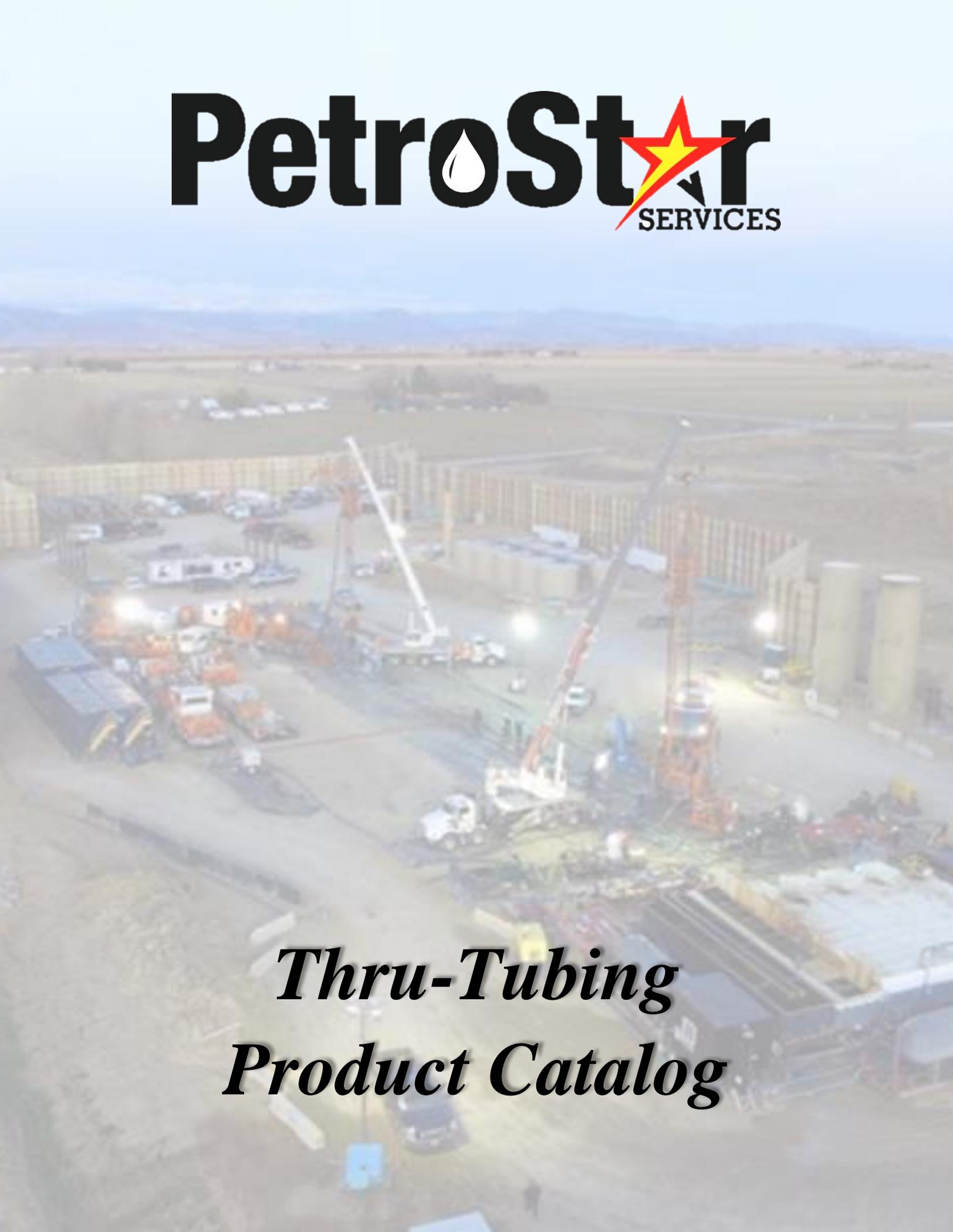


PetroStar SERVICES



*Thru-Tubing
Product Catalog*

PetroStar
SERVICES

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Summary

Petrostar Services is dedicated to providing the Oil and Gas industry with the highest quality of thru tubing fishing, milling, and under reaming services available. We have a committed staff of highly qualified individuals working as a cohesive unit to provide the highest degree of services possible to our customers. Our teams of Field Supervisors, Technical Sales Representatives, Industry Specialist, and Shop Technicians have an average of 20 years of experience each and have worked in multiple facets of the Oil and Gas Industry.

Our district locations are established in:

- Broussard, Louisiana
- Dickinson, North Dakota
- Greeley, Colorado
- Midland, Texas
- Poteet, Texas

We are committed to maintaining safe working conditions, proper operating practices and procedures designed to prevent illness, injury and accidental deaths by adhering to all government policies and regulations regarding worker safety and equipment standards through a comprehensive training program. Petrostar Services has maintained an “A” rating year with IS Net world, the global resource for connecting corporations with safe, reliable contractors in capital-intensive industries.

With our vast array of thru tubing equipment combined with experienced, well trained technicians and field supervisors, we can successfully eliminate virtually any well bore obstruction. Our inventory includes a full line of thru tubing tools and accessories equipped for coil tubing, hydraulic work over units, and work over rigs. We utilize the best equipment known to the industry from such manufactures as BICO Drilling Tools, NOV, Venturi Oil Tools, Logan Oil Tools, and Thru Tubing Technology.

All tools and equipment must undergo extensive inspection and testing prior to deployment. All downhole motors must meet manufactures specifications before they are assigned to the field. We utilize the Dyno-Master system which provides verification of the motor’s performance. Each test provides a graphic illustration of the motor’s actual performance. This details the relationship of a given flow rate on the motor, the resulting pressure, speed and torque.

Wellbore Obstruction Solutions

Thru-Tubing Fishing/Milling

Wellbore obstructions are a common dilemma and typically must be removed as they can severely restrict a well's production capability. For instance, scale formation will eventually result in lower yields and well failure, and a fish is left in a well can hamper future operations in that wellbore.

Petrostar Service's vast array of equipment and obstruction removal systems, coupled with experienced and well-trained technicians, can efficiently and effectively eliminate virtually any wellbore obstruction. A full line of tools and accessories exists to address various applications – from standard motor applications to the more challenging underreaming, tubing cutting, window milling and drilling.

Fish Removal/Burn-Over Operations

It is often more effective to mill over a wellbore obstruction than to mill it away. Some fishing operations require removal of debris down to and around the fish so that the appropriate fishing tool can be lowered to engage the fish. Certain cast-iron bridge plugs or packers with poor milling characteristics can also be burned over. In situation where only the marginal annular velocity can be achieved, Petrostar Services can incorporate specialty tools onto the bottom hole assembly (BHA) to help capture larger debris within its chambers.

Underreaming Operations

When mechanical wellbore cleanout is needed but the wellbore geometry prohibits the passing of a full gauge mill, an underreaming operation is required. Typically, an underreaming operation involves passing through completion-related restrictions, such as nipple profiles, or passing through the end of the tubing into a casing string below, subsequently opening the blades of the underreamers to clean out to the full gage of the casing.

Fluid flows through the motor and bottom hole assembly (BHA) forces the blades to expand until they are fully engaged and centralized within the wellbore. A drop-in pressure registers, giving the operator a positive indication at the surface that the underreamer blades are fully extended. When flow is interrupted, the blades retract, enabling their easy removal from the wellbore.

Blue & DURA Coil Connector

Description:

The Blue & DURA Coil Connector is designed to exceed the tensile strength and bursting pressures of the coil and has a maximum ID for non-restricted flow rate. This tool integrates old and new technologies, all the while allowing to remain a slim hole coil connector.

Operation:

The top and bottom sub are loosened so the slips can move freely. Next, the tool is slipped over the dressed coil tubing, and the coil is bumped down in the bottom sub. Then the bottom sub is tightened, forcing the hardened slips around the coil. It is recommended to perform pull and pressure tests once the connector is assembled on the coil.

Coil Size	2.375 in
MYS:	150 ksi
OD:	3.125 in
ID:	1.125 in
Length:	12.285 in
Standard Connection:	2.375 in Reg
Mechanical Specifications	
Burst Pressure:	Bottom Sub at 18,240 psi
Tensile Yield:	Bottom Sub at 200,190 lb

Coil Size	2.625 in
MYS:	150 ksi
OD:	3.375
ID:	1.125 in
Length:	12.285 in
Standard Connection:	2.375 in Reg
Mechanical Specifications	
Burst Pressure:	Bottom Sub at 16,800 psi
Tensile Yield:	Bottom Sub at 219,800 lb



Velocity Tool

Description:

The Velocity Tool is designed to have the best hole cleaning capabilities possible, without causing catastrophic damage or failure to the mud motor by over pumping. This tool allows turbulent flow on the annular of the workstring, which permits optimum hole cleaning without causing failure to the BHA.

- Allow turbulent flow without motor damage.
- Reduce chemical bill.
- Extend life of the motor.
- Engineered with field mentality.
- Easy to adjust.
- No drop ball activation.
- Unlimited cycles.

Tool OD	2.875 in	3.125 in
ID	1.375 in	1.125 in
Tool Length	29.16 in	29.16 in
Recommended Mud WT	8-11 ppg	8-11 ppg
Opt. Motor Flow Rate	2.25 BPM	3.8 BPM
Max Tool Flow Rate	5.1 BPM	8.2 BPM
Max Tension	90,890 lb	155,160 lb
Max Torsion	2,610 lb*ft	5200 lb*ft
Standard Connections	2.375" PAC	2.375" Reg



X Reach Tool

Patent Pending

Description:

The **X Reach Tool** is a fully adjustable device used for friction reduction on a workstring. It causes extreme pressure pulsations which utilize a fluid hammer effect to “walk” a BHA further downhole. Designed to be used on coil tubing or conventional jointed pipe, the **XRT** operates at a low frequency so pressure pulses are higher, which in turn pulls a workstring further down the hole: past the usual point of lockup. This improves the ROP, decreases the amount of time to drill out plugs, and decreases workstring fatigue. Our patent pending tool is set apart from the competition both in how it functions and how it performs.

- Completely adjustable
 - Pressure drop
 - Flow rate
- Proprietary self-cooling design for durability
- Non-impact, water hammer effect = less motor damage

Tool Size (OD)	2.875 in	3.125 in
Makeup Length (mm)	69.125 in	70 in
Recommended Mud Weight	8-10 ppg	8-10 ppg
Standard Flow Tool Flow Rate	2-4.5 bbl/min	2-4.5 bbl/min
High Flow Tool Flow Rate**	3.5-6 bbl/min	3.5-6 bbl/min
Pressure Drop	500 psi - 3,500 psi ^γ	500 psi-3,500 psi ^γ
Operational Frequency	2.6-7.2 Hz	2.6-7.2 Hz
Pressure Rating	10,800 psi	15,300 psi
Max Tension	90,890 lb	155,160 lb
Max Torsion	2,610 lb* ^γ ft	4,200 lb* ^γ ft
Standard Connections	2.375 PAC [~]	2.375 Reg [~]

** Numbers are theoretical, HF tool still under development

^γ Higher pressure drop possible but not recommended



Boot Basket

Description:

Boot baskets are used to collect debris that is too large to be carried out of the hole by normal circulation. The boot basket is designed to create a change in velocity around the upper end of the tool allowing debris to fall into the cavity between the skirt and mandrel.

- **Solid Construction**
- **Full Flow Thru**

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.5	2.5	320	54100	1" MT
2	0.5	2.67	770	97900	1-1/2" MT
2.125	0.5	2.67	700	97900	1-1/2" MT



Bow Spring Centralizer

Description:

Bow spring centralizers are used to centralize the BHA inside larger tubing or casing after it has passed through a restricted ID. It is designed for the springs to be at constant maximum expansion.

DESCRIPTION	OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	RANGES
MECHANICAL	1.69	0.56	3.75	320	34900	1" MT	4" to 9" Casing
MECHANICAL	2.125	0.56	3.75	770	42340	1-1/2" MT	4" to 9.625" Casing
HYDRAULIC	1.69	0.56	4.917	320	56600	1" MT	4" to 9" Casing
HYDRAULIC	2.125	0.56	5.25	770	99680	1-1/2" MT	4" to 9.625" Casing

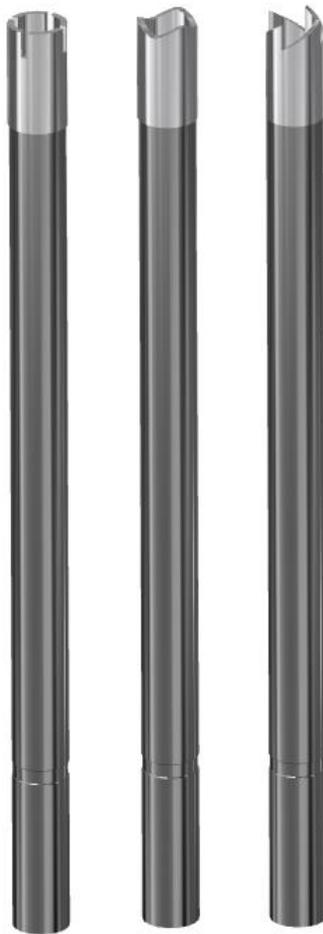


Burning Shoe

Description:

Shoes are available in many different designs; however, wash pipe may be necessary for longer obstructions. They can be dressed with carbide to wash over obstructions including:

- **Bridge Plugs**
- **Packers**
- **Locks**
- **Coil Tubing**
- **Wire Line Tool Strings**



Coil Tubing Connector

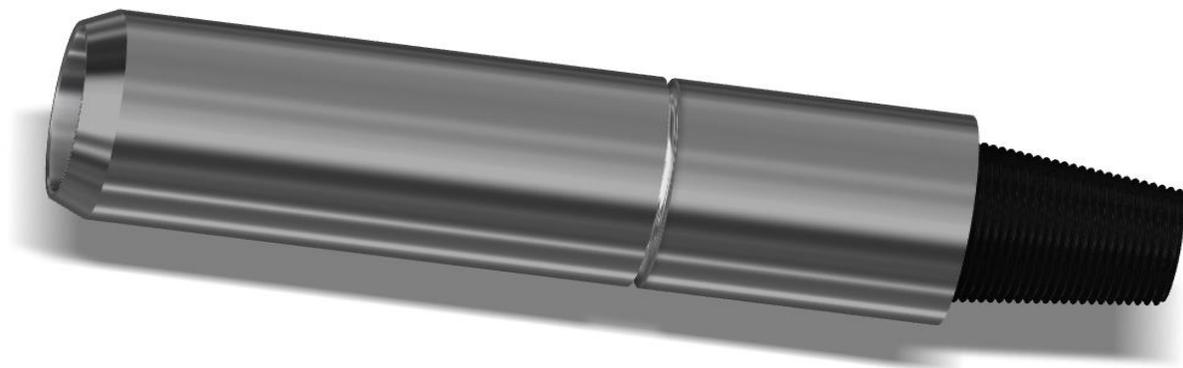
Description:

Coil tubing connectors are designed to be used on coil tubing having a diameter of 1.0 – 3.5 inches. It is designed to exceed the tensile strength and burst pressure of the coil tubing and has a maximum ID for a non-restricted flow rate, allowing balls to pass to tools below.

Operation:

The top and bottom sub are loosened so the slips can move freely. Next, the tool is slipped over the dressed coil tubing, and the coil is bumped down in the bottom sub. Then the bottom sub is tightened, forcing the hardened slips around the coil. It is recommended to perform pull and pressure tests once the connector is assembled on the coil.

OD / COIL SIZE	ID (in)	LENGTH (in)	MU TORQUE (lbs*ft)	70% YLD	80% YLD	100% YLD	CONN	PULL TEST	PSI
1.69" / 1.25" CT	0.75	8.875	320	33250	38000	47500	1" MT	5K / 15K	10000
1.69" / 1.25" CT	0.75	10.375	400	33250	38000	47500	1" CS	5K / 15K	10000
1.85" / 1.25" CT	1	9.375	400	31500	36000	45000	1" CS	5K / 15K	10000
1.93" / 1.5" CT	0.75	9.375	770	32375	37000	46250	1-1/2" MT	5K / 20K	10000
1.93" / 1.5" CT	0.75	9.375	600	32375	37000	46250	1-1/4" CS	5K / 20K	10000
2.188" / 1.5" CT	1	9.75	770	43750	50000	62500	1-1/2" MT	5K / 20K	10000
2.188" / 1.5" CT	1	9.75	600	43750	50000	62500	1-1/4" CS	5K / 20K	10000
2.188" / 1.75" CT	1	9.375	770	37660	43040	53800	1-1/2" MT	5K / 25K	10000
2.188" / 1.75" CT	1	9.375	600	37660	43040	53800	1-1/4" CS	5K / 25K	10000
2.87" / 1.75" CT	1.375	10	3400	64750	74000	92500	2-3/8" PAC	5K / 25K	10000
2.87" / 2.0" CT	1.375	10	3400	65660	75040	93800	2-3/8" PAC	5K / 30K	10000
3.50" / 2.38" CT	1.25	11.375	3800	87360	104000	124800	2-3/8" REG	5K / 30K	10000
3.50" / 2.38" CT	1.5	11.375	3400	87360	104000	124800	2-7/8" PAC	5K / 30K	10000
2.88" / 1.50"	1.125	12.2	3400	39270	44880	56100	2-3/8" PAC	5K / 20K	10000
2.88" / 1.75"	1.375	11.9	3400	60812.5	69500	86875	2-3/8" PAC	5K / 25K	10000
3.125" / 2.0"	1.5	16	3400	84000	100000	120000	2-3/8" PAC	5K / 25K	10000



Continuous Tubing Pack Off

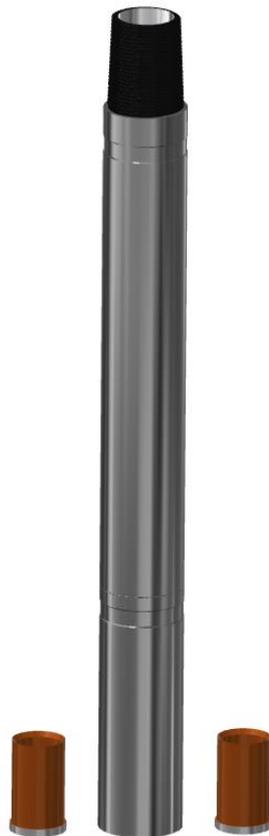
Description:

Pack off subs are designed to run above the continuous tubing overshoot. The tool consists of a top and bottom sub, with molded packing inside the body.

Operation:

As a fish is engaged with a continuous overshoot, the pack off sub creates a seal between the work string and the fish. Circulation can now be maintained through the fish, allowing for a hydraulic releasing tool to be activated. This also makes it possible to retrieve the damaged tubing and any tools that may be attached. New molded packing is rated for 10,000 psi.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	COIL SIZE
1.86	1.30	2	300	69000	1-1/4" CS	1" & 1-1/4"
2.065	1.312	2	300	52000	1-1/4" CS	1" & 1-1/4"
2.30	1.563	2	400	49700	2-1/16" CS	1-1/4" & 1-1/2"
2.70	1.813	3.25	1100	47200	2-3/8" CS	1-1/4" ,1-1/2",1-3/4"



Deployment Bar

Description:

Deployment bars are used to deploy long bottom hole assemblies into and out of the wellbore. When added to the bottom hole assembly, they allow closing of the blow out preventer rams and slips for adding or removing segments of the assembly. This limits the amount of lubricator needed for operations.

- **OD to Match Coil ID**

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	COIL SIZE
1.69	0.75	7	320	51300	1" MT	1-1/4"
2.125	1	7	770	98300	1-1/2" MT	1-1-/2"
2.875	1.38	7	3400	212900	2-3/8" PAC	1-3/4"



Dual Back Pressure Valve

Description:

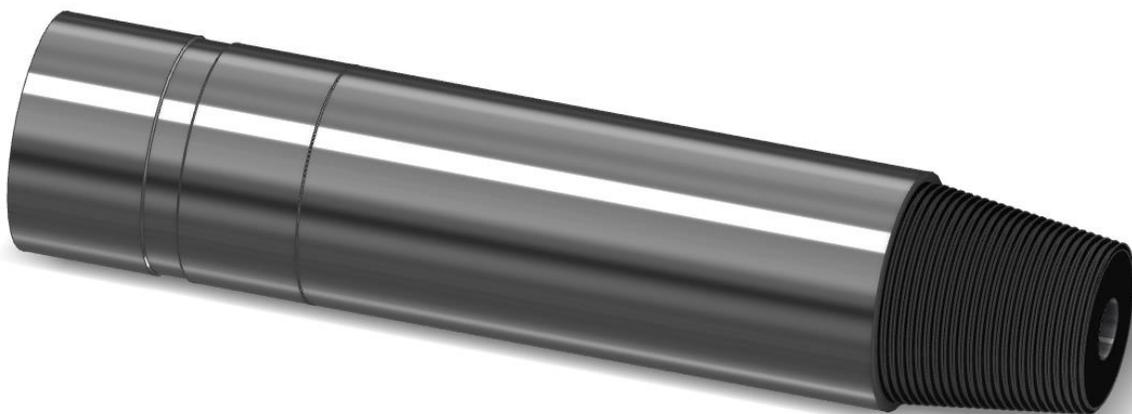
Dual back pressure valves are run in the tubing string as safety mechanisms to prevent fluid flow back up the tubing and work string. This is especially important when running coiled tubing in live wells or when there is a pinhole in the tubing at surface that would allow the well to flow uncontrolled.

They are flapper type cartridge valves made up of two flapper cartridges with seals. The flappers are designed so that balls can be pumped through the ID at a minimum flow rate.

Operation:

They are normally run directly below the coil connector in CT operations. On snubbing operations, they are made up at the top of the bottom hole assembly. Their presence must be taken into consideration during some downhole operations because the flapper will not allow the pressure in the coiled tubing below the valve to bleed off at surface. This must be considered when used with downhole motors.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.578	1	320	58900	1" MT
2.125	0.906	1.1	770	84000	1-1/2" MT
2.875	0.906	1.41	3400	104000	2-3/8" PAC
3.125	0.906	1.41	3000	175000	2-3/8" REG
3.5	0.906	1.41	3000	180118	2-3/8" REG



Dual Circulating Sub

Description:

Dual circulating subs are designed to provide a means of circulation in an emergency situation should the string below the sub become plugged. They can also be used to bypass circulation through the mud motor to reduce unnecessary wear while circulating out of the hole.

Operation:

They have a rupture disc incorporated that bursts when the pressure increases due to the string becoming plugged. This allows enough flow to pump a ball to the piston. An increase in pump pressure causes the brass shear screws to shear, allowing the ports to become exposed so adequate circulation can be continued. They are also used when the motor is no longer necessary and circulation is required while tripping out of the hole. The sub is placed above the motor and circulation is diverted through the port holes, eliminating unnecessary wear.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs.)	CONN
1.69	0.375	1	320	35000	1" MT
1.69	0.406	1.3	320	58900	1" MT
2.125	0.438	1.2	770	62400	1-1/2" MT
2.125	0.5	1.15	770	94800	1-1/2" MT
2.875	0.563	1.4	3400	104000	2-3/8" PAC
2.875	0.563	1.32	3400	146000	2-3/8" PAC



Hydraulic Disconnect

Description:

Hydraulic disconnects are designed to release the coil tubing from the operating tool string if it becomes stuck while in the wellbore. They are also designed to give the ultimate resistance to tensile and torsional stresses that occur while jarring and/or milling.

Operation:

If it becomes necessary to disconnect, a ball is pumped to the disconnect, thus increasing the pump pressure, allowing the locking piston to shift, shearing the brass shear screws. This allows the load piston to drop and pass through the collet body, allowing the top sub body to collapse and release off of the bottom sub. The bottom sub is left in the wellbore with an internal fishing neck for future fishing procedures.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.469	1.25	320	56750	1" MT
1.69	0.469	1.25	400	60000	1" CS
2.125	0.563	1.417	770	124300	1-1/2" MT
2.875	0.688	2.083	3400	146100	2-3/8" PAC
3.125	0.688	2.083	3000	198700	2-3/8" REG
3.5	0.813	2.167	4900	244558	2-3/8" REG



Hydraulic Spear

Description:

Hydraulic spears are used to retrieve devices with internal fishing neck profiles. They are designed to withstand high side and tensile loads during jarring operations.

Operation:

They are operated using coil tubing by pumping fluid through the ID. Once latched onto a fish, a certain amount of pump pressure is applied and the collet of the tool will disengage and collapse, allowing the tool to release from a fish. This tool can also help circulate any sand or debris that is trapped inside of the fishing neck, creating a clean profile to attempt to latch.

Types:

Hydraulic GS Pulling Tool – designed to fish special size profiles on the internal fishing neck.

Hydraulic Bulldog Spear – designed to fish a certain catch range on the internal fishing neck profile by changing the collets on the spear.

DESCRIPTION	OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	CATCH RANGE
1-3/8" HYD BW TOOL	1.6	0.25	1.25	320	23190	1" MT	1-3/8" BW PROFILE
2" HYD GS TOOL	1.69	0.25	1.25	320	36400	1" MT	1-3/8" GS PROFILE
2.50" HYD GS TOOL	2.125	0.25	1.333	770	37400	1-1/2" MT	1-3/4" GS PROFILE
3" HYD GS TOOL	2.875	0.25	1.667	3400	60100	2-3/8" PAC	2.313" GS PROFILE
3.50" HYD GS TOOL	3.5	0.25	1.667	3800	75400	2-7/8" REG	2-5/8" GS PROFILE
2" HYD BULLDOG SPEAR	1.85	0.25	1.75	320	37000	1" MT	7/16" - 1-9/16"
2.50" HYD BULLDOG SPEAR	2.25	0.39	2.333	770	59000	1-1/2" MT	7/16" - 1-3/4"
3" HYD BULLDOG SPEAR	2.625	0.39	2.25	3400	80000	2-3/8" PAC	3/8" - 2-1/16"



Invertible Packer

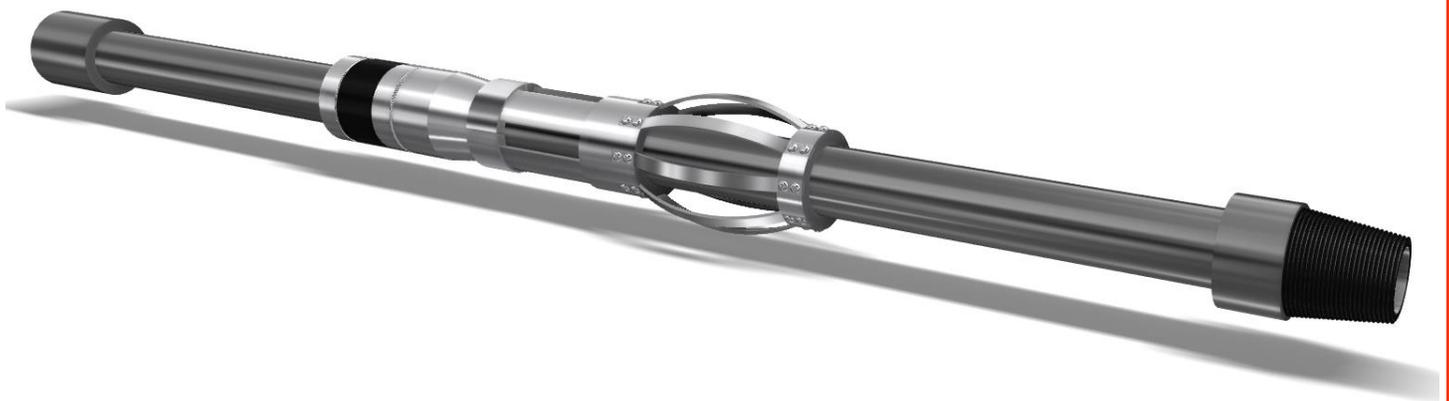
Description:

Invertible packers (Go Packers) are used for detecting holes in tubing or small casings. They are also used for selective treatments and wellbore stimulation, run on coil tubing or conventional tubing. They are cost effective tools for certain operations such as temporarily isolating areas above or below the packer throughout the tubing.

Operation:

They are mechanically set packers that can be run in tension or compression and can be set and released multiple times in one run as the set and release operation is performed with a jay mechanism.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	CONN	TUBING SIZE	SETTING FORCE (lbs)	MAX SHEAR FORCE (lbs)
1.69	0.562	3.75	400	1" CS	2-3/8" 4.7 - 5.8#	3500	9600
2.125	1	3.833	500	1-1/4" CS	2-7/8" 6.4 - 8.6#	3500	15200
2.652	1.375	4.5	700	1-1/2" CS	3-1/2" 9.3 - 12.7#	4000	22800
3.562	2	4.833	1100	2-3/8" CS	4-1/2" 12.6 - 15.1#	5000	38400



Hydraulic Overshot

Description:

Hydraulic overshots are used to latch external fishing necks found on different types of locks, probes, and rope sockets. They are designed to withstand high side and tensile loads during jarring operations.

Operation:

They are operated using coil tubing by pumping fluid through the ID. Once latched onto a fish, fluid pressure is applied and the grapple will disengage and collapse, allowing the tool to release from a fish. Using this tool can also help circulate any sand or debris that is trapped around the fishing neck, creating a clean profile to attempt to latch.

Types:

Hydraulic Heavy-Duty Pulling Tool – designed to fish special size profiles on the external fishing neck.

Hydraulic Releasable Overshot – designed to fish a certain catch range on the external fishing neck profile by changing the grapples on the overshot.

DESCRIPTION	OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	CATCH RANGE
2" FA HD PULLING TOOL	1.875	0.39	2.083	320	50000	1" MT	1-3/8" FN
2.50" FA HD PULLING TOOL	2.3	0.39	2.083	770	75000	1-1/2" MT	1-3/4" FN
3" FA HD PULLING TOOL	2.875	0.39	2.75	3400	118000	2-3/8" PAC	2.313" FN
2" FA RELEASABLE OS	1.85	0.25	2.333	320	41000	1" MT	7/16" - 1-9/16"
2.50" FA RELEASABLE OS	2.25	0.39	2.333	770	92000	1-1/2" MT	7/16" - 1-3/4"
3" FA RELEASABLE OS	2.625	0.39	2.5	3400	82000	2-3/8" PAC	3/8" - 2-1/16"



Impact Hammer

Description:

Bi-directional impact hammers are compact hammers that generate up and down impacts. They can be configured as up, down, or bi-directional. They reduce coil tubing fatigue compared with jarring, and the mechanism does not rely on elastomeric seals, thus it is suitable for use in corrosive and high temperature wells.

Operation:

They deliver a controllable, high frequency up or down impact to a downhole device. The frequency and magnitude of the impacts are controlled via the flow rate and applied force. They are suitable for applications such as shifting sleeves, breaking discs, pulling plugs, scale removal, cleanouts, tubing swaging, and broaching.

DESCRIPTION	OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
HAMMERHEAD IMPACT HAMMER	1.69	N/A	4.75	300	43490	1" MT
HAMMERHEAD IMPACT HAMMER	2.125	N/A	4.333	500	80600	1-1/2" MT
HAMMERHEAD ACCELERATOR	1.69	N/A	4.583	300	30000	1" MT
HAMMERHEAD ACCELERATOR	2.125	N/A	5.083	400	60000	1-1/2" MT



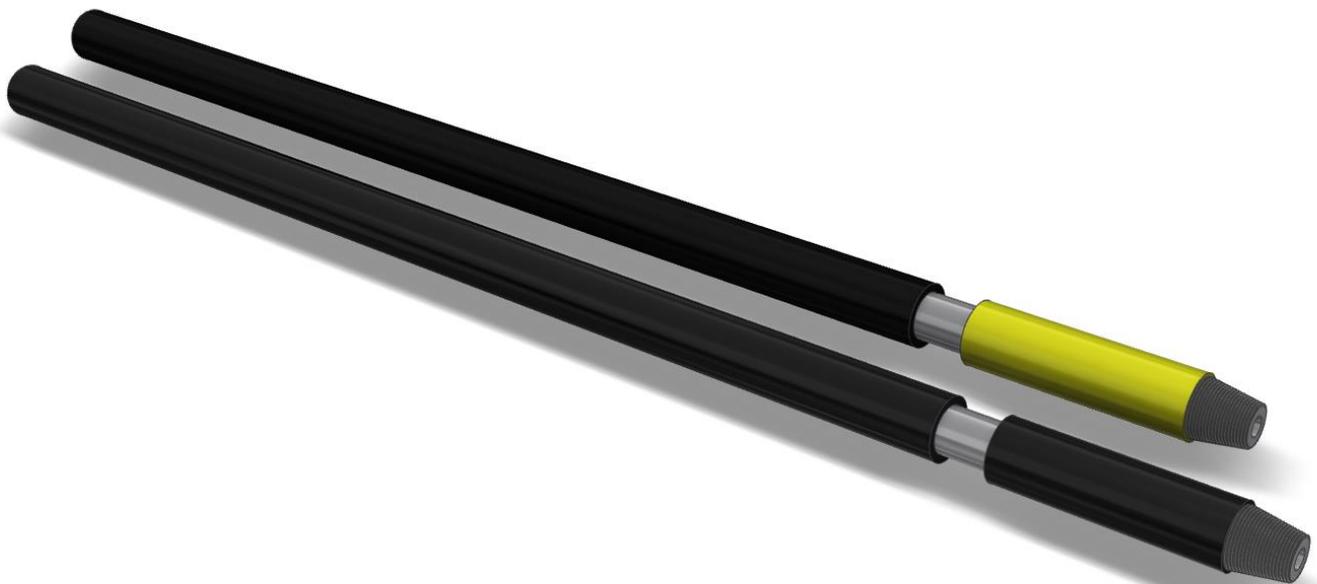
Jar and Accelerator

Description:

Bi-directional jars are designed for milling, drilling, workover, remedial, or completion operations and work on coil tubing or conventional tubing. They are designed to hit upward and downward blows and operate by a straight push and pull. They are hydrostatically pressure balanced and can operate at any depth.

Accelerators are run in conjunction with jars of the same size and are designed to store energy when a strain is pulled on the fishing string. This energy is released by the free stroke of the jar. Their purpose is to absorb the jarring shock for the rebounding string and to protect the bottom hole assembly from damage.

DESCRIPTION	OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	DETENT (lbs)
ACCELERATOR	1.69	0.53	4.5	320	69000	1" MT	13,500
JAR	1.69	0.53	4.25	320	69000	1" MT	13,500
ACCELERATOR	2.125	0.626	5.25	320	130000	1-1/2" MT	30,000
JAR	2.125	0.626	5	770	130000	1-1/2" MT	30,000
ACCELERATOR	2.875	0.906	5.667	3400	225000	2-3/8" PAC	42,000
JAR	2.875	0.906	6	3400	225000	2-3/8" PAC	42,000



Lockable Swivel

Description:

Lockable swivels are designed to allow for long bottom hole assemblies to be made up to the coil tubing connector. They allow for rotation at the swivel instead of rotating the entire bottom hole assembly and allow for sections of the tool string to be made up and lowered into the wellbore. There are certain procedures that have long lengths of lubricator to accommodate the work string, creating difficult situations where lockable swivels can be used.

Operation:

They are operated by pulling the coupling back and tightening the set screws. This allows the clutches to disengage and lets the swivel spin freely.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.53	1.25	320	21000	1" MT
2.125	0.56	1.167	770	27600	1-1/2" MT
2.875	1	1.583	3400	59300	2-3/8" PAC



Mill

Description:

Mills are used to clean out obstructions inside the wellbore. They come in various shapes, sizes, and designs. Each mill design is determined based on the job application and wellbore restriction.

Types:

- Crushed Carbide
- Inserted Carbide
- PDC
- Diamond

Common Obstructions:

- Barium
- Cement
- Paraffin
- Plugs
- Sand
- Scale
- Sleeves





BICO **SpiroStar Stators** provide strength, durability and increased power output making them the smart choice for optimum performance in today's ever-changing and harsher environments. Proven performance derived over years of field testing has established SpiroStar as the market leader. SpiroStar Stators are commercially available in sizes ranging from 1-11/16" through 8".

- ♦ **More power** – Underlying steel lobes permit the rubber to achieve a stronger seal resulting in 2x more power than most conventional motors. This often results in higher effective ROP's due to more time on bottom drilling in directional steering applications due to a more consistent tool face. This can be critical in high angle, extended reach, performance drilling, over thrust drilling or applications where you need more power such as when you require high weight on bit or run larger bi-center bits in a deepwater application.
- ♦ **Longer life** – Uniform thickness of injected elastomer in each tool reduces the probability of chunking due to hysteretic failure since the elastomer is structurally supported by the steel tube. We currently have stators in the field that have in excess of 1200 circulating hours without being relined.
- ♦ **Higher temperature ratings** – Thin, uniform thickness of the rubber causes it to expand very little with temperature changes. Heat generated in standard drilling operations is more readily dissipated through the thin layer of rubber, directly to the steel tube. Even Wall power sections have been run in wells with temperatures approaching 400 Degrees.
- ♦ **Chemical resistance** – Fluids that tend to swell or soften other various rubber compounds on the market do not effect the Even Wall stators in many cases. Performance in oil based and synthetic muds has been impressive and the number of relines has been greatly reduced.
- ♦ **Improved performance capability** – In many directional applications a shorter tool can be run due to the higher power output per unit length. This has permitted higher dogleg capability and increased the use of motors in specialty applications. Some of the specialty applications have included dual laterals, open hole sidetracks, use on production decks of offshore platforms, coiled tubing and coal bed methane applications.



For illustrative purposes only.



Rev. 021108

Nipple Locator

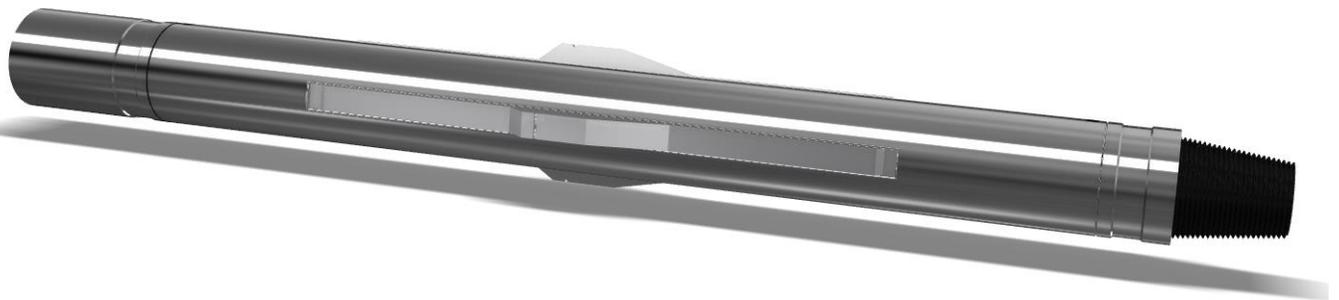
Description:

Thru-tubing nipple locators have three leaf-type springs retained in the housing. An upset in the middle of the springs is greater than the maximum ID of the nipple profile it is intended to locate. The spring can deflect inwards enough to allow the spring to pass through the nipple. The contour shape of the spring is such that the tool moves down through restrictions easily but creates a drag force that can be detected at the surface when moving up through a restriction. Adjustment rings under the spring effectively change the length of the spring and allow changing the force required to pull the locator through a nipple. Mechanical nipple locators will locate most nipples but not the end of the tubing.

Operation:

They are a simple means of locating a known position downhole, allowing for a more accurate positioning of the coil tubing tool string. This is especially important when running on coil tubing where the depth indicator in the coil tubing unit is unlikely to be accurate.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs.*ft)	100% YLD (lbs.)	CONN	TUBING
1.69	0.68	1.667	320	49100	1" MT	2-3/8" & 2-7/8"
2.125	0.81	2	770	31000	1-1/2" MT	3-1/2"



Continuous Tubing Overshot

Description:

Continuous tubing overshots are used to retrieve long tubing strings that have been parted, stuck, or abandoned in the wellbore. They consist of four major parts:

- Top Sub
- Bowl
- Grapple (Various Sizes)
- Guide (Various Sizes)

Operation:

The overshot is attached to the desired fishing string and lowered to the top of the fish while circulating and washing over to the required depth. Lifting the work string causes the grapple to engage the fish. The fish will part below the overshot if it cannot be pulled out of the hole making recovery of the tubing possible. If all the tubing is not recovered, the overshot should be disassembled and visually inspected. Parts are to be replaced as necessary and the procedure repeated until all of the tubing is recovered. The overshot will not have a problem latching parted tubing but cannot be released once latched. *Note: A pack off sub can be run with the overshot to allow circulation through the string being fished.*

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN	COIL SIZE
1.86	1.30	2	300	31300	1-1/4" CS	1" & 1-1/4"
2.065	1.312	2	300	65000	1-1/4" CS	1" & 1-1/4"
2.30	1.563	2	400	53000	2-1/16" CS	1-1/4" & 1-1/2"
2.70	1.813	3.167	1100	62000	2-3/8" CS	1-1/4", 1-1/2", 1-3/4"



Continuous Tubing Cutting Overshot

Description:

Continuous tubing cutting overshots are designed to cut and retrieve coiled tubing that has been parted, stuck, or abandoned in the wellbore. They are assembled with cutting blades and a grapple inside the bowl.

Operation:

They are designed to cut tubing while latched. Once the appropriate overpull is reached, the screws are sheared causing the blades to cut the tubing, leaving a clean fishing neck looking up.

Key Features:

- Retrieve Cut Segment
- Reduced Overpull & Necking of Coil
- Leaves Clean Cut
- Coiled Tubing or Threaded Pipe
- Can cut 1-1/4" through 2" Coil Tubing

OD	ID	LENGTH	TORQUE	100% YLD	CONN	COIL SIZE
(in)	(in)	(ft)	(lbs*ft)	(lbs)		
2.065	1.312	2.667	300	65000	1-1/4" CS	1" & 1-1/4"
2.30	1.563	2.583	400	75000	2-1/16" CS	1-1/4" & 1-1/2"
2.50	1.563	3	700	120000	2-1/16" CS	1-1/2"
2.70	1.813	3.167	1100	124000	2-3/8" CS	1-1/4", 1-1/2", 1-3/4"



PetroStar
SERVICES

Positive Latch Overshot

Description:

Positive latch overshots are the strongest tools available to externally engage, pack off, and pull a fish. They have similar rugged design features and construction as the industry standard Bowen Series 150 overshot with the ability to interchange the bottom guide with the full range of existing Bowen Series 150 components.

Operation:

They make a positive grip over a large area of a fish and are capable of withstanding heavy tensile, torsional, and jarring strains without damage to the tool or fish. They are designed to significantly increase the catch range on the OD of the fish, enabling a greater chance for a successful fishing operation in a reduced number of trips, thus reducing overall cost. In addition to the large catch range, they have the ability to seal across large extrusion gaps at low and high pressure and can provide full circulation through the fish, should it be required.



Shifting Tool

Description:

PCE Coil Tubing Shifting Tools are designed specifically to selectively shift PCE, Otis, CAMCO, and Baker sliding sleeves in horizontal wellbores.

Operation:

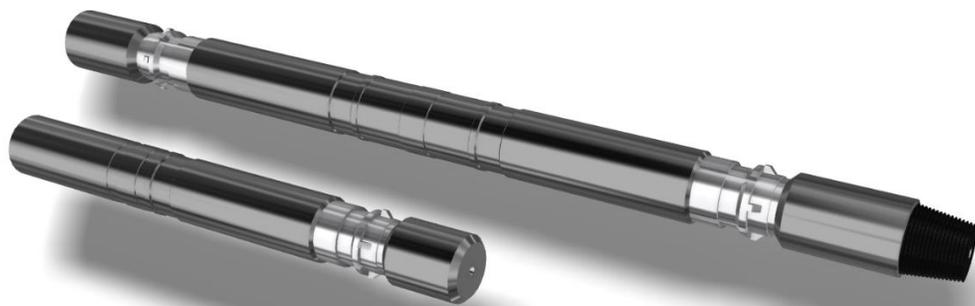
They are to be used on coil tubing with the keys normally retracted during the running procedure and hydraulically actuated to the open position.

Types:

Single Ended Selective Shifting Tool – Designed to either open or close a sliding sleeve. The top and bottom subs are box connections and the pin x pin crossover is provided, allowing the same tool to be used in both operations.

Double Ended Selective Shifting Tool – Selectively opens/closes multiple SSD's in a single trip.

DESCRIPTION	OD (Body)	ID	LENGTH	TORQUE	100% YLD	CONN	KEY RANGE	SLEEVE REF
	(in)	(in)	(ft)	(lbs*ft)	(lbs)			
SINGLE ENDED	1.85	0.25	1.75	320	35000	1" MT	1.875" - 2.16"	1.875"
SINGLE ENDED	2.15	0.25	1.75	770	56000	1-1/2" MT	2.15" - 2.60"	2.312"
SINGLE ENDED	2.72	0.39	1.917	770	90000	1-1/2" MT	2.72" - 3.16"	2.812"
DOUBLE ENDED	1.85	0.25	3.25	320	35000	1" MT	1.875" - 2.16"	1.875"
DOUBLE ENDED	2.15	0.25	3.667	770	56000	1-1/2" MT	2.15" - 2.60"	2.312"
DOUBLE ENDED	2.72	0.39	3.167	770	90000	1-1/2" MT	2.72" - 3.16"	2.812"

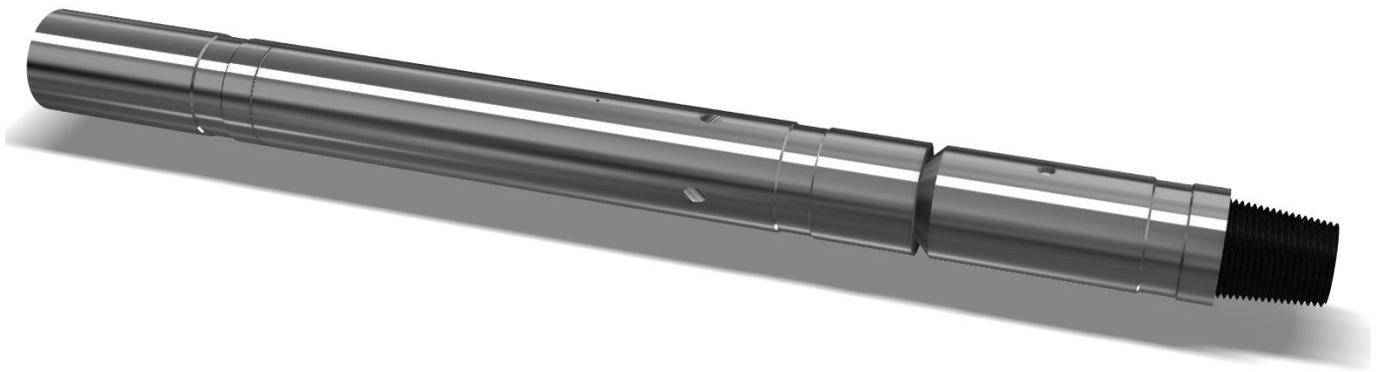


Shear Force Tool

Description:

Shear force tools are used to deliver high impulse down impacts to a fish, pulling tool, shear disc, or another desired tool inside the wellbore. They use the fluid inside the tubing (water hammer effect) to deliver the down impact once the tool shears.

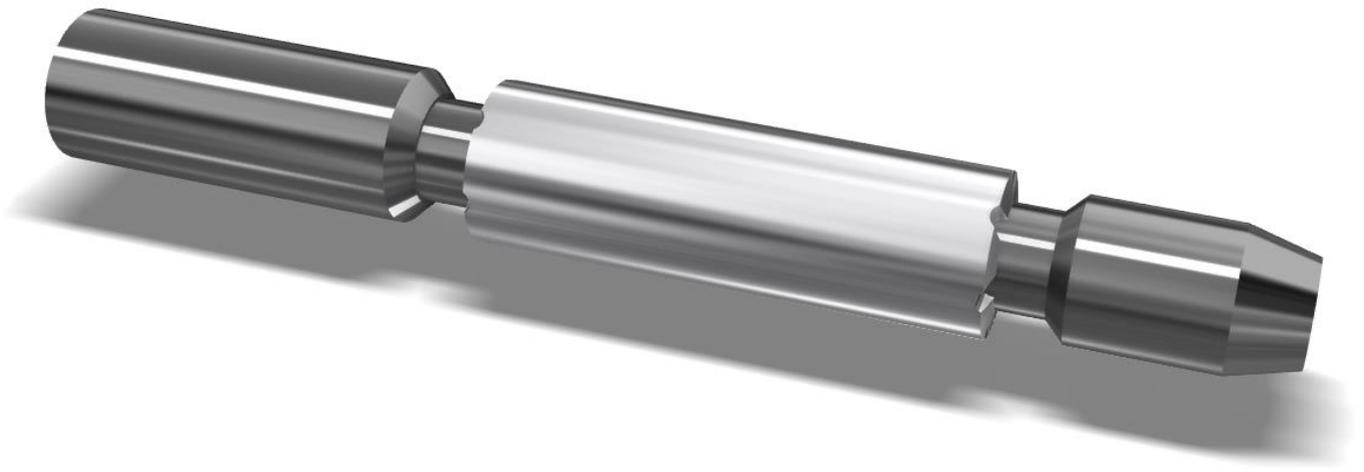
OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONNECTION
1.69	0.25	1.583	320	38000	1" MT



Spinning Wash Tool

Description:

Spinning wash tools were developed specifically for down hole coil tubing operations. They feature nozzle heads that rotate by means of water jet reaction force. Their rotational speed is controlled by a high-pressure water swivel with a viscous brake. The jets were designed to clean irregular surfaces without damaging tubulars and are used to clean calcium scale, asphaltene, and paraffin plugs.

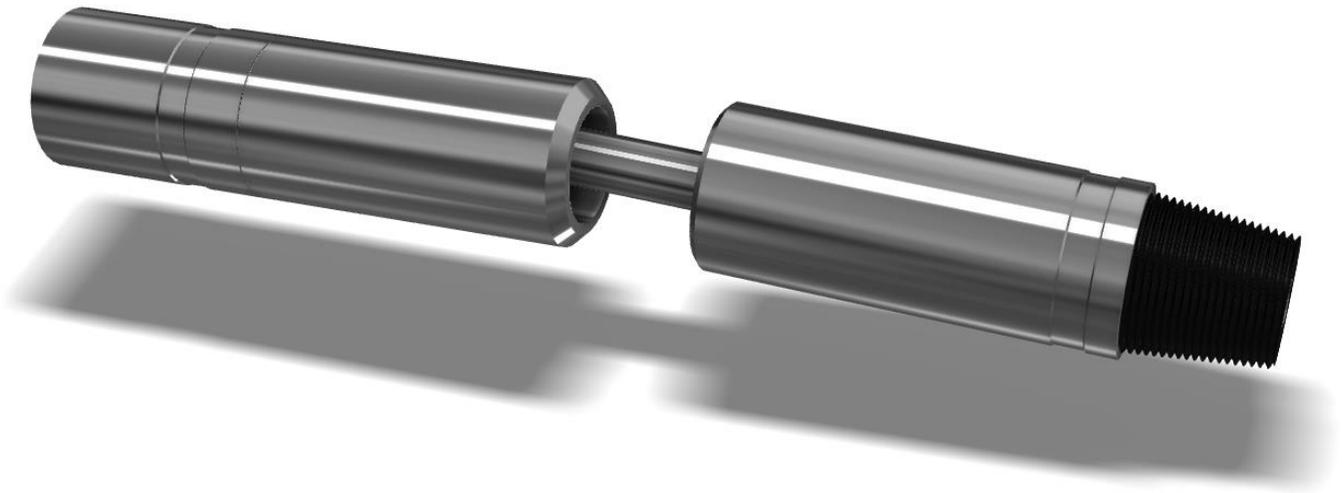


Torque Thru Knuckle Joint

Description:

Torque thru knuckle joints are used in deviated wells to aid in centralization while running a centralizer, stabilizer, mud motor, or another tool. They function the same way as sealed knuckle joints but transmit torque additionally. They can be placed above and below the mud motor, preventing side loads that may reduce the motor's life span or cause damage. They can transmit torque greater than or equal to the capability of the mud motor and are sealed to allow fluid to pass for washing or operating hydraulic tools below.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.531	0.917	320	51600	1" MT
2.125	0.594	1.083	770	83130	1-1/2" MT
2.875	0.78	1.583	3400	144090	2-3/8" PAC



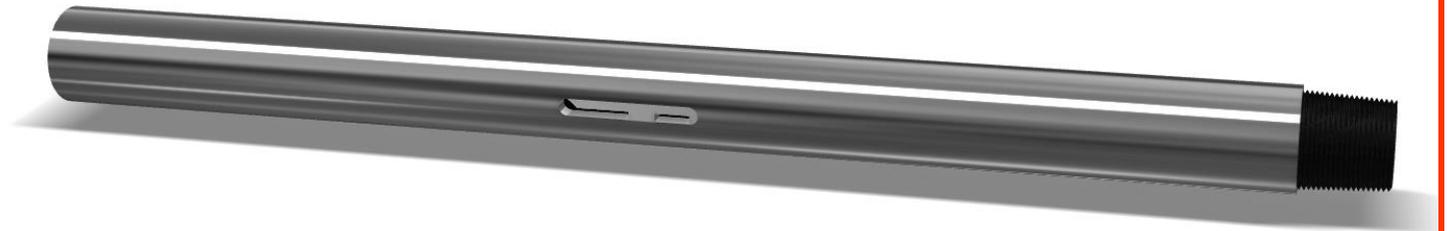
Underreamer

Description:

Two bladed underreamers are used to drill obstructions such as cement, sand, scale, or bridge plugs below a restriction. They are designed to work with a motor or threaded tubing.

Operation:

The blades are actuated by pump pressure forcing a piston to expand them into their operating position. The blades are continuously cleaned as fluid flows through the tool. Once the pump is shut off the blades retract into the body. This design utilizes a fully contained pivot pin that secures the blades with greater reliability than other designs.



Venturi Jet Basket

Description:

Venturi jet baskets work by pumping fluid or nitrogen down the coil tubing, creating a vacuum effect (Venturi effect). They are used to retrieve debris from the wellbore using a cage catch system. A Venturi nozzle located inside the jet basket diverts flow around the OD work string and tubing with the jet action facing downward creating a Venturi effect allowing the debris to circulate inside of the bottom of the basket. Cages inside of the basket are used to catch loose debris trapped inside the wellbore. Various sized wash nozzles are used to determine the ratio, flow rate, and pressure needed for jobs. They can be run with or without a motor.

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.68"	N/A	3.167	320	67000	1" MT
2.062"	N/A	3.75	320	86000	1-1/2" MT
2.625"	N/A	4	770	116000	1-1/2" MT
3.125"	N/A	3.5	3400	141000	2-3/8" PAC



Wash Nozzle

Description:

Coil tubing wash nozzles are used to clean the inside of tubulars. Circulating through them causes a jetting action allowing for the removal of fill within the wellbore. Selecting the appropriate nozzle configuration allows removal of residue such as salt, sand, mud, rust, or scale from the wellbore.



Weight Bar

Description:

Weight bars are long rods/bars with restricted ID's for fluid to flow through. Depending on the job application, they can be various sizes and lengths. They are used to increase the amount of impact applied at the fish while running in tandem with a jar and accelerator and are mainly used on wash over applications by running a wash nozzle below. This helps the coil tubing bend by keeping the BHA below as a straighter guide to achieve certain depths in areas with a smaller ID without getting hung up.

Uses:

- Added impact while jarring
- Custom made to job applications

OD (in)	ID (in)	LENGTH (ft)	TORQUE (lbs*ft)	100% YLD (lbs)	CONN
1.69	0.75	5	320	51300	1" MT
2.125	0.9	5	770	98300	1-1/2" MT
2.875	1.25	5	3400	212900	2-3/8" PAC
1.69	0.7	5	400	52000	1" CS
2.125	1	5	600	70000	1-1/4" CS



Wire Grab

Description:

Wire grabs are used as a means of removing lost slickline, electric line, or braided line from the wellbore. The barbs on the tool entangle with the lost wire allowing it to be recovered.



General Milling Procedure

RUNNING PROCEDURE

The following information is meant to serve as general milling guidelines for the operation of Petrostar Services line of Mud Motors. These procedures should be modified as necessary to achieve optimum field results. There are differing well conditions that may affect the milling efficiency from one well to the other. Customer and Petrostar Services Thru Tubing Operator experience and preferences should be taken into account when planning all milling operations.

Mill Selection

- Customer and Petrostar Services Thru Tubing Operator experience and preferences for milling of various materials should be taken into account when making a determination as to the appropriate mill types.
- Generous watercourses should be present to allow for effective removal of cuttings from below the mill face. If the diameter of the mill's shank is not sufficient to allow for the addition of generous watercourses the diameter of the mill's shank should be turned to the minimum diameter allowed for by API specifications so that ample room for the addition of watercourses is present. The machining process will require that the mill is first measured for concentricity to ensure that concentricity between the multiple diameters is maintained.
- The mill shall have a minimum shank length of 4" and be of a fishable diameter within the tubing in which it is being used.

Coil Tubing Selection (Responsibility of the Coil Service Provider)

- Coil tubing torsional yield should be at least twice the maximum output torque of the motor being used. This is especially important when running larger motors with higher torque ratings.
- Larger diameter coil tubing will generate less friction loss, allowing higher pump rate capacity for a given pressure. It will also reduce the annular flow area, which will increase the annular velocity to assist in hole cleaning.
- Pump rates should be sufficient to maintain fluid velocities sufficient to carry the cuttings and clean the hole. Special attention needs to be paid to this when using commingled drilling fluids with nitrogen and/or air.

General Milling Procedure

- Make up coiled tubing connector and perform pull test in accordance to the Technical Unit specification for that coiled tubing connector.
- Install dual flapper check valve, hydraulic disconnect (and potentially a circulating sub). Pressure test BHA to ensure no leak is detected (if a rupture disk is being run, remove rupture disk prior to pressure test and replace following a successful pressure test of the BHA).
- Install motor / mill and pressure test at various anticipated flow rates. Log “off-bottom” pressures at each flow rate.
- RIH with minimum pump rate in effect following recommended running procedures for CT unit while going in the hole.
- Slow coil tubing running speed when within 1000 feet of the obstruction or tag depth to start milling. Maintain a safe running speed until obstruction is tagged.
- Once tag is made, pick up approximately 6 feet and increase flow rate.
- Note pump pressure prior to proceeding to bottom.
- Set down on the obstruction and establish positive milling WOB via monitoring of differential pressures.
- Patience should be exercised as a cutting pattern is established. Multiple stalls can characterize this period until such time as the mill has had an opportunity to establish a cutting pattern.
- Continue slacking off weight as differential pressure indicates obstruction removal.

TIPS:

- Try to mill using a mid-range flow rate. Maximum flow rate can hydraulically lift the milling BHA off of the obstruction. You can correct this with more WOB. Drill off of differential pressure readings, not WOB. Your WOB will fluctuate. Keep your differential pressure reading constant.

Motor Do's & Don'ts for Coiled Tubing and Conventional Slimhole Applications

□ Pre-Job/Rig Up

Discuss with customer in detail the operating parameters of the job.

- Coil size/grade (for motor stall torque)
- Job objective
- Drilling medium
- Expected flow rate
- Deposit type to be removed
- Expected BHST/BHCT

- Presence of H₂S
- AV
- Max SPP
- Lubricator length

Understand the well schematic and physical location.

Inspect entire BHA.

- Minimum restrictions and locations of SSSV's, GLM's and X-Nipples
- Drift ID's of production string/casing
- Starting and ending depth of cleanout/restrictions
- Severe DLS and directional survey
- Rathole depth
- Location accessibility
- Thread condition (clean / dope / thread lock)
- Record serial numbers
- Drift ID's for debris and ball passage / proper seating

Test BHA.

- Pull test connector.
- Pressure test remaining MHA/coil string to desired psi.
- Surface test motor (do not surface test motor at temp. <32°F).
- Pressure test entire BHA in lubricator.

□ Job

RIH and start job with patience.

- RIH at 50-100 feet / minute and slow to 20-30 feet / minute thru SSSV's, GLM's and X-Nipples.
- Establish true off-bottom circulating pressure.
- Slowly establish cutting patterns for u/r and mills.

Ensure proper hole cleaning.

- Pump 5-10 bbls of dual polymer gel sweeps (2.5-3.5 lbs./bbl) every 500-1000 feet
- Pump ball and activate circulating sub while tripping to bottom and increase to max pressure or pump rate.
- Perform periodic wiper trips if time allows.
- Utilize ported sub if needed.
- AV > 1m/sec in 60-degree inclinations or higher.

Know your motor / MHA / BHA

- Do not exceed maximum recommended flow rate for motor.
- Know the motor stall torque and associated pressure.
- Minimize stalls.
- When stalls do take place reduce flow to a minimum (1/4 bbl) before P/U off bottom.
- When running a surface filter, you need to check pressures on the pump truck and unit, making sure that the pressures are fairly close.
- Inspect coiled tubing connector on every TOH.

- Re-dress individual MHA components and re-head (20-25 feet of coil).
- Inspect coil tubing for flat spots, and or damages where the coil connector will seal.
- Make sure you have a good smooth taper on the end of coil so not to damage O-ring seal area.
- Always shut down pumps and bleed off to a minimum of 300-400 psi before coming off bottom.

Know your fluid.

- Do not pump high concentrations (>15%) of HCL, and minimize exposure to BHA with prompt flushing of freshwater.
- Do not pump Calcium Bromide solution.
- Be aware of fluid characteristics such as LCM type and concentration, sand content (max 2% by volume), WB or OB. mud weight (max 17 ppg) and CL ppm content.
- Be aware of potential stator damage from low aniline points in OBM (<140° F) and excessive temperatures (>212° F).
- Use friction reducers for high circulating rates.
- Always filter fluid.

Know your bit.

- Match anticipated motor rpm to bit / mil / size and cutting surface.
- Limit underreaming time to 12-14 hours before re-heading and blade inspection for 1-3/4-inch coil and smaller.
- Secure u/r blades with single bailing wire or O-rings.
- In u/r applications, do not exceed one-half the recommended maximum motor pressure differential.
- Design u/r blade coverage at .5" less than the drift ID of the casing / tubing.

□ **Post-Job**

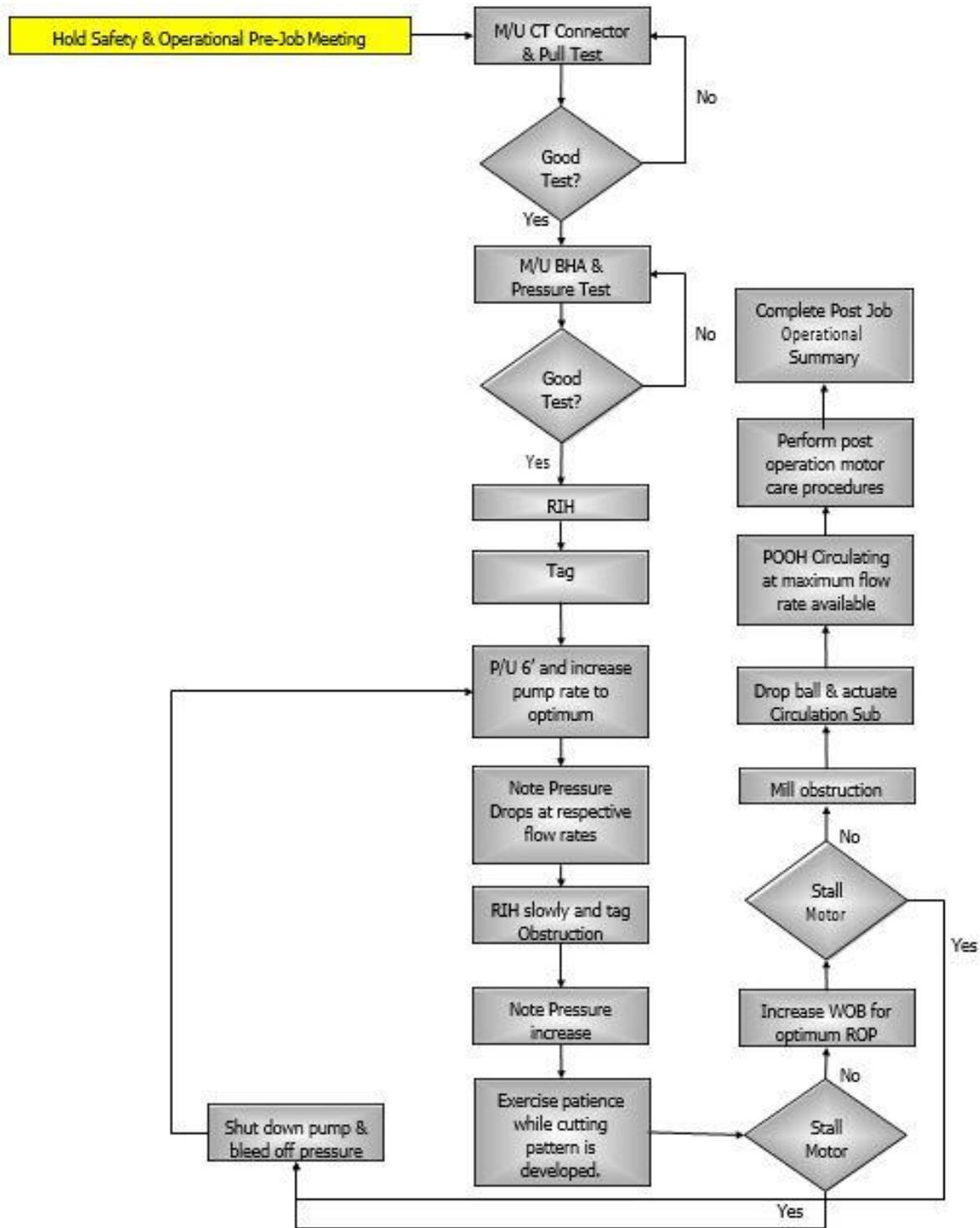
Ensure all aspects and operating parameters of the job are recorded.

- Flow rates
- Drill String / coil data
- BHA data
- Failure reports
- Daily tickets signed

Take care of motors and equipment.

- Flush motor with fresh water upon coming out of the hole and prior to lay down unless it is certain foreign material was pumped through the motor.
- Thread protectors installed.
- All equipment is accounted for.

Operational Flow Chart



General Fishing Procedure

1.0 Introduction

This procedure is for guideline purposes only and should any different down hole conditions be encountered during the operation, we strongly recommended stopping operations and having a conference call with everyone involved and then decided on a common way ahead to solve the problem and progress to a successful conclusion of the operation.

2.0 Scope of Work

Job objective is to fish out a slick line tool string that is stuck inside of 2 7/8" 6.5# Tubing using 1 1/4" Coil Tubing.

3.0 Well Information

Customer:

Field:

Lease:

Well Number:

Tubing Size:

Tubing ID:

Tubing Drift:

Minimum Restriction:

4.0 Work String Data and Size

- Coil Tubing
- Workover Drill Pipe



(Example Job Information)

5.0 Proposed Bottom Hole Assembly #1

Item	Qty	OD	Description	Connections
1.	1	1.69"	Coil Connector For 1 1/4" Coil	1 " MT Pin
2.	1	1.69"	Dual Check Valve	1 " MT Box x Pin
3.	1	1.69"	Hydraulic Disconnect	1 " MT Box x Pin
4.	1	1.69"	Dual Circulating Sub	1 " MT Box x Pin
5.	1	1.69"	Petrostar Services Mud Motor	1 " MT Box x Box
6.	1	1.69"	Venturi Jet Basket W/Debris Chamber	1 " MT Pin x 1 1/4" CS Pin
7.	1	2.30"	Ocean Wave Burning Shoe W/Indicator Pins Every 12" Apart	1 1/4" CS Box

- Hold JSA's for all aspects of job.
- Rig-up 1 1/4" Coil Tubing unit to customer specifications.
- Measure all BHA Tool's OD'S ID'S Lengths.
- Make up BHA to recommended torque consisting of 2.30"OD burning shoe with indicator pins every 12" apart up to 6' from bottom of shoe, 1.69"OD Venturi jet basket, 1.69"OD high torque mud motor, 1.69"OD dual circulating sub, 1.69"OD hydraulic disconnect, 1.69"OD dual check valve and 1.69"OD coil tubing connector for 1 1/4" coil tubing.
- Surface test Mud Motor to Petrostar Services recommendations at ¼, ½, ¾ and 1 bbl. Record surface pressures.
- Trip in hole as to Petrostar Services Supervisor recommendations making slack off and pick up weight checks and recording same.



Take caution when passing through any nipples and any restrictions.

- Make P/U and S/O weight checks @ 500'. Bring pump rate up to ¾" bbl and slowly lower BHA.
- Tag wire line tool string and flag coil tubing and begin milling operations. Burn over top of tool string about 3-5' down to 566' remembering the following.
- Do not pump for long periods with motor stalled. This will cause unnecessary wear on the stator.

- Never pick up out of a stall with full pump rate and torque. This could cause backlash which could result in backing off of the BHA below the motor.
- When milling with the Mud Motor keep approximately 1,000 lbs of weight on bottom adjust weight for best R.O.P.
- When burning over tool string monitor returns for evidence of wire and metal shavings pump a 5 bbl gel pill.
- Once the returns are clean, we can now shut down the pump and POOH.
- Once out of the well be sure to break down BHA in lengths easily handled and laid down without excessive bending. Visual inspect the venturi jet basket for any debris (metal shavings/wire) also check the indicator pins on the burning shoe to if they are broken.
- If we were successful with burning over the top of the tool string then proceed to the proposed BHA #2. If we are unsuccessful then we would need to proceed back to BHA #1 and finish burning over the top of the slick line tool string.

6.0 Proposed Bottom Hole Assembly # 2

Item	Qty	OD	Description	Connections
1.	1	1.69"	Coil Connector for 1 1/4" Coil Tubing	1" MT Pin
2.	1	1.69"	Dual Back Pressure Check Valve	1" MT Box x Pin
3.	1	1.69"	Global Acc Jar - Shorty	1" MT Box x Pin
4.	1	1.69"	Weight Bar/Pony Collar – 4' Long	1" MT Box x Pin
5.	1	1.69"	Global Oil Jar Up and Down - Shorty	1" MT Box x Pin
6.	1	1.69"	Heavy Duty Hydraulic Disconnect	1" MT Box x Pin
7.	1	2.25"	Bowen Overshot	1" MT Box

- Hold JSA's for all aspects of job.
- Measure all fishing tool's OD'S ID'S Lengths.
- Make up BHA to recommended torque.
- Test BHA to Petrostar Services recommendations.
- Trip in hole as to Petrostar Services Supervisor recommendations making slack off and pick up weight checks and recording same.
- Once top of fish is reached make slack off and pick up and record same.

- Slack off until fish is tagged. Flag coil tubing and record depth. Slack off 2,000 – 4,000lbs down on wire line tool string. P/U to ensure Bowen Overshot is latched if not latched slack off additional weight and test for latch up again.
- If still unable to latch, start pumping at 1/2 – 3/4 bbl's and attempt to wash on top tool string clean.
- Attempt to latch fish, once fish is latched attempt to release with straight pull. Attempt to straight pull by bleeding off the jars in 1,000 lb increments until jars are bled off. Note do not exceed 80% of coil tubing tensile limit.
- If fish does not pull free with straight pull then we will have to start jarring on the slick line tool string. Activate jars by pulling 6-8,000 lbs tension and holding until jars fire cycle the jars at this over pull for 10 times. After every cycle with the jars attempt to straight pull fish free. Note do not exceed 80% of coil tubing tensile limit.
- If fish does not pull free then we will have to increase the over pull to activate the jars in 2,000 lb increments.
- Activate jars by pulling 8-10,000 lbs tension and holding until jars fire cycle the jars at this over pull for 10 times. After every cycle with the jars attempt to straight pull fish free. Note do not exceed 80% of coil tubing tensile limit.
- If fish does not pull free then we will have to continue with the above steps until we reach the max cycle on the Global Jars or max cycle on the coil tubing string. (21K Max Jar Impact Over Pull)



Take caution when jarring on the slick line tool string that we do not exceed the tensile rating on our fishing tool BHA. The jar impact at 560' at 12K will be around 45K which is near to the max rating on the Bowen over shot.

- Continue jarring until fish becomes free. POOH with same.
- Note: Additional tools will be added to the load out list as required on further information being provided and subject to any changes to the work scope.
- Accurate drawings of all BHA will be required and supplied before any BHA are RIH.

Where We Operate



PetroStar Services, LLC. Corporate HQ



Basins



District Operations



Yards



Corporate/Sales Offices

