

Packers



Introduction

Halliburton offers a complete line of production packers and accessories — from standard packers to specialized designs for the most hostile environments.

Halliburton has a packer for every type of completion: permanent packers rated up to 20,000 psi (138 MPa) at 475°F (246°C); retrievable packers suitable for 15,000 psi (103.4 MPa) at 400°F (204°C); dual packers for stacked or injection wells; thermal packers for steam service; and packers for a variety of applications including multilateral, deepwater, sand control, and intelligent completions.

Halliburton packers are manufactured to a quality program standard that meets ISO 9001 requirements, and all threads are gauged and inspected according to API or proprietary standards. Finite element analysis and full-scale testing at the Halliburton world-class test facility helps ensure packers perform as designed.

In addition to packers for production installations, Halliburton provides a wide selection of isolation, utility, and special application packers, offering a packer solution for every well completion type.

Packer Performance Envelopes

Performance envelopes provide a graphical means by which packer capabilities can be effectively communicated. Accurate packer performance is determined based on the combined effects of loading, which includes pressure, temperature, and axial forces.

To provide a graphical reference for the loading scenarios, Halliburton plots performance envelopes unique to packer designs.

Quadrants labeled in the envelope example represent the following:

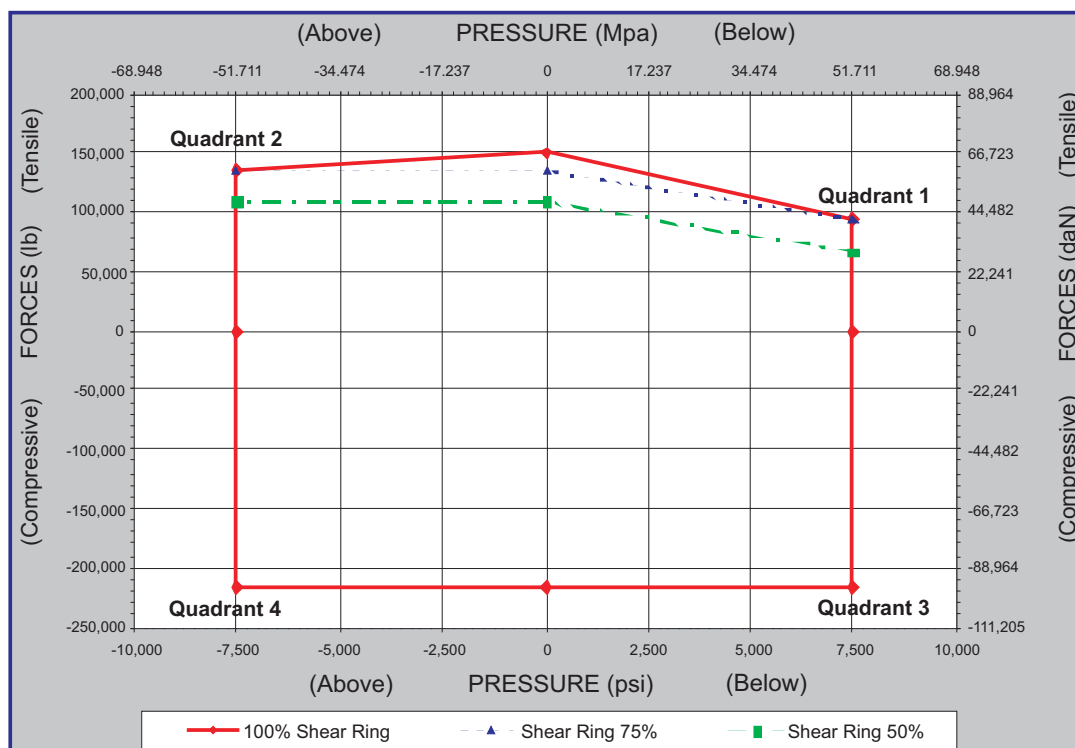
- » Quadrant 1: Pressure from *Below* with *Tension*
- » Quadrant 2: Pressure from *Above* with *Tension*
- » Quadrant 3: Pressure from *Below* with *Compression*
- » Quadrant 4: Pressure from *Above* with *Compression*

ISO 14310/API 11D1 Design Validation Grades

Validation levels should be used to describe development test requirements for new packers. ISO 14310/API 11D1 design validation grades are as follows:

- » Grade V6 = minimum grade (supplier specified)
- » Grade V5 = liquid test
- » Grade V4 = liquid test with axial loads
- » Grade V3 = liquid test with axial loads and temperature cycling
- » Grade V2 = gas test with axial loads
- » Grade V1 = gas test with axial loads and temperature cycling
- » Grade V0 = V1 with special acceptance criteria (zero bubble)

Halliburton typically supplies V3 and V0 validation grades. Selection of a specific validation grade is best determined with the consultation of a Halliburton representative.



Operating envelopes are used for combined packer performance ratings.

Permanent Production Packers

The Halliburton Perma-Series® packer family is a complete portfolio of standard and high-pressure/high-temperature packers validated for API/ISO V0 and V3 applications. This reliable, field-proven line of packers is available in wireline-, hydraulic-, and hydrostatic-set options.

Wireline-Set Perma-Series® Packers

Halliburton wireline-set Perma-Series packers are effective differential production packers for single or multizone completions. These permanent packers can be slickline, electric line, or hydraulic set on the workstring. They are also designed to leave the packer bore free of all setting devices and maintain a large fluid-bypass area through the packer.

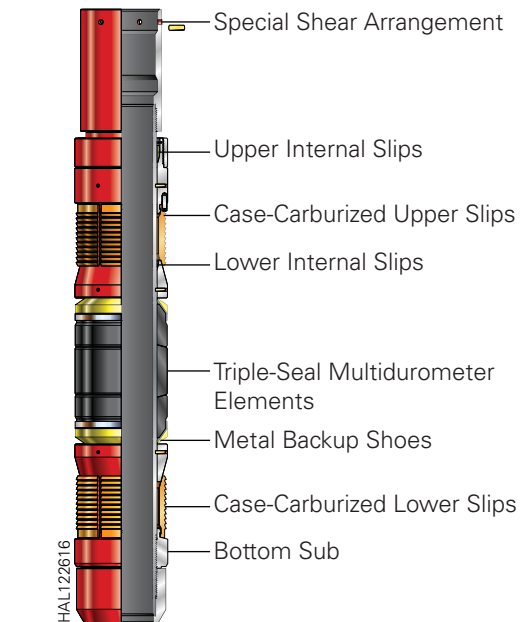
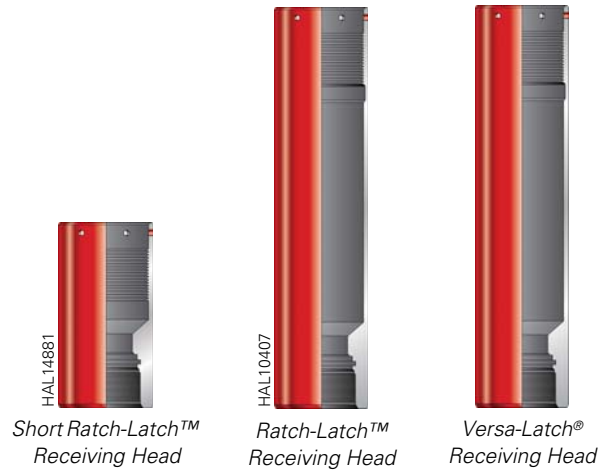
Applications

- » High formation, unloading differential, or stimulation pressure areas
- » Pulling tubing without unseating packers
- » High bottomhole temperatures
- » Downhole conditions that demand special running clearance
- » Twin-flow chemical injection systems

Features

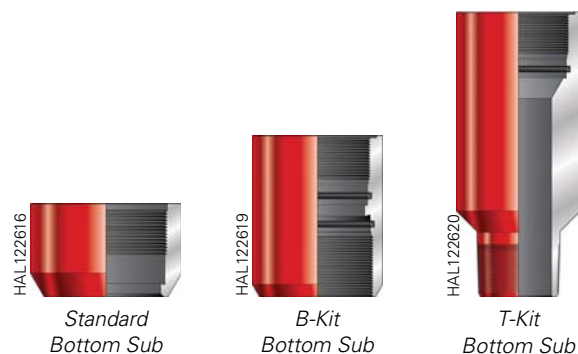
- » Upper internal slip design retains the setting force throughout the packer assembly; lower internal slips prevent upward movement of the upper wedge while running
- » Internal locking-slip ring aids in fast removal, saving rig time if milling becomes necessary
- » Triple-seal multidurometer seal element
- » Element package is effective at high or low temperatures and pressures
- » Metal-to-metal backup shoes with 360° casing wall contact prevent seal element extrusion and offer reliable sealing at ultra-high pressures
- » Contoured c-slip design provides maximum casing contact with uniform slip engagement
- » Case-carburized slips provide controlled hardness depth and maximum hardness across the tooth section
- » Slip core retains original metallic structure for easy milling

Optional Receiving Head Arrangements



Configured Wireline-Set
Perma-Series® Packer

Optional Bottom Sub Arrangements

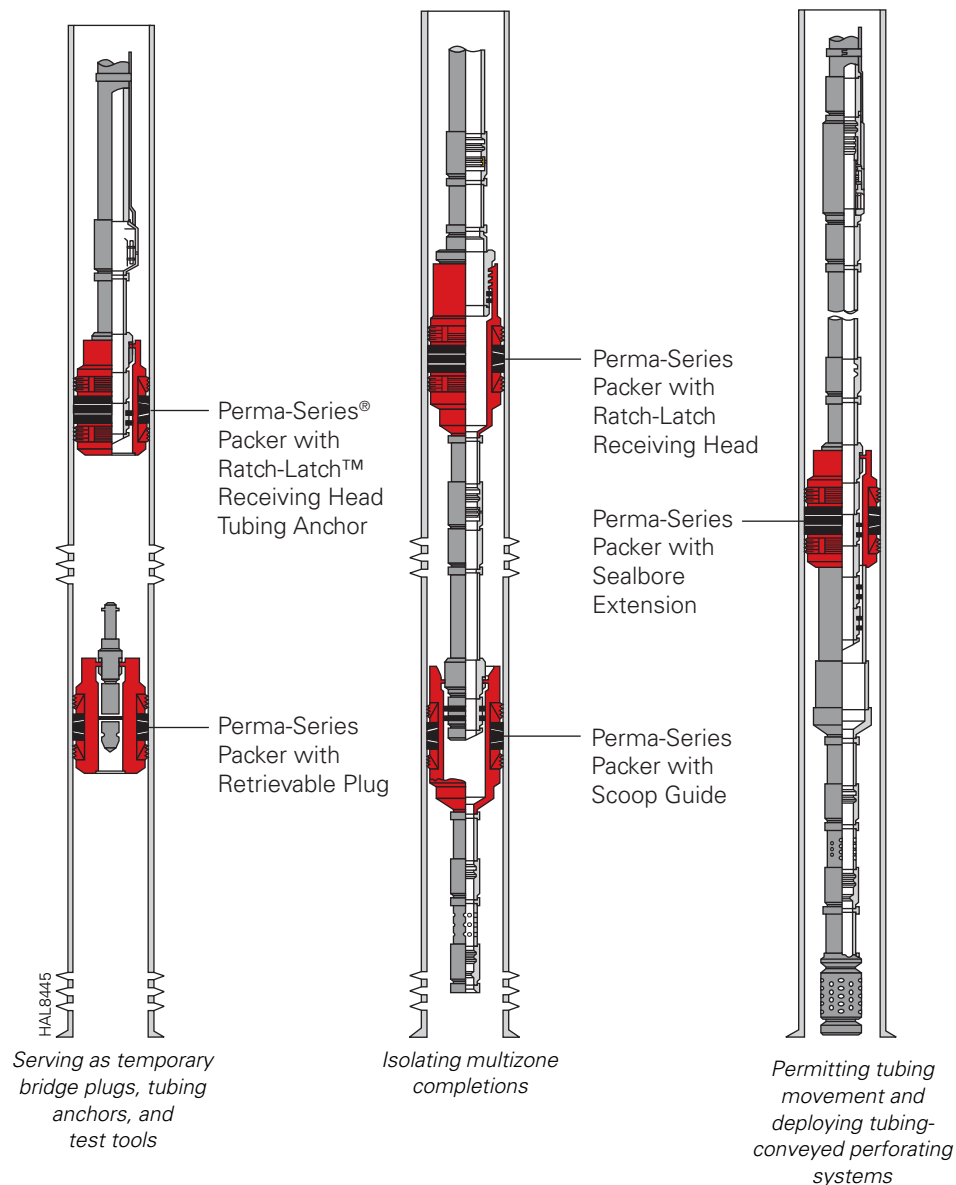


Benefits

- » Maintains a large fluid-bypass area through the packer
- » Saves rig time
- » Helps ensure easy milling because the slip core retains its original metallic structure
- » Provides flexibility with multiple receiving head and bottom sub options
- » Can be adapted for high-pressure/high-temperature applications

Options

- » Optional receiving head arrangements include short Ratch-Latch™ for vertical wells, short Ratch-Latch with scoop guide for deviated wells, and upper Ratch-Latch for maximum bore through the packer
- » Optional bottom sub arrangements include plain bottom sub for sump packer applications, sealbore extension thread for additional seal surface, and tubing or millout extension thread for tailpipe accessories
- » Seal element package available in standard up to 325°F (163°C) and special up to 550°F (288°C) packages


HALLIBURTON

Completion Tools

Wireline-Set Perma-Series® Production Packers

Casing Size		Casing Weight		Packer OD		Sealbore ID		Maximum Seal Unit ID*	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
4 1/2	114.30	9.5 to 12.6	14.14 to 18.75	3.79	96.27	2.55	64.90	1.92	48.77
						3.00**	76.20	2.33	59.18
		9.5 to 13.5	14.14 to 20.09	3.72	94.49	2.37	60.33	1.53	38.86
		13.5 to 15.1	20.09 to 22.47	3.64	92.46	2.55	64.90	1.92	48.77
						2.75**	69.85	2.02	51.31
5	127.00	13.5 to 16.8	20.09 to 25.00	3.60	91.44	2.37	60.33	1.53	38.86
		15 to 21	22.32 to 31.25	3.96	100.58	2.55	64.90	1.92	48.77
						3.12**	79.25	2.39	60.71
		23.2 to 24.2	34.52 to 36.01	3.79	96.27	2.55	64.90	1.92	48.77
						3.00**	76.20	2.33	59.18
5 1/2	139.70	13 to 20	19.34 to 29.76	4.54	115.32	2.75	69.85	1.92	48.77
						3.00	76.20	2.33	59.18
						3.50**	88.90	2.77	70.36
		20 to 26	29.76 to 38.69	4.36	110.74	2.75	69.85	1.92	48.77
						3.00	76.20	2.33	59.18
						3.50**	88.90	2.77	70.36
		23 to 28.4	34.22 to 42.26	4.26	108.20	2.75	69.85	1.92	48.77
						3.00	76.20	2.33	59.18
						3.12**	79.25	2.39	60.71
						2.75	69.85	1.92	48.77
6 5/8	168.28	17 to 32	25.30 to 47.62	5.47	138.89	3.25	82.55	2.35	59.69
						4.25**	107.95	3.25	82.55
						3.25	82.55	2.35	59.69
		20 to 24	29.76 to 35.72	5.69	144.45	4.00	101.60	2.97	75.44
						4.75**	120.65	3.87	98.30
						4.00	101.60	2.97	75.44
7	177.80	17 to 20	25.30 to 29.76	6.25	158.75	3.25	82.55	2.35	59.69
		17 to 23	25.30 to 34.22	6.18	156.97	4.25**	107.95	3.25	82.55
		20 to 26	29.76 to 38.69	6.00	152.40	4.00	101.60	2.97	75.44
		23 to 32	34.22 to 47.62	5.88	149.23	4.00	101.60	2.97	75.44
		23 to 38	34.22 to 56.54	5.69	144.45	5.00**	127.00	3.93	99.82
						2.75	69.85	1.92	48.77
						3.25	82.55	2.35	59.69
		32 to 38	47.62 to 56.54	5.69	144.45	4.25**	107.95	3.25	82.55
						4.00	101.60	2.97	75.44
						4.75**	120.65	3.87	98.30
		32 to 45.4	47.62 to 67.55	5.47	138.89	2.75	69.85	1.92	48.77
						3.25	82.55	2.35	59.69
						4.25**	107.95	3.25	82.55
		46.4 to 49.5	69.04 to 73.66	5.29	134.37	3.25	82.55	2.35	59.69
						4.00**	101.60	2.97	75.44
						2.75	69.85	1.83	46.48
7 5/8	193.68	26.4 to 39	39.29 to 58.04	6.38	161.93	3.25	82.55	2.35	59.69
						4.00	101.60	2.97	75.44
						4.50	114.30	3.52	89.41
		33.7 to 39	50.14 to 58.04	6.38	161.93	5.25**	133.35	4.00	101.60
						3.25	82.55	2.35	59.69
						4.25**	107.95	3.25	82.55
8 5/8	219.08	33.7 to 45.3	50.14 to 67.41	6.18	156.97	4.00	101.60	2.97	75.44
		36 to 49	53.57 to 72.91	7.26	184.40	4.00	101.60	2.97	75.44
		57.4 to 60.4	85.41 to 89.87	6.94	176.15	4.60	116.84	3.80	96.52

Wireline-Set Perma-Series® Production Packers

Casing Size		Casing Weight		Packer OD		Sealbore ID		Maximum Seal Unit ID*	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
9 5/8	244.48	36 to 47	53.57 to 69.94	8.42	213.87	6.00	152.40	4.86	123.44
						7.00**	177.80	6.00	152.40
		40 to 53.5	59.52 to 79.61	8.22	208.79	6.00	152.40	4.86	123.44
						7.00**	177.80	6.00	152.40
		47 to 58.4	69.94 to 86.90	8.16	207.26	6.00	152.40	4.86	123.44
		36 to 59.4	53.57 to 88.39	8.12	206.25	3.25	82.55	2.35	59.69
						4.00	101.60	2.97	75.44
						5.00	127.00	3.85	97.79
10 3/4	273.05					6.50**	165.10	5.00	127.00
		40.5 to 45.5	60.26 to 67.70	9.63	244.60	7.25**	184.15	5.90	149.86
		32.75 to 65.7	48.73 to 97.76	9.28	235.71	5.00	127.00	3.85	97.79
						6.00	152.40	4.86	123.44
11 3/4	298.45	54 to 65	80.35 to 96.72	10.44	265.18	7.00**	177.80	6.00	152.40
						5.00	127.00	3.85	97.79
						8.75**	222.25	7.60	193.04
11 7/8	301.63	71.8	106.84	10.44	265.18	5.00	127.00	3.85	97.79
						8.75**	222.25	7.60	193.04
13 3/8	339.73	54.5 to 72	81.10 to 107.13	12.09	307.09	8.00	203.20	6.25	158.75
		72 to 77	107.13 to 114.57	11.92	302.77	10.38**	263.53	8.50	215.90

*Thread type and size control seal unit

**Upper Ratch-Latch™ head style

Ordering Information

Specify: casing size and weight; packer bore, receiving head arrangement (short Ratch-Latch, scoop guide, upper Ratch-Latch), bottom sub arrangement (blank, threaded for tubing, sealbore or extensions, or millout extensions), bottom thread, if applicable, tubing size; weight; grade/material; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 212AWS, 212BWS, 212TWS, 212AWT, 212BWT, 212TWT, 212TWR

Wireline-Set Perma-Series® TWC Packers

The Halliburton TWC Perma-Series® packer is a permanent millable packer set by wireline in the well casing to divert casing-to-tubing flow. An internal slip inhibits mandrel movement caused by pressure and load reversals. Once the packer is set, it cannot be released. However, the packer can be milled out. A lug on the top slip support and the internal slip prevent the packer from rotating during milling operations.

The TWC packer features an on-off gudgeon with an overshoot seal unit on the upper end to engage the tubing to the packer. The gudgeon contains a profile to accept a wireline plug to allow the packer to be used as a bridge plug when the tubing is disconnected. The packer can be run and set with a wireline plug pre-installed. The overshoot engages the gudgeon using an automatic J-profile and is disconnected with 1/4 turn to the left at the packer. Refer to the “On-Off Tool” section of the catalog for more details about the XL on-off tool features.

The TWC packer mandrel is of a single-piece construction, from the gudgeon to the bottom thread of the packer. This eliminates o-rings and potential leak paths.

TWC Packers

Casing Size		Casing Weight		Packer OD		Profile X®, XN®, R®, or RN®
in.	mm	lb/ft	kg/m	in.	mm	in.
4 1/2	114.30	9.5 to 12.6	14.14 to 18.75	3.79	96.27	1.875
		13.5 to 15.1	20.09 to 22.47	3.64	92.46	
5	127.00	15 to 21	22.32 to 31.25	3.96	100.58	1.875
		23.2 to 24.2	34.52 to 36.01	3.79	96.27	
5 1/2	139.70	13 to 20	19.34 to 29.76	4.54	115.32	1.875 or 2.313
		20 to 26	29.76 to 38.69	4.36	110.74	
7	177.80	23 to 38	34.22 to 56.54	5.69	144.53	1.875 or 2.313 or 2.75
7 5/8	193.68	26.4 to 39	39.28 to 58.03	6.38	162.05	1.875 or 2.313 or 2.75

*Contact your local Halliburton representative for specifics regarding pressure/temperature ratings, threads, materials, etc.

Part Number Prefix: 212TWC



Setting Adapter Kits and Hydraulic Setting Tools

Setting Adapter Kits

Halliburton adapter kits are designed to be attached to the packer and either a conventional explosive-type wireline setting tool or a hydraulic setting tool. When the setting tool is activated, the setting adapter kit sets the packer. When prescribed setting force is applied to the packer, setting pins in the wireline adapter kit separate to release setting equipment from the packer so it can be retrieved.

Hydraulic Setting Tools

Hydraulic setting tools allow packers normally run and set on electric wireline to be run and set on a workstring instead.

Various configurations of setting adapter kits and setting tools are possible. Figure 1 features a standard electric wireline adapter kit in which the packer and adapter kit are connected directly to the hydraulic setting tool.

In Figure 2, the packer is connected directly to the hydraulic setting tool; therefore, no adapter kit is required. This setting tool incorporates a seal in the packer bore that enables an annulus test against the packer before expending the ball and seat.

Figure 3 shows a hydraulic setting tool designed for use only on certain Perma-Series® packers. It provides an additional anti-preset mechanism by limiting downward movement of the tube guide and top slip carrier until the hydraulic-setting mechanism is activated. A stabilizer bar with packoff is provided to test the annulus against the packer before shearing off the packer and expending the ball seat. No tubing rotation is required for disengagement from the packer.

In all three cases, the setting ball and seat are set to shear at a predetermined pressure, which exposes a port to allow tubing-to-casing communication. The operator can then pull a dry workstring.



Hydraulic Setting Tools

Hydraulic-Set Perma-Series® Packers

The hydraulic-set Perma-Series® packer is a single-trip permanent millable production version of the proven Perma-Series packer. It is ideal for highly deviated and/or single-trip production and injection applications.

This packer includes a one-piece mandrel and sealbore, if required, which eliminates a potential leak path. It has a low profile for greater running clearance to help reduce problems that might occur when running in highly deviated and horizontal wells. Premium metal-to-metal (MTM) thread connections help enhance packer dependability.

Ease of use is proven in flanged-up, single-trip completions common during offshore operations. This packer sets with low pressure, major components are rotationally locked, and materials are suitable for milling. No tubing manipulation is required to set the packer, and the hydraulic-set Perma-Series packer is compatible with standard Halliburton accessory equipment.

An upper polished bore receptacle or overshot tubing seal divider can be connected to the top of the packer.

Applications

- » Highly deviated production and/or injection areas
- » Single-trip production and/or injection wells
- » Offshore completions that require a single-trip packer

Features

- » Case-carburized slips
- » MTM backup shoes with 360° casing wall contact
- » Triple-seal multidurometer element package
- » Single-piece bottom sub and piston housing
- » MTM premium thread connections standard on the packer, seal anchor, and Ratch-Latch™ assembly
- » Minimal number of pressure-containing o-ring seals
- » Large bore through packer and seal assembly
- » Low profile
- » Self-contained hydraulic setting system
- » No mandrel movement
- » One-piece mandrel and sealbore
- » Ratch-Latch sealbore with seal anchor



Benefits

- » Potential leak paths minimized
- » No tubing manipulation required during setting
- » Greater running clearance because of the low profile of the external components
- » Compatible with standard accessory equipment
- » Easy to use in flanged-up completions common to offshore operations

Options

- » Lower sealbore (short) Ratch-Latch™ head
- » Upper sealbore Ratch-Latch head (largest bore)
- » Metal-to-metal backoff subhead
- » No mandrel movement

Hydraulic-Set Perma-Series® Production Packers

Casing Size		Casing Weight		Packer OD		Packer Sealing Bore							
						Upper Sealbore		Packer and Seal Assembly Minimum ID*		Lower Sealbore		Packer and Seal Assembly Minimum ID*	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
5	127.00	15 to 21	22.32 to 31.25	3.96	100.58	3.12	79.25	1.91	48.51	–	–	–	–
		18	26.78	4.10	104.14	3.12	79.25	1.91	48.51	–	–	–	–
5 1/2	139.70	14 to 20	20.83 to 29.76	4.54	115.32	3.50	88.90	2.36	59.94	3.00	76.20	2.33	59.18
		20 to 23	29.76 to 34.22	4.45	113.03								
		23 to 26	34.22 to 38.69	4.36	110.74								
6 5/8	168.28	17 to 32	25.30 to 47.62	5.47	138.89	4.25	107.95	3.17	80.52	3.25	82.55	2.35	59.69
		17 to 20	25.30 to 29.76	5.88	149.23	5.00	127.00	3.88	98.55	4.00	101.60	2.88	73.03
7	177.80	17 to 23	25.30 to 34.22	6.18	156.97	4.25	107.95	3.17	80.52	3.25	82.55	2.35	59.69
		17 to 20	25.30 to 29.76	6.25	158.75	5.00	127.00	3.88	98.43	4.00	101.60	2.88	73.03
		23 to 32	34.22 to 47.62	5.88	149.23	5.00	127.00	3.88	98.43	4.00	101.60	2.88	73.03
		23 to 38	34.22 to 56.55	5.69	144.45	4.25	107.95	3.17	80.52	3.25	82.55	2.35	59.69
		29 to 32	43.15 to 47.62	5.88	149.23	5.25	133.35	4.12	104.65	–	–	–	–
		32 to 35	47.62 to 52.08	5.75	146.05	4.685	119.00	3.72	94.49	–	–	–	–
		32 to 44	47.62 to 65.47	5.47	138.89	4.25	107.95	3.17	80.52	3.25	82.55	2.35	59.69
7 5/8	193.68	26.4 to 39	39.29 to 58.04	6.38	161.93	5.00	127.00	3.88	98.55	4.00	101.60	2.88	73.15
		33.7 to 45.3	50.15 to 67.41	6.25	158.75	5.00	127.00	3.88	98.55	4.00	101.60	2.88	73.15
		33.7 to 47.1	50.15 to 70.08	6.18	156.97	4.25	107.95	3.17	80.52	3.25	82.55	2.35	59.69
9 5/8	244.48	36 to 59.4	53.57 to 88.39	8.13	206.50	6.50	165.10	4.85	123.19	5.00	127.00	3.88	98.55
		40 to 47	59.52 to 69.94	8.42	213.87	7.25	184.15	6.02	152.91	6.00	152.40	4.85	123.19
		53.50	79.61	8.31	211.07	7.25	184.15	6.02	152.91	6.00	152.40	4.85	123.19
10 3/4	273.05	55.5 to 60.7	82.58 to 90.32	9.28	235.71	7.00	177.80	6.00	152.40	6.00	152.40	4.85	123.19
		60.7 to 65.7	90.32 to 97.76	9.28	235.71	7.00	177.80	6.00	152.40	6.00	152.40	4.85	123.19

*Minimum IDs can vary depending on tubing thread connection. Other sizes available on request.

*Upper sealbore assembly sold separately from the packer.

Ordering Information

Specify: casing size and weight, packer bore, bottom thread, minimum ID, locator type (Ratch-Latch™ or seal anchor), service environment (%H₂S, %CO₂, temperature, pressures, inhibitors, possibility of acid treatments, etc.), differential pressure rating requirements, special material requirements.

Part Number Prefixes: 212MHT, 212THT, 212MHS, 212THS, 212MNT, 212TNT

Hydrostatic-Set Perma-Series® Packers

The hydrostatic-set Perma-Series® packer is a single-string packer ideal for highly deviated well applications or where conventional packer plug setting techniques are not possible. Based on the most advanced permanent packers available in the industry, this technology helps save both time and money, and reduces intervention risk.

Applications

- » Highly deviated wells or where conventional packer plug setting techniques are not possible (non-perforated wells)

Features

- » Holds pressure above and below
- » Advanced rupture disk technology (available in 500-psi increments with temperature compensation curves)
- » Dual rupture disks for reliability
- » Built-in anti-preset features (hydrostatic module is biased in the closed position)
- » Independent contingency setting mechanism
- » Can be set in heavy completion/drilling fluids

Benefits

- » Reduces packer setting costs
- » Reduces rig time
- » Uses available hydrostatic pressure to initiate setting process
- » Minimizes wellbore intervention to set packer setting plug

Operation

- » Run on tubing string
- » Set using available hydrostatic wellbore pressure and applied surface pressure without plugs
- » Removed with conventional milling tools



Hydrostatic-Set
Perma-Series® Packer

Hydrostatic-Set Permanent Production Packer

Casing Size		Weight Range		Maximum OD		Minimum OD	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
5	127.00	24.1	35.86	3.84	97.54	2.19	55.62
7	177.80	29 to 32	43.15 to 47.62	5.90	149.86	3.87	98.29
		32 to 35	47.62 to 52.08	5.80	147.32	3.83	97.28
7 5/8	193.68	26.4 to 39	39.29 to 58.04	6.37	161.93	3.87	98.29
		33.7 to 39	50.15 to 58.04	6.37	161.93	3.87	98.29
9 5/8	244.50	43.5 to 53.5	64.73 to 79.62	8.31	211.07	4.85	123.18
		43.5 to 47	64.73 to 69.94	8.42	213.87	6.00	152.39
		53.5	79.62	8.33	211.58	6.00	152.39
9 7/8	250.83	62.7 to 68	93.30 to 101.18	8.31	211.07	4.46	113.28
10	254.00	67.56 to 68.7	100.54 to 102.24	8.31	211.07	4.46	113.28
10 3/4	263.53	55.5 to 65.7	82.59 to 97.77	9.250	234.95	6.023	152.98

Part Number Prefixes: 212HHT, 212HHS, 212HNT, 212HNS

Hydraulic-Set Perma-Series® HP/HT Packer

The hydraulic-set Perma-Series® high-pressure/high-temperature (HP/HT) packer, designed for extreme-service conditions, is a permanent, millable packer set in the well casing to divert casing-to-tubing flow. In addition to HP/HT ratings, this packer offers high tubing-to-packer load ratings. It features a tubing thread top connection and is hydraulically set by applying pressure to the plugged tubing string. A special shear sleeve attached to the bottom slip carrier allows the packer to set without the need for mandrel movement. It has a low profile for greater running clearance to help reduce problems that can occur when running in highly deviated and horizontal wells. Premium metal-to-metal (MTM) thread connections enhance packer dependability. The Halliburton unique double opposing barrel slips and HP/HT element systems are unsurpassed in the industry for efficient gripping and sealing against the casing wall under the toughest of conditions.

Applications

- » Hot, corrosive, deep, deviated, production, or test completions
- » Single-trip production and/or injection wells
- » Offshore completions that require a single-trip packer

Features

- » Case-carburized opposing barrel slips
- » MTM backup shoes with 360° casing wall contact for reliable element containment
- » MTM thread connections
- » Low profile
- » Self-contained hydraulic setting system
- » No mandrel movement operation

Options

- » Element package suitable for particular temperatures, pressures, and fluids
- » Metallurgy suitable for particular completions, stimulations, and produced fluids
- » Various latch heads available, if necessary



*Hydraulic-Set
Perma-Series® HP/HT Packer*

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 212TNT, 212HNT, 212THT, 212HHT

Wireline-Set Perma-Series® HP/HT Packer

Wireline-set Perma-Series® high-pressure/high-temperature (HP/HT) packers are designed for the most severe completion environments. These packers are designed specifically for HP/HT, hostile environments. Compatible seal assemblies and various receiving heads, including metal-to-metal (MTM) latching type, are available.

Applications

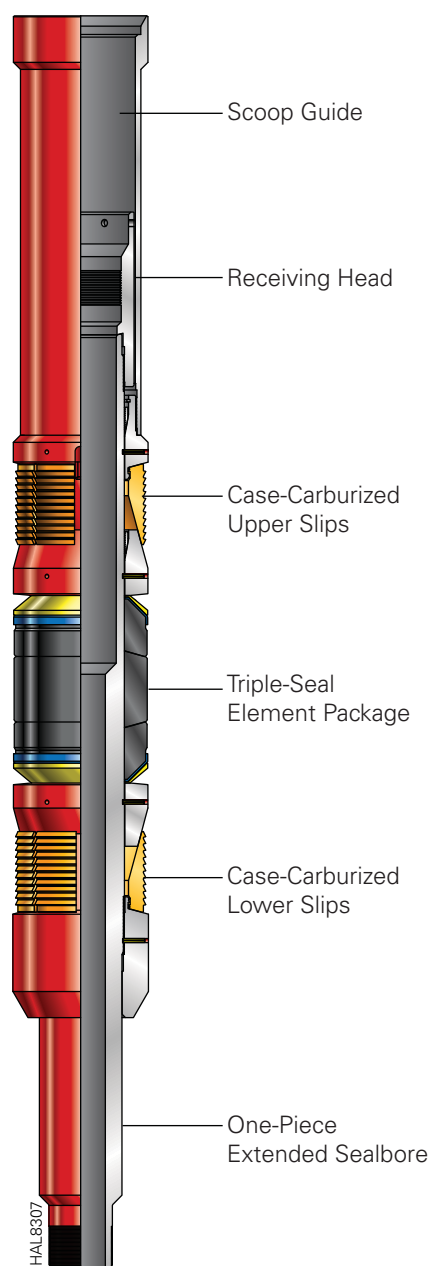
- » Hot, corrosive, deep, deviated, production, or test completions
- » Pressures up to 18,000 psi (124.1 MPa)
- » Temperatures up to 550°F (288°C)

Features

- » HP/HT triple-seal element package with MTM backup shoes with 360° casing wall contact for reliable element containment
- » Contoured case-carburized external c-slips for maximum casing contact with uniform engagement to minimize casing damage or deformation
- » Extended seal mandrel eliminates o-ring or thread connections for the sealbore extension
- » Premium metallurgy suitable for hostile environments
- » Scoophead for easy entry of seal assembly in highly deviated wellbores
- » Can be set on wireline or with a hydraulic setting tool

Options

- » Element package suitable for particular temperatures, pressures, and fluids
- » Metallurgy suitable for particular completions, stimulations, and produced fluids
- » Length of sealbore
- » Type of top connection
- » Hydraulic-set design



Wireline-Set Perma-Series®
HP/HT Packer

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 212NWT

Retrievable Production Packers

Halliburton X-Trieve™ retrievable production packers are available in hydraulic- or hydrostatic-set as well as high-performance options for high-pressure/high-temperature (HP/HT) applications.

The HR, HC, and HP X-Trieve packer families feature a barrel slip, which provides superior anchoring and load distribution capabilities, and are validated for API/ISO V0 and V3 applications.

Hydraulic-Set X-Trieve™ HR (AHR) Packer

The X-Trieve HR (AHR) packer is a retrievable, hydraulic-set production packer set in casing to divert casing-to-tubing flow. It is set by pressuring up the tubing string against a plugging device below the packer. Bi-directional, case-carburized slips hold the packer against well pressures from above and below. Spring-loaded internal slips maintain the packer in the set position.

The X-Trieve AHR packer is a straight shear-to-release packer that is convertible to cut to release. The shear release value is adjustable.

Applications

- » Multizone production applications
- » Single-trip applications
- » Multi-string completions with control line feed through
- » Electric submersible pump completions

Features

- » API 11D1-V3 validated
- » Single-trip capability
- » Barrel slip design
- » Single-piece mandrel construction
- » Triple-seal multidurometer element
- » Straight shear or cut to release

Benefits

- » Multiple packers can be set close together
- » Easily converted between straight shear to release or cut to release
- » Meets API 11D1 specifications
- » Various casing sizes available



Hydraulic-Set X-Trieve™
HR (AHR) Packer

Hydraulic-Set X-Trieve™ HR (AHR) Packer

Casing Size		Casing Weight		Packer OD		Packer ID	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
5 1/2	139.7	20 to 23	29.76 to 34.22	4.50	114.3	2.35	59.69
7	177.8	20 to 26	29.76 to 38.69	6.1	154.93	3.875	98.42
		23 to 29	34.22 to 43.15	6	152.39	3.875	98.42
		26 to 32	38.69 to 47.62	5.93	150.62	3.875	98.42
9 5/8	244.48	40 to 47	59.53 to 69.94	8.47	215.13	4.73	120.14
		47 to 53.5	69.94 to 79.62	8.31	211.07	4.73	120.14

Hydraulic-Set X-Trieve™ HC (AHC) Retrievable Packer

The X-Trieve™ HC (AHC) retrievable packer is a hydraulic-set, cut-to-release production packer. The unique design allows either the packer ID to be maximized or have multiple bores or control line feed throughs. The large bore and no mandrel movement when setting make this packer ideally suited for multizone stacked packer applications.

The AHC packer can be configured as either a straight-shear-release retrievable packer, or where high pressures are expected, it can be set up as cut to release. In the cut-to-release design, the packer mandrel is cut, and the packer with tailpipe is retrieved without leaving any packer components in the well.

Applications

- » Multizone production applications
- » Single-trip completions
- » Multi-string completions with control line feed through
- » Electric submersible pump completions
- » High-pressure and tubing-conveyed perforating applications with cut-to-release option

Features

- » Large ID for maximum tubing size or multiple bores
- » Single-trip capability
- » Triple-seal multidurometer element package
- » Case-carburized barrel slip
- » Single-piece mandrel construction
- » Straight pull (in some cases) or cut to release

Benefits

- » Does not require tubing manipulation to set
- » Multiple packers can be set close together
- » Minimal casing damage caused by slips under extreme load situations
- » Maximum protection from leaks

Options

- » Premium metallurgy and elastomers
- » Upper tubing connection or Ratch-Latch™ head
- » Optional element packages for high temperature or completion fluid compatibility
- » Straight shear or cut to release

Hydraulic-Set X-Trieve™ HC (AHC) Retrievable Packer

Casing Size		Casing Weight		Packer OD		Packer ID	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
7	177.80	26 to 29	38.69 to 43.15	5.96	151.38	2.95	74.93
		29 to 32	43.15 to 47.62	5.93	150.62	3.90	99.06
		32 to 35	47.62 to 52.08	5.82	147.83	3.90	99.06
7 5/8	193.68	24 to 29.7	35.71 to 44.19	6.69	169.93	3.90	99.06
		33.7 to 39	50.14 to 58.03	6.44	163.58	3.90	99.06
9 5/8	244.48	43.5 to 53.5	64.73 to 79.61	8.31	211.07	4.88	123.95
		43.5 to 47	64.73 to 69.94	8.45	214.63	6.02	152.91
		47 to 53.5	69.94 to 79.61	8.35	212.09	6.02	152.91
13 3/8	339.73	68 to 72	101.18 to 107.13	12.13	308.10	8.52	216.41

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 12AHC



Hydraulic-Set X-Trieve™ HC (AHC) Retrievable Packer

Hydrostatic-Set X-Trieve™ HC Retrievable Production Packers

X-Trieve™ HC hydrostatic-set retrievable packers are for large bore, deviated well applications or where conventional packer plug setting techniques are not possible. These reliable single-trip packers help save both time and costs and reduce intervention risk.

Applications

- » Highly deviated wells or where conventional packer plug setting techniques are not possible (non-perforated wells)
- » Where a large bore retrievable packer design is required

Features

- » Holds pressure above and below
- » Barrel slips for effective load distribution
- » Advanced rupture disk technology (available in 500-psi increments with temperature compensation curves)
- » Dual rupture disks for reliability
- » Built-in anti-preset features (hydrostatic module is biased in the closed position)
- » Independent contingency setting mechanism
- » Removed from the wellbore using cut-to-release technology

Benefits

- » Reduces packer setting costs
- » Reduces rig time
- » Uses available hydrostatic pressure to initiate the setting process
- » Eliminates wellbore intervention to set packer setting plug
- » Reliable cut-to-release design eliminates lengthy milling operations during retrieval operations

Operation

- » Run on tubing string
- » Set using available hydrostatic wellbore pressure and applied surface pressure without plugging devices
- » Removed by cutting mandrel in predetermined cut zone using chemical or mechanical cutting tools



Hydrostatic-Set X-Trieve™
HC Retrievable Packer

X-Trieve™ HC Hydrostatic-Set Retrievable Packer

Casing Size		Weight Range		Maximum OD		Minimum OD	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
7	177.80	29 to 32	43.85 to 47.62	5.93	150.62	3.87	98.29
		32 to 35	47.62 to 52.08	5.82	147.82	3.85	97.79
9 5/8	244.50	43.5 to 53.5	64.73 to 79.62	8.31	211.06	4.79	121.41
		43.5 to 47	64.73 to 69.94	8.44	214.37	6.00	152.36
		47 to 53.5	69.94 to 79.62	8.35	212.08	6.00	152.36
10 3/4	273.05	55.5 to 60.7	82.59 to 90.33	9.45	240.03	4.59	116.59
		60.7 to 65.7	90.33 to 97.77	9.38	238.25	4.73	120.14
13 3/8	339.73	68 to 72	101.20 to 107.14	12.13	308.10	6.02	152.91

X-Trieve™ HP (HHH and HHS) Retrievable Packers

The X-Trieve™ HP (HHH and HHS) retrievable packer is a high-pressure/high-temperature (HP/HT), retrievable, single-string hydrostatic-set packer that can be run in extreme hydrostatic pressures up to 28,000 psi. The HHH packer is set interventionlessly in casing to divert casing-to-tubing flow. This packer contains a hydrostatic-setting feature that allows the packer to be set using available well hydrostatic pressure. Once set, a barrel slip holds the packer against well pressures from above and below. An internal slip system maintains the packer in the set position. Once this packer is run and set, it is released and retrieved by a straight upward pull with the HRB retrieving tool.

The packer is deployed on tubing using regular completion techniques. Once the production packer reaches the intended setting depth, a predetermined surface pressure is applied to increase the hydrostatic pressure at the packer. As the hydrostatic pressure approaches the packer setting pressure, the packer setting motion begins. This process is performed without well intervention or tubing plugging devices.

The X-Trieve HHS retrievable packer is a hydrostatic-set cut-to-release version of the HHH packer. It is ideal for use in complex completions that require advanced packer-setting techniques. The HHS packer eliminates the need to deploy packer setting plugs.

Once the packer is released, a snap ring engages the mandrel, locking the lower wedge in place. This helps hold the barrel slip in the retracted position.

Applications

- » Hot, corrosive, deep, deviated, production, or test completions with hydrostatic pressures up to 28,000 psi
- » Extended reach completions where conventional intervention techniques are limited
- » Completions in which milling to retrieve a permanent packer is not desired
- » Wells in which minimum casing deformation or damage is desired
- » Single-trip completions
- » Multi-packer installations
- » Liner-top installations
- » Monobore completions

Features

- » Propped element package
- » Barrel slip
- » Casing-compliant metal-to-metal backup shoes with 360° casing wall contact for element containment and reliability
- » Slips located below element package for protection from debris
- » No mandrel movement operation
- » Premium metallurgy and elastomers
- » Anti-reset (HHS packer)

Benefits

- » No milling required for retrieval
- » Suitable for unsupported casing
- » Non-damaging to casing
- » Maximum sealing and retrieving reliability
- » Designed to minimize rig time during completion and decompletion



HAL123946

X-Trieve™ HHH
Packer Assembly

X-Trieve™ HP (HPH and HPS) Retrievable Packers

X-Trieve™ HP (HPH and HPS) retrievable packers combine the pressure and temperature ratings and reliability of a permanent packer with the convenience of a retrievable packer. These packers incorporate unique design features that result in a retrievable packer suitable for use at differential pressures up to 15,000 psi (103.4 MPa) at temperatures up to 400°F (204°C). The barrel slip uniformly distributes the packer to casing loads. The propped element package reliably seals the high pressures and can be retrieved with the packer.

Applications

- » Hot, corrosive, deep, deviated, production, or test completions
- » When permanent packer retrieval without milling is preferred
- » Wells in which minimum casing deformation or damage is desired
- » Single-trip completions
- » Multi-packer installations
- » Liner-top installation
- » Monobore

Features

- » Propped element package
- » Barrel slip
- » Metal-to-metal backup shoes with 360° casing wall contact for element containment and reliability
- » Slips located below element package for protection from debris
- » No mandrel movement operation
- » Premium metallurgy and elastomers
- » Also available as cut to release (HPS packer)
- » Retrieved using a dedicated retrieving tool run on a workstring

Benefits

- » No milling required to retrieve HPH packer
- » Suitable for unsupported casing
- » Non-damaging to casing
- » Maximum sealing and retrieving reliability
- » Designed to minimize rig time during completion and decompletion

X-Trieve™ HP (HPH) Retrievable Packer

Casing Size		Casing Weight		Maximum OD		Minimum ID	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
7	177.80	26 to 32	38.69 to 47.62	5.92	150.36	3.80	96.52
		29 to 32	43.16 to 47.62	5.92	150.36	3.72	94.48
		29 to 32	43.16 to 47.62	5.92	150.36	3.88	98.55
		32 to 35	47.62 to 52.08	5.82	147.82	3.72	94.48
		35 to 38	52.08 to 56.54	5.730	145.54	2.75	69.85
7 5/8	193.68	39	58.03	6.405	162.69	2.972	75.49
		47.1	70.08	6.125	155.57	3.32	84.32
8 5/8	219.08	55.83	83.08	7.125	180.97	4.60	116.84
		57.4	85.41	7.125	180.97	3.32	84.32
		61.4	91.36	6.935	176.14	3.32	84.32
9 5/8	244.48	47 to 53.5	69.94 to 79.62	8.35	212.09	5.06	128.52
						5.80	147.32
9 7/8	250.83	62.8 to 66.4	93.46 to 98.81	8.25	209.55	4.465	113.41
10 3/4	273.05	97.1 to 99.5	144.50 to 148.07	8.64	219.46	4.65	118.11

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 12HPH, 12HPS



X-Trieve™ HP (HPH) Packer

X-Trieve™ HP (HPS) Packer

Retrievable Feed-Through Packers

X-Trieve™ HP (MFT) feed-through packers are based on the successful, field-proven platforms highlighted in this catalog. The packer chassis is customized to allow for accommodation of feed-through lines, setting, retrieval, and performance capabilities. These packers are available in various ISO 14310 validation grades up to V0.

Feed-through applications include permanent reservoir monitoring, chemical injection, distributed temperature sensing, SmartWell® completions, electrical submersible pump (ESP) completions, or any other feed-through application.

- » Permanent packers can be used for ultra-high-pressure, high-temperature applications when control-line bypass is required.
- » HPS packers are used for high-performance completions when a retrievable feed-through packer is required. The MFT packer is the customized derivative.
- » HF-1 packers are the high-performance derivative of the HP1 packer, which offers punch, shifting tool, or cut-to-release options.
- » AHC packers used as hydraulic-set, retrievable feed-through packers become MFC packers.
- » AHR packers used as a donor for hydraulic-set, shear-release feed-through packers are MFA packers.
- » ESP packers are usually based on RDH or AHC packer chassis and are hydraulic set, shear to release.
- » Feed-through, hydrostatic-set packers are also available in certain casing and mandrel size configurations.
- » DHC packers offer multiple feed-through possibilities for SmartWell completions, ESP, and dual bore with control line penetration requirements.

X-Trieve™ HP (MFT) Packer

The X-Trieve HP (MFT) packer is a retrievable, hydraulic-set, cut-to-release, multi-string production or injection packer set in casing to divert casing-to-tubing flow. It is based on the proven HPH packer and features the same barrel slip and element package to provide high-performance operation. The packer can be set conventionally with tubing pressure via control line or in some sizes interventionally. Once set, an external barrel-type slip holds the packer against well pressures from above and below. The internal slips maintain the packer in the set position. After it is run and set, the packer can be released by cutting the mandrel. When properly and completely cut, the packer releases and all of the packer components, along with the tailpipe, can be retrieved from the well. A locator sub is installed on the lower end of the assembly for locating the cutter.

Benefits

- » Compatible with feed-through equipment
- » Easy installation can help make marginally economical wells attractive to produce
- » Easy retrievability means less time spent on workovers
- » Chemical injection and pressure monitoring ports can easily be added through the packer without significant costs
- » Long-term, dependable performance; elastomeric seals are minimized



X-Trieve™ HP
(MFT) Packer

Part Number Prefixes:
12MFT, 12MFC, 12MFA

Hydraulic-Set X-Trieve™ HC (DHC) Packer

The X-Trieve™ HC (DHC) packer is a retrievable, hydraulic-set dual-bore, or multi-feed-through production packer that is set in casing to divert casing-to-tubing flow. It is set by pressuring up the tubing string against a plugging device below the packer or can be control-line set in certain applications.

A bi-directional, case-carburized barrel slip holds the packer against well pressures from above and below. An internal body lock ring maintains the packer in the set position until the mandrel is cut to retrieve the packer.

Applications

- » Annular safety valve or SmartWell® completions
- » Single-trip applications
- » Multi-string completions with control line feed through
- » Dual-bore completions

Features

- » API 11D1-V3 validated
- » Single-trip capability
- » Barrel slip design
- » Single-piece mandrel construction
- » Triple-seal multidurometer element

Benefits

- » Multiple mandrel penetrations possible
- » Cut to release
- » Various casing sizes available

Hydraulic-Set X-Trieve™ HC (DHC) Packer

Casing Size		Casing Weight		Packer OD	
in.	mm	lb/ft	kg/m	in.	mm
9 5/8	244.48	47	69.94	8.41	213.6
		43.5 to 53.5	64.73 to 79.62	8.30	210.8
9 5/8/ 9 7/8	244.48/ 250.82	47 to 53.5/62.8	69.94 to 79.62/93.45	8.35	212.1
10 3/4	273.05	55.5	82.59	9.455	240.1
		55.5 to 60.7	82.59 to 90.33	9.455	240.1
		60.7 to 65.7	90.33 to 97.77	9.375	238.1
13 3/8	339.72	68 to 72	101.2 to 107.14	12.13	308.1



HAL14028

X-Trieve™ HC
(DHC) Packer

HALLIBURTON

Completion Tools

Retrievable Sealbore Production Packers

Wireline-Set Versa-Trieve® Packers

Versa-Trieve® Packers: VTA, VBA, VCA, VCH, VBS, VGP, VGH, VSA

Versa-Trieve packers are production packers designed for intermediate and high-pressure well applications. Numerous features in these compact, millable packers incorporate the production features of permanent packers plus the added feature of retrievability. External components are easily millable if conventional release is not possible. The packers can be either hydraulic or wireline set and are designed to be retrieved by a pulling tool with a straight pull of the tubing. When hydraulically set, Versa-Trieve packers are ideal for deviated or directional wells in which it is difficult to run mechanical-set packers.

Applications

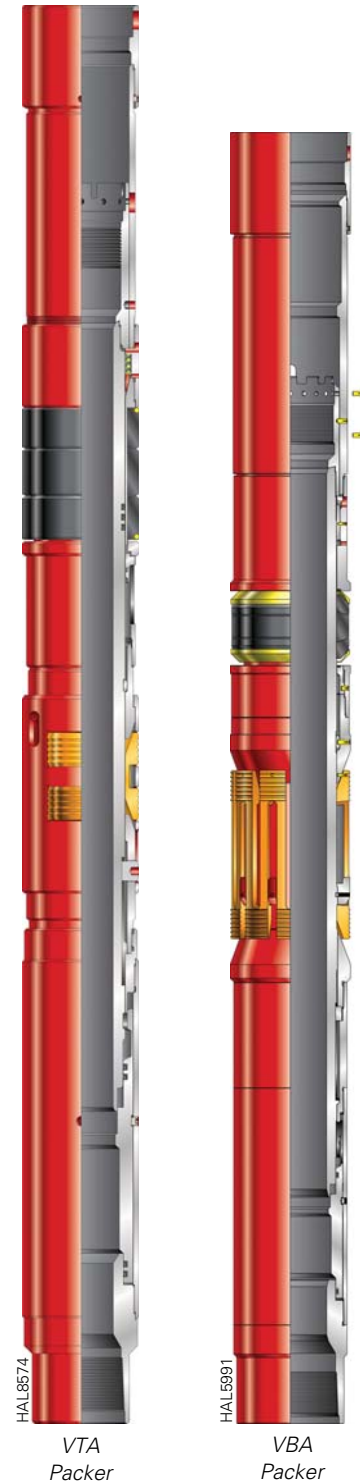
Versa-Trieve packers can be used in a variety of applications:

- » Gravel pack
- » High-rate water pack
- » Ex-tension PacSM service
- » FracPacSM service
- » Horizontal completion assemblies
- » Production sealbore packer
- » Suspending guns for tubing-conveyed perforating
- » Stimulation

Features

- » Packers can be run, set, and retrieved without any tubing rotation, in most cases.
- » The hydraulic-setting mechanism is contained in the setting tool, reducing the number of potential leak paths remaining downhole.
- » The scoop-head design saves time by providing a guide for landing seal units and accessories.
- » The spring-loaded, case-carburized internal locking slips maintain maximum element compression.
- » The multidurometer element package is designed to seal against high and low pressures and casing irregularities. (Standard nitrile or optional AFLAS® element packages are available. Special packer and element designs exist to suit high-pressure applications.)
- » Element mandrel design on the VTA packers provides a positive means of locking the upper components to the slips. (The element mandrel allows for full setting force application to the elements and slips during setting operations. If milling operations are required, the upper components will not spin.)

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- » Lower anchor lug allows torque to be transmitted through the packer during running and pulling operations.
- » Bi-directional case-carburized slips or a barrel slip hold the packer securely against well pressures in all casing grades (including P110 and harder) from above and below.
- » Location of the slips beneath the elements simplifies release and retrieval. Debris is kept off the slips.
- » A flow-isolated, C-ring release mechanism locks the packer in the set position until located and unlatched by the retrieving tool. Pushing through tight spots is safer than with traditional collet-release mechanisms.
- » Packer is designed for simple release and retrieval.

Versa-Trieve® packers are available with the following top sub configurations:

- » Versa-Latch® assembly
- » Upper sealbore assembly (VSA, VBS)

Threaded bottom subs are provided as a separate item for running gravel pack flow subs, sealbore extensions, or tubing tailpipe of varying types and sizes. The -Z designates that the packer has no bottom sub.

VCH and VGH Packers

The VCH packer is a VCA packer specially designed for use with the HPT heavy hang weight soft release tool. The VGH packer is a VGP packer designed for the HPT tool.



VGP Packers

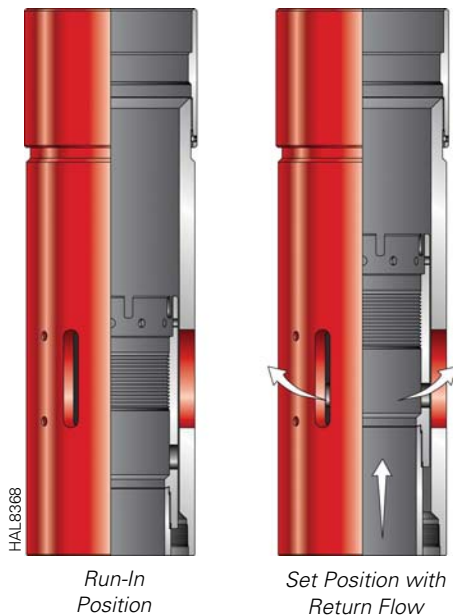
The large-bore Versa-Latch® gravel pack (VGP)-style packer is an integral part of the Versa-Trieve® packer family of tools. It provides a larger bore than the VTA packers (in a given casing size and weight) by eliminating the element mandrel, while still retaining many of the Versa-Trieve packer line features. Because the element mandrel is eliminated, the lower element retainer is pinned to the packer mandrel, and an additional set of anti-rotation pins are added for ease of milling. The VGP packer also includes a top snap guide for collet locations.

Upper Sealbore VSA Versa-Trieve® Packer

For applications in which a larger bore is required through the seal assembly, Halliburton can provide an upper sealbore packer head design that has a larger ID than the packer mandrel and can accept a short seal assembly and Versa-Latch locator.

Weight-Down Versa-Trieve and PGP Packers

All the packers described previously can be provided as weight-down packer designs for weight-down squeeze and circulate gravel packing and FracPac™ systems. The weight-down packers use the slots in the top sub and setting sleeve. These slots align when the packer is in the set position. This provides a flow path for return fluids during a gravel packing operation or pressure monitoring during a FracPac system operation.



Versa-Trieve® Packers

Casing Size		Casing Weight		Packer OD		Packer Bore		Production Seal Assembly ID	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
4 1/2	114.30	9.5 to 11.6	14.14 to 17.26	3.82	97.03	2.380	60.45	1.74	44.07
5	127.00	15 to 18	22.32 to 26.79	4.09	103.89	2.550	64.77	1.81	45.97
5 1/2	139.70	23 to 23.8	35.22 to 35.41	4.44	112.78	2.750	69.85	1.93	48.95
		20 to 23	29.76 to 34.22	4.50	114.30				
		17 to 20	20.83 to 25.30	4.60	116.84				
		14 to 17	20.83 to 25.30	4.67	118.62				
6 5/8	168.28	34.5	51.34	5.35	135.89	3.250	82.55	2.35	59.69
		28	41.66	5.53	140.46				
		24	35.72	5.73	145.54				
		20 to 24	29.76 to 35.71	5.73	145.54				
7	177.80	49.5 to 50.1	73.66 to 74.56	5.30	134.62	3.000	76.20	2.35	59.69
		49	72.92	5.35	135.89	3.250	82.55	2.35	59.69
		41 to 44	61.01 to 65.47	5.53	140.46				
		41 to 42.7	61.01 to 63.54	5.565	141.35				
		38	56.55	5.73	145.54				
		32 to 38	47.62 to 56.54	5.73	145.54	3.880	98.55	3.050	77.47
		38	56.55	5.725	145.42				
		32 to 35	47.62 to 52.08	5.82	147.83				
		32	47.62	5.89	149.61				
		26 to 32	38.69 to 47.62	5.92	150.37				
		26 to 29	38.69 to 43.15	6.015	152.78				
		26 to 29	38.69 to 43.15	6.00	152.78				
		23 to 29	34.22 to 43.15	6.00	152.40				
		23	34.22	6.14	155.96				
		23	34.22	6.19	157.23				
		17 to 23	25.30 to 34.22	6.19	157.23				
		17 to 20	25.30 to 29.76	6.275	159.51				
7 5/8	193.68	45.3 to 47.1	67.41 to 70.08	6.14	155.96	3.880	98.55	3.050	77.47
		42.4 to 47.1	35.72 to 70.09	6.19	157.23				
		39 to 42.8	58.03 to 63.69	6.275	159.51				
		39	58.04	6.44	163.58				
		29.7 to 39	44.19 to 58.03	6.44	163.58				
		29.7 to 33.7	44.19 to 50.15	6.56	166.62				
		33.7	50.15	6.58	167.13				
		26.4 to 29.7	39.28 to 44.19	6.62	168.15				
7 3/4	196.85	46.1	68.6	6.28	159.96	3.880	98.55	3.050	77.47
		46.1 to 48.6	68.6 to 72.32	6.19	157.23				
8 1/8	206.38	45.5	67.71	6.87	174.5	4.600	116.84	3.800	96.52
8 5/8	219.08	57.4 to 61.4	85.42 to 91.37	6.985	177.42	4.600	116.84	3.800	96.52
		60.7	90.32	7.00	177.8	4.600	116.84	3.800	96.52
		61.4	91.37	7.00	177.8	4.600	116.84	3.800	96.52
		55.83	83.08	7.125	180.95	4.600	116.84	3.800	96.52
		55.83 to 57.4	82.94 to 85.42	7.125	180.98	4.600	116.84	3.800	96.52
		52 to 54	77.38 to 80.36	7.16	181.86	4.600	116.84	3.800	96.52
		40 to 44	59.53 to 65.47	7.43	188.72	5.000	127.00	3.850	97.79
		28 to 36	41.67 to 53.57	7.63	193.80	3.880	98.55	3.05	77.47
		32 to 36	47.62 to 53.57	7.64	194.06	3.880	98.55	3.05	77.47
8 3/4	222.25	49.7	73.96	7.43	188.72	5.000	127.00	3.85	97.79

Versa-Trieve® Packers

Casing Size		Casing Weight		Packer OD		Packer Bore		Production Seal Assembly ID	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
9 5/8	244.48	70.3 to 71.8	104.61 to 106.84	7.89	202.69	5.000	127.00	3.850	97.79
		53.5	79.62	8.30	210.82	3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
		47 to 53.5	64.74 to 79.62	8.30	210.82	5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
		43.5 to 53.5	64.73 to 79.62	8.30	210.82	3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
		43.5 to 47	64.74 to 69.94	8.45	214.63	3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						5.000	127.00	3.85	97.79
		40 to 47	59.53 to 69.94	8.46	214.88	3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
		36 to 43.5	53.57 to 64.73	8.52	216.41	5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
		40 to 43.5	59.53 to 64.73	8.52	216.41	6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
		36 to 40	53.57 to 59.53	8.60	218.44	3.880	98.55	3.05	77.47
						5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
						3.880	98.55	3.05	77.47
9 3/4	247.65	59.2	88.10	8.30	210.82	5.000	127.00	3.85	97.79
9 7/8	250.83	62.8	93.46	8.30	210.82	5.000	127.00	3.85	97.79
						6.000	152.40	4.86	123.44
		66.9	99.56	8.30	210.82	6.000	152.40	4.86	123.44
10 1/8	257.18	79.22	117.89	8.30	210.82	5.000	127.00	3.85	97.79
10 3/4	273.05	51 to 65.7	75.90 to 97.77	9.31	236.47	5.000	127.00	3.85	97.79
		60.7 to 65.7	90.33 to 97.77	9.34	237.24	6.000	152.40	4.86	123.44
11 3/4	298.45	65 to 71	96.72 to 105.65	10.30	261.62	6.000	152.40	4.86	123.44
11 7/8	301.63	71.8	106.85	10.34	273.05	6.000	152.40	4.86	123.44
13 3/8	339.73	68 to 72	101.18 to 107.14	12.13	308.10	6.000	152.40	4.86	123.44

Versa-Trieve® Packer Retrieving Tool

Versa-Trieve® retrieving tools are used to retrieve Versa-Trieve packers. To retrieve the packer, the retrieving tool is run on a workstring, stung into the packer bore, and latched into the Versa-Trieve packer. Once latched, the tool locates the packer's release sleeve and moves it upward, allowing the packer to be released. Additional upward movement of the workstring releases the sleeve and moves the packer mandrel up, which allows the packer slips to retract and the packer to be retrieved.

No rotation is necessary in the pulling operation. To release the pulling tool from the packer, only a 1/4 turn to the right is needed on the J-latch-type locators. Additional rotation (six to eight turns) is required to release from the Versa-Latch® locator from the packer top sub.

Benefits

- » No rotation required for pulling operation
- » Straight-through ID allows washing down to the packer
- » Easy to release with 1/4 turn on lug-type tools (VRT type) and six to eight turns on a Versa-Latch tool (VRA type)
- » Rugged lug-type design engages the release sleeve



Versa-Trieve® Packer
Retrieving Tool

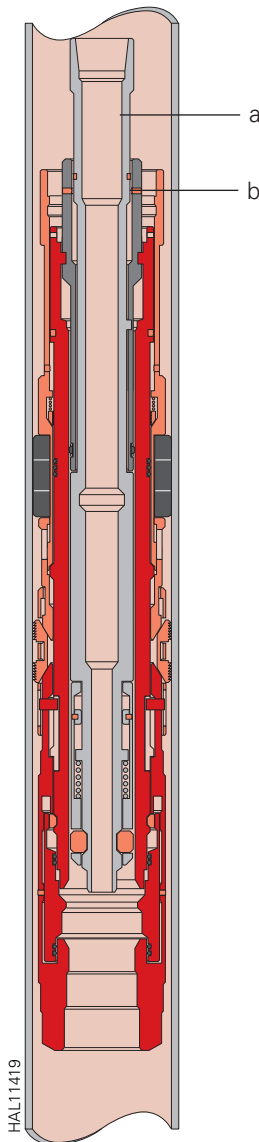
Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 12VRA, 12VRR, 12VRT

Engaging

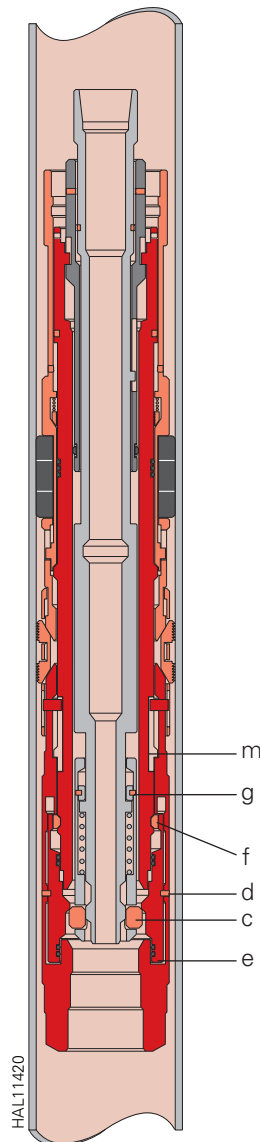
After the tubing and seal assembly are removed, a Versa-Trieve® retrieving tool is lowered into the packer until the locator no-goes on the packer top sub. An upstrain on the workstring (a) verifies that the retrieving tool is latched into the packer and shears the locator to the mandrel shear pin (b).



Schematic 1

Releasing

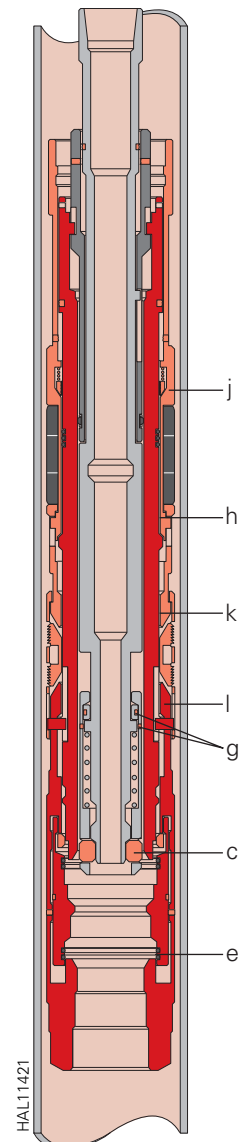
With the retrieving tool properly latched to the packer, the workstring is slacked off until the retrieving tool begins to take weight. An upstrain applied to the retrieving tool allows the lugs of the retrieving tool (c) to engage the packer release sleeve. Continued upstrain will shear the shear pins (d) in the release sleeve, allowing the release sleeve (e) to move upward and toward the release ring (f).



Schematic 2

Retrieving

Additional upstrain shears the pins (g), causing the lugs of the retrieving tool (c) to retract. Upward movement of the packer's mandrel causes the shoulder (h) to raise the element mandrel (j) and top wedge (k). The top wedge is pulled out from under the slips and pulls on the slip carrier, which pulls the slips off of the lower wedge (l). The shoulder (m) catches the lower edge and supports the tailpipe below the packer.



Schematic 3

Retrievable Mechanical-Set Packers

Versa-Set® Packers

The Versa-Set® packer uses a modular design concept to combine all the best high-performance features of a mechanical-set retrievable packer with the ability to set on wireline. Three setting modules are available for a wide variety of applications.

The Versa-Set packer can be set on wireline using the economical WLS module. A standard XL on-off tool with integral landing nipple profile provides for a temporary plug at the top of the packer while the production tubing is run. Setting on wireline allows lubricating into the wellbore without having to kill the well, which minimizes damage to sensitive formations. It also provides for precise setting depth control. Once it is set on wireline and the tubing string is engaged, the packer can be released and retrieved in a half-trip — no retrieving tool is required. The packer can also be set on wireline when either of the mechanical-set modules (with or without clutch) are used. These modules allow the packer to be moved and reset multiple times before retrieving.

The Versa-Set packer can easily be converted at the wellsite to run mechanically on tubing. Operation is a simple 1/4 turn for right-hand set and release. The element package can be packed off in either compression or tension. Heavy-duty j-lugs are capable of handling most treating conditions and also provide emergency straight-pull release.

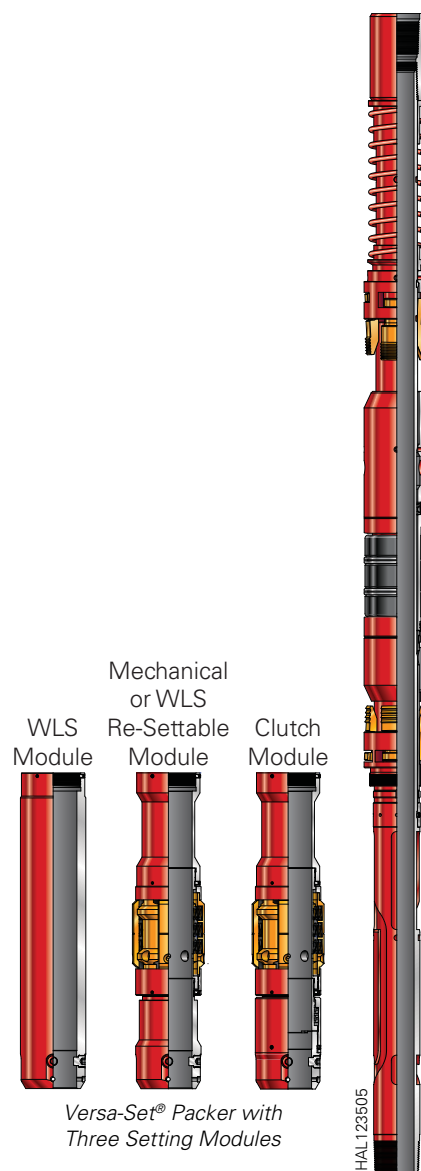
This packer provides a full opening for most tubing-casing combinations and is available for pressure ratings up to 10,000 psi and temperatures up to 325°F to meet most well conditions. It can be trimmed for sour service applications.

Applications

- » Production, testing, injection, stimulation, tubing-conveyed perforating (TCP), and temporary plugging
- » Any application that requires the packer be lubricated into the wellbore with a plug in place
- » TCP or other completions that require tailpipe

Features

- » Wireline-set or mechanical-set
- » Temporary plug can be installed at the top of the packer
- » Holds in both directions with opposing slip design
- » Pressure ratings to 10,000 psi (68.9 MPa)
- » Temperature ratings up to 325°F (163°C)
- » Single-trip retrievable
- » Mechanically resettable on tubing with simple, 1/4 turn J-slot operation when using either mechanical-set module
- » High-performance triple-seal multidurometer element package
- » Internal bypass
- » Emergency shear release
- » Large ID
- » Accepts a wide variety of completion accessories
- » Sour service trim available



Benefits

- » Three setting modules available for maximum versatility
- » Easily converts to wireline- or mechanical-set in the field
- » Can be lubricated into well under pressure, thereby minimizing damage to sensitive formations
- » Provides both the accuracy of wireline setting and the capability of a mechanical-set retrievable packer
- » Provides the versatility to run the packer either on wireline, slickline (with the Halliburton DPU® downhole power unit), or tubing
- » Profile nipples and/or pump-out plugs can also be run below the packer

Wireline-Set Operation

- » When trimmed with any of the three setting modules, the packer can be set with a standard wireline setting tool or DPU downhole power unit with wireline adapter kit
- » Uses standard XL on-off tool
- » Can be run and set with a plug installed in the on-off tool gudgeon (top of packer)
- » Operates as a standard mechanical double-grip packer with on-off tool once set on wireline
- » One-quarter turn right-hand release
- » Resettable on tubing when either of the mechanical-set modules are used
- » Emergency straight-pull release

Mechanical-Set Operation

- » Can be run and set on tubing with either of the mechanical-set modules
- » One-quarter turn right-hand set
- » Can be packed off in either compression or tension
- » Can be left in compression, tension, or neutral position
- » One-quarter turn right-hand release
- » Emergency straight-pull release
- » Clutch (mechanical-set with clutch module) helps ensure reliable setting operations by removing excess tubing torque



*Versa-Set® Retrievable
Packer with Clutch
(Wireline Operation)*



*Versa-Set® Retrievable
Packer with Clutch
(Mechanical Operation)*

Versa-Set® Packer

Casing Size		Casing Weight		Maximum OD		Minimum ID		Tubing Size	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
4 1/2	114.30	9.5 to 11.6	14.14 to 17.20	3.82	97.03	1.923	48.84	2 3/8	60.33
		11.6 to 13.5	17.26 to 20.09	3.76	95.50				
		15.1	22.47	3.66	92.96				
5	127.00	11.5 to 15	17.11 to 22.32	4.22	107.19	1.923	48.84	2 3/8	60.33
		15 to 18	22.32 to 26.79	4.10	104.14				
5 1/2	139.70	13 to 15.5	19.35 to 23.07	4.77	121.16	1.985	50.42	2 3/8	60.33
						2.36	59.94	2 7/8	73.03
		15.5 to 20	23.07 to 29.76	4.61	117.09	1.985	50.42	2 3/8	60.33
						2.36	59.94	2 7/8	73.03
		20 to 23	29.76 to 34.23	4.50	114.30	1.985	50.42	2 3/8	60.33
						2.36	59.94	2 7/8	73.03
7	177.80	17 to 23	25.30 to 34.23	6.18	156.97	1.975	50.17	2 3/8	60.33
						2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90
		23 to 29	34.23 to 43.16	6.00	152.40	1.975	50.17	2 3/8	60.33
						2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90
		29 to 32	43.16 to 47.62	5.91	150.11	1.975	50.17	2 3/8	60.33
						2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90
		32 to 35	47.62 to 52.09	5.80	147.32	1.975	50.17	2 3/8	60.33
						2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90
7 5/8	193.68	24 to 29.7	35.72 to 44.20	6.70	170.18	2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90
		33.7 to 39	50.15 to 58.04	6.45	163.83	2.423	61.54	2 7/8	73.03
						2.853	72.47	3 1/2	88.90

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 12VSW, 12VSM, 12VSC

Guiberson® G-6 Packer

The Halliburton Guiberson® G-6 packer is a double-grip, retrievable, single-string packer designed for service in waterflooding and enhanced oil recovery (EOR). Because many of these wells are shallow, the packer was designed to allow the packing elements to be packed off with either tubing tension or compression at the packer. The double-grip feature provides the option of leaving tubing in compression or tension and makes the packer suitable for use with accessories, such as on-off tools, downhole shutoff valves, and other related completion tools.

Applications

- » Ideally suited for EOR projects
- » CO₂ and steam injection service with specific elastomer systems
- » Up to 5,000 psi (34.45 MPa) differential pressure typical

Features

- » Short compact length
- » Compatible with plastic coating, sour service trim, or special flow wet metallurgy
- » Internal bypass valve provides reliable running, releasing, and retrieving
- » Innovative packing element system for positive pressure-enhanced packoff
- » Opposing slip design holds forces from either direction, while loaded slip remains on the low-pressure side of the tool
- » Emergency shear release
- » Take-up feature allows pressure differential to increase and lock in added rubber compression

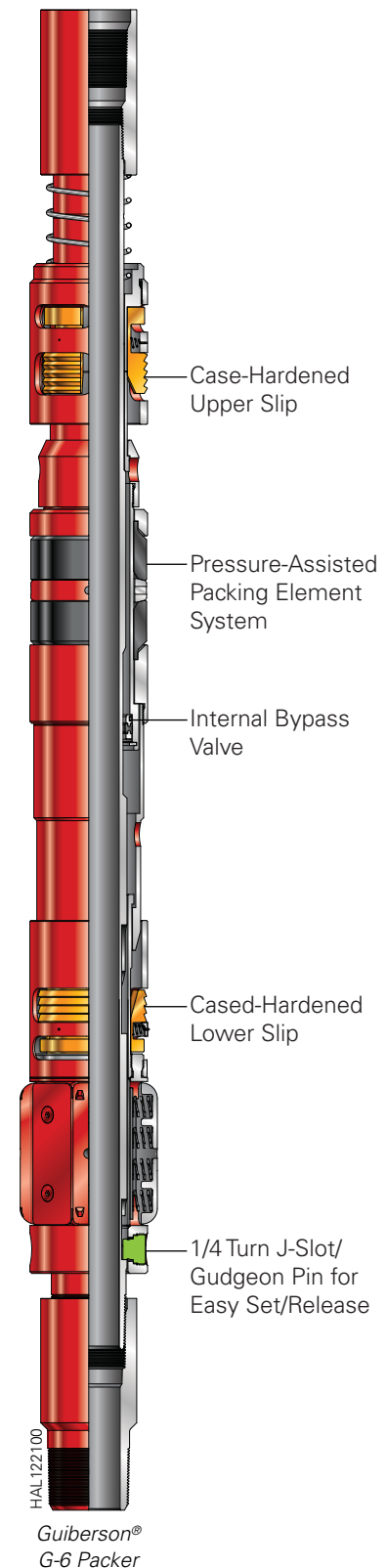
Benefits

- » Requires only 1/4 turn of the tubing at the packer to set or release
- » Tension or compression packs off the rubber system
- » Tubing can be spaced out in tension, neutral, or compression
- » Field-redressable
- » Can be run with a variety of completion accessories

Operation

The G-6 packer is set by lowering the tubing to the setting depth. The tubing is picked up to allow for the setting stroke (8 in.) plus the desired tubing load. One-quarter turn right-hand rotation of the tubing at the packer with set-down motion sets both slip systems. Packing elements can then be packed off with either compression or tension at the packer.

The packer is retrieved by applying 1/4 turn right-hand rotation of the tubing at the packer and picking up. Opening of the internal bypass valve allows pressure to equalize across the packer. Continued upward movement will release the packer and automatically re-J the tool into the running position. In the event the tool cannot be unset conventionally, a safety shear system is provided for emergency release.



Guiberson® G-6 Packer

Casing Size		Casing Weight		Packer OD		Minimum ID		Tubing Size	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
4	101.60	9.25 to 11.6	13.77 to 17.26	3.295	83.69	1.545	39.24	1.90	48.26
4 1/2	114.30	9.5 to 13.5	14.14 to 20.09	3.75	98.17	1.94	49.22	2 3/8	60.33
5	127.00	11.5 to 15	17.11 to 22.32	4.25	107.95	1.94	49.22	2 3/8	60.33
		15 to 18	22.32 to 26.79	4.13	104.78				
5 1/2	139.70	13 to 15.5	19.35 to 23.07	4.75	120.65	1.94 or 2.44	49.22 or 61.93	2 3/8 or 2 7/8	60.33 or 73.03
		17 to 20	25.30 to 29.76	4.63	117.48				
		20 to 23	29.76 to 34.22	4.50	114.30				
5 3/4	146.10	17 to 20	25.30 to 29.76	4.85	123.19	1.94	49.22	2 3/8	60.33
6 5/8	168.30	17 to 24	25.30 to 35.72	5.69	144.45	2.50	63.50	2 7/8	73.03
		26 to 32	38.67 to 47.62	5.50	139.70				
7	177.80	17 to 20	25.30 to 29.76	6.13	155.58	1.94 or 2.50 or 3.00	49.22 or 63.50 or 76.20	2 3/8 or 2 7/8 or 3 1/2	60.33 or 73.03 or 88.90
		22 to 26	32.74 to 38.69	6.00	152.40				
		28 to 32	41.67 to 47.62	5.88	149.23				
7 5/8	193.70	20 to 26.4	29.76 to 39.29	6.69	169.88	2.50	63.50	2 7/8	73.03
		29.7 to 39	44.20 to 58.04	6.44	163.53				
8 5/8	209.10	28 to 36	41.67 to 53.57	7.56	192.10	3.00	76.20	3 1/2	88.90
		40 to 49	59.53 to 72.92	7.38	190.50				
9 5/8	244.50	32.3 to 40	48.07 to 59.53	8.50	215.90	4.00	101.60	4 1/2	114.30
		43.5 to 47	64.74 to 69.94	8.38	212.72				
		53.5	79.62	8.25	209.55				

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 12GF, D

Retrievable Hydraulic-Set Packers

Hydraulic-Set Perma-Lach® PHL Packers

The Perma-Lach® PHL hydraulic-set retrievable packer is a high-performance, straight-shear-release packer. The PHL packer has no holddown buttons, helping eliminate potential leakage from the o-rings.

The PHL packer's optimized OD speeds the run-in process. Setting is achieved by running the packer in on tubing, dropping a ball, or setting a slickline plug and applying pressure. No tubing manipulation is required. To release, pull straight up on the production tubing. Setting pressures can be field adjusted, allowing multiple packers to be run and set during a single trip. Tubing can also be spaced out before the packer is set.

Applications

- » Single or multi-packer production completions
- » Can be used as the lower packer in dual completions
- » Can be set at predetermined pressures or selectively set in multizone completions
- » Up to 7,500 psi (51.7 MPa) differential pressure typical

Features

- » Optimized OD
- » Triple-seal multidurometer elements
- » Shear screws allow operators to vary the setting pressure and release force
- » Release mechanism protected from premature shearing
- » No mandrel movement when setting

Benefits

- » Setting pressures can be adjusted in the field
- » No tubing manipulation required for setting
- » Requires only a straight pull to release
- » Multiple packers can be run and set in one trip
- » High performance at low cost
- » Tubing can be spaced out before the packer is set



Hydraulic-Set
Perma-Lach® PHL Packer

Hydraulic-Set Perma-Lach® PHL Packer

Casing Size		Casing Weight		Tubing Size		Packer OD	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm
4 1/2	114.30	9.5 to 13.5	14.14 to 20.09	2.38	60.33	3.76	96.16
5 1/2	139.70	13 to 17	19.35 to 25.30	2.38	60.33	4.70	119.38
		13 to 17	19.35 to 25.30	2.88	73.03	4.70	119.38
		17 to 23	25.30 to 34.22	2.38	60.33	4.52	114.30
		17 to 23	25.30 to 34.22	2.88	73.03	4.52	114.30
6 5/8	168.28	24 to 28	35.72 to 41.67	3.50	88.90	5.61	142.49
7	177.80	23 to 29	34.22 to 43.16	2.88	73.03	5.98	151.89
				3.50	88.90	5.98	151.89
		29 to 35	43.16 to 52.09	2.88	73.03	5.83	147.83
				3.50	88.90	5.83	147.83
7 5/8	193.68	29.7 to 39	44.20 to 58.04	2.88	73.03	6.47	164.29
				3.50	88.90	6.47	164.29
9 5/8	244.48	40 to 47	59.53 to 69.94	3.50	88.90	8.45	214.68
				4.50	114.30	8.45	214.68
		47 to 53.5	64.74 to 79.62	3.50	88.90	8.23	209.12
				4.50	114.30	8.23	209.12

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 12PHL

Hydraulic-Set Guiberson® G-77 Packer

The Halliburton Guiberson® G-77 packer is a hydraulically set, mechanically held pressure-balanced packer that is ideal for deep, high-pressure oil and gas production. The hydraulic-setting feature combined with the pressure-balanced system makes this packer ideal for multizone and deviated-hole applications. The G-77 packer is hydraulically actuated and pressure balanced to offset pressure fluctuations and reversals when the packer is in the set position.

Applications

- » Multizone production or injection
- » Single-trip completions
- » Deviated wellbores
- » Up to 5,000 psi (34.5 MPa) differential pressure typical

Features

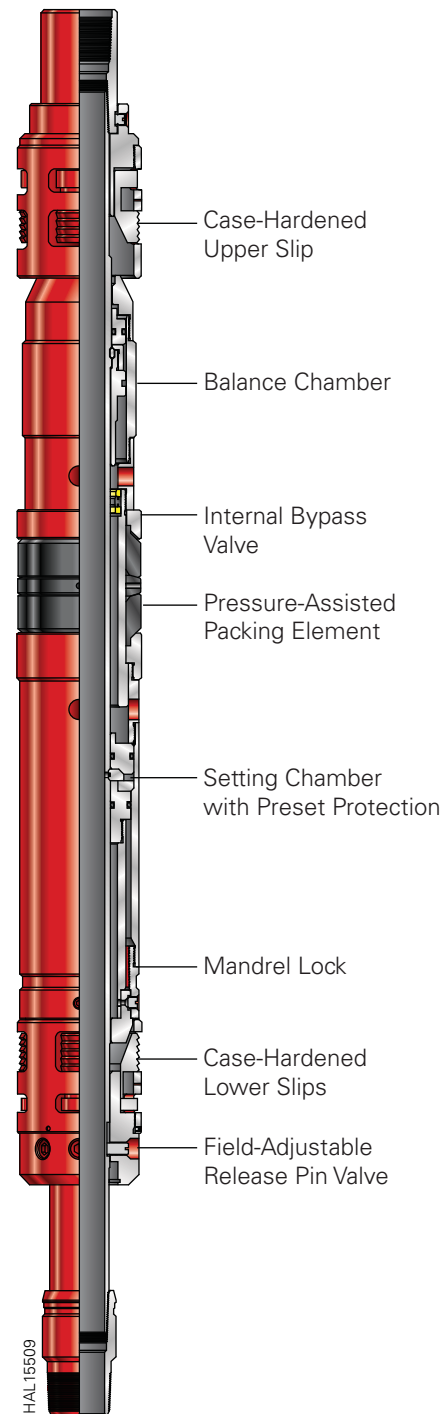
- » Opposing slip design holds forces from either direction, while the loaded slip remains on the low-pressure side of the tool
- » Compatible with packer accessories
- » Innovative packing element system for positive pressure-enhanced packoff
- » Solid preset prevention system
- » Internal bypass valve

Benefits

- » Packer does not require tubing manipulation to set
- » Multiple packers can be set close together
- » Handles differential pressure from below without excessive releasing shear values
- » Field-redressable
- » Releasing shear value is field adjustable without disassembly

Operation

The G-77 packer is set by establishing a temporary plug in the tubing below and applying setting pressure to the tubing. The packer is released by straight upstrain to the tubing string in excess of the previously selected releasing shear value.



Hydraulic-Set
Guiberson® G-77 Packer

Hydraulic-Set Guiberson® G-77 Packer

Casing Size		Casing Weight		Packer OD		Minimum ID		Tubing Size	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
4 1/2	114.30	9.5 to 13.5	14.14 to 20.09	3.75	95.25	1.94	49.23	2 3/8	60.33
5	127.00	11.5 to 15	17.11 to 22.32	4.25	107.95	1.94	49.23	2 3/8	60.33
		15 to 18	22.32 to 26.79	4.13	104.78				
5 1/2	139.70	13 to 15.5	19.35 to 23.07	4.75	120.65	1.94	49.23	2 3/8	60.33
		17 to 20	25.30 to 29.76	4.63	117.48				
		20 to 23	29.76 to 34.22	4.50	114.30				
6 5/8	168.30	17 to 24	25.30 to 35.72	5.69	144.47	2.44	61.93	2 7/8	73.03
		26 to 32	38.67 to 47.62	5.50	139.70				
7	177.80	17 to 20	25.30 to 29.76	6.13	155.58	2.44 or 3.00	61.93 or 76.20	2 7/8 or 3 1/2	73.03 or 88.90
		22 to 26	32.74 to 38.69	6.00	152.40				
		28 to 32	41.67 to 47.62	5.88	149.23				
7 5/8	193.70	20 to 26.4	29.76 to 39.29	6.69	169.88	3.00	76.20	3 1/2	88.90
		29.7 to 39	44.20 to 58.04	6.44	163.53				
8 5/8	209.10	28 to 36	41.67 to 53.57	7.56	192.10	3.00	76.20	3 1/2	88.90
		40 to 49	59.53 to 72.92	7.38	190.50				
9 5/8	244.50	32.3 to 40	48.07 to 59.53	8.50	215.90	4.00	101.60	4 1/2	114.30
		43.5 to 47	64.74 to 69.94	8.38	212.72				
		53.5	79.62	8.25	209.55				

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefixes: 12GGG, D

Hydraulic-Set RDH Dual Production Packers

RDH hydraulic-set packers are designed to be set by pressuring up the tubing string against a plugging device below the packer.

RDH packers lock-set mechanically using spring-loaded internal slips. A lower set of mechanical slips holds the packer set against downward forces and an upper set of pressure-actuated button slips holds the packer set against differential pressure from below. The packers are released and retrieved by straight upward pull on the tubing string.

Applications

- » Deep or deviated wells that require dual completion strings

Features

- » Tungsten carbide disk inserts in the holddowns are protected from the casing wall as the packer is lowered into the well.

- » Triple-seal multidurometer elements have two hard end elements with molded self-retracting springs and a softer middle element for casing irregularities and low pressures.
- » Contoured case-carburized slips conform without deforming casing.
- » Dovetail slip design helps release the packer during retrieval.
- » Optional heads allow use of various latching arrangements.
- » Shear screws allow operator to vary the setting pressure and release force.

Benefits

- » Has a low-pressure setting requirement so rig pumps usually provide enough pressure
- » Allows varied setting pressures with varied numbers of shear screws
- » Requires only a straight pull to release
- » Allows adjustment of pull to release in the field
- » Works well in all casing types

Hydraulic-Set RDH Dual Production Packers

Casing Size		Casing Weight		Packer OD		Primary ID*		Secondary ID*	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	mm
6 5/8	168.29	20 to 28	29.76 to 41.67	5.63	143.00	1.94	49.28	1.56	39.62
7	177.80	20 to 26	29.76 to 38.69	5.94	150.88	1.94	49.28	1.94	49.28
		23 to 29	34.22 to 43.16	6.03	153.16	2.38	60.45	1.53	38.86
		26 to 32	38.69 to 47.62	5.94	150.88	1.94	49.28	1.94	49.28
		35	52.09	5.95	151.13	2.38	60.45	1.53	38.86
7 5/8	193.68	26.4 to 29.7	39.29 to 44.20	5.84	148.34	1.92	48.77	1.54	39.12
				6.64	168.66	1.94	49.28	1.94	49.28
		29.7 to 39	44.20 to 58.04	6.64	168.66	2.37	60.20	1.91	48.51
				6.48	164.59	1.91	48.51	1.91	48.51
9 5/8	244.48	36 to 43.5	53.57 to 64.74	6.44	163.58	2.38	60.45	1.93	49.02
				8.62	218.95	2.90	73.66	2.90	73.66
				8.44	214.38	2.90	73.66	2.44	61.98
				8.44	214.38	2.90	73.66	2.90	73.66
		40 to 47	59.53 to 69.94	8.50	215.90	2.89	73.41	2.90	73.66
				8.50	215.90	3.81	96.77	1.92	48.77
		43.5 to 53.5	64.74 to 79.62	8.50	215.90	3.81	96.77	1.92	48.77
				8.34	211.84	2.90	73.66	2.44	61.98

*Other IDs available depending on tubing size selected.

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement, primary or secondary string set, secondary latch type. **Part Number Prefix:** 12RDH



HAL10410

Hydraulic-Set RDH Packer

Seal Assemblies for Hydraulic-Set RDH Dual Packers

Head Configurations for RDH Packers

The following head configurations for RDH packers are available for both short-string and long-string set packers:

- » J-slot latch that releases with only a 1/4 right-hand turn of the tubing at the packer
- » Collet latch that requires no rotation for latching or unlatching; it indicates this action at the surface
- » Collet/sleeve latch that operates the same as the collet latch, except the sleeve must be shifted to lock and unlock the collet



Primary: Threaded
Secondary: Collet



Primary: Threaded
Secondary: J-Slot



Primary: J-Slot
Secondary: Collet

Options

These head configurations are available with molded or premium seal elements.

Dual Hydraulic-Set Packer Latch Selection Chart

Type Latch	Latch Arrangement*	
	Primary	Secondary
LT	Threaded	Threaded
LB	Threaded	Collet
LA	Threaded	J-Latch
LSC	Threaded	Steamline Collet
LJ	J-Latch	J-Latch
LC	J-Latch	Collet
SSC	Collet (sliding sleeve)	Collet (sliding sleeve)
SC	Collet (sliding sleeve)	Collet

*Other combinations available

Ordering Information

Specify: casing size and weight; sizes; weights; grades; and threads for all tubing strings; latch type for each tubing string (refer to dual hydraulic-set packer latch selection chart); service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); approximate weight to be suspended below packer; selective set (Y/N); maximum differential pressure requirements; setting string and desired setting pressure; desired shear release value.

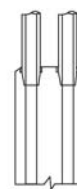
Part Number Prefix: 12RDH



Primary: J-Slot
Secondary: J-Slot



Primary: Threaded
Secondary: Collet/Sleeve Latch



Primary: Threaded
Secondary: Threaded



J-Slot Latch



Collet Latch



Collet/Sleeve Latch

HALLIBURTON

Completion Tools

Special Application Packers

ZoneGuard® FP Packer

The ZoneGuard® FP (Frac Pack) packer is designed to provide effective, economical annular isolation in openhole wellbore sections, while remaining versatile enough for cased-hole isolation applications. It is primarily used in wellbores that require multizone isolation for stimulating, fracturing, or general production operations.

The ZoneGuard FP packer is run as an integral part of the production casing or tubing string and is set with hydraulic pressure by setting a plug beneath the tool. The packer uses a uniquely designed element package with backup system to deliver consistent sealing performance in a defined range of openhole and cased-hole sizes. Additionally, the compact design is ideal for wellbores with short radius build angles or high dogleg severity well conditions. The design also provides additional value for wells in which a significant number of packers need to be run, such as unconventional shale plays, to isolate dozens of individual zones.

Applications

- » Unconventional and mature assets
- » Open or cased-hole applications in vertical or horizontal wells
- » Multistage fracturing or acidizing
- » Production management
- » Wellbore segmentation
- » Remedial stimulation

Features

- » Instant hydraulic setting
- » Compact, concise design
- » Small running OD
- » Multi-piece element package with unique backup
- » Adjustable setting shear value
- » Internal locking system

Benefits

- » Effective and economical design suited for multizone fracturing treatments
- » Compact size for trouble-free deployment in horizontal or directional wells
- » Effective selective production management in horizontal wellbores
- » Reliably control inflow or injection within selected sections of the wellbore



ZoneGuard® FP Packer

Tool Connection	Maximum Metal OD	Minimum ID	Minimum Borehole	Maximum Borehole	Length	Temperature Rating	Maximum Pressure Rating (in Minimum Bore ID)
in.	in.	in.	in.	in.	in.	°F	psi
4 1/2 13.5 lb API-LC	5.755	3.895	5.875	6.5	48.71	325	10,000
4 1/2 Blank	5.755	3.895	5.875	6.5	50.95	325	10,000
5 1/2 23.0 lb API-LC	7.25	4.65	7.75	8	52.15	325	10,000
5 1/2 Blank	7.25	4.65	7.75	8	53.28	325	10,000
5 1/2 23.0 lb API-LC	8	4.67	8.5	8.75	47.6	325	10,000
5 1/2 Blank	8	4.67	8.5	8.75	51.7	325	10,000

ZoneGuard® HE Packer

The Halliburton ZoneGuard® HE (High-Expansion) packer is designed for situations in which a high-expansion sealing element is required and when large variations in hole gauge diameter are anticipated. The packer uses a multidurometer, multi-element package with a unique backup and deployment system to deliver industry-leading sealing performance in the most challenging wellbore environments. The packer is well-suited for zonal isolation in multiple applications, such as sand control, production management, stimulation, and stage cementing.

The ZoneGuard HE packer is run as part of the completion string and can be set either hydrostatically or hydraulically, depending on the well conditions. The hydrostatic-set ZoneGuard HE packer requires a shifting tool to shift an internal sleeve that allows the hydrostatic pressure to enter the setting chamber and set the packer. The hydraulic-set ZoneGuard HE packer can be set by plugging the tubing below the packer or with an isolation straddle tool to provide hydraulic pressure to the setting chamber. The hydraulic ZoneGuard HE packer can also contain a hydrostatic-assist feature, which helps maintain positive pressure on the packer at all times.

Applications

- » Deepwater, unconventional, and mature assets
- » Open or cased-hole applications (horizontal or vertical)
- » Production management
- » Sand control
- » Stimulation
- » Stage cementing
- » Water and gas shutoff

Features

- » Hydrostatic-assist feature for positive pressure on element
- » High-expansion element package
- » Anti-preset mechanism
- » Small running OD
- » Adjustable setting shear value
- » Internal locking system

Benefits

- » Provides selective production management in horizontal wellbores
- » Reliably controls inflow or injection within selected sections of the wellbore
- » Wide range of openhole isolation capabilities with one packer design
- » Optional setting procedure: either hydraulic, hydrostatic, or hydrostatic-assist



ZoneGuard® HE Packer

Tool Connection	Maximum Metal OD	Minimum ID	Minimum Borehole	Maximum Borehole	Length	Temperature Rating	Maximum Pressure Rating (at Minimum Borehole ID)	Setting Process
	in.	in.	in.	in.	in.	°F	psi	
4 1/2 12.60 lb VAMTOP®	5.630	3.490	6	8 1/4	130.70	325	5,000	Hydraulic
4 1/2 12.75 lb API-EU	5.630	3.490	6	8 1/4	169.08	325	5,000	Hydrostatic
5 1/2 17.0 lb NEW VAM®	8.000	4.670	8 1/2	11 1/2	142.33	325	5,000	Hydraulic
5 1/2 17.0 lb API-LC	8.000	4.870	8 1/2	11 1/2	170.85	325	5,000	Hydrostatic
6 5/8 32 lb VAMTOP	8.000	4.890	8 1/2	11 1/2	140.88	325	5,000	Hydraulic

VAM TOP® and VAM® are registered trademarks of Vallourec Oil and Gas France.

ZoneGuard® SR Packer

The Halliburton ZoneGuard® SR (Short Radius) openhole packer is a versatile solution that helps enable effective annular zonal isolation in a wide range of oilfield applications. The packer includes many enhanced features, such as an innovative anti-preset mechanism, upgraded element package with robust backup system, and ample setting range. These features help ensure reliable deployment to target depth and unsurpassed sealing performance in a variety of wellbore conditions. The ZoneGuard SR packer is ideal for situations in which tight radius well conditions exist, effective isolation is imperative, and deployment risks need to be removed.

The ZoneGuard SR packer is run as an integral part of the production casing or tubing string. It is set with hydraulic pressure either by setting a plug beneath the tool, or when plugging the completion string is not possible, by running an isolation straddle tool across the packer. Additionally, the innovative anti-preset mechanism helps prevent premature setting of the packer during running operations. Once on depth and set, an internal locking mechanism helps ensure the elements remain energized against the wellbore. The ZoneGuard SR packer can be used for zonal isolation in production control, selective stimulation, fracturing, and a wide array of other applications.

Applications

- » Deepwater, unconventional, and mature assets
- » Horizontal, deviated, or vertical completions
- » Open or cased-hole isolation
- » Stimulation, such as fracturing and acidizing
- » Sand control
- » Stage cementing
- » Water and gas shutoff
- » Selective production
- » Wellbore segmentation

Features

- » Anti-preset feature
- » Upgraded element package with robust backup system
- » Adjustable setting shear value
- » Internal locking system
- » Multiple hydraulic setting methods
- » Differential pressure ratings up to 15,000 psi
- » Temperature ratings up to 400°F
- » Standard or sour service availability

Benefits

- » Hydraulically set for instantaneous zonal isolation
- » Effective isolation for fracturing, production management, sand control, cementing, and various other applications
- » Innovative anti-preset mechanism reduces deployment risks



ZoneGuard® SR
Packer

ZoneGuard® SR Packer (Standard Pressure Systems)

Tool Connection	Maximum Metal OD	Minimum ID	Minimum Borehole	Maximum Borehole	Length	Temperature Rating	Maximum Pressure Rating (at Minimum Borehole ID)
	in.	in.	in.	in.		°F	psi
4 1/2 in. Blank	5.65	3.850	5 7/8	6 1/4	70.48	325	10,000
4 1/2 in. 13.5 lb API-LC	5.65	3.850	5 7/8	6 1/4	60.04	325	10,000
4 1/2 in. 15.1 lb API-LC	5.81	3.724	5 7/8	6 1/4	60.61	325	10,000
4 1/2 in. 13.5 lb API-LC	5.9	3.850	6 1/4	6 1/2	60.01	325	10,000
5 1/2 in. 23.0 lb API-LC	7.25	4.670	7 1/2	7 7/8	80.24	325	10,000
5 1/2 in. 23.0 lb API-BC	7.25	4.670	7 1/2	7 7/8	80.24	325	10,000
5 1/2 in. Blank	7.25	4.670	7 1/2	7 7/8	80.24	325	10,000
5 1/2 in. 23.0 lb API-LC	8.00	4.670	8 1/2	9 3/4	80.36	325	10,000
5 1/2 in. 23.0 lb API-BC	8.00	4.670	8 1/2	9 3/4	80.36	325	10,000
5 1/2 in. Blank	8.00	4.670	8 1/2	9 3/4	80.36	325	10,000
6 5/8 in. 32.0 lb VAMTOP®	8.25	4.890	8 1/2	9 3/4	84.25	325	10,000

VAM TOP® is a registered trademark of Vallourec Oil and Gas France.

ZoneGuard® SR Packer (High-Pressure Systems)

Tool Connection	Maximum Metal OD	Minimum ID	Minimum Borehole	Maximum Borehole	Length	Temperature Rating	Maximum Pressure Rating (at Minimum Borehole ID)
	in.	in.	in.	in.		°F	psi
4 1/2 in. 23.0 lb API-LC	5.81	3.72	6	6 1/4	58.06	325	15,000
5 1/2 in. 23.0 lb API-LC	7.50	4.59	7 3/4	7 7/8	74.77	325	15,000
5 1/2 in. 23.0 lb API-LC	8.25	4.650	8 1/2	8 3/4	72.88	325	15,000

Electric Submersible Pump Packer

The electric submersible pump (ESP) packer is a single-trip, hydraulic-set packer with a multi-bore head designed to reduce the overall costs of submersible pump completions. It is made up on the tubing string, allowing a full bore production tubing ID and passage of an electric cable, vent gas, and control line.

The ESP packer is designed to set with low hydraulic pressure. This allows the packer to be set shallow or in deviated wellbores.

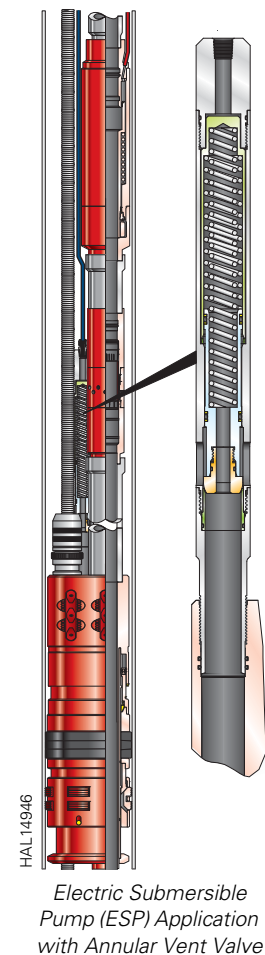
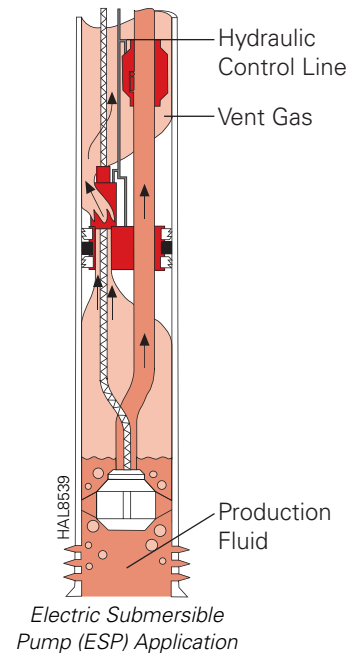
The concentric triple-seal multidurometer element package is designed to maintain a seal against high or low pressures and compensate for casing irregularities.

Case-carburized bi-directional slips anchor the packer against well pressure and offer exceptional hang-weight capability. Straight pull shear release allows simple retrieval without a retrieving tool.

The Halliburton gas vent valve can be used to control vent gas into the annulus. Refer to the "Subsurface Safety Equipment" section of the catalog for more details about this valve.

Features and Benefits

- » Compatible with feed-through equipment.
- » Easy installation can help make marginally economic wells attractive to produce.
- » Easy retrievability leads to less time spent on workovers.
- » Chemical injection and pressure monitoring ports can easily be added through the packer without significant costs.



B-Series Wireline-Retrievable Packers

B-series packers are large bore pack-off devices that can be set at a predetermined point anywhere in the tubing or casing.

A slip system on the tool's outer body anchors the packer to the wellbore, while a packing element provides a pressure seal. The tools are typically run and retrieved using conventional well intervention methods along with Halliburton RO and PK service tools.

Applications

B-series packers are "utility" packers designed for a wide range of applications.

The base model is the BB0 packer, which is primarily used as an anchoring device for the suspension of various well intervention tools, such as water injection valves, downhole gauges, and safety valves (Storm Choke® safety valves). It can also be used as a plugging device by attaching a remote equalizing sub (i.e., pump-out plug) or prong equalizing sub.

The BB0 model forms the base for both the BR0 sealbore packer and the BV0 velocity string packer.

The BR0 packer incorporates an upper seal receptacle, making it ideal for use in modular straddle systems in addition to the standard BB0 packer applications.

The BV0 packer uses a Ratch-Latch™-type running head that is designed for use with the Halliburton CT hydraulic running tool. This configuration allows large weights to be suspended from the packer while running in hole and makes the BV0 packer ideal for velocity string, long isolation straddle, and sand control applications.

Features

- » One-piece dual-modulus packing element
- » Compact, modular design
- » High running and retrieval speeds
- » Large footprint segmented slip mechanism
- » Slip mechanism located below packing element
- » Slips mechanically retained on retrieval
- » Controlled setting action
- » OD components rotationally locked
- » Field-redressable



Benefits

- » Modular design allows economical conversion of BB0 and BR0 variants for use in different operational conditions.
- » Compact design allows deployment in restricted work areas where limited height is available above the well and access is difficult.
- » Slip design and controlled setting action helps ensure the stresses exerted on the casing or tubing are evenly distributed, thus preventing damage.
- » Mechanically retained slips reduce premature setting risks while running in hole and hanging upon retrieval.
- » Packing element design enhances its ability to return to its original shape upon release, reducing hanging up risks.
- » Slip mechanism position offers protection from casing debris, thus improving reliability.
- » BB0 and BR0 packers can be run and retrieved on slickline, electric line, coiled tubing, or workstring. The BV0 packer deployment and retrieval method is dependent on the application.

B-Series Wireline-Retrievable Packers

Casing/Tubing				Maximum OD		Minimum ID		Pressure Rating			
Size		Weight						Above		Below	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	psi	bar	psi	bar
2 7/8	73.03	6.4	9.52	2.280	57.91	1.000	25.40	5,000	344.50	5,000	344.50
		8.7	12.94	2.140	54.36			5,000	344.50	5,000	344.50
3 1/2	88.90	9.2	13.69	2.720	69.09	1.375	34.93	3,000	206.70	3,000	206.70
		12.7	18.90	2.600	66.04	1.000	25.40	5,000	344.50	5,000	344.50
4 1/2	114.30	11.6	17.26	3.650	92.71	2.340	59.44	4,000	275.76	3,000	206.70
		12.6	18.75	3.650	92.71	2.340	59.44	4,000	275.76	4,000	275.76
		13.5	20.09	3.650	92.71	2.340	59.44	5,000	344.50	5,000	344.50
		15.1	22.47	3.650	92.71	2.340	59.44	4,000	275.76	4,000	275.76
5	127.00	15.0	22.31	4.280	108.71	2.500	63.50	4,000	275.76	4,000	275.76
		18.0	26.78	4.090	103.89	2.400	60.96	4,000	275.76	4,000	275.76
				3.970	100.84	2.400	60.96	2,000	137.88	2,000	137.88
		20.3	30.20	4.090	103.89	2.400	60.96	5,200	358.48	5,200	358.48
		23.2	34.52	3.812	96.82	2.400	60.96	4,000	275.76	3,000	206.70
5 1/2	139.70	17.0	25.29	4.530	115.06	2.625	66.68	5,000	344.50	4,500	310.26
				4.470	113.54	2.625	66.68	3,000	206.70	3,000	206.70
		20.0	29.75	4.530	115.06	2.625	66.68	5,000	344.50	5,000	344.50
				4.470	113.54	2.625	66.68	3,000	206.70	3,000	206.70
				4.460	113.28	2.625	66.68	4,000	275.76	3,500	241.15
		23.0	34.21	4.460	113.28	2.625	66.68	5,000	344.50	4,500	310.26
26.0	38.68	4.280	108.71	2.340	59.44	5,000	344.50	5,000	344.50		
6 5/8	168.30	32	47.60	5.500	139.70	3.400	86.36	5,000	344.50	5,000	344.50
7	177.80	26.0	38.68	5.935	150.75	3.625	92.08	3,000	206.70	3,000	206.70
		29.0	43.15	5.720	145.29	3.625	92.08	5,000	344.50	4,000	275.76
		32.0	47.60	5.720	145.29	3.625	92.08	5,000	344.50	5,000	344.50
		35.0	52.06	5.720	145.29	3.625	92.08	5,000	344.50	5,000	344.50
		38.0	56.54	5.635	143.13	3.625	92.08	4,000	275.76	4,000	275.76

Part Number Prefixes: P.803BB0, P.803BR0, P.803BV0

Packer Completion Accessories

This section describes the Halliburton line of packer completion accessories, including:

- » Sealbore and millout extensions
- » Seal assemblies
- » Seal units
- » Polished bore receptacle and seal units
- » Travel joints
- » Adjustable unions
- » Twin-flow assemblies
- » On-off tools
- » Sealing plugs and backpressure valves
- » Catcher subs
- » Anvil® plugging system
- » Mirage® disappearing plug
- » Tubing safety joints
- » Tubing tester flapper valve
- » Setting adapter kits

Sealbore and Millout Extensions

Halliburton packer sealbore extensions extend the polished surface below the packer. This enables the use of longer sealing units to compensate for tubing contraction or elongation. The extensions are available in standard 8-, 20-, and 24-ft (2.44-, 6.10-, and 7.32-m) increments.

Halliburton millout extensions provide a large ID below the packer sealbore or sealbore extension, which allows a single-trip packer milling/retrieving tool to be used when tubing is run below the packer assembly.

Applications

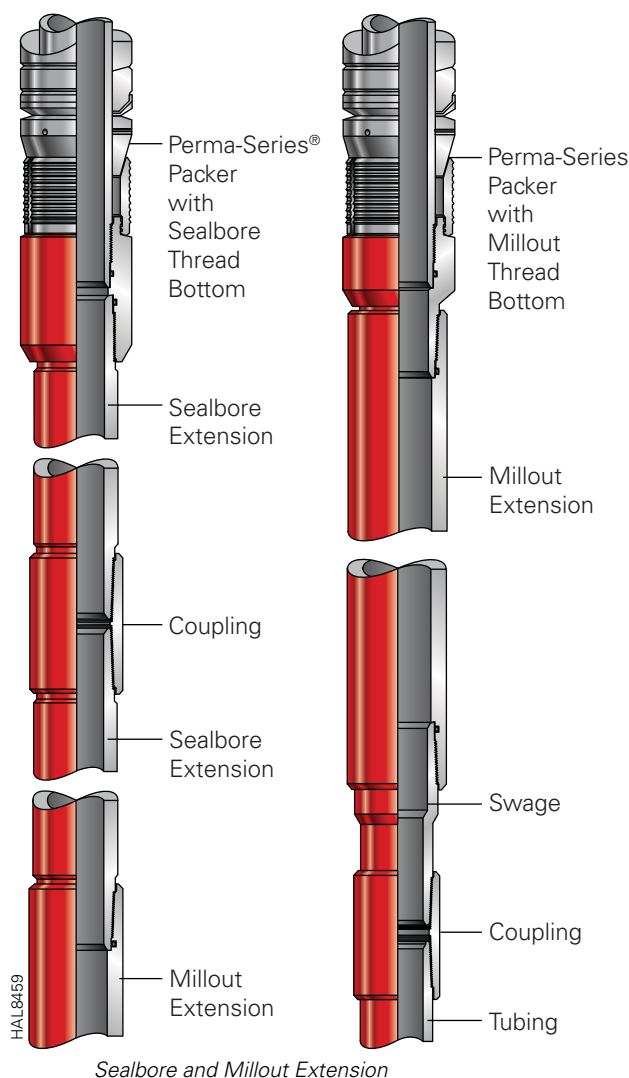
- » For using longer sealing units to compensate for tubing contraction or elongation (sealbore extensions)
- » To allow a single-trip packer milling/retrieving tool to be used when tubing is run below the packer assembly (millout extensions)

Benefits

- » Enables the use of longer sealing units to compensate for tubing contraction or elongation (sealbore extensions)

Options

- » Sealbore extensions available in 8-, 20-, and 24-ft (2.44-, 6.10-, and 7.32-m) increments



Ordering Information

Specify: casing size and weight, packer with which assembly will be used, packer bore, length of sealbore extension (standard lengths = 8, 20, and 24 ft), service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.), tubing material, bottom thread, special material or assembly thread requirements, if applicable.

Part Number Prefix: 212

Seal Assemblies

Halliburton seal assemblies for permanent and retrievable sealbore-type packers act as a seal between the tubing string and packer. If components will be exposed to corrosive fluids, the seal's standard alloys can be plated for extra protection or manufactured from corrosive-resistant alloys. A Halliburton seal assembly consists of three primary components:

- » Locator
- » Molded or premium seal units
- » Muleshoe guide, collet, or production tubing



No-Go Locator

A no-go locator is used with permanent packers that feature the short Ratch-Latch™-type receiving head. This locator can be provided with a positive locating stop for the tubing at the packer. These locators can be provided with the correct spacing between the no-go and seals because the lower end is machined to accept either molded seals or premium seal units.

Ratch-Latch™ Anchor Assembly

No rotation is needed to install the Ratch-Latch anchor assembly. This positive latch system minimizes seal movement in the well. Right-hand tubing rotation is used to disengage the Ratch-Latch assembly. It can be relatched or pulled with the tubing for redress operations. The straight shear Ratch-Latch assembly can be disengaged by either rotation or straight pull.

Ordering Information

Specify: packer bore (or specific packer to mate with) latch type (Ratch-Latch™, no-go); special makeup thread requirements if applicable (standard or premium); service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); material (L80 alloy, P125 alloy, 9Cr-1Mo, or Incoloy® 925).

Incoloy® is a registered trademark of Special Metals Corporation.

Seal Units

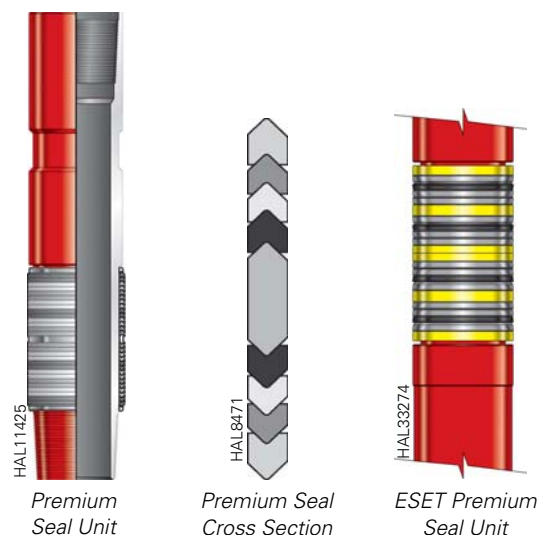
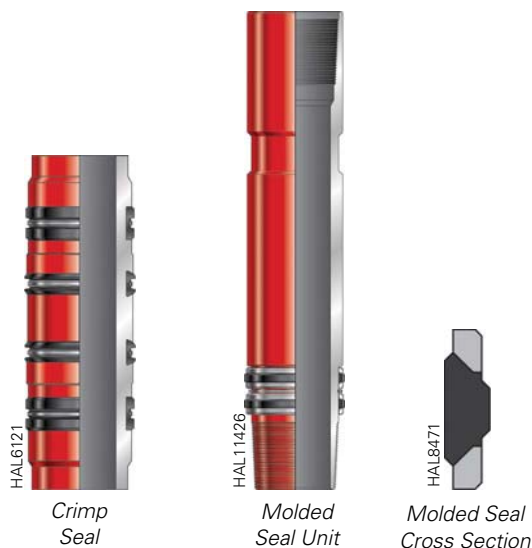
Halliburton offers molded, crimp, and premium seal units. Molded and crimp seals are recommended for applications in which the seal will be going in and out of the sealbore. Premium seals are ideal for applications that require the seal units remain in the sealbore.

All seal units are designed for easy field redress. The geometry of the seals helps them provide a more positive seal as they are subjected to higher pressures and temperatures. Many seal unit types are available, and others can be designed to fit specific needs.

Premium seal units are V-packing seal systems of either elastomeric or plastic materials with a plastic and metal backup system. The V-ring lips are designed to have an initial interference fit with the sealbore. The lips respond to pressure increases by flexing outward. Various backup material combinations can be used with each V-packing seal to make it suitable for different temperatures and pressures.

Crimp seals, in combination with centering rings and debris barrier rings, can be fitted on long seal mandrels, which eliminate threaded connections typically used on successive chevron stacks. The crimp seal consists of a rubber seal ring that is fitted to a groove on the seal mandrel. The seal is retained to the groove by a metal ring crimped over the seal. It is available in various elastomers and can be fitted with anti-extrusion backup rings.

While it has long been considered a best practice in high-pressure/high-temperature sealbore applications to limit seal movement using a Ratch-Latch™ or seal anchor, treatments or production cycles under these conditions can reach the mechanical limit of the completion. ESET premium seal units were developed specifically for these applications that require dynamic sealing capabilities.



Muleshoe Guides

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

Collet muleshoe guides combine the muleshoe features with an indicator collet to provide a surface indication of the packer seals entering or exiting a packer bore. Push-through and no-go-type collets are available for indication on the packer or a special ID sub below the packer.

Self-aligning muleshoe guides allow the end of the guide to rotate and orient with the liner top without rotation of the tubing. This tool is particularly useful in dual-wellbore or horizontal completions in which control of tubing rotation downhole is difficult.



Ordering Information

Seal Units and Muleshoe Guides

Specify: packer bore; special makeup thread requirements, if applicable (standard or premium); service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); material (L80 alloy, 9Cr-1Mo, or Incoloy® 925).

Part Number Prefixes: 212G, 212SDG, 212COL

Incoloy® is a registered trademark of Special Metals Corporation.

Polished Bore Assembly

The polished bore assembly (PBA) consists of a no-go seal assembly pinned to a polished bore receptacle (PBR), and once sheared, provides tubing elongation and contraction capabilities. The PBA can be placed anywhere in the tubing string to provide a floating seal and maintain equivalent tubing ID. It is most commonly used above a production packer when running a single-trip upper completion.

Applications

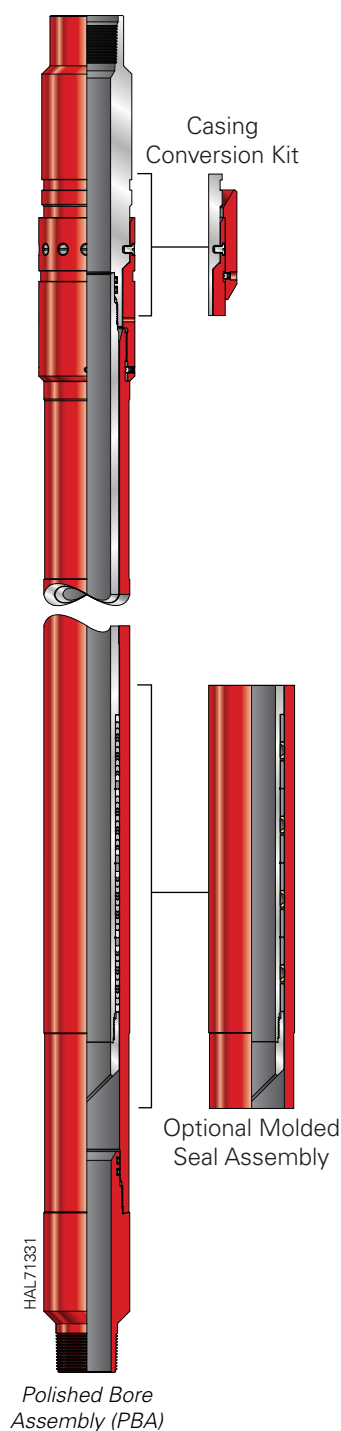
- » Used in applications requiring large bores, dynamic sealing, and the ability to retrieve the upper completion

Features

- » One-piece body design
- » Stroke lengths of 10 and 20 ft (3.0 and 6.1 m)
- » Right-hand rotation releases the PBR from the packer
- » Adjustable shear value
- » Optional modular conversion kits to centralize inside larger casing sizes
- » Molded and V-packing seal configurations

Benefits

- » Maintains maximum available IDs through the completion
- » Allows for a single-trip packer installation
- » Easily retrieved with a fishing tool spear without disturbing the packer
- » Minimal internal connections for fewer potential leak paths



Ordering Information

Specify: casing size and weight; thread type; size; and weight for top of seal assembly, type of connection to packer (Ratch-Latch™ or seal anchor); seal space out (full closed or stroked out position); service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); tubing material, seal assembly stroke; if applicable; seal type on seal units and anchor/latch assembly.

Part Number Prefix: 212PBA

Travel Joints

Halliburton travel joints provide alternate methods of compensating for tubing contraction and elongation in producing, injection, and disposal wells. They are run as an integral part of the tubing string and have a full tubing drift ID that is compatible with other downhole control equipment. After packers and associated equipment are in place, travel joints can be activated. Depending on the application, travel joints can be activated by shear pins or standard wireline tools.

Options

- » Allow tubing torque below by engagement of clutch, spline, or lug and slot
- » Available in versions that can be locked in open, mid-stroke, or closed positions
- » Available in standard tubing sizes
- » Can be trimmed with standard or sour service seal packages
- » Available in versions equipped with centralizer rings to help prevent abnormal seal wear and to clean accumulated solids from the inner mandrel during the operation of the well

Swivel Travel Joints

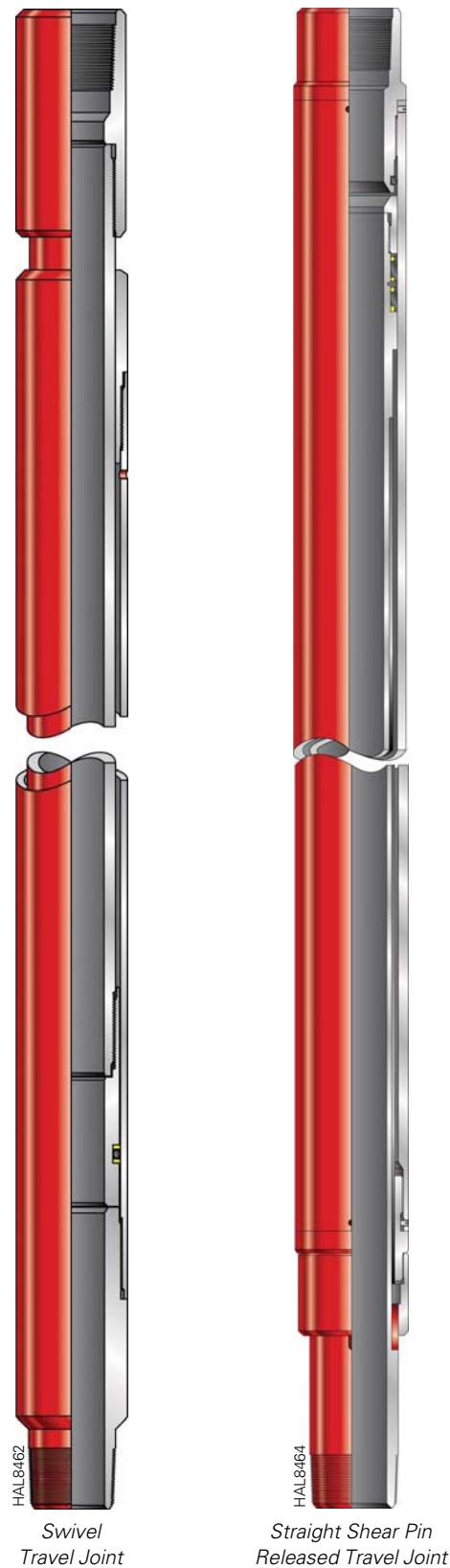
Swivel travel joints help with spacing out between packers or near the surface. They offer continuous 360° rotation, while isolating the tubing from the annulus.

Straight Shear Pin Released Travel Joints

These travel joints can be sheared by tension or compression. They can also be sheared during initial completion operations or left in the pinned condition to be sheared at a predetermined value later. These travel joints can be pinned at any point in the stroke. The release valve can be varied by the number of shear screws. Splined designs are available when torque must be transmitted through the travel joint.

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; type (wireline-release, H-slot and shear-pin release, straight shear-pin release, swivel, swivel with clutch, ability to lock or pin in opened, mid-stroke, or closed positions); stroke; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); tensile/hand weight requirements; special material or elastomer requirements, if applicable



Keyed Travel Joints

Keyed travel joints are similar to the swivel type but are keyed the length of the travel joint. The keys allow torque to be transmitted through the full stroke of the travel joint.

Long Space-Out Travel Joints

The Halliburton long space-out travel joint was designed to ease the space-out process required to install a production tubing string in a subsea completion. The joint is designed to stroke closed under a compressive load after a production seal assembly is landed in a sealbore packer. After the joint strokes, the production tubing can be lowered until the subsea tubing hanger lands in the subsea tubing head spool.

Travel Joints

Size		OD		ID		Stroke	
in.	mm	in.	mm	in.	mm	ft	m
2 3/8	60.33	3.65	92.71	1.92	48.77	10	3.05
						20	6.10
2 7/8	73.03	4.28	108.71	2.37	60.20	10	3.05
						20	6.10
3 1/2	88.90	5.03	127.76	2.97	75.44	10	3.05
						20	6.10

Other sizes available upon request.

Specific ID dimension might change with selection of premium or API thread connection.

Part Number Prefix: 31TO



Keyed
Travel Joint

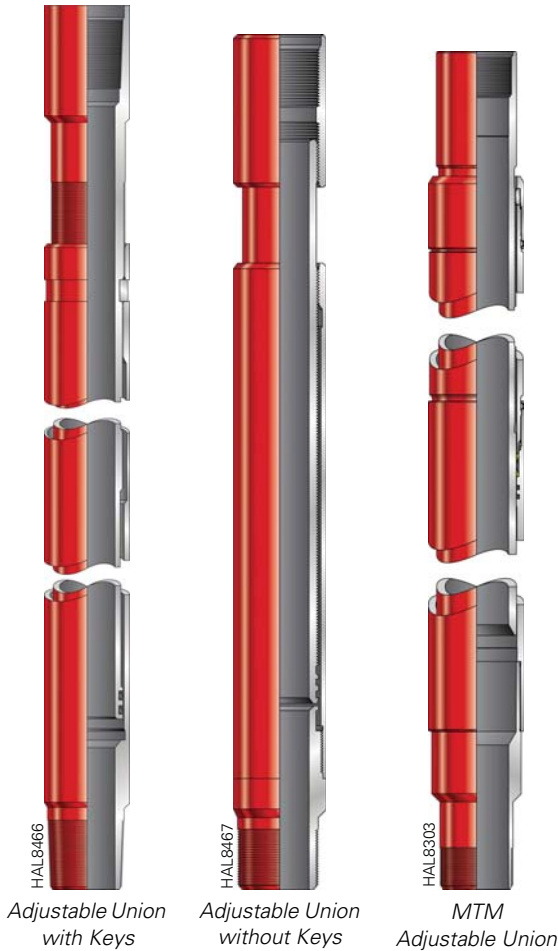
Long Space-Out
Travel Joint

HALLIBURTON

Completion Tools

Adjustable Unions

Halliburton adjustable unions are installed in the tubing string to facilitate critical spacing out at the surface and between subsurface components. They can also be keyed to prevent future rotation. Threading on the adjustable unions stops travel. Adjustable unions with keys allow tubing torque to packers and other equipment below. Adjustable unions without keys are used when tubing torque below the union is not required. The metal-to-metal adjustable union does not have elastomeric seals exposed to well pressure.

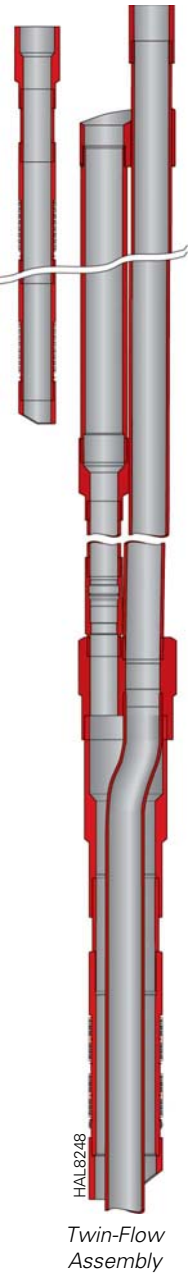


Adjustable Unions With and Without Keys

Size		OD		ID		Stroke	
in.	mm	in.	mm	in.	mm	in.	mm
2 3/8	60.33	2.83	71.88	1.93	49.02	12.0	304.80
						24.0	609.60
2 7/8	73.03	3.50	88.90	2.44	61.98	12.0	304.80
						24.0	609.60
3 1/2	88.90	4.54	115.32	2.90	76.66	12.0	304.80
						24.0	609.60
4 1/2	114.30	5.58	141.73	3.92	99.57	24.0	609.60

Twin-Flow Assemblies

Halliburton twin-flow assemblies are used in production or injection wells in which dual or isolated flow above the packer is desired. The twin-flow assembly has seals on the lower end that seal in the polished bore of the upper packer. The upper section of the assembly has a primary string that is threaded above and below the twin-flow head. The secondary tubing string connection can be designed with either floating seals or a latch-type connection.



On-Off Tools

The Halliburton XL on-off tool is a short, compact, overshot-type receptacle with a J-slot that engages automatically and releases with 1/4 turn left-hand rotation.

Applications

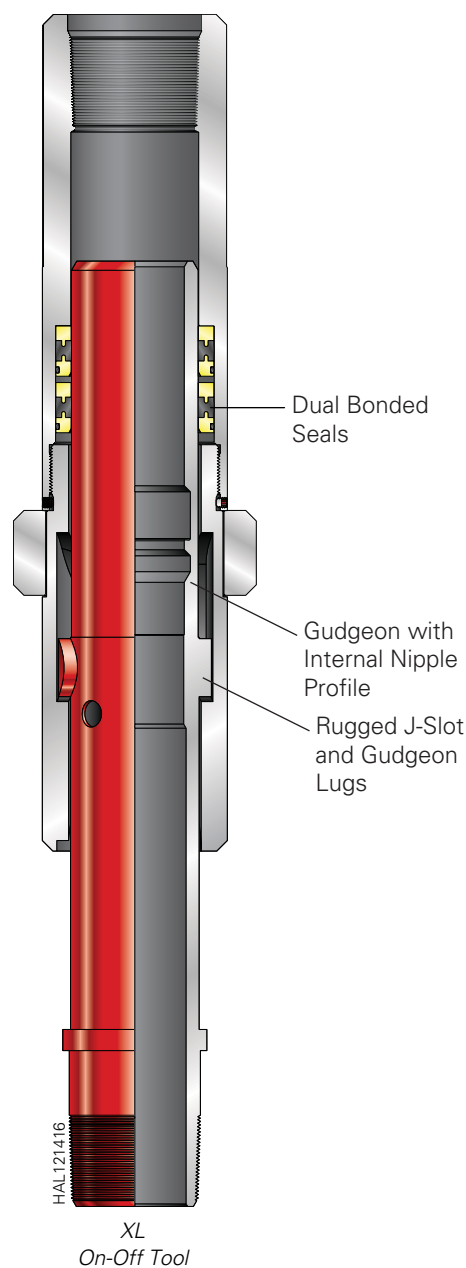
- » Injection
- » Production
- » Stimulation
- » Testing
- » Temporary suspension

Features

- » 10,000 psi pressure rating
- » 325°F temperature rating
- » Compact, short length
- » Can be pinned in running position
- » Nipple profile in gudgeon
- » Optional casing conversion kits to centralize inside larger casing sizes

Benefits

- » Allows multiple tubing to packer connections/disconnections without unsetting the packer
- » Allows packer to be used as a bridge plug
- » Accommodates wireline setting kit for wireline-set packers



XL On-Off Tool

Casing Size		Casing Weight		Maximum OD		Gudgeon X® Nipple Profile Minimum ID		Length		Gudgeon Seal Diameter		Tubing Connection (API-EU, Box Up x Pin Down)	
in.	mm	lb/ft	kg/m	in.	mm	in.	mm	in.	cm	in.	mm	in.	mm
4 1/2	114.3	11.6 to 15.1	17.26 to 22.47	3.700	94.0	1.875	47.63	25.37	64.44	2.615	66.4	2 3/8	60.3
5 1/2	139.7	14.0 to 26.0	20.83 to 38.69	4.395	111.6	1.875	47.63	25.37	64.44	2.615	66.4	2 3/8	60.3
7	177.8	23.0 to 35.0	34.23 to 52.08	5.765	146.4	1.875	47.63	25.37	64.44	2.615	66.4	2 3/8	60.3
5 1/2	139.7	14.0 to 26.0	20.83 to 38.69	4.395	111.6	2.313	58.75	25.78	65.48	3.000	76.2	2 7/8	73.03
7	177.8	23.0 to 35.0	34.23 to 52.08	5.765	146.4	2.313	58.75	25.78	65.48	3.000	76.2	2 7/8	73.03
7	177.8	23.0 to 35.0	34.23 to 52.08	5.765	146.4	2.750	69.85	27.72	70.41	4.000	101.6	3 1/2	88.9

Sealing Plugs and Backpressure Valves

A sealing plug can be used to convert packers to bridge plugs when testing, squeezing, or performing well stimulation work above a sealbore packer, such as Halliburton Perma-Series® or Versa-Trieve® packers. Halliburton offers many plugs that can help reduce the possibility of high-pressure damage in the zone below the packer. When properly seated, Halliburton sealing plugs provide a fluid- or gas-tight seal and withstand pressures within the packer limits.

Retrievable Sealing Plugs

Retrievable sealing plugs are available in two types:

- » SS plug engages the latch thread in the packer top sub and seals against pressure from above or below
- » Locator plug provides a seal against pressure from above the packer only

Sealing plugs can be dropped into the casing if no possibility of a low fluid level exists, or they can be run in on tubing. A bypass incorporated into the plug aids in the plug's retrieval because it equalizes pressure above and below the packer when the plug is unlatched and an upward pull is taken on the tubing. A J-slot overshoot is used to retrieve the J-slot plug. A ratchet-type overshoot is used to retrieve the locator plug.

Ordering Information

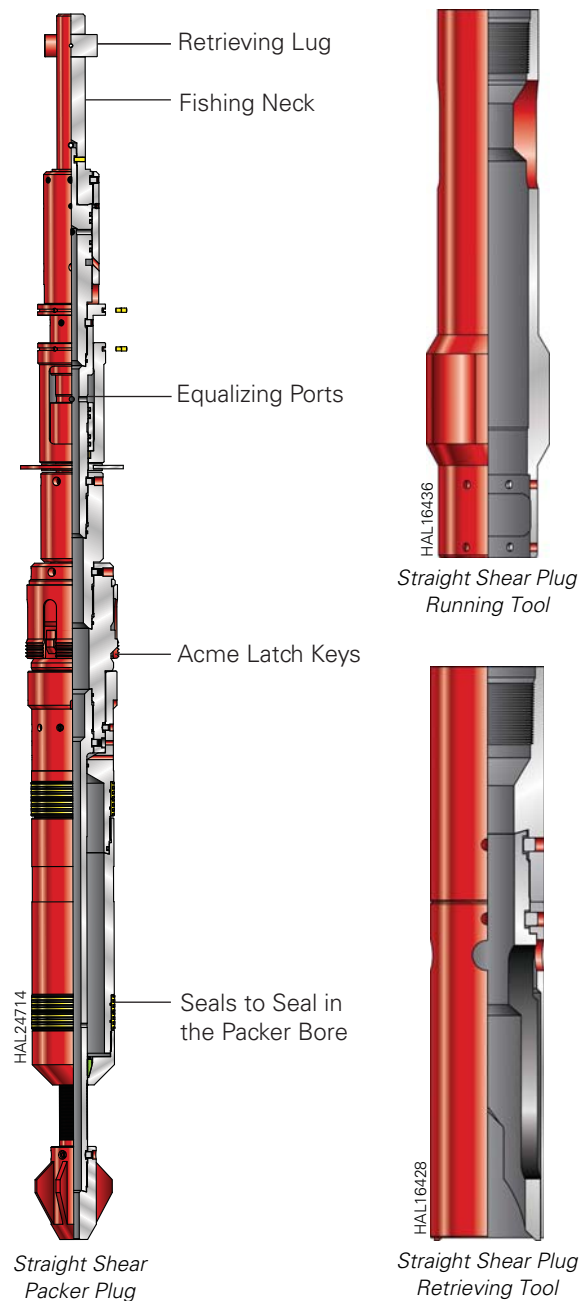
Specify: mating packer part number or packer type and bore size, latch type (J-slot, straight slot, Ratch-Latch™, no-go), top thread and tubing material/grade, service environment (standard %H₂S, %CO₂, amines/ other chemicals, chloride content, pressures, temperatures, etc.), mandrel material (L-80 alloy, 9 Cr-1Mo, Incoloy® 925), seal type for Ratch-Latch locators (nitrile, Fluorel®, Ryton®, Viton™, PEEK), special bottom thread requirements if applicable (standard or premium).

Fluorel® is a registered trademark of Dyneon, LLC.

Ryton® is a registered trademark of Solvay S.A. - Polyphenylene Sulfide

Viton™ is a trademark of The Chemours Company - Fluorocarbon

Incoloy® is a registered trademark of Huntington Alloys.



Expendable Sealing Plugs

Expendable sealing plugs can be assembled in the bottom of a sealbore-type packer. Expendable sealing plugs are millable and can be expended out the bottom of the packer by applying tubing weight as the stinger or sealing unit enters the packer. The plug's releasing mechanism is pressure balanced, and the plug is designed to hold any pressure within the packer limits.



*Expendable
Sealing Plug*

Backpressure Valves

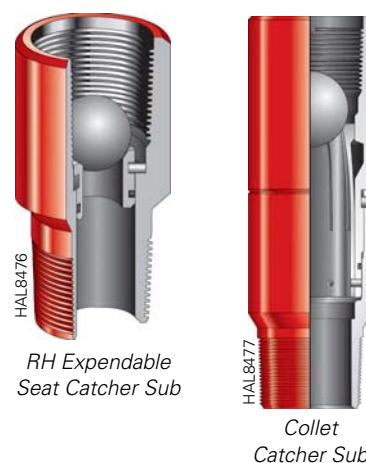
Backpressure valves are attached to the bottom of a packer to shut off flow from below when the sealing unit and tailpipe are removed. These flapper-type valves seal against a resilient seal and metal seat.



*Backpressure
Valve*

Catcher Subs

Catcher subs for hydraulic-set packers are installed on the tubing to catch the seal ball that sets the packer. They have a full-open ID when the ball is expended. The RH seat-type catcher sub has the seat expended with the ball. The collet catcher sub (CCS) is used when landing nipples or other restrictions are installed below.



RH Expendable Seat Catcher Subs

Size		OD		Ball OD		Seat ID		ID After Seat Extended*	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1.660	42.16	2.20	55.88	1.00	25.40	0.86	21.84	1.37	34.80
1.900	48.26	2.50	63.50	1.31	33.27	0.98	24.89	1.49	37.85
2 3/8	60.33	2.91	73.91	1.00	25.40	0.86	21.84	1.91	48.51
				1.50	38.10	1.29	32.77		
2 7/8	73.03	3.50	88.90	1.00	25.40	0.86	21.84	2.36	59.94
				1.87	47.50	1.73	43.92		
3 1/2	88.90	4.06	103.12	2.25	57.15	1.73	43.92	2.88	73.15
4 1/2	114.30	5.52	140.21	1.75	44.45	1.48	37.59	3.92	99.57

*Also considered OD of ball seat. Care must be taken to avoid running this tool above smaller IDs, such as landing nipples, in the tubing string.

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 12RH

Collet Catcher Subs

Top Thread Size		OD		Collet ID Before Expended		Ball OD		Minimum ID After Expended	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1.90	48.26	2.50	63.50	1.25	31.75	1.44	36.58	1.52	38.61
2 3/8	60.33	3.06	77.72	1.56	39.62	1.75	44.45	1.92	48.77
2 7/8	73.03	3.67	93.22	2.00	50.80	2.12	53.85	2.38	60.45
3 1/2	88.90	4.50	114.30	2.50	63.50	2.75	69.85	2.80	71.12
5 1/2	139.70	6.52	165.61	4.32	109.73	4.50	114.3	4.67	118.62

Ordering Information

Specify: type (collet or expendable ball and seat); thread type; size; and weight; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); tubing material; desired shear-out value; tubing ID restrictions above and below the catcher sub.

Part Number Prefix: 12CCS

DP1 Anvil® Plugging System

The DP1 Anvil® plugging system is a temporary tubing plugging device that allows the operator to perform multiple pressure tests of the production tubing before packer setting and on command provides full bore, through-tubing access without well intervention. The plug incorporates a solid metal mechanical barrier removed by applying tubing pressure a predetermined number of times. No special surface equipment is required for operation and no debris results after actuation.

The Anvil plug comes complete with a range of accessories to accommodate pre-fill, circulation, and secondary override facility.

Applications

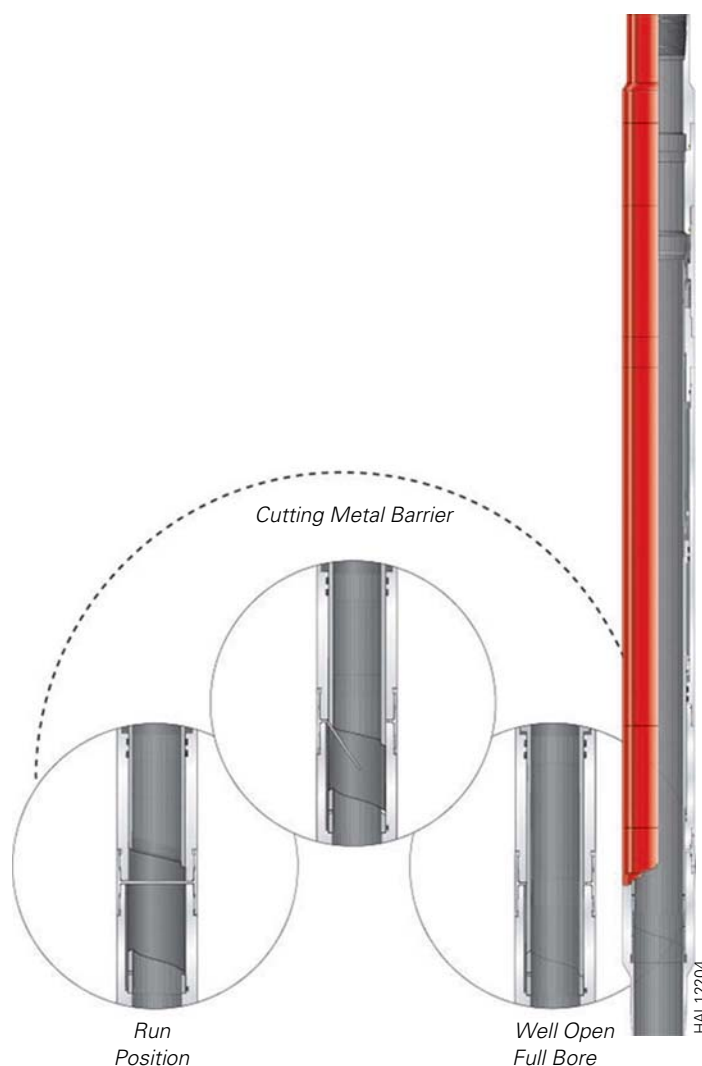
This tool is ideally suited for deep, highly deviated, or horizontal wells that would normally require coiled tubing to run plugs to set hydraulically activated equipment.

Features

- » Solid metal barrier
- » Depth limited only by ratings of the hydrostatic chamber housings
- » Low pressure differentials to activate
- » Feedback at surface of tool activation
- » No waiting on plug to open
- » No debris
- » No non-standard surface equipment required
- » Mechanical override
- » Easily millable

Benefits

- » Totally interventionless completion installation
- » Can be used as a deep, downhole barrier for wireline valve removal
- » After activation, Anvil plug produces no residual debris
- » No special surface equipment to occupy premium space on the rig floor



DP1 Anvil® Plugging System

Part Number Prefix: P.208DP1

Mirage® Disappearing Plug

The Halliburton Mirage® disappearing plug enables setting of the production packer without intervention, which reduces costs associated with running and pulling slickline plugs. The plug is run in as a part of the tubing interior string and disintegrates after a predetermined number of pressure cycles, leaving the tubing full bore. See the “Subsurface Flow Controls” section for additional information about the Mirage disappearing plug.



Mirage®
Disappearing Plug

Tubing Safety Joints

Halliburton tubing safety joints are straight shear-type safety joints run on the tubing usually below a packer. They allow for separation of the tubing in case the lower packer or sealing unit becomes stuck and cannot be pulled with existing tubing. Their shear strength can be adjusted by adding or removing shear screws.



Tubing
Safety Joint

SO Straight Shear Tubing Safety Joint

Size		OD		ID		Maximum Shear Valve	
in.	mm	in.	mm	in.	mm	lb	kg
2.063	52.40	2.38	60.45	1.50	38.10	24,000	10 886
2 3/8	60.33	3.02	76.71	1.92	48.77	40,000	18 144
2 7/8	73.03	3.64	92.46	2.36	59.94	40,000	18 144
3 1/2	88.90	4.27	108.46	2.90	73.66	50,000	22 680
4	101.60	4.73	120.14	3.52	89.41	40,000	18 144
4 1/2	114.30	5.19	131.83	3.85	97.79	80,000	36 288
5 1/2	139.70	6.22	157.99	4.98	126.49	120,000	54 432

Ordering Information

Specify: casing size and weight; tubing size; weight; grade; and thread; service environment (standard, %H₂S, %CO₂, amines/other chemicals, chloride content, pressures, temperatures, etc.); maximum differential pressure requirement.

Part Number Prefix: 12SO

Seal Selection for Packers

To select the appropriate seal — static, dynamic, non-active, or active — consider the following factors:

- » Maximum pressure differential
- » Maximum and minimum temperature
- » Well fluids
- » Seal application

The static seals remain stationary in the sealbore, while dynamic seals move. Temperature, pressure, or movement cycling within the sealbore calls for active

seals; conversely, non-active seals cannot undergo these changes. These facts, as well as application, availability, price, and well environment must be considered during seal selection.

Other Seal Technology

Other seal technologies, including metal-to-metal seals, are available from Halliburton representatives.

Halliburton Packer Seal Unit Selection Guide

A Sweet Crude

B Hydrogen Sulfide

C Zinc Bromide

D Steam

E Carbon Dioxide

F Organic Amines

G Diesel

V=Viton

R=Ryton

K=Kalrez

T=Teflon

P=Peek

A=Aflas

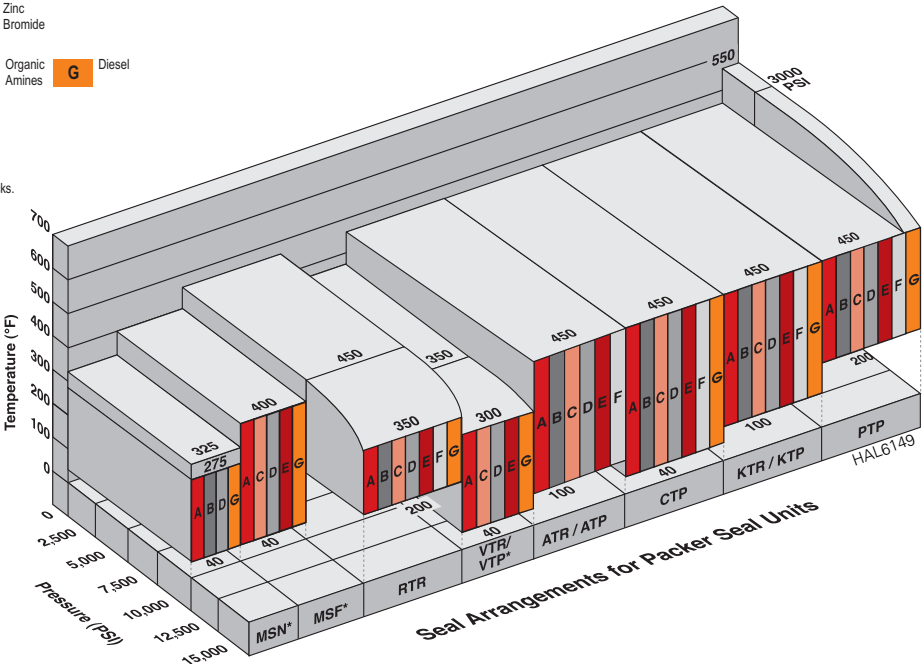
C=Chemraz

N=Nitrile

F=Fluorel

MS=Molded Seal

All other seal units are premium v-packing stacks.

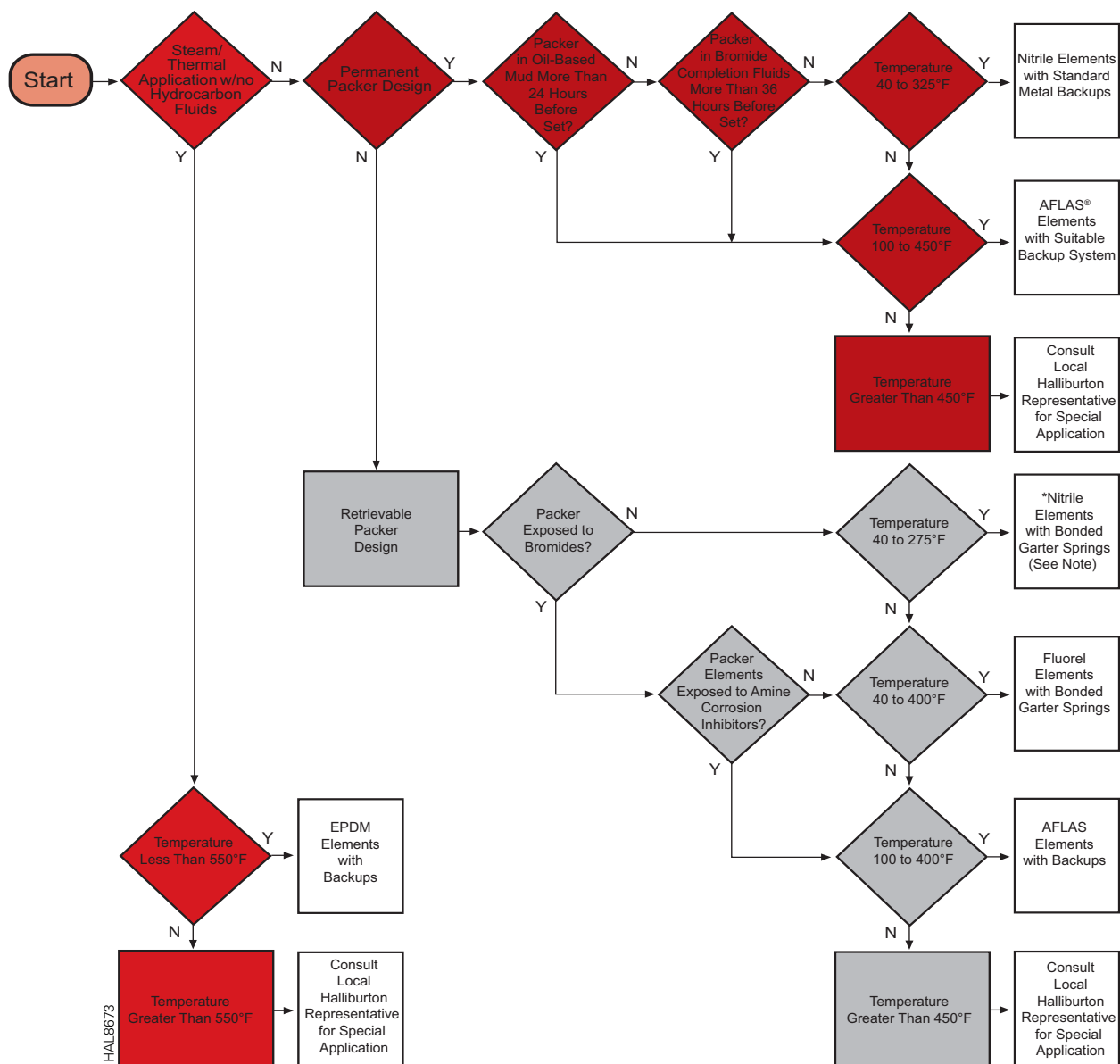


**Good to 325°F if seal static. Good in water soluble amines — no aromatic hydrocarbon carrier and in CO₂ if seal static.
Note: Higher pressure ratings available. Contact your local Halliburton representative.*

	KTR	KTP	RTR	VTR	VTP	ATR	ATP	PTP	CTP
	RYTON	PEEK	RYTON	RYTON	PEEK	RYTON	PEEK	PEEK	PEEK
	TEFLON	TEFLON	TEFLON	TEFLON	TEFLON	TEFLON	TEFLON	TEFLON	TEFLON
	KALREZ	KALREZ	RYTON	VITON	VITON	AFLAS	AFLAS	PEEK	CHEMRAZ

AFLAS® is a registered trademark of Asahi Glass Co., Ltd. - Propylene - Tetrafluoroethylene Copolymer.
Chemraz® is a registered trademark of Greene, Tweed & Co., Inc. - Perfluoro Elastomer.
Kalrez® is a registered trademark of E. I. du Pont de Nemours and Company - Perfluoro Elastomer.
Ryton® is a registered trademark of Solvay S.A. - Polyphenylene Sulfide.
Teflon® is a registered trademark of The Chemours Company - PTFE Polytetrafluoroethylene.
Viton™ is a trademark of The Chemours Company - Fluorocarbon.
KTR® is a registered trademark of Halliburton.

Packer Element Selection Chart



*Note: Nitrile elements exposed to H₂S will experience varying levels of hardening.

Please consult your Halliburton Representative and supply the following information:
%H₂S, temperature, length of exposure, completion fluids, and produced fluids data.

AFLAS® is a registered trademark of Asahi Glass Co., Ltd.
Teflon® is a registered trademark of The Chemours Company.
Fluorel® is a registered trademark of Dyneon, LLC.