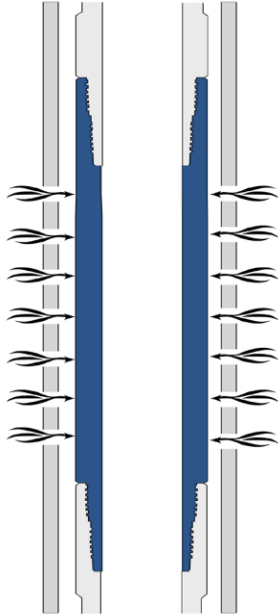


BLAST JOINTS



Blast Joints are heavy wall connectors made up in tubing strings opposite the location where perforations are made in the production casing.

These joints resist erosion caused by production fluids and gases. Blast Joints can be ordered in any lengths, but are normally furnished in 10' or 20' (metric lengths available).

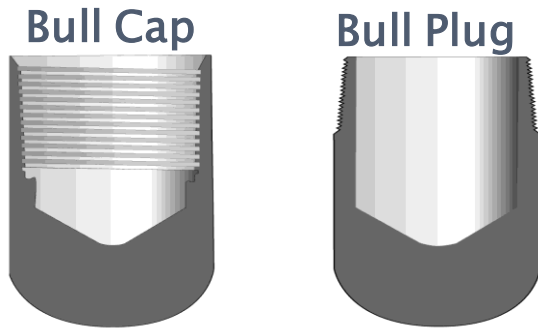
Applications:

- Threads may be specified for either API or proprietary connections
- Integral or threaded and coupled* connections
- Box-by-pin shown, but also available as box-by-box or pin-by-pin
- Flush Joint connections

*Couplings can be furnished loose, hand tight or power tight.

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grades	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in
	9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS
	Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger
	Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO
	Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB
	API - All Connections

BULL PLUG

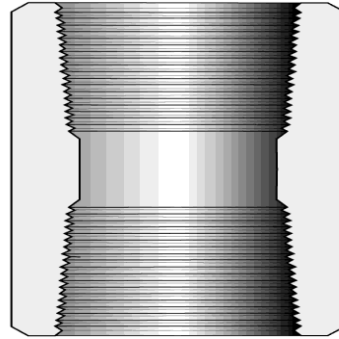
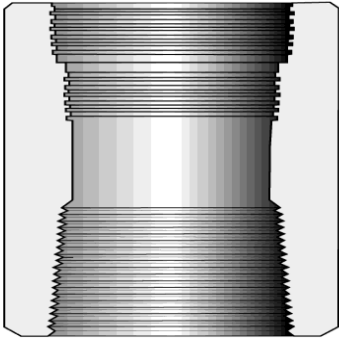


BULL PLUGS / BULL CAPS are used to cap off pipe or parts to provide pressure integrity.

These plugs and caps are short solid pieces with the closed end rounded and the other end threaded with either pin or box threads. Available in API or proprietary connections.

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grades	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API - All Connections

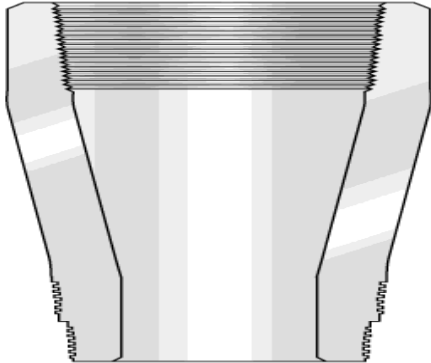
COUPLING



Couplings are used to connect two joints of pipe together. The couplings are short lengths of heavy wall pipe with identical box threads at each end which mate with the pin ends of the joint.

	TECHNICAL CAPACITY
Sizes	2 3/8" – 20"
Nominal Weight	4.6 lb./ft. – 169 lb./ft.
Wall Thickness	.190" – .812"
Grades	API and 4130/4140 to Meet API Grades – J/K55, N/L80, C90/95, T95, P110
	Q125. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2,
	Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL,
	Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS
	Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC
	JFE – Kawasaki Fox, Bear, Tiger
	Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO
	Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB
	API – All Connections

CROSSOVER SUB



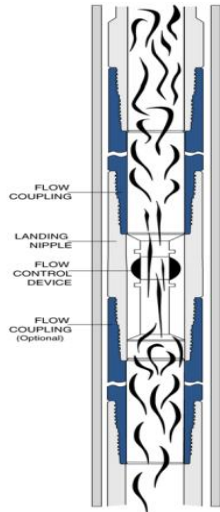
Crossover Subs are short lengths of casing or tubing used to change the size, weight or connection type at a certain point in a string.

Options:

- API or proprietary connections
- Any pipe size or weight
- Flush joint connections

	TECHNICAL CAPACITY
Sizes	2 3/8" – 20"
Nominal Weight	4.6 lb./ft. – 169 lb./ft.
Wall Thickness	.190" – .812"
Grades	API and 4130/4140 to Meet API Grades – J/K55, N/L80, C90/95, T95, P110
	Q125. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2,
	Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS
	Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC
	JFE – Kawasaki Fox, Bear, Tiger
	Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO
	Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB
	API – All Connections

FLOW COUPLING



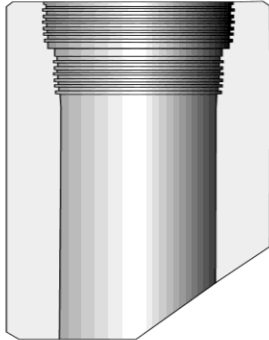
Flow Couplings are heavy-wall connectors made up in tubing strings above subs where turbulent flow problems are apt to occur.

These couplings resist erosion caused by production fluids and gases. The ID size is usually the same at the pin ID unless otherwise specified by the customer.

Flow Couplings are normally ordered in lengths of 3,4,6, or 8 foot (metric lengths available).

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grades	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in
	9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS
	Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger
	Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO
	Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB
	API - All Connections

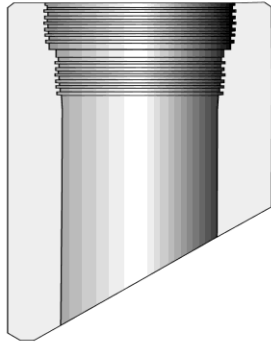
HALF MULE SHOE



Half Mule Shoes are used to facilitate the passage of tools or instruments into the bore of another tool, such as a packer. The shoe is run on the bottom of a tubing string and lands inside the bore after the shoe insures the centralizing of the string.

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grade	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API - All Connections

MULE SHOE



Mule Shoes are used to facilitate the passage of tools or instruments into the bore of another tool, such as a packer. The shoe is run on the bottom of a tubing string and lands inside the bore after the shoe insures the centralizing of the string.

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grades	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in
	9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS
	Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger
	Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO
	Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB
	API - All Connections

LIFTING PLUGS



Lift Plugs are used to handle multiple joints during the running of tubulars. The plug provides a positive grip for the elevators.

These plugs support the weight of an entire string.

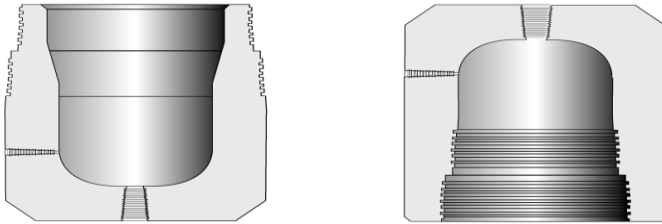
Consequently, it is important that the lift plug be designed by the same company that designed the connection it is made up to.

	TECHNICAL CAPACITY
Sizes	2 3/8" – 7"
Nominal Weight	4.6 lb./ft. – 49.50 lb./ft.
Wall Thickness	.190" – .730"
Grades	4130/4140 to Meet API Grades – J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 – 110 Hyp 1 and 2, Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE – Kawasaki Fox, Bear, Tiger Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API – All Connections

PRESSURE TEST FIXTURE (PROGRAMA DE PRUEBAS DE PRESION)



Pressure test fixtures are used to pressure test tubing, casing and accessories.



The fixtures are cylindrical-parts, normally one a cap and one a plug, which are made up on the ends of pipe to be tested.

A tapped hole is provided in each fixture for pressurization.

	TECHNICAL CAPACITY
Sizes	2 3/8" – 7"
Nominal Weight	4.6 lb./ft. – 49.50 lb./ft.
Wall Thickness	.190" – .730"
Grades	4130/4140 to Meet API Grades – J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2, Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE – Kawasaki Fox, Bear, Tiger Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API – All Connections

PUP JOINT



Pup Joints are short lengths of casing and tubing that are used to adjust the depth of strings or downhole tools.

These pups can be manufactured to any length, described in Table 26 of API 5CT as 2,3,4,6,8,10 or 12 feet (metric lengths also available) with O.D. and I.D. as defined by string criteria. Threads may be specified for either API or proprietary connections.

TECHNICAL CAPACITY	
Sizes	2 3/8" – 20"
Nominal Weight	4.6 lb./ft. – 169 lb./ft.
Wall Thickness	.190" – .812"
Grades	API and 4130/4140 to Meet API Grades – J/K55, N/L80, C90/95, T95, P110 Q125. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2, Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC JFE – Kawasaki Fox, Bear, Tiger Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API – All Connections

STABBING GUIDES

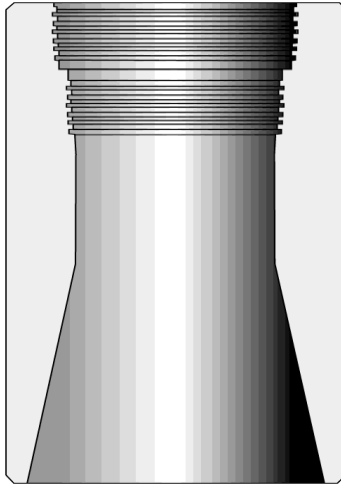


Stabbing Guides are used to protect pin and box threads (as well as seals and internal coating if present) when tubulars are being run into or out of a well. The guides are constructed of lightweight, rigid aluminum outer frames with durable polyethylene inserts. Latches and hinge pins are stainless steel ensuring long-lasting service.

Maintenance is simple and inserts can be changed to accommodate different size connections.

	TECHNICAL CAPACITY
Sizes	2 3/8" – 20"
Nominal Weight	4.6 lb./ft. – 169 lb./ft.
Wall Thickness	.190" – .812"
Grades	API and 4130/4140 to Meet API Grades – J/K55, N/L80, C90/95, T95, P110 Q125. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2, Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting – SLHT, TSHP,TSHD, SLFJ, SLSF, SLHC,SL Boss, TKC JFE – Kawasaki Fox, Bear, Tiger Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API – All Connections

WIRELINER RE-ENTRY GUIDE

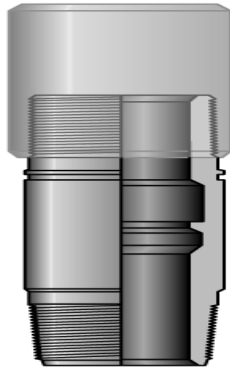


Re-entry Guide is used to facilitate the return of wire line tools back into the tubing when being brought back up the well bore.

Its purpose is to keep the wire line tool lined up to the center so as not to hang up when entering the tubing.

	TECHNICAL CAPACITY
Sizes	2 3/8" - 7"
Nominal Weight	4.6 lb./ft. - 49.50 lb./ft.
Wall Thickness	.190" - .730"
Grades	4130/4140 to Meet API Grades - J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 -110 Hyp 1 and 2, Super 13 Cr95 - 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M - Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting - SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE - Kawasaki Fox, Bear, Tiger Grant Atlas Bradford - RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris - TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API - All Connections

LANDING NIPPLE



Halliburton X[®] and R[®] Landing Nipples and Lock Mandrels are run into the well on completion tubing to provide a specific landing location for subsurface flow control equipment.

These landing nipples are universal due to their common internal profile. The X[®] Landing Nipples is used on standard weight tubing, the R[®] Landing Nipple is used typically for heavy weight tubing.

The Halliburton XN[®] and RN[®] NO-GO Landing Nipples are designed for use in single nipple installations or as the bottom nipple in a series of X[®] or R[®] landing nipples.

	TECHNICAL CAPACITY
Sizes	2 3/8" – 7"
Nominal Weight	4.6 lb./ft. – 49.50 lb./ft.
Wall Thickness	.190" – .730"
Grades	4130/4140 to Meet API Grades – J55, K55, N80, L80, C90, C95, T95, P110. Also available in 9Cr 80, 13 Cr 80/85, 13 Cr 95 –110 Hyp 1 and 2, Super 13 Cr95 – 110 , 22 Cr, 25 Cr, Inconel, Incolloy, Hastelloy, Titanium
Threads	V&M – Regular Vam, New Vam, Vam Ace, Vam Top, Vam FJL, Vam SLIJ2, Dino Vam, Mannesmann, TDS/BDS Hunting – SLHT, TSHP, TSHD, SLFJ, SLSF, SLHC, SL Boss, TKC, JFE – Kawasaki Fox, Bear, Tiger Grant Atlas Bradford – RTS6, RTS8, TC 2, BTB, DWC, STL, FL 4S, ANJO Tenaris – TS MS, TS MS28, TS MS 28 XT/XC, TS MS XT/XC, TS ER, TS HW, TS 3SB API – All Connections

COMPLETION



▶ Bridge Plugs- Permanent

- Wireline Set Bridge Plugs
- Mechanical Tubing Set Bridge Plugs

▶ Cement Retainers

- Wireline Set Cement Retainers
- Mechanical Tubing Set Cement Retainers
- Cement Retainer Accessories

▶ Retrievable Production Packers

- MAPSET- Retrievable, double-grip compression or tension-set production packer that can be left in tension, compression, or in a neutral position, and will hold pressure of 7,500 psi max from above or below.
- MAPSET-HP - Retrievable, double-grip compression or tension-set production packer that can be left in tension, compression, or in a neutral position, and will hold pressure of 10,000 psi max from above or below.
- CP-2 - Retrievable Compression Packer, G type with larger slips and drag blocks
- MAD-1 - Retrievable tension set Packer, AD-1 type
- MG-1 - Retrievable Compression Packer, G type
- MR-3D - Double Grip Retrievable Casing Packer, R-3 type
- MR-3D Large Bore - Double Grip Retrievable Casing Packer, R-3 type
- MR-3S- Single Grip Retrievable Casing Packer, R-3 type
- PL-1 - Mechanically locked Casing Packer
- TP-2 - Retrievable tension set Packer, AD-1 type with larger slips and drag blocks

COMPLETION



▶ Service Tools

- PC-1 – Tension style service tool for shallow depths
- CS-1 – Compression style service tool with top hydraulic hold down
- JS-2A – Heavy duty service tool used in production, stimulation, perforating, gravel packing and testing applications
- JS-3 – Heavy duty storm packer used in production, stimulation, perforating, gravel packing and testing applications, API IF thread connection
- MSV-2 – Storm Valve run above JS-3 to provide well control protection during a temporary abandonment of the well

▶ Thermal Tools and Accessories, 450 Degrees and Higher

▶ Tubing Anchor / Catcher

▶ Tubing Testers

▶ Unloaders

COMPLETION



► The T312 Tubing Anchor Catcher

- Is a heavy duty rotationally activated tool used to prevent vertical movement of the tubing string. The H/D Anchor uses drag blocks in place of friction springs allowing for better torque resistance and longevity. The H/D Anchor sets to the left, releases to the right or can be shear released with an easily adjustable shear release system. The H/D Anchor can also be special ordered for right hand set, left hand release with Team Torque slips allowing the tool to be run with progressive cavity pumps. Drag Block Design For Durability and Torque
- Easily Adjustable Shear Release Mechanism
- Full Bore Design
- Available in Right Hand Set For PCP Applications



COMPLETION



▶ The T354 RT Anchor / Catcher

- Was developed to run with a progressive cavity pump on fiberglass tubing string. The unique slip design allows the anchor to grip the casing wall when right hand rotation is applied and prevents any right hand torque. The RT Anchor Catcher sets to the right, releases to the left or straight pull of the tubing string will engage the adjustable shear safety release mechanism. **Vertically Cut Wicker Slip Allows Right Hand Torque**
- Reduces Wear on Tubing String
- Right Hand Set, Left Hand Release or Shear Release
- Parts Interchangable With Standard Tool
- Sturdy Stainless Steel Drag Springs



COMPLETION



▶ Tubing Anchor Catcher Model TAC-B

- Model The MAP Model TAC-B Tubing Anchor Catcher acts as a tubing anchor to maintain tension in the tubing string during the pump cycle and as a tubing catcher to prevent parted pipe from falling into the well . It is used in most rod pumping applications where it is important to maintain the tubing tension.
- Increases pump efficiency
- Reduces operating cost by reducing maintenance and down time caused by casing, tubing or sucker rod wear
- Rotates left to set, right to release
- Straight pull emergency release
- Parts interchangeable with other manufacturers
- Available with Right Hand Set



COMPLETION



► Model MFH Retrievable Double-Grip Hydrostatic Single-string Packer

- The Model MFH Retrievable Hydrostatic Packer is used in production, injection and zonal isolation. It can be run in single or multiple zone installations. It is recommended for deviated wells where conditions are not suitable for mechanical or wireline set packers. No tubing movement is required or generated to set the packer. Once set, the packer is locked in place by one-piece no-directional slips. The packer can be released by straight pull. They are available in 4 1/2" through 9 5/8" casing.
- Sets securely in any hardness casing, including premium grades
- Simple operation
- Hydraulically activated, hydrostatic set
- Built-in unloader and bypass
- Packoff is mechanically locked and constantly reinforced by hydrostatic pressure
- Triple seal multi-durometer elements
- No Mandrel movement during setting allows stacked packer applications
- Straight pull releaseField-proven design, recommended to 300°F applications.



COMPLETION

▶ Tension Packer Model MAD-1

- Retrievable tension set Packer, AD-1 type
- Model MAD-1 Tension Packer is a retrievable, tension set packer, designed to hold pressure from below. This economical tension packer is for shallow wells where sufficient setdown weight is not available to utilize a set down packer. This packer can be used in water flood, oil production or treating applications. They are available for 4 1/2" through 13 3/8" casing.
- Sets securely in any hardness casing, including premium grades
- Compact, Short, easy to transport and run
- Bore is larger than tubing drift diameter
- Easy to operate J-Slot control
- Rocker type slips
- One piece packing
- Three release methods, Normal release, Shear release and safety joint top sub
- Parts are interchangeable with other manufacturers



COMPLETION



▶ Double Grip Retrievable Packer Model MR-3D

- Model MR-3D Double Grip Retrievable Casing Packers are used in production, stimulation and testing applications. Their hydraulic hold down is below the pressure equalization valve. They feature a proven three element packing system and a balance sleeve device to assist in keeping the by-pass closed. They are available for 4 1/2" through 9 5/8" casing.
- Sets securely in any hardness casing, including premium grades
- Three piece packing element system
- Hydraulic hold down button unit with large internal flow path located below the bypass valve to reduce element swabbing and button wicker dulling
- Surface controlled combination bypass and equalizing valve
- Tubing pressure actuated collet lock to eliminate excessive set down weight requirements
- Rocker type Slips
- Parts are interchangeable with other manufacturers

COMPLETION



▶ T437 S-1 Tandem Tension Packer

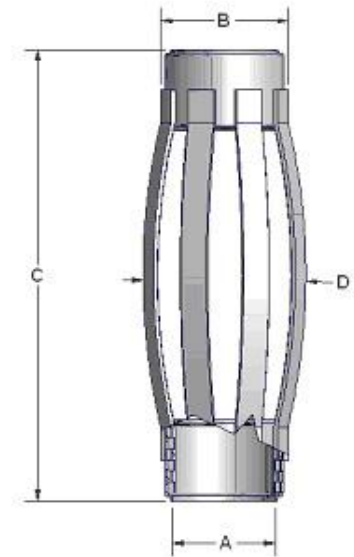
- Is used as an isolation packer in multiple zone completions. Setting: Unjayed position: Apply tension shearing the brass shear screws energizing the packing element.
- Layed position: Set down weight shearing the brass shear screws, then rotate 1 / 8 right hand turn at packer and pull tension to energize the packing element.
- Releasing: Set down weight to remove applied tension and engage the unloader to equalize pressures, then rotate 1 / 8 left hand turn at the packer to re-engage into running jay position.
- Full Bore Design
- Simple, Economical Packer for Zone Isolation
- Built-In Unloader
- Available In Right or Left Hand J-Slot Configurations



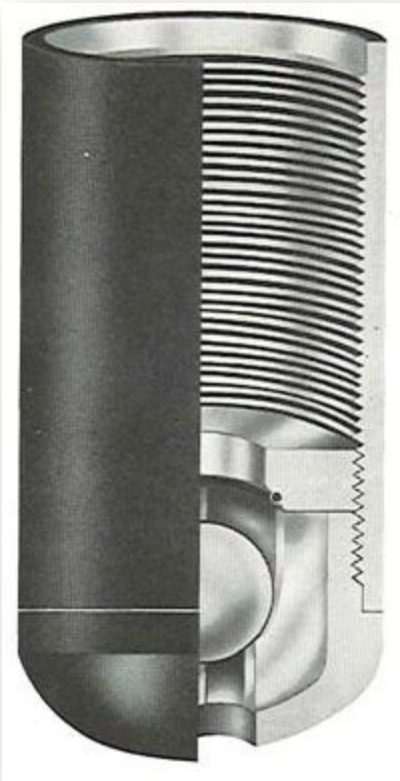
HINGE TYPE CENTRALIZERS



- ▶ Hinge-Type Centralizers feature channel-formed collar rings with hinges placed within the channel to eliminate hinge damage. This Construction assures that hinges will not rupture while the casing is being run regardless of hole direction or irregularities in formations.
- ▶ Box springs are made of 1 1/4" x 3/16" 1095 spring steel.
- ▶ The design of the split collars and narrow bow springs provide maximum effective centralizing of the casing with minimum obstruction to annular flow.
- ▶ Available in sizes 2 3/8" through 20"



Regular Float Shoe



- ▶ The float ball is made of high density phenolic for strength and resistance to abrasion, even when subjected to long periods of pumping abrasive materials. The ball seat, a rubber O-Ring located in an aluminum disk, is designed to be out of the flow path of circulating fluids so that it can not wash out.
- ▶ The ball is guided into the seat by aluminum guide fins which are an integral part of the guide nose.
- ▶ The fins not only guide the ball, but also direct the flow of cement slurry evenly around the shoe for a better cementing job.