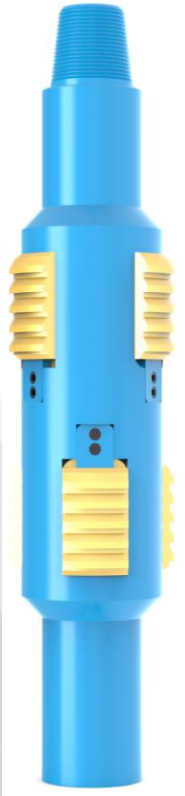
Features:

- 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

**WIRESLINE & 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.

**WIRESLINE & 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 convert 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		
	26.0-32.3						
5-1/2	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		
	45.3						
7-5/8	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		
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	
		BX7	9.437	9.660	10.192		
11-3/4	60.0-83.0	BY7	9.937	10.192	10.772	4,000	
		BX8	10.437	10.772	11.150		
13-3/8	85-102	BY8	11.562	11.633	12.159	3,000	
		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		
		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-BB

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

**WIRELINER 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			5.687	BY3	
	17-35	6.312		BX4	6.312	
7-5/8	20 - 39	BX4		7.125	BX5	7.125
8-5/8	24 - 49	BX5		8.125	BX6	8.120
9-5/8	29.3 - 53.5	BX6		9.000	BY6	8.875
10-3/4	60.7 - 81	BY6		9.437	BX7	9.437
	32.75 - 60.7	BX7		9.937	BY7	9.930
11-3/4	60.0 - 83.0	BY7		10.437	BX8	10.438
	38 - 60	BX8		11.562	BY8	11.562
13-3/8	85 - 102	BY8	12.000	BX9	12.000	
	48 - 72	BX9	13.915	BX11	13.900	
16	109.0 - 146.0	BX11	14.585	BY11	14.570	
	55.0 - 84.0	BY11				

**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	



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