



**PACKER
ACCESSORIES
& TOOLS**



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Material Selection

Wellcare equipment is offered in various material configurations for a variety of well conditions. Wellcare employs leaders in the field of metallurgy and polymer chemistry to ensure superior material recommendations are made to our customers.

For corrosive wells, Wellcare corrosion metallurgists and polymer scientists are available to provide expert material recommendations. To provide the most cost-effective recommendations, the well environment data form has been developed to aid in gathering the necessary well data.

The following alloys and groups of alloys are currently the most common materials used for the construction of packers and related equipment:

- Standard, non-corrosive service–low alloy steels (e.g. 4140) with mechanical properties compatible with API P110 tubular.
- Non-corrosive service containing H₂S–low alloy steels (e.g. NACE MR0175 compliant 4140) with mechanical properties compatible with API L80 tubulars.
- Corrosive CO₂ service with little or no H₂S–Martensitic and PH stainless steels (e.g. 9Cr, 13Cr, 17-4PH, alloy 450, Super 13Cr) with mechanical properties that vary from 80 ksi to 110 ksi minimum yield strength; the selection of the specific corrosion-resistant alloy(s) depends on the environment (pH, chlorides, temperature, H₂S, etc.) and strength requirements

- Severely corrosive CO₂ and H₂S–nickel alloys such as 825, 925 and 718 at strength levels of 110 ksi minimum yield strength and higher.
- Severely corrosive CO₂, H₂S and free sulphur–nickel alloys such as 625 Plus, 725 and, less frequently, C-276 at strength levels of 120 ksi minimum yield strength and higher

For equipment required to perform a temporary function and then allow quick removal by drilling or milling, an additional group of materials is used:

- Cast iron
- Reinforced polymer-based composites

Besides the more common materials, Wellcare manufactures packers and related equipment from other materials when raw material availability, quantities, delivery schedules, etc., permit. Example alloys include 316L austenitic, 22 Cr duplex, 25 Cr duplex, 25 Cr super duplex, alloy 20Cb3, 28 Cr super austenitic, K-500 Monel, alloy 2025, alloy 2535, alloy 2550, alloy G-3 and others



Elastomer Selection

Ideally, seal materials have high strength and resiliency, and remain unaffected by thermal or chemical environments. However, there is no single material that offers adequate levels of these characteristics for all downhole applications. Effective sealing in downhole environments often requires a combination of materials to form a seal system. Several sets of identical seal systems can be combined to create a seal stack with redundant seals. Choosing the optimum seal stack requires knowledge of the application and downhole conditions.

Bonded seals are used in applications that require seals to be repeatedly inserted into and removed from the sealbore while holding differential pressure. This action is known as unloading. Bonded seals are composed of high-strength elastomers, usually nitrile or Viton™, which have limited operational capabilities.

Applications beyond the capabilities of bonded seals require more inert elastomers. Generally, these premium elastomeric materials have lower resistance to extrusion than nitrile or Viton* and require the protection of a containment system to prevent failures. Sealing systems using contained premium elastomers are offered as a chevron- or v-ring-type seal stack.

V-ring seal stacks can tolerate movement while holding high pressures, providing they are always contained within a sealbore. Therefore, while holding differential pressure, they must remain in the sealbore. Selecting the most appropriate seal stack can be simplified by referring to the seal stack service matrix shown below.

Selecting the most appropriate seal stack can be simplified by referring to the seal stack service matrix shown below. For additional information regarding packer to tubing seal systems, ask your Wellcare representative for a copy of the following:

- “What to Consider When Designing Downhole Seals,” reprinted from World Oil magazine
- “Factors and Conditions Which Cause Seal Assemblies Used in Downhole Environments to Get Stuck,” Engineering Tech Data given below
- “Metal-to-Metal Sealing in Hostile Environment Completion Equipment,” Engineering Tech Data.



Selection Guide Packer-to-Tubing Packing Unit

Seal Type	Pressure Differential				Temp. Range		*Environment Compatibility					
	Non - Unholding		Unholding				H ₂ S	Oil Base Completion	Light Brine Completion	Bromide Completion	High pH Completion Ph>10	Amine Inhibitors
	PSI	MPa	PSI	MPa	°F	°C						
Nitrile Chevron	10,000	68.9	NO	NO	32-300	0-149	NO	OK	OK	CaBr ₂ /NaBr ₂ OK to 250°F ZNBr ₂ NO	NO pH>10 OK to 250°F pH<10	OK to 200°F
70 Hard Nitrile Bonded	5,000	34.4	5,000	34.4	32-200	0-93	NO	OK	OK			
90 Hard Nitrile Bonded	10,000	68.9	5,000	34.4	32-300	0-149	NO	OK	OK			
95 Hard Viton Bonded	10,000	68.9	5,000	34.4	32-250	0-121	5%	OK	OK	OK	NO	OK to 200°F
HN-Ryte	15,000	68.9	NO	NO	32-350	0-177	2%	OK	OK	CaBr ₂ /NaBr ₂ OK to 250°F ZNBr ₂ NO	OK	OK
V-Ryte	15,000	103.3	NO	NO	32-300	0-149	15%	OK	OK	OK	NO	OK to 200°F
					32-400	0-204	5%		OK	OK		
A-Ryte	15,000	103.3	NO	NO	80-300	27-149	20%	NO	OK	OK	OK	OK
					80-450	27-232	7%		OK	OK		
A-HEET	15,000	103.3	NO	NO	80-300	27-149	20%	NO	OK	OK	OK	OK
					80-450	27-232	15%		OK	OK		
K-Ryte	15,000	103.3	NO	NO	100-450	38-232	7%	OK	OK	OK	OK	OK
K-HEET	15,000	103.3	NO	NO	100-550	38-288	°	OK	OK	OK	OK	OK
Seal-Ryte	15,000	103.3	NO	NO	40-450	4-232	7%	OK	OK	OK	OK	OK
Seal-HEET	15,000	103.3	NO	NO	40-450	4-232	°	OK	OK	OK	OK	OK
R-Ryte	10,000	68.9	NO	NO	325-450	163-232	7%	OK	OK	OK	OK	OK
Molyglass	10,000	68.9	NO	NO	125-300	52-149	15%	OK	OK	OK	OK	OK

*Explosive decompression is chemical and mechanical in nature related to solubility of gas in elastomer and strength of that elastomer. Under rapid decompression,

*The elastomeric seals in these units may be susceptible to explosive decompression, however, explosive decompression does not occur while seals are in service.

° There are no known H₂S limitations below 500°F (260°C).



Packer Performance Definition

The successful performance of any packer includes recognizing that the combined effects of varying differential pressure or applied forces cannot be considered independently. Rating a production packer in terms of differential pressure alone does not sufficiently describe the packer's performance limits. To accurately measure and compare the performance of various packers, an understanding of the simultaneous effects of differential pressure and axial loading is required.

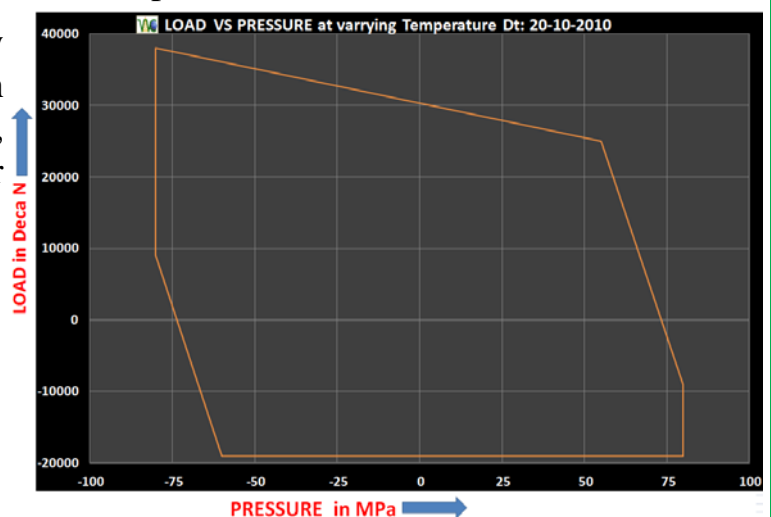
Wellcare has developed a high-tech **R&D** center which is industry's first means of describing a packer's performance capabilities, under all possible cyclic loading, temperature, pressure & circulation conditions.

The analytical system combines computer modeling, sophisticated numerical stimulation techniques, including finite element analysis, exhaustive laboratory testing, and field verification.

To apply this technology, a graphical solution is used to provide an accurate and useful definition of a packer's safe operating region.

Wellcare incorporates API Quality Management System of level **Q1** with 100% inspection and testing of material, component and products, so as to render best customer satisfaction.

The numerical controlled system of graphical representation and recorded tabular data system in accordance with **API 11 D1 (of level V3 as of now but trending up to V0)**, is used to validate permanent and retrievable packers are compatible with the demands of today's critical completions. Ensuring all load combinations fall inside the region formed by the curves confirms that the equipment is adequate for the combined loading conditions. This area is called the "safe performance envelope" In those instances where one or more sets of loading conditions fall outside the safe performance envelope, a detailed evaluation of all aspects of the proposed completion system is required to upgrade its performance. Some conditions outside the safe performance envelope adversely affect the packer's ability to maintain its sealing integrity. Others may prevent the packer from functioning as designed, while retaining pressure integrity. For more information regarding testing and simulation, testing and validation system of packers, contact your local Wellcare Representative.





Drag Block Tubing Anchor/Catcher:-

Model : WC-DBTAC

Product No. WC-22501

Drag Block Tubing Anchor/Catcher is a retrievable positive-action tubing anchor designed to hold the tubing string in tension or compression. It has drag blocks to allow the anchor to be run deeper than conventional drag spring anchors. The anchor prevents movement of the tubing during pumping strokes; and holds it stationary if it should part. The use of a tension tubing anchor increases pump efficiency, reduces rod and tubing wear, and keeps tubing and rods from falling into the well in case of a part.

Special Features:-

- Enclosed slips.
- Rotational release or shear release.
- Shear release value easily adjusted.

MODEL : WC-DBTAC
PROD. NO. WC-22501



Casing Size (inches)	Casing Weight (lbs/ft)	Recommended Hole Size (inches)	Tool OD (inches)	Tool ID (inches)	Thread Connection
					Box Up/Pin Down
4-1/2	9.5-13.5	3.920 - 4.090	3.750	1.94	2-3/8 EUE
5-1/2	13-20	4.778 - 5.044	4.500	2.00	2-3/8 EUE
				2.44	2-7/8 EUE
7	17-32	6.094 - 6.538	5.750	2.50	2-7/8 EUE
				3.00	3-1/2 EUE
7-5/8	24-39	6.625 - 7.025	6.400	2.50	2-7/8 EUE
8-5/8	24-40	7.725 - 8.097	7.500	4.00	4-1/2 EUE
9-5/8	32.3-53.5	8.535 - 9.001	8.250	4.00	4-1/2 EUE

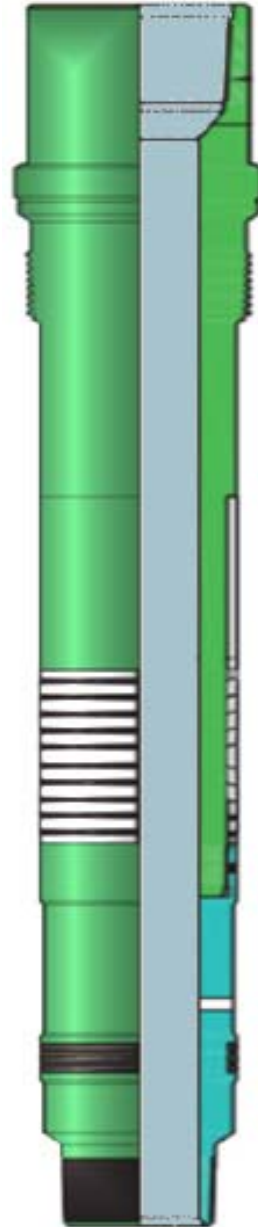


Setting Tool Nipple:-

Model : WC-STNE

Product No. WC-21801

Packer Setting Tool Nipple is attached to left hand square thread of the Packer by means of Setting Nut. Fluid Ports are positioned opposite the holes of the Packer Body so the pressure may be applied to set the Packer. These Fluid ports are sealed off within the Packer Bore by an O-ring below and Chevron Seal above. Setting Tool is released by rotating 15 turn of right hand rotation and picked up.



MODEL : WC-STNE
PRODUCT NO. WC-21801



Splined Expansion Joint:-

Model : WC-SEP

Product No. WC-22203

Splined Expansion Joint is designed to be used in single and dual string completions to accommodate changes in tubing length caused by variations in temperature. They are capable of maintaining the pressure integrity of the tubing while allowing the string to safely expand and contract, and can be run above rotational release or straight pickup release packers.

It may be shear pinned at one-foot intervals along its entries stroke length, allowing the operator to select the proper expansion and/or contraction stroke that will be required after the splined expansion joint has been installed. The splines allow for torque through the joint.

Features:-

- Rotationally locked at all times for transmitting torque when required.
- Multi-spline design for high torque load.
- Maximized tension carrying capability.
- ID compatible with tubing ID.
- Tool can be pinned at one foot spacing from closed to fully stroked position.
- Shear value can be adjusted by varying the number of shear screws.
- Torsional Rating 7,500 ft-lb Standard Service application at 110,000 psi material yield. 5,500 ft-lb for Sour Service application at 80,000 psi material yield.
- Pressure rating 7,500 psi for Standard Service application at 110,000 psi material yield.
- 5,000 psi for Sour Service application at 80,000 psi material.

Operation:-

It is pinned and run in the closed or partially extended position. When allowing for thermal expansion, the splined expansion joint is shear pinned in the fully extended position. If it is made up on the production string for the purpose of allowing for thermal expansion, and is being run above a hydraulic set packer, then the shear value of the shear pins must be sufficient to accommodate the proper setting of the packer without prematurely shearing the expansion joint. Used on a production string that must land in a permanent packer, the shear pins must have sufficient shear resistance so that the expansion joint will not inadvertently close when the packer stinger is landed and engaged.



MODEL : WC-SEP
PRODUCT NO. WC-22203

SPECIFICATION GUIDE				
SIZE in / mm	MAX. O.D. in / mm	MIN. I.D. in / mm	STROKE Ft	STANDARD THREAD CONNECTION
2.3/8 60.33	3.562 90.47	2.000 50.80	4 - 6 or 10	2.3/8 E.U. 8 RD
2.7/8 73.03	4.312 109.52	2.500 63.50		2.7/8 E.U. 8 RD
3.1/2 88.90	5.283 134.20	3.000 76.20		3.1/2 E.U. 8 RD
4.1/2 114.30	6.250 158.75	4.000 101.60		4.1/2 E.U. 8 RD



Auto Lock Expansion Joint:-

Model : WC-EP-A

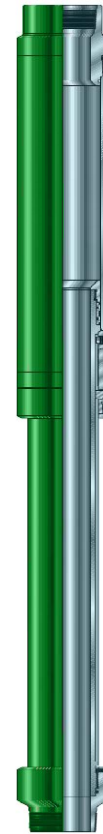
Product No. WC-22202

This Auto-Lock Expansion Joint is used on a subsurface single or dual-string hanger completion to provide a means of spacing-out between the surface hanger and the subsurface hanger. The tool is activated by up and down motion and is designed to overcome seal friction and snap force when stinging into the subsurface hanger. The Auto-Lock Expansion Joint is also rotationally locked for releasing from the Subsurface Hanger.

Features:-

- Control ring actuated by linear movement
- No rotation of the string is necessary to actuate the tool
- Rotational capability at all times

SPECIFICATION GUIDE				
SIZE in / mm	O.D. in / mm	I.D. in / mm	STROKE in / mm	STANDARD THREAD CONNECTIONS
2.3/8 60,33	3.689 93,7	1.906 48,4	21.5 546,1	2.3/8 E.U. 8 RD
2.7/8 73,03	4.500 114,3	2.374 60,3	24.6 625,5	2.7/8 E.U. 8 RD
3.1/2 88,90	4.875 123,8	2.875 73,0	22.5 571,5	3.1/2 E.U. 8 RD
4.1/2 114,30	6.390 162,3	3.878 98,5	24.9 632,2	4.1/2 E.U. 8 RD



MODEL : WC-EP-A
PRODUCT NO. WC-22202

Splined Expansion Joint:-

Model : WC-SEP-1

Product No. WC-22204

The Model "WC-SEP-1" Splined Expansion Joint is designed for use above packers in well completions where rotation through the tool is required. Torque can be applied through the tool in any position.

Features/Benefits:-

- Tool can be shear-pinned in the extended, collapsed, or middle position
- Rugged bonded seals for continuous service
- Metal goods suitable for H2S service
- Rotational-lock in any position to transmit torque when required

SPECIFICATION GUIDE					
SIZE in / mm	O.D. in / mm	SEAL BORE in / mm	I.D. in / mm	STROKE in / mm	STANDARD THREAD CONNECTIONS
2.3/8 60,33	3.689 93,7	3.000 76,2	2.000 50,8	48 1219,2	2.3/8 E.U. 8 RD
2.7/8 73,03	4.531 115,1	3.625 92,1	2.373 60,3		2.7/8 E.U. 8 RD
3.1/2 88,90	4.906 124,6	4.000 101,6	2.875 73,0	120 3048,0	3.1/2 E.U. 8 RD
4.1/2 114,30	6.406 162,7	5.250 133,4	3.875 98,4		4.1/2 E.U. 8 RD



MODEL : WC-SEP-1
PRODUCT NO. WC-22204



Expansion Joint:-

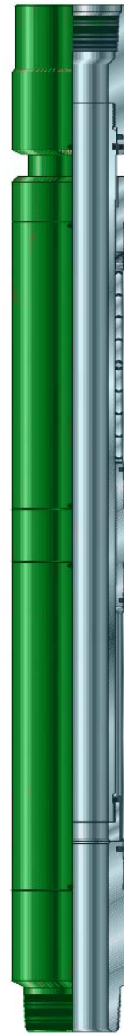
Model : WC-EP

Product No. WC-22201

The Model “WC-EP” Expansion Joint is a tool designed for use in dual-string completions. The main feature of the tool is the thin-walled design, combined with optimized pressure and tensile rating. The Model “WC-EP” Expansion Joint incorporates a 14-inch premium seal unit and short debris barrier above the seals. The standard tool has a 10 ft. stroke.

Features

- ID compatible with tubing ID
- OD compatible with dual-string applications
- 5,000 psi minimum rating in burst and collapse
- Stroke optional to 10 ft.
- Maximized tension carrying capability
- Suitable for H2S service
- Premium seals are standard (alternative seal types are available upon request)



MODEL:WC-EP
PRODUCT NO. 22201

SPECIFICATION GUIDE					
SIZE in / mm	O.D. in / mm	SEAL BORE in / mm	I.D. in / mm	STROKE in / mm	STANDARD THREAD CONNECTIONS
2.3/8 60.33	3.250 82.6	2.690 68.3	1.939 49.3	120 3048.0	2.3/8 E.U. 8 RD
2.7/8 73.03	3.750 95.3	3.250 82.6	2.374 60.3		2.7/8 E.U. 8 RD
3.1/2 88.90	4.250 108.0	3.625 92.1	2.890 73.4		3.1/2 E.U. 8 RD
4.1/2 114.30	5.390 136.9	4.750 120.7	3.895 98.9		4.1/2 E.U. 8 RD

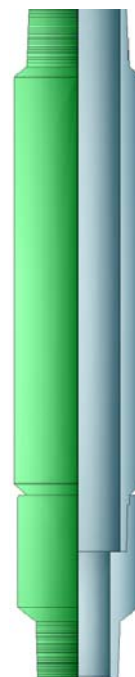
Seal Bore Extension:-

Seal Bore Extension can be run below a “WC-WSSDP-1”. Seal Bore Extension is run to provide additional sealing bore when a long Seal Bore Assembly is run to accommodate considerable tubing movement. The Seal Bore Extension has the same ID as the corresponding Packer seal bore it is run with. Thus all seals of a long Seal Assembly seat off in the Seal Bore Extension. If the top set of seal normally sealing in the Packer bore should get damaged, the Seal Bore Extension still provide a sealing surface for the lower seat.

DIMENSIONAL DATA FOR SEAL BORE EXTENSION

DIM	SIZE 40-26	SIZE 80-32	194-40
OD	3.625	4.250	5.125
ID (SEAL BORE)	2.668	3.250	4.000
LENGTH	120	120"	120"
GUIDE OD	4.328	5.468	7.125
COUP OD	4.500	5.468	8.125
THD	3.406, 8 STUB ACME	4.094, 8 NAT'L	4.906, 8N
GUIDE THD.	2 7/8" E.U. 8 RD. PIN	PIN THD. AS ORDERED	

Note : Length is indicative. Can be furnished in any length to suit customer needs.





Seal Bore Extension:-

Model : WC-SBE

Product No. WC-22301

Seal Bore Extension is used in installation where floating seals are required due to tubing contractions. This packer accessory allows for a continuous seal bore and is available in length up to twenty feet.



Seal Bore To Mill-Out Coupling:-

Model : WC-SBMC

Product No. WC-22302

Seal Bore to Mill-Out Coupling is used to connect mill-out extensions to seal bore extensions.



Concentric Bottom:-

Model : WC-SBCB

Product No. WC-22303

Concentric Bottom is used to connect seal bore extensions to a packer.



Concentric Coupling:-

Model : WC-SBCC

Product No. WC-22304

Concentric Coupling is used to connect seal bore extensions to increase length.

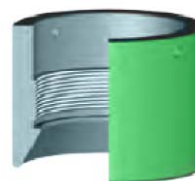


Wireline Re-Entry Bottom:-

Model : WC-SBRB

Product No. WC-22305

Wireline Re-Entry Bottom is used as the packer bottom when an extension below a packer is not required.





Locator Type Packer Plug:-

Model : WC-LRTPP

Product No. WC-22401

Locator type packer plug is used to convert a model WC-WSSDP-1 & WC-WLSDP retainer production packer that has been previously set, into a temporary bridge plug. It permits the performance of pressuring operation above the packer without affecting the zones below. It is attached with shear screws to a shear sub which is made up on the bottom of the work string or a retrievable squeeze tool. Set-down weight shears the screws and leaves the plug in the packer. It is retrieved with a conventional overshot.



MODEL : WC-LRTPP
PRODUCT NO. WC-22401

Latching Type Packer Plug:-

Model : WC-LHTPP

Product No. WC-22402

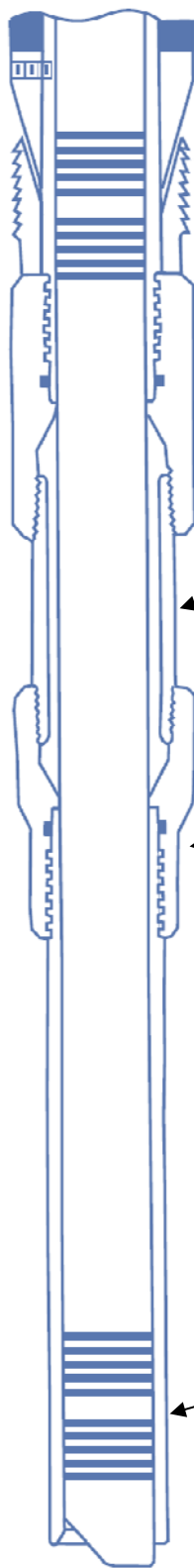
Latching type packer plug is used for the same purpose and in the same way as the locator type but will hold pressure in both directions. It is run in the same way but is retrieved by holding a slight up strain and turning to the right 15 turns after engaging with a conventional overshot.



MODEL : WC-LHTPP
PRODUCT NO. WC-22402



Typical Hook-Up With Millout Extension And Seal Bore Extension:-



Seal Bore Packer

Permanent Packers are generally available for threading extensions below the Packer

Guide

Guides are threaded bottom subs for Seal Bore Packers, and can be ordered separately or as an integral part of the Packer. They are available as box thread down to accommodate Mill out Extensions or Seal Bore Extensions or, as pin thread down to Crossover to other tail-pipe. Standard Mill out Extension utilizes API tapered thread connections. Other threads are available on request. Seal Bore Extension connections utilize a straight thread and need not be specified.

Mill out Extension

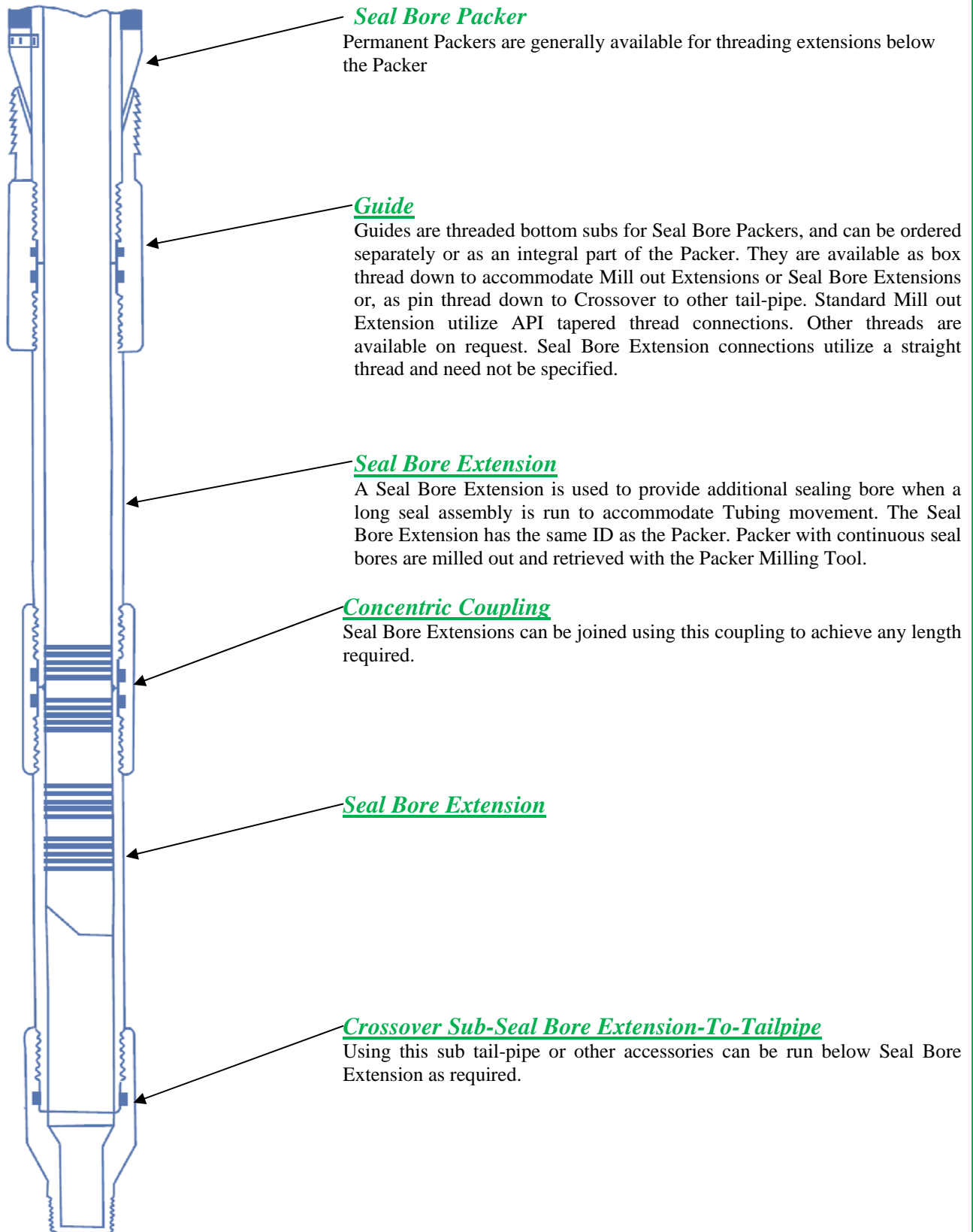
For Packers that will eventually be milled out using the Packer Milling Tool, the Mill out Extension is used to provide the length and inside diameter necessary to accommodate the Mandrel and Catch sleeve of a standard Milling Tool. Mill out Extensions are not required when using the Packer Milling Tool.

Connector Sub Mill out Extension-To-Seal Bore Extension

Seal Bore Extension With Blank Bottom

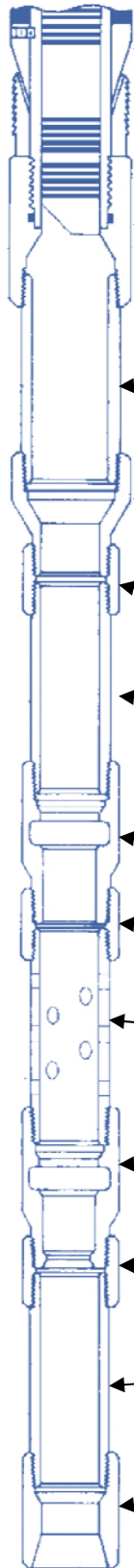


Typical Hook-Up With Seal Bore Extension:-





Typical Hook-Up With Mill out Extension And Flow Control Accessories:-



Seal Bore Packer

Permanent Packers are generally available for threading extensions below the Packer

Guide for mill-out extension

These packers are the same basic packers as the regular versions as far as construction, running and setting, holding characteristics, etc, are concerned. The only difference is the lower guide. Which is threaded to accept the various extensions.

Mill-out Extension

For Packers that will eventually be milled out using the Packer Milling Tool, the Mill-out Extension is used to provide the length and inside diameter necessary to accommodate the Mandrel and Catch sleeve of a standard Milling Tool. Mill-out Extensions are not required when using the Packer Milling Tool.

Crossover Sub-Mill-out Extension To Tailpipe

Tubing Coupling

Spacer Tube

Setting Nipple

Tubing Coupling

Perforated Spacer Tube

Seating Nipple

Tubing Coupling

Spacer Tube

Wire Line Entry Guide



Snap Latch Assembly:-

Model : WC-SLA

Product No. WC-22101

Snap Latch Seal Assembly latches into the packer upon set down (like our Anchor Latch Seal Assembly). It can be removed with straight pull of 10,000 to 12,000 lbs. above tubing weight. The Snap Latch Seal Assembly is used where a mechanical indication is required to verify the seal assembly is properly positioned in the packer bore.



MODEL: WC-SLA
Product No. WC-22101



Anchor Latch Assembly:-

Model : WC-ALA

Product No. WC-22102

Anchor Latch Assembly is used when floating seals are not required. This assembly allows the tubing string to be in tension or compression. Upon set down anchor latches into the packer and can be removed with eight to ten right-hand turns.



MODEL : WC-ALA
PRODUCT NO. WC-22102

Anchor Tubing Seal Assembly:-

Model : WC-ATA

Product No. WC-22103

Designed for anchoring the tubing string to the packer. Used where well conditions require the tubing to be landed in tension or where insufficient tubing weight is available to prevent seal movement.

The latch, in conjunction with the left-hand square threads located on top of the packer body, locks the tubing string into the packer. When properly landed in the packer, tubing tension will be held by the latch, preventing seal movement.

Standard assembly is supplied with two seal units.



MODEL : WC-ATA
PRODUCT No. WC-22103

SPECIFICATION GUIDE

SIZE	SEAL BORE in / mm	MAX. O.D. in / mm	MIN. I.D. in / mm	STANDARD THREAD CONNECTION (BOX UP)
40-26	2.688 68,28	3.750 95,25	1.969 50,00	2.3/8 E.U. 8 RD
60-30	3.000 76,20	4.000 101,60		
80-32	3,250 82,55	4.625 117,48	2.406 61,11	2.7/8 E.U. 8 RD
80-40	4.000 101,60	5.000 127,00	3.000 76,20	3.1/2 E.U. 8 RD
190-47	4.750 120,65	6.000 152,40		
192-47		5.875 149,23	3.875 98,43	4.1/2 E.U. 8 RD



Locator Seal Assembly:-

Model: WC-LSA

Product No. WC-22104

Locator Seal Assembly is used in installations which require floating seals. Once landed, the seal locator prevents downward movement of the tubing while allowing the seal to move with tubing contraction.



MODEL: WC-LSA
PRODUCT NO. WC-22104

Half Mule Shoe Guide

Model : WC-MG

Product No. WC-22105

Half Mule Shoe Guide is standard with the seal assembly to allow for easy entry into the packer bore.



MODEL: WC-MG
PRODUCT NO. WC-22105

Mill-Out Extension:-

Model : WC-MOE

Product No. WC-22106

Mill-Out Extension is used in installations where floating seals are required due to tubing contractions. In addition, this packer accessory provides a larger ID between a packer bore and a seal bore extension allowing a packer is milled out.



MODEL: WC-MOE
PRODUCT NO. WC-22106

Mill Out Bottom:-

Model : WC-MOB

Product No. WC-22107

Mill-Out Bottom is used to connect a mill-out extension to a packer.



MODEL: WC-MOB
PRODUCT NO. WC-22107

Knock-Out Plug Bottom:-

Model : WC-KOP

Product No. WC-22108

When Knock-Out Bottom is run below the packer, the knock-out plug allows a packer to serve as a bridge plug holding pressure from above and below.



MODEL: WC-KOP
PRODUCT NO. WC-22108



Tubing Seal Nipple:-

Model : WC-TSN

Product No. WC-21802

Tubing Seal Nipple is used as the lower seal assembly or assemblies in multiple packer installations. With sufficient seal units, mismeasurement or tubing movement can be accommodated.



MODEL: WC-TSN
PRODUCT NO. WC-21802

Seal Units:-

Model : WC-SU

Product No. WC-21803

Seal units are used to add additional seal stacks to Model “WC-LTSA” Locator Tubing Seal. Assemblies and Tubing Seal Nipples. Any number can be used to accommodate expected tubing movement.



MODEL: WC-SU
PRODUCT NO. WC-21803

Seal Unit:-

Model : WC-SU-1

Product No. WC-21804

Standard Seal Units are furnished with bonded nitrile rings and a 12-inch make-up length. These units may be ordered in various lengths and with severe service seal rings for high temperature and corrosive environmental conditions.



MODEL: WC-SU-1
PRODUCT NO. WC-21804



Snap Latch Tubing Seal Assembly:-

Model : WC-STSA

Product No. WC-21702

Snap-latch Seal Assembly provides a leak proof seal between the packer and the production string. It is ideally suited for all applications requiring a snap-in/snap-out indication that the seals are in or out the packer bore.

The snap-latch seal assembly is most often run on the bottom of an upper gravel pack assembly in a dual-zone completion. It is latched into the top packer of the lower gravel pack to guarantee the production seals are properly seated and the upper-zone gravel pack assembly is in the proper location.

Standard assembly is supplied with two seal units.



MODEL: WC-STSA
PRODUCT NO. WC-21702

SPECIFICATION GUIDE

SIZE	SEAL BORE in / mm	MAX. O.D. in / mm	MIN. I.D. in / mm	STANDARD THREAD CONNECTION (BOX UP)
40-26	2.688 68,28	3.750 95,25	1.969 50,00	2.3/8 E.U. 8 RD
60-30	3.000 76,20	4.000 101,60		
80-32	3,250 82,55	4,625 117,48	2,406 61,11	2.7/8 E.U. 8 RD
80-40	4.000 101,60	5,000 127,00	3,000 76,20	3.1/2 E.U. 8 RD
190-47	4,750 120,65	6,000 152,40		
192-47			3,875 98,43	4.1/2 E.U. 8 RD



Locator Tubing Seal Assembly:-

Model : WC-LTSA

Product No. WC-21701

Locator Tubing Seal Assembly is designed for limiting downward movement of the seals in the packer bore. Normally landed with the tubing in compression sufficient to prevent seal movement upward. Any number of seal units can be added for increased length. Standard assembly includes two seal units.

SPECIFICATION GUIDE				
SIZE	SEAL BORE in / mm	MAX. O.D. in / mm	MIN. I.D. in / mm	STANDARD THREAD CONNECTION (BOX UP)
40-26	2.688 68,28	3.062 77,77	1.969 50,00	2.3/8 E.U. 8 RD
60-30	3.000 76,20	3.156 80,16		
80-32	3.250 82,55	3.460 87,88	2.406 61,11	2.7/8 E.U. 8 RD
80-40	4.000 101,60	4.218 107,14	3.000 76,20	3.1/2 E.U. 8 RD
190-47	4.750 120,65	4.875 123,83		
192-47		5.000 127,00	3.875 98,43	4.1/2 E.U. 8 RD



MODEL: WC-LTSA
PRODUCT NO. WC-21701

Locator Seal Assembly:-

Model : WC-LRSA

Product No. WC-21703

Locator Seal Assembly is designed for hostile environments, high temperatures and high pressures. It utilizes metal parts that meet the requirements of NACE standard MR-0175 for sulfide stress cracking resistant materials and is suitable for use in H₂S environments. This locator may also be used in non H₂S environments where pressure and temperature requirement warrants.

Features / Benefits:-

The standard Seal System consists of three sets of seals and three debris barriers. The seals are arranged so that they are protected by the debris barriers in the event of tubing movement. The two lower debris barriers and two lower seal stacks are the main working seals and should never be allowed to leave the seal bore. The upper debris barrier and seal stack are a back-up and also prevent settings from entering the bore, which could lead to sticking or seal damage.



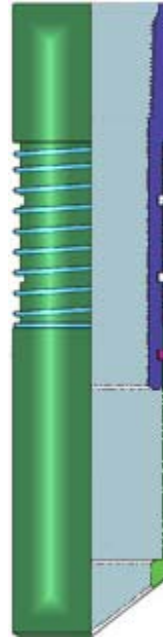
MODEL: WC-LRSA
PRODUCT NO. WC-21703



Auto Orienting Bottom Sub With Half Mule Shoe:-
Model : WC-BSWH-A
Product No. WC-21704

The bottom sub of L.T.S.A. 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.



MODEL: WC-BSWH-A
PRODUCT NO. WC-21704



Wireline Adapter Kit:-

Model : WC-W

Product No. WC-21601

The Wireline Adapter Kit enables both the series or permanent packers to be set by wireline on a pressure setting tool, or to be mated to the hydraulic setting tool.

Application:-

- Cased hole.
- Deviations to 65°.
- Wireline-set packers.

Benefits:-

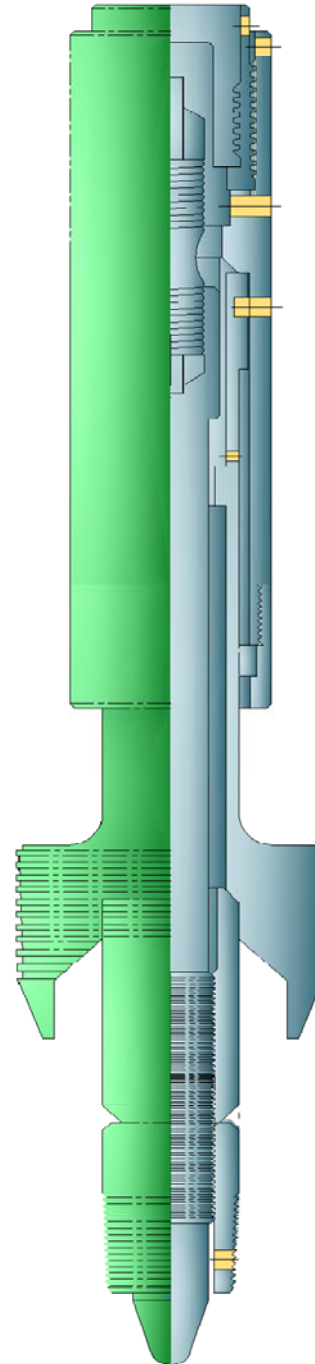
- Substantial rig time saving over hydraulically setting packer.
- Long field life.

Features:-

- Mates to size 10 or 20 wireline pressure setting assembly.
- Mates to hydraulic-setting tool.
- Rugged design.

In its most common use with a wireline setting tool, the system allows for a substantial reduction in rig time over setting on tubing with a hydraulic setting tool.

This kit can be run with a fast-or slow-burning power charge and 35,000-lbf or 55,000lbf [15,873-kg or 24943-kg]. Shear stud or setting tools which has a maximum shear force of 83,000 lbf [37,642 kg]. The system is adaptable to many packer configuration.



MODEL: WC-W
PROD. NO. WC-21601



Hydraulic Setting Tool:-

Model : WC-HST

Product No. WC-21201

The Model WC-HST Hydraulic Setting Tool is used to hydraulically set the packers on tubing or drill pipe.

Application:-

Particularly useful for setting packers in deviated wells or wells where it is difficult to get down hole with a wire line set packer.

Features:-

- Tubing conveyed
- Can push tools to bottom in deep or deviated wells
- Tubing will fill and drain automatically
- Setting Tool can be tested from above after setting the packer
- Well can be circulated from above after setting the packer
- Setting pressure may be adjusted by varying the number of shear pins

Setting Procedure:-

When setting the Packers, sufficient pressure must be applied to set the upper slips which is applied to the tubing. Tension is then pulled for final pack-off and setting of the packer.

When setting the Packer, sufficient pressure must be applied to set the slips, pack-off the element, and shear-out of the packer, if drive-loc pins are used.

The tubing may be allowed to fill as the packer is lowered and then a ball dropped to plug off the tubing. Pressure is then applied to the tubing activating the chambers of the Hydraulic Setting Tool.

In order to apply the proper setting force to the packer, both hydrostatic and pump pressure must be considered. Please consult a Wellcare Technician or refer to the Hydraulic Setting Tool tech documentation to calculate proper setting force.

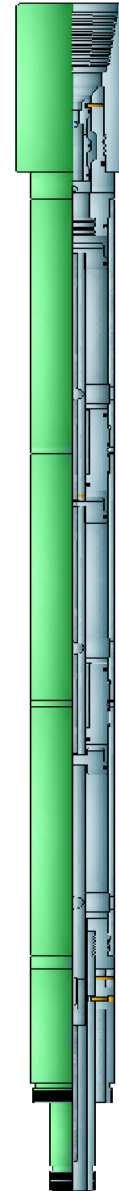
Releasing Procedure:-

Rotational

Bleed pressure off of tubing. Before attempting to release the Hydraulic Setting Tool and Adapter Kit from the packer, consideration must be given to the pressures acting on the tools. Balance the forces so that a slight up strain remains. Rotate to the right six to eight turns while holding the up strain to release from the packer.

Shear

The Hydraulic Setting Tool will automatically release from the tool when sufficient force is applied.



MODEL: WC-HST
PRODUCT No.WC-21201

SPECIFICATION GUIDE					
CASING in / mm	SEAL BORE in / mm	MAX. O.D. in / mm	STANDARD THREAD CONNECTIONS	BALL SIZE in / mm	SETTING PISTON AFFECTED AREA in ²
4-1/2 114,30	2,688 68,27	3,750 95,25	2-3/8 EU 8RD	1,000 25,40	5,806 147,47
5 127,00	2,688 68,27	3,968 100,79	2-3/8 EU 8RD	1,000 25,40	5,806 147,47
5-1/2 139,70	2,688 68,27	4,438 112,73	2-7/8 EU 8RD	1,000 25,40	5,806 147,47
5-1/2 139,70	3,000 76,20	4,438 112,73	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
7 177,80	3,250 82,55	5,468 138,89	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
7 177,80	4,000 101,60	5,500 139,70	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
7-5/8 193,68	4,250 107,95	5,500 139,70	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
9-5/8 244,48	3,250 82,55	5,468 138,89	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
9-5/8 244,48	4,750 120,65	8,000 203,20	2-7/8 EU 8RD	1,000 25,40	9,425 239,40
9-5/8 244,48	6,000 152,40	8,000 203,20	4-1/2 I.F.	1,000 25,40	9,425 239,40
13-3/8 339,73	9,000 228,60	12,000 304,80	2-7/8 EU 8RD	1,000 25,40	9,425 239,40



Packer Milling & Retrieving Tool:-

Model : WC-MRT

Product No. WC-21306

Wellcare packer milling & retrieving tool is an internally engaging fishing tool designed for the partially milling & retrieving of permanent production packers.

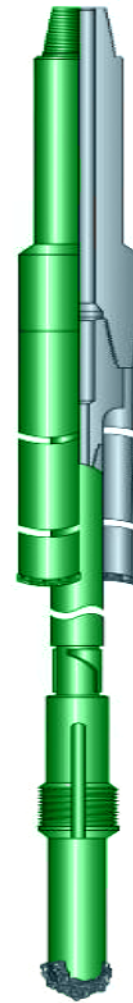
This tool is a combination of mill and spear that recovers drillable packers in a one trip milling and recovery operation. It is ideal for high angle holes.

Operation:-

The milling tool passes through the seal bore of the packer, mills the packer upper slips loose and pulls the packer after it has been milled over, in a single trip.

A packer retriever is assembled with the proper size slip to engage the bottom of a specific bore packer, and made up on the lower end of sufficiently long stinger extension to permit the retriever to be lowered completely through the packer during the milling operation.

A pin connection is usually supplied at tools upper end, however, a coupling or crossover could be provided to convert upper connection into a box connection.



MODEL : WC-MRT
PRODUCT NO. WC-21306



Retrieving Tool:-

Model : WC-RT

Product No. 21301

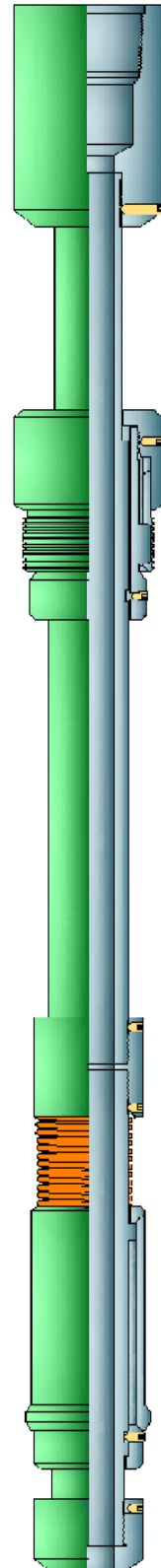
The Model WC-RT Retrieving Tool is used to retrieve the packers.

The Retrieving Tool is run in the hole and set down force is applied when the packer is contacted. A set down force of 15,000 pounds is sufficient to fully latch the Retrieving Tool into the packer. At this point, the release collet is positioned directly below the support ring of the packer. Straight pull will engage the release collet and the support ring. Tension force is applied which will shear the screws in the support ring and shift it upward thus releasing the packer.

The retrieving tool may be released from the packer at any time by rotating the tubing to the right while holding an up strain.

SPECIFICATION GUIDE

SIZE	MAX. O.D. in / mm	I.D. in / mm	STANDARD THREAD CONNECTION box up
80-40	5.000 127,00	1.375 34,93	2.7/8 I.F.
190-47	5.768 146,50		3.1/2 I.F.



MODEL:WC-RT
PRODUCT NO. WC-21301



On/Off Overshot:-

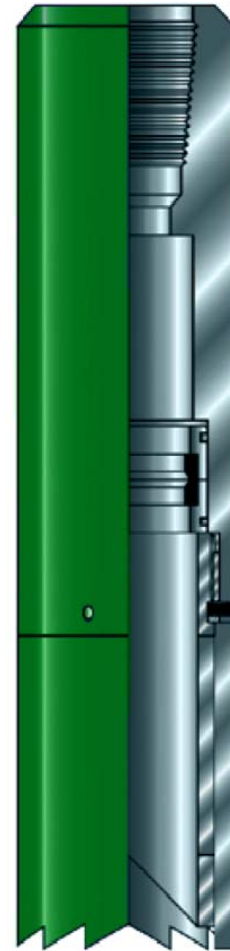
Model : WC-OS10

Product No. 22601

The On/Off Overshot was designed to disconnect and connect the tubing string from a double grip production packer that does not require tension or compression to maintain a pack-off. The On/ Off Tool applications consist of treating, fracturing, testing and production applications. The profile stingers run with the overshot are available in a variety of profile sizes and materials.

Features:-

- Proven bonded seal system
- Built for strength and durability
- Variety of profile nipples
- Available in special metallurgy
- Available shear pinned up or down position
- Available in spring loaded design



Casing Size		Max O.D.		Min. I.D.		Thread Connection	
in.	mm	in.	mm	in.	mm	in.	mm
2-7/8	73.0	2.250	57.15	1.00	25.4	1.660 EUE	42.2
3-1/2	88.9	2.750	69.85	1.50	38.1	1.900 NUE	48.3
4	101.6	3.250	82.55	1.50	38.1	1.900 EUE	48.3
4-1/2-5	114.3-127	3.750	95.25	2.00	50.8	2-3/8 EUE	60.3
4-1/2-5	114.3-127	3.750	95.25	2.375	60.3	2-7/8 EUE	73.0
5-1/2-6-5/8	139.7-168.3	4.500	114.3	2.00	50.8	2-3/8 EUE	60.3
5-1/2-6-5/8	139.7-168.3	4.500	114.3	2.50	63.5	2-7/8 EUE	73.0
7-7-5/8	177.8-193.7	5.750	146	2.50	63.5	2-7/8 EUE	73.0
7-7-5/8	177.8-193.7	5.750	146	3.00	76.2	3-1/2 EUE	88.9
8-5/8	219.1	6.500	165.1	2.50	63.5	2-7/8 EUE	73.0
8-5/8	219.1	6.500	165.1	4.00	101.6	4-1/2 EUE	114.3
9-5/8	244.5	7.500	190.5	2.50	63.5	2-7/8 EUE	73.0
9-5/8	244.5	7.500	190.5	4.00	101.6	4-1/2 EUE	114.3
10-3/4	273.1	8.500	215.9	2.50	63.5	2-7/8 EUE	73.0
10-3/4	273.1	8.500	215.9	4.00	101.6	4-1/2 EUE	114.3