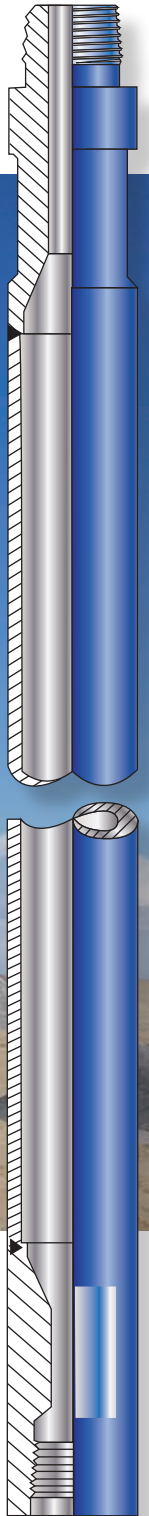
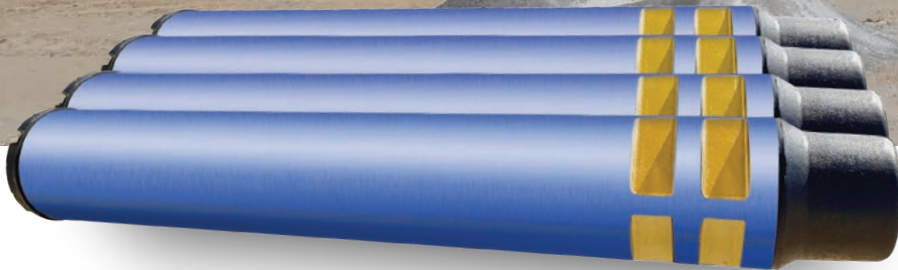


GALLEON

MINING TOOLS, INCORPORATED.

Providing Quality and Service to the Global Mining Industry

Your Mining Tool Solution Team



GALLEON is dedicated to manufacturing quality drilling tools for the mining and industrial industries. We have built our reputation and customer base on fair pricing, a quality product, and above all, superior service.



Integral Drill Steel



Starter Pipe



Starter Sub



Saver Sub



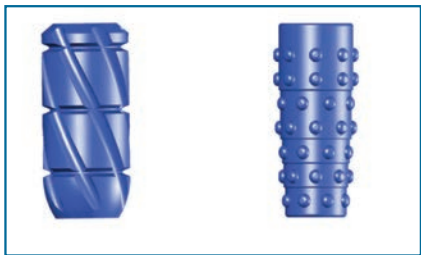
Spiral Rib Stabilizer



Straight Rib Stabilizer

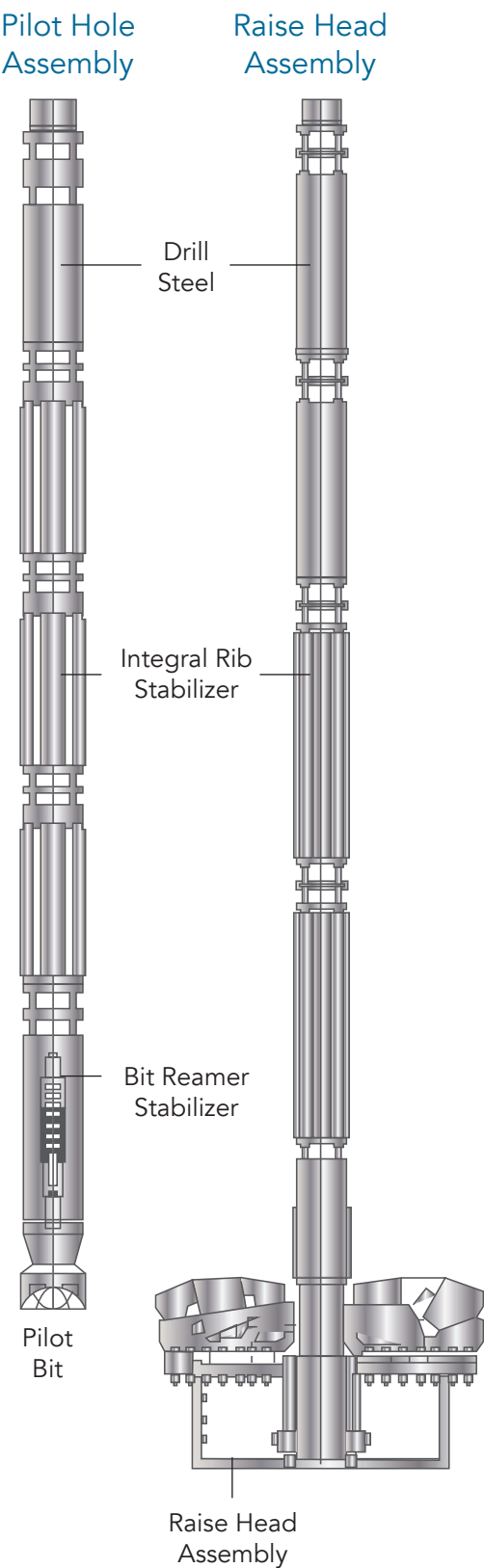


Model 60 Bit Reamer-Stabilizer

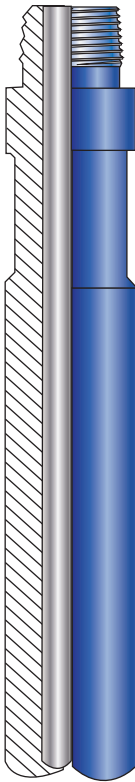
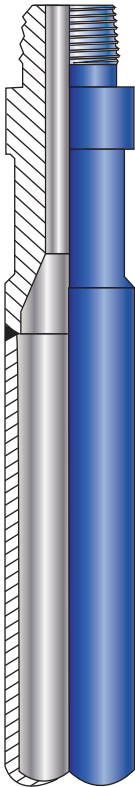


Type "Q"

Type "K" (Knobby)



FABRICATED AND INTEGRAL DRILL STEEL



	FABRICATED DESIGN		INTEGRAL DESIGN	
O.D. (Ins)	NOMINAL WALL (Ins)	NOMINAL WEIGHT/FT. (Lbs)	NOMINAL ID (Ins)	NOMINAL WEIGHT/FT. (Lbs)
6 1/4	3/4	44	2 13/16	84
6 1/2	3/4	48	2 13/16	96
7	3/4 1	50 64	2 13/16	110
7 5/8	3/4	56	2 13/16	134
8 5/8	1 1 1/2	82 114	3 1/4	172
9 1/4	1	88	3 1/4	202
10 3/4	1 1 1/2 2	104 148 187	4 3/4	250
12 3/4	1	126	4 3/4	250
13 3/8	1 1 1/2	148 184	4 3/4	394

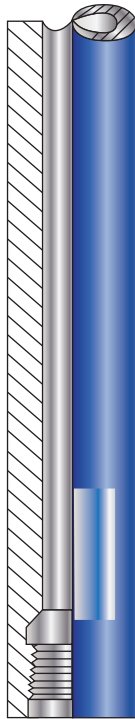
Other sizes available upon request

BECO CONNECTIONS ARE RECOMMENDED FOR LONG TROUBLE FREE LIFE

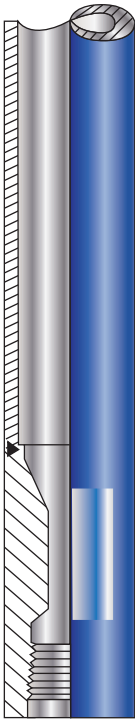
O.D. (Ins)	Recommended BECO Connection
6 1/4 - 6 1/2	4 1/2
7	5 1/4
7 5/8 - 8 5/8	6
10 3/4 - 12 3/4	8
13 3/8	10

When ordering or requesting a quotation please specify:

1. OD Size
2. Integral or Fabricated
3. Bore or wall thickness
4. Connections
5. Length
6. Make and Model of drill or wrench slots, description and locarton

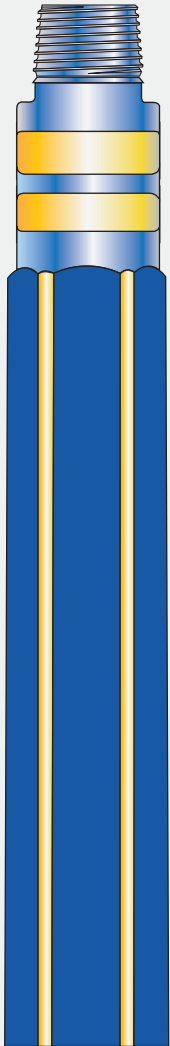


INTEGRAL
DRILL STEEL



FABRICATED
DRILL STEEL

INTEGRAL RIB STABILIZERS



This one-piece, straight or spiral rib design assures the most practical physical solution to maximum stiffness. The longest rib length consistent with machine restrictions is achieved. Adequate annular area for cuttings removal is maintained.

Stabilizers are machined from special alloy steels, selected for balance in hardness, strength, toughness and resistance to yield in bending. A choice of wear resistant rib surfaces is available - sintered tungsten carbide buttons or crushed tungsten carbide overlay.

Considerations for Stabilizer

Selection: Straight rib stabilizers are thought to provide less restriction to cuttings flow up the annulus.

Spiral rib stabilizers are thought by some to provide better stabilization due to full circumferential wall contact within a given stabilizer.

In most cases, stabilizer selection is made on the basis of experience and personal choice.

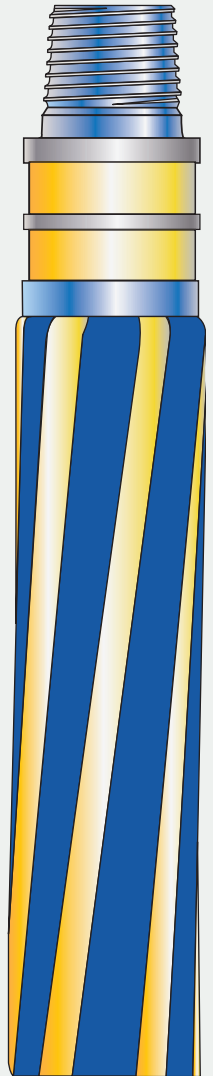
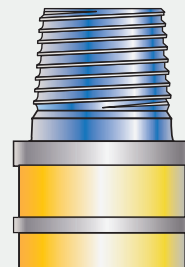
Considerations for Rib Surface Selection:

Abrasion resistant crushed tungsten carbide overlay (hardfaced) rib surfaces are most common due to lower initial cost and the practicality of field and shop rebuilding.

Rib surfaces of sintered tungsten carbide contacts are, in most cases, longer lasting but are very difficult to rebuild to size. Due to higher initial cost of this type rib abrasion resistance there is a tendency to use this type stabilizer far beyond its effective service life. This leads to loss of directional control and breakage of the box connections.

SAVERSUBS

Saver subs are designed to reduce or eliminate premature discard of the more expensive drill string members.



SERVICE APPLICATION CONSIDERATIONS

Saver subs, stabilizers and raise head stems are subjected to externally imposed, indeterminate, bending forces. These bending forces increase with raise head diameter as well as the dip angles and hardness differences in formations drilled. The moment itself is affected by drill string tensile loading.

For optimum stabilizer and saver sub life.

1. Assure rib diameters are within 1/8th of nominal pilot hole diameter.
2. Assure proper connection makeup torque.

3. Assure collaring face is smooth and normal to pilot hole axis.

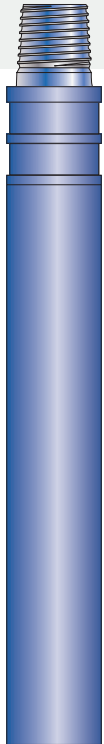
4. Assure that all diameter changes occur over the longest length practical.

MAINTENANCE AND REBUILDING

Stabilizer effectiveness decreases as clearance between ribs and hole wall increases. Experience indicates that effectiveness is lost after 3/16 inch O.D. wear. Reworking is recommended after 1/8 inch O.D. wear. Gages are available to measure accumulated wear.



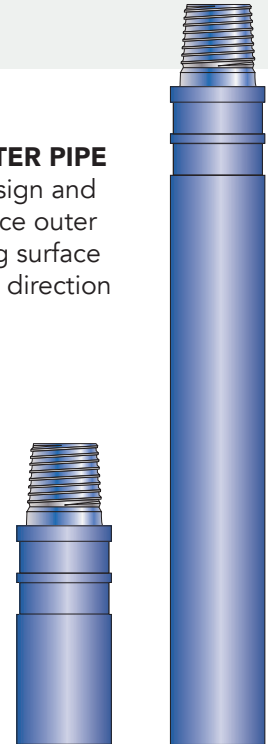
RAISE DRILL STEEL



Integral Steel Drill

RAISE DRILL STEEL is designed to be compatible with the specific drilling machine's capabilities. The machine determines the combined torsional, comprehensive/tensile requirement as well as the unit length and wrenching configuration. Other factors in design include economic considerations of weight, serviceability and durability.

STARTER SUBS AND STARTER PIPE are similar to drill steel in design and construction. A close tolerance outer diameter is used as a bearing surface through a bushing to control direction in starting pilot hole.



Starter Sub

Starter Pipe

RAISE DRILL STEEL

O.D.	I.D.	S/S LENGTH*	CONNECTIONS	UNIT WEIGHT	STRENGTH
53/4	211/16	48	43/4 DI-22	205	Std.
63/4	4	48	53/4 DI-22	225	Std.
8	43/4	48	63/4 DI-22	385	Std.
8	53/4	48	7.2 DI-22	250	Lt. Wt.
8	43/4	60	63/4 DI-22	440	Std.
10	43/4	48	81/4 DI-22	600	High
10	43/4	60	81/4 DI-22	750	High
10	43/4	60	81/4 DI-22	750	Std.
111/4	43/4	60	91/4 DI-22	1000	High
127/8	57/16	60	101/2 DI-22	1400	High
127/8	57/16	138	101/8 DI-42	2870	High
131/8	43/4	138	101/2 DI-42	2500	Std.

*Lengths may vary with machine design

When Ordering:

Raise drilling components are available through raise drill manufacturers only. When ordering, please advice drill manufacturer of machine model and serial number.

MODEL 60 BIT REAMER-STABILIZER

The extremely successful Model 60 Bit Reamer-Stabilizer is used adjacent the bit during the pilot hole drilling operations. The reamer-stabilizer helps centralize the bit and tends to retard the wear rate of the rib type stabilizers which follow. It features readily replaceable roller and bearings in a heat-treated alloy body. The drive fit bearing blocks are made of carburized alloy steel ground to a close tolerance fit.

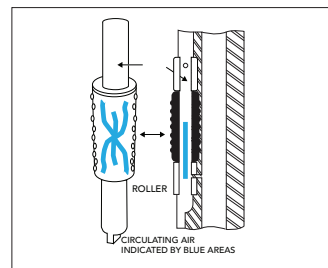
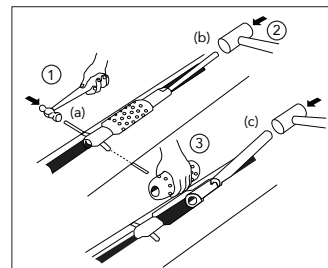
Bearing pins are also made of carburized alloy steel. The Aero® feature keeps them cool in service and free from dust and rock cuttings. At the completion of the pilot hole, the bit and reamer-stabilizer are removed from the string by use of the portable Makeup/Break-out tool.

The ability to replace worn parts adds versatility to this design. A choice of "Q" or "K" (Knobby)® rollers is available (for roller type recommendations see bottom of page). Replacement of rollers, pins and blocks is accomplished as shown in the following illustrated sequence:

1. Remove roll pin from upper bearing blocks with punch (a)
2. Drive bearing pin into dressing slots with tool (b) as shown
3. Lift roller out of body. To remove blocks from roller pocket use block or soft iron or brass against face of part and drive out with soft hammer.

HOLE SIZE	BODY OD	BODY ID	LENGTH S/S	PIN CONN.	BOX CONN.	FLOAT SIZE	ROLLER SIZE	BEARING PIN SIZE	BEARING BLOCK ID & TYPE	WEIGHT WITH ROLLER
63/4	53/4	11/2	42	41/2 D1-22	31/2 Reg.	2F/3R	21/4	11/8	11/8 B	255
77/8	63/4	15/8	42	53/4 D1-22	41/2 Reg.	2F/3R	23/4	13/8	13/8 B	360
77/8	63/4	15/8	48	53/4 D1-22	41/2 Reg.	2F/3R	23/4	13/8	13/8 B	415
9	8	17/8	42	63/4 D1-22	41/2 Reg.	4R	27/4	13/8	13/8 B	535
9	8	17/8	48	63/4 D1-22	41/2 Reg.	4R	27/4	13/8	13/8 B	600
9	8	17/8	60	63/4 D1-22	41/2 Reg.	4R	27/4	13/8	13/8 B	720
97/8	8	21/4	48	63/4 D1-22	65/8 Reg.	4R	31/4	13/8	13/4 C	660
11	10	21/4	48	81/4 D1-22	65/8 Reg.	4R	4	21/4	21/4 A	820
11	10	21/4	60	81/4 D1-22	65/8 Reg.	4R	4	21/4	21/4 A	1025
121/4	10	3	60	81/4 D1-22	65/8 Reg.	4R	4	21/4	21/4 D	1320
121/4	111/4	3	60	91/4 D1-22	65/8 Reg.	4R	4	21/4	21/4 E	1320
133/4	127/8	41/4	48	101/8 D1-42	65/8 Reg.	5F/6R	31/4	13/4	23/4 C	1500
133/4	127/8	41/4	48	101/4 D1-22	65/8 Reg.	4R	31/4	13/4	23/4 C	1500
137/8	131/8	41/4	48	101/2 D1-22	75/8 Reg.	4R	31/4	13/4	23/4 C	1500

Caution: All surfaces of blocks, rollers, reamer pins and cross pins are carburized steel or hardened steel. Beware of fragments of these brittle surfaces breaking off under impact. By using block of soft iron or brass against face of part, drive out with a sledge hammer. **Wear eye protection at all times.**



When Ordering: Please specify the following:
 1. Hole size
 2. Drill steel O.D.
 3. Drill make and model
 4. Type rollers required



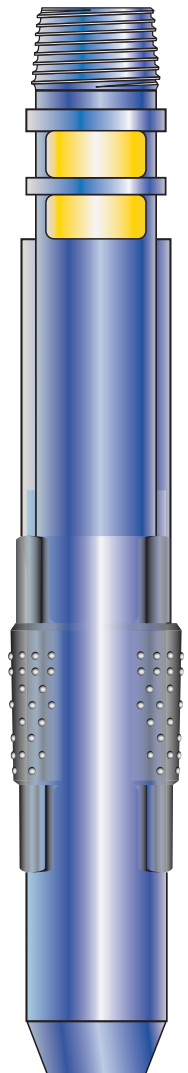
TYPE "Q"

For use in soft to medium-hard, less abrasive formations. This design features long wearing O.D. surfaces of oxy-acetylene applied crushed tungsten carbide. The inner bearing surface is deep case carburized, hardened and honed to gage.



TYPE "K" (Knobby)®

For extremely hard and hard abrasive formations. This design features a tungsten carbide compact studded wear surface for maximum life in abrasive environments. The inner bearing surface is carburized, hardened and honed to close tolerance for long life.





RAISE DRILLING TOOLS AND TECHNIQUES

The rotary drilling method of boring ventilation shafts, man-ways, and other mine openings is an important development in the safety and economy of underground operations. Raise drilling has become an integral part of the mining industry and has gained worldwide acceptance.

The design of the stabilization assembly is dependent on the accuracy required and the rock formations encountered. Key factors to consider in this design include:

1. CLEARANCE

Difference between stabilizer diameter and hole diameter.

2. LENGTH

Length of contact between stabilizer member and hole wall.

3. STIFFNESS

Resistance to bending of the stabilizer member - increases in diameter.

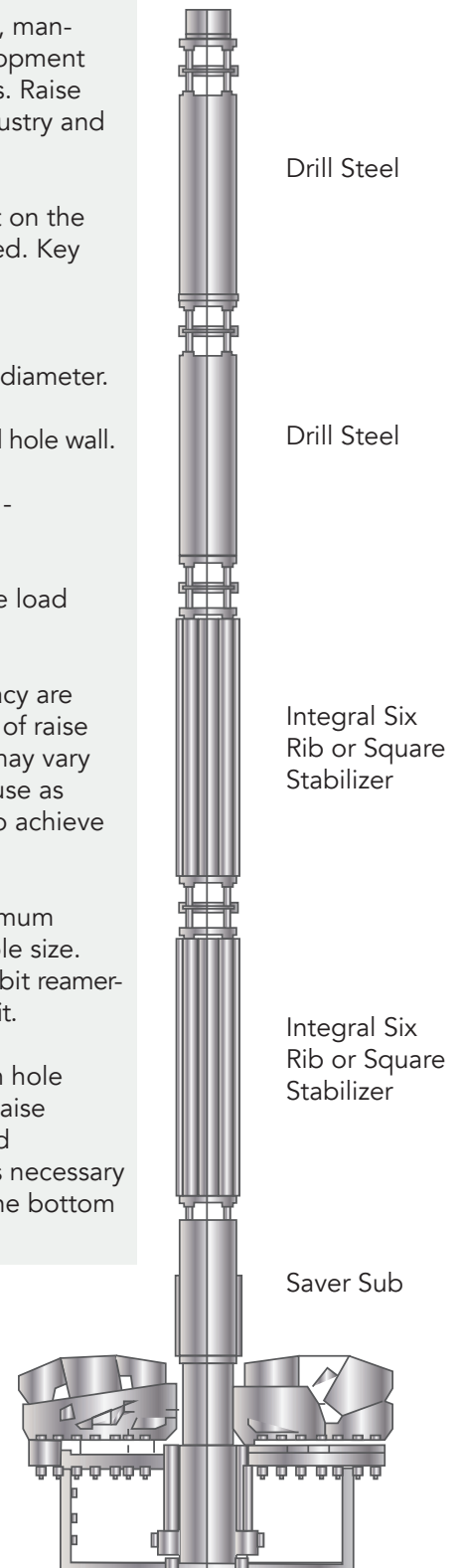
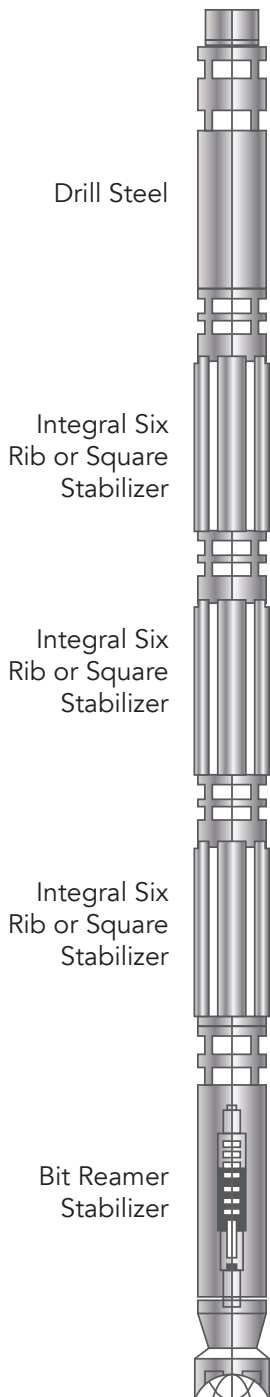
4. WALL SUPPORT

The ability of rock being drilled to resist the side load of stabilizers.

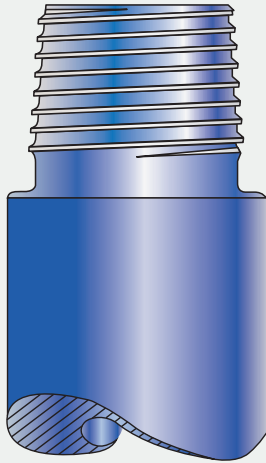
Once hole size, stiffness factors and directional accuracy are determined, rock formations encountered and length of raise determine length of stabilizers required. (Note - this may vary within a given mine.) In many cases it is necessary to use as many as ten stabilizers in the bottom hole assembly to achieve the desired results.

It is important to keep stabilizer clearance to the minimum economic limit, no greater than 1/8" under normal hole size. To reduce wear rate on the stiff stabilizer members, a bit reamer-stabilizer is recommended to dress the hole behind the bit.

Another factor to be considered in selecting a bottom hole assembly is the diameter of the raise to be pulled. A raise diameter increases, bending holes on the bottom load components may become obsessive. It then becomes necessary to increase pilot hole size as well as the diameter of the bottom hole assembly to insure the strength required.



DI SERIES ROTARY SHOULDERED CONNECTIONS



DI -22 Connection

The DI Rotary Shouldered Connection was primarily designed for use in raise drilling in underground environments. It is a high torque connection which, unlike any other, features:

1. Deep, coarse threads with only one thread flank in contact, leaving space in the threads for limited foreign matter during make-up.
2. A high angle, non-pressure flank for easy stabbing.
3. A low angle pressure flank for minimum box hoop stress

4. Low taper angle for minimum parasitic weight per joint.
5. Two threads per inch on a double lead to assist in reducing the breakout makeup ratio.
6. Vanishing box threads to eliminate a notch effect, in the critical fatigue zone area of the box member.
7. Relief groove in the critical relief zone of the pin member.

All new DI connections are provided with "anti-gall" protection. This protection acts as a lubricant, separating the metal surfaces during makeup and assists in retention of thread lubricant.

CARE AND MAINTENANCE OF DI SERIES ROTARY SHOULDERED CONNECTIONS

Rotary shouldered connections are designed to give many years of trouble free service. However, damage in handling or makeup can ruin a connection and shorten the lifespan of entire string. The DI-22, like any quality machined part, requires care and maintenance for maximum return on investment. Regardless of the precaution taken during the manufacture of any product to assure highest quality, proper application and care is the cheapest maintenance in the long run.

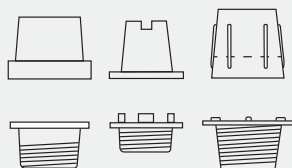
The following care and maintenance procedures are recommended:

1. Clean both the pin and box member of the joint carefully before using.
2. Inspect each mating joint shoulder and pressure flanks of threads for damage prior to makeup.
3. Use only a high quality lubricant intended for high torque rotary shouldered connections. Give special attention to lubricant application.
4. Stab carefully - avoid excessive pressure on high angle thread flank.
5. Make up joint to the manufacturer's recommended torque.
6. When removing from service, clean joint thoroughly, visually inspect, repair any damage found and relubricate and install protectors.
7. Repair damaged connections immediately to avoid damaging mating connections.
8. Keep thread protectors on joints when they are not in service, and particularly when they are moved from one location to another.
9. Avoid dragging or abusing unprotected connections when moving steel.
10. Provide for periodic magnaflux inspection of all thread connections.

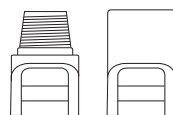
ACCESSORY ITEMS

THREAD PROTECTORS

Thread protectors are recommended to prevent damage to end connections. A minimal investment in pressed steel or plastic protectors, coupled with proper care and maintenance procedures, can extend the life of the connections



LIFTING BAILS



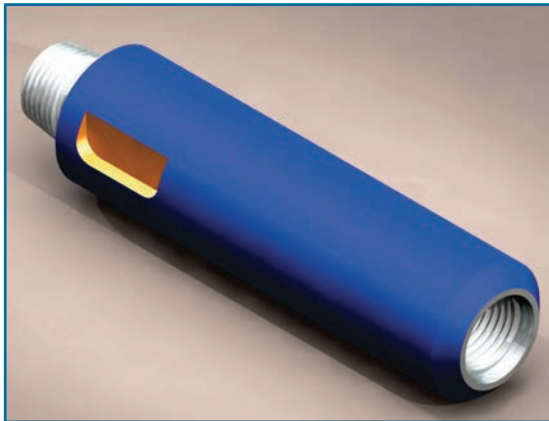
When ordering taper taps or lifting bails:

Please advise size of drill steel and length of string.

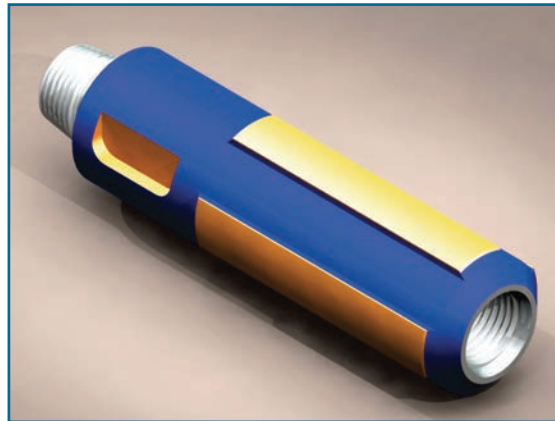
TAPER TAPS

The Galleon Mining Tools taper tap is made of alloy steel heat treated to provide a proper balance of core toughness and cutting thread hardness. The fishing threads are fluted to enhance cutting ability.





Blasthole Bit Sub



Blasthole Fixed Rib Stabilizer



Air Bearing Roller Stabilizers



Fabricated Blasthole Drill Pipe





With our multiple manufacturing centers
we can meet the customer's specific needs.

GALLEON

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