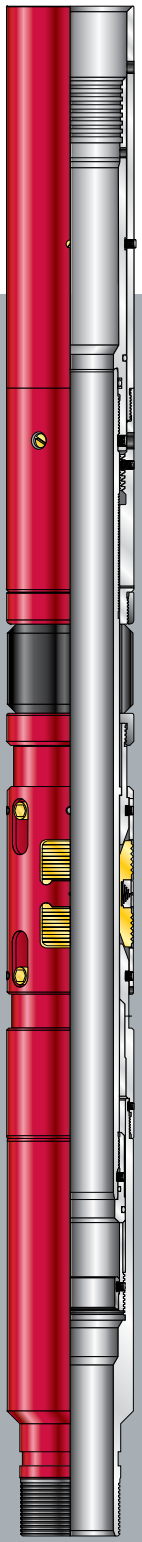
Weatherford®

Packers Catalog



Discover Premium Performance.

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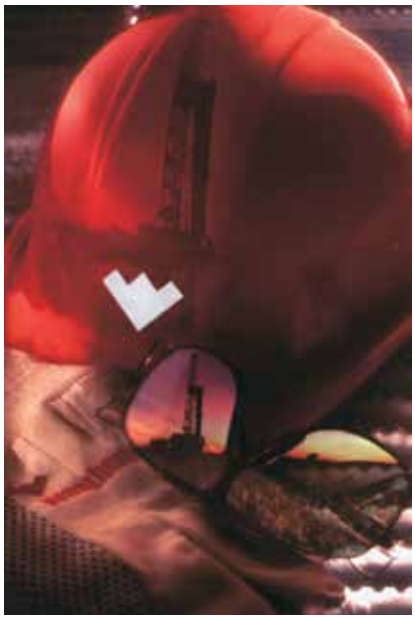
About Weatherford

The Weatherford Portfolio

Weatherford International Ltd. is one of the largest global providers of innovative mechanical solutions, technology and services for the drilling and production sectors of the oil and gas industry. An industry leader for more than 55 years, Weatherford has built its reputation by providing high-quality products, responsive client service, and a commitment to safety in all aspects of operations. Our continued pledge to our clients is to provide production-enabling technologies and superior services that maximize production. Our vast global infrastructure enables us to offer one of the industry's most diversified portfolios of products and services for drilling, intervention, completion and production applications.

Since 1998, Weatherford has strategically combined an array of well-known brands from the completions sector with one goal in mind: making your reservoir recovery operations more productive.



Discover Breadth and Depth of Completion Technology

Weatherford provides completion options with a broad range of products to meet every application—from the most basic to the extreme. Fully integrated and engineered, these products add up to an infinitely configurable, highly practical system for completion optimization.

A Full Range of Completion Products and Services

- **Packers**
- Liners
- Inflatable Packers
- Safety Valves
- Downhole Control Valves
- Expandable Technology
- Conventional Sand Screens
- Flow Control Systems
- Artificial Lift Systems
- Intelligent Wells

About Weatherford

Engineering Depth

Weatherford's product engineering resources are based around the world. We also employ a range of engineers, designers and technical support staff whose breadth and depth of experience includes mechanical and electrical engineering to highly specialized disciplines of optical science and metallurgy.

Industry-Leading Testing, R&D and Training Facilities

Weatherford has two of the largest research-and-development (R&D), testing and training facilities in the industry. Our Houston-based Technology & Training Center houses the world's most advanced safety valve engineering lab and three hot cells that simulate downhole conditions. Our Aberdeen facility is Europe's foremost research, testing and development center for offshore well services. This facility includes two fully operational drilling rigs and test boreholes.

Manufacturing Infrastructure

Weatherford's certified manufacturing facilities are strategically located throughout the world. Since 2002, we have doubled our completions manufacturing capacity by adding new facilities, expanding existing ones, and investing significantly in the latest machining equipment.

About Weatherford

Enterprise Excellence Program

Weatherford has created a culture focused on prevention to achieve error-free performance and empowerment of all employees to achieve continuous improvement in all work processes.

Our Enterprise Excellence Program describes how we will

- comply with all applicable laws and regulations of the areas where we operate or exceed compliance where our stated expectations require;
- conduct all operations in a way that promotes safe work practices and minimizes risk to our employees, our communities and the environment;
- implement the programs, training and internal controls necessary for achieving our goals.

Our enterprise culture has one objective and a single commitment: We empower each employee to achieve complete internal and external client satisfaction and to conform to mutually agreed requirements the first time, every time, while protecting the well-being of all personnel, assets and the environment.

For our clients, our excellence culture results in advantages such as greater efficiency through more effective planning and collaboration to ensure that mutually agreed requirements are being met and the elimination of nonconformance in the delivery of products and services, assuming both technical integrity and safe work practices.

EEP EMPOWERING EXCELLENCE EEP

Weatherford's Packer Systems

Discover Premium Performance.

Weatherford has more than 40 years of experience in providing packer systems and completion accessories for a wide range of downhole conditions, including the most demanding applications, such as high pressure/high temperature, high H_2S and CO_2 and deepwater.

From mechanical, hydraulic, wireline, multistring and feed-through packers to permanent and retrievable sealbore packers, Weatherford offers breadth and depth of packer tools and technology, custom-engineered completion systems to meet any challenging environment, and engineering expertise.

Weatherford is constantly and consistently developing new technologies for today's demanding applications. Throughout this catalog you'll discover our latest developments for intelligent completions, high pressure/high temperature and thermal applications.

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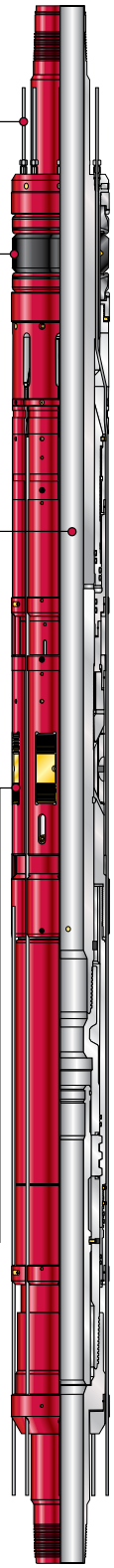
HellCat™ 2 Intelligent-Completion Packer



Weatherford's versatile *HellCat* 2 packer is a retrievable, hydraulically set production packer that provides single-trip speed and efficiency for

- intelligent completions
- subsea completions
- deviated and horizontal well completions
- zonal isolation

With a large-ID primary mandrel and up to eight control-line feedthroughs. The *HellCat* 2 packer is an ideal single-string primary production packer. It has been rigorously tested to ISO 14310 standards in Q-125 casing.

Features, Advantages and Benefits

- Low setting pressure reduces tubing stretch during setting. In many cases, setting can be accomplished with rig pumps to reduce expense of using high-pressure pumps.
- No mandrel movement during setting allows stacked applications.
- Shift-to-release capability, using a wireline shifting tool, provides operational simplicity and reduces the risk of premature failure under varying load conditions.
- Cut-to-release capability, available by special order, reduces the risk of premature failure of shear-out type packers under extreme loading.
- Packer may be set after flanging up wellhead for greater operational flexibility and safety.
- Single-trip system saves rig time.

HellCat™ 2 Intelligent-Completion Packer

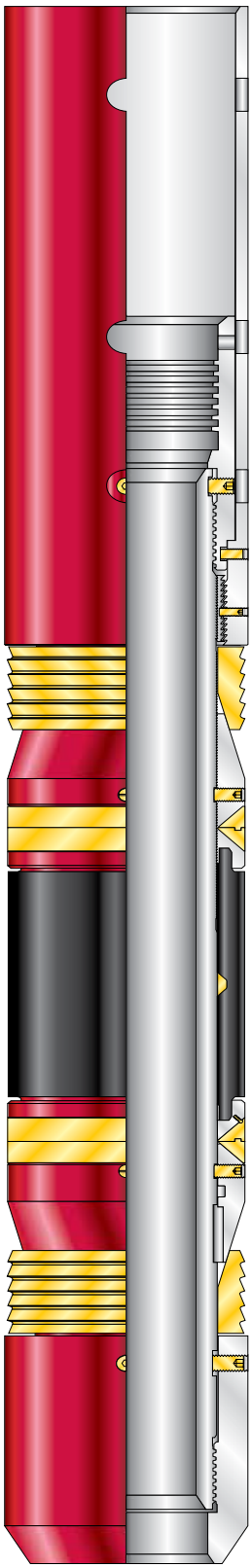
Specifications

Casing				Packer					
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Gauge Ring OD (in./*mm*)	Minimum ID (in./*mm*)	Pressure Rating[1] (psi/*MPa*)	Standard Connections[2] Pin × Pin	Control Lines	Product Number
7 *177.80*	23.0 to 26.0 *34.2 to 38.7*	6.187 *157.15*	6.466 *164.24*	6.020 *152.91*	2.880 *73.15*	5,000 *34.5*	3 1/2-in., 9.2-lb/ft NEW VAM®	(8) 1/4 in.	738107
				6.025 *153.04*					801266
	29.0 to 32.0 *43.2 to 47.6*	5.990 *152.15*	6.293 *159.84*	5.860 *148.84*		7,500 *51.7*			738581
	29.7 to 33.7 *44.2 to 50.2*	6.662 *169.21*	6.987 *177.47*	6.560 *166.62*		5,000 *34.5*			736114
7-5/8 *193.67*	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.27*	6.662 *169.21*	6.400 *162.56*	2.386 *60.60*	5,000 *34.5*	3 1/2-in., 9.2-lb/ft NEW VAM	(4) 1/4 in.	178496
9-5/8 244.48	47.0 to 53.5 69.9 to 79.6	8.535 216.79	8.681 220.50	8.289 210.54	2.890 73.41	7,500 51.7	3 1/2-in., 9.2-lb/ft NEW VAM	(8) 1/4 in.	794376
				8.315 211.20	3.933 99.90	5,000 34.5	4 1/2-in., 12.6-lb/ft NEW VAM		790315
					3.945 100.20	7,500 51.7	4 1/2-in., 12.6-lb/ft KSBEAwR™ Box × Pin		1157182
					3.933 99.90		4 1/2-in., VAM TOP® Box × Pin		884394
				8.289 210.54	4.600 116.84		5 1/2-in., 23-lb/ft NEW VAM		779627

[1]Pressure ratings are for the packer only and do not take into account ratings for the end connections or tubing.

[2]Premium connections available through special order.

UltraPak™ Permanent Sealbore Packer



Weatherford's *UltraPak* permanent Sealbore packer is designed for single- or multiple-zone completions in straight to highly deviated wellbores with high differential pressure. The robust, high-performance packer can be set on wireline or with a hydraulic setting tool.

The packer has passed rigorous ISO 14310 testing. Performance-rating envelopes developed for each size display combination loading from pressure and axial loads.

Applications

- High-pressure production or testing
- Fracture stimulations with anchored or floating tubing strings
- Lower-zone isolation, using the packer as a bridge plug
- Tubing removal without the need to unseat the packer

Features, Advantages and Benefits

- The packer is fully envelope-tested to ISO 14310 industry standards for improved safety and reliability.
- The packer has been tested in Q125 collapse-resistant casing to eliminate the need for carbide insert slips and reduce cost.
- The upper-scoop head design enables the easy stabbing of seals into the packer in deviated wellbores, simplifying installation and saving valuable rig time and costs.
- The packer is available with materials and elastomers for hostile environments, providing flexibility in wellbore applications.
- Ductile cast-iron full-strength, full-circle slips distribute the load evenly around the parent casing wall, maximizing the load rating and reliability.

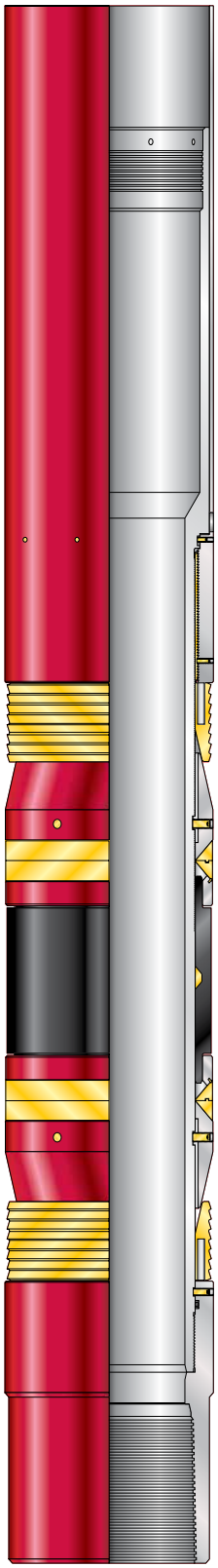
UltraPak™ Permanent Sealbore Packer

Specifications

Casing				Packer[1]			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Bore (in./*mm*)	Maximum OD (in./*mm*)	Part Number	Elastomer
4-1/2 *114.3*	11.6 to 13.5 *17.3 to 20.1*	3.853 *97.87*	4.069 *103.35*	2.688 *68.28*	3.750 *95.25*	173369	NBR[2]
						747092	HNBR[3]
						742725	Aflas®
	15.1 to 16.6 *22.5 to 24.7*	3.669 *93.19*	3.904 *99.16*	2.390 *60.71*	3.574 *90.78*	166863	Nitrile
5-1/2 *139.7*	14.0 to 17.0 *20.8 to 25.3*	4.778 *121.36*	4.950 *125.73*	2.688 *68.28*	4.600 *116.84*	742814	Nitrile
				3.000 *76.20*		168508	NBR
						231098	Nitrile
						742805	Aflas
	17.0 to 23.0 *25.3 to 34.2*	4.670 *118.62*	4.892 *124.26*		4.435 *112.65*	167058	NBR
					4.440 *112.78*	166879	Nitrile
						896333	Aflas Kalrez® Teflon® Ryton®
7 *177.8*	23.0 to 32.0 *34.2 to 47.6*	5.900 *149.86*	6.466 *164.24*	3.250 *82.55*	5.875 *149.23*	168371	NBR
						747098	HNBR
						173510	Nitrile
						173309	Aflas
						747096	Aflas
				4.00 *101.60*	5.860 *148.84*	747100	Aflas
					5.875 *149.23*	718580	Nitrile
						762924	HNBR
						718580	Nitrile
	32.0 to 35.0 *47.6 to 52.1*	5.892 *149.66*	6.208 *157.68*		5.794 *147.17*	290138	HSN[4]
	35.0 to 38.0 *52.1 to 56.6*	5.801 *147.35*	6.123 *155.52*		5.710 *145.03*	742891	Aflas
						711054	HNBR
7-5/8 *193.7*	29.7 *44.2*	6.510 *165.35*	6.875 *174.63*	3.250 *82.55*	6.250 *158.75*	737016	NBR
	33.7 to 39.0 *50.2 to 58.0*		6.882 *174.80*			168563	NBR
				4.000 *101.60*	6.375 *161.93*	277814	WE-216
	29.7 *44.2*	6.781 *172.24*	6.987 *177.47*	3.250 *82.55*	6.250 *158.75*	737016	NBR
9-5/8 *244.5*	40.0 to 53.5 *59.5 to 79.6*	8.405 *213.49*	8.968 *227.79*	4.750 *120.65*	8.319 *211.30*	745634	Aflas
						173978	Nitrile
						743146	HNBR
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	3.250 *82.55*	8.125 *206.38*	728071	NBR
				4.000 *101.60*		728191	NBR

[1]Has a wireline-guide bottom connection
[2]Nitrile butadiene rubber
[3]Hydrogenated nitrile butadiene rubber
[4]Highly saturated nitrile

UltraPak™ U Permanent Sealbore Packer



Weatherford's *UltraPak* U permanent sealbore packer is a robust, high-performance, permanent packer designed for high differential pressure in single or multiple zone applications in straight or highly deviated wellbores. The packer features a large upper bore that permits completions with large-ID tubing in wells with high production rates. This packer can be run with tubing anchored in the upper bore or with a polished bore receptacle (PBR) above the packer for completions requiring tubing movement compensation.

The *UltraPak* U packer has passed rigorous ISO 14310 testing and has been tested in Q125 casing. Performance-rating envelopes, developed for each size, display combination loading from pressure and axial loads.

The packer is available with materials tailored for hostile environments, including premium elastomers rated up to 350°F (177°C).

Applications

- High-pressure production or testing
- Fracture stimulation jobs with anchored or floating tubing strings
- Lower-zone isolation, using the packer as a bridge plug
- Upper-completion workover without the need to unseat the packer

Features, Advantages and Benefits

- The packer is fully envelope-tested to ISO 14310, ensuring extra security in high-risk gas wells.
- The large upper bore allows completions with large-ID tubing to maximize flow rates and improve access to the reservoir by wireline tools.
- The upper-scoop head design allows easy stabbing of seals into the packer in deviated wellbores, simplifying installation and saving valuable rig time and costs.
- The packer has been tested in Q125 collapse-resistant casing to eliminate the need for carbide insert slips and reduce costs.
- The packer is available with materials and elastomers designed for hostile environments, providing flexibility in wellbore applications.
- Ductile, cast iron, full-strength, full-circle slips distribute the load evenly around the parent casing wall, maximizing load rating and reliability.

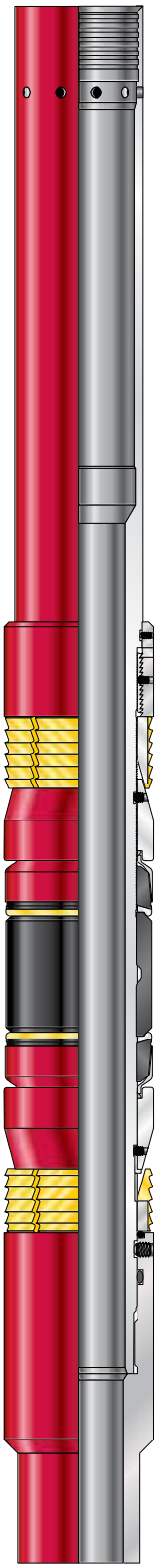
UltraPak™ U Permanent Sealbore Packer

Specifications

Casing				Packer			
OD (in./*mm*)	**Weight (lb/ft, *kg/m*)**	**Minimum ID (in./*mm*)**	**Maximum ID (in./*mm*)**	**Upper Bore (in./*mm*)**	**Lower Bore (in./*mm*)**	**Maximum OD (in./*mm*)**	**Product Number***
4.5 *114.3*	9.5 to 11.6 *14.1 to 17.3*	3.940 *100.08*	4.154 *105.51*	3.00 *76.20*	2.39 *60.71*	3.79 *96.14*	230168
5.0 *127.0*	15.0 to 18.0 *22.3 to 26.8*	4.195 *106.55*	4.486 *113.94*	3.00 *76.20*	2.50 *63.50*	4.06 *103.12*	179007
	18.0 to 21.4 *26.8 to 31.8*	4.032 *102.41*	4.361 *110.77*	3.00 *76.20*	2.39 *60.71*	3.97 *100.79*	289736
5.5 *139.7*	23.0 to 26.8 *34.2 to 39.9*	4.393 *111.58*	4.766 *121.06*	3.00 *76.20*	2.69 *68.28*	4.25 *107.95*	904599
7.0 *177.8*	23.0 to 32.0 *34.2 to 39.9*	5.990 *152.15*	6.466 *164.24*	4.75 *120.65*	3.88 *98.43*	5.88 *149.23*	234909 736275 818010
9.6 *244.5*	40.0 to 53.5 *59.5 to 79.6*	8.535 *216.79*	8.835 *224.41*	7.13 *180.98*	6.00 *152.40*	8.25 *209.55*	806344

*Basic UltraPak U - 80 ksi alloy construction, nitrile elastomers, plain bottom. Alternate metallurgy and elastomers are available on special order.

UltraPak™ U HPHT 15K Production Packer



Weatherford's *UltraPak* U HPHT 15K production packer is a high-performance, permanent packer for environments with high differential pressures and temperatures up to 450°F (232°C). The packer can be set on wireline or with a hydraulic setting tool. The Aflas® packing element system (patent pending) provides 360° casing contact to prevent element extrusion at high temperatures and pressures. The packer has passed rigorous ISO 14310 testing and is designed to withstand 15,000 psi (103 MPa) of differential pressure above or below.

Designed for stimulation jobs in high-pressure and high-temperature zones, the packer can also be used later to produce a zone by removing the plug with the production string and landing the seals. The packer can be converted to a bridge plug by setting a wireline plug in a profile nipple below the packer. The conversion enables the removal of the tubing string without killing the well. The lower zone can be produced later by removing the plug from the profile nipple.

Applications

- Stimulations in high-pressure and high-temperature zones
- Lower-zone isolation, using the packer as a bridge plug

Features, Advantages and Benefits

- The packer is tested to ISO 14310 standards to deliver consistent performance within the API minimum and maximum casing weight parameters.
- The packer has been tested in Q125 collapse-resistant casing to eliminate the need for carbide insert slips and reduce cost.
- The upper-scoop head design enables the easy stabbing of seals into the packer in deviated wellbores, simplifying installation and saving valuable rig time and costs.
- The patent-pending Aflas® packing element system prevents rubber extrusion at high temperatures and pressures, which provides sealing reliability under extreme conditions.
- One-piece slips prevent premature setting of the packer.
- Ductile cast-iron full-strength, full-circle slips distribute the load evenly around the parent casing wall, maximizing the load rating and reliability.

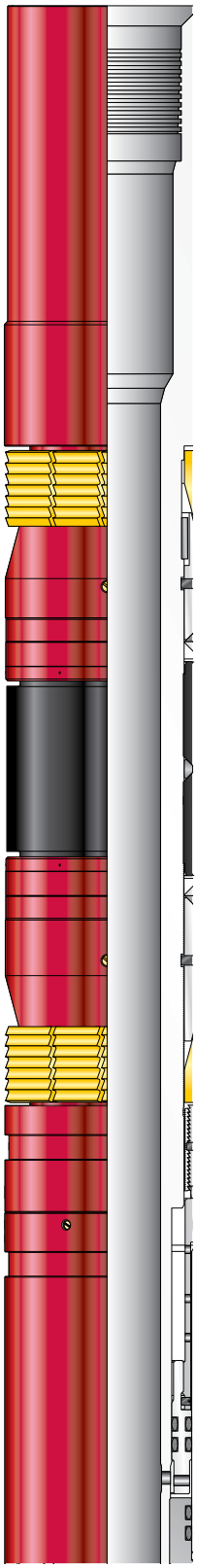
Aflas is a registered trademark of 3M.

UltraPak™ U HPHT 15K Production Packer

Specifications

Casing				Packer					
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Upper Bore Diameter (in./*mm*)	Lower Bore Diameter (in./*mm*)	Maximum Bore Diameter (in./*mm*)	Product Number	Temperature Rating (°F/°*C*)	Pressure Rating (psi/*MPa*)
5 *127.0*	15 to 20.8 *22.3 to 31.0*	4.086 *103.78*	4.529 *115.04*	3.000 *76.20*	1.980 *50.29*	4.060 *103.12*	727534	450 *232*	15,000 *103.4*
5-1/2 *139.7*	26.8 to 35.3 *39.9 to 52.5*								

UltraPak™ HU Permanent Hydraulic-Set Sealbore Packer



Weatherford's *UltraPak* HU permanent hydraulic-set, Sealbore packer is designed for single- or multiple-zone completions in straight to highly deviated wellbores with high differential pressure. The upper seal bore of the packer and integral hydraulic-setting chamber enable single-trip installation for operational efficiency. The robust, high-performance packer can be set without rotating or reciprocating the tubing string.

The packer has passed rigorous ISO 14310 testing, is rated from 45° to 350°F (7° to 177°C), and is available with materials tailored for hostile environments.

Applications

- High-pressure production or testing
- Fracture stimulation
- Monobore applications
- Highly deviated wells and doglegs

Features, Advantages and Benefits

- Along with the setting cylinder below the element, the one-piece mandrel eliminates the O-ring connection between the top sub and mandrel, minimizing leak paths and providing greater reliability.
- The packer can be set in a single trip without rotation or reciprocation of the tubing string, saving valuable rig time.
- The packer is fully envelope-tested to ISO 14310 industry standards for improved safety and reliability.
- Expandable metal backup rings provide a metal-to-metal barrier with the casing wall to prevent element extrusion and to enhance reliability.
- The packer is available with materials and elastomers for hostile environments, enabling flexibility in wellbore applications.
- The packer components are rotationally locked to enable rotation into liner tops and horizontal sections, saving rig time.
- Full-strength, full-circle slips distribute the load evenly around the parent casing wall, maximizing the load rating and reliability.

Options

- An external pressure-test clamp is available for shop and rig-floor testing during the makeup of completion subassemblies.
- A full range of completion accessories is available.

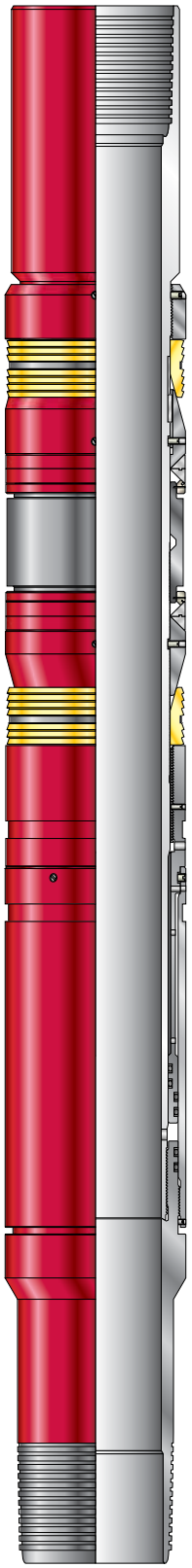
UltraPak™ HU Permanent Hydraulic-Set Sealbore Packer

Specifications

Casing				Packer				
OD (in./*mm*)	**Weight (lb/ft, *kg/m*)**	**Minimum ID (in./*mm*)**	**Maximum ID (in./*mm*)**	**Style**	**Upper Bore (in./*mm*)**	**Lower Bore (in./*mm*)**	**Gage OD (in./*mm*)**	**Product Number***
6-5/8 168	28.0 to 32.0 *41.7 to 47.6*	5.675 *144.15*	5.897 *149.78*	HU	4.000 *101.60*	3.250 *82.55*	5.469 *138.91*	1367555
7 *177.80*	20.0 to 26.0 *29.8 to 38.7*	6.187 *157.15*	6.552 *166.42*	H	—	4.000 *101.60*	6.025 *153.04*	710188
	23.0 to 32.0 *34.2 to 47.6*	6.094 *154.79*	6.366 *161.7*	HU	4.750 *120.65*	3.875 *98.43*	5.875 *149.23*	173319
				HU				173497
				HU				795136
				HU				1114441
7-5/8 *193.7*	33.7 to 39.0 *50.2 to 58.0*	6.429 *163.30*	6.882 *174.80*	HU	4.000 *101.60*	3.250 *82.55*	6.220 *157.99*	303477
9-5/8 *244.5*	40.0 to 53.5 *59.5 to 79.6*	8.405 *213.49*	8.968 *227.79*	HU	7.125	6.000 *152.40*	8.25 209.55	887932

[1]Long thread and coupling
[2]Hydrogenated nitrile butadiene rubber
[3]Nitrile butadiene rubber

UltraPak™ TH Permanent Hydraulic-Set Packer



Weatherford's *UltraPak* TH permanent packer, a robust, high-performance tool, is designed for single-trip, high-differential-pressure, single- or multiple-zone applications, in straight to highly deviated wellbores. The top and bottom premium thread connections allow connection of the packer directly to the tubing string, thus eliminating the need for a threaded latch anchor.

The *UltraPak* TH packer has passed rigorous ISO/DIS 14310 testing. Performance rating envelopes display combination loading from pressure and axial loads.

For more than 40 years, Weatherford has manufactured and installed packers for operations around the world. The success of the *UltraPak* series of packers and accessories is a result of their reliability and performance in a broad range of operating environments.

Applications

- High-pressure production or testing
- Fracture stimulation
- Monobore applications
- Highly deviated wells and doglegs
- Applications with large flow volumes

Features, Advantages and Benefits

- One-piece mandrel, with premium top and bottom tubing connections, eliminates the O-ring connection between the mandrel and bottom sub, thereby eliminating leak points and providing greater reliability.
- One-trip setting requires no rotating or reciprocation of the tubing string, saving rig time in running and setting the completion.
- Dual O-rings on the hydraulic setting system provide extra protection against failure from O-ring leakage.
- Large packer bore reduces restriction to maximize flow rates and provide free access to the reservoir for wireline tools.
- The UltraPak TH packer is fully envelope-tested to ISO 14310.

Options

- An external test clamp is available, which permits testing of the packer before it is run in the hole.
- Elastomer options are available for hostile environments.

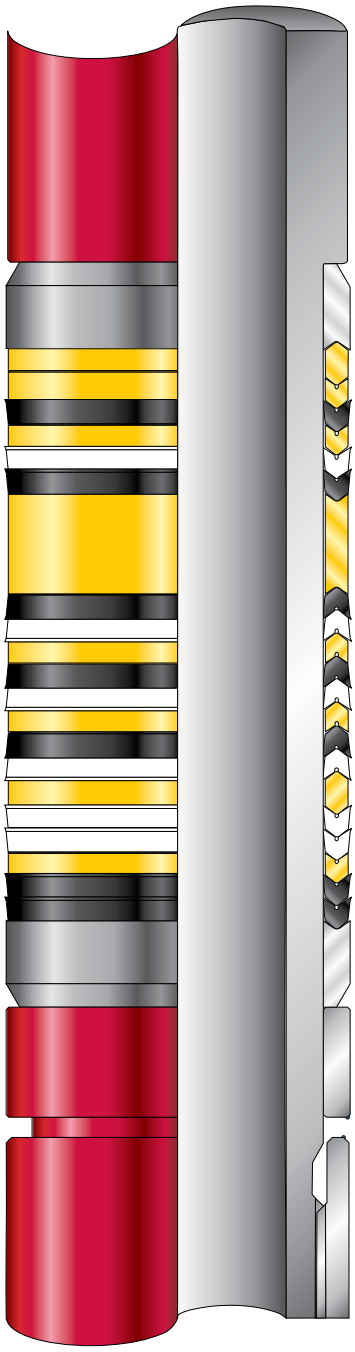
UltraPak™ TH Permanent Hydraulic-Set Packer

Specifications

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Box-and-Pin Connection	Elastomer	Product
		Maximum	Minimum					
4-1/2 *114.3*	15.1 to 16.6 *22.5 to 24.7*	3.826 *97.18*	3.754 *95.35*	3.584 *91.03*	1.970 *50.04*	2 3/8-in. EUE[1] Atlas Bradford® 2 3/8-in. EUE 8 RD[2]	Nitrile	726019
5-1/2 *139.7*	14.0 to 17.0 *20.8 to 25.3*	5.012 *127.30*	4.892 *124.26*	4.605 *116.97*	2.421 *61.49*	2 7/8-in., 6.4-lb Atlas Bradford TCII™ pin and pin	HNBR[3]	823932
7 *177.8*	23.0 to 32.0 *34.2 to 47.6*	6.366 *161.70*	6.094 *154.79*	5.875 *149.23*	2.421 *61.49*	2 7/8-in., 6.4-lb Atlas Bradford TCII	HNBR	823526
					2.967 *75.36*	3 1/2-in., 9.2-lb NEW VAM®	HNBR	732158
					3.895 *98.93*	4 1/2-in., 13.5-lb NEW VAM	HNBR	787136
						4 1/2-in., 12.6-lb NS-CT[4] 5-in., 18-lb NEW VAM box	HNBR	745403
9-5/8 *244.5*	40.0 to 53.5 *59.5 to 79.6*	8.835 *224.41*	8.535 *216.79*	8.125 *206.38*	4.758 *120.85*	5 1/2-in., 20-lb VAM® TOP® 5 1/2-in., 20-lb NEW VAM	Aflas®	173307
				8.130 *206.50*	3.915 *99.44*	4 1/2-in., 13.5-lb NEW VAM	HNBR	720359
				8.255 *209.68*	5.995 *152.27*	7-in., 29-lb VAM TOP	HNBR	909223

[1]External upset end
[2]Round
[3]Hydrogenated nitrile butadiene rubber
[4]NS connection for tubing

NEOS™ Nonelastomeric Optimum Seal-Packing Unit



Weatherford's NEOS nonelastomeric optimum seal packing unit is a premium seal stack for severe high-pressure and high-temperature applications. This rugged packing unit can be used on both anchored and floating seal assemblies with UltraPak™ permanent and BlackCat™ retrievable Sealbore packers and on polished bore receptacles (PBRs). The NEOS packing unit is manufactured from proprietary high-strength materials that are not affected by most hostile downhole environments. These materials are also chemically resistant to carbon dioxide (CO_2), hydrogen sulfide (H^2S), and downhole fluids such as acids, ZnBr muds, and amine-based corrosion inhibitors.

The NEOS packing unit has proved its durability in temperatures from 80° to 400°F (27° to 204°C) and pressures up to 15,000 psi (103,421 bar). It has passed rigorous ISO 14310 testing, including multiple stab-in tests at the rated temperature.

Applications

- Oil- or water-based completion fluids
- Floating or anchored completions
- PBRs and expansion joints
- Well testing and stimulation
- Horizontal and deviated completions
- High-pressure and high-temperature applications
- Sealbore packers

Features, Advantages and Benefits

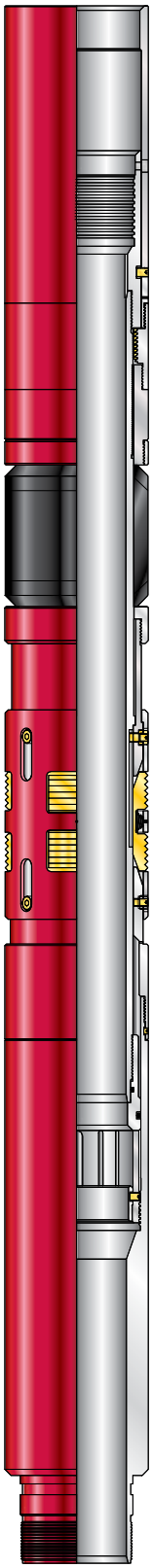
- Robust design enables the versatile NEOS packing unit to seal effectively in a wide range of temperatures and pressures, eliminating the need to maintain specialty seal inventories for most downhole conditions and thereby reducing overall inventory costs.
- The comprehensive chemical resistance of the seals eliminates the risk of incompatibility with downhole fluids and thus improves the success rate of completions. It also allows the operator to select different completion fluids with less concern for the effects of compromised seal integrity.

NEOS™ Nonelastic Optimum Seal-Packing Unit

Specifications

Sealbore Size (in./*mm*)	Temperature Range (°F/°*C*)	Maximum Pressure (psi/*bar*)	Product Number
2.390 *60.71*	200 to 400 *93 to 204*	15,000 *1,034*	00740018
2.688 *68.28*	150 to 400 *66 to 204*	15,000 *1,034*	00740019
3.000 *76.20*	200 to 400 *93 to 204*	15,000 *1,034*	00740020
3.250 *82.55*	150 to 400 *66 to 204*	15,000 *1,034*	00747233
4.000 *101.60*	100 to 400 *38 to 204*	15,000 *1,034*	00740325
4.750 *120.65*	100 to 350 *38 to 176*	10,000 *689*	00756987

BlackCat Retrievable Sealbore Packer



Weatherford's BlackCat retrievable sealbore packer is a reliable, high-pressure packer for production, gravel packing, and injection. It can be set on wireline or on tubing with a hydraulic setting tool and can be run with tubing-conveyed perforating (TCP) guns suspended beneath. The patented ECNER array system (high-pressure thermal packing element) provides a superior seal that enables the packer to pack off easily and resist swabbing. The packer can be retrieved with a pulling tool on a work string, and its rotationally locked components ease milling when normal retrieval is impossible.

The packer uses the same accessories as the UltraPak™ permanent packer. The packer is available in many materials suitable for hostile environments.

Applications

- High-pressure production or injection
- Stimulation and fracturing
- Operations with TCP guns run below the packer
- High-rate gravel packing
- Anchored or floating seal applications
- Deviated and horizontal wells

Features, Advantages and Benefits

- The packer can be set by wireline or by a hydraulic tool, which provides flexibility in deployment.
- Hydraulically setting the packer avoids the need to rotate the work string in running or retrieving the packer, which simplifies procedures, improves efficiency, and saves rig time.
- The ECNER array system reduces the swab-off effect and facilitates center packoff by enabling supporting force to be applied to the outer elements.
- The components are rotationally locked to enable rotation into liner tops and horizontal sections, saving rig time.
- The field-proven design with the slips below the element prevents the buildup of debris in and around the retrieval mechanism, which reduces circulating time and improves reliability.
- The compatibility with the *UltraPak* accessories reduces cost and inventory.

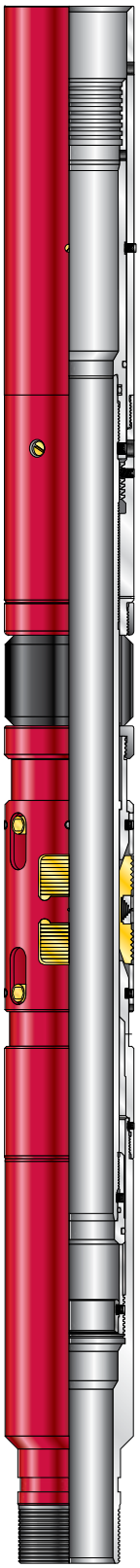
BlackCat Retrievable Sealbore Packer

Specifications

Casing				Packer				Accessory		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Sealbore (in./*mm*)	Minimum ID through Seals (in./*mm*)	Product	Retrieving Tool	MHT Modular Hydraulic Setting Tool Adapter Kit	Baker E-4 Wireline Adapter Kit
		Minimum	Maximum							
4.500 *114.30*	9.50 to 10.50 *14.14 to 15.63*	4.051 *102.90*	4.090 *103.89*	3.906 *99.21*	2.500 *63.50*	1.910 *48.51*	258938	234761	—	169067
	11.60 to 13.50 *17.26 to 20.09*	3.920 *99.57*	4.000 *101.60*	3.771 *95.78*			258937			
5.000 *127.00*	11.50 to 15.00 *17.11 to 22.32*	4.408 *111.96*	4.560 *115.82*	4.250 *107.95*	2.688 *68.28*	1.933 *49.10*	277605	271588	—	265689
	13.00 to 15.00 *19.35 to 22.32*		4.494 *114.15*				882858			
	18.00 *26.79*	4.276 *108.61*	4.276 *108.61*	3.969 *100.81*			882865			
	18.00 to 21.40 *26.79 to 31.85*	4.126 *104.80*					265536			
5.500 *139.70*	13.00 to 20.00 *19.35 to 29.76*	4.778 *121.36*	5.044 *128.12*	4.625 *117.48*	3.000 *76.20*	2.350 *59.69*	764435	235717	302819	174019
	14.00 to 17.00 *20.83 to 25.30*	4.892 *124.26*	5.012 *127.30*	4.642 *117.91*	2.688 *68.28*	1.933 *49.10*	826457	271588	302814	168750
	14.00 to 20.00 *20.83 to 29.76*	4.778 *121.36*		4.625 *117.48*	3.000 *76.20*	2.350 *59.69*	1119153	235717	302819	174019
	20.00 to 23.00 *29.76 to 34.23*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	2.688 *68.28*	1.933 *49.10*	828238	271588	302723	174225
					3.000 *76.20*	2.350 *59.69*	235869	235717	302819	174019
6.000 *152.40*	20.00 to 26.00 *29.76 to 38.69*	5.132 *130.35*	5.352 *135.94*	4.791 *121.69*	3.000 *76.20*	2.350 *59.69*	1124741	235717	302814	174019
6.625 *168.28*	20.00 to 28.00 *29.76 to 41.69*	5.791 *147.09*	6.049 *153.64*	5.540 *140.72*	3.000 *76.20*	2.350 *59.69*	1125798	235717	—	1126313[a]
7.000 *177.80*	23.00 to 32.00 *34.23 to 47.62*	6.094 *154.79*	6.366 *161.70*	5.938 *150.83*	3.250 *82.55*	2.390 *60.71*	235870	163876	258964	168529
					4.000 *101.60*	2.990 *75.95*	905231	238654	277594	173354
	29.00 to 35.00 *43.16 to 52.09*	6.004 *152.50*	6.184 *157.07*	5.813 *147.65*	3.250 *82.55*	2.390 *60.71*	235834	163876	258964	168529
					4.000 *101.60*	2.990 *75.95*	254084	238654	277594	173354
	32.00 to 35.00 *47.62 to 52.09*		6.094 *154.79*	5.781 *146.84*			175062			
7.625 *193.68*	24.00 to 29.70 *35.71 to 44.19*	6.875 *174.63*	7.025 *178.44*	6.688 *169.88*	4.000 *101.60*	2.990 *75.95*	258958	238654	277595	715970
	29.70 to 39.00 *44.20 to 58.04*	6.625 *168.28*	6.875 *174.63*	6.438 *163.53*			255643			
	33.70 to 39.00 *50.15 to 58.04*		6.765 *171.83*				916858			
9.625 *244.48*	40.00 to 47.00 *59.53 to 69.94*	8.681 *220.50*	8.835 *224.41*	8.440 *214.38*	4.000 *101.60*	2.990 *75.95*	818280	238654	729235	727140
	47.00 to 53.50 *69.94 to 79.62*	8.535 *216.79*	8.681 *220.50*	8.281 *210.34*	4.750 *120.65*	3.830 *97.28*	723452	722749	280107	173988
			8.535 *216.79*	8.319 *211.30*	4.000 *101.60*	2.990 *75.95*	727092	238654	729235	727140

[a]Setting tool, not a wireline adapter kit

BlackCat U Retrievable Sealbore Packer



Weatherford's BlackCat U retrievable sealbore packer is a reliable, high-pressure packer for production, gravel packing, and injection. It has a large upper bore for the installation of large ID tubing for high-production flow rates. The packer design is based on the field-proven BlackCat retrievable sealbore packer.

The versatile BlackCat U packer can be set on wireline or on tubing with a hydraulic setting tool. The tubing can be anchored in the upper bore, and a packer bore receptacle can be run above the packer for floating seal applications.

The patented ECNER array system (high-pressure thermal packing element) provides a superior seal that enables the packer to pack off easily and resist swabbing. The packer can be retrieved with a pulling tool on a work string, and its rotationally locked components ease milling when normal retrieval is impossible.

The packer is available in many materials suitable for hostile environments.

Applications

- High-pressure production or injection
- Stimulation and fracturing
- Operations with tubing-conveyed perforating guns run below the packer
- High-rate gravel packing
- Deviated and horizontal wells

Features, Advantages and Benefits

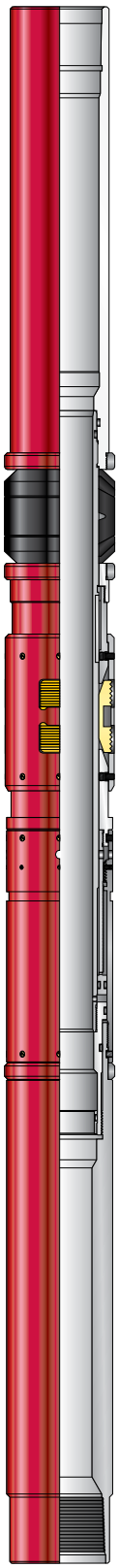
- The packer can be set by wireline or by a hydraulic tool, which provides flexibility in deployment.
- The work string does not require rotation in running or retrieving the packer, which simplifies procedures, improves efficiency, and saves rig time.
- The ECNER array system reduces the swab-off effect and facilitates packoff by enabling supporting force to be applied to the outer elements.
- The components are rotationally locked to prevent them from spinning, reducing milling time if the packer cannot be retrieved normally.
- The field-proven design with the slips below the element prevents the buildup of debris in and around the retrieval mechanism, reducing circulating time and improving reliability.

BlackCat U Retrievable Sealbore Packer

Specifications

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Bore (in./*mm*)		Minimum ID through Seals (in./*mm*)	Product Number
		Minimum	Maximum		Upper	Lower		
5 *127.0*	18.0 to 21.4 *26.8 to 31.8*	4.126 *104.80*	4.276 *108.61*	3.969 *100.81*	3.000 *76.20*	2.688 *68.28*	2.350 *59.69*	179005
9-5/8 *244*	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.49*	8.281 *210.34*	6.000 *152.40*	4.750 *120.65*	4.880 *123.83*	1184277

BlackCat™ H and HU Hydraulic-Set Sealbore Production Packers



Weatherford's *BlackCat* H and HU production packers are high-performance, hydraulic-set, retrievable sealbore packers for medium- to high-pressure production and testing applications. These rugged, dependable packers can be retrieved with tubing or drillpipe and the *BlackCat* retrieving tool. The HU version of these packers features a large upper sealbore that maximizes the ID of the completion to optimize well access.

BlackCat H and HU production packers are fully engineered. The packers are available in most oilfield material specifications—from alloy steel to corrosion-resistant alloy (CRA) materials—that are suitable for hydrogen sulfide (H_2S) service. *BlackCat* production packers accept Weatherford's standard UltraPak™ permanent packer accessories.

Applications

- One-trip applications on land or offshore
- Deviated and horizontal wells
- Running with tubing-conveyed perforating (TCP) guns suspended below the packer
- High-pressure, high-flow applications
- Applications in which tubing movement may be encountered

Features, Advantages and Benefits

- Setting cylinder below the element reduces leak paths to maximize completion integrity.
- Packers are easily retrieved for well intervention operations using the *BlackCat* retrieving tool.
- An O-ring pressure-test kit is available to enable shop-testing of packer assemblies, ensuring their integrity before shipment offshore and thereby reducing the risk of nonproductive time.
- Rotationally locked components facilitate deployment by enabling rotation into liner tops and horizontal sections and by facilitating milling.
- One-trip installation saves rig time.
- Hydraulic setting capability eliminates the need for tubing manipulation and allows packer to be set after wellhead is flanged up, expediting installation of the completion.

Options

- Alternative materials and connections are available.

BlackCat™ H and HU Hydraulic-Set Sealbore Production Packers

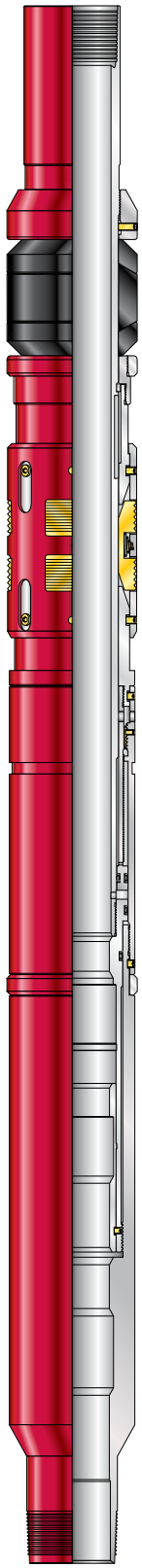
Specifications

Casing				Packer							
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Model	Gauge Ring OD (in./*mm*)	Bore (in./*mm*)		Minimum ID through Seals (in./*mm*)	Bottom Connection	Product	Retrieving Tool
		Minimum	Maximum			Upper	Lower				
7 *177.8*	23.0 to 32.0 *34.2 to 47.6*	6.094 *154.79*	6.366 *161.70*	HU	5.938 *150.83*	4.750 *120.65*	3.875 *98.43*	3.875 *98.43*	4 1/2-in., 12.6-lb NEW VAM®	754942	175275
	29.0 to 35.0 *43.2 to 52.1*	6.004 *152.50*	6.184 *157.07*		5.813 *147.65*	4.000 *101.60*	3.250 *82.55*	2.990 *75.95*	3 1/2-in., 9.2-lb NEW VAM	786090	790841
7-5/8 *193.7*	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	HU	6.688 *169.88*	4.750 *120.65*	3.875 *98.43*	3.875 *98.43*	5 1/2-in., 17-lb LTC[1]	716709	718472
9-5/8 *244.5*	32.3 to 43.5 *48.1 to 64.7*	8.775 *222.89*	9.001 *228.63*	H[2]	8.440 *214.38*	—	6.000 *152.40*	3.830 *97.28*	5 1/2-in., 15.5-lb NEW VAM	290715[2]	278318
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	H	8.319 *211.30*			4.875 *123.83*	5 1/2-in., 23-lb NEW VAM	172039	

[1]Long casing thread
[2]Set by a control line, this packer is used with a ratcheting hydraulic-setting tool or the equivalent.

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation

BlackCat™ TH Hydraulic-Set Production Packer



Weatherford's *BlackCat* TH hydraulic-set production packer is designed for medium- to high-pressure production and testing. The rugged, high-performance packer can be hydraulically set without manipulation of the tubing and can be run with tubing-conveyed perforating guns suspended beneath. The packer can be released with the *BlackCat* wireline releasing tool and retrieved on tubing.

The packer is available in most oilfield material specifications from alloy steel to corrosion-resistant alloy materials, suitable for hydrogen-sulfide service.

Applications

- High-pressure, high-flow applications
- One-trip applications on land and offshore
- Operations in which tubing may move
- Deviated and horizontal wells

Features, Advantages and Benefits

- The packer can be set after the wellhead is flanged, enabling the well to be controlled by the displacement or circulation of downhole fluids, eliminating additional rig time.
- Hydraulically setting the packer avoids the need to rotate the work string in running or retrieving the packer, which simplifies procedures, improves efficiency, and saves rig time.
- The packer can be installed in one trip, saving valuable rig time.
- The ECNER array system (high-pressure thermal packing element) reduces the swab-off effect and facilitates center packoff by enabling supporting force to be applied to the outer elements.
- The packer components are rotationally locked to enable rotation into liner tops and horizontal sections, saving rig time.
- The cylinder is below the packer element to reduce potential leak paths after the packer is set, preventing future workovers.
- Packer retrieval can be started with a slickline, saving rig time by eliminating an extra trip in the hole.

Options

- Other connections, metals, and elastomers may be ordered.
- An O-ring pressure-test kit is available for shop testing the assembly.

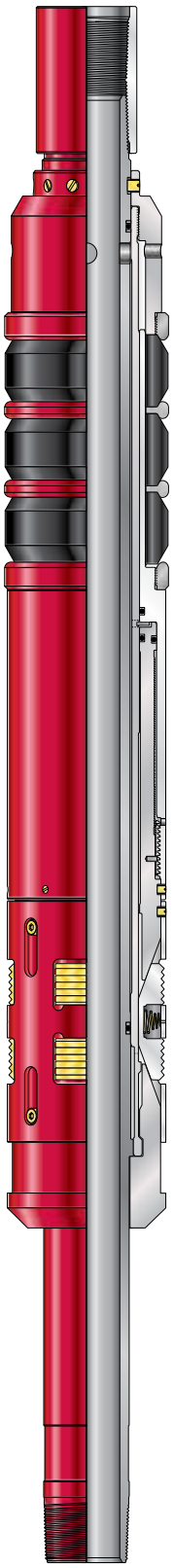
BlackCat™ TH Hydraulic-Set Production Packer

Specifications

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Minimum ID (in./*mm*)	Thread Connection	Product	Releasing Tool
		Minimum	Maximum					
7 *177.8*	23.0 to 32.0 *34.2 to 47.6*	6.094 *154.79*	6.366 *161.70*	5.937 *150.80*	3.875 *98.43*	4 1/2-in., 11.6-lb NEW VAM®	174115	175046
7-5/8 *193.7*	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.688 *169.88*	3.845 *97.66*	4 1/2-in., 12.6-lb NEW VAM	175092	
9-5/8 *244.8*	*47.0 to 53.5* *69.9 to 79.6*	*8.535* *216.79*	*8.681* *220.50*	*8.319* *211.30*	*4.690* *119.13*	5-1/2-in, 17.0-lb VAM TOP	1172771	1176121

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

WH-6 Hydraulic-Set Retrievable Packer



Weatherford's WH-6 hydraulic-set retrievable packer is designed for low- to medium-pressure applications. The short body length makes it ideal for low-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.

Applications

- Offshore oil and gas wells with low- to medium-pressure requirements
- Highly deviated wells and severe doglegs
- Stacked-packer completions
- Coiled-tubing completions
- Hydrogen sulfide (H_2S) environments
- Injection wells

Features, Advantages and Benefits

- 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 dif ferential.
- 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 times.

WH-6 Hydraulic-Set Retrievable Packer

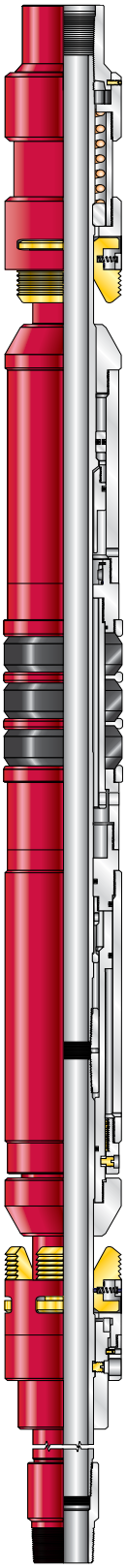
Specifications

Casing				Setting Pressure (psi/bar)	Packing Element Elastometer	Packer				
OD (in./mm)	Weight (lb/ft)	Minimum ID (in./mm)	Maximum ID (in./mm)			Gauge Ring OD (in./mm)	ID (in./mm)	Flow Wet Material	Connection (Box × Pin)	Product Number
5-1/2 *139.7*	14 to 17 *20.8 to 25.3*	4.819 *122.40*	5.09 *129.29*	3,500 *241.32*	HNBR 90-80-90	4.625 *117.48*	1.97 *50.04*	4140 L-80	2 3/8-in. EUE	807297
								9 Cr		807338
							1.937 *49.20*	4140 L-80	2 3/8-in., 4.6-lb/ft NEW VAM®	807336
								9 Cr		807340
6-5/8* *168.3*	24 to 28 *35.7 to 41.7*	5.791 *147.09*	5.921 *150.39*	3,500 *241.32*	HNBR 90-80-90	5.540 *140.72*	2.373 *60.27*	4140 L-80	2 7/8-in. EUE	807341
								9 Cr		807344
								4140 L-80	2 7/8-in., 6.4-lb/ft NEW VAM	807342
								9 Cr		807347
7 *177.8*	20 to 26 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*	3,500 *241.32*	HNBR 90-80-90	5.540 *140.72*	2.631 *66.83*	4140 L-80	2 7/8-in. EUE	807395
								9 Cr		807398
							2.374 *60.30*	4140 L-80	2 7/8-in., 6.4-lb/ft NEW VAM	807397
								9 Cr		807399
	26 to 32 *38.7 to 47.6*	6.094 *154.79*	6.276 *159.41*			5.540 *140.72*	2.361 *59.97*	4140 L-80	2 7/8-in. EUE	807401
								9 Cr		807408
							2.374 *60.30*	4140 L-80	2 7/8-in., 6.4-lb/ft NEW VAM	807402
								9 Cr		807410
	23 to 29 *34.2 to 43.2*	6.184 *157.07*	6.366 *161.70*			5.845 *148.46*	2.900 *73.66*	4140 L-80	3 1/2-in. EUE	807417
								9 Cr		807421
								4140 L-80	3 1/2-in., 9.2-lb/ft NEW VAM	807420
								9 Cr		807422
9-5/8 *244.5*	43 to 53.5 *64.0 to 79.6*	8.535 *216.79*	8.755 *222.38*	3,500 *241.32*	HNBR 90-80-90	8.250 *209.55*	2.919 *74.14*	4140 L-80	3 1/2-in. EUE	1140775
								9 Cr L-80		1141515
							2.972 *75.49*	4140 L-80	3 1/2-in., 9.2-lb/ft NEW VAM	1141543
								9 Cr L-80		1141544

*Packer for 6 5/8-in. casing is rated to 5,000 psi (344.7 bar) dif ferential and 275ºF (135ºC). All other packers are rated to 6,000 psi (413.7 bar) differential and 275ºF (135ºC).

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

Hydrow I Hydraulic Production Packer



Weatherford's Hydrow I hydraulic production packer is a high-pressure, double-grip, retrievable packer that isolates the annulus from the production conduit in flanged wells, deviated wellbores, gas-lift installations, and other completions in which a mechanically set packer is unsuitable. The built-in, zone-activated, pressure-balance system offsets pressure differentials across the packer, making it ideal for stacked-packer installations.

A straight tubing-string pull releases the packer. The patented upper-slip releasing system has a key nondirectional slip that can be dislocated to release the other slips automatically. The system reduces the strain required for slip and packer release.

Applications

- Highly deviated wells and doglegs
- Stacked-packer completions
- Coiled-tubing completions
- Offshore oil and gas completions

Features, Advantages and Benefits

- The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- All components are locked to prevent pressure buildup or debris from presetting the packer, improving reliability when running the packer in the wellbore.
- The pressure-balance system offsets pressure differentials across the packer, enabling the packing element to maintain an effective seal.
- The double-grip system enables the packer to hold differential pressures securely from above and below, preventing packing-element movement and ensuring proper packoff.

Options

- The packer can be converted to be set and tested selectively in stacked-packer completions.

Hydrow I Hydraulic Production Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	ID (in./*mm*)	Connection (in.)	Product Number
		Minimum	Maximum				
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.59*	4.090 *103.89*	3.766 *95.66*	1.938 *49.23*	2-3/8 EU[1] 8 RD[2]	650-45
5 *127.0*	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	4.141 *105.18*	1.938 *49.23*	2-3/8 EU 8 RD	650-50
	15.0 to 18.0 *22.3 to 26.8*	4.276 *108.61*	4.408 *111.96*	4.125 *104.78*			650-52
5-1/2 *139.7*	9.0 to 13.0 *13.4 to 19.3*	5.044 *128.12*	5.240 *133.10*	4.875 *123.83*	1.984 *50.39*	2-3/8 EU 8 RD	650-54
	13.0 to 15.5 *19.3 to 23.1*	4.892 *124.26*	5.044 *128.12*	4.781 *121.44*	2.375 *60.33*	2-7/8 EU 8 RD	PHRP14200
	13.0 to 20.0 *19.3 to 29.8*	4.778 *121.36*		4.641 *117.88*	1.984 *50.39*	2-3/8 EU 8 RD	650-55
	15.5 to 20.0 *23.1 to 29.8*		4.950 *125.73*		2.375 *60.33*	2-7/8 EU 8 RD	PHRP14300
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.516 *114.71*	1.984 *50.39*	2-3/8 EU 8 RD	650-57
				4.500 *114.30*	2.375 *60.33*	2-7/8 EU 8 RD	PHRP14400
5-3/4 *146.1*	18.6 to 25.0 *27.7 to 37.2*	4.882 *124.00*	5.118 *130.00*	4.641 *117.88*	1.984 *50.39*	2-3/8 EU 8 RD	650-55A-000
6 *152.4*	23.0 to 26.0 *34.2 to 38.7*	5.132 *130.35*	5.240 *133.10*	4.875 *123.83*	1.984 *50.39*	2-3/8 EU 8 RD	650-54
6-5/8 *168.3*	17.0 to 24.0 *25.3 to 35.7*	5.921 *150.39*	6.135 *155.83*	5.781 *146.84*	2.908 *73.86*	3-1/2 EU 8 RD	650-66
	20.0 to 24.0 *29.8 to 35.7*		6.049 *153.64*	5.750 *146.05*	2.439 *61.95*	2-7/8 EU 8 RD	650-67
	24.0 to 32.0 *35.7 to 47.6*	5.675 *144.15*	5.921 *150.39*	5.500 *139.70*			650-65
7 *177.8*	17.0 to 29.0 *25.3 to 43.2*	6.184 *157.07*	6.538 *166.07*	6.000 *152.40*	2.439 *61.95*	2-7/8 EU 8 RD	650-72
					2.908 *73.86*	3-1/2 EU 8 RD	650-74
	26.0 to 35.0 *38.7 to 52.1*	6.004 *152.50*	6.276 *159.41*	5.891 *149.63*	2.439 *61.95*	2-7/8 EU 8 RD	650-70
					2.908 *73.86*	3-1/2 EU 8 RD	650-73

[1]External upset
[2]Round

Hydrow I Hydraulic Production Packer

Specifications (continued)

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	ID (in./*mm*)	Connection (in.)	Product Number
		Minimum	Maximum				
7-5/8 *193.7*	20.0 to 33.7 *29.8 to 50.2*	6.765 *171.83*	7.125 *180.98*	6.630 *168.40*	2.485 *63.12*	2-7/8 EU[1] 8 RD[2]	650-76-000
				6.625 *168.28*	2.908 *73.86*	3-1/2 EU 8 RD	650-78
	29.7 to 39.0 *44.2 to 58.0*	6.625 *168.28*	6.875 *174.63*	6.485 *164.72*	2.485 *63.12*	2-7/8 EU 8 RD	650-75-000
				6.458 *164.03*	2.908 *73.86*	3-1/2 EU 8 RD	650-77
8-5/8 *219.1*	28.0 to 40.0 *41.7 to 59.5*	7.725 *196.22*	8.017 *203.63*	7.536 *191.41*	2.984 *75.79*	3-1/2 EU 8 RD	650-85
9-5/8 *244.5*	29.3 to 43.5 *43.6 to 64.7*	8.755 *222.38*	9.063 *230.20*	8.516 *216.31*	2.984 *75.79*	3-1/2 EU 8 RD	650-96
	40.0 to 53.5 *59.5 to 79.6*	8.535 *216.79*	8.835 *224.41*	8.266 *209.96*			650-95
					3.937 *100.00*	4-1/2 EU 8 RD	650-97
10-3/4 *273.1*	60.7 to 71.1 *90.3 to 105.8*	9.450 *240.03*	9.660 *245.36*	9.200 *233.68*	2.910 *73.91*	3-1/2 EU 8 RD	825833
					4.875 *123.83*	5-1/2 buttress	233258
13-3/8 *339.7*	68.0 to 72.0 *101.2 to 107.1*	12.347 *313.61*	12.415 *315.34*	11.875 *301.63*	3.000 *76.20*	3-1/2 EU 8 RD	745-13B-000

[1]External upset
[2]Round

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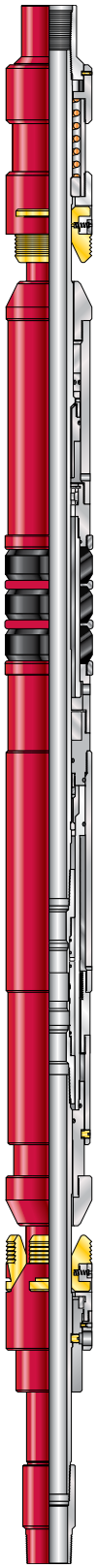
Hydrow I-SS Hydraulic Production Packer



Weatherford's Hydrow I-SS hydraulic production packer is a high-pressure, double-grip, retrievable packer that isolates the annulus from the production conduit in flanged wells, deviated wellbores, gas-lift installations, and stacked packer installations. The packer can be used on multipacker, single-string completions in which the tubing is tested before the packers are set and on completions in which each packer is set and tested selectively.

All the packer parts are positively locked to prevent pressure buildup or debris from presetting the packer while running in the hole. A straight tubing-string pull releases the packer. The patented upper-slip releasing system has a key nondirectional slip that can be dislocated to release the other slips automatically. The system reduces the strain required for slip and packer release.

Applications

- Flanged wells
- Deviated wellbores
- Gas-lift installations
- Stacked-packer installations
- Completions in which mechanically set packers are unsuitable

Features, Advantages and Benefits

- The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- All components are locked to prevent pressure buildup or debris from presetting the packer, improving reliability when running the packer in the wellbore.
- The built-in, zone-activated, pressure-balance system offsets pressure differentials across the packer, enabling the packing element to maintain an effective seal.
- The double-grip system enables the packer to hold differential pressures securely from above and below, preventing packing-element movement and ensuring proper packoff.

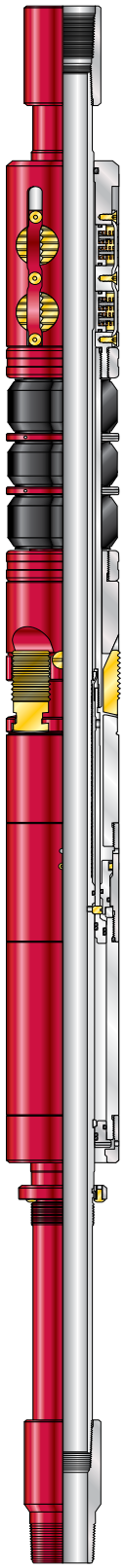
Hydrow I-SS Hydraulic Production Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	ID (in./*mm*)	Connection (in.)	Part
		Minimum	Maximum				
7 *177.8*	17.0 to 29.0 *25.3 to 43.2*	6.184 *157.07*	6.538 *166.07*	6.005 *152.53*	2.313 *58.75*	2-7/8 EU[1] 8 RD[2]	651-72-020
				5.890 *149.61*	2.908 *73.86*	3-1/2 EU 8 RD	1122133
				6.005 *152.53*	2.745 *69.72*		650-74-020
	26.0 to 32.0 *38.7 to 47.6*	6.094 *154.79*	6.276 *159.41*	5.891 *149.63*	2.313 *58.75*	2-7/8 EU 8 RD	651-70-020
				5.890 *149.61*	2.745 *69.72*	3-1/2 EU 8 RD	650-73-020
	32.0 to 35.0 *47.6 to 52.1*	6.004 *152.50*	6.094 *154.79*		2.908 *73.86*		1122593
9-5/8 *244.5*	29.3 to 47.0 *43.6 to 69.9*	8.681 *220.50*	9.063 *230.20*	8.500 *215.90*	3.985 *101.22*	4-1/2 EU 8 RD	652-96-020
	40.0 to 53.5 *59.5 to 79.6*	8.535 *216.79*	8.835 *224.41*	8.266 *209.96*	2.745 *69.72*	3-1/2 EU 8 RD	650-95-020

[1]External upset
[2]Round

PFH and PFHL Hydraulic/Hydrostatic Packers



Weatherford's PFH and PFHL hydraulic/hydrostatic packers are hydraulically set, single-string packers using hydrostatic pressure to provide additional packoff force in the setting mechanism to isolate the annulus from the production conduit. The hydrostatic pressure reduces the surface pressure required for setting.

The packers require no downward mandrel movement for setting, enabling reliable, simultaneous setting in stacked-packer installations. The start-to-set shear screws may be adjusted to set multiple packers sequentially.

The PFHL packer has the same features as the PFH and a larger bore.

Applications

- Deviated wells
- Onshore or offshore completions
- Multiple-zone selective completions

Features, Advantages and Benefits

- The hydraulic packer setting and straight-pull release without tubing rotation simplify deployment and retrieval in deviated and flanged wells.
- Setting the packer with hydrostatic pressure reduces the applied surface pressure, lowering rig costs.
- The soft center element in the packing system packs off first, and the two hard end elements back up the center for reliability.

Options

- The PFH packer is available with an optional rotational release.

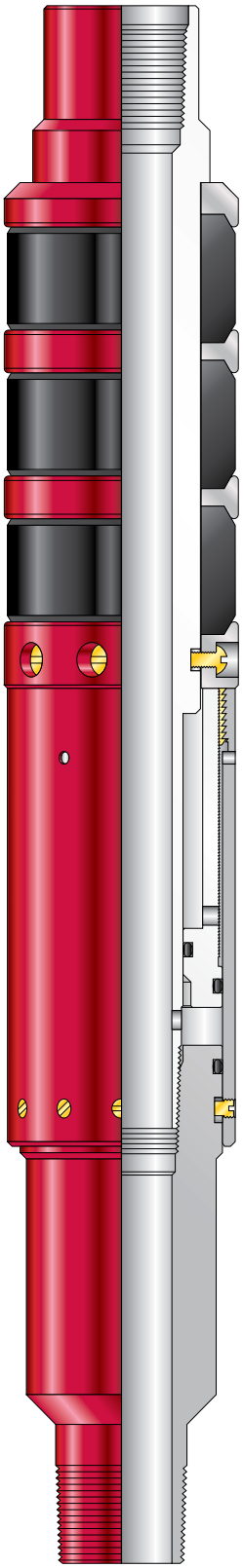
PFH and PFHL Hydraulic/Hydrostatic Packers

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product Number
		Minimum	Maximum				
5-1/2 *139.7*	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.190 *131.83*	4.781 *121.44*	1.980 *50.29*	2-3/8 EUE[1] 8 RD[2]	45PFH.1003
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.950 *125.73*	4.614 *117.20*			45PFH.1002
	20.0 to 23.0 *29.8 to 34.2*	4.625 *117.48*	4.778 *121.36*	4.500 *114.30*			45PFH.1001
6 *152.4*	26.0 *38.7*	4.950 *125.73*	5.190 *131.83*	4.781 *121.44*	1.980 *50.29*	2-3/8 EUE 8 RD	45PFH.1003
6-5/8 *168.3*	17.0 to 20.0 *25.3 to 29.8*	5.938 *150.83*	6.135 *155.83*	5.812 *147.62*	2.420 *61.47*	2-7/8 EUE 8 RD	47PFH.1002
	24.0 *35.7*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*			47PFH.1001
7 *177.8*	20.0 to 26.0 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*	6.078 *154.38*	2.420 *61.47*	2-7/8 EUE 8 RD	47PFH.1004
						3-1/2 EUE 8 RD	47PFHL.1002
	26.0 to 29.0 *38.7 to 43.2*	6.136 *155.85*	6.276 *159.41*	5.968 *151.59*		2-7/8 EUE 8 RD	47PFH.1003
						3-1/2 EUE 8 RD	47PFHL.1001
	32.0 to 35.0 *47.6 to 52.1*	5.938 *150.83*	6.135 *155.83*	5.812 *147.62*		2-7/8 EUE 8 RD	47PFH.1002
	38.0 *56.6*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*			47PFH.1001
7-5/8 *193.7*	24.0 to 29.7 *35.7 to 44.2*	6.798 *172.67*	7.025 *178.44*	6.672 *169.47*	2.420 *61.47*	2-7/8 EUE 8 RD	47PFH.1007
	33.7 to 39.0 *50.2 to 58.0*	6.579 *167.11*	6.797 *172.64*	6.453 *163.91*			47PFH.1006
						3-1/2 EUE 8 RD	47PFHL.1004

[1]External upset end
[2]Round

Hydrow IV Hydraulic-Set Production Packer



Weatherford's Hydrow IV hydraulic-set production packer is run above another hydraulic retrievable packer to isolate a zone between them for treatment, injection, or production. The field-proven Hydrow IV packer can also isolate casing holes or perforations. The simple design and straight tubing-pull release make the packer a cost-effective tool to isolate zones in low-pressure applications.

Applications

- Low-pressure wells
- Stacked applications
- Applications prohibiting tubing rotation
- Isolation of casing holes and perforations

Features, Advantages and Benefits

- The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- The compact design eases passage through doglegs and deviated wells to help prevent sticking and improve running efficiency.
- The hydraulic setting avoids the need to rotate the work string in running or retrieving the packer, which simplifies procedures, improves efficiency, and saves rig time.

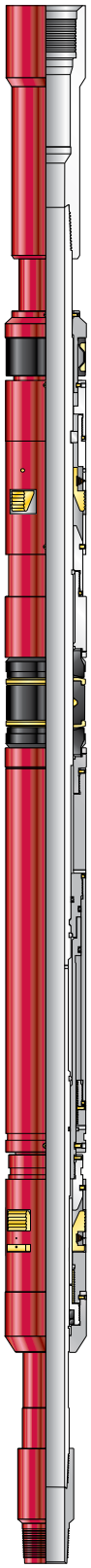
Hydrow IV Hydraulic-Set Production Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product
		Minimum	Maximum				
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.776 *95.91*	1.984 *50.39*	2-3/8 EU[1] 8 RD[2]	654-45
5 *127.0*	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	4.266 *108.36*	1.984 *50.39*	2-3/8 EU 8 RD	654-50
	15.0 to 18.0 *22.3 to 26.8*	4.276 *108.61*	4.408 *111.96*	4.141 *105.18*			654-52
5-1/2 *139.7*	13.0 to 20.0 *19.3 to 29.8*	4.778 *121.36*	5.044 *128.12*	4.641 *117.88*	1.984 *50.39*	2-3/8 EU 8 RD	654-55
				4.630 *117.60*	2.400 *60.96*	2-7/8 EU 8 RD	748072
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.516 *114.71*	1.984 *50.39*	2-3/8 EU 8 RD	654-57
7 *177.8*	17.0 to 26.0 *25.3 to 38.7*	6.276 *159.41*	6.538 *166.07*	6.110 *155.19*	2.484 *63.09*	2-7/8 EU 8 RD	654-72

[1]External upset
[2]Round

ThunderCat Hydraulic-Set Retrievable Production Packer



Weatherford's ThunderCat hydraulic-set retrievable production packer is a high-performance packer ideally suited to isolate the annulus from the production conduit in deep, high-pressure completions. All the O-rings can be pressure tested to ensure correct setting on the tubing before running the packer. Tubing pressure sets the packer, and a straight-pull shear release or optional mechanical or chemical cutting easily retrieves it.

Applications

- Monobore applications
- Liner-top completions
- Stacked completions
- Flanged completions
- High-pressure production or testing
- Highly deviated and extended-reach wells

Features, Advantages and Benefits

- The packer can be installed in one trip, saving rig time.
- The hydraulic packer setting and straight-pull release without tubing manipulation simplify deployment in deviated and flanged wells.
- The one-piece mandrel without internal connections reduces potential leak paths.
- The field-proven design with the top slips below the nonsealing element prevents debris buildup in and around the retrieval mechanism, reducing circulating time and improving reliability.

Options

- An optional upper sealbore enables tubing-string retrieval without packer retrieval, saving rig time.
- Alternate materials, elastomers, and connections are available on order.

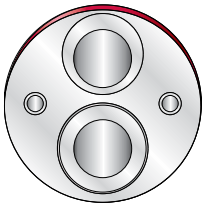
ThunderCat Hydraulic-Set Retrievable Production Packer

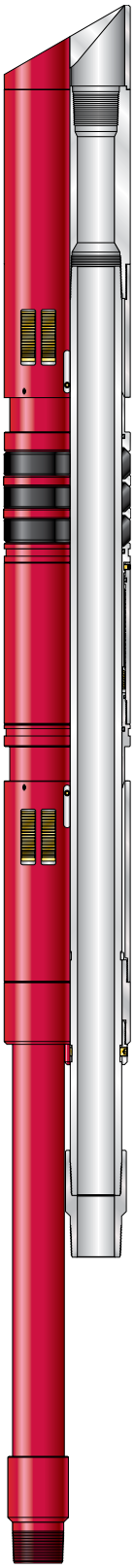
Specifications

Casing				Packer			
Size (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Pressure Rating (psi, *kPa*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Product Number
		Minimum	Maximum				
6-5/8 *168.3*	32 to 35 *48 to 52*	5.460 *138.68*	5.778 *146.76*	10,000* *68,948*	5.390 *136.91*	2.485 *63.12*	178363
	28 *42*			8,000* *55,158*			
7 *177.8*	35 to 38 *52 to 57*	5.801 *147.35*	6.122 *155.50*	10,000[1] *68,948*	5.705 *144.91*	2.500 *63.50*	178443
	32 *48*			8,000[1] *55,158*			
	32 to 38 *48 to 57*	5.92 *150.37*	6.094 *154.79*	5,500[2] *37,921*	5.705 *144.91*	2.485 *63.12*	1235425

[1]From 150 to 300°F (66 to 149°C). The packer can be set with 3,500-psi (24,132-kPa) pressure.
[2]Packer is rated to 5,500 psi at 400°F

Hydrow II-A Hydraulic-Set, Dual-String Production Packer





Weatherford's Hydrow II-A hydraulic-set, dual-string production packer is a double-grip, retrievable packer that isolates the annulus from the production conduit. The versatile, cost-effective packer has a patented, sequential upper-slip releasing system. Each slip is easily released individually to reduce the force required for packer release. The angles on the slips, cone, and upper-slip body direct forces that provide smooth slip release from the casing.

Applications

- Deviated and horizontal wells
- High-volume instrumented applications
- Well monitoring, gas venting, chemical injection, and hydraulic-line access
- Multiple-zone isolation

Features, Advantages and Benefits

- The packer can be pressure tested on-site to save rig time.
- The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- The compact design eases passage through doglegs and deviated wells to help prevent sticking and improve running efficiency.
- All components are locked to prevent pressure buildup or debris from presetting the packer, improving reliability when running the packer in the wellbore.
- The setting cylinder is below the packing elements, eliminating all critical O-rings after setting.
- The packer has a cone design instead of hydraulic hold-down buttons to prevent a pressure-induced packer release.

Options

- Multiple bores are available for the deployment of electrical submersible pump cable, chemical-injection lines, control lines, and well-monitoring devices.
- The packer can be easily converted to Weatherford's Hydrow II-AP hydraulic-set, dual-string production packer for submersible pump applications.
- Elastomer and metallurgy options are available for hostile environments.
- Other accessories are available.

Hydrow II-A Hydraulic-Set, Dual-String Production Packer

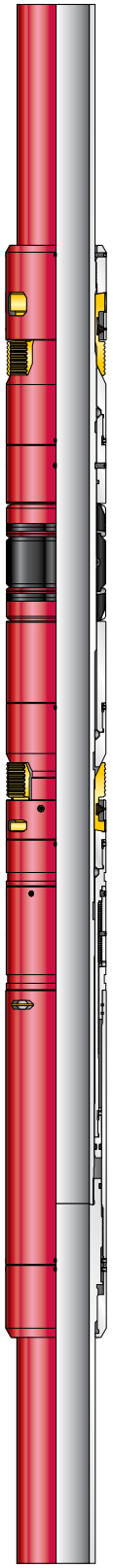
Specifications

Casing				Packer						
		ID (in./*mm*)			Long String		Short String			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum	Maximum	Gauge Ring OD (in./*mm*)	ID (in./*mm*)	Box-and-Pin Connection	ID (in./*mm*)	Box-and-Pin Connection	String Set	Product Number
5-1/2 *139.7*	14.0 to 20.0 *20.8 to 29.8*	4.778 *121.36*	5.012 *127.30*	4.625 *117.48*	1.526 *38.76*	1.900-in. NU[1] 10 RD[2] 2 3/8-in. EU[3] 8 RD	1.359 *34.52*	1.969-in. J-latch Wireline re-entry guide	Long	905-55-001
						1.900-in. NU 10 RD 1.900-in. EU 10 RD		1.969-in. J-latch 1.660-in. EU 10 RD	Short	905-55-002
7 *177.8*	17.0 to 29.0 *25.3 to 43.2*	6.184 *157.07*	6.538 *166.07*	6.000 *152.40*	1.938 *49.23*	2 3/8-in. EU 8 RD	1.938 *49.23*	2.688-in. snap latch 2 3/8-in. NU 10 RD	Long	907-72-005[4]
				6.005 *152.53*	1.933 *49.10*	2 3/8-in., 4.6-lb VAM® ACE®	1.940 *49.28*	2.688-in. J-latch 2 3/8-in. VAM ACE		905-72A-LSS-JL
				6.016 *152.81*		2 3/8-in. EU 8 RD		2.688-in. snap latch 2 3/8-in. EU 8 RD		905-72A-LSS-SL
	23.0 to 32.0 *34.2 to 47.6*	6.094 *154.79*	6.366 *161.70*	5.938 *150.83*	1.922 *48.82*		1.938 *49.23*			905-70A-LSS-SLC
					1.933 *49.10*	2 3/8-in. NU 10 RD		2.688-in. snap latch 2 3/8-in. NU 10 RD		905-70A-LS-SLNU
					1.938 *49.23*	2 3/8-in. EU 8 RD		2.688-in. snap latch 2 3/8-in. EU 8 RD	Short	905-70A-SS-SLC
						2 3/8-in. NU 10 RD		2.688-in. snap latch 2 3/8-in. NU 10 RD		905-70A-SS-SLNC
				5.943 *150.95*	1.922 *48.82*	2 3/8-in. EU 8 RD	1.933 *49.10*	2.688-in. J-latch 2 3/8-in. EU 8 RD		905-70A-SSS-JL
					1.933 *49.10*		1.938 *49.23*		Long	905-70A-LSS-JL
7-5/8 *193.7*	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*	1.969 *50.01*	2 3/8-in. EU 8 RD	1.938 *49.23*	2.688-in. snap latch 2 3/8-in. EU 8 RD	Short	905-76A-SS-SLC
	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.785 *172.34*	6.469 *164.31*	1.985 *50.42*		1.985 *50.42*	2.688-in. J-latch 2 3/8-in. EU 8 RD		907-75-JLS
					2.000 *50.80*		1.938 *49.23*	2.688-in. snap latch 2 3/8-in. EU 8 RD		905-75A-SL-SSS
9-5/8 *244.5*	36.0 to 47.0 *53.6 to 69.9*	8.681 *220.50*	8.921 *226.59*	8.500 *215.90*	2.357 *59.87*	2 7/8-in., 6.4-lb NEW VAM®	2.357 *59.87*	3.250-in. J-latch 2 7/8-in., 6.4-lb NEW VAM	Short	905-96A-001NV
					2.484 *63.09*	2 7/8-in. EU 8 RD	2.484 *63.09*	3.250-in. snap latch 2 7/8-in. EU 8 RD	Long	905-96A-LSS-SL
					2.500 *63.50*		3.750 *95.25*	3.750-in. J-latch 3 1/2-in. EU 8 RD	Short	907-96-002
					2.907 *73.84*	3 1/2-in. EU 8 RD	2.907 *73.84*	3.250-in. snap latch 3 1/2-in. EU 8 RD	Long	734042
						3 1/2-in. NU 10 RD	2.906 *73.81*	3.750-in. snap latch 3 1/2-in. NU 10 RD	Short	905-96A-SSS-NU
					2.938 *74.63*	3 1/2-in., 9.2-lb NEW VAM	2.938 *74.63*			905-96-032
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	8.250 *209.55*	2.930 *74.42*	3 1/2-in. EU 8 RD	3.000 *76.20*	3.750-in. J-latch 3 1/2-in. NU 10 RD	Long	822249
				8.313 *211.15*	3.000 *76.20*	3 1/2-in., 9.2-lb NEW VAM		3.750-in. snap latch 3 1/2-in., 9.2-lb NEW VAM		905-95A-NVSL-SG
10-3/4 *273.1*	45.5 to 55.5 *67.7 to 82.6*	9.760 *247.90*	9.950 *252.73*	9.500 *241.30*	2.907 *73.84*	3 1/2-in. NU 10 RD	2.906 *73.81*	3.750-in. snap latch 3 1/2-in. NU 10 RD	Short	801032

[1]Nonupset
[2]Round
[3]External upset
[4]Has one round 3/4-in. national pipe thread, box-and-pin string and vent-string connection

VAM ACE and NEW VAM are registered trademarks of Vallourec Mannesmann Oil & Gas France Corporation

OptiPkr™ Production Packer



Weatherford's *OptiPkr* production packer is designed for maximum versatility and durability. It offers the robustness of a permanent packer, while maintaining the flexibility of a retrievable packer, lending to easy removal. It can be converted from a hydraulic-set to a hydrostatic-set tool, as necessary. Its multiple applications include conventional, monobore, and stacked completions, as well as liner-top isolations. The *OptiPkr* packer is also ideally suited for subsea environments, in which packer reliability is particularly critical.

The *OptiPkr* production packer meets ISO 14310 Level V0 standards, minimizing the risk of performance failure. With few components, its simplicity further enhances reliability.

Applications

- Conventional, monobore and stacked completions
- Liner-top isolations
- Subsea environments, where packer reliability is critical

Features, Advantages and Benefits

- Cut-to-release technology enables packer removal, even after the packer has been placed under extreme loads, saving time required by milling operations.
- Rotationally locked features reduce mill-up time, should milling be necessary.
- Large packer ID, ideal for use in monobore completions.
- Modularity of packer setting methods (hydraulic-, hydrostatic-, intervention-set, and RFID) provides packer versatility and improves operational efficiency.
- Elimination of body movement during setting reduces risk in stack completions
- Shorter body length than conventional retrievable packers reduces risks in highly deviated wells.

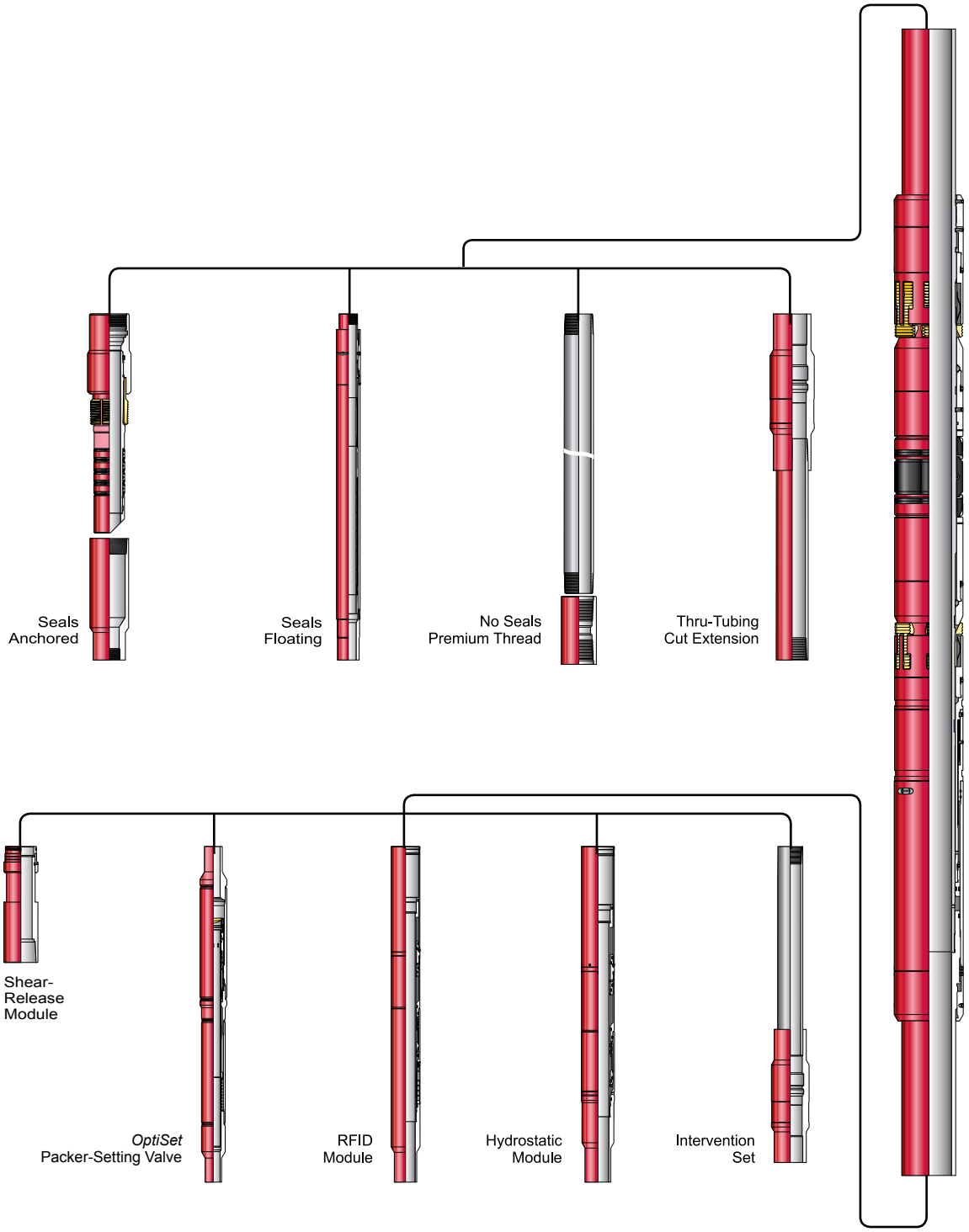
OptiPkr™ Production Packer

Specifications

Casing	OD (in./*mm*)		7 *177.8*		9-5/8 *244.5*
	Weight (lb/ft, *kg/m*)		29.0 to 32.0 *43.1 to 47.6*	32.0 to 35.0 *47.6 to 52.1*	47.0 to 53.5 *69.9 to 79.6*
	Minimum ID (in./*mm*)		6.094 *154.8*	6.004 *152.5*	8.535 *216.8*
	Maximum ID (in./*mm*)		6.184 *157.1*	6.094 *154.8*	8.681 *220.5*
Packer	Maximum OD (in./*mm*)		5.910 *150.1*	5.820 *147.8*	8.310 *211.1*
	Minimum ID (in./*mm*)		3.833 *97.4*		6.060 *149.2*
	80ksi material	Pressure rating (psi/*MPa*)	8,400 *58*		6,700 *46*
		Compression load rating (lbf/*KN*)	164,009 *729.5*		334,462 *1,487.8*
		Tension load rating (lbf/*KN*)	178,128 *792.4*		302,264 *1,334.5*
	95ksi material	Pressure rating (psi/*MPa*)	10,000 *69*		8,000 *55*
		Compression load rating (lbf/*KN*)	200,000 889.6		400,000 *1,779.3*
		Tension load rating (lbf/*KN*)	212,546 *945.5*		360,380 *1,603.0*
	Temperature range (°F/°*C*)		80° to 350° *27° to 177°*		
	Standard thread connection		4 1/2-in. VAMâ TOP HC		7-in. VAMâ TOP HC

VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

OptiPkr™ Production Packer



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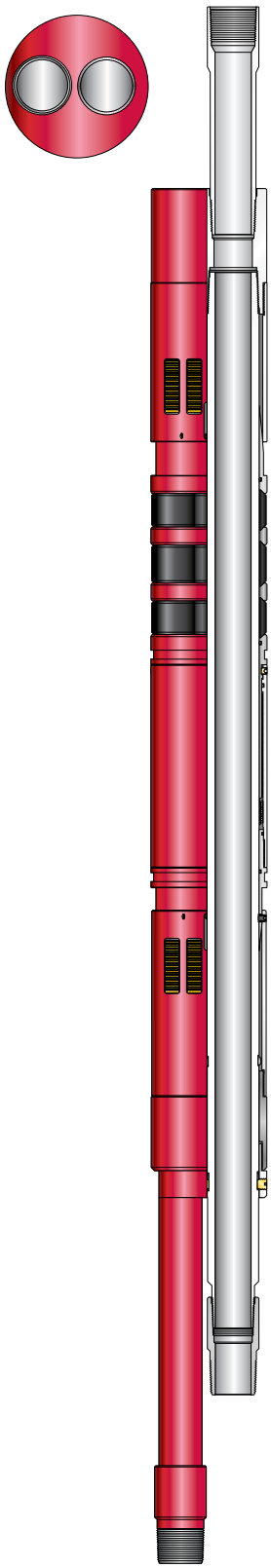
Hydrow II-AP Hydraulic-Set, Dual-String Production Packer



Weatherford's Hydrow II-AP hydraulic-set, dual-string production packer is a double-grip, retrievable packer that isolates the annulus from the production conduit. The versatile packer has a patented, sequential upper-slip releasing system. Each slip is easily released individually to reduce the force required for packer release. The angles on the slips, cone, and upper-slip body direct forces that provide smooth slip release from the casing.

Applications

- Deviated and horizontal wells
- High-volume instrumented applications
- Well monitoring, gas venting, chemical injection, and hydraulic-line access
- Multiple-zone isolation

Features, Advantages and Benefits

- The packer can be pressure tested on-site to save rig time.
- The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- The compact design eases passage through doglegs and deviated wells to help prevent sticking and improve running efficiency.
- All components are locked to prevent pressure buildup or debris from presetting the packer, improving reliability when running the packer in the wellbore.
- The setting cylinder is below the packing elements, eliminating all critical O-rings after setting.
- The packer has a cone design instead of hydraulic hold-down buttons to prevent a pressure-induced packer release.

Options

- Multiple bores are available for the deployment of electrical submersible pump cable, chemical-injection lines, control lines, and well-monitoring devices.
- The packer is available with a snap latch, J-latch short string, and long- and short-string set.
- Elastomer and metallurgy options are available for hostile environments.

Hydrow II-AP Hydraulic-Set, Dual-String Production Packer

Specifications

Casing				Packer							
		ID (in./*mm*)			Long String		Short String				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum	Maximum	Gauge Ring OD (in./*mm*)	ID (in./*mm*)	Box-and-Pin Connection	ID (in./*mm*)	Box-and-Pin Connection	Round String and Vent-String Connection (in.)	String Set	Product Number
5-1/2 *139.7*	14.0 to 20.0 *20.8 to 29.8*	4.778 *121.36*	5.012 *127.30*	4.625 *117.48*	1.526 *38.76*	1.900-in. NU[1] 10 RD[2]	1.359 *34.52*	1.660-in. NU 10 RD	—	Long	905-55-000
										Short	905-55-004
7 *177.8*	17.0 to 29.0 *25.3 to 43.2*	6.184 *157.07*	6.538 *166.07*	6.000 *152.40*	1.929 *49.00*	2 3/8-in., 4.7-lb NEW VAM®	2.045 *51.94*	2 3/8-in. EU[3] 8 RD	Two 1/2 NPT[4] box and pin	Long	905-72-005
					1.938 *49.23*	2 3/8-in. EU 8 RD	1.938 *49.23*		—	Long	905-72A-LSS
										Short	905-72A-SSS
						2 3/8-in. NU 10 RD		2 3/8-in. NU 10 RD		Long	905-72A-LSS-01
					2.360 *59.94*	2 7/8-in., 6.4-lb VAM® TOP®	1.485 *37.72*	1.900-in. EU 10 RD	Two 1/2 NPT box and pin	Long	1151341
					2.375 *60.33*	2 7/8-in. EU 8 RD	1.500 *38.10*			Long	907-72-010
	23.0 to 32.0 *34.2 to 47.6*	6.094 *154.79*	6.366 *161.70*	5.938 *150.83*	1.938 *49.23*	2 3/8-in. EU 8 RD	1.938 *49.23*	2 3/8-in. EU 8 RD	—	Long	905-70A-LSS
										Short	905-70A-SSS
				5.943 *150.95*	2.360 *59.94*	2 7/8-in. EU 8 RD	1.485 *37.72*	1.900-in. NU 10 RD		Long	905-70A-012
				5.938 *150.83*	2.359 *59.92*	2 7/8-in., 6.4-lb NEW VAM				Long	905-70-010-NV
7-5/8 *193.7*	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*	1.938 *49.23*	2 3/8-in. EU 8 RD	1.938 *49.23*	2 3/8-in. EU 8 RD	—	Short	905-76A-007
					2.360 *59.94*	2 7/8-in. EU 8 RD				Long	905-76A-LSS
										Short	905-76A-SSS
	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.785 *172.34*	6.453 *163.91*	1.938 *49.23*	2 3/8-in. EU 8 RD				Long	905-75A-LSS
				6.469 *164.31*	1.975 *50.17*					Short	905-75A-SSS
					2.360 *59.94*	2 7/8-in. EU 8 RD				Long	907-75-000
										Short	907-75-001

[1]Nonupset
[2]Round
[3]External upset
[4]National pipe thread

Hydrow II-AP Hydraulic-Set, Dual-String Production Packer

Specifications (continued)

Casing				Packer							
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Long String		Short String		Round String and Vent-String Connection (in.)	String Set	Product Number
		Minimum	Maximum		ID (in./*mm*)	Box-and-Pin Connection	ID (in./*mm*)	Box-and-Pin Connection			
9-5/8 *244.5*	36.0 to 47.0 *53.6 to 69.9*	8.681 *220.50*	8.921 *226.59*	8.500 *215.90*	2.484 *63.09*	2 7/8-in. EU 8 RD	2.406 *61.11*	2 7/8-in. EU 8 RD	—	Long	905-96A-LSS-01
					2.485 *63.12*		2.485 *63.12*			Short	905-96-013
					2.938 *74.63*	3 1/2-in. EU 8 RD	1.938 *49.23*	2 3/8-in. EU 8 RD	One 1/2 NPT box and pin	Long	789244
					2.906 *73.81*		2.906 *73.81*	3 1/2-in. EU 8 RD	—		905-96A-LSS
										Short	905-96A-SSS
						3 1/2-in., 9.2-lb NEW VAM		3 1/2-in., 9.2-lb NEW VAM			905-96A-SSS-NV
					2.907 *73.84*	3 1/2-in. NU 10 RD		3 1/2-in. NU 10 RD			905-96A-SSS-NU
						3 1/2-in. EU 8 RD	2.484 *63.09*	2 7/8-in. EU 8 RD		Long	234416
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	8.312 *211.12*	2.485 *63.12*	2 7/8-in. EU 8 RD	2.406 *61.11*			Short	905-95A-004ABC
					2.500 *63.50*		2.500 *63.50*			Long	905-95A-LSS-01
					2.880 *73.15*	3 1/2-in., 10.2-lb NEW VAM	2.406 *61.11*	2 7/8-in., 4-lb NEW VAM			905-95A-007NV
					2.953 *75.01*	3 1/2-in., 9.2-lb NEW VAM	2.469 *62.71*	2 7/8-in. EU 8 RD	Three 1/2 NPT box and box		906-95-000NVHS
					3.000 *76.20*	3 1/2-in. EU 8 RD	3.000 *76.20*	3 1/2-in. EU 8 RD	—		905-95A-LSS
										Short	905-95A-SSS
				8.313 *211.15*	2.880 *73.15*		2.406 *61.11*	2 7/8-in. EU 8 RD		Long	1116865
					2.920 *74.17*	3 1/2-in., 9.3-lb Hydril CS®	2.563 *65.10*	2 7/8-in. EU 8 RD up 1.900-in. NU 10 RD down	Two 3/4 NPT box and pin One 1.900 NU 10 RD box and pin		906-95A-CS-LSS
				8.500 *215.90*	3.938 *100.03*	4 1/2-in., 12.6-lb NEW VAM	1.938 *49.23*	2 3/8-in. EU 8 RD	Three 1/2 NPT box and box		908-96-000
10-3/4 *273.1*	51.0 to 60.7 *75.9 to 90.3*	9.660 *245.36*	9.850 *250.19*	9.375 *238.13*	3.920 *99.57*	4 1/2-in., 12.6-lb NEW VAM	2.050 *52.07*	2 3/8-in. EU 8 RD	Two 1/2 NPT box and pin	Long	907-10-0NV

NEW VAM, VAM TOP, and Hydril CS are registered trademarks of their respective owners.

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Arrowset I-XS Mechanical Packer

Weatherford's Arrowset I-XS mechanical packer is a versatile, field-proven retrievable double-grip packer for isolating the annulus from the production conduit. The packer can be set with tension or compression.

A patented upper-slip releasing system reduces the force required to release the packer. A nondirectional slip is released first, making it easier to release the other slips. The packer also has a straight-pull safety release.

Applications

- Production
- Pumping
- Injection
- Fiberglass tubing
- Completions requiring periodic casing-integrity tests
- Zonal isolation

Features, Advantages and Benefits

- The design holds differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs.
- The packer can be set with compression or tension, enabling deployment in shallow and deep applications.
- The packer can be set and released with only a one-quarter turn of the tubing.
- The bypass valve is below the upper slips so that debris is washed from the slips when the valve is opened, reducing the times for circulation and total retrieval.
- The packer can be run with Weatherford's T-2 on-off tool, which enables the tubing to be disconnected and retrieved without retrieving the packer.

Options

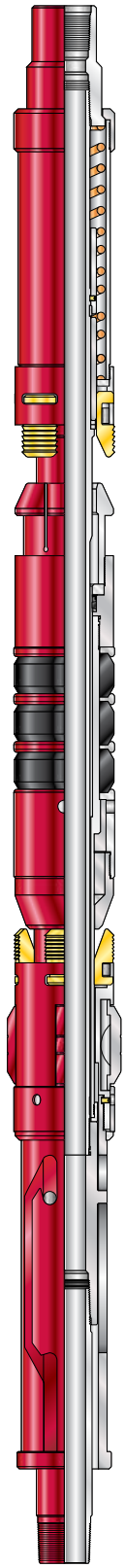
- Elastomer options are available for hostile environments.

Arrowset I-XS Mechanical Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in./*mm*)	Product Number
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.750 *95.25*	1.985 *50.42*	2-3/8 EUE 8 Rd	604-45
5-1/2 *139.7*	14.0 to 17.0 *20.8 to 25.3*	4.892 *124.26*	5.012 *127.30*	4.515 *114.68*	1.985 *50.42*	2-3/8 EUE 8 Rd	604-55
				4.625 *117.48*		2-7/8 EUE 8 Rd	604-56
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.515 *114.68*		2-3/8 EUE 8 Rd	604-57
						2-7/8 EUE 8 Rd	604-59-000
6-5/8 *168.3*	24.0 to 32.0 *35.7 to 47.6*	5.675 *144.15*	5.921 *150.39*	5.515 *140.08*	2.375 *60.33*	2-7/8 EUE 8 Rd	604-65
	17.0 to 24.0 *25.3 to 35.7*	5.921 *150.39*	6.135 *155.83*	5.750 *146.00*			604-68
7 *177.8*	17.0 to 26.0 *25.7 to 39.3*	6.276 *159.41*	6.538 *166.07*	5.515 *140.08*	2.375 *60.33*	2-7/8 EUE 8 Rd	604-72
				6.000 *152.40*	3.000 *76.20*	3-1/2 EUE 8 Rd	604-74

Arrowset I-X, I-X 10K, and I-X HP Mechanical Packers



Weatherford's Arrowset I-X, I-X 10K, and I-X HP mechanical packers are versatile, field-proven retrievable double-grip packers for most production, stimulation, and injection. The packers can be set with tension or compression.

A large internal bypass reduces the swabbing effect during run-in and retrieval and closes securely when the packer is set. During release, the bypass is opened to equalize the pressure before the upper slips are released. A patented upper-slip releasing system reduces the force required to release the packer. A nondirectional slip is released first, making it easier to release the other slips.

The I-X 10K packer has all the features of the I-X packer and can withstand 10,000 psi (69 MPa) of differential pressure above or below. The I-X HP packer can withstand 7,500 psi (52 MPa) of differential pressure above or below.

Applications

- Production
- Pumping
- Injection
- Fiberglass tubing
- Zonal isolation

Features, Advantages and Benefits

- The design holds high differential pressure from above or below, enabling the packer to meet most production, stimulation, and injection needs.
- The packer can be set with compression, tension, or wireline, enabling deployment in shallow and deep applications.
- The packer can be set and released with only a one-quarter turn of the tubing.
- The bypass valve is below the upper slips so that debris is washed from the slips when the valve is opened, reducing the times for circulation and total retrieval.
- The full opening enables unrestricted flow and the passage of wireline tools and other packer systems.
- The packer can be run with Weatherford's T-2 on-off tool, which enables the tubing to be disconnected and retrieved without retrieving the packer.

Options

- Elastomer options are available for hostile environments.
- Optional safety releases are available.

Arrowset I-X, I-X 10K, and I-X HP Mechanical Packers

Specifications

Casing				Packer					
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in./*mm*)	1-X 10K and I-X HP	Wireline Set	1-X
2-7/8 *73.0*	6.40 to 6.50 *9.52 to 9.67*	2.376 *60.33*	2.441 *62.00*	2.250 *57.15*	0.625 *15.88*	1.050 *EU[1] 10 RD[2]*	—		603-25
3-1/2 *88.9*	7.70 to 10.20 *11.46 to 15.18*	2.922 *74.22*	3.068 *77.93*	2.781 *70.64*	1.250 *31.75*	1.900 *NUE[3] 10 RD*	—		603-30
4 *101.6*	9.50 to 11.00 *14.14 to 16.37*	3.476 *88.29*	3.548 *90.12*	3.250 *82.55*	1.500 *38.10*		—		603-40
4-1/2 *114.3*	9.50 to 13.50 *14.14 to 20.09*	3.920 *99.57*	4.090 *103.89*	3.750 *95.250*	1.938 *49.23*	2-3/8 *EUE[4] 8 RD*	603-45-H	603-45-HWS	603-45
	13.50 to 15.10 *20.09 to 23.47*	3.826 *97.18*	3.920 *99.57*	3.680 *93.47*			603-46-H	603-46-HWLS	603-46
5 *127.0*	11.50 to 15.00 *17.11 to 22.32*	4.408 *111.96*	4.560 *115.82*	4.125 *104.78*	1.938 *49.23*		603-50-H	603-50-HWLS	603-50
	18.00 to 20.80 *26.79 to 30.95*	4.156 *105.56*	4.276 *108.61*	4.000 *101.60*			603-52-H	603-52-HWLS	603-52
5-1/2 139.7	13.00 to 17.00 *19.35 to 25.30*	4.892 *124.26*	5.044 *128.12*	4.625 *117.48*	1.938 *49.23*		603-55-H	—	603-55
	14.00 to 20.00 *20.83 to 29.76*	4.882 *124.00*	5.991 *152.17*		2.000 *50.800*			603-55-HWLS	603-55-H
	20.00 to 23.00 *29.76 to 34.23*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	1.938 *49.23*		603-57-H	603-57-HWLS	603-57
	9.00 to 13.00 *13.39 to 19.35*	5.044 *128.112*	5.192 *131.88*	4.875 *123.83*	2.375 *60.33*	2-7/8 *EUE 8 RD*	—	—	603-62
	13.00 to 14.00 *19.35 to 20.83*	5.012 *127.30*	5.044 *128.12*	4.500 *114.30*			603-58-H	—	603-58
				4.813 *122.25*			—	—	
	15.50 to 17.00 *23.07 to 25.30*	4.778 *121.36*	4.950 *125.73*	4.750 *120.65*			603-56-H	603-56-HWLS	603-56
	20.00 to 23.00 *29.76 to 34.23*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*			603-59-H	603-5-HWLS	603-59
	23.00 to 26.00 *34.23 to 38.69*	4.548 *115.52*	4.670 *118.62*	4.410 *112.01*			—	*603-54-HWLS*	*603-54*
6-5/8 *168.275*	20.0 to 24.0 *30.3 to 36.3*	5.921 *150.393*	6.094 *154.788*	5.750 *146.050*	2.500 *63.500*	3-1/2 *EU 8 RD*	—		603-68

[1]External Upset
[2]Round
[3]Non Upset End
[4]External Upset End

Arrowset I-X, I-X 10K, and I-X HP Mechanical Packers

Specifications (continued)

Casing				Packer					
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in./*mm*)	1-X 10K and I-X HP	Wireline Set	1-X
6-5/8 *168.3*	20.00 to 24.00 *29.76 to 35.72*	5.921 *150.39*	6.094 *154.79*	5.750 *146.05*	2.500 *63.50*	3-1/2 *EU 8 RD*	—		603-68
7 177.8	17.00 to 26.00 *25.30 to 38.69*	6.276 *159.41*	6.538 *166.07*	6.000 *152.40*	2.485 *63.12*	2-7/8 *EUE 8 RD*	603-72-H	603-70-WLS-HT	603-72
	26.00 to 32.00 *38.69 to 47.62*	6.094 *154.79*	6.004 *152.50*	6.276 *159.41*			603-70-001	603-72-WLS-HT	603-70
	26.0 to 35.0 *38.7 to 52.1*			5.875 *149.23*	2.411 *61.24*		603-70-H	—	
	29.00 to 35.00 *43.16 to 52.09*	5.875 *149.23*	6.184 *157.07*	5.813 *147.65*	2.485 *63.12*		—		603-71
	17.00 to 26.00 *25.30 to 38.69*	6.276 *159.41*	6.538 *166.07*	6.000 *152.400*	3.000 *76.20*	3-1/2 *EUE 8 RD*			603-74
	26.00 to 35.00 *38.69 to 52.09*	6.004 *152.50*	6.276 *159.41*	5.875 *149.23*					603-73
7-5/8 193.675	24.00 to 29.70 *35.72 to 44.20*	6.875 *174.63*	7.025 *178.44*	6.679 *169.65*	2.485 *63.12*	2-7/8 *EU 8 RD*	—	603-76-HWL	603-76
	33.70 to 39.00 *50.15 to 58.04*	6.625 *168.28*	6.765 *171.83*	6.453 *163.91*			603-75-010a	603-75-HWL	603-75
	24.00 to 29.70 *35.72 to 44.20*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*	3.000 *76.20*	3-1/2 *EU 8 RD*	—		603-78
	33.70 to 39.00 *50.15 to 58.04.0*	6.625 *168.28*	6.766 *171.86*	6.453 163.91					603-77
8-5/8 219.075	24.00 to 28.00 *35.72 to 42.00*	8.017 *203.63*	8.097 *205.66*	7.750 *196.85*	2.938 *74.63*		603-85-0HPa	—	603-85
	28.00 to 40.00 *41.67 to 59.53*	7.725 *196.22*	8.017 *203.63*	7.531 *191.29*			603-86-0HPa		603-86
	24.00 to 28.00 *35.72 to 42.00*	8.017 *203.63*	8.097 *205.66*	7.750 *196.85*	4.000 *101.600*	4-1/2 *EUE 8 RD*	—		603-83
	32.00 to 40.00 *47.62 to 59.53*	7.725 *196.22*	7.921 *201.19*	7.500 *190.50*					603-82
9-5/8 244.5	43.50 to 53.50 *64.74 to 79.62*	8.535 *216.79*	8.755 *222.38*	8.265 *209.931*	3.894 *98.91*	3-1/2 *EUE 8 RD*	603-95-H02		603-95
	32.30 to 43.50 *48.07 to 64.74*	8.755 *222.38*	9.001 *228.63*	8.500 *215.90*		4-1/2 *EUE 8 RD*	603-96-H[5]	—	603-96
	43.50 to 53.50 *64.74 to 79.62*	8.535 *216.79*	8.755 *222.38*	8.265 *209.93*			603-95-HP[5]		603-95
							603-95-H01		
10-3/4 273.1	32.75 to 45.50 *49.53 to 67.71*	9.950 *252.73*	10.192 *258.88*	9.687 *246.05*	4.000 *101.60*		—		603-10
13-3/8 339.7	48.00 to 72.00 *71.43 to 107.15*	12.347 *313.61*	12.716 *322.99*	12.000 *304.80*			—		603-13

[5]The 7 5/8-in. (193.675-mm) through 9 5/8-in. (244.475-mm) sizes are rated to a 7,500-psi (52-MPa) differential.

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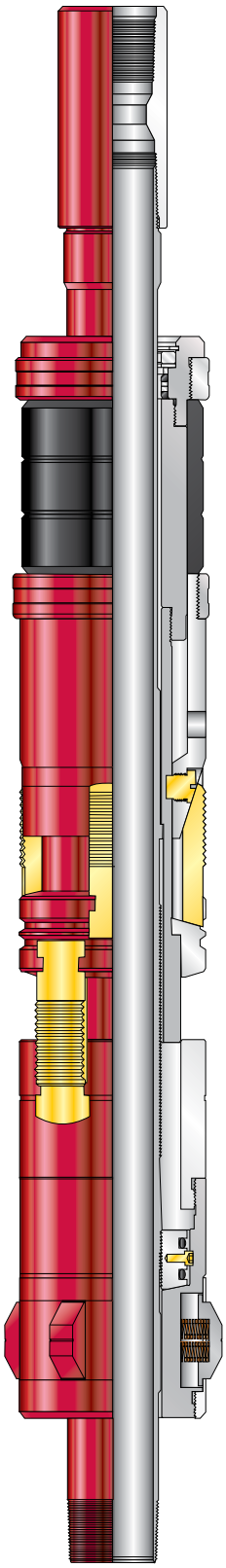
Ultra-Lok Packer



Weatherford's Ultra-Lok packer is a compression-set, retrievable packer that enables tubing to be landed in a tension, compression, or neutral condition. Right rotation sets and releases the packer, providing simple, reliable operation. The internal bypass equalizes the pressure before the slips are unset for safety and reliability.

Applications

- Production
- Injection
- Remedial operations
- Tubing anchor catcher
- Zonal isolation

Features, Advantages and Benefits

- The packer parts are interchangeable with equipment from other manufacturers, reducing cost and inventory.
- The compact design eases snubbing and passage through doglegs.
- The opposed dovetail slips prevent packer movement caused by pressure differentials.
- The internal bypass equalizes the pressure before packer unsetting, providing safety and reliability.

Options

- Coatings can be applied to the packer for corrosion resistance in waterflood applications.
- The addition of Weatherford's T-2 on-off tool and a blanking plug converts the packer to a mechanical bridge plug, which enables tubing disconnection and retrieval without packer retrieval.

Ultra-Lok Packer

Specifications

Casing				Packer		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Thread Connection (in.)	Product Number
		Minimum	Maximum			
4-1/2 *114.3*	11.6 to 13.5 *17.3 to 20.1*	3.920 *99.57*	4.000 *101.60*	3.771 *95.78*	2-3/8 EU[1] 8 RD[2]	43LS.1002
	9.5 to 10.5 *14.1 to 15.6*	4.052 *102.92*	4.090 *103.89*			43LS.1004
						43LS.1003
5 *127.0*	15.0 to 18.0 *22.3 to 26.8*	4.250 *107.95*	4.408 *111.96*	4.125 *104.78*	2-3/8 EU 8 RD	43LS.1006
	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	4.250 *107.95*		43LS.1007
5-1/2 *139.7*	26.0 *38.7*	4.408 *111.96*	4.560 *115.82*	4.250 *107.95*	2-3/8 EU 8 RD	43LS.1007
	20.0 to 23.0 *29.8 to 34.2*	4.625 *117.48*	4.777 *121.34*	4.500 *114.30*		45LS.1002
					2-7/8 EU 8 RD	45LLS.1009
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.892 *124.26*	4.641 *117.88*	2-3/8 EU 8 RD	45LS.1004
					2-7/8 EU 8 RD	45LLS.1006
	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.781 *121.44*	2-3/8 EU 8 RD	45LS.1006
					2-7/8 EU 8 RD	45LLS.1005
6 *152.4*	20.0 to 23.0 *29.8 to 34.2*	5.240 *133.10*	5.352 *135.94*	5.062 *128.57*	2-3/8 EU 8 RD	60LS.1002
	15.0 to 18.0 *22.3 to 26.8*	5.424 *137.77*	5.524 *140.31*	5.156 *130.96*		60LS.1001
6-5/8 *168.3*	24.0 to 32.0 *35.7 to 47.6*	5.675 *144.15*	5.921 *150.39*	5.500 *139.70*	2-3/8 EU 8 RD	46LS.1001
	24.0 *35.7*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*	2-7/8 EU 8 RD	47LS.1001
	17.0 to 20.0 *25.3 to 29.8*	6.049 *153.64*	6.135 *155.83*	5.812 *147.62*		47LS.1004

[1]External upset
[2]Round

Ultra-Lok Packer

Specifications (continued)

Casing				Packer		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Thread Connection (in.)	Product Number
		Minimum	Maximum			
7 *177.8*	38.0 *56.6*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*	2-7/8 EU[1] 8 RD[2]	47LS.1001
					3-1/2 EU 8 RD	47LLS.1001
	32.0 to 35.0 *47.6 to 52.1*	6.004 *152.50*	6.094 *154.79*	5.812 *147.62*	2-7/8 EU 8 RD	47LS.1004
	26.0 to 29.0 *38.7 to 43.2*	6.184 *157.07*	6.276 *159.41*	5.968 *151.59*		47LS.1006
					3-1/2 EU 8 RD	47LLS.1003
	23.0 to 26.0 *34.2 to 38.7*	6.276 *159.41*	6.366 *161.70*	6.078 *154.38*	2-7/8 EU 8 RD	47LS.1008
					3-1/2 EU 8 RD	47LLS.1006
	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	6.281 *159.54*	2-7/8 EU 8 RD	47LS.1010
					3-1/2 EU 8 RD	47LLS.1007
7-5/8 *193.7*	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.765 *171.83*	6.453 *163.91*	2-7/8 EU 8 RD	47LS.1011
					3-1/2 EU 8 RD	47LLS.1012
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*	2-7/8 EU 8 RD	47LS.1014
	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.725 *196.22*	6.812 *173.02*		47LS.1016
8-5/8 *219.1*	44.0 to 49.0 *65.5 to 72.9*	7.511 *190.78*	7.625 *193.68*	7.312 *185.72*	3-1/2 EU 8 RD	49LS.1001
	32.0 to 40.0 *47.6 to 59.5*	7.725 *196.22*	7.921 *201.19*	7.531 *191.29*		49LS.1002
	20.0 to 28.0 *29.8 to 41.7*	8.017 *203.63*	8.191 *208.05*	7.781 *197.64*		49LS.1003
9-5/8 *244.9*	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	8.218 *208.74*	3-1/2 EU 8 RD	51LS.1001
	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.835 *224.41*	8.437 *214.30*		51LS.1002
	29.3 to 36.0 *43.6 to 53.6*	8.921 *226.59*	9.063 *230.20*	8.593 *218.26*		51LS.1009

[1]External upset
[2]Round

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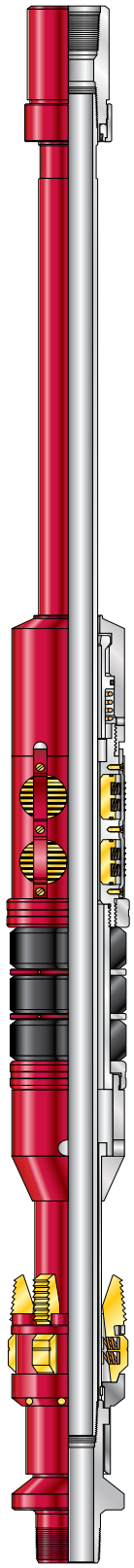
PR-3 Double-Grip Mechanical Production Packer



Weatherford's PR-3 double-grip mechanical production packer is a retrievable packer set by compression that isolates the annulus from the production conduit in most production, stimulation, and testing operations. The field-proven design includes rocker slips and a three-element packing system that helps to ensure correct setting and packoff. A hydraulic holddown controls differential pressure from below.

Applications

- Injection
- Pumping
- Testing and production
- Zonal isolation

Features, Advantages and Benefits

- The packer parts are interchangeable with equipment from other manufacturers, reducing costs and inventory.
- The large bypass enables fluids to equalize quickly and reduces the swabbing effect during run-in and retrieval for faster running.
- The standard one-quarter right turn for packer setting provides simple operation on the rig.
- A differential lock helps to keep the bypass to the mandrel closed and locked during high-pressure operations to maintain integrity and prevent production loss and the need for a workover to pull out of the hole and redress the packer.
- The long-stroke mandrel simplifies fluid circulation without packer release.
- The packer automatically returns to the run-in position when moved up the hole to enable circulation through and around it.

Options

- The packer is available with an optional left turn for setting.

PR-3 Double-Grip Mechanical Production Packer

Specifications

Casing				Packer		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Thread Connection (in.)	Product
		Minimum	Maximum			
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.771 *95.78*	2-3/8 EU[1] 8 RD[2]	43RD.1001
5 *127.0*	15.0 to 18.0 *22.3 to 26.8*	4.250 *107.95*	4.408 *111.96*	4.125 *104.78*	2-3/8 EU 8 RD	43RD.1003
	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	4.250 *107.95*		43RD.1005
5-1/2 139.7	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	2-3/8 EU 8 RD	45RD.1001
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.950 *125.73*	4.641 *117.88*		45RD.1003
	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.781 *121.44*		45RD.1005
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	2-7/8 EU 8 RD	45RDL.1003
	15.0 to 20.0 *22.3 to 29.8*	4.778 *121.36*	4.974 *126.34*	4.641 *117.88*		45RDL.1001
	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.781 *121.44*		45RDL.1002
5-3/4 *146.1*	22.5 *33.5*	4.950 *125.73*	5.190 *131.83*	4.781 *121.44*	2-3/8 EU 8 RD	45RD.1005
6 *152.4*	26.0 *38.7*	4.893 *124.28*	5.044 *128.12*	4.781 *121.44*	2-7/8 EU 8 RD	45RDL.1002
		4.950 *125.73*	5.190 *131.83*		2-3/8 EU 8 RD	45RD.1005
	20.0 to 23.0 *29.8 to 34.2*	5.240 *133.10*	5.352 *135.94*	5.062 *128.57*		60RD.1002
	15.0 to 18.0 *22.3 to 26.8*	5.424 *137.77*	5.524 *140.31*	5.156 *130.96*		60RD.1001
6-5/8 *168.3*	28.0 to 32.0 *41.7 to 47.6*	5.675 *144.15*	5.791 *147.09*	5.490 *139.45*	2-3/8 EU 8 RD	46RD.1002
	24.0 to 28.0 *35.7 to 41.7*	5.791 *147.09*	5.921 *150.39*			46RD.1001
	24.0 *35.7*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*	2-7/8 EU 8 RD	47RD.1001
	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	5.812 *147.62*		47RD.1002

[1]External upset
[2]Round

PR-3 Double-Grip Mechanical Production Packer

Specifications (continued)

Casing				Packer		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Thread Connection (in.)	Product
		Minimum	Maximum			
7 *177.8*	38.0 *56.6*	5.830 *148.08*	5.937 *150.80*	5.656 *143.66*	2-7/8 EU[1] 8 RD[2]	47RD.1001
	32.0 to 35.0 *47.6 to 52.1*	6.004 *152.50*	6.094 *154.79*	5.812 *147.62*		47RD.1002
	26.0 to 29.0 *38.7 to 43.2*	6.184 *157.07*	6.276 *159.41*	5.968 *151.59*		47RD.1003
					3-1/2 EU 8 RD	47RD.1013
	20.0 to 26.0 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*	6.078 *154.38*	2-7/8 EU 8 RD	47RD.1004
	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	6.266 *159.16*		47RD.1005
7-5/8 *193.7*	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.765 *171.83*	6.453 *163.91*	2-7/8 EU 8 RD	47RD.1006
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*		47RD.1007
	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.125 *180.98*	6.812 *173.02*		47RD.1008
9-5/8 *244.5*	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	8.218 *208.74*	3-1/2 EU 8 RD	51RD.1002
	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.835 *224.41*	8.437 *214.30*		51RD.1004
	29.3 to 36.0 *43.6 to 53.6*	8.921 *226.59*	9.063 *230.20*	8.593 *218.26*		51RD.1006

[1]External upset
[2]Round

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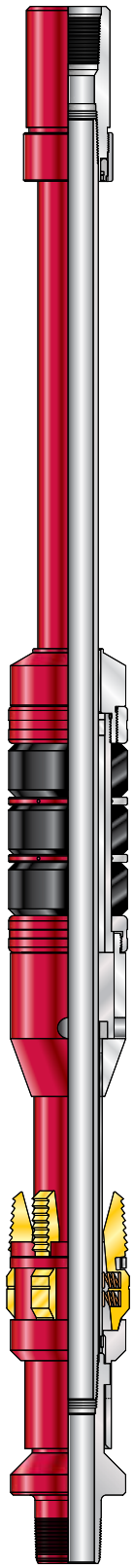
PR-3 Single-Grip Mechanical Production Packer



Weatherford's PR-3 single-grip mechanical production packer is a retrievable packer set by compression that isolates the annulus from the production conduit in most production, stimulation, and testing operations. The field-proven design includes rocker slips and a three-element packing system that helps to ensure correct setting and packoff. A hydraulic holddown controls differential pressure from below.

Applications

- Cementing
- Fracture stimulation
- Testing and production
- Zonal isolation

Features, Advantages and Benefits

- The packer parts are interchangeable with equipment from other manufacturers, reducing costs and inventory.
- The large bypass enables fluids to equalize quickly and reduces the swabbing effect during run-in and retrieval for faster running.
- The standard one-quarter right turn for packer setting provides simple operation on the rig.
- A differential lock helps to keep the bypass to the mandrel closed and locked during high-pressure operations to maintain intergrity and prevent production loss and the need for a workover to pull out of the hole and redress the packer.
- The long-stroke mandrel simplifies fluid circulation without packer release.
- The packer automatically returns to the run-in position when moved up the hole to enable circulation through and around it.

Options

- The packer is available with an optional left turn for setting.

PR-3 Single-Grip Mechanical Production Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Maximum Gauge Ring OD (in./*mm*)	Thread connection Box Up/Pin Down (in.)	Product
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	1.92 *48.8*	3.771 *95.78*	2-3/8 EU[1] 8 RD[2]	43RS.1001
5 *127.0*	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	1.92 *48.8*	4.250 *107.95*	2-3/8 EU 8 RD	43RS.1006
	15.0 to 18.0 *22.3 to 26.8*	4.276 *108.61*	4.408 *111.96*		4.125 *104.78*		43RS.1003
5-1/2 *139.7*	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	1.93 *49.0*	4.781 *121.44*	2-3/8 EU 8 RD	45RS.1005
				2.37 *60.2*		2-7/8 EU 8 RD	45RSL.1002
	17.0 to 20.0 *25.3 to 29.8*	4.778 *121.36*	4.892 *124.26*	1.93 *49.0*	4.641 *117.88*	2-3/8 EU 8 RD	45RS.1003
				2.37 *60.2*		2-7/8 EU 8 RD	45RSL.1001
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	1.93 *49.0*	4.500 *114.30*	2-3/8 EU 8 RD	45RS.1001
5-3/4 *146.1*	22.5 *33.5*	4.990 *126.75*		1.93 *49.0*	4.781 *121.44*	2-3/8 EU 8 RD	45RS.1005
				2.37 *60.2*		2-7/8 EU 8 RD	45RSL.1002
6 *152.4*	26.0 *38.7*	5.132 *130.35*		1.93 *49.0*	4.781 *121.44*	2-3/8 EU 8 RD	45RS.1005
				2.37 *60.2*		2-7/8 EU 8 RD	45RSL.1002
6-5/8 *168.3*	17.0 to 20.0 *25.3 to 29.8*	6.049 *153.64*	6.135 *155.83*	2.37 *60.2*	5.812 *147.62*	2-7/8 EU 8 RD	47RS.1002
	24.0 *35.7*	5.921 *150.39*			5.656 *143.66*		47RS.1001

[1]External upset
[2]Round

PR-3 Single-Grip Mechanical Production Packer

Specifications (continued)

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Maximum Gauge Ring OD (in./*mm*)	Box-Up, Pin-Down Thread Connection (in.)	Product
7 *177.8*	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	2.37 *60.2*	6.281 *159.54*	2-7/8 EU[1] 8 RD[2]	47RS.1005
	20.0 to 26.0 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*		6.078 *154.38*		47RS.1004
	26.0 to 29.0 *38.7 to 43.2*	6.184 *157.07*	6.276 *159.41*		5.968 *151.59*		47RS.1003
	32.0 to 35.0 *47.6 to 52.1*	6.004 *152.50*	6.094 *154.79*		5.812 *147.62*		47RS.1002
	38.0 *56.6*	5.920 *150.37*			5.656 *143.66*		47RS.1001
7-5/8 *193.7*	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.125 *180.98*	2.37 *60.2*	6.812 *173.02*	2-7/8 EU 8 RD	47RS.1008
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*		6.672 *169.47*		47RS.1007
	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.765 *171.83*		6.453 *163.91*		47RS.1006
9-5/8 *244.5*	29.3 to 36.0 *43.6 to 53.6*	8.921 *226.59*	9.063 *230.20*	3.94 *100.1*	8.593 *218.26*	3-1/2 EU 8 RD	51RS.1006
	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.835 *224.41*		8.437 *214.30*		51RS.1003
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*		8.218 *208.74*		51RS.1001

[1]External upset
[2]Round

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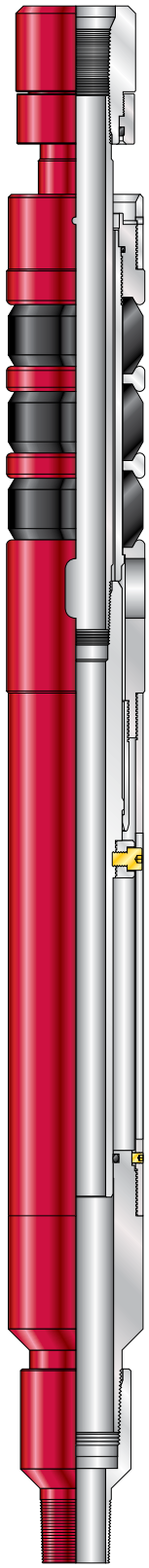
Arrowsnap | Compression Snap-Set Production Packer



Weatherford's Arrowsnap I compression snap-set production packer is run above a retrievable or permanent sealbore packer to isolate a zone bewteen them for the treatment, injection, production, and isolation of casing holes or perforations. The simple design and straight pickup release make the packer ideal for isolating zones in low-pressure applications.

The packer can be set without rotation but can be keyed for rotation, if required, to set another packer below it.

Applications

- Low-pressure wells
- Applications prohibiting tubing rotation
- Isolating casing holes and perforations
- Treating and injecting multiple zones

Features, Advantages and Benefits

- The simple design makes the packer cost effective to deploy for various applications.
- The internal fluid-bypass port enables the annulus to fill while running to depth, reducing running time.
- The collet snap latch enables the packer to be set without rotation, saving rig time.

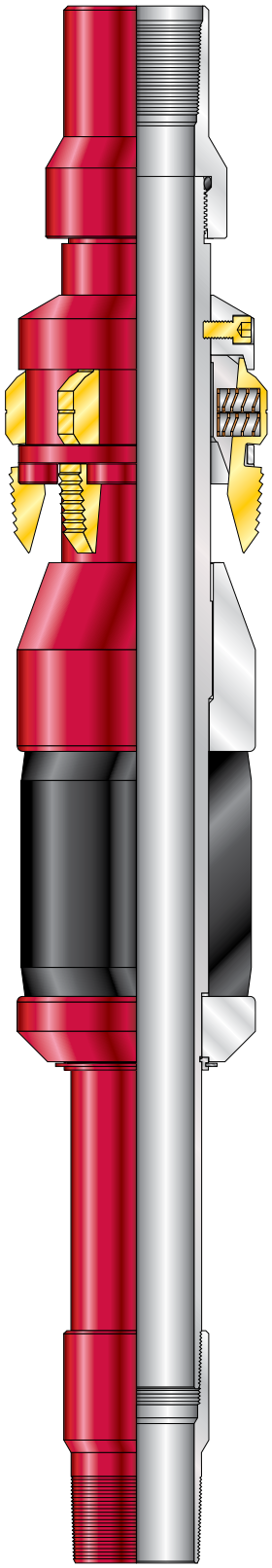
Arrowsnap | Compression Snap-Set Production Packer

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product
		Minimum	Maximum				
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.750 *95.25*	1.937 *49.20*	2-3/8 EU[1] 8 RD[2]	635-45
5-1/2 *139.7*	13.0 to 20.0 *19.3 to 29.8*	4.778 *121.36*	5.044 *128.12*	4.625 *117.48*	2.375 *60.33*	2-7/8 EU 8 RD	635-55
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	2.000 *50.80*	2-3/8 EU 8 RD	635-57
					2.375 *60.33*	2-7/8 EU 8 RD	635-59
	13.0 to 20.0 *19.3 to 29.8*	4.778 *121.36*	5.044 1 *28.12*	4.625 *117.48*			635-56
7 *177.8*	17.0 to 26.0 *25.3 to 38.7*	6.276 *159.41*	6.538 *166.07*	6.000 *152.40*	2.500 *63.50*	2-7/8 EU 8 RD	635-72
					3.000 *76.20*	3-1/2 EU 8 RD	635-73
9-5/8 *244.5*	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.835 *224.41*	8.375 *212.73*	3.000 *76.20*	3-1/2 EU 8 RD	635-97

[1]External upset
[2]Round

PAD-1 and PAD-1L Tension Packers



Weatherford's PAD-1 and PAD-1L tension packers are tension-set, single-grip, retrievable production packers that isolate the annulus in low-pressure production, water injection, and pressure work.

The J-slot provides simple packer setting and release and reliable operation on the rig. The compact, cost-effective packer uses three release methods to ensure retrievability. The set-down weight can be rotated one-fourth turn to the right, the top sub can be rotated similarly to the safety joint, and a shear-ring, straight-pull release can be used.

The PAD-1L has the same features as the PAD-1 and a larger bore.

Applications

- Injection wells
- Shallow, low-pressure production
- Well stimulation, testing, and other pressure operations

Features, Advantages and Benefits

- The short design and simple one-fourth turn for setting and releasing make the packer easy to run.
- The full opening enables maximum well-fluid circulation through the packer during run-in.
- The field-proven rocker slips and one-piece packing element help ensure a correct setting and packoff.
- The large-bore PAD-1L enables the maximum flow rate from the well.
- The right safety-joint emergency release provides a reliable, inexpensive tubing-string release if necessary.
- Both packers can be left in the well as production packers, avoiding rig time for retrieval.

PAD-1 and PAD-1L Tension Packers

Specifications

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Box-and-Pin Thread Connection (in.)	Product Number	
		Minimum	Maximum			PAD-1	PAD-1L
4 *101.6*	9.5 to 11.6 *14.1 to 17.3*	3.428 *87.07*	3.548 *90.12*	3.285 *83.44*	2-3/8 EU[1] 8 RD[2]	41AD.1001	—
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.771 *95.78*	2-3/8 EU 8 RD	43AD.1002	—
5 *127.0*	11.5 to 15.0 *17.1 to 22.3*	4.408 *111.96*	4.560 *115.82*	4.250 *107.95*	2-3/8 EU 8 RD	43AD.1015	—
	15.0 to 18.0 *22.3 to 26.8*	4.276 *108.61*	4.408 *111.96*	4.125 *104.78*		43AD.1005	
5-1/2 *139.7*	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.781 *121.44*	2-3/8 EU 8 RD	45AD.1021	—
	13.0 to 17.0 *19.3 to 25.3*	4.892 *124.26*		4.750 *120.65*	2-7/8 EU 8 RD	—	45ADL.1002
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.950 *125.73*	4.641 *117.88*	2-3/8 EU 8 RD	45AD.1013	—
	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*		45AD.1005	
5-3/4 *146.1*	22.5 *33.5*	4.950 *125.73*	5.190 *131.83*	4.781 *121.44*	2-3/8 EU 8 RD	45AD.1021	—
6 *152.4*	26.0 *38.7*	4.950 *125.73*	5.190 *131.83*	4.781 *121.44*	2-3/8 EU 8 RD	45AD.1021	—
6-5/8 *168.3*	17.0 to 20.0 *25.3 to 29.8*	6.049 *153.64*	6.135 *155.83*	5.812 *147.62*	2-7/8 EU 8 RD	47AD.1008	—
	24.0 *35.7*	5.830 *148.08*	5.921 *150.39*	5.656 *143.66*		47AD.1004	

[1]External upset
[2]Round

PAD-1 and PAD-1L Tension Packers

Specifications (continued)

Casing				Packer			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Box-and-Pin Thread Connection (in.)	Product Number	
		Minimum	Maximum			PAD-1L	PAD-1L
7 *177.8*	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	6.266 *159.16*	2-7/8 EU 8 RD	47AD.1020	—
					3-1/2 EU 8 RD	—	47ADL.1002
					4-1/2 LTC[3] × 4-1/2 STC[4]		47ADL.1004
	20.0 to 26.0 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*	6.078 *154.38*	2-7/8 EU 8 RD	47AD.1016	—
	23.0 to 29.0 *34.2 to 43.2*	6.184 *157.07*	6.366 *161.70*	5.968 *151.59*	3-1/2 EU 8 RD	—	47ADL.1001
					4-1/2 LTC × 4-1/2 STC		47ADL.1003
	26.0 to 29.0 *38.7 to 43.2*		6.276 *159.41*		2-7/8 EU 8 RD	47AD.1012	—
	32.0 to 35.0 *47.6 to 52.1*	6.044 *153.52*	6.094 *154.79*	5.812 *147.62*		47AD.1008	
	38.0 *56.6*	5.830 *148.08*	5.921 *150.39*	5.656 *143.66*		47AD.1004	
7-5/8 *193.7*	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.125 *180.98*	6.812 *173.02*	2-7/8 EU 8 RD	47AD.1032	—
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*		47AD.1028	
	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.765 *171.83*	6.453 *163.91*		47AD.1024	
9-5/8 *244.5*	29.3 to 36.0 *43.6 to 53.6*	8.921 *226.59*	9.063 *230.20*	8.593 *218.26*	3-1/2 EU 8 RD	51AD.1018	—
	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.825 *224.16*	8.437 *214.30*		51AD.1010	
	47.0 to 53.5 *69.9 to 79.6*	8.535 *216.79*	8.681 *220.50*	8.218 *208.74*		51AD.1002	
					4-1/2 LTC 8 RD	51AD.1028	

[3]Long casing thread
[4]Short casing thread

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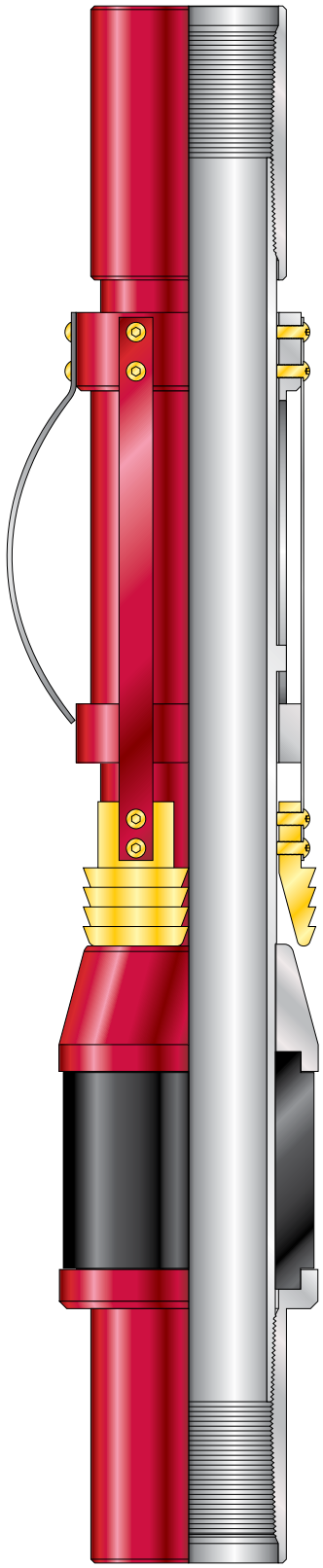
440 Casing Packer



Weatherford's 440 casing packer is a single-grip, retrievable packer for isolating the annulus from the production conduit in most low-pressure production, water-injection, and pressure applications. The versatile packer is both compact and cost effective, and the full opening provides maximum running efficiency.

Applications

- Low-pressure production operations
- Well stimulation, testing, and other pressure operations
- Injection wells
- Production packer

Features, Advantages and Benefits

- The packer can be used in several applications, reducing inventory costs.
- The long lasting, corrosion-resistant stainless-steel drag springs enable the packer to be set with a one-quarter turn, preventing rotation relative to the casing.
- The widespread, deep-cut slip wickers securely anchor the packer without damaging the casing.

440 Casing Packer

Specifications

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product	
		Minimum	Maximum				Single Element	Double Element
4-1/2 *114.3*	15.10 *22.47*	3.750 *95.25*	4.000 *101.60*	3.516 *89.31*	1.922 *48.82*	2-3/8 EU[1] 8 RD[2]	440-35	—
	9.50 to 13.50 *14.14 to 20.09*	3.920 *99.57*	4.090 *103.89*	3.766 *95.66*	2.484 *63.09*	2-7/8 EU 8 RD	440-45	—
5 *127.0*	11.50 to 18.00 *17.11 to 26.79*	4.276 *108.61*	4.560 *115.82*	4.141 *105.18*	2.484 *63.09*	2-7/8 NU[3] 10 RD	440-50	—
5-1/2 *139.7*	20.00 to 23.00 *29.76 to 34.23*	4.670 *118.62*	4.788 *121.62*	4.516 *114.71*	2.984 *75.79*	3-1/2 EU 8 RD	440-54	—
	13.00 to 17.00 *19.35 to 25.30*	4.892 *124.26*	5.044 *128.12*	4.641 *117.88*		3-1/2 NU 10 RD	440-55	—
						3-1/2 EU 8 RD up 3-1/2 NU 10 RD down	440-55-001	—
				4.650 *118.11*	3.484 *88.49*	4 NU 8 RD	440-56	—
6 *152.4*	18.00 to 20.00 *26.79 to 29.76*	5.352 *135.94*	5.424 *137.77*	5.193 *131.90*	3.484 *88.49*	4 NU 8 RD	440-60	—
6-5/8 *168.3*	20.00 to 28.00 *29.76 to 41.67*	5.791 *147.09*	6.049 *153.64*	5.641 *143.28*	3.984 *101.19*	4 EU 8 RD	440-64	—
						4-1/2 LTC[4] 8 RD	440-65	—
7 *177.8*	17.00 to 38.00 *25.30 to 56.55*	5.920 *150.37*	6.538 *166.07*	5.766 *146.46*	3.984 *101.19*	4-1/2 LTC 8 RD	440-70	440-70-001
	20.00 to 26.00 *29.76 to 38.69*	6.276 *159.41*	6.456 *163.98*	6.125 *155.58*	4.484 *113.89*	5 LTC 8 RD	440-74	—
	17.00 to 23.00 *25.30 to 34.23*	6.366 *161.70*	6.538 *166.07*	6.204 *157.58*			440-73	—
7-5/8 *193.7*	20.00 to 33.70 *29.76 to 50.15*	6.765 *171.83*	7.125 *180.98*	6.641 *168.68*	3.984 *101.19*	4-1/2 LTC 8 RD	440-75	—
				6.516 *165.51*	4.984 *126.59*	5-1/2 LTC 8 RD	440-76	—

[1]External upset
[2]Round
[3]Nonupset
[4]Long casing thread

440 Casing Packer

Specifications (continued)

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product	
		Minimum	Maximum				Single Element	Double Element
8-5/8 *219.1*	24.00 to 40.00 *35.72 to 59.53*	7.725 *196.22*	8.097 *205.66*	7.516 *190.91*	3.984 *101.19*	4-1/2 LTC 8 RD	—	440-83
					4.984 *126.59*	5-1/2 LTC 8 RD	440-85	—
	29.00 to 36.00 *43.16 to 53.57*	7.825 *198.76*		7.630 *193.80*	5.984 *151.99*	6-5/8 LTC 8 RD	440-86	—
9-5/8 *244.5*	43.80 to 53.50 *65.18 to 79.62*	8.535 *216.79*	8.755 *222.38*	8.266 *209.96*	3.984 *101.19*	4-1/2 LTC 8 RD	440-96	—
	43.00 to 53.00 *63.99 to 78.87*				6.484 *164.69*	7 LTC 8 RD	440-94	—
	32.60 to 43.50 *48.51 to 64.74*	8.755 *222.38*	9.001 *228.63*	8.516 *216.31*	5.984 *151.99*	6-5/8 LTC 8 RD	440-97	—
					6.484 *164.69*	7 LTC 8 RD	440-95	440-95-003
10-3/4 *273.1*	32.75 to 55.50 *48.74 to 82.59*	9.760 *247.90*	10.192 *258.88*	9.500 *241.30*	6.484 *164.69*	7 LTC 8 RD	440-10	—
11-3/4 *298.5*	42.00 to 54.00 *62.50 to 80.36*	10.880 *276.35*	11.084 *281.53*	10.641 *270.28*	7.984 *202.79*	8-5/8 LTC 8 RD	440-11	—
13-3/8 *339.7*	48.00 to 72.00 *71.43 to 107.15*	12.347 *313.61*	12.715 *322.96*	12.016 *305.21*	8.984 *228.19*	9-5/8 LTC 8 RD	—	440-13
16 *406.4*	65.00 to 84.00 *96.73 to 125.01*	15.010 *381.25*	15.250 *387.35*	14.750 *374.65*	8.984 *228.19*	9-5/8 LTC 8 RD	440-16	—
				14.716 *373.79*	12.484 *317.09*	13-3/8 STC[5] 8 RD	440-17	—

[5]Short casing thread

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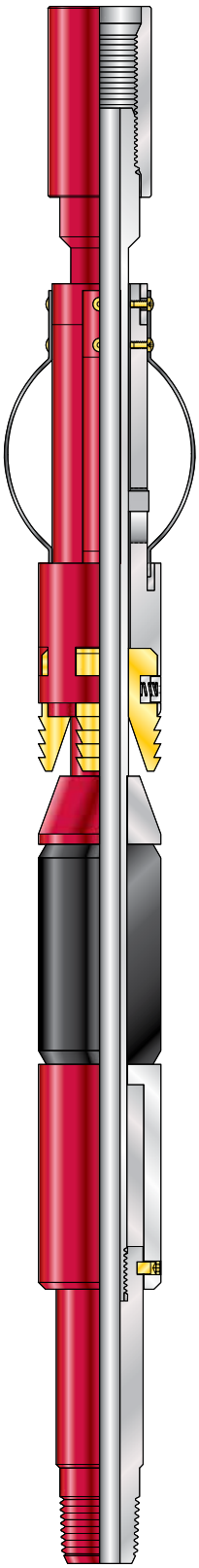
SL Shear Production Packer



Weatherford's SL shear production packer is a retrievable packer set by tension that isolates the annulus from the production conduit in most low-pressure production, water-injection, and pressure-work applications. A one-quarter right turn of the tubing string sets the compact, cost-effective, single-grip packer, which has an auto-release J-body. Setting down weight automatically rejays the packer into the running procedure for release.

Applications

- Low-pressure production
- Well stimulation, testing, and other pressure operations
- Injection wells

Features, Advantages and Benefits

- The packer can be used in several applications, reducing inventory costs.
- The full opening enables maximum well-fluid circulation through the packer during run-in.
- The widespread, deep-cut slip wickers securely anchor the packer without damaging the casing.
- The stainless-steel drag springs prevent rotation for reliable J-body operation.
- The straight-pickup shear release provides simple operation unaffected by differential pressure.
- The right safety-joint emergency release provides a reliable, inexpensive tubing-string release if necessary.

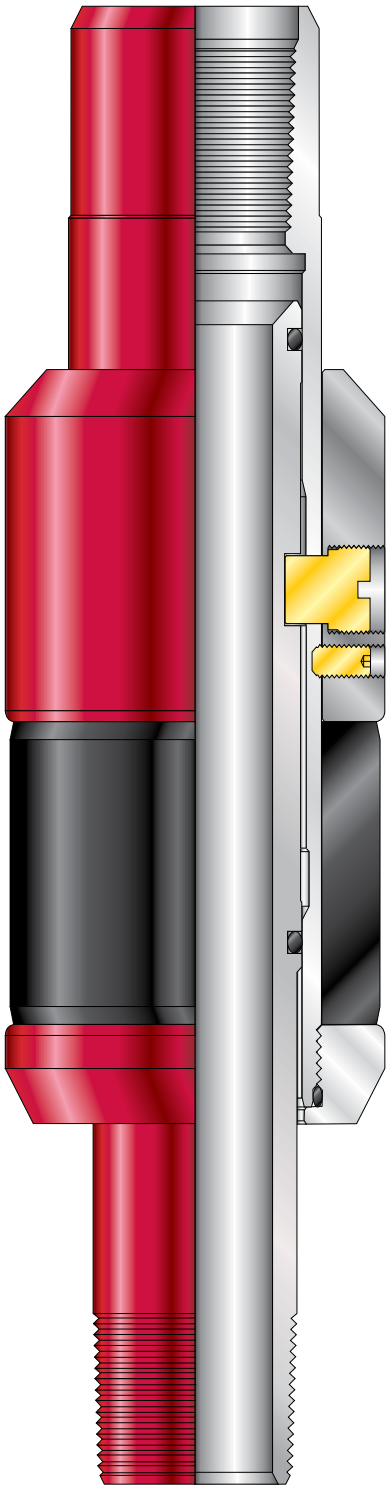
SL Shear Production Packer

Specifications

OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product
		Minimum	Maximum				
2-7/8 *73.0*	6.4 to 6.5 *9.5 to 9.7*	2.375 *60.33*	2.441 *62.00*	2.250 *57.15*	0.750 *19.05*	1 EU[1] 10 RD[2]	412-25
3-1/2 *88.9*	7.7 to 10.2 *11.5 to 15.2*	2.922 *74.22*	3.068 *77.93*	2.781 *70.64*	1.500 *38.10*	1.900 EU 10 RD	412-35
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.755 *95.38*	1.985 *50.42*	2-3/8 EU 8 RD	412-45
	15.1 to 16.6 *22.5 to 24.7*	3.754 *95.35*	3.826 *97.18*	3.500 *88.90*	1.938 *49.23*		412-42
11-3/4 *298.5*	38.0 to 60.0 *56.6 to 89.3*	10.772 *273.61*	11.150 *283.21*	10.375 *263.53*	2.500 *63.50*	2-7/8 EU 8 RD	412-11
13-3/8 *339.7*	48.0 to 72.0 *71.4 to 107.1*	12.347 *313.61*	12.715 *322.96*	12.000 *304.80*	3.000 *76.20*	3-1/2 EU 8 RD	412-13

[1]External upset
[2]Round

PC-1 Tandem Tension Packer



Weatherford's PC-1 tandem tension packer is a tension-set, retrievable packer without slips that isolates the annulus from the production conduit. The compact, inexpensive packer is ideal for wells in which set-down weight is unavailable. The packer can also be run in tandem above any packer against which an upstrain can be pulled.

Applications

- Wells in which set-down weight is unavailable
- Multiple-zone, single-string waterflood installations

Features, Advantages and Benefits

- The built-in unloader provides well-fluid circulation through and around the packer during run-in, improving efficiency.
- The packer can be set without tubing rotation when pinned in the unjayed position, enabling easy rig operation.

Options

- A large bore is available for 7-in. (177.8-mm) casing.

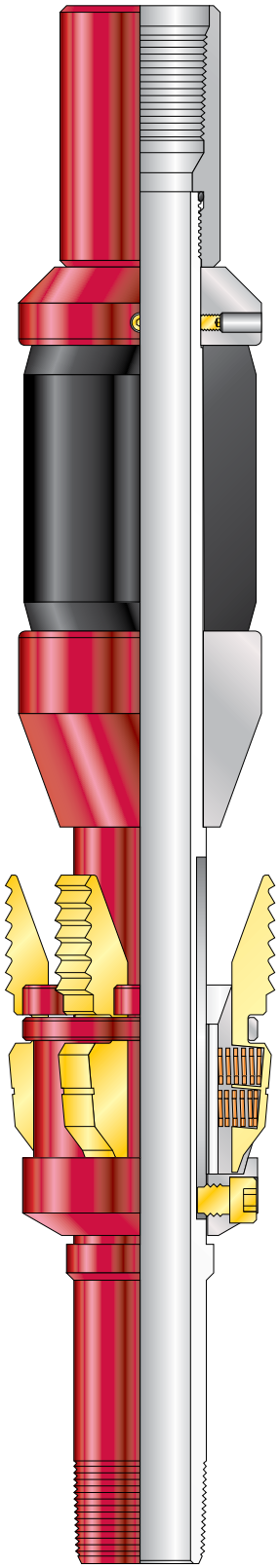
PC-1 Tandem Tension Packer

Specifications

Casing				Packer[1]		
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Thread Connection (in.)	Product
		Minimum	Maximum			
2-7/8 *73.0*	6.4 to 6.5 *9.5 to 9.7*	2.375 *60.33*	2.441 *62.00*	2.250 *57.15*	1.660 EU[2] 10 RD[3]	437-25-006
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.750 *95.25*	2-3/8 EU 8 RD	437-45
5 *127.0*	11.5 to 15.0 *17.1 to 22.3*	4.276 *108.61*	4.408 *111.96*	4.125 *104.78*	2-3/8 EU 8 RD	437-50
5-1/2 *139.7*	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.784 *121.51*	2-3/8 EU 8 RD	45PC.1001
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.950 *125.73*	4.644 *117.96*		45PC.1003
7 *177.8*	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	6.266 *159.16*	2-7/8 EU 8 RD	47PC.1002
	20.0 to 29.0 *29.8 to 43.2*	6.184 *157.07*	6.456 *163.98*	5.968 *151.59*	3-1/2 EU 8 RD	47PCL.1001
	23.0 to 26.0 *34.2 to 38.7*	6.276 *159.41*	6.366 *161.70*	6.120 *155.45*	2-7/8 EU 8 RD	47PC.1003
	26.0 to 29.0 *38.7 to 43.2*	6.184 *157.07*	6.276 *159.41*	5.968 *151.59*		47PC.1001
7-5/8 *193.7*	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.125 *180.98*	6.812 *173.02*	2-7/8 EU 8 RD	47PC.1004
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*		47PC.1005
9-5/8 *244.5*	29.3 to 36.0 *43.6 to 53.6*	8.921 *226.59*	9.063 *230.20*	8.593 *218.26*	3-1/2 EU 8 RD	51PC.1002
	40.0 to 47.0 *59.5 to 69.9*	8.681 *220.50*	8.835 *224.41*	8.437 *214.30*		51PC.1001

[1]Rated to 5,000 psi (34,474 kPa) from below at temperatures up to 275°F (135°C)
[2]External upset
[3]Round

PG Set-Down Packer



Weatherford's PG set-down packer is a retrievable packer set by compression that isolates the annulus from the production conduit in most low-pressure applications. A J-slot provides simple packer setting and release and reliable operation on the rig. The compact, inexpensive packer has a safety joint for tubing-string removal, if necessary.

Applications

- Low-pressure production
- Production packer
- Well stimulation, testing, and other pressure operations when used with an unloader and hold-down mechanism

Features, Advantages and Benefits

- The packer parts are interchangeable with equipment from other manufacturers, reducing costs and inventory.
- A simple one-quarter right turn and the set-down weight set the packer, making it easy to run.
- The drag block and rocker slip design, field proven for more than 60 years, ensures a positive set and easy release.
- The right safety-joint emergency release provides a reliable, inexpensive tubing-string release if necessary.
- The packer can be left in the well as a production packer, avoiding rig time for retrieval.

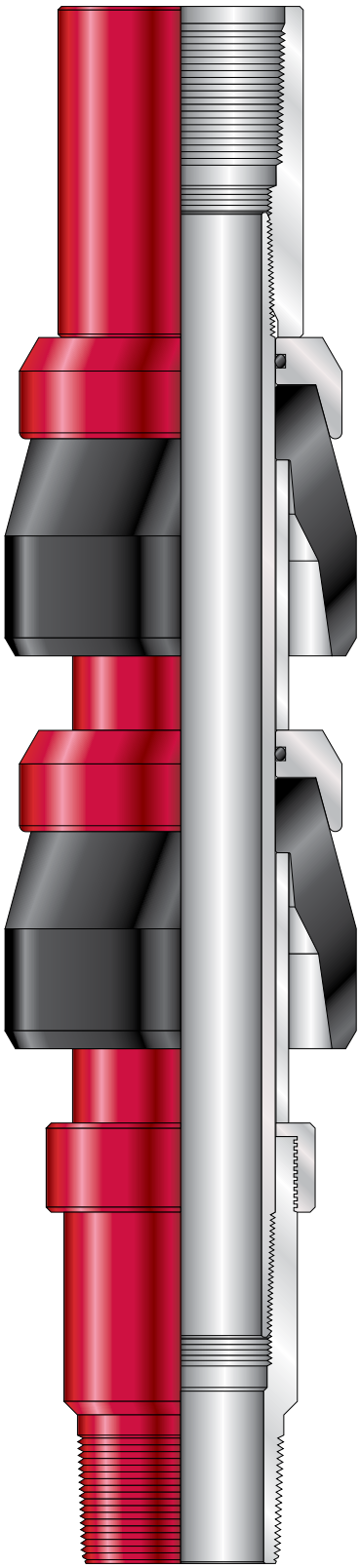
PG Set-Down Packer

Specifications

Casing				Packer[1]		
OD (in./*mm*)	Weight (lb/ft, kg/m)	ID (in./*mm*)		Maximum OD (in./*mm*)	Standard Box-and-Pin Thread Connection (in.)	Product
		Minimum	Maximum			
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.771 *95.78*	2-3/8 EU[2] 8 RD[3]	43SD.1001
5 *127.0*	15.0 to 18.0 *22.3 to 26.8*	4.276 *108.61*	4.408 *111.96*	4.125 *104.78*	2-3/8 EU 8 RD	43SD.1002
5-1/2 *139.7*	20.0 to 23.0 *29.8 to 34.2*	4.670 *118.62*	4.778 *121.36*	4.500 *114.30*	2-3/8 EU 8 RD	45SD.1001
	15.5 to 20.0 *23.1 to 29.8*	4.778 *121.36*	4.950 *125.73*	4.641 *117.88*		45SD.1003
	13.0 to 15.5 *19.3 to 23.1*	4.950 *125.73*	5.044 *128.12*	4.781 *121.44*		45SD.1005
5-3/4 *146.1*	22.5 *33.5*	4.990 *126.75*		4.781 *121.44*	2-3/8 EU 8 RD	45SD.1005
6-5/8 *168.3*	24.0 *35.7*	5.921 *150.39*		5.656 *143.66*	2-7/8 EU 8 RD	47SD.1001
	17.0 to 20.0 *25.3 to 29.8*	6.049 *153.64*	6.135 *155.83*	5.812 *147.62*		47SD.1002
7 *177.8*	38.0 *56.6*	5.920 *150.37*		5.656 *143.66*	2-7/8 EU 8 RD	47SD.1001
	32.0 to 35.0 *47.6 to 52.1*	6.004 *152.50*	6.049 *153.64*	5.812 *147.62*		47SD.1002
	26.0 to 29.0 *38.7 to 43.2*	6.184 *157.07*	6.276 *159.41*	5.968 *151.59*		47SD.1003
	20.0 to 26.0 *29.8 to 38.7*	6.276 *159.41*	6.456 *163.98*	6.078 *154.38*		47SD.1004
	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*	6.266 *159.16*		47SD.1005
7-5/8 *193.7*	33.7 to 39.0 *50.2 to 58.0*	6.625 *168.28*	6.765 *171.83*	6.453 *163.91*	2-7/8 EU 8 RD	47SD.1006
	24.0 to 29.7 *35.7 to 44.2*	6.875 *174.63*	7.025 *178.44*	6.672 *169.47*		47SD.1007
	20.0 to 24.0 *29.8 to 35.7*	7.025 *178.44*	7.125 *180.98*	6.812 *173.02*		47SD.1008

[1]For temperatures up to 275°F (135°C)
[2]External upset
[3]Round

Cup Packer



Weatherford's cup packer isolates casing leaks, zones, and injection wells in shallow conditions cost effectively and efficiently. Available with compact single or double cups, the packer can be installed, usually in multiples of two, with the cups facing toward or away from the center, depending on the requirement. Opposed double cups isolate pressure from both directions simultaneously.

Applications

- Shallow, low-pressure production
- Injection wells
- Thermal steamflood and cyclic steam injection
- Casing-leak isolation

Features, Advantages and Benefits

- The standard tubing threads ease makeup and spacing-out with standard pup joints.
- The full-bore opening provides access for wireline tools and other equipment.

Options

- The packer is available with cups of ethylene propylene diene monomer for thermal applications.

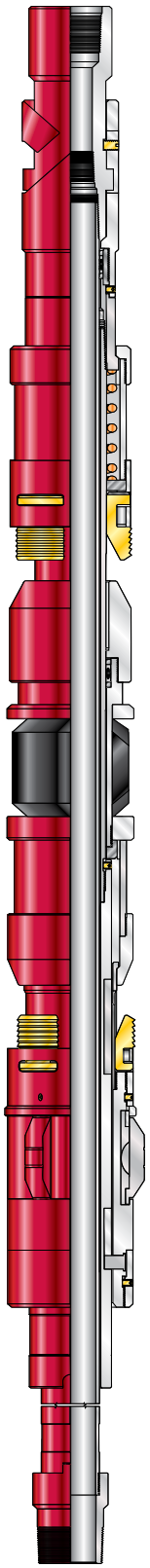
Cup Packer

Specifications

Casing		Packer				
OD (in./*mm*)	**Weight (lb/ft, *kg/m*)**	**Standard Thread Connection (in.)**	**Maximum OD (in./*mm*)**	**Minimum ID (in./*mm*)**	**Single Cup**	**Double Cup**
3-1/2 *88.9*	9.2 to 9.3 *13.7 to 13.8*	2-3/8 EU[1] 8 RD[2]	3.000 *76.20*	1.485 *37.72*	—	439-35
4-1/2 *114.3*	9.5 to 11.6 *14.1 to 17.3*	2-3/8 EU 8 RD	4.257 *108.13*	1.922 *48.82*	439-45-000	439-45
		2-7/8 EU 8 RD		2.485 *63.12*	—	439-47
5-1/2 *139.7*	13.0 to 15.0 *19.3 to 22.3*	2-7/8 EU 8 RD	5.105 *129.67*	2.436 *61.87*	—	439-56-001
	13.0 to 17.0 *19.3 to 25.3*	2-3/8 EU 8 RD	4.500 *114.30*	1.995 *50.67*		439-55-002
			4.625 *117.48*	2.000 *50.80*		439-55
		2-7/8 EU 8 RD		2.441 *62.00*		439-56
	17.0 to 23.0 *25.3 to 34.2*		4.952 *125.78*	2.485 *63.12*		439-59
7 *177.8*	17.0 to 20.0 *25.3 to 29.8*	2-7/8 EU 8 RD	6.531 *165.89*	2.485 *63.12*	—	439-70
		3-1/2 EU 8 RD		2.985 *75.82*	439-73-001	—
	26.0 to 29.0 *38.7 to 43.2*	2-7/8 EU 8 RD	6.310 *160.27*	2.485 *63.12*	—	439-71-011

[1]External upset
[2]Round

ArrowTherm Mechanical-Set Thermal Packer



Weatherford's ArrowTherm mechanical-set, thermal packer isolates the annulus from the production conduit for high-temperature steam injection, cyclic steam stimulation, and geothermal production wells. The double-grip packer requires only a one-quarter turn to set and release it. The rotational safety release disengages the expansion joint from the packer.

The standard packing system is rated to 550°F (288°C). The packer holds up to a 3,000-psi (20,684-kPa) pressure differential from above and below.

Applications

- High-temperature steam injection
- Cyclic steam stimulation
- Geothermal production

Features, Advantages and Benefits

- The flexible design enables the packer to be used in various completion requirements.
- Wire-mesh debris barriers on the expansion joint eliminate seal extrusion.
- The field-adjustable shear safety release enables retrieval if the packer cannot be retrieved normally, saving rig time.

Options

- Optional element and seal configurations are available up to 650°F (343°C).
- An optional port provides circulation when the expansion joint is stroked out.
- An optional integral expansion joint eliminates the need for a separate expansion joint above the packer.

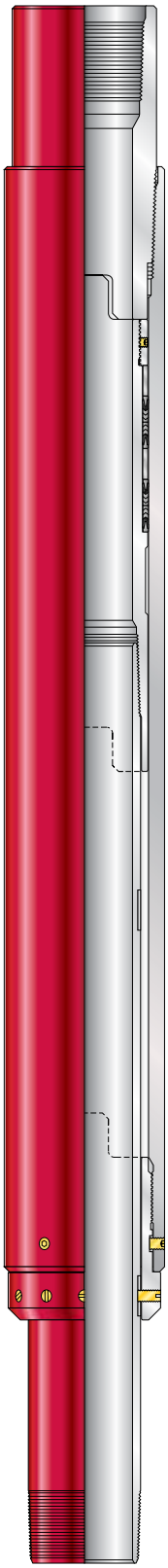
ArrowTherm Mechanical-Set Thermal Packer

Specifications

Casing				Packer				
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Gauge Ring OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Stroke (ft/*m*)	Product Number
		Minimum	Maximum					
7 *177.8*	17.0 to 26.0 *25.3 to 38.7*	6.184 *157.10*	6.366 *161.70*	6.000 *152.40*	2.980 *75.69*	3-1/2 EUE[1] 8 RD[2]	N/A	95.280.08.07
	17.0 to 26.0 *25.3 to 38.7*	6.276 *159.41*	6.538 *166.07*	6.078 *154.38*	2.980 *75.69*		N/A	741-74
		6.276 *159.41*	6.538 *166.07*	6.078 *154.38*	3.469 *88.11*	4-1/2 EUE 8 RD	N/A	1249222
Optional Integral Expansion Joint								
6-5/8 *168.3*	24.0 to 32.0 *35.7 to 47.6*	5.675 *144.15*	5.921 *150.39*	5.500 *139.70*	2.484 *63.09*	2-7/8 EUE 8 RD	25 *7.6*	740-65-025
7 *177.8*	17.0 to 26.0 *25.3 to 38.7*	6.276 *159.41*	6.538 *166.07*	6.000 *152.40*	2.500 *63.50*	2-7/8 EUE 8 RD	10 *3.0*	740-74
		6.280 *159.51*	6.540 *166.12*		2.938 *74.63*	3-1/2 EUE 8 RD	25 *7.6*	740-74A-025
								740-74A-025SP
							15 *4.6*	740-74A-015178

[1]External upset end
[2]Round

Clutch-Style Thermal Expansion Joint



Model C

Weatherford's clutch-style thermal expansion joint, model C, compensates for tubing movement resulting from temperature variations in the well. The joint reduces the stresses transmitted to packers in single-string, high-temperature, high-pressure completions during injection, production, shut-in, and stimulation. The clutch at the top and bottom of the stroke facilitates the setting and retrieval of a production packer.

The joint has a swivel that enables the tubing to rotate, preventing excessive torque on the tubing connections. The joint can be shear-pinned in the open or closed position for deployment in the well. Premium thermal seal stacks maintain pressure up to 650°F (343°C) and 2,500 psi (17 MPa).

Applications

- Single-string completions
- High-temperature steam injection
- Cyclic steam injection
- Geothermal production
- Deviated and horizontal wells

Features, Advantages and Benefits

- The joint can be pressure-tested at the surface to ensure seal integrity.
- The joint design enables it to be stacked for additional stroke requirements.
- The rugged construction provides high tensile strength for maximum durability.
- The full-bore construction provides an unrestricted ID that enables the maximum flow rate.

Options

- Alternate strokes are available on order.
- Standard EUE, nonupset (NU), and premium connections are available on order.

Clutch-Style Thermal Expansion Joint

Specifications

Tubing Size[1] (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Stroke[2] (ft/*m*)	Thread Connection	Product Number
3-1/2 *88.9*	5.010 *127.25*	2.969 *75.41*	20 *6.0*	3-1/2 EUE[1]	503-35-025T
4-1/2 *114.3*	6.060 *153.92*	3.990 *101.35*	5 *1.5*	4-1/2 LTC[2]	503-45-005T

[1]External upset end
[2]Long thread and coupling

Splined Thermal Expansion Joint

Weatherford's splined thermal expansion joint compensates for tubing movement resulting from temperature and pressure variations during production, shut-in, or stimulation in single-string completions. The spline enables the tubing to transmit torque throughout the stroke length of the joint. A premium seal system maintains the pressure seal.

Applications

- Single-string completions
- High-temperature steam injection
- Cyclic steam injection
- Geothermal production
- Deviated and horizontal wells

Features, Advantages and Benefits

- The joint can be pressure tested at the surface to ensure seal integrity.
- The joint design enables it to be stacked for additional stroke requirements, reducing inventory and saving rig time.
- The rugged construction provides high tensile strength for maximum durability.
- The full-bore construction provides an unrestricted ID that enables the maximum flow rate.

Options

- Premium seal stacks are available in materials compatible with fluid environments.
- Long-life seal systems are available.

Splined Thermal Expansion Joint

Specifications

Tubing Size[1] (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Stroke[2] (ft/*m*)	Product Number
2-3/8 *60.325*	3.260 *82.804*	1.990 *50.546*	10 *3*	00734840
2-7/8 *73.025*	4.010 *101.854*	2.370 *60.198*		00735048

[1]EUE connections are standard. NU and premium connections are available.
[2]Alternate strokes are available on special order.

Expansion Swivel Joint

Model A

Weatherford's expansion swivel joint, model A, compensates for tubing movement resulting ftrom temperature and pressure variations during production, shut-in, and stimulation in single- and dual-string completions. The joint enables the tubing to rotate, facilitating makeup of the connections. A premium seal system maintains the pressure seal.

Applications

- Single- and dual-string hydraulic packer installations
- Retrievable and permanent installations
- Deviated and horizontal wells

Features, Advantages and Benefits

- The expansion swivel joint can be pressure tested at the surface to ensure seal integrity.
- The pressure rating of the joint is compatible with the tubing, providing pressure integrity during production, shut-in, and stimulation.
- The joint can be pinned in an open, closed, or midstroke position, enabling selection of the correct stroke before deployment to avoid damage from overstressing the tubing during production or stimulation.
- The joint design enables it to be stacked for additional stroke requirements, reducing inventory and saving rig time.
- The full-bore construction provides an unrestricted ID that enables the maximum flow rate.
- The rugged construction provides high tensile strength for maximum durability.

Options

- Premium seal stacks are available in materials compatible with fluid environments.
- Standard external upset end, NU, and premium connections are available on order.
- Alternate strokes are available on order.

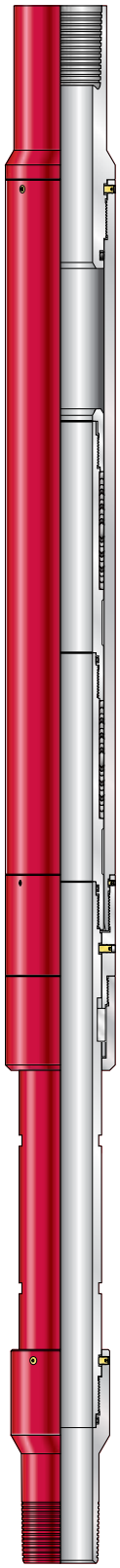
Expansion Swivel Joint

Specifications

Tubing Size (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Stroke (ft/*m*)	Thread Connection (in.)	Product Number
2-3/8 *60.3*	3.250 *82.55*	1.938 *49.23*	10 *3*	2-3/8 NEW VAM®	548-20-001NV
2-7/8 *73.0*	3.750 *95.25*	2.500 *63.50*	10 *3*	2-7/8 EU[1] 8 RD[2]	548-25-002
	3.760 *95.50*	2.370 *60.20*		2-7/8 NEW VAM	720893
	4.031 *102.39*	2.374 *60.30*	12 *4*	2-7/8 NEW VAM	764469
3-1/2 *88.9*	4.250 *107.95*	3.000 *76.20*	10 *3*	3-1/2 EU 8 RD	548-35-000
	5.010 *127.25*	2.900 *73.66*		3-1/2 NU[3] 10 RD	548-35-002
	4.250 *107.95*	2.921 *74.19*	12 *4*	3-1/2 NEW VAM	774925

[1]External upset
[2]Round
[3]Nonupset

Splined Expansion Joint



Model B

Weatherford's splined expansion joint, model B, compensates for tubing movement resulting from temperature and pressure variations during production, shut-in, and stimulation in single- and multiple-string completions. The spline enables the tubing to transmit torque throughout the stroke length of the tool. A premium seal system maintains the pressure seal.

Applications

- Single- and dual-string packer installations
- Retrievable and permanent installations
- Deviated and horizontal wells

Features, Advantages and Benefits

- The expansion joint can be pressure tested at the surface to ensure seal integrity.
- The pressure rating of the joint is compatible with the tubing, providing pressure integrity during production, shut-in, and stimulation.
- The joint can be pinned in an open, closed, or midstroke position, enabling selection of the correct stroke before deployment to avoid damage from overstressing the tubing during production or stimulation.
- The joint design enables it to be stacked for additional stroke requirements, reducing inventory and saving rig time.
- The full-bore construction provides an unrestricted ID that enables a maximum flow rate.
- The rugged construction provides high tensile strength for maximum durability.

Options

- Premium seal stacks are available in materials compatible with fluid environments.
- Standard EUE, NU, and premium connections are available on order.
- Alternate strokes are available on order.

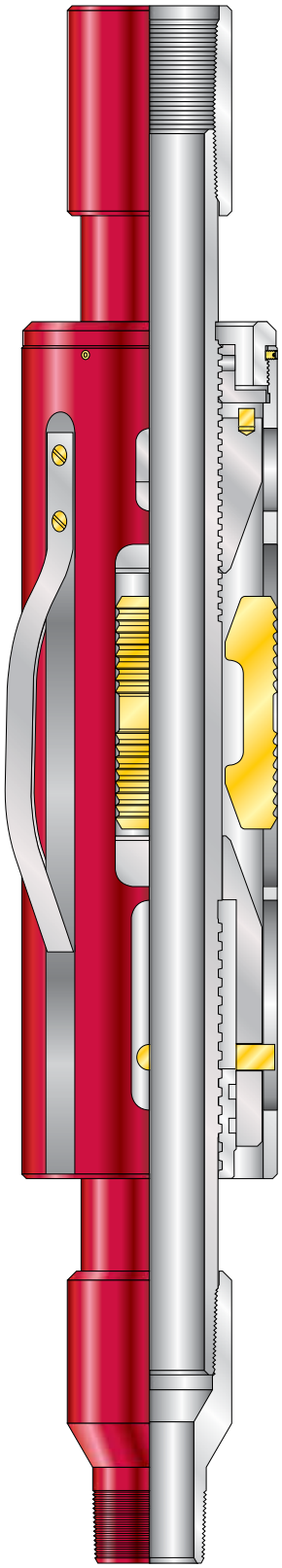
Splined Expansion Joint

Specifications

Tubing Size (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Stroke (ft/*m*)	Thread Connection	Product Number
2-7/8 *73.0*	4.130 *104.90*	2.360 *59.94*	10.0 *3.0*	2 7/8-in., 6.4-lb Fox K	172599
	4.140 *105.16*		6.6 *2.0*	2 7/8-in. EU 8RD	762677
3-1/2 *88.9*	5.000 *127.00*	2.845 *72.26*	10.0 *3.0*	3 1/2-in. EU 8RD	804920
		2.990 *75.95*	10.0 *3.0*	3 1/2-in., 9.2-lb NEW VAM®	889057
	5.015 *127.38*	2.906 *73.81*	20.0 *6.1*	3 1/2-in. EU 8RD	172565
4-1/2 *114.3*	6.250 *158.75*	4.000 *101.60*	10.0 *3.0*	4 1/2-in. EU 8RD	820335

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

BA Tubing Anchor Catcher



Weatherford's BA tubing anchor catcher is run below a sucker-rod pump to anchor the lower end of the tubing string. Then the string can be landed in tension, reducing the tubing tendency to corkscrew from cyclical loading during pump operation. By eliminating tubing movement, the catcher improves pump efficiency and reduces tubing and rod wear. The catcher can also be used in any single-string application requiring a bottomhole nonsealing anchor on the string.

The double-grip slip prevents parted tubing from falling to the well bottom.

Applications

- Sucker-rod pumping applications
- Single-string, non sealing anchored completions

Features, Advantages and Benefits

- The left rotation to set the catcher and right rotation to release it provide simple operation on the rig.
- The double-grip slip anchors the tubing to prevent upward and downward movements, increasing pump efficiency by lengthening the stroke and lowering operating costs by reducing maintenance and downtime from tubing and sucker-rod wear.
- The double-grip slip catches parted tubing, reducing fishing costs.
- The full bore-through catcher provides access for wireline tools and other equipment.
- The straight-pull emergency shear release provides release-force adjustment with shear pins if the catcher cannot be retrieved normally.
- The catcher has few parts to take apart, making it easy and inexpensive to redress.

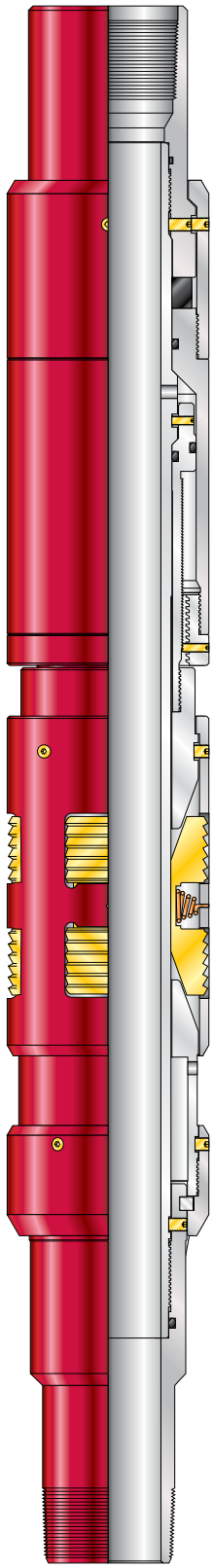
BA Tubing Anchor Catcher

Specifications

Casing				Anchor			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	Minimum ID (in./*mm*)	Maximum OD (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Box-Up, Pin-Down Thread Connection (in.)	Product
4-1/2 *114.3*	9.5 to 13.5 *14.1 to 20.1*	3.920 *99.57*	4.090 *103.89*	3.755 *95.38*	1.930 *49.02*	2-3/8 EU[1] 8 RD[2]	00146114
						2-7/8 EU 8 RD	00730353
5 *127.0*	15.0 to 18.0 *22.3 to 26.8*	4.250 *107.95*	4.408 *111.96*	4.000 *101.60*	1.930 *49.02*	2-3/8 EU 8 RD	00146115
						2-7/8 EU 8 RD	00129307
5-1/2 *139.7*	13.0 to 23.0 *19.3 to 34.2*	4.670 *118.62*	5.044 *128.12*	4.510 *114.55*	1.930 *49.02*	2-3/8 EU 8 RD	00130026
					2.370 *60.20*	2-7/8 EU 8 RD	00130779
5-3/4[3] *146.1*	14.0 to 17.0 *20.8 to 25.3*	5.190 *131.83*	5.290 *134.37*	4.932 *125.27*	1.930 *49.02*	2-3/8 EU 8 RD	01154230
					2.370 *60.20*	2-7/8 EU 8 RD	01154286
6-5/8 *168.3*	28.0 to 32.0 *41.7 to 47.6*	5.675 *144.15*	5.791 *147.09*	5.530 *140.46*	1.969 *50.01*	2-3/8 EU 8 RD	00726826
					2.420 *61.47*	2-7/8 EU 8 RD	00726833
7 *177.8*	20.0 to 38.0 *29.8 to 56.6*	5.920 *150.37*	6.456 *163.98*	5.530 *140.46*	1.969 *50.01*	2-3/8 EU 8 RD	00142487
					2.420 *61.47*	2-7/8 EU 8 RD	00143294
	17.0 to 20.0 *25.3 to 29.8*	6.456 *163.98*	6.538 *166.07*		1.969 *50.01*	2-3/8 EU 8 RD	00142494
					2.420 *61.47*	2-7/8 EU 8 RD	00145662
	17.0 to 38.0 *25.3 to 56.6*	5.920 *150.37*		5.510 *139.95*	2.918 *74.12*	3-1/2 EU 8 RD	00142498
7-5/8 *193.7*	20.0 to 39.0 *29.8 to 58.0*	6.625 *168.28*	7.125 *180.98*	5.510 *139.95*	1.969 *50.01*	2-3/8 EU 8 RD	00142496
					2.420 *61.47*	2-7/8 EU 8 RD	00145663
8-5/8 *219.1*	24.0 to 49.0 *35.7 to 72.9*	7.511 *190.78*	8.097 *205.66*	7.018 *178.26*	2.372 *60.25*	2-7/8 EU 8 RD	00130400
					2.969 *75.41*	3-1/2 EU 8 RD	00131128
9-5/8 *244.5*	32.3 to 47.0 *48.1 to 69.9*	8.535 *216.79*	9.001 *228.63*	7.018 *178.26*	2.969 *75.41*	3-1/2 EU 8 RD	00131206

[1]External upset
[2]Round
[3]Includes slip protectors

MH Hydraulic-Set Tubing Anchor Catcher



Weatherford's MH hydraulic-set tubing anchor catcher holds the tubing string in tension or compression to prevent movement in rod-pump installations. The retrievable catcher is set by tubing pressure against a temporary plug run below it. Setting the catcher requires no tubing manipulation. After the setting, bidirectional slips prevent the tubing from moving upward and downward and from falling if it separates. A straight-pull shear releases the catcher for easy retrieval.

Applications

- Rod-pump installations

Features, Advantages and Benefits

- The simple design enables the catcher to be set in tension or compression without tubing manipulation.
- Bidirectional slips anchor the tubing to prevent upward and downward movements, increasing pump efficiency and lowering operating costs by reducing maintenance and downtime from tubing and sucker-rod wear.
- The catcher has a small OD, which enables the passage of control and electric lines.
- The straight-pull shear release enables release-force adjustment for easy retrieval.

MH Hydraulic-Set Tubing Anchor Catcher

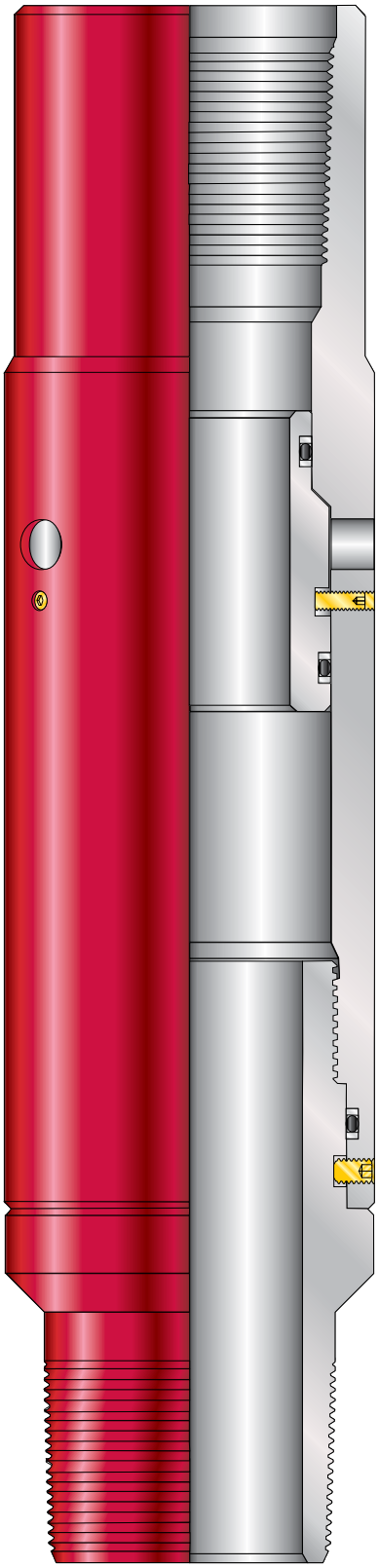
Specifications

Casing				Catcher			
OD (in./*mm*)	Weight (lb/ft, *kg/m*)	ID (in./*mm*)		Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Box-up, Pin-Down Thread Connection	Product
		Minimum	Maximum				
6-5/8 *168.3*	24.0 to 32.0 *35.7 to 47.6*	5.675 *144.15*	5.921 *150.39*	5.510 *139.95*	2.907 *73.84*	3 1/2-in., 9.2-lb/ft NEW VAM®	353-65-000VHS
7 *177.8*	20.0 to 38.0 *29.8 to 56.6*	5.920 *150.37*	6.456 *163.98*	5.719 *145.26*	2.938 *74.63*	3 1/2-in. EU[1] 8 RD[2]	353-73
9-5/8 *244.5*	32.3 to 47.0 *48.1 to 69.9*	8.681 *220.50*	9.001 *228.63*	8.438 *214.33*	5.734 *145.64*	6 5/8-in. LTC[3]	353-95-000

[1]External upset
[2]Round
[3]Long casing thread

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Company.

Annulus Fluid Dump Valve



Weatherford's annulus fluid dump valve provides communication between the tubing and annulus to drain the annulus before the string is pulled. The valve has a piston held in place with shear screws. Differential pressure in the annulus acts against the piston until the force shears the screws and pushes the piston down to expose the drain ports. After the valve opens, production fluid drains from the annulus.

Applications

- Rod-pump installations
- Retrievable and service completions

Features, Advantages and Benefits

- The shear pins enable the shear value to be changed easily in the field to compensate for varying well conditions.
- The valve is activated by easy, conventional differential pressure, avoiding mechanical manipulation of the tubing string to open the valve.
- The sleeve completely uncovers drain ports in the body, eliminating fluid-cut valve damage.
- The valve drains fluid in the tubing to reduce hydrostatic pressure that can break the sucker-rod string, enabling safe retrieval of the standing valve and pump and avoiding costly repairs.

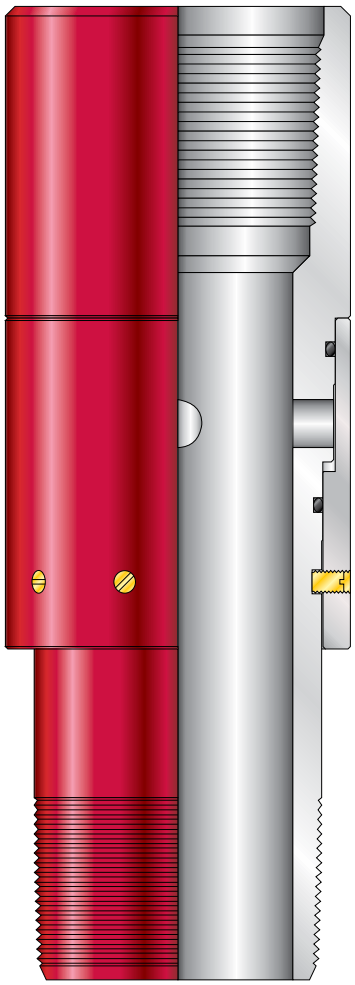
Annulus Fluid Dump Valve

Specifications

Tubing (in./*mm*)	Valve				
	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Shear Screws	Product
2-7/8 *73.0*	3.693 *93.80*	1.969 *50.01*	2-7/8 EU[1] 8 RD[2]	6 at 492 psi (3.392 MPa) each	507-25-002
	3.680 *93.47*		2-7/8 NU[3] 10 RD	10 at 660 psi (4.551 MPa) each	507-25-005

[1]External upset
[2]Round
[3]Nonupset

Tubing Fluid Dump Valve



Weatherford's tubing fluid dump valve provides communication between the tubing and annulus to drain the annulus when the string is pulled out of the hole. The valve has an outside piston held in place with shear screws. Differential pressure in the annulus acts against the piston until the force shears the screws and pushes the piston down to expose the drain ports. After the valve opens, production fluid drains from the annulus.

Applications

- Rod-pump installations
- Retrievable and service completions

Features, Advantages and Benefits

- The shear pins enable the shear value to be changed easily in the field to compensate for varying well conditions.
- The valve is activated by easy, conventional differential pressure, avoiding mechanical manipulation of the tubing string to open the valve.
- The sleeve completely uncovers drain ports in the body, eliminating fluid-cut valve damage.
- The valve drains fluid in the tubing to reduce hydrostatic pressure that can break the sucker-rod string, enabling safe retrieval of the standing valve and pump and avoiding costly repairs.

Tubing Fluid Dump Valve

Specifications

Tubing (in./*mm*)	Valve				
	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Shear Screws	Product
2-3/8 *60.3*	3.063 *77.80*	1.938 *49.23*	2-3/8 EU[1] 8 RD[2]	10 at 600 psi (4,137 kPa) each	508-20-000
2-7/8 *73.0*	3.688 *93.68*	2.500 *63.50*	2-7/8 EU 8 RD		508-25-000
3-1/2 *88.9*	4.500 *114.30*	3.000 *76.20*	3-1/2 EU 8 RD		508-35-000

[1]External upset
[2]Round

HST Hydraulic Setting Tool

Weatherford's HST hydraulic setting tool conveys and sets all wireline-set sealbore packers, including the UltraPak™ permanent packer and BlackCat sealbore packers, on production and coiled tubings. The HST sets the packer by applying adjustable surface pressure until the preset shear force is reached. The HST has a bottom connection that accepts common wireline-setting tool adapter kits.

The HST is available with EUE tubing connections.

Applications

- Deviated or horizontal wells
- Large-casing packers
- Wireline-set sealbore packer completions

Features, Advantages and Benefits

- The HST accepts common wireline adapter kits, enabling it to set all Weatherford permanent and retrievable sealbore packers.
- The HST enables the well to be circulated before the packer is set, preventing debris accumulation.
- The heavy-duty HST construction enables the packer assembly to be pushed into place in high-angle and horizontal wells, enabling the packer to be set where wireline deployment is difficult or impractical.
- The stackable piston arrangement enables the setting pressure to be varied to the output force of the well.
- The automatic fill-and-drain feature enables the work string to fill with well fluids as tools are run and to drain during retrieval, preventing the pulling of a wet string.

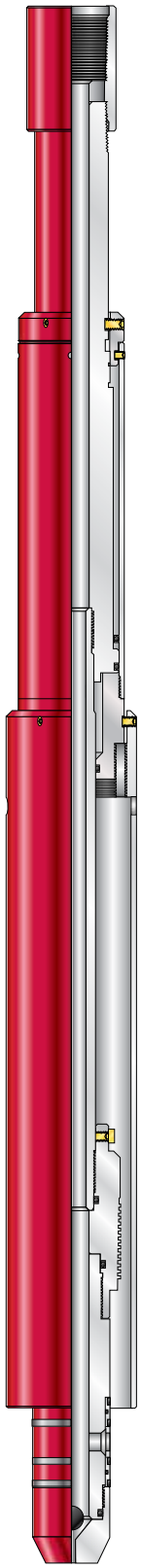
HST Hydraulic Setting Tool

Specifications

Size (in./*mm*)	Tool OD (in./*mm*)	Standard Thread Connection (in.)	Bottom Connection (in.)	Base Product
1-1/2 *38.1*	2.13 *54.10*	1-1/2 Blank for MT	#05 BAKER E-4	15HST.1001
			2-1/8 GO	15HST.1002
2-3/8 *60.325*	3.63 *92.20*	2-3/8 EU[1] 8RD[2]	#10 BAKER E-4	23HST.1001
2-7/8 *73.025*	4.38 *111.25*	2-7/8 EU 8RD	#20 BAKER E-4	27HST.1001

[1]External upset
[2]Round

AH Hydraulic Setting Tool



Weatherford's AH hydraulic setting tool conveys and sets the UltraPak™ permanent packer and BlackCat sealbore packers on a work string. The heavy-duty construction enables the packer assembly to be worked through tight spots and into horizontal sections. The packer can be set by surface pressure or a combination of it and work-string tension. The start-to-set pressure is adjustable. The packer can be tested from the surface down the annulus before the setting tool is released by rotation to the right or by optional shear with hydraulic pressure.

The setting tool is available with many drillpipe connections.

Applications

- Deviated or horizontal wells
- Large-casing packers
- Wireline-set sealbore packer completions
- Completions with high tailpipe loads

Features, Advantages and Benefits

- The setting tool enables the well to be circulated before the packer is set, preventing debris accumulation.
- The heavy-duty tool construction enables the packer assembly to be pushed into place in high-angle and horizontal wells, enabling the packer to be set where wireline deployment is difficult or impractical.
- The high-strength mandrel enables the packer to be set with high tailpipe loads, so that plugs, temporary flow-control devices, downhole gauges, and monitoring equipment can be deployed.
- The mandrel seal enables the annulus to be pressure tested, ensuring packer integrity before the setting tool is released.
- The automatic fill-and-drain feature enables the work string to fill with well fluids as tools are run and to drain during retrieval, preventing the pulling of a wet string.
- The optional shear release offers another retrieval method when the pipe cannot be rotated.

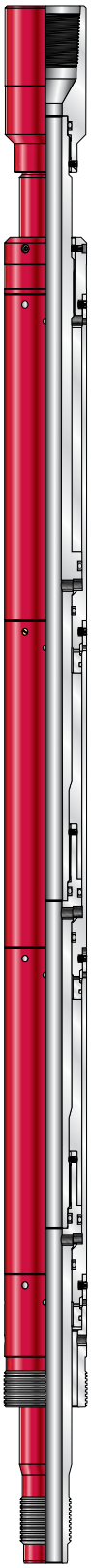
AH Hydraulic Setting Tool

Specifications

Casing			Tool	
OD (in./*mm*)	**Packer Bore (in./*mm*)**	**Maximum OD (in./*mm*)**	**Standard Thread Connection (in.)**	**Base Product**
4-1/2 *114.3*	2.688 *68.275*	3.75 *95.25*	2-3/8 EU[1] 8RD[2]	583-45-000
	2.39 *60.71*	3.6 *91.4*		583-46-000
5 *177.8*	2.688 *68.275*	3.968 *100.787*		583-50-001
5-1/2 *139.7*	3.0 *76.2*	4.438 *112.725*	2-7/8 EU 8RD	583-55-000
	2.688 *68.275*			583-55-001
7 *177.8*	4.0 *101.6*	5.468 *138.887*		583-74-001
	3.25 *82.55*			583-70-325
9-5/8 *244.475*	6.0 *152.4*	8.0 *203.2*	4-1/2 IF drillpipe	583-96-000HD
	4.75 *120.65*		2-7/8 EU 8RD	583-95-000
	4.0 *101.6*			583-94-005

[1]External upset
[2]Round

MHT Modular Hydraulic Setting Tool



Weatherford's MHT modular hydraulic setting tool sets the UltraPak™ permanent packer and BlackCat retrievable sealbore packer on tubing or drillpipe in many completion applications. With a slim OD and stackable setting pistons, the MHT can set packers with ODs of 5 in. (127 mm) and larger by changing the adapter kit. The MHT enables the annulus to be pressure tested after the packer is set and is released from the packer by rotation to the right.

The robust MHT construction can withstand forces up to 150,000 lb (68,039 kg). It uses elastomers suitable for temperatures up to 400°F (204°C).

Applications

- Setting of all sealbore packers
- Highly deviated and horizontal wells
- Heavy mud systems
- High bottomhole temperature applications

Features, Advantages and Benefits

- The MHT enables the well to be circulated before the packer is set, preventing debris accumulation.
- The heavy-duty MHT construction enables the packer assembly to be pushed into place in high-angle and horizontal wells, enabling the packer to be set where wireline deployment is difficult or impractical.
- The MHT design enables packers to be set with pressure only or with pressure and tension for deployment in shallow and deep applications.
- The stackable piston arrangement enables the setting pressure to be varied to the output force of the well.
- Large fluid passages prevent the MHT from plugging in heavy mud systems.
- The packer seal enables the annulus to be pressure tested, ensuring packer integrity before the MHT is released.
- After the packer is set, the ball seat can be sheared to drain the work string during retrieval, saving rig time.

Options

- A kit for temperatures above 400°F (204°C) is available.

MHT Modular Hydraulic Setting Tool

Specifications

Tool[1]	Setting Pistons	Product Number
Basic MHT	3	239523
Conversion kit	5	279666

[1]Has standard 90-duro Viton® elastomers for service up to 400°F (204°C).

MNT Dimensions

OD (in./*mm*)	ID (in./*mm*)	Top Connection (in.)
3.75 *95.25*	1.5 *38.1*	2-7/8 EUE box

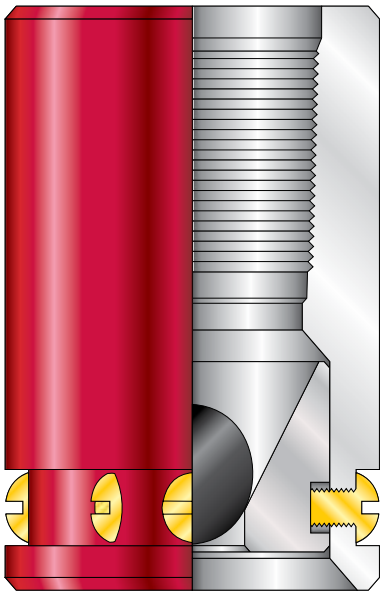
Adapter Kits[1]

Packer OD (in./*mm*)	Weight (lb/*kg*)	Bore (in./*mm*)	Packer	Product Number
5 *127*	18 to 21.4 *8 to 9.7*	3.0 × 2.390 *76.2 × 60.706*	UltraPak™ U	303376
5-1/2 *139.7*	14 to 17 *6 to 8*	2.688 *68.275*	*UltraPak*	302713
			BlackCat	
	20 to 23 *9 to 10*		*UltraPak*	302723
			BlackCat	
	14 to 17 *6 to 8*	3 *76*	*UltraPak*	302814
			BlackCat	
	20 to 23 *9 to 10*	2.688 *68.275*	*UltraPak*	302723
		3 *76*	*UltraPak*	302819
			BlackCat	
	23 to 26.8 *10 to 12.2*	3.0 × 2.688 *76.2 × 68.275*	*UltraPak* U	291485
7 *178*	*23 to 32* *10 to 15*	3.25 *82.55*	*UltraPak*	258964
			BlackCat	
		4 *102*	*UltraPak*	277594
	35 to 38 *16 to 17*		*UltraPak*	711654
	35 to 38 *16 to 17*	3.25 *82.55*	*UltraPak*	746535
		4 *102*	*UltraPak*	711655
7-5/8 *193.675*	—	3.25 *82.55*	*UltraPak*	277591
			BlackCat	
		4 *102*	*UltraPak*	277595
			BlackCat	
9-5/8 *244.475*	—	3.25 *82.55*	*UltraPak*	729049
			BlackCat	
		4 *102*	*UltraPak*	729235
			BlackCat	
		4.75 *120.65*	*UltraPak*	280107
			BlackCat	

[1]Contain the setting sleeve assembly, setting mandrel, ball set, and ball catcher. Many parts are interchangeable between sizes.

Viton is a registered trademark of DuPont Dow Elastomers L.L.C.

Expendable Seating Sub Assembly



Weatherford's expendable seating sub assembly temporarily plugs tubing to deploy a hydraulically set packer or to facilitate stimulation, acidizing, and testing.

In deploying a packer, the assembly is placed in the tubing string below the packer. A ball drops down the tubing to land onto the seat inside the assembly. The appropriate differential pressure is applied to the tubing string to set the packer. Additional differential pressure is applied to shear out the ball seat, leaving a full opening with a wireline reentry guide shoe on the tailpipe.

Applications

- Setting a hydraulic packer
- Temporary plugging of the tubing during stimulation, acidizing, or testing

Features, Advantages and Benefits

- The simple, field-proven design enables the application of pressure to the tubing to set a hydraulic packer reliably.
- The design enables the tubing string to fill with well fluids as tools are run, reducing rig time.
- Easily accessible shear screws enable shear values to be readily adjusted in the field, saving time.
- The ball seat shears out completely, leaving a full-opening ID for maximum production and a wireline reentry guide shoe for the running in and out of wireline tools.

Options

- Premium threads are available on request.

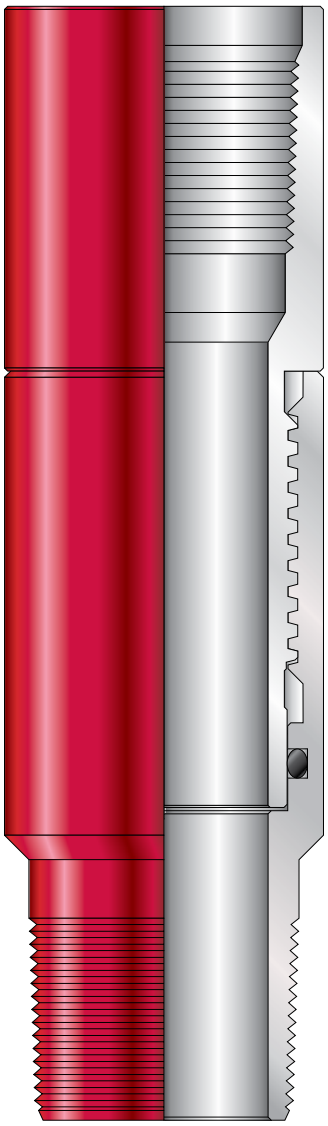
Expendable Seating Sub Assembly

Specifications

Tubing (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID after Shear-out (in./*mm*)	Standard Box-Up Thread Connection (in.)	Brass Ball OD (in./*mm*)	Product
2-3/8 *60.3*	3.265 *82.93*	1.985 *50.42*	2-3/8 EU[1] 8 RD[2]	1-3/8 *34.9*	650-50-025
2-7/8 *73.0*	3.668 *93.17*	2.790 *70.87*	2-7/8 EUE[3] 8 RD	2 *50.8*	01141106
	3.940 *100.08*		2-7/8 EU 8 RD	1-3/4 *44.5*	00231812
	4.250 *107.95*	2.812 *71.42*		1-3/8 *34.9*	650-73-025
3-1/2 *88.9*	4.500 *114.30*	2.812 *71.42*	3-1/2 EU 8 RD	1-3/8 *34.9*	650-73-035
				1-3/4 *44.5*	00725813
4 *101.6*	4.750 *120.65*	3.000 *76.20*	4 NU[4] 8 RD	1-3/8 *34.9*	650-95-037

[1]External upset
[2]Round
[3]External upset end
[4]Nonupset

Rotational Safety Joint



Weatherford's rotational safety joint enables the positive release of the tubing string in completions with expected retrieval difficulties. The joint is used between packers in single, dual, and triple completions and in applications to avoid shear releasing.

The joint is available in models that can be released with left or right rotation to enable manipulation of other equipment in the string.

Applications

- Single-, dual-, and stacked-packer completions
- Fracturing, acidizing, and remedial workovers

Features, Advantages and Benefits

- The simple design provides a reliable, inexpensive way to release the tubing string when retrieval difficulties are expected, saving rig time.
- Hydraulics do not affect the left or right release capability, providing flexibility for manipulating other equipment in the tubing string.

Specifications

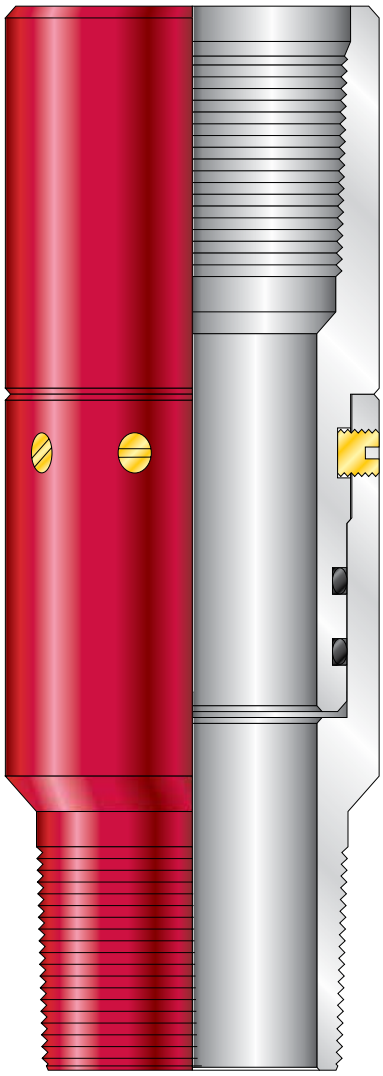
Tubing (in./*mm*)	Safety Joint				
	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Left-Release Product Number	Right-Release Product Number
1-1/4 *31.75*	2.25 *57.15*	1.25 *31.75*	1.660[1] NU 10 RD[2]	568-16-00R	568-16-000
2-3/8 *60.325*	3.063 *77.800*	2.0 *50.8*	2-3/8 EU[3] 8 RD	568-20-00R	568-20-000
2-7/8 *73.025*	3.688 *93.675*	2.5 *63.5*	2-7/8 EU 8 RD	568-25-00R	568-25-000
3-1/2 *88.9*	4.5 *114.3*	3.0 *76.2*	3-1/2 EU 8 RD	568-35-00R	568-35-000

[1]Nonupset
[2]Round
[3]External upset

Shear-Out Safety Joint

Weatherford's shear-out safety joint enables the positive release of the tubing string in completions with expected retrieval challenges. The joint is used between packers in single, dual, and triple completions. It is also used when rotational release is not wanted.

The safety joint is easily adjusted in the field for various straight-pull release shear values. It can also be adjusted to compensate for hydraulic conditions that exist when the string is landed or that are created by well treatment.



Applications

- Single-, dual-, and stacked-packer completions
- Fracturing, acidizing, and remedial workovers

Features, Advantages and Benefits

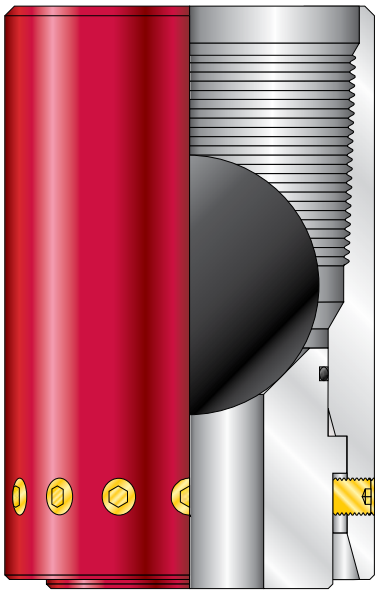
- The simple design provides a reliable, inexpensive method for straight-pull emergency shear release.
- Easily adjustable shear values compensate for hydraulic conditions.

Specifications

Tubing (in./*mm*)	Shear Out Safety Joint					
	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Product Number	Shear Value Fully Loaded (lb/*kg*)	Shear Pins
1.9 *48.26*	2.688 *68.275*	1.61 *40.894*	1.9 NUE[1] 10 RD[2]	569-19-000	16,250 *7,371*	5
2-3/8 *60.325*	3.067 *77.800*	2.0 *50.8*	2-3/8 EU[3] 8 RD	569-20-001	54,000 *24,494*	12
			2-3/8 NU[4] 10 RD	569-20-003		
2-7/8 *73.025*	3.688 *93.675*	2.5 *63.5*	2-7/8 EU 8 RD	569-25-000	45,000 *20,412*	10
3-1/2 *88.9*	4.5 *114.3*	3.0 *76.2*	3-1/2 EU 8 RD	569-35-000	63,600 *28,848*	12
			3-1/2 NU 10 RD	569-35-001		
4-1/2 *114.3*	5.562 *141.275*	4 *101.6*	4-1/2 EU 8 RD	569-45-001	55,000 *24,948*	12

[1]Nonupset end
[2]Round
[3]External upset
[4]Nonupset

Pump-Out Plug Assembly



Weatherford's pump-out plug assembly temporarily plugs the tubing and serves as a temporary bridge plug in the setting of a hydraulic packer. After the production string is landed or the well is prepared for production, the internal plug shears out when appropriate differential pressure is applied to the tubing, leaving a full opening with a wireline reentry guide shoe on the tailpipe.

Applications

- Setting a hydraulic packer
- Temporary plugging of the tubing during stimulation, acidizing, or testing

Features, Advantages and Benefits

- The simple, field-proven design enables the application of pressure to the tubing to set a hydraulic packer reliably.
- Easily accessible shear screws enable shear values to be readily adjusted in the field, saving time.
- The internal plug shears out completely, leaving a full-opening ID for maximum production and a wireline reentry guide shoe for the running in and out of wireline tools.

Options

- Premium threads are available on request.

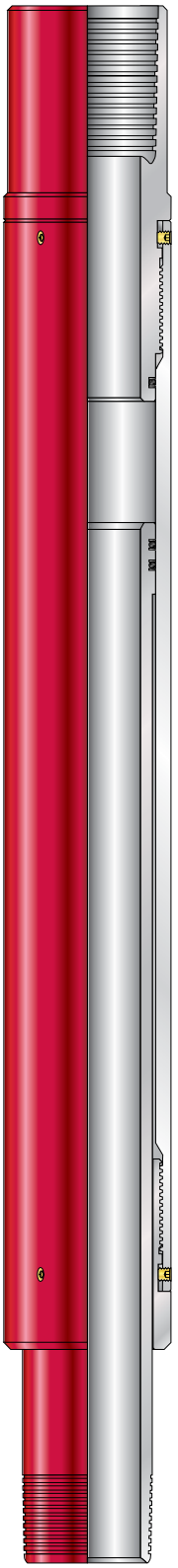
Specifications

Tubing (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID after Shear-out (in./*mm*)	Standard Thread Connection Box Up (in.)	Product
2-3/8 *60.3*	3.060 *77.72*	2.000 *50.80*	2-3/8 EU[1] 8RD[2]	23PBS.1001
2-7/8 *73.0*	3.690 *93.73*	2.500 *63.50*	2-7/8 EU 8RD	27PBS.1001
3-1/2 *88.9*	4.500 *114.30*	2.995 *76.07*	3-1/2 EU 8RD	35PBS.1001
4-1/2 *114.3*	5.000 *127.00*	3.750 *95.25*	4-1/2 8RD LTC[3]	45PBS.1001

[1]Extended upset
[2]Round
[3]Long casing thread

Telescoping Swivel Sub

Weatherford's telescoping swivel sub enables easy makeup of the tubing string between multistring packers by rotation and telescoping.



Applications

- Multistring completions
- Electrical submersible pump completions

Features, Advantages and Benefits

- The telescoping feature compensates for inaccuracies in measurements and relieves the strain on threads during makeup.
- The telescoping swivel action enables the easy connection of both long and short strings between multistring packers, even if the tailpipes are strapped together.

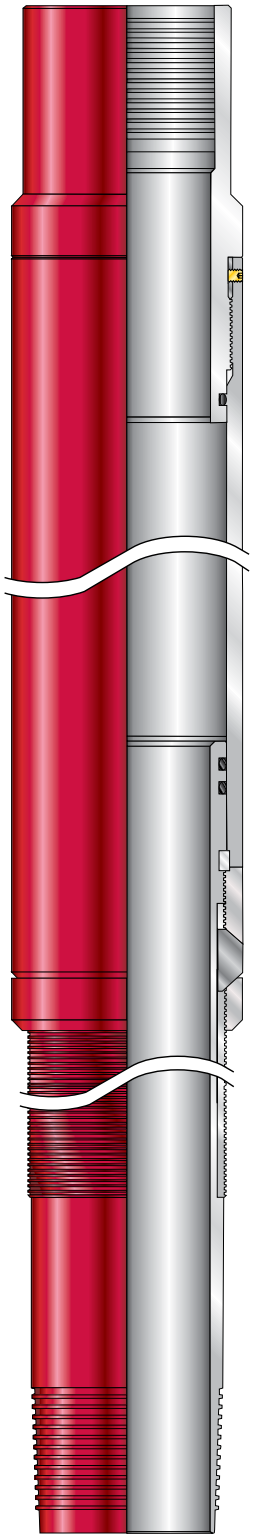
Specifications

Tubing (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connection (in.)	Tool Stroke (in./*mm*)	Product
1-1/4 *31.75*	2.20 *55.88*	1.375 *34.925*	1.660 EU[1] 10 RD[2]	24 *610*	537-16-024
2-3/8 *60.325*	3.063 *77.800*	1.939 *49.251*	2-3/8 EU 8 RD	24 *610*	537-20-024ABC
			2-3/8 (4.6) NEW VAM®	12 *305*	537-20-012NV
2-7/8 *73.025*	3.75 *95.25*	2.5 *63.5*	2-7/8 EU 8 RD	24 *610*	537-25-024
				48 *1,219*	537-25-048
			2-7/8 (6.4) NEW VAM	24 *610*	537-25-024NV
3-1/2 *88.9*	4.688 *119.075*	2.972 *75.489*	3-1/2 EU 8 RD	24 *610*	537-35-024
			3-1/2 (9.2) NEW VAM		537-35-000NV
4-1/2 *114.3*	5.5 *139.7*	3.988 *101.295*	4-1/2 (12.6) NEW VAM	36 *914*	537-45-001

[1]External upset
[2]Round

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

Adjustable Sub with Rotational Lock



Weatherford's adjustable sub with rotational lock enables the length of the tubing to be adjusted up to 24 in. (610 mm) without rotation of the tubing string. The sub is used in multistring completions to ease connecting or spacing the tubing among multiple packers and the tailpipe. The lock prevents both telescoping and rotation.

Applications

- Multistring completions
- Retrievable packer systems

Features, Advantages and Benefits

- The sub can be locked at any length up to 24 in. (610 mm) to facilitate tubing connections and spacing among multiple retrievable packers, reducing the inventory of pup joints required.
- The rotational lock prevents the rotation and telescoping of the tubing string to enable the correct operation of downhole equipment.

Adjustable Sub with Rotational Lock

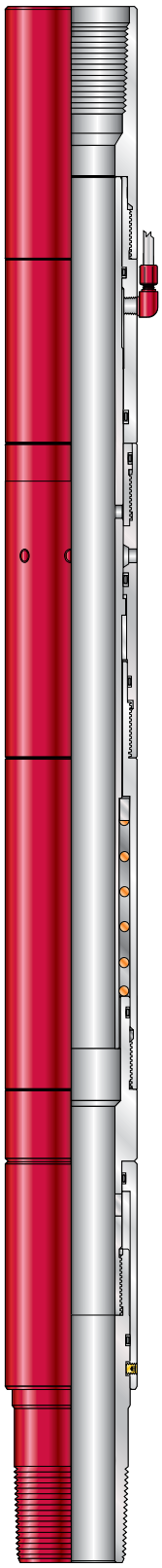
Specifications

Tubing (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Standard Thread Connections (in.)	Product Number
2-3/8 *60.325*	2.91 *73.91*	1.922 *48.819*	2-3/8 EU[1] 8RD[2]	539-20-000
2-7/8 *73.025*	3.688 *93.675*	2.484 *63.094*	2-7/8 EU 8RD	539-25-000
		2.36 *59.94*	2-7/8 (6.4) NEW VAM®	539-25-002NV
3-1/2 *88.9*	4.5 *114.3*	2.883 *73.228*	3-1/2 EU 8RD	539-35-002
			3-1/2 (10.2) NEW VAM	539-35-003NV
4-1/2 *114.3*	5.531 *140.487*	3.928 *99.771*	4-1/2 (12.6) NEW VAM	539-45-002

[1]External upset
[2]Round

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation.

HAS Vent/Dump Valve



Weatherford's HAS vent/dump valve is a hydraulically actuated system that vents gas from the casing below a packer into the annulus to help maintain an optimal fluid level for an electrical submersible pump (ESP). The system has an integral, built-in annulus valve installed above a multistring packer.

Pressure from the control line opens the valve to vent the gas, and pressure loss closes the valve and ends communication. Pressure applied to the annulus at a predetermined shear value opens the valve ports.

Applications

- ESP Completions
- Not an API® 14A certified safety system

Features, Advantages and Benefits

- Positive control-line pressure opens the valve, and pressure loss immediately closes it to control the gas content of fluid entering the ESP, improving pump efficiency.
- The valve vents gas from below the packer to maintain optimal fluid levels, protecting the ESP from excessive wear and burnout.
- The valve drains fluid from the tubing to remove hydrostatic pressure for safe ESP retrieval.

Note: The HAS vent is not to be used as an annular safety valve. It must be kept in the *closed* position until after the required venting of accumulated gas cap below the packer. It must not be used in the *open* position during production and then closed for well shut-in.

HAS Vent/Dump Valve

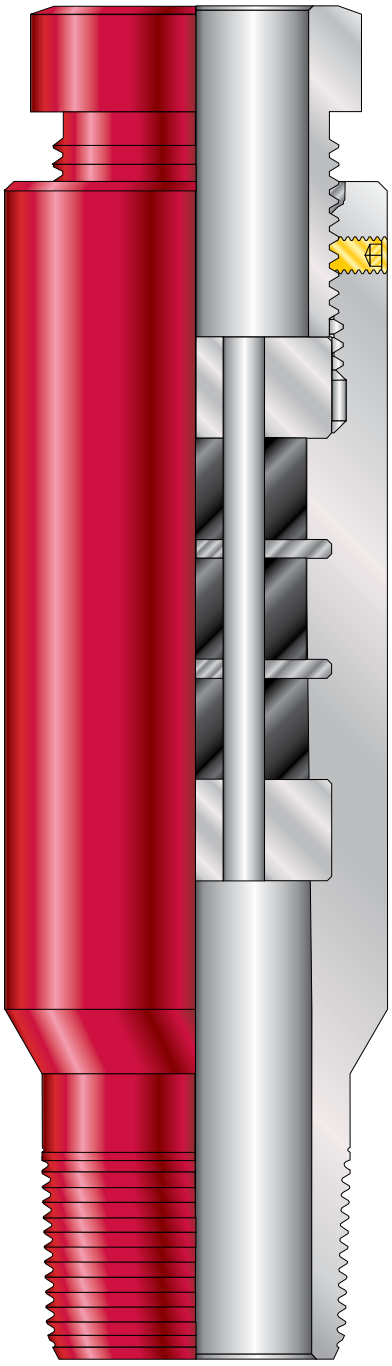
Specifications

Size (in./*mm*)	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Box-Up, Pin-Down Thread Connection (in.)	Pressure Required to Open Valve (psi/*kPa*)	Product
1.900 *48.26*	2.610 *66.29*	1.370 *34.80*	1.900 EU[1] 10 RD[2]	1,200 *8,274*	00955387
	2.600 *66.04*	1.375 *34.93*	1.900 NU[3] 10 RD		00888254
2-3/8 *60.33*	3.180 *80.77*	1.625 *41.28*	2-3/8 EU 8 RD	1,200 *8,274*	896-20-005
					896-20-006
			2-3/8 NEW VAM®		896-20-006NV
	3.500 *88.90*	1.939 *49.25*	2-3/8 EU 8 RD		896-21-015
	3.000 *76.20*	1.969 *50.01*			896-22-000
					896-22-005
2-7/8 *73.03*	4.000 *101.60*	2.437 *61.90*	2-7/8 EU 8 RD	1,300 *8,963*	896-25-005
	4.010 *101.85*	2.370 *60.20*	2-7/8 NEW VAM		896-25-NV
	4.000 *101.60*	2.437 *61.90*	2-7/8 EU 8 RD		896-25-010
					896-25-015

[1]External upset
[2]Round
[3]Nonupset

NEW VAM is a registered trademark of Vallourec Mannesmann Oil & Gas France Corporation

Cable Pack-off Assembly



Weatherford's cable pack-off assembly provides an effective seal for an electrical submersible pump (ESP) cable when used with a multistring packer, such as the Hydrow II-AP hydraulic-set, dual-string production packer. To achieve a seal, the metal shield on the cable is removed from a short section, and the cable is inserted through the assembly until its unshielded portion is inside.

Applications

- ESP completions
- Multistring, retrievable-packer systems

Features, Advantages and Benefits

- The packoff around the cable requires only the simple tightening of a nut to compress the elastomers.
- Low torque pressure of 500 lbf-ft (678 N·m) activates the ESP cable seal, preventing damage from excessive torque application.
- The assembly effectively seals the ESP cable without splicing it or using expensive penetrators.

Options

- Other cable sizes are available.

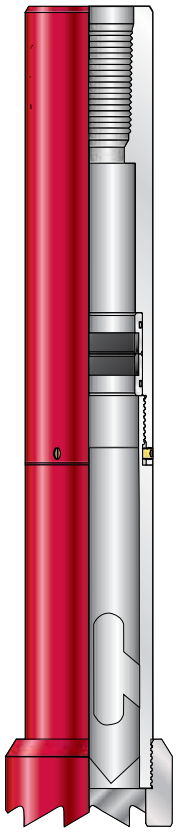
Cable Pack-off Assembly

Specifications

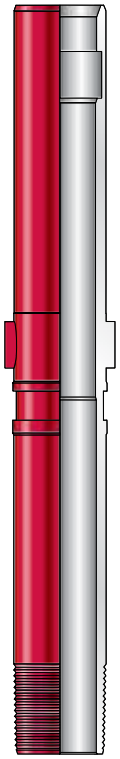
Cable Size (in./*mm*)	Assembly				
	Maximum OD (in./*mm*)	Minimum ID (in./*mm*)	Pin-Down Thread Connection (in.)	Packing	Product
Flat 4 *101.6*	2.405 *61.09*	1.526 *38.76*	1.900 NU[1] 10 RD[2]	3 wire	780727
	2.600 *66.04*	1.560 *39.62*	1.900 EU[3] 10 RD		920-19-010H
Round 4 *101.6*	2.605 *66.17*	1.560 *39.62*	1.900 EU 10 RD	Shielded cable	779165
Round 2 *50.8*	2.605 *66.17*	1.560 *39.62*	1.900 EU 10 RD	3 wire	820868
Round 1 *25.4*	3.095 *78.61*	1.214 *30.84*	2-7/8 EU 8 RD	Shielded cable	1162578

[1]Nonupset
[2]Round
[3]External upset

T-2 On-Off Tool



Overshot



Stinger

Weatherford's T-2 on-off tool enables the tubing string to be disconnected above a packer for zonal isolation, tubing retrieval, and temporary zone abandonment. The tool contains an internal lock profile for landing a wireline plug to provide zonal isolation below the packer.

The tool has two basic components: the overshot mounted on the tubing string and the stinger mounted on the packer. The overshot disengages with either a standard left release or an optional right quarter-turn release. The washover shoe on the overshot cuts through debris, allowing for easy engagement of the stinger. The seals in the tool are retrieved with the overshot to enable redressing at the surface.

Available with all common wireline profiles, the stinger works with industry-standard blanking plugs, standing valves, and regulators.

Applications

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

Features, Advantages and Benefits

- The tool enables the packer to be used as a bridge plug for zonal isolation or the temporary abandonment of lower zones to save rig costs.
- The tool can be full-pressure tested at the surface to save rig time.
- The tool can be pinned in a shear-up or shear-down position, providing compatibility with the packer setting and retrieving style.
- The standard left or optional right quarter-turn release provides simple operation on the rig.
- Bonded seals enable multiple disconnections without costly retrieval.
- The rugged, dependable design enables tubing retrieval without disturbing the packer.
- The washover shoe cuts through debris to release stuck equipment in the wellbore.

Options

- The tool is available in a variety of materials.
- An optional right quarter-turn release is available for the overshot disengagement.
- The stinger is available with all common wireline profiles.

T-2 On-Off Tool

Specifications

Overshot

Casing (in./*mm*)	Washover Shoe OD (in./*mm*)	Standard Tubing Connection (in.)	Release Direction	Product	
				Overshot	Overshot 10K
3-1/2 *88.9*	2.775 *70.49*	1.9 HYDCS1	Left	510-35-002	—
		1-1/2 EUE2 10 RD3		510-35-000	
4-1/2 *114.3*	3.750 *95.25*	2-3/8 EUE 8 RD	Left	—	512-45-010
					512-45-011
				512-45-0HNBR	—
				512-45-000	
5-1/2 *139.7*	4.516 *114.71*	2-3/8 EUE 8 RD	Left	512-55-000	—
			Right	—	512-55-010
			Left		512-55-011
7 *177.8*	5.875 *149.23*	2-7/8 EUE 8 RD	Left	512-70-00HSN	—
		2-3/8 EUE 8 RD		512-71-000	
				—	512-71-010
		2-7/8 EUE 8 RD			512-70-010
				512-70-0HNBR	—
				512-70-005	
		3-1/2 EUE 8 RD	Right	512-73-0NB	
7-5/8 *193.7*	6.391 *162.33*	2-7/8 EUE 8 RD	Left	512-75-000	—
9-5/8 *244.5*	8.255 *209.68*	2-7/8 EUE 8 RD	Left	512-95-000	—
	8.265 *209.93*	4-1/2 EUE 8 RD		510-96	

[1]Hydril Type CS joint
[2]External upset end
[3]Round

T-2 On-Off Tool

Specifications (continued)

Stinger

Standard Tubing Connection (in.)	Full Opening (in./*mm*)	Wireline Profile								Stinger
		WF (in./*mm*)	WR (in./*mm*)	WN (in./*mm*)	WX (in./*mm*)	WXN (in./*mm*)	VX (in./*mm*)	VF (in./*mm*)	VOR (in./*mm*)	
1.66 NU[1] 10 RD[2]	1.250 *31.75*	—	—	—	—	—	—	—	—	510-35-701
	—	1.250 *31.75*	—	—	—	—	—	—	—	510-35-125SB
1.9 HYDCS[3]	1.250 *31.75*	—	—	—	—	—	—	—	—	510-35-125HYD
2-3/8 EU[4] 8 RD	—	—	—	—	—	—	1.500 *38.10*	—	—	510-20-150X
	—	—	—	—	—	—		—	—	510-20-150XWL
	—	—	—	—	—	—	—	1.750 *44.45*	—	510-20-175FH
	—	—	—	—	—	—	—	1.781 *45.24*	—	510-20-178FWL
	—	1.781 *45.24*	—	—	—	—	—	—	—	510-20-181FWL
	—	1.780 *45.21*	—	—	—	—	—	—	—	510-20-178
	—	—	—	—	—	—	—	—	1.781 *45.24*	510-20-1781WL
	—	1.810 *45.97*	—	—	—	—	—	—	—	510-20-181SB
	—	—	1.810 *45.97*	—	—	—	—	—	—	510-20-181R
	—	1.810 *45.97*	—	—	—	—	—	—	—	510-20-181
	—	1.870 *47.50*	—	—	—	—	—	—	—	510-20-187
	—		—	—	—	—	—	—	—	510-20-187FWL
	—	—	—	—	1.870 *47.50*	—	—	—	—	510-20-187XWL
	—	—	—	—		—	—	—	—	510-20-187X99
	—	—	—	—	—	1.870 *47.50*	—	—	—	510-20-187XN
	—	—	—	—	—		—	—	—	510-20-187XNWL
	—	—	—	—	—	—	1.870 *47.50*	—	—	510-20-187XWLH
	—	—	—	1.875 *47.63*	—	—	—	—	—	510-20-187N
	2.000 *50.80*	—	—	—	—	—	—	—	—	510-20-712
		—	—	—	—	—	—	—	—	510-20-210WL

[1]Nonupset
[2]Round
[3]Hydril Type CS joint
[4]External upset

T-2 On-Off Tool

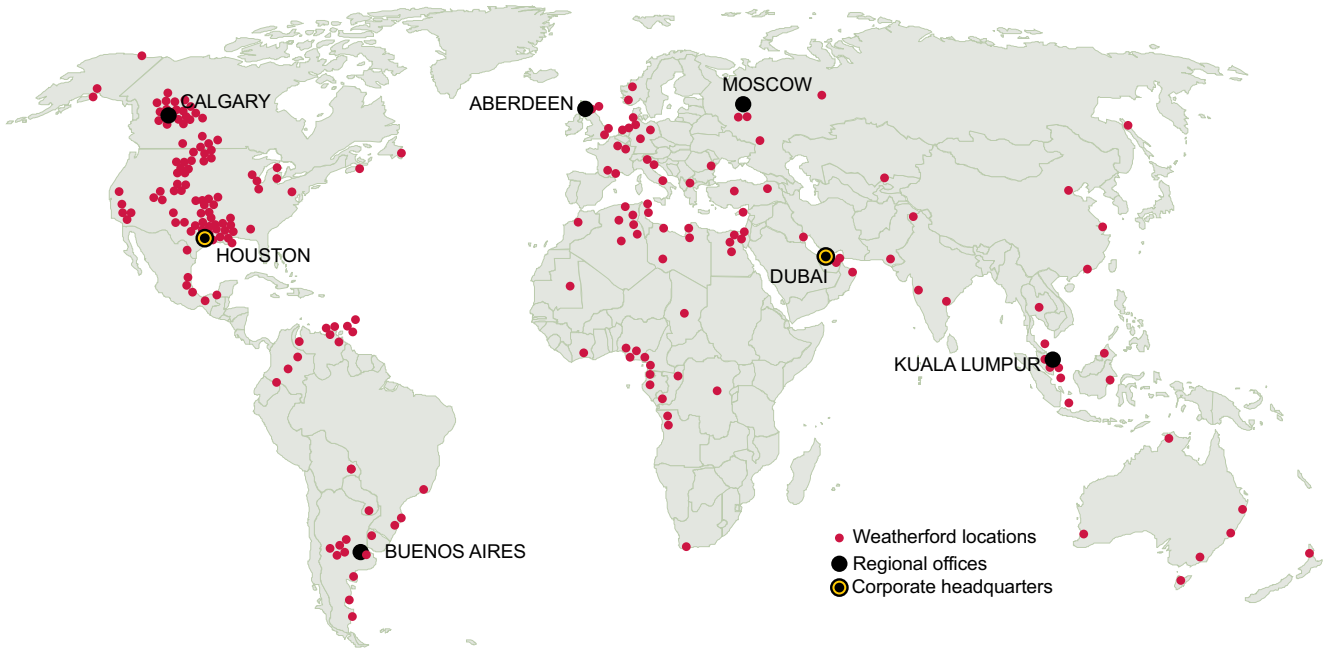
Specifications (continued)

Stinger

Standard Tubing Connection (in.)	Full Opening (in./*mm*)	Wireline Profile								Stinger
		WF (in./*mm*)	WR (in./*mm*)	WN (in./*mm*)	WX (in./*mm*)	WXN (in./*mm*)	VX (in./*mm*)	VF (in./*mm*)	VOR (in./*mm*)	
2-7/8 EU[1] 8 RD[2]	—	1.430 *36.32*	—	—	—	—	—	—	—	510-25-143
	—	1.780 *45.21*	—	—	—	—	—	—	—	510-25-178
	—	—	—	—	—	—	—	1.870 *47.50*	—	510-25-187SB
	—	—	—	—	1.870 *47.50*	—	—	—	—	510-25-187XWL
	—	2.250 *57.15*	—	—	—	—	—	—	—	510-25-225FWL
	—		—	—	—	—	—	—	—	510-25-225
	—	—	—	—	—	—	—	2.301 *58.45*	—	510-25-231FWL
	—	—	—	—	2.301 *58.45*	—	—	—	—	510-25-231XSB
	—	2.301 *58.45*	—	—	—	—	—	—	—	510-25-231
	—	2.313 *58.75*	—	—	—	—	—	—	—	
	—	—	—	—	—	2.313 *58.75*	—	—	—	510-25-231XN
	—	—	—	—	2.313 *58.75*	—	—	—	—	510-25-231X
	—	—	—	—		—	—	—	—	510-25-231X99
	—	—	—	—		—	—	—	—	510-25-231XWL
	—	2.875 *73.03*	—	—	—	—	—	—	—	510-25-711
	2.500 *63.50*	—	—	—	—	—	—	—	—	510-25-715
		—	—	—	—	—	—	—	—	510-25-714
3-1/2 EU 8 RD	—	—	—	—	—	—	2.313 *58.75*	—	—	510-37-231NB
	3.000 *76.20*	—	—	—	—	—	—	—	—	510-35-715HT
		—	—	—	—	—	—	—	—	510-35-715
4-1/2 EU 8 RD	—	—	—	—	—	—	3.813 *96.85*	—	—	510-96-381X

[1]External upset
[2]Round

Packers Catalog



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