

## T-Frac System™ Catalog





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# Threaded Latch Anchor Seal Assembly

The T-580 Threaded Latch Anchor Seal Assembly is used to make a connection or dis-connection of the tubing string and the RSB-1 Retrievable Seal Bore Packer. The seal assembly is engaged by set down weight and disengaged by applying and maintaining tension at the packer followed by right hand rotation. Sealing options and material choices are available to enable operation at 10,000psi at temperatures up to 450°F in standard or sour service conditions.

## FEATURES AND BENEFITS

- Optional thread connections available
- Metal goods available for H2S service
- Right-hand rotation with tension to release
- Pressure rating up to 10,000psi
- Wide range of seal materials available to suit any well conditions.



## Thread Latch Anchor Seal Assembly

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	UPPER THREAD CONNECTION Inches	LATCH THREAD Type	SEAL Type	PRODUCT NUMBER
4.750 (120.65)	5.875 (149.23)	3.870 (98.30)	4.500" EU 8RD Box	5.122" -4 Special Ratchet Left-Hand	90D Bonded Nitrile	T580-74A-010

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# RSB<sub>1</sub> Retrievable Seal Bore Packer

The T-1265 RSB1 is a Retrievable Seal Bore Packer designed for use in applications where a long tailpipe assembly is required. It is set hydraulically using a model G Hydraulic Setting Tool with appropriate Wireline Adapter Kit and once set does not require string weight or tension to remain anchored. All the load bearing parts are designed to withstand high tensile loads and the bidirectional slips prevent any movement of the tool. The packer is retrieved by a straight pull shear release mechanism.

The packer has two seal bores in the standard 7" size, a full bore 4.00" (101.60mm) ID and an upper seal bore ID of 4.75" (120.65mm) to accept an anchor seal assembly.

## FEATURES AND BENEFITS

- › Designed for use in vertical, deviated or horizontal well completions.
- › Bi-directional slips which prevent movement after setting.
- › An internal locking system maintains pack-off.
- › Full bore ID matches tubing and extended tailpipe.
- › Both setting pressure and shear release are field adjustable.
- › Ideal for anchoring a liner in the T-Frac™ multi-zone stimulation system.
- › Rated to 300°F and 10,000psi.



### RSB<sub>1</sub> Retrievable Seal Bore Packer

SIZE Inches (mm)	CASING WEIGHT RANGE lbs/ft (kg/m)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	PRODUCT NUMBER
7.000 (177.80)	26.0-32.0 (38.69-47.62)	5.875 (149.23)	3.875 (98.43)	T1265-74A-000
7.000 (177.80)	26.0-32.0 (38.69-47.62)	5.875 (149.23)	3.875 (98.43)	T1265-74A-005
7.000 (177.80)	26.0-32.0 (38.69-47.62)	5.875 (149.23)	3.875 (98.43)	T1265-74B-000
7.000 (177.80)	26.0-32.0 (38.69-47.62)	5.875 (149.23)	3.875 (98.43)	T1265-74B-001

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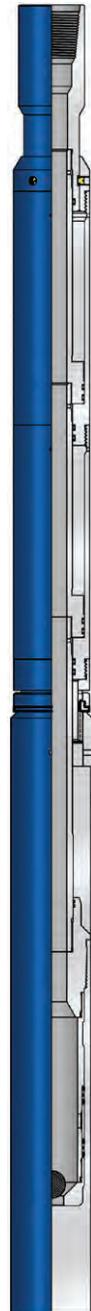
# RSB<sub>1</sub> Hydraulic Setting Tool

The RSB<sub>1</sub> Hydraulic Setting Tool is used to set the RSB/RSB-1 Packer as part of a standard completion or a liner in the T-Frac™ System. Once on depth, a predetermined differential pressure is applied against a plugging device below the tool such as a pump out plug, a wireline plug or a ball dropped or pumped from surface to an integral ball seat. This shears screws which activates a hydraulic chamber that strokes the RSB<sub>1</sub> Setting Tool, engages the slips and energizes the packing elements.

Once the RSB/RSB-1 Packer is set and tested the RSB<sub>1</sub> setting tool is released by picking up the setting string and maintaining tension while applying right hand rotation. Ports between the seals of the setting tool ensure drainage while tripping out of the hole.

## FEATURES AND BENEFITS

- › Large internal bypass allows fluid to enter the workstring while running in.
- › An Integral ball seat is available.
- › The tool is self-draining when pulling out of hole to prevent pulling a wet string.
- › Setting pressure is field adjustable.
- › High tensile capacity allows running of long liners.
- › Supplementary setting chambers can be added as an option.
- › Standard top connection is an IF drill pipe box.
- › Rated at 350°F and 10,000psi.



RSB <sub>1</sub> Hydraulic Setting Tool				
SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	SETTING BALL SIZE Inches (mm)	PRODUCT NUMBER
7.000 (177.80)	5.880 (149.35)	1.750 (44.45)	2.000 (50.80)	T1062-70A-000

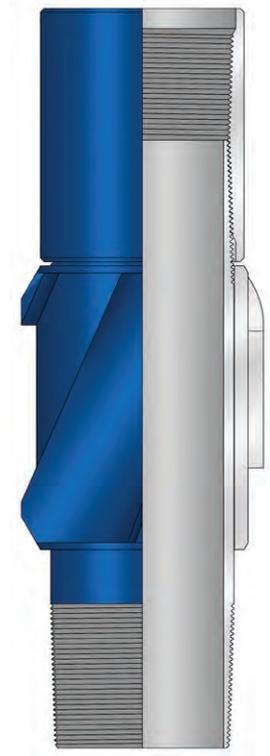
**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# Open Hole Centralizer

The Team Oil Tools Open Hole Centralizer is used with the Hydro-Pak and I-Pack Packers with the open hole T-Frac System™. The centralizer protects the packer from damage during installation in the open hole section of the well bore and swivels to allow for rotation when running in the hole.

## FEATURES AND BENEFITS

- Available in composite or steel
- Helps prevent running damage
- Centralizes when setting
- Swivels
- Pressure rating up to 10,000psi



Open Hole Centralizer			
SIZE	MAX O.D.	MIN I.D.	PRODUCT NUMBER
Inches (mm)	Inches (mm)	Inches (mm)	
7.000 (177.80)	5.812 (147.62)	4.000 (101.60)	T117-74C-000
7.000 (177.80)	5.812 (147.62)	4.000 (101.60)	T117-74B-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

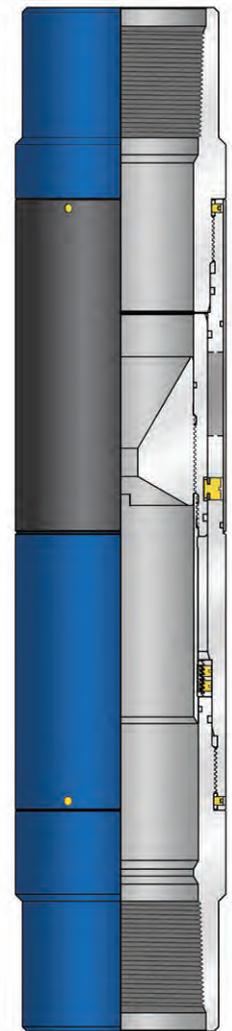
## T-Port Frac Sleeve

The T1041 T-Port Frac Sleeve is designed for use in selective stimulation of multi-zone wells in open hole or cemented completion applications, especially with the T-Frac™ system. It is activated by circulating a ball to a drillable seat inside the tool, when hydraulic pressure is applied from surface the differential pressure created across it shears the inner sleeve piston, moving it downwards to open up the frac ports. The inner sleeve piston is locked in the full open position by a ratchet ring, allowing stimulation of the zone.

The T-Port Frac Sleeve can be run in multiple quantities with each having a different ball and seat size with the smallest on bottom and progressively larger sizes moving up the hole.

### FEATURES AND BENEFITS

- Allows independent stimulation of 24 zones for the 4.500" tool and 31 zones for the 5.500" tool when used in conjunction with the TEAM Hydro-Pack Packer or ORIO™ Hydro Port.
- The internal locking mechanism ensures that the frac ports remain fully open once the sleeve is activated.
- The ball seat is drillable resulting in a full bore ID matching the pipe size.
- Once activated, the ball and seat act as a bridge plug preventing any communication to lower zones.
- Available in seat ID's accommodating setting ball sizes from 1" to 4.75".
- Available in materials suitable for standard or sour service.
- Rated at 350°F and 10,000psi.



### T-Port Frac Sleeve

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	LENGTH Inches (mm)	PRODUCT NUMBER
4.500 (114.30)	5.635 (143.13)	3.895 (98.93)	29.00 (736.59)	T1041-46A-000
5.500 (139.70)	6.750 (171.45)	4.495 (114.17)	25.00 (635.00)	T1041-56A-000

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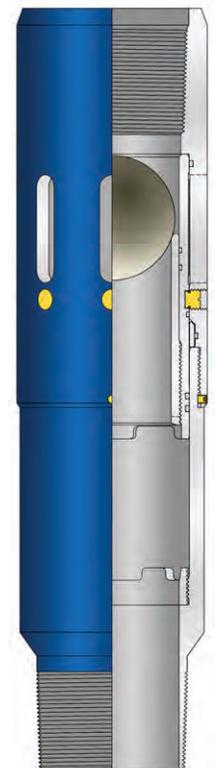
## I-Port Frac Sleeve

The T1021 I-Port Frac Sleeve is designed for use in selective stimulation of multi-zone wells in open hole or cemented completion applications, especially with the T-Frac™ system. It is activated by circulating a ball to a drillable seat inside the tool, when hydraulic pressure is applied from surface the differential pressure created across it shears the inner sleeve piston, moving it downwards to open up the frac ports. The inner sleeve piston is locked in the full open position by a ratchet ring, allowing stimulation of the zone.

The I-Port Frac Sleeve can be run in multiple quantities with each having a different ball and seat size with the smallest on bottom and progressively larger sizes moving up the hole.

### FEATURES AND BENEFITS

- Available in sizes 2-7/8", 3-1/2" and 4-1/2".
- The internal locking mechanism ensures that the frac ports remain fully open once the sleeve is activated.
- The ball seat is drillable resulting in a full bore ID matching the pipe size.
- The shear pressure setting is field adjustable.
- Once activated, the ball and seat act as a bridge plug preventing any communication to lower zones.
- Available in seat ID ranging from 0.786" to 3.536" accommodating setting ball sizes from 1" to 3.75" in increments of 0.25".
- Can be run in quantities of 5 for 2-7/8", 6 for 3-1/2" and 12 for 4-1/2".
- Available in materials suitable for standard or sour service.
- Rated up to 300°F and 10,000psi.



### I-Port Frac Sleeve

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	PRODUCT NUMBER
2.875 (73.03)	4.281 (108.74)	2.470 (62.74)	T1021-25B-000
3.500 (88.90)	4.625 (117.48)	2.997 (76.12)	T1021-35B-000
4.500 (114.30)	5.688 (144.48)	4.000 (101.60)	T1021-45B-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# Pump Out Cement Sleeve

The T218 Pump Out Cement Sleeve is a hydraulically operated sliding sleeve which is run as an integral part of a casing string, to provide access to the annulus for use in Multi zone stimulation operations. The device allows cement to be placed in the annulus above a specific point. It can be opened to allow cement placement, then closed off externally and the operating pistons pumped to bottom leaving a full ID without any drill out.

## FEATURES AND BENEFITS

- Allows cement placement at a specific point in the annulus as required.
- Opened by casing pressure applied against a ball and seat.
- Closed by running a standard plug behind the cement.
- The closing sleeve is externally mounted.
- After closing the inner pistons and stop ring can be sheared out and pumped to bottom.
- After shear out a full ID remains without the need to drill out.



## Pump Out Cement Sleeve

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. BEFORE Inches (mm)	MIN I.D. AFTER Inches (mm)	MIN I.D. REQUIRED BELOW TOOL Inches (mm)	PRODUCT NUMBER
2.375 (60.33)	3.121 (79.27)	0.985 (25.02)	1.925 (48.90)	1.995 (50.67)	T218-20A-000
2.875 (73.03)	3.766 (95.66)	1.234 (31.34)	2.400 (60.96)	2.441 (62.00)	T218-25A-000
3.500 (88.90)	4.515 (114.68)	1.235 (31.37)	2.906 (73.81)	2.992 (76.00)	T218-35A-000
4.500 (114.30)	5.500 (139.70)	1.234 (31.34)	3.970 (100.84)	4.000 (101.60)	T218-45A-000
5.500 (139.70)	6.000 (152.40)	1.250 (31.75)	4.965 (126.11)	5.000 (127.00)	T218-55A-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# I-Hydro Frac Sleeve

The T1016 I-Hydro Frac Sleeve is designed for use in the selective stimulation of multiple zone wells in any application such as a T-Frac™ operation, be it in open hole or cemented completion and in vertical, high angle or horizontal wells. It is normally used as the lowermost sleeve in a well equipped with multiple ball actuated frac sleeves. It is activated by circulating a ball into a drillable seat located below the sleeve and applying hydraulic pressure from surface which shears the piston free and drives it down to the fully open position where it is locked in place by means of a snap ring.

## FEATURES AND BENEFITS

- When opened, the sleeve is locked in the full open position to ensure that the flow area is maximized at all times..
- The setting pressure for opening the sleeve can be readily field adjusted.
- The sleeve is available with a steel inner sleeve if drill out is not required or with a readily drillable cast iron sleeve which results in a full bore ID when drilled out.
- Rated up to 300°F and 10,000psi.
- Available in materials to suit standard or sour service.



## I-Hydro Frac Sleeve

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	PRODUCT NUMBER
3.500 (88.90)	5.500 (139.70)	2.970 (75.44)	T1016-36A-000
4.500 (114.30)	5.500 (139.70)	2.970 (75.44)	T1016-45A-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

## HyRate Frac Sleeve

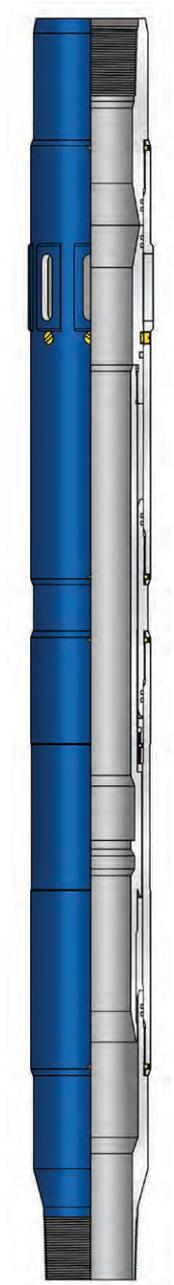
The T1024 HyRate Frac Sleeve is a hydraulically operated sleeve which, when mounted on the casing string of a multi zone completion, provides a method of establishing communication from the casing to the formation for treating purposes. It is activated by setting a bridge plug inside the sleeve and then applying hydraulic pressure to the casing string to shift the inner sleeve down and open up the communication ports. As an alternative the sleeve has an internal profile which allows it to be opened mechanically using a HyRate Shifter in applications where this method is preferable.

### FEATURES AND BENEFITS

- Full open ID matching the casing provides for maximum flow rate.
- Following activation the inner sleeve is locked in place in the full open position.
- Full opening design allows its use in both open hole and cemented casing applications.
- Rated to 300°F and 10,000psi.
- Standard threads are LTC box and pin but can the tool be made available with any required thread specifications for either standard or sour service.

### HyRate Frac Sleeve

SIZE	MAX O.D.	MIN I.D.	PRODUCT NUMBER
Inches (mm)	Inches (mm)	Inches (mm)	
4.500 (114.30)	6.000 (152.40)	3.845 (97.66)	T1024-45B-000



**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# ORIO™ Toe Valve

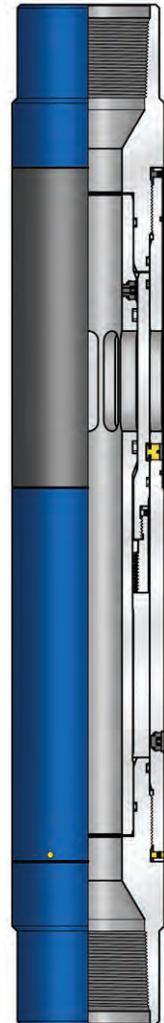
The T1026 ORIO™ Toe Valve “Patent Pending” is a hydrostatic operated sliding sleeve which is run at the bottom of a cemented casing completion in horizontal wells and provides a means of establishing circulation to facilitate subsequent treatment operations, such as “Plug and Perf.” Its’ unique design ensures that the sleeve, once activated, is always fully open as opposed to standard shear sleeves which tend to open only partially when activated. This is achieved by hydrostatic pressure always being applied across the sleeve against an atmospheric chamber.

## FEATURES AND BENEFITS

- Equipped with a rupture disc which allows for pressure testing of the casing in excess of 15,000-psi.
- No moving parts on both the inside and outside of the valve. This is achieved with a unique patented inner piston design.
- The design incorporates a dual rupture disk phased 180 degrees apart.
- The opening piston is hydraulically balanced while running in the hole.
- Once the rupture disc has burst and the shear screws sheared, hydrostatic pressure continues to drive the sleeve fully open and maintains it there, by acting against an atmospheric chamber, allowing maximum flow area throughout.
- Shouldered connections allow rotation while running in the hole or during cementing.
- Temperature Rating 350°F.
- Rupture Disc sizes up to 20,000-psi.

## MAXIMUM SURFACE TESTING PRESSURE CALCULATION

True Vertical Depth x 0.052 x Mud Weight = BHP  
 8,000 ft x 0.052 x 9 ppg = 3,744 psi  
 Rupture Disk - BHP = Maximum Surface Test Pressure  
 20,000 psi - 3,744 psi = 16,256 psi



ORIO™ Toe Valve					
SIZE	MAX O.D.	MIN I.D.	LENGTH	PRESSURE RATING	PRODUCT NUMBER
Inches (mm)	Inches (mm)	Inches (mm)	Inches (mm)	Pressure psi (bar)	
3.500 (88.90)	4.40 (111.76)	1.80 (45.72)	37.20 (944.88)	22,000 (1516.85)	T1026-35D-000
4.500 (114.30)	5.63 (143.00)	2.50 (63.50)	38.00 (925.20)	22,000 (1516.85)	T1026-45D-000
5.500 (139.70)	6.75 (171.45)	3.00 (76.20)	42.00 (1066.80)	22,000 (1516.85)	T1026-55D-000
5.500 (139.70)	7.38 (187.45)	4.25 (107.90)	42.00 (1066.80)	15,000 (1034.21)	T1026-55C-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

## Gateway™ Frac Sleeve

The T1172 Gateway™ Frac Sleeve is a ball activated device designed for use in the T-Frac System™ to facilitate the establishment of communication from the casing string to the formation in multi zone open hole completions, especially horizontals. Once the ball has been deployed and the sleeve shifted open by application of surface pressure, the ball remains on seat and thereby creates a bridge plug between each zone. After all the zones have been treated, the balls can all be flowed out of the well and if desired the seats can be drilled out in order to provide maximum internal diameter throughout. This drill out also facilitates re-entering the well with a Gateway shifter assembly to shift any given sleeve open or closed as needed. The Gateway can also be configured without the ball seat sub for use in applications where mechanical sleeve shifting is preferable.

### FEATURES AND BENEFITS

- The unique design allows the perfect alignment of both sleeve and body flow ports thus minimizing the pressure drop from casing to annulus.
- When shifted the piston remains locked in the open position
- Provides for rapid drill out of the ball seats.
- The sleeve can be operated open and closed by mechanical means after the seats have been drilled out.
- Available with any specified thread connection and for either standard or sour service.
- Can be supplied with a Hyflow piston which incorporates multiple small diameter seats and effectively increases the maximum flow rates for any given size. This is recommended when a large number of sleeves is to be run in one well, in order to provide a maximum pump thru capability.
- Rated at 300°F up to 10,000psi



### Gateway™ Frac Sleeve

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	PRODUCT NUMBER
3.500 (88.90)	5.625 (142.88)	3.063 (77.80)	T1172-35C-000
4.500 (114.30)	5.625 (142.88)	3.718 (94.43)	T1172-45B-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# T-Pack HIP Packer

The T1019 T-Pack HIP Packer is Hydraulic Isolation Packer designed to be run in multiple quantities, as an integral part of the casing string, for zonal isolation in multi-zone completions such as in the T-Frac™ system. It can be run in either open or cased hole completions and is suitable for application in vertical, high angle and horizontal wells. It is a non-anchoring device set hydraulically by applying the required differential pressure across a plug set below it. When set, it features an internal locking mechanism providing a positive long term set and its' durable construction makes it a viable alternative to the use of inflatable packers.

## FEATURES AND BENEFITS

- The outer components are locked in place to prevent premature setting during run in.
- Set by hydraulic pressure from surface against a plug located below the packer(s).
- Packing element set by a single acting setting piston.
- The setting pressure is field adjustable.
- Can be supplied with premium elastomers and in materials for sour service applications.
- ID is compatible with the casing on which it is run.
- Compact design makes for ease of handling.
- Standard tool burst and collapse rating designed to be compatible with P-110 grade casing.
- Offered with an HNBR element.
- Rated up to 350°F and 10,000psi.



## T-Pack HIP Packer

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	OPEN HOLE RANGE Inches (mm)	LENGTH Inches (mm)	PRODUCT NUMBER
4.500 (114.30)	5.635 (143.13)	3.900 (99.06)	6.12-6.50 (155.6-165.1)	32.00 (812.80)	T1019-46A-000
5.500 (139.70)	6.750 (171.45)	4.600 (116.84)	7.75-8.75 (196.9-222.3)	37.00 (939.80)	T1019-56A-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# I-Pack Packer

The T276 I-Pack Packer is designed to be run in multiple quantities, as an integral part of the casing string, for zonal isolation in multi-zone completions such as in the T-Frac System™. It can be run in either open or cased hole completions and is suitable for application in vertical, high angle and horizontal wells. It is a non-anchoring device set hydraulically by applying the required differential pressure across a plug set below it. When set, it features an internal locking mechanism providing a positive long term set. It has two separate packing elements for improved seal reliability and its durable construction makes it a viable alternative to the use of inflatable packers.

## FEATURES AND BENEFITS

- › The outer components are locked in place to prevent premature setting during running in.
- › The internal components are similarly locked.
- › Set by hydraulic pressure from surface against a plug located below the packer(s).
- › Both packing elements are set by a single acting setting piston.
- › The setting pressure is field adjustable.
- › Retrieved by straight pull shear release which is also field adjustable prior to run in if required.
- › Can be supplied with premium elastomers and in materials for sour service applications.
- › ID is compatible with the casing on which it is run.
- › Rated up to 300°F and 10,000psi.



### I-Pack Packer

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	PRODUCT NUMBER
4.500 (114.30)	4.500 (114.30)	2.495 (63.37)	T276-56B-000
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T276-74E-000
7.000 (177.80)	7.875 (200.03)	3.995 (101.47)	T276-74B-000
7.875 (200.25)	7.375 (187.33)	3.995 (101.47)	T276-84A-000

**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# Hydro-Pack Packer

The T275 Hydro-Pack Packer is a hydraulic set anchor packer designed specifically for use in the T-Frac™ system for multi-zone horizontal completions. It is mainly used as the top packer to anchor the casing string at the heel of the well, but in longer liners it can also be used in open hole at the toe for the same purpose. It is similar in construction to the T276 Iso-Pack packer in that all components are locked together to prevent the possibility of presetting due to drag while running in. It is set by the application of the required differential pressure across a plug set below it.

## FEATURES AND BENEFITS

- All components are locked in place to prevent premature setting during run in.
- Set by hydraulic pressure from surface against a plug located below the packer.
- The setting pressure is field adjustable.
- Retrieved by straight pull shear release.
- Rated at 10,000-psi working pressure and 300°F.
- Can be supplied with premium elastomers and in materials for sour service applications.
- The ID is compatible with the casing on which it is run.



Hydro-Pack Packer			
SIZE	MAX O.D.	MIN I.D.	PRODUCT NUMBER
Inches (mm)	Inches (mm)	Inches (mm)	
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-73A-000
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-73A-020
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-74E-000
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-74E-020
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-74B-000
7.000 (177.80)	5.750 (146.05)	3.781 (96.04)	T275-74B-020
7.875 (200.25)	7.375 (187.33)	3.995 (101.47)	T275-84A-020

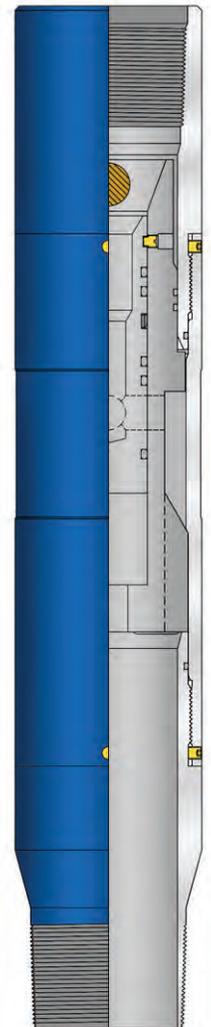
**For more information, go to [TeamOilTools.com](http://TeamOilTools.com) or call 281.602.7815**

# I-Circulation Sub

The T1073 I-Circulation Sub is designed for use in the multi stage T-Frac™ system in open hole completions in vertical, high angle or horizontal applications. It is normally run as the lowest seating sub and is run in the open position to enable circulation to be established at any time during the running of the casing. Once the casing is at setting depth a ball is circulated onto the seat and the internal sleeve is sheared free by the application of a predetermined pressure from surface. It shifts down closing off the circulating ports and latching in place using a positive locking mechanism. The casing string is thus prepared for the hydraulic completion processes and fracturing operations that will follow.

## FEATURES AND BENEFITS

- Readily adjustable closing pressure.
- When closed the internal locking mechanism is unaffected by pressure changes.
- Standard ball and seat sizes are 0.75" (19.05mm.) and 1" (25.4mm.) but this can be customized if needed.
- Available in materials suitable for standard or sour service.
- Rated for high pressure applications.



## I-Circulation Sub

SIZE Inches (mm)	MAX O.D. Inches (mm)	MIN I.D. Inches (mm)	TEMP. RATING °F (°C)	PRESSURE RATING Pressure psi (bar)	PRODUCT NUMBER
2.875 (73.03)	4.281 (108.74)	0.750 (19.05)	300 (148.89)	10,000 (689.48)	T1073-25B-000
3.500 (88.90)	5.400 (137.16)	0.750 (19.05)	300 (148.89)	10,000 (689.48)	T1073-36A-000
4.500 (114.30)	5.400 (137.16)	4.000 (101.60)	300 (148.89)	10,000 (689.48)	T1073-45A-000

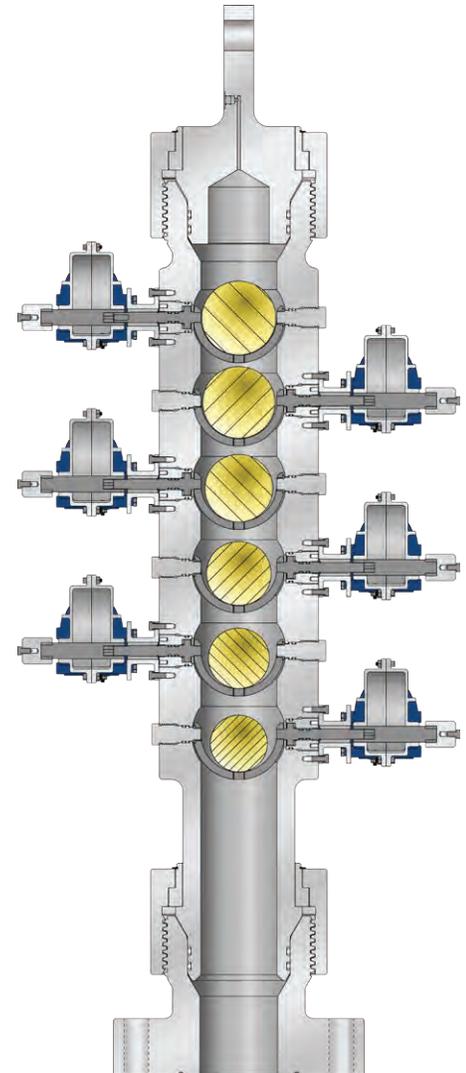
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# Ball Launching System

The T-Frac™ Ball Launching System is a compactly designed high pressure device used in multi-zone fracturing operations such as the T-Frac System™. It provides an automated launching process to speed up and eliminate errors in the process for launching operating balls into the well undergoing treatment. It can handle a total of 6 separate balls in sequence and if more are required the units can be readily stacked as required. Each ball is launched remotely using a proven quarter turn pneumatic actuator operated from a self-contained control panel. The ball launcher incorporates both a flag indicator to give visual indication of launching and a manual override should it be required.

## FEATURES AND BENEFITS

- The wellhead connection uses a proprietary lubricator style system for fast manual installation.
- Units are stackable and incorporate a unique quick connect wellhead connection. This provides the choice of stacking units if more than 6 balls are involved for fast rig up of a second preloaded unit if preferred.
- The unit is easily redressed in the field if needed.
- Balls are top loaded and are set up ahead of time to function for all the launching required.
- Each ball is separately launched by a field proven 1/4 turn pneumatic actuator. ➤ Shouldered connections allow rotation while running in the hole or during cementing.
- Control of the unit is provided from a remote self-contained pneumatic control panel linked to the actuators by a pneumatic umbilical.
- Balls are launched by a pneumatic signal to the 1/4 turn actuator which rotates the “spoon” allowing the ball to fall while maintaining full ID when fully actuated.
- The flag on each actuator provides visual verification of launch.
- Wrench flats at the flag can be used for manual actuator override.



## Ball Launcher System

LENGTH Inches (mm)	MIN O.D. Inches (mm)	MIN I.D. Inches (mm)	BALL CAPACITY	BALL SIZE Inches (mm)	PRESSURE RATING Pressure psi (bar)	PRODUCT NUMBER
55.000 (1397.00)	12.000 (304.80)	5.000 (127.00)	6	1.000-4750 (25.40-120.65)	15,000 (1397.00)	T191400

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***On Common Ground***

