

Thru-Tubing Technology

Product Catalogue



HUNTING

Thru-Tubing Solutions
Engineering Design
Test & Development
Manufacturing



Thru-Tubing Technology Product Catalogue

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web. www.huntingplc.com

Thru-Tubing Technology | Global Headquarters

Americas and Canada

1018 Rankin Road
Houston
Texas 77073-4606
USA

T. +1 281-821-5577
F. +1 281-821-6633

thru.tubing.usa@hunting-intl.com
thru.tubing.canada@hunting-intl.com

Europe / Russia / Africa

Badentoy Avenue
Badentoy Industrial Park
Portlethen, Aberdeen
AB12 4YB, UK

T. +44 (0)1224 787000
F. +44 (0)1224 787100

thru.tubing@hunting-intl.com

Middle East

Building 23
Oilfields Supply Center
Jebel Ali, P.O. Box 261929
Dubai, UAE

T. +971 4 887 6850
F. +971 4 887 6849

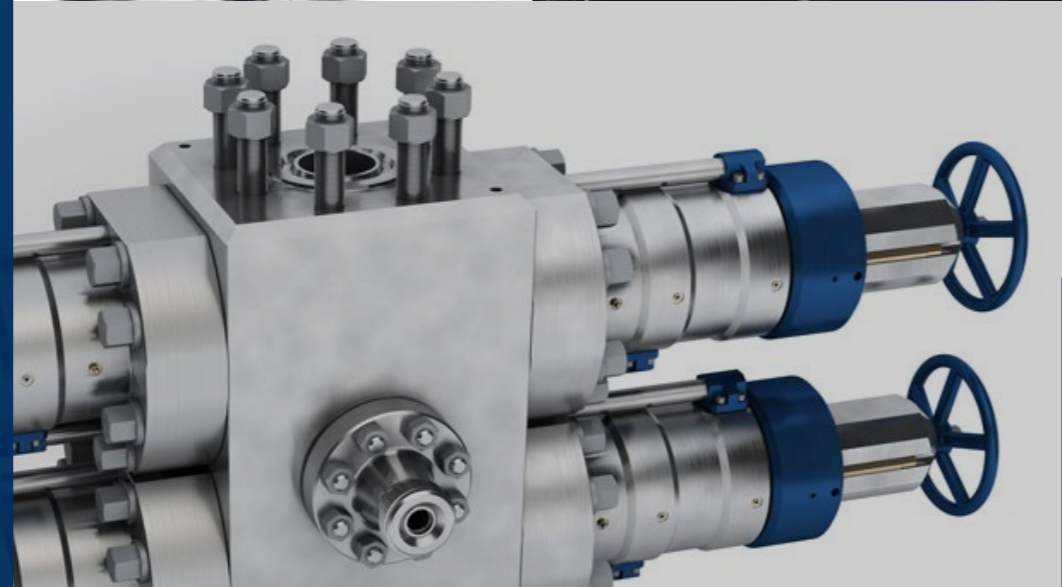
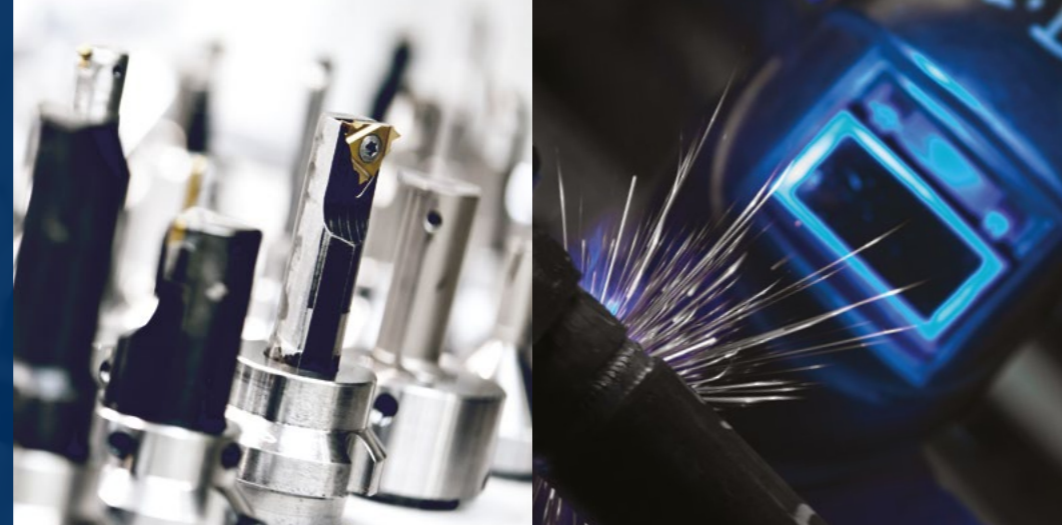
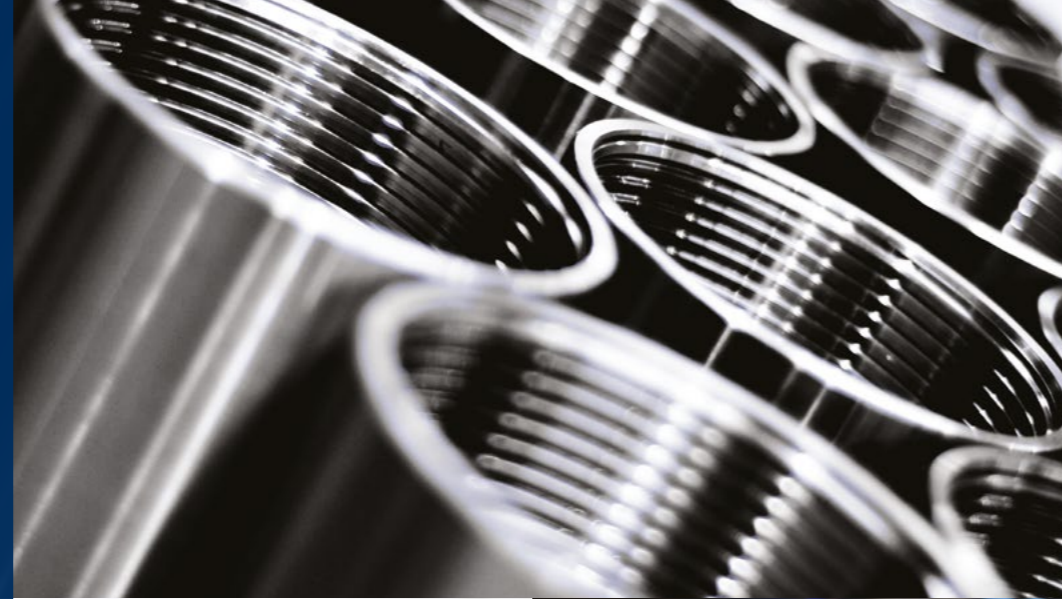
thru.tubing.mena@hunting-intl.com

Asia Pacific

31C Benoi Road
Pioneer Lot
Singapore
627781

T. +65 6863 0668
F. +65 6863 9196

thru.tubing.asia@hunting-intl.com



Hunting provides products and services to the world's leading national, international energy companies and oil service companies enabling the extraction of oil and gas.

Manufacturing and sales locations are located in the key energy producing regions of the world.

Global Business Divisions

- OCTG and Connection Technology
- Drilling Tools
- Perforating Systems
- Intervention Tools
- Advanced Manufacturing
- Subsea

Proprietary Technology

Hunting owns and develops proprietary patented products with a full range of applications below the wellhead including mud motors, premium connections, well perforating, logging and intervention tools.

Geographic Footprint

In strategic locations around the world Hunting owns and operates plants, properties and equipment, employing people to serve its global customers with local services and products.

Hunting is committed to working safely in an environmentally responsible manner. These principles are fully integrated within our QMS that defines the company's global operations.

Quality Assurance

It is essential that products and services provided by Hunting are designed and manufactured to conform to the agreed API, proprietary licensor, or other specification of the customer, meeting their needs and expectations the first time, every time.

It is the policy of Hunting that only the highest quality products and services, that meet all specification requirements, are provided to customers. Hunting operates a corporate Quality Management System covering all worldwide locations.

Health, Safety and Environment

Hunting is committed to achieving and maintaining the highest standards of safety for its employees, customers, suppliers and the public. All Hunting business units consciously operate in a manner that includes environmental matters as an integral part of its business plan.

Hunting's aims are no accidents, no harm to people, and no damage to the environment. The Hunting goal is "Total Customer Satisfaction".

Hunting offers unique benefits to the Thru-Tubing industry, providing advanced solutions for a wide range of workover and coiled tubing interventions direct to service providers and operators alike.



05 **Advanced Solutions**

There is an ever-increasing market demand for well-engineered solutions for on and offshore Coiled Tubing operations and Hunting's Thru-Tubing technology has provided many innovative and highly technical solutions which have firmly established Hunting at the forefront of their field.

Tool and Operational Design

Hunting utilises its expertise in the field of Thru-Tubing technology and highly experienced personnel to develop bespoke tool solutions and technical support relating to problems encountered within the ever more complex well-bores and completions faced today.

Working in close partnerships with clients ensures that the best solution is provided to meet their needs in terms of both cost and safe operational performance.

Operational & Engineering Support

Hunting employees are renowned for their experience, reliability, integrity, and delivery of exceptionally high levels of service support. Due to the rapid growth of the company Hunting has recruited additional highly skilled personnel, maintaining the philosophy of hiring amongst the best and most experienced engineers in the industry.

With a proactive approach to the ever-increasing market demand for well-engineered solutions for on and offshore operations, Hunting does not merely provide tools & hardware.

Our success has been built around knowledge of the industry, correct planning, reliability of the equipment and ability to react to client requirements through timely service and teamwork.

Dedicated R&D Engineering / Investment in R&D / Sustaining and R&D Engineering

Hunting's dedicated engineering team specialise in both sustaining engineering and new product development. This unique approach ensures Hunting continue to evolve existing product designs as well as responding to client and industry changes by extending the proprietary technology offering.

Test Facilities

- 3 x Pressure testing capability up to 28,500 psi
- Oven testing capability
- Load Testing Capability
- Flow testing Capability
- Gas Testing Capability
- Electronic data acquisition

Manufacturing Capability

- In House machining, assembly, pressure testing, water blasting, painting and storage
- Machining capability – Turning, Milling, Turn/Milling and Sawing
- Coating and treatments including bead blasting, zinc and manganese phosphate
- In house test & assembly to ensure quality
- Manufacturing in accordance with ISO 9001:2015 & API Q1
- Strong supply chain to keep lead times short



COILED TUBING CONNECTORS

Thru-Tubing Technology

Slip Type Connector

Product Code | WT-2003

FEATURES

- External connector engages with the outer diameter of the coiled tubing
- Uninterrupted bore for drop ball operations
- Slip ensures the axial load is transferred into the tubing, increasing the strength of the connector grip
- Comprises a top and bottom-sub which contains the slip and spacer ring
- Available in all sizes of coil
- Locking screws prevent back off of the service connection
- Anti-rotation screws prevent connector rotating once assembled
- Elastomeric seals

BENEFITS

- Minimal coil dress required
- Field redressable

The Slip Type Connector is an external type connector that engages the outer diameter of the coil tubing.

The slip ensures that axial load is transferred into the tubing, increasing the strength of the connector grip on the tubing.

The connector design provides an uninterrupted bore for drop ball operations while locking screws prevent the service connection backing off and the anti-rotation screws prevent the coil tubing rotating inside the connector once assembled.

The Slip Type Coil Connector comprises of a top and bottom-sub, which contains the slip and spacer ring. The dressed coil is simply stabbed into the connector and the bottom-sub rotated with an overpull applied to set the slip. Finally, the bottom-sub is made up and the lock and anti-rotation screws fitted.

The connection on the bottom-sub is manufactured to suit BHA requirements.



Tool Size	1-3/4"	2 - 1/8"	2-1/4"	2-7/8"	2-7/8"	3-1/8"
Coil Size (in)	1-1/4	1-1/2	1-3/4	1-3/4	2	2-3/8
End Connection	1-1/4" AMMT	1-1/2" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
Tensile Strength - Standard (lbs)	42,000	62,300	53,800	150,100	110,800	136,700
Tensile Strength - H2S (lbs)	30,500	45,300	39,100	109,100	80,500	99,400
ID (in)	0.750	1.000	1.000	1.375	1.375	1.375
Working Pressure (psi)	10,000	10,000	10,000	10,000	10,000	10,000

These values are obtained at the weakest point of the connector. Coil tubing strengths will vary depending upon the coil tubing size and material used.

Dimple-On Connector

Product Code | WT-1301



FEATURES

- Robust and cost effective means of attaching a BHA to the coil
- Available in sizes 1-1/4 inches to 2-7/8 inches
- One-piece design
- Provides superior mechanical strength
- Available with standard through-tubing tool joints or specially cut to customer requirements
- Any combination of coil tubing and thread size

BENEFITS

- Two O-ring grooves provide added security in high-pressure applications
- Dimple design provides torque-through capabilities
- Reusable connectors furnished with standard O-rings simplifying field redress

The Dimple-On Connector is a one-piece design providing a robust, cost effective means of attaching a BHA to the coil.

The one-piece design incorporates two O-ring grooves providing added security in high-pressure applications. The Dimple-On Connector has superior mechanical strength comparable with tubing with the dimple design enabling torque-through capability.

Although the connectors are supplied with standard through-tubing tool joints, they can also be cut to suit customer requirements. The connector is reusable and furnished with standard O-rings making it extremely easy to redress in the field.

The Dimple-On Connector is available for any combination of coil tubing and thread size. through the tool string is lost, a rupture disc option is included as standard.

Coil Tubing OD	1-1/4"	1-1/2"	1-3/4"	2"	2-3/8"	2-7/8"
Wall Thickness	TBA	TBA	TBA	TBA	TBA	TBA
OD (in)	TBA	TBA	TBA	TBA	TBA	TBA
End Connection	1" AMMT	1-1/4" AMMT	1-1/4" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
ID (in)	0.500	0.688	0.750	1.000	1.000	1.375
Tensile Strength (lbs)	50,160	57,860	77,305	107,910	143,990	245,931
Length (ft)	0.67	0.67	0.67	0.67	0.67	0.67
Working Pressure (psi)	10,000	10,000	10,000	10,000	10,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials. All CT sizes can be accommodated.

Roll-On Connector

Product Code | WT-1304



FEATURES

- Attaches a BHA to the coil
- Available for all coil sizes
- One-piece design
- Reusable connector fitted with standard O-rings
- Robust and cost effective
- Three O-ring grooves
- Three crimping grooves

BENEFITS

- Easy to redress in the field
- Provides added security in high-pressure applications

The Roll-On Connector with one-piece design provides a robust, cost effective means of attaching a BHA to the coil.

The one-piece design incorporates three O-ring grooves providing added security in high-pressure applications, while three crimping grooves give improved tensile strength.

The connectors can be supplied with standard through-tubing tool joints or cut to suit customer requirements. The connector is reusable and furnished with standard O-rings making it extremely easy to redress in the field.

The Roll-On Connector is available for any combination of coil tubing and thread size. However, if for any reason circulation through the tool string is lost, a rupture disc option is included as standard.

Coil Tubing OD	1-1/4"	1-1/2"	1-3/4"	2"	2-3/8"	2-7/8"
Wall Thickness	TBA	TBA	TBA	TBA	TBA	TBA
OD (in)	TBA	TBA	TBA	TBA	TBA	TBA
End Connection	1" AMMT	1-1/4" AMMT	1-1/4" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
ID (in)	0.500	0.688	0.750	1.000	1.000	1.375
Tensile Strength (lbs)	23,870	38,390	69,080	77,440	178,860	165,110
Length (ft)	0.67	0.67	0.67	0.67	0.67	0.67
Working Pressure (psi)	10,000	10,000	10,000	10,000	10,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials. All ct sizes can be accommodated.

Spoolable Connector

Product Code | WT-1301/1304



FEATURES

- Robust, cost effective joining of two sections of coil
- Available in coil sizes from 1-1/4 inches to 2-7/8 inches
- One-piece design

BENEFITS

- Available in both dimple-on and roll-on
- Available for all coil size

The Spoolable Connector with one-piece design provides a robust, cost effective means of joining two sections of coil. They are available in both dimple-on and roll-on styles.

The roll-on design incorporates three O-ring grooves providing added security in high-pressure applications. There are also three crimping grooves to give improved tensile strength.

The Spoolable Connector is available for any combination of coil tubing.

Coil Tubing OD	1-1/2"	1-3/4"	2"	2-3/8"	2-7/8"
Wall Thickness	TBA	TBA	TBA	TBA	TBA
ID (in)	0.688	0.750	1.000	1.313	1.750
Tensile Strength (lbs)	38,390	51,000	77,440	144,800	165,110
Length (ft)	1.54	1.46	1.46	1.54	1.56
Working Pressure (psi)	5K	5K	5K	5K	5K

Properties quoted for standard service materials.

WellGripp™ Connector

Product Code | WT-2004



FEATURES

- Grips and seals the outer diameter of the coiled tubing
- Ideal for running high load velocity strings
- Short in length suited to tubing with a tight bend radius or large diameter

BENEFITS

- High strength characteristics are ideal for hanging velocity
- Easy assembly

The WellGripp™ Connector grips and seals on the outer diameter of coiled tubing, enabling the attachment of tools for coiled tubing operations.

The connectors are designed to be stronger than the coiled tubing and with ease of assembly in mind. Thanks to the one-piece housing, fitting the connector to the dressed tubing reduces the make-up time and the short length makes it particularly suitable for tubing with a tight bend radius or large diameter.

The in-situ test port permits O-ring integrity testing without filling the tubing, while the spiral design of the slip spreads the radial load produced by axial loading, resulting in a connector with greater strength than conventional connectors and improved operating parameters.

The WellGripp™ Connector consists of a housing and spiral slip. The tool is pushed onto the dressed coil and tapped with a soft hammer until it shoulders out. A small rotation is applied to the housing to bed the slip in and an overpull taken. O-rings within the bore of the housing provide a pressure seal and set screws prevent any movement of the housing or the slip relative to the coil.

The connector can be supplied in a variety of sizes and materials to suit any size and type of coiled tubing. Any connection can be supplied, including premium connections when being used in completion strings. Example sizes and connections are shown below.

Tool Size	2-7/8"	2-7/8"	3 1/8"	3-5/8"
Coiled Tubing OD (in)	1.750	2.000	2.375	2.875
End Connection	2.063 SA	2.375 SA	2.375" EJE	3.5" VAM FJL
ID (in)	1.406	1.375	1.985	2.540
Length (ft)	1.00	0.75	0.78	1.42
Working Pressure (psi)	7,500	10,000	10,000	10,000

Other sizes and materials available on request. Available with most pin and box connections.

External Dimple Connector

Product Code | WT-1305



FEATURES

- Robust and cost effective means of attaching a BHA to the coil
- Torsionally locked connector to prevent spinning when using BHA's that create torque
- Large ID to allow for maximum flow rates and drop ball capability
- Dual Internal Seals
- Dual purpose assembly / disassembly tool

BENEFITS

- Simple and strong design
- Easy to make-up to the coil
- Reuseable design
- Two O'Ring grooves provide security in high-pressure applications

The External Dimple Connector engages the outer diameter of the coil tubing by the use of special grub screws that are screwed through the connector body and into the pre dimpled coil tubing.

A dimpling tool is used to align the dimples with the pattern on the connector body.

The connection between the connector and the coil is able to withstand high tensile loads, high torque and high pressure.

The connection on the bottom-sub is manufactured to suit BHA requirements. Standard connections are listed below, but any connections can be supplied.

Tool OD	2.000"	2-1/4"	2-1/2"	3-1/8"	3-5/8" OD
Coil Size	1-1/2"	1.750"	2.000"	2.375"	2.875"
Standard End Connection	1.000" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
Tensile Strength	63,000 lbs	71,800 lbs	185,900 lbs	185,900 lbs	185,900 lbs
ID / Inches	0.750"	1.000"	1.380"	1.380"	1.380"
Working Pressure	10,000 psi	10,000 psi	10,000 psi	10,000 psi	10,000 psi

These values are obtained at the weakest point of the connector. Coil tubing Strengths will vary depending upon the coil tubing size and material used. Tensile Limitations based on 80 Ksi material

Manual Dimpling Jig

Product Code | WT-1305

FEATURES

- Split half-moon design for easy assembly
- Alignment feature for correct positioning
- Lightweight system for easy handling

BENEFITS

- No requirement for Hydraulic system
- Suitable for up to 0.236" Wall Thickness matching most hydraulic systems

The manual dimple jig is a hand-operated system that secures the internal dimple coil connector to the coil tubing.

A dimpling tool is used to align the dimples with the pattern on the connector body.

The connection between the connector and the coil is able to withstand high tensile loads, high torque and high pressure.

The connection on the bottom-sub is manufactured to suit BHA requirements. Standard connections are listed below, but any connections can be supplied.



Coil Size	1.500"	1.750"	2.000"	2.375"	2.875"
Max Wall Thickness	0.236"	0.236"	0.236"	0.236"	0.236"

Hydraulic Dimple Jig & Yoke

Product Code | WT-8100

Internal Combination Reamer System (ICRS)

Product Code | WT-8160



FEATURES

- Alignment feature for correct positioning

BENEFITS

- Fast deformation of coils into dimples

The hydraulic dimple jig is a hand-operated system that secures the internal dimple coil connector to the coil tubing.

Once the coil has been prepared with the ICRS, the internal dimple connector is installed into the coil and Jig is assembly and orientated around the connector. The bolts are then pressed in succession using the yoke forming the coil into the dimples on OD of the connector.

FEATURES

- Each Tool Assembly covers all Wall Thicknesses of Coil in its range
- Self Centering Retainer Sleeve
- Depth Adjustment
- Bevel Cutter fixture creates a smooth lead-in for elastomers

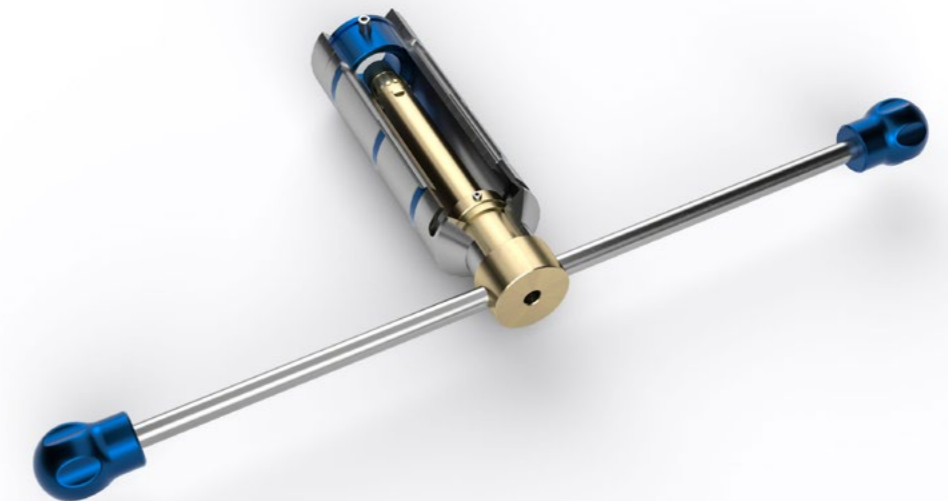
BENEFITS

- Quick Assembly
- Safe Handling
- Precision Finish in Bore

The Internal Combination Reamer System (ICRS) is a hand-operated, self-aligning unit that prepares the coiled tubing to accept an Elastomer Sealed Inline Connector by removing the coil tubing weld seam.

By changing out the Tubing Bush and selecting the correct size of reamer, the ICRS can be used on any size of tubing within the range.

The bevel cutter deburs and chamfers the end of the coil.



Coil Size	1.500"	1.750"	2.000"	2.375"
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Assembly Size	1.250"	2.375"	3.500"
Coil Range	1.250"	1.500" - 2.375"	2.625" - 3.500"



MOTORHEAD ASSEMBLIES

Thru-Tubing Technology



Heavy Duty Motorhead Assembly

Product Code | WT-2010

Heavy Duty Motorhead Assembly

Technical Information



FEATURES

- Compact tool string suitable for H2S and Standard Service Environments
- Dual flapper check valve assembly provides a uni-directional barrier between the well and above tubing
- A ball activated disconnect facility
- Dual operation circulating sub
- A torque thru facility
- Rupture disc included as standard
- Impact, shock loading, torque and straight pull tolerant design
- Large thru bore
- Standard internal GS profile

BENEFITS

- Fully adjustable disconnect and circulating shear values
- Restricted rig up heights

The Motorhead Assembly is a compact tool string that incorporates a variety of features including:

- A dual flapper check valve assembly
- A ball activated disconnect facility
- And a dual operation circulating sub

The tool also features a torque through facility, in addition to a standard internal GS fishing neck profile.

The dual flapper check valves provide a uni-directional barrier between the well and the tubing above. The disconnect facility provides a means of disconnecting from a stuck tool string by simply dropping a ball.

The circulating sub introduces a flow path from the tool's inner diameter to the annulus. However, if for any reason circulation through the tool string is lost, a rupture disc option is included as standard.

Tool Size	1 - 11/16"	1 - 3/4"	2 - 1/8"
End Connection	1" AMMT	1-1/4" AMMT	1-1/2" AMMT
Tensile Strength (lbs)	33,860	47,000	62,000
ID (in)	0.406	0.406	0.563
Length (ft)	2.30	2.21	2.38
Drop Ball Size (Disc. in)	0.500	0.500	0.750
Drop Ball Size (Circ. in)	0.438	0.438	0.625
Fish Neck Size	1-1/2" GS	1-1/2" GS	2" GS
Working Pressure in (psi)	10,000	10,000	10,000

Tool Size	2 - 7/8"	2 - 7/8" HP	3 - 1/8"
End Connection	2-3/8" PAC	2-3/8" PAC	2-3/8" Reg/2-3/8" PAC
Tensile Strength (lbs)	120,300	90,000	120,300
ID (in)	0.688	0.688	0.688
Length (ft)	2.73	3.26	2.76
Drop Ball Size (Disc. in)	0.875	0.875	0.875
Drop Ball Size (Circ. in)	0.750	0.750	0.750
Fish Neck Size	3" GS	3" GS	3" GS
Working Pressure in (psi)	10,000 / 15,000	15,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for sour service materials.



DOWNHOLE VALVES

Thru-Tubing Technology



Back Pressure Valve

Product Code | WT-0702



FEATURES

- Designed to hold a column of fluid in coil tubing
- Adjustable opening pressure
- Spring loaded valve

BENEFITS

- Opening pressure easily adjustable
- No ball drop required
- Easily redressable

The Hunting Back Pressure Valve enables the operator to keep a predetermined column of fluid in the tubing string irrespective of hydrostatic pressures.

The valve design is also fully adjustable and maintains a pressure tight seal in both low and high pressure environments.

To function the valve, the operator simply increases tubing pressure to the predetermined activation/hydrostatic pressure + down hole pressure. When this pressure is reached the valve opens allowing the fluid in the tubing to enter the well. The valve remains open until pumping ceases and the closing pressure is reached, at which point a column of fluid is maintained within the tubing string above the valve.

Tool Size	1 - 11/16"	2 - 1/8"	2 - 7/8"
End Connection	1.000" AMMT	1.500" AMMT	2.375" PAC
Tensile Strength (lbs)	29,700	60,000	92,287
Back Pressure Range	500 psi - 5,000 psi	400 psi - 5,000 psi	1,000 psi - 4,800 psi
Make Up Length (in)	18.9	17.4	17.9
Working Pressure (psi)	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Tensile strength based upon 80Ksi material.

Dual Flapper Check Valve

Product Code | WT-1102



FEATURES

- Provides a means of adding a uni-directional barrier to BHA
- The flapper provides a pressure tight barrier in one direction but enables flow in the opposite direction
- Designed to open fully to give a large uninterrupted bore through the tool for drop ball activated subs

BENEFITS

- Two removable flapper cartridges
- Field redressable

The Dual Flapper Check Valve provides a means of adding a uni-directional barrier to a BHA.

The flappers provide a pressure-tight barrier in one direction, while enabling flow in the opposite direction.

The Dual Flapper Check Valve consists of a two-piece housing assembly that contains two removable flapper cartridges. The flappers are spring loaded in the closed position and are designed to open fully to give a large, uninterrupted bore through the tool.

The tool is easily redressed and the orientation of the flappers can be reversed depending on operational requirements.

Tool OD	1 - 11/16"	2 - 1/8"	2 - 7/8"	3 - 1/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC	2 - 3/8" REG
Tensile Strength (lbs)	45,000	77,000	145,000	150,000
ID (in)	0.750	0.813	1.030	1.000
Length (ft)	1.09	0.98	1.15	1.54
Working Pressure (psi)	10,000	10,000	10,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for sour service materials.



DISCONNECTS

Thru-Tubing Technology

Heavy Duty Disconnect

Product Code | WT-2012

FEATURES

- Provides a means to disconnect the upper BHA from a stuck fish via a drop ball and hydraulic pressure
- Impact, shock loading, torque and straight pull tolerant design
- Operates below jars and impact hammers
- Standard internal GS profile

BENEFITS

- Fully adjustable disconnect values
- Burst disc facility
- Field redressable

The Heavy Duty Disconnect is a torque through disconnect that is released via a drop ball and hydraulic pressure.

This tool enables the operator to drop a ball and pressure-up in order to disengage from a stuck fish or BHA. The tool can handle straight pull, impact, jarring and torque loads without affecting the release mechanism.

This tool is designed to operate below jars or impact hammers. When pump pressure is applied, the drop ball lands out on a ball seat, and screws shear allowing the release piston to move down, de-supporting the threaded collet fingers, thus allowing the upper half of the assembly, complete with drop ball to be retrieved to surface. A standard internal fishing neck is left looking up for future retrieval operations.

The tool can be fitted with a burst disc in the Bottom-sub in order to re-establish circulation if required.



Tool OD	1 - 11/16"	2 - 1/8"	2 - 7/8"	3 - 1/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC	2 - 3/8" PAC
Tensile Strength (lbs)	33,860	62,000	120,300	120,300
Ball Seat ID (in)	0.344	0.469	0.560	0.655
Length in (ft)	1.44	1.60	1.86	1.86
Drop Ball Size (in)	0.375	0.500	0.625	0.688
Fish Neck Size	1-1/2" GS	2" GS	3" GS	3" GS
Working Pressure (psi)	10,000	10,000	10,000	10,000

Properties quoted for sour service materials.

Flow & Tension Release Disconnect

Product Code | WT-2002



FEATURES

- Rigid release mechanism, shear pins and piston are designed to withstand great vibration and jarring
- Full torque through capabilities, heavy duty rotation lock designed to withstand vibration and high torque operations

BENEFITS

- Full flow after disconnect - no drop ball required
- Release flow rate has to be achieved simultaneously with overpull to be able to release
- Variable nozzles allow specific application setup

The Hunting Flow & Tension Release Disconnect Tool provides a safe and reliable means of release or disengaging from downhole tools, Tubing or Coiled Tubing.

The tool is available in standard sizes used during Coiled Tubing operations.

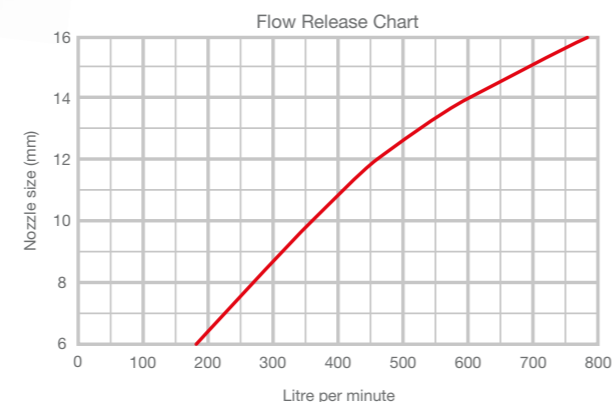
The Hunting Flow & Tension Release Disconnect is designed for applications where a reliable release tool is required but there's no possibility to drop a release ball.

A pressure drop is created when flowing through the tool that activates the release mechanism on the Flow Release Tool. A nozzle inside creates the pressure drop and various nozzle configuration shall create different pressure drops and dictate your release rate.

The tool is designed to be fail safe, to avoid accidental release but if release should become necessary disconnect is simply achieved by inducing flow through the tool to predetermined rate and additionally applying a simultaneous overpull over and above the tensile limit of the predetermined shear pin loading.

Tool OD	2 7/8"
Connection Box and Pin	2 3/8 " PAC
Tensile strength (lbs)	90,000
Length (In)	23.5
Working Pressure (psi)	10,000 psi
Retrieval Tool	3.0" GS (NON STD)
Torsional Yield (ft/lbs)	1800
Temp Rating Deg C	150

Other sizes and materials are available upon request.



Drilling Disconnect

Product Code | WT-2016



FEATURES

- Adjustable release pressure
- Simple, robust construction
- Large through bore

BENEFITS

- Torque and straight pull tolerant design
- Field redressable

The Hunting Drilling Disconnect is a robust, torque through disconnect that is released via a drop ball and hydraulic pressure.

This tool enables the operator to drop a ball and pressure up in order to disengage from a stuck drill bit or BHA. The tool can accommodate straight pull and torque loads without affecting the release mechanism.

The Drilling Disconnect is a cost effective, three-piece design, consisting of aLatch Sub, Piston and Housing. To release, a ball is dropped to seat on the top of the piston. At a predetermined pressure the shear screws will shear allowing the piston to move down and disengage the latch. A minimal over pull is required to release the latch allowing the drill string to be retrieved. The Housing, which is left in hole, has a substantial fishing neck left looking up for retrieval with a die collar or other fishing tools.

The tool can be fitted with a burst disc in the Housing in order to re-establish circulation if required.

Drilling Disconnect Technical Information

Tool Size	3-3/4"	4-3/4"	6-3/4"
Upper End Connection	2-7/8" AOH Tubing Box	3-1/2" API IF Box	4-1/2" API IF Box
Lower End Strength	2-7/8" Hydril PH6 WT TBC Pin	3-1/2" API IF Pin	4-1/2" API IF Pin
Material	AISI 4145 (30-36 Rc)	AISI 4145 (30-36 Rc)	AISI 4145 (30-36 Rc)
Tensile Yield (lbs)	143,900	178,000 ²	247,500
Torsional Yield (lbf-ft) Torque rating at drilling disconnect castellations	11,100	30,000	86,700
Torsional Yield (lbf-ft) Torque rating of pipe connection	5,225 ¹	12,900 ²	23,700 ³
OD (inches)	3.75"	4.75"	6.75"
ID (inches)	2.30"	2.30" / 2.438"	2.75"
Ball OD (inches)	2.38"	2.38" / 2.50"	2.00" / 3.25" / 3.375"
Make-up Length (inch/mm)	36.8" / 935	46.4" / 1179	53.0" / 1346
Burst Pressure Rating (PSI/Mpa)	11,700 / 80.7	15,000 / 103.4	17,300 / 119.3

1 = 2-7/8" AOH connection calculated torque yield | 2 = 3-1/2" API IF drill pipe connection calculated torque yield | 3 = 4-1/2" API IF drill pipe connection torque yield



Shear Screw Quantity	Tool OD - Shear Pin Pressure - Psi		
	3.750"	4.750"	6.750"
1	202	164	199
2	404	328	399
3	607	494	598
4	809	659	798
5	1011	824	997
6	1213	989	1197
7	1415	1154	1396
8	1617	1319	1596
9	1820	1484	1795
10	2022	1649	1995
11	2224	1814	2194
12	2426	1979	2394

Applied Pressure Required per number of Shear Screws - Calculated

Screw Screws should be installed as evenly spaced as possible to achieve the most accurate disconnect at listed pressure.

Fishing Neck (after disconnect)	3.75" Drilling Disconnect	4.75" Drilling Disconnect	6.75" Drilling Disconnect
OD	3.75"	4.75"	6.75"
ID	3.13"	3.74"	5.31"
Depth (internal area for internal pulling tool)	7.25"	12.88"	14.88"
Depth (external length accepting overshot)	21.50"	25.50"	32.10"



DUAL FUNCTION CIRCULATING SUBS

Thru-Tubing Technology

Dual Circulating Sub

Product Code | WT-0603

FEATURES

- Designed as a circulating safety component within the BHA
- Design features include a shear out ball seat coupled with a burst disc

BENEFITS

- Field redressable
- Simple drop ball design to activate

The Dual Circulating Sub is designed as a circulating safety component within the BHA.

The design features a Shear-Out Ball Seat coupled with a Burst Disc.

In the event that circulation is lost during a coiled tubing operation, an increase in applied pressure to the tubing will burst the disc, which will regain a sufficient circulation rate to pump a ball.

Pressure can then be applied to the tubing to shear the shear screws and shift the piston to regain maximum circulation.



Tool Size	1 - 11/16"	2 - 1/8"	2 - 7/8"	3 - 1/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC	2 - 3/8" PAC
Tensile Strength (lbs)	57,217	77,305	245,931	245,931
Ball Seat ID (in)	0.375	0.438	0.563	0.688
Drop Ball Size (in)	0.438	0.500	0.625	0.750
Length in (ft)	0.54	0.54	0.58	1.18
Working Pressure (psi)	10,000	10,000	10,000	10,000

Other sizes, end connections and materials available on request.

Annular Circulating Sub

Product Code | WT-0604



FEATURES

- Allows circulation above a tool string from the tubing into the annulus
- Equalises pressure across the tool string while running in hole
- Release flow rate has to be achieved simultaneously with overpull to be able to release

BENEFITS

- Field redressable
- Short make up length
- Simple drop ball design to activate

The Hunting Annular circulation sub is run above a BHA and creates a flow path from the tubing into the annulus above so that fluid can be circulated above the tool string while running in hole.

Once a ball is dropped on seat and pressure applied to shear out the ball seat a sleeve moves down, flow to the annulus is isolated and pressure can be applied down the tubing to the BHA.

- Ideally suited for the applications below;
- Perforating operations utilizing pressure activated firing heads
 - Hydraulic setting tool deployment
 - Inflatable packer deployment
 - Milling operations

Tool Size	1-11/16"	2-1/4"
End Connection	1.375"-10 TPI SA	1-1/2" AMMT
Safe Working Load (lbs)	68,000	125,000
Drop Ball Size (in)	3/8	1/2
Overall Length (in)	8.4	9.7
Working Pressure (psi)	10,000	10,000

Other sizes, end connections and materials available on request. SWL based upon 110Ksi material.

Flow Diversion Tool

Product Code | WT-0730



FEATURES

- Improves wellbore cleanout efficiency during intervention
- Can be run in conjunction with Mill and Motor

BENEFITS

- Increased flowrate for improved cleanout efficiency
- Increased flexibility in operations
- Decreases cleanout rotating hours on Motors
- Enhances the Coiled Tubing fatigue life
- No drop ball requirement

Hunting has developed a Flow Diversion Tool that can be run into the well to improve and enhance wellbore cleanout efficiency during intervention.

The tool is available in several standard sizes used during Coiled Tubing operations - 1 11/16" , 2 1/8" and 2 7/8" OD. The tool can be run in conjunction with Mill and Motor during a well intervention.

It is a flow activated tool that can be switched numerous times during intervention operation.

This tool allows standard flow thru operations while running into well, then by increasing the flowrate to a predetermined rate the flow is diverted to the CT annulus, this increased flow rate to the annulus enhances the cleanout efficiency of Well intervention operation, by then decreasing flowrate the tool shall revert to standard flow thru operations.

Tool OD	1 -11/16"	2-1/8"	2-7/8"
Connection Box and Pin	1" AMMT	1-1/2" AMMT	2-3/8" PAC
Tensile strength (lbs)	33,000	80,000	105,000
Length (in)	17.25	20.75	24.25
Working Pressure (psi)	10,000	10,000	10,000
Activation differential pressure (psi)	200-400	200-400	200-400
Torsional Yield (ft/lbs)	530	1300	3100
Temp Rating Deg C	150	150	150
Flow area through circulation ports (sq.in.)	0.262	0.39	0.66

Can be supplied in Standard or H2S Material. Specifications are subject to change.
Global availability restrictions please contact Hunting Well Intervention for further details.



JOINTS AND STEMS

Thru-Tubing Technology



Torque Thru Quick Connector

Product Code | WT-3100



FEATURES

- Self-aligning tool string connector capable of withstanding high degrees of torque in both directions
- Ideal for use in make up and running of velocity or gas lift strings
- Eliminates the problems of connecting the BHA when there is no means of rotation
- Simple robust design

BENEFITS

- Field redressable

The Torque Thru Quick Connector is a self-aligning tool string connector, capable of withstanding high degrees of torque in both directions.

It eliminates the problems of connecting the coiled tubing when there is no means of rotating either the tubing or the BHA.

The Torque Thru Quick Connector locking taper feature allows each section of the tool string to simply 'stab-in' and centralize before the torque drive teeth positively engage into the female lower sub.

The primary locking collar is then screwed down to lock the two sections together. The secondary locking collar can then be screwed down to secure the joint and prevent the primary collar from backing off.

Tool OD	1 - 11/16"	2 - 1/8"	2 - 7/8"	3-3/8"
End Connection	1" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" REG
Tensile Strength (lbs)	30,000	77,305	105,000	120,000
ID (in)	0.560	0.875	1.000	1.000
Length (ft)	1.54	1.58	1.60	1.85
Working Pressure (psi)	10,000	10,000	10,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Torque Thru Knuckle Joint

Product Code | WT-0503



FEATURES

- The Torque Thru Knuckle Joint provides a full 15-degree angular deviation and internal pressure seal
- The ball and socket of the knuckle have keys that prevent rotation, while still allowing full angular movement
- Provides additional flexibility in the tool string when positioned above the manipulation tool

BENEFITS

- Can be used with long tool strings
- Torque thru capability
- The additional flexibility allows tools to run in restricted or highly deviated wells

The Torque Thru Knuckle Joint provides a full 15-degree angular deviation and internal pressure sealing throughout the full deviation of the tool.

The ball and socket of the knuckle have keys that prevent rotation, while still allowing full angular movement.

The Torque Thru Knuckle Joint can provide additional flexibility in the tool string when positioned above the manipulation tool. This additional flexibility is often necessary when the bore of the hole, which the tool is running through, is restricted and/or highly deviated.

Multiple Torque Thru Knuckle Joints can be incorporated in particularly long tool strings.

Tool OD	1-11/16"	2 - 1/8"	2 - 7/8"	3-3/8"
End Connection	1" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC
Tensile Strength (lbs)	30,000	40,000	100,000	135,000
ID (in)	0.406	0.530	0.750	1.375
Length (ft)	1.10	1.00	1.24	1.33
Working Pressure in (psi)	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for sour service materials.

Pump Thru Swivel

Product Code | WT-1501



FEATURES

- Permits full rotation of the BHA made up below the joint Includes self lubricating, oil-impregnated, sintered bronze bearings as standard
- Simple design ensures full integrity of flow through the joint
- Ball or Roller bearings can be installed depending on customer requirements and environment
- A swivel in a BHA will allow the tool string to be broken and made up below the joint, without the need to disconnect the BHA from the coil
- Large thru bore

BENEFITS

- Operates under tensile or compressive loads
- Allows full rotation of toolstring

The Pump Thru Swivel is a standard tool string component which when used, permits full rotation of the BHA made up below the joint.

As standard, the Swivel includes self-lubricating, oil-impregnated, sintered bronze bearings. The simple design ensures full integrity of flow through the joint.

The inclusion of a Swivel joint in a typical BHA gives the operator orientation flexibility, by allowing the tool string to be broken and made-up below the joint, without the need to disconnect from the coil.

The tool operates equally well in tension or compression and Ball or Roller bearings can be installed if desired.

Tool OD	1-3/4"	2-1/8"	2-7/8"	3-1/8"
End Connection	1-1/4" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" REG
Tensile Strength (lbs)	35,000	37,000	100,000	122,000
ID (in)	0.438	0.500	1.030	1.000
Length (ft)	1.05	1.00	1.20	1.20
Working Pressure (psi)	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Downhole Filter

Product Code | WT-3500

FEATURES

- Filters circulating fluid to ensure correct operability of debris intolerant tools below
- Internal cartridge can be of any filter size screen

BENEFITS

- Field redressable
- Robust

The Hunting Downhole Filter is a simple tool that is run above any debris intolerant tool to ensure full operability. This is particularly useful when cleanliness of circulating fluid is poor, unknown or whilst recirculating the same fluid.

It is recommended to run the filter below a tool with a circulating burst disc to ensure circulation is not lost if the filter plugs off.



Tool OD	1 - 11/16"	1 - 3/4"	2 - 1/8"	2 - 7/8"
End Connection	1" AMMT	1 - 1/4" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC
Tensile Strength	70,000 lbs	70,000 lbs	124,000 lbs	148,000 lbs
Length	13.5"	13.5"	13"	14.375"

Sleeve Stabilizer

Product Code | WT-1201



TOOLSTRING STABILIZERS

Thru-Tubing Technology

FEATURES

- Used to centralize the coiled tubing BHA at points within the wellbore where problems of centralization occur
- Assist in providing centralization, allowing easier location of tools during fishing
- Provides general stability in the tubing
- Full through bore
- One body mandrel can accommodate a range of sleeve diameters

BENEFITS

- Allows the assembly to rotate while being supported by external flutes and eliminates possible wear
- Field redressable

The Sleeve Stabilizer is used to centralize the coiled tubing BHA at points within the wellbore where problems of centralization are paramount.

The Sleeve Stabilizer is designed to be included as part of the coiled tubing work string to assist in providing centralization, allowing easier location of tools during fishing and/or to provide general stability in the tubing.

The Sleeve Stabilizer has a full flow through bore allowing the passage of drop balls. The advantage of this tool is that it allows the assembly to rotate while being supported by the external flutes, thus eliminating possible wear.



Tool Size	1 - 11/16"	2 - 1/8"	2 - 7/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC
Tensile Strength (lbs)	57,217	77,305	245,931
ID (in)	0.50	1.00	1.38
Length (ft)	1.42	2.08	1.83
Working Pressure (psi)	10,000	10,000	10,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Bull Nose Jetting Nozzles

Product Code | WT-0401



NOZZLES

Thru-Tubing Technology

FEATURES

- Downhole jetting
- Cement placement operations
- Multi-port nozzle giving full radial coverage
- Porting can be manufactured in any combination with port sizes to match the optimum performance

BENEFITS

- Various port configurations for different operations
- A single large port for cement placement operations
- Robust design
- Design to suit all operational requirements

The Bull Nose Jetting Nozzles are available in both single or multiport designs.

The single ported through-bore nozzle is primarily designed for the placement of slurry during a shut-off operation.

The multi-port nozzle is designed to give full radial coverage over the completion tubular during well intervention operations, while the porting can be manufactured in any combination of up, down and side jetting with port sizes to match the optimum performance for each size of nozzle.



Variable Jetting Sub

Product Code | WT-0401



FEATURES

- Multi-ported nozzle for clean out, scale removal and other jetting operations
- Single piece body and multiple tapped holes positioned at various angles within the sub
- Holes accommodate hardened jetting nozzles or blank plugs
- Flexibility to use or blank off specific ports; use for backward, side, downward or multiple jetting applications

BENEFITS

- Flexible configuration for varying operations
- Multiple jet direction
- Robust design
- Field adjustable
- Various nozzle sizes and number of ports

The Variable Jetting Nozzle is a multi-ported sub for clean out, scale removal and other such jetting operations.

Consisting of a single piece body the Variable Jetting Nozzle has multiple tapped holes positioned at various angles within the sub. These holes accommodate hardened jetting nozzles or blank plugs, giving the flexibility to use or blank off specific ports, so the tool can be used for backward, sideward, downward or for multiple jetting applications.

A variety of replaceable nozzle sizes are available so that the required jetting flow area can be adjusted in the workshop or in the field should operations dictate.

Spincat™ Wash Tool

Product Code | WT-RWT

FEATURES

- Simple self-rotating high-pressure jetting action for downhole tubular cleaning
- Nozzle sizes from 0.090-inches – 0.155-inches available
- Temperatures up to 200°C
- Up to thirty per cent HCL and Nitrogen injection
- Self-rotating assembly
- Compatible with acids and other corrosive fluids

BENEFITS

- High-pressure fully utilising pump power
- Long-lasting attack tips that can outlast tungsten carbide jets

The Spincat family of tools provides a simple, self-rotating high-pressure jetting action for downhole tubulars.

Maximised jet power is delivered to the tubing walls by rotational speed controlled by the viscous fluid governor. By using only a few rotating jets, this results in hard-hitting power.

The replaceable jets are highly efficient, cleaning recesses and irregular surfaces without damaging tubing in the well. The tools can be used at temperatures up to 200°C, and with up to thirty per cent HCL and Nitrogen injection.

Because of the high-efficiency nozzle design and the unique seven-step manufacturing process, the attack tips are the best quality and longest lasting tip we are aware of.

The flow straightener corrects power-robbing turbulence, ensuring excellent jetting results. Tests have shown that the attack tips can outlast even tungsten carbide jets.



Model	SC-168	SC-212	SC-250	SC-287
Pressure (psi)	5,000	5,000	5,000	5,000
Flow Range (bpm)	0.7 - 1.3	0.5 - 2	0.7 - 3.0	1.0 - 3.0
Flow Rating (Cv)	2.3	4.6	7.5	7.5
Outside Dia. (in)	1.68	2.12	2.50	2.875
Length (in)	9.8	12.3	16.0	15.6
Connection	1" AMMT	1-1/2" AMMT	1-1/2" AMMT	2-3/8" PAC
Rotation Speed (rpm)	150-200	150-200	80-150	80-150
PSI Loss @ 1bpm (psi)	330	83	31	31
Max Temp	200 Deg C	200 Deg C	200 Deg C	200 Deg C



MOTORS

Thru-Tubing Technology

WellDrill™ & WellDrill™ XTR Downhole Motor

Product Code | WT-6000

FEATURES

- Positive displacement motor which produces optimum reliability and power output with maximum efficiency for today's thru-tubing demands
- All motors are dyno tested in house and supplied with a test certificate to measure performance data and ensure motor performance is maintained
- Comes in a variety of sizes and configurations to ensure the WellDrill™ / WellDrill™ XTR Motor can operate for any job
- Industry leading components
- Fully established and field proven reliability
- Accurate performance data

BENEFITS

- Experienced service and support

The WellDrill™ Downhole Motor incorporates industry leading power and bearing sections.

Using specifically selected components based on realtime merit, this positive displacement motor produces optimum reliability and power output, with maximum efficiency for today's Well Intervention thru tubing demands.

Motor performance can vary quite dramatically depending on wear, tear or even tolerance stack-up and for this reason, every motor is dyno tested inhouse - pre and post operation - and supplied with Test Certification. This ensures that 100% accurate performance data is supplied on a motor-to-motor basis, rather than relying upon theoretical values.

The motor can be tailored to the planned well intervention operation, whether it is a high-temperature environment, low bottom hole pressure or an aggressive fluid application.

The high performance WellDrill™ XTR Motors are now fully established within our fleet, having successfully performed numerous thru-tubing milling, underreaming and cutting operations.

With "Uniform Wall Advantage" these motors offer strength, durability and increased power output making them the smart choice for optimum performance in extreme environments, N2 applications and high-temperature applications.

Technical Information overleaf >



WellDrill™ & WellDrill™ XTR Downhole Motor Technical Information

Motor Size	Lobe Ratio	Number of Stages	Power Section	Overall Length (ft)	Motor Connections	Flow Rate GPM
1-11/16"	5:6	4.0	Welldrill	7.9	1" AMMT	20-40
1-11/16"	5:6	2.3	XTR SS 100	7.8	1" AMMT	20-40
2-1/8"	5:6	4.0	Welldrill	9.4	1-1/2" AMMT	20-40
2-1/8"	5:6	6.0	XTR SS 150	11.1	1-1/2" AMMT	20-50
2-7/8"	7:8	3.5	Welldrill	11.3	2-3/8" PAC	20-80
2-7/8"	5:6	7.0	Welldrill	14.4	2-3/8" PAC	30-90
2-7/8"	5:6	3.5	XTR SS 150	12.9	2-3/8" PAC	60-120

Motor Size	Bit Speed (rpm)	Max. Operating Pressure (psi)	Operating Torque (ft/lbs)	Max. Recommended WOB (lbs)	Max. Overpull (lbs)	Max. Operating Temp. F
1-11/16"	190-380	900	150	2800	17000	212
1-11/16"	216-433	560	131	2800	26180	400
2-1/8"	191-390	900	240	4500	23800	212
2-1/8"	260-680	1500	256	4500	23800	400
2-7/8"	80-320	790	510	6500	42700	212
2-7/8"	172-520	1580	760	6500	42700	212
2-7/8"	200-400	875	1100	6500	42700	400

Other Motor configurations and sizes available upon request





MILLS AND WASHOVER SHOES

Thru-Tubing Technology

Mills

Product Code | WT-0101

FEATURES

- Used on a variety of operations such as scale and cement milling
- Operations also include plug removal, fish dressing and reaming
- Restriction enlargement as well as general cleanout and debris removal operations
- Range of mill sizes starting from 1-3/4" diameter
- Can be designed and manufactured to suit specific applications
- Proven technology

BENEFITS

- Quick manufacturing time
- Robust design
- Extensive range in stock
- Extensive field run database

Hunting can supply a full range of Mills for all thru-tubing applications, including a variety of operations such as:

- Scale and cement milling
- Plug removal
- Fish dressing
- Reaming
- Restriction enlargement
- Or any other general cleanout or debris removal operations

We can design and supply the following range of Mills, starting at sizes from 1-3/4" diameter:

- Crushed carbide dressed
- Insert dressed
- Diamond impregnated
- PDC insert

Although an extensive variety of styles and sizes are available from our stock, generally mills are designed and manufactured to suit specific applications.

As well as taper, convex, concave, flat-bottomed, stage and string mills, bespoke designs are manufactured to suit specific fishing necks or other similar profiles, eccentric milling operations or any other unique application.

A variety of cutting structure, diameter and connection configurations can be supplied.



Washover Shoes

Product Code | WT-0103

FEATURES

- Used for various operations such as plug removal, fish dressing and any other clean out or debris removal operations
- Many variations available including crushed carbide, carbide insert dressed, diamond impregnated and PDC type

BENEFITS

- Large inventory
- Proven technology
- Robust design

Design and supply of various types of crushed carbide, carbide insert dressed, diamond impregnated and PDC type.

Although an extensive variety of styles and sizes are available from our stock, generally Shoes are designed and manufactured to suit specific applications. In addition to flat, scalloped or castellated-bottomed Shoes, bespoke designs are produced to suit specific applications.

A variety of cutting structure, diameter and connection configurations can be supplied.



WellDrill™ Tri-Reamer

Product Code | WT-0501

FEATURES

- Enlarging a section of the wellbore
- Removes scale or cement from a tubular beneath a restriction
- Three-blade design for optimum stability
- Continuous uninterrupted through-bore
- Jetting option to the blades is included as standard
- The debris tolerant design limits the amount of debris ingress
- Load shoulder to ensure hinge pins are not subjected to shear loads

BENEFITS

- Dress options include carbide inserts, PDC inserts, crushed carbide
- Field redressable

The WellDrill™ Tri-Reamer is a hydraulically actuated underreamer used for removing scale or cement from the wellbore beneath a restriction.

The robust, three-blade design ensures the blades are not only well supported during operation, but that they also provide optimum stability compared with similar dual-blade designs.

The tool has a continuous, uninterrupted through-bore, which reduces flow erosion and as a result, significantly increases the tool life.

A jetting option to the blades is included as standard, however it can be simply disabled should operational conditions dictate.



Tool Size	2 - 1/8"	2 - 1/2"	2 - 7/8"
End Connection	1 - 1/2" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC
Tensile Strength (lbs)	73,300	77,305	146,000
Tubing Size	4-1/2" Max	7" Max	7" Max
Length (ft)	2.23	3.20	2.96
Working Pressure (psi)	10,000	10,000	10,000

Properties quoted for standard service materials. Tubing size is the maximum for the tool.



TUBULAR SEVERANCE

Thru-Tubing Technology



Hydraulic Anchor

Product Code | WT-1990



FEATURES

- Anchoring bottom hole assemblies within tubulars
- High expansion/body outer diameter ratio
- Facilitates gripping inside large inner diameters
- Fully retained and automatically retractable blades
- Allows drop balls to pass through the tool with the added benefit of reducing flow turbulence

BENEFITS

- Uninterrupted through bore
- Four blade guarantee stability within the tubular
- Field redressable

The Hydraulic Anchor is primarily a device for anchoring bottom hole assemblies within tubulars.

The Anchor incorporates a variety of unique features, some of which include the following:

- A “high expansion/body” outer diameter ratio, which facilitates gripping inside large inner diameters below small restrictions.
- An un-interrupted through bore, allowing drop balls to pass through the tool with the benefit of reducing flow turbulence.

The blades are fully retained prior to flowing through the tool and are pulled back into the body when flow stops. Four blades guarantee centrality within the tubular and maximum stability.

The Anchor is flow operated; hydraulic pressure moves pistons within the tool body forcing the blades out until they grip the tubular. When flow stops, a compression spring returns the pistons to their start position, pulling the blades back in and holding them closed. The Anchor is run as part of any BHA that needs to be positively located within a section of tubing. A typical example would be a pipe cutting operation.

One size of anchor blade suits a range of inner diameters.

Tool Size	1 - 3/4"	2 - 1/8"	2 - 7/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC
Tensile Strength (lbs)	48,900	74,000	146,500
ID (in)	0.367	0.500	0.750
Length (ft)	2.68	2.87	3.95
Max Tbg Size (in)	4.00	4-1/2	7.00
Working Pressure (psi)	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for sour service materials.

Hydraulic Pipe Cutter

Product Code | WT-1950



FEATURES

- The severing down hole tubulars
- Variety of features enhance the operation of the tool
- A dual piston which doubles the axial force into the knives
- Activation fluid is diverted up the tool to flush and assist with the cut
- Knives are dressed with premium and coated machine tool inserts, enabling a fast and clean cut

BENEFITS

- Field redressable

The Hydraulic Pipe Cutter is a device for severing down hole tubulars.

Activation fluid is diverted up the tool to flush and prevent cuttings interfering with the cut. The knives are dressed with premium and coated machine tool inserts, enabling a fast and clean cut.

The pipe cutter can be deployed on a positive displacement motor or jointed pipe. Flow, down through the tool generates an internal pressure that causes the dual piston to actuate. As the pistons move up within the tool, cams lift the three cutter knives out.

Upon completion of the cut, flow is ceased and a compression spring forces the dual piston back to its starting position.

Tool Size	1 - 3/4"	2 - 1/8"	2 - 7/8"
End Connection	1" AMMT	1 - 1/2" AMMT	2 - 3/8" PAC
Tensile Strength (lbs)	48,900	74,000	150,000
Length (ft)	2.22	2.42	2.52
Max tubing size (in)	4.00	4.50	5.50
Working Pressure (psi)	5,000	5,000	5,000

Properties quoted for standard service materials.

External Heavy Duty Pulling Tool

Product Code | WT-0902



FISHING TOOLS

Thru-Tubing Technology

FEATURES

- Means of engaging, locating and pulling on standard, external fishing necks
- Variety of nozzle sizes to suit specific operating parameters
- Suit all standard external profiles

BENEFITS

- Field redressable
- Simple robust design

The External Heavy Duty Pulling Tool is a cost effective means of engaging, locating and pulling on standard, external fishing necks.

This tool allows the operator to engage the fishing neck by either:

- Flowing - to pump the latch back
- Or mechanically - by pushing the latch back and allowing the tool to snap on to the profile

Flow through a nozzle, fitted to the nose of the core, creates an internal pressure which actuates an unbalanced piston, allowing the latch to become de-supported and pass on to or off the external fishing neck profile.



Tool Size	1.812"	2.625"	3.500"	3.625"
To suit F/N size	1-1.375"	1-1.750"	1-2.313"	1-3.125"
Tensile Strength - Lbs	33,000	110,000	95,370	70,000
Length - ft	0.98	1.40	1.35	1.60
Working Pressure - Psi	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials. All ct sizes can be accommodated.

Flow Release GS Pulling Tool

Product Code | WT-0301



FEATURES

- Means of engaging, locating and pulling on standard, internal fishing necks
- Variety of nozzle sizes to suit specific operating parameters
- Suit all standard internal and GS profiles

BENEFITS

- Simple robust design
- Field redressable

The Flow Release GS Pulling Tool is a cost effective means of engaging, locating and pulling on standard internal fishing necks.

This tool allows the operator to engage the fishing neck by either:

- Flowing - to pump the latch back
- Or mechanically - by pushing the latch back and allowing the tool to snap into the profile

Flow through a nozzle fitted to the nose of the tool creates an internal pressure that actuates an unbalanced piston, allowing the Latch to become de-supported and pass into the internal fishing neck profile.

Tool Size	1-1/2" GS	2" GS	2-1/2" GS	3" GS	3-1/2" GS
End Connection	1" AMMT	1-1/4" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC
Tensile Strength - Lbs	30,000	42,000	53,100	72,000	102,000
Length - ft	1.02	1.31	1.28	1.46	1.69
Max Working Pressure - Psi	5,000	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials. All ct sizes can be accommodated.

Flow-Release Overshot

Product Code | WT-0901



FEATURES

- Provides a means of engaging, locating and pulling on plain end fish or damaged external fishing necks
- Allows the operator to engage the fishing neck by allowing the grapple to locate over the fish
- An overpull is applied to the tool and hardened grapple teeth bite into the fish enabling it to be retrieved
- Hydraulic and Mechanical actuation

BENEFITS

- Each tool size can engage a whole range of diameters by changing out the grapple
- Field redressable

The Flow-Release Overshot provides a means of engaging, locating and pulling on plain end fish or damaged external fishing necks.

This tool allows the operator to engage the fishing neck by either:

- Flowing - to pump the latch back
- Or mechanically - by pushing the latch back and allowing the grapple to locate over the fish

As an overpull is applied to the tool, case hardened grapple teeth bite into the fish enabling it to be retrieved. The tool can be released from the fish by flowing through the tool.

By changing out the grapple, each tool size can engage a whole range of diameters and additionally, the flow actuation can also be adjusted by fitting a different sized nozzle.

Standard tool and catches are listed below but other sizes and catches are available.

Tool OD	2-1/4"	2-7/8"	3-5/8"	4-3/8"
End Connection	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
Tensile Strength (lbs)	59,400	132,000	112,750	128,300
Length (ft)	1.58	1.77	1.78	2.00
Working Pressure (psi)	5,000	5,000	5,000	5,000
Minimum standard catch size	1"	1-1/2"	1-3/4"	2-7/8"
Maximum standard catch size	1-3/4"	2-1/8"	3-1/8"	3-3/4"

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Flow-Release Spear

Product Code | WT-0304



FEATURES

- Device for fishing downhole equipment with a damaged internal fishing neck
- A device for fishing tubular sections lost within the wellbore
- Can be supplied with a complete range of hardened slips for varying internal diameters
- A selection of nozzles to vary the activation flow rate are also available

BENEFITS

- Simple robust design
- Field redressable

The Flow-Release Spear is a device for fishing either:

- Downhole equipment with a damaged internal fishing neck
- Tubular sections lost within the wellbore

To engage the fish, simply set down weight allowing the slip to collapse into the bore. When an overpull is applied, the slips will take hold of the fish.

To release from the fish, simply set down weight and flow through the tool. This creates the differential pressure required to de-support the slip and allow it to collapse and release.

The Flow-Release Spear can be supplied with a complete range of hardened slips for varying internal diameters and a selection of nozzles to vary the activation flow rate are also available.

Tool Size	2"	2-7/8"	3-5/8"	4"
End Connection	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC	2-3/8" PAC
Tensile Strength (lbs)	25,000	43,000	136,000	180,000
Length (ft)	1.36	1.59	2.00	2.05
Working Pressure (psi)	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Bi-Directional Shifting Tool

Product Code | WT-1870



FEATURES

- Available to suit all standard type 'B' shifting profiles
- Device used to selectively open and close sliding sleeves
- Flow activated
- One chassis suits a range of profiles
- Maximum bearing contact area
- Fully independent dogs

BENEFITS

- Dual-action for opening or closing sliding sleeves
- Field redressable

The Bi-Directional Shifting Tool is a device used to selectively open or close sliding sleeves.

The tool can be fitted with bi-directional dogs, allowing the operator to shift the sleeve in either direction, in a single run. Alternatively, the standard uni-directional dogs can be fitted and easily rotated within the chassis to either open or close the sliding sleeve.

The Shifting Tool is run with the shifting dogs in the retracted position, and once at the required depth, fluid flow through the tool causes the retainer sleeves to move, allowing each independent dog to activate. The dog profile can then engage the sliding sleeve profile, shift the sleeve and automatically disengage from it. Stopping the flow allows the springs to return the retainer sleeves and retract the dogs back into the closed position.

The Shifting Tool is available to suit all brands and sizes of sliding sleeves and can also be supplied with either positive or selective dogs. As a result of the 360-degree dog coverage, the design provides superior contact compared to similar tools.

Additionally, each chassis can be assembled to cover a range of profile sizes.

Tool Size	1.875"	2.313"	3.813"	4.562"
End connection	1 - 1-1/4" AMMT	1-1/2" AMMT	2-3/8" PAC	2-3/8" PAC
Tensile Strength - Lbs	13,300	21,000	60,400	60,400
Collapsed OD	1.843"	2.125"	3.650"	4.437"
Activation Pressure - Psi	450 - 650	450 - 650	650 - 850	650 - 850
Max Working Pressure - Psi	5,000	5,000	5,000	5,000

Other sizes, end connections and materials available on request. Properties quoted for standard service materials.

Flow-Activated Tubing End/Nipple Locator

Product Code | WT-1860



FEATURES

- Available in sizes to suit most nipple profiles
- Used at the end of production tubing for depth correlation
- Designed to allow the device to be run with location latch in the retracted position
- Flow activated multiple on/off function
- Mechanical emergency release and tool de-activation function

BENEFITS

- Field redressable

The Flow Activated Tubing End Locator is a device used for the location of nipple profiles and/or the end of the production tubing for depth correlation.

The design allows the device to be run with the location latch retracted, therefore eliminating wear of the latch and damage to the tubing. Flow through the tool creates the differential pressure required to activate the mechanism, enabling the latch to ride up onto the cone. Stopping the flow retracts the latch.

The design incorporates a shear release mechanism that can be used to 'switch off' the tool or provide an emergency release if required.

The Tubing End Locator can be functioned repeatedly. If, for some reason, the locator is no longer required to be used during the operation or has become jammed, the shear feature can be activated by a straight pull or upward jarring. This shears out the cone and by slacking-off weight, retracts the latch. Subsequent flow through the tool simply pushes the cone down the tool, where it is retained via a body lock ring.

A variety of latches can be supplied to suit profiles or tubing inner-diameter.

Mechanical Tubing End Locator

Product Code | WT-1840



FEATURES

- Device is used to help locate nipple profiles
- Used at the end of production tubing for depth correlation
- Adjustable push/pull loads to suit most nipple profiles
- Emergency shear release facility
- Large through bore

BENEFITS

- Field redressable

The Mechanical Tubing End Locator is a device used for location of nipple profiles and/or the end of the production tubing, for depth correlation.

The design incorporates an emergency shear mechanism.

The Tubing End Locator disc spring mechanism, which supports the dogs in the open position, can be repeatedly functioned as chosen. The quantity of disc springs installed can be varied to give the desired indication loads for a particular application.

If, for some reason, the dogs become jammed as a result of debris ingress, the emergency shear feature can be activated by upward jarring. This function produces enough movement to un-support the dogs, enabling tool retrieval.

A variety of dogs can be supplied to suit profiles or tubing inner-diameters. Additionally, the pull through/push through load can be adjusted to suit specific applications.

Wireline Spear

Product Code | WT-4002

FEATURES

- Retrieves wire that has broken in the tubing or wellbore
- Any combination of style, outer diameter and thread connection is available

BENEFITS

- Simple design
- Robust construction

The Wireline Spear is used to fish broken wire from the tubing.

The Coiled Tubing Wireline Spear consists of a box up connection with a centre prong extending downwards. Pointed barbs are welded to the prong in order to form hooks that catch the looped end of the broken wire. A Stop Ring with a specific outer diameter is fitted to the prong and additionally, the Wireline Spear also allows flow through.

The Wireline Spear Stop Ring can be gauged for the tubing it is to be run in. The prong ends of the Spear will increase in outer diameter until just below the diameter of the Stop Ring.



Tool Size	2"	2-7/8"
End Connection	1-1/2" AMMT	2 - 3/8" PAC
Tensile Strength (lbs)	47,750	89,700
OD range of dogs	2-1/2" thru 3"	3-1/2" thru 5"
Length (ft)	1.46	1.88
Working Pressure (psi)	5,000	5,000

Wireline Grab

Product Code | WT-4001



FEATURES

- Retrieves wire that has broken in the tubing or wellbore
- Two or three flexible prongs extending downwards
- Pointed barbs are welded to the inside of the prongs to form hooks and allow easier retrieval of the broken wire
- Flexible design to allow for it to bend
- Any combination of style, outer diameter and thread connection available

BENEFITS

- Simple design
- Robust construction

The Wireline Grab is used to fish broken wire from the tubing.

The Coiled Tubing Wireline Grab consists of two or three flexible prongs extending downwards. Pointed barbs are welded to the inside of the prongs in order to form hooks that will catch the looped end of the broken wire.

The Wireline Grab is flexible enough to bend and can be gauged for the tubing it is to be run in. The prong ends of the grab should fit snugly against the walls of the tubing to help prevent line by-pass.

Coiled Tubing Lead Impression Block

Product Code | WT-1904

FEATURES

- Helps identify fishing necks and debris during coiled tubing fishing operations
- Manufactured to client specifications and size
- General cleanout and debris removal operations
- Circulation sub enables fluids to be pumped during the operation

BENEFITS

- Designed for specific operations
- Robust design

The Lead Impression Block is used to identify fishing necks and debris during coiled tubing fishing operations.

The Lead Impression Block has a circulation sub at the top, enabling circulating fluids to be pumped during the operation.





SURFACE EQUIPMENT

Thru-Tubing Technology

Stabbing Pulley

Product Code | WT-1510

FEATURES

- Lightweight device fitted to the bottom of the injector head stripper and used for safely feeding the coil from the reel into the injector head
- Lightweight
- Can be supplied with a variety of connections
- Designed to enable the wire to be fitted without removing any parts
- Fitted with a replaceable brass wear bush
- The outer-thread is reduced in length in order to reduce make-up time
- Fitted with a self-lubricating bearing as standard

BENEFITS

- The brass wear bush prevents damage to the wire
- Reduced make-up time

The Stabbing Pulley is a lightweight device used in conjunction with a winch and wire system to safely feed the coil tubing from the reel to the injector head.

The Stabbing Pulley has a slot enabling the Surface Handling Tool and wire to be fitted without removing any parts. The wire is retained on the Pulley Wheel via a ball lock pin, which is retained via a lanyard (not shown), thus:

- Reducing manual handling and working at height
- Greatly reducing rig-up time
- Eliminating the need for assembly tools
- Thus preventing any dropped objects or loss of components

A replaceable brass wear bush is fitted in the bore, additionally preventing damage to the wire. The outer-thread is reduced in length to decrease make-up time and as standard, the Pulley Wheel is fitted with a self-lubricating bearing.



Quick Stabbing Tool

Product Code | WT-1512



FEATURES

- Device used in conjunction with a winch and the Stabbing Pulley for manipulating and safely feeding the coil from the reel into the injector head
- Simple two-piece design
- It can be manufactured to suit all sizes of coiled tubing from 1-inch upwards

BENEFITS

- Easy 'on' and 'off'
- Robust construction

The Quick Stabbing Tool is a device used in conjunction with a winch and the Stabbing Pulley, to manipulate and safely feed the coil from the reel, and into the injector head.

To fit the Quick Stabbing Tool, the inner core is pushed fully into the body, de-supporting the latch fingers. A slot is lined up with the bead in the coil, and then it is easily pushed into the coil bore. Next, the inner-core is pushed back in, supporting the fingers. The coil is then rolled onto the Tool, which can be connected to the winch so that the coil can be pulled into the injector head.

To remove the Tool, the coil is cut just above the rolled coil. The piece of coil is then gripped in a vice and the core is knocked back from under the fingers, allowing them to collapse.

The Quick Stabbing Tool can then be pulled from the coil without the need to grind or split the coil.

Surface Handling Tool

Product Code | WT-1509



FEATURES

- Safe manipulation and feeding of the coil from the reel into the injector head
- Robust double-knuckle and thrust bearing
- Supplied to suit many diameters of coiled tubing

BENEFITS

- Linear flexibility via the double-knuckle
- Bearings enable free rotation while the tool is in tension
- Field redressable

The Surface Handling Tool is a device used in conjunction with a winch and the Stabbing Pulley for manipulating and safely feeding the coil from the reel and into the injector head.

The Surface Handling Tool incorporates a robust double-knuckle and thrust bearing.

The knuckle provides maximum linear flexibility, while the bearing enables free rotation while the tool is in tension. It suits all sizes of coiled tubing.

Tubing Clamp

Product Code | WT-0712

FEATURES

- Securing coiled tubing while being fed off of the reel
- Slip segments to suit various tubing diameters

BENEFITS

- Easy 'on' and 'off'
- Robust construction

The Tubing Clamp is a device used for securing coiled tubing, while being fed off of the reel.

The tool comprises of two halves that contain slip segments to suit a specific tubing diameter. A tapered bowl ensures the slip grips the tubing.

The spacer plates retain the slips while preventing the clamp from crushing the tubing when the clamping bolt is made up.

The Tubing Clamp can be supplied with a range of slips to suit various tubing diameters.



TITAN TCP FIRING HEADS

Thru-Tubing Technology



Direct Pressure Firing Head

Product Code | FHPA-1375



FEATURES

- Utilizes industry leading precision shear pins
- Can be run on top or bottom of Hunting guns
- Designed to API RP-67 (Oilfield Explosive Safety) guidelines
- Redress kits
- Simple, reliable and rugged design

BENEFITS

- Precision shear pins guaranteed to actuate within 5% of calculations
- Enhanced safety as difficult to detonate at surface or by electrical sources
- Can be effectively utilized in very high underbalance environments
- Compatible with all Hunting TCP firing systems
- Redress kits allow for quick turnarounds

The Direct Pressure Firing Head is designed for well conditions that are not favorable for dropping a detonating bar or where a backup pressure firing head is desirable.

The firing head is assembled to actuate at a predetermined pressure by using precision shear pins. The firing piston is held within the retainer sleeve by these precision shear pins. The number of pins used is based on well conditions and desired safety factor.

Hydrostatic plus applied pressure is used to hydraulically actuate the firing head within ±5% of the calculated values. When the precision shear pins fail at the predetermined pressure, the firing piston drives the firing pin into the percussion initiator which in turn detonates the perforating gun assembly.

Assembly Part Number	FHPA-1375-000**	FHPA-1375-000T 1.315" NUE Top Connection
O.D. (in)[mm]	1-3/8 [35]	1-3/8 [35]
Makeup Length (ft)[m]	0.49 [0.15]	0.49 [0.15]
Max. 100 Hour Temperature Rating (°F)[°C]†	400 [204]	400 [204]
Min. Required Pinning Pressure (psi)[MPa]	1,800 [12]	1,800 [12]
Max. Operating Pressure (psi)[MPa]‡	20,000 [138]	20,000 [138]
Precision Shear Pin Part Number		
500psi/pin [3.4MPa/pin]	SPIN-076-250	SPIN-076-250
900psi/pin [6.2MPa/pin]	SPIN-0100-250	SPIN-0100-250
Redress Kit Part Number	FHPA-1375-000**-KIT	FHPA-1375-000**-KIT

** Use "HT" for high temperature operations (above 325°F (163°C))

† Hardware only. Viton O-rings need to be used above 325°F (163°C)

‡ Backup O-rings required above 13,000psi (90MPa). Kit FHPA-1375-000-BUKIT needs to be ordered separately.

Ball Drop Hydraulic Actuated Firing Head

Product Code | ACTU-2000 / ACTU-3125



FEATURES

- Can circulate before and after perforating
- Designed to API RP-67 (Oilfield Explosive Safety) guidelines

BENEFITS

- Ideal for single trip operations requiring pre- and post-perforating clean up
- Enhanced safety as firing head can only be activated by properly seated ball

The Direct Pressure Firing Head is designed for well conditions that are not favorable for dropping a detonating bar or where a backup pressure firing head is desirable.

The firing head is assembled to actuate at a predetermined pressure by using precision shear pins. The firing piston is held within the retainer sleeve by these precision shear pins. The number of pins used is based on well conditions and desired safety factor.

Hydrostatic plus applied pressure is used to hydraulically actuate the firing head within ±5% of the calculated values. When the precision shear pins fail at the predetermined pressure, the firing piston drives the firing pin into the percussion initiator which in turn detonates the perforating gun assembly.

Tubing Size (in)[mm]	1.66 [42] EUE	2-3/8 [60] EUE
Assembly Part Number	ACTU-2000-500**	ACTU-3125-500**
O.D. (in)[mm]	2.00 [54]	3.13 [79]
Makeup Length (ft)[m]	1.65 [0.50]	1.74 [0.53]
Max. 100 Hour Temperature Rating (°F)[°C]†	400 [204]	400 [204]
Min. Required Pressure - 3 pins (psi)[MPa]	1,950 [13]	1,800 [12]
Max. Differential Pressure - 12 pins (psi)[MPa]‡	7,800 [54]	7,200 [50]
Precision/Shear Set Part Numbers (in²)[cm²]§		
3/8" Bore. Flow Area (0.11)[0.71]	ACTU-2000-538A**	ACTU-3125-538A**
7/16" Bore. Flow Area (0.15)[0.97]	ACTU-2000-544A**	ACTU-3125-544A**
1/2" Bore. Flow Area (0.20)[1.29]	ACTU-2000-550A**	ACTU-3125-550A**
1-1/8" Bore. Flow Area (0.99)[6.39]	-	ACTU-3125-512A**
Flow Area of Ports After Perforating (in²)[cm²]	0.99 [6.39]	2.41 [15.55]
Max. Tension (lbf)[kN]	65,000 [289]	158,000 [703]
Precision Shear Pins Part Number	SPIN-0130-250	SPIN-0187-380
Redress Kit Part Number	ACTU-2000-500**-KIT	ACTU-3125-500**-KIT
Piston/Shear Set Redress Kit Part Number	ACTU-2000-xxxA**-KIT	ACTU-3125-xxxA**-KIT

** Use "HT" for high temperature operations (above 325°F (163°C))

† Hardware only. Viton O-rings need to be used above 325°F (163°C)

‡ Backup O-rings required above 13,000psi (90MPa). Kit ACTU-xxxx-500-BUKIT needs to be ordered separately.

§ Flow area of piston before perforating.

Additional Tools

Contact our Sales Team

In addition to the tools contained in this catalogue, Hunting can also source or supply the following tools:

- Hydraulic Up/Down Coiled Tubing Jar
- Hydraulic Intensifier
- Impact Hammer
- Venturi Jet Junk Basket (VJJB)
- Agitators
- Continuous Coil Overshot (CCO)
- Snipper Overshot
- Bowen Series Overshots
- Itco Spears
- Bull Dog Spears
- Alligator Grab
- Fishing Magnets
- Packer Milling Tools
- Kelly Valves
- Deployment Bars
- Pump in Subs
- Reverse Circulating System
- Seeker Tool System
- Lubricated Bumper Sub
- Free Travel Tool
- Indexing Tool
- BOP Test Bars
- Crossovers
- Mini Tongs

If you do not see the tool you are looking for contact our Thru-Tubing Sales team.





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