



EXPLORATION RIGS & DRILL TOOLING

PRODUCT OVERVIEW

DESIGN. BUILD. PERFORM.

Engineered solutions for the resource industry.



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About us

FOREMOST HAD ITS HUMBLE BEGINNINGS STARTING WITH A LINE OF TRACKED VEHICLES FOR HEAVY TERRAIN APPLICATIONS

Foremost is a large and diverse industrial manufacturer. We specialize in equipment for oil & gas, mining, construction and waterwell markets and have grown to be one of the largest vacuum truck manufacturers in Canada. In early 2019, Foremost acquired the operating assets of Steel Craft Inc. and JTL Industries, leading to the addition of ULC Fuel Tanks and Agriculture Grain Bins to Foremost's product line. With multiple locations in Alberta, a solid reputation dating back to 1940, over 500 employees and a unique depth of expertise Foremost is a company with great people, great products and a great future. We have adapted, invented, and evolved all of our products with a view to make them more useful and profitable for our customers.

The Foremost name has long been associated with our remarkable line of off-road tracked and wheeled vehicles. Early innovations like the Nodwell 110, developed in the Canadian Arctic in the 1960s, set Foremost on the road to success. For over fifty years Foremost has been a leading manufacturer, innovating solutions for the resource industry.

Foremost is a world-class company that leverages its excellence in engineering and production to consistently deliver functional and reliable products to the agreed specification, performance, price and delivery. Foremost prides itself on manufacturing to the highest quality standards. Stringent manufacturing procedures allow Foremost to produce high quality Canadian

products. Quality programs include API, ISO, ASME, CWB among others.

Foremost is customer-focused. We believe in honouring our commitments and delivering on our promises. Accurate and timely communication is vital to maintaining accountability.

At Foremost, our commitment to occupational health, safety, and the environment is based in our vision to create and support a culture that places the highest value on the well-being of the individual as well as to instill a sense of ownership in order to embrace and enhance occupational health, safety, and environmental excellence in all aspects of performance.

OUR PROUDEST MOMENTS

1964 The Mountain "Nodwell Peaks" in Antarctica was named in honour of Foremost's founders, the Nodwells, due to the enormous support and innovation equipment (Nodwell 10) used in Antarctica. The first Husky 8 was manufactured and sold in 1967; Jack Nodwell closed two contracts in 1970 in Moscow for 67 Husky 8 units.

1970 Bruce Nodwell was made "Officer of the Order of Canada", Canada's highest civilian honour for his contribution to the opening of the Canadian North through his inventions and development of tracked vehicles.

1981 Foremost sold the first wheeled "Terra Bus" to Brewster for their Glacier Tours for tourists on the Columbia Ice Fields in Jasper, Alberta. A further 23 buses have been purchased for their fleet.

1984 Foremost won a contract for \$36,000,000 for 50 Husky 8G units with fire fighting packages, plus spare parts, delivered to the Soviet Union.

1993 A series of commemorative postage stamps, called Historic Land Vehicles, was issued by Canada Post Corporation between 1993 and 1996. The Robin-Nodwell RN 110 is illustrated on an 88 cent stamp.

2002 Foremost Mobile Equipment partnered with NASA to launch scientific balloons using our Commander vehicle in the Antarctic, and then worked with them again to develop the NASA Mars Lander Balloon Launch Vehicle used successfully in two launches to date in Hawaii on June 28th, 2013 and on June 8, 2015.

2013 The CNRL Lamella tanks were the largest pieces of equipment to date to traverse Alberta roads.

2018 Foremost acquired the operating assets of JTL Industries and Steel Craft Inc., which led to the addition of Agriculture Grain Bins and ULC Fuel Tanks to Foremost's product catalog.



QUICK FACTS

- In the top 250 largest companies in Alberta (Alberta Venture Magazine).
- 400+ employees.
- \$150M per year in revenue.
- Foremost is named after a small town in southern Alberta.
- Three Divisions – Foremost Energy Equipment, Foremost Mobile Equipment, Foremost Agriculture

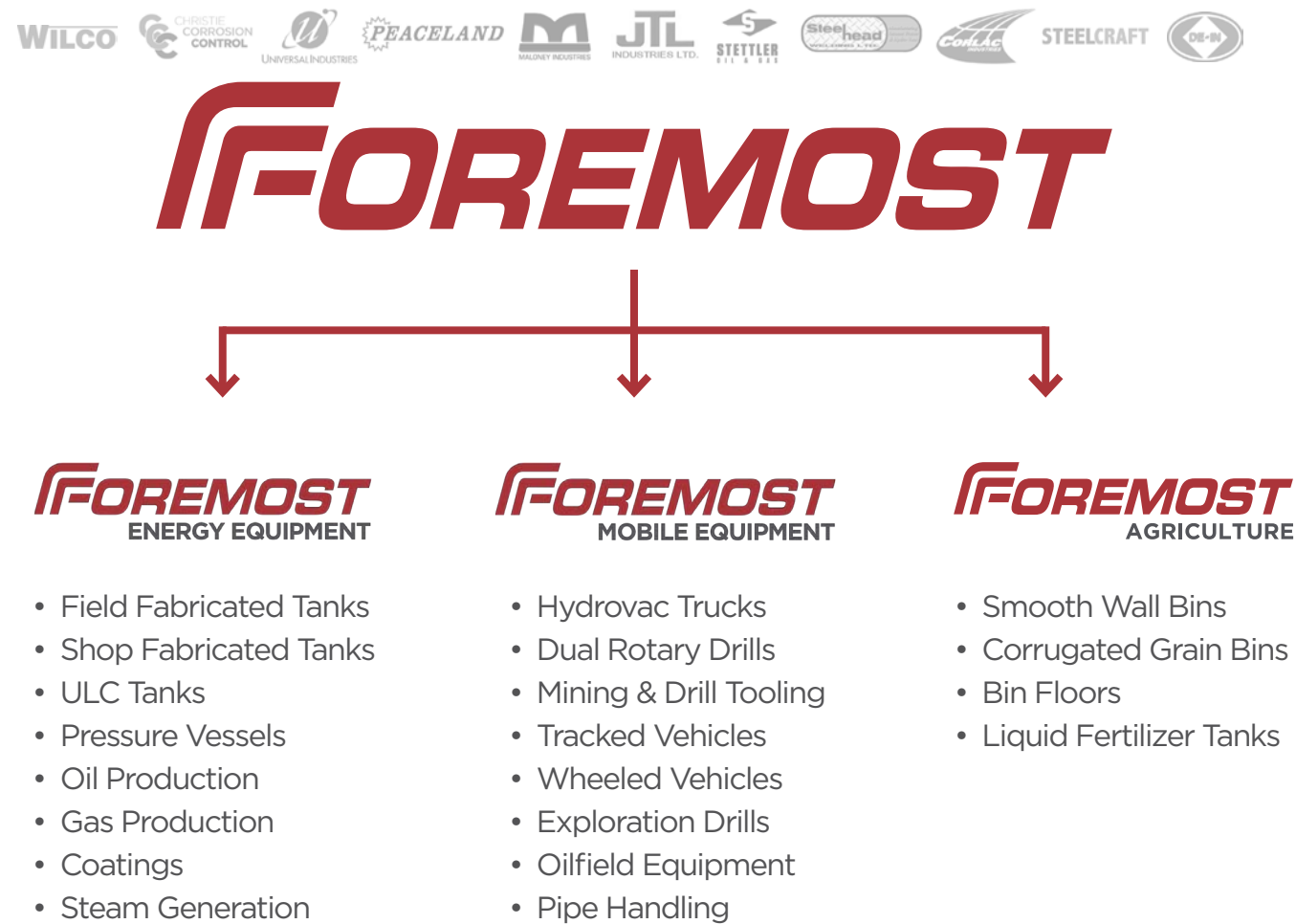


CERTIFICATIONS



ONE COMPANY THREE DIVISIONS

Foremost began its acquisitions in 1988 with Drill Systems. In January 2013, The Foremost Group of Companies came together under a single name. Universal Industries, Corlac Industries, Maloney Industries, Peaceland Fabrication, Stettler Oil & Gas, Steelhead Welding, and Foremost Industries launched the beginning of a new era as "FOREMOST". In 2018, Foremost acquired three additional companies, Christie Corrosion Control, Steelcraft Inc., and JTL Industries. Today Foremost has three distinct divisions; Foremost Energy Equipment, Foremost Mobile Equipment, and Foremost Agriculture operating out of 5 locations with over 400,000 sq. ft. of manufacturing space and 400+ employees.



FOREMOST PRODUCTS GLOBAL REACH

» WE HAVE THE
CAPABILITY TO MOVE
OUR PRODUCTS
ANYWHERE

OUR GLOBAL CLIENT
BASE SPANS MANY
COUNTRIES IN **ALL 7**
CONTINENTS



EXPLORER III DRILLING RIG, AUSTRALIA



HUSKY 8 TRACKED VEHICLE, RUSSIA



HEAVY DUTY DUAL ROTARY DRILL, INDIA



Mineral Exploration Drills

Foremost designed the first off-road rig for reverse circulation drilling. Many years of field experience and continuous product improvement have made Foremost Exploration Series drills the standard for off-road exploration. Foremost's Exploration Series Reverse Circulation drills are flexible, economical to operate and have low environmental impact. Available models include wheeled and tracked specifications.

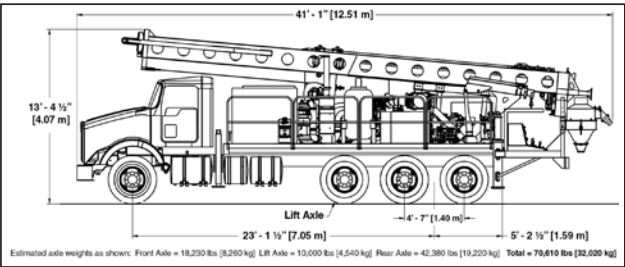
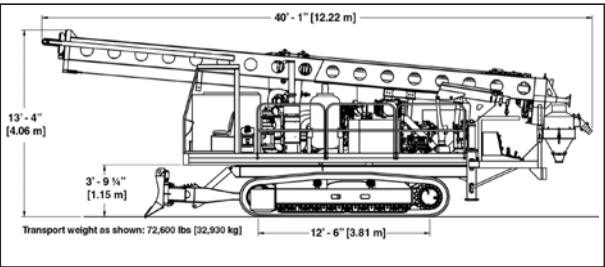


FOREMOST

APEX 65



Versatile, powerful, and safe drilling rig for RC mineral exploration applications.
The Apex 65 features a proprietary feed system that reduces maintenance costs, increases safety, and improves performance. With 65,000 lbs of pullback and the ability to be configured on tracks or chassis, the Apex 65 can satisfy a wide range of exploration requirements.



FOREMOST APEX 65

SPECS & PERFORMANCE

TOP DRIVE

Stroke	25 ft (7.6 m)
Hoist Capacity	Pullback: 65,000 lbs (29,484 kg) Pulldown: 22,000 lbs (9,979 kg)
Hoist Speed	150 ft/min (46 m/min)
Torque (stall)	22,000 ft-lbs (29828 Nm)
Rotation Speed	Low Speed: 12,000 ft-lbs (16,270 N-m) @ 110 RPM High Speed: 8,200 ft-lbs (11,118 N-m) @ 165 RPM
Spindle Thru Hole	4-1/2" (114 mm)
Tilting Capacity	1,500 lbs (680 kg) @ 70 degrees

COMPRESSOR

Air Flow	900 cfm
Pressure	350 psi
Plumbing	1,000 psi rated
Engine Power	550 HP

TABLE

Opening	14" (356 mm)
Hands Free Breakout	4" - 8-5/8" (102 mm - 219 mm) OD Pipe

SERVICE WINCH

Wire Rope Length	140 ft (42.7 m)
Wire Rope Diameter	1/2" (13 mm)
Line Pull on Bare Drum	6,000 lbs (2,722 kg)
Line Speed on Full Drum	100 ft/min (30 m/min)

WATER AND FOAM INJECTION

Capacity	25 gpm
Pressure	1450 psi

DIMENSIONS

Length	Tracked: 40' 1" (12.2 m) Chassis: 41' 1" (12.5 m)
Height	Tracked: 13' 4" (4.1 m) Chassis: 13' 5" (4.1 m)
Width	Tracked: 10' 5" (3.2 m) Chassis: 8' 6" (2.6 m)
Weight	Tracked: 72,600 lbs (32,930 kg) Chassis: 70,610 lbs (32,020 kg)

OPTIONS

Carrier	Tracks, chassis, or deck kit
Engine	Power: 550 HP to 675 HP Emissions: Tier 3 (Stage IIIa) or Tier 4 (Stage IV)
Compressor	1070/350, 1250/350, 1000/500
Pipehandling	Foremost hands free pipehandling system
Misc. Options	Sampling cyclone, sandline winch, hose minder winch, special request water pump, side mounted breakout for casing/hammers/bits, data acquisition, cold weather package, fire suppression system.

FEATURES

- Vertical to 45 degrees angle drilling
- Cylinder driven gear feed system
- Hydraulically operated split table
- Remote driller's console
- Hydraulic split deck (tracked configuration) 0-25 degrees
- Mast base rotation barrier
- Blowdown valve
- Electric over hydraulic controls
- Bellybox controls for set up and pipehandling



PROSPECTOR W750



MOBILE. VERSATILE. ECONOMICAL.

The Prospector W750 is all of the above and more. Incorporating proven reverse circulation components, the Prospector W750 is designed to meet the high demands of the mining driller.

Built on a proven Foremost articulated carrier, the Prospector W750 is highly mobile in off-road applications. In addition, it is capable of on-road speeds up to 22 mph (35 km/h). On road or off, the result is quick mobilization between holes or mine sites. Reduced travel time means increased drilling productivity. The Prospector W750 is a versatile machine: The low pressure terra tires allow it to travel to remote sites with minimal environmental impact. The unique mast pivots laterally through 180 degrees for increased productivity when drilling in the pit or against a wall.

The Prospector W750 is the most economical of Foremost's Exploration Series drills and delivers excellent value.

FOREMOST PROSPECTOR W750

SPECS & PERFORMANCE

Rotary Head Stroke	22 ft 1 in (6.7 m)
Compressor Drive	PTO from transfer case
Chassis Feature	Mast rotates 180° for side drilling
Cab	Open - 1 person
Steering	42° frame articulation
Turning radius	25 ft 9 in (7.9 m)
Tires/Undercarriage	23.5 x 25 Sure Grip 66 x 43 - 25 Terra
Ground Pressure	*35.5 psi (2.5 kg/cm ²) w/23.5 x 25 tires *22.2 psi (1.6 kg/cm ²) w/66 x 43 tires
Maximum Speed	22 mph (35 km/h)
Dimensions	
Length	46 ft (14.4 m)
Height (mast down)	12 ft 1 in (3.7 m)
Height (mast up)	30 ft 8 in (9.3 m)
Width	9 ft 6 in (2.9 m) w/23.5 x 25 tracks 11 ft 7 in (3.5 m) w/Terra tires
Weight	53,270 lb (24 160 kg)

COMMON DRILL SPECS

Pulldown - 16,500 lbs (7 500 kg); 0 - 138 ft/min (0 - 42 m/min)
Pullback (hydraulic cylinder & cable) - 37,700 lbs (17 100 kg); 0 - 90 ft/min (0 - 27 m/min)
Top drive rotary torque (dual motors) rated at 5,000 lb ft (6 780 Nm) 0 - 120 rpm
Rated drilling depth - 1,500 ft (455 m) using 3 3/4 in (9.5 cm) R/C pipe
Minimum horsepower rated at 470 hp (352 kW)
Rexroth piston pumps
Water injection system - 10 or 20 gpm (37.9 or 75.8 l/min)
Hydraulic breakout wrenches
Compressor - 900 cfm @ 350 psi (25.5 m ³ /min @ 2 414 kPa)
0 - 45° angle drilling
Tip-out rotary drive
Height (mast down)
Height (mast up)
On-board pipe rack

* 3 in penetration ** 1 in penetration. Performance specifications are theoretical maximums. Actual performance may vary.



DISCOVERER MPD 1500



THE LEADER IN TRACKED OFF-ROAD EXPLORATION DRILLING

The Discoverer MPD 1500 offers the same drill components and specifications as the Explorer 1500 with the added benefit of a tracked undercarriage. The MPD 1500's tracked configuration provides the ultimate in climbing ability on steep grades and side slopes. Like its terra-tired sibling, the MPD 1500 comes equipped with a hydraulic leveling deck and front dozer blade. The optional sampling cyclone enables safe monitoring of cuttings and collection of samples.

FOREMOST DISCOVERER MPD 1500

SPECS & PERFORMANCE

Rotary Head Stroke	23 ft (7 m)
Compressor Drive	Clutch off deck engine
Chassis Feature	Hydraulic deck leveling (0-25°)
Cab	Open - 1 person
Steering	Hydrostatic track
Turning radius	Pivot
Tires/Undercarriage	Cat 325 tracks
Ground Pressure	**8.9 psi (0.6 kg/cm ²)
Maximum Speed	2.5 mph (4 km/h)
Dimensions	
Length	34 ft 9 in (10.6 m)
Height (mast down)	13 ft 7 in (4.1 m)
Height (mast up)	35 ft (10.7 m)
Width	9 ft 11.5 in (3.0 m)
Weight	64,000 lb (29 090 kg)

COMMON DRILL SPECS

Pulldown - 16,500 lbs (7 500 kg); 0 - 138 ft/min (0 - 42 m/min)
Pullback (hydraulic cylinder & cable) - 37,700 lbs (17 100 kg); 0 - 90 ft/min (0 - 27 m/min)
Top drive rotary torque (dual motors) rated at 5,000 lb ft (6 780 Nm) 0 - 120 rpm
Rated drilling depth - 1,500 ft (455 m) using 3 3/4 in (9.5 cm) R/C pipe
Minimum horsepower rated at 470 hp (352 kW)
Rexroth piston pumps
Water injection system - 10 or 20 gpm (37.9 or 75.8 l/min)
Hydraulic breakout wrenches
Compressor - 900 cfm @ 350 psi (25.5 m ³ /min @ 2 414 kPa)
0 - 45° angle drilling
Tip-out rotary drive
Height (mast down)
Height (mast up)
On-board pipe rack

* 3 in penetration ** 1 in penetration. Performance specifications are theoretical maximums. Actual performance may vary.



EXPLORER 1500



CLIMB STEEP SLOPES AND CROSS TOUGH TERRAIN WITH MINIMAL ENVIRONMENTAL DISTURBANCE

Like all Foremost Exploration Series drills, the Explorer 1500 incorporates proven reverse circulation components and provides excellent mobility over marginal terrain. Large terra tires minimize ground pressure and environmental impact, making the Explorer 1500 the ideal machine for the early stages of exploration where roads are not built and even small environmental damage must be restored. The rubber tires also enable the Explorer 1500 to travel at reasonable speeds between different mine sites or holes.

The integral Foremost designed carrier features a hydraulic leveling deck for safe operation on sloped terrain. The front dozer blade aids in quick site preparation and in stabilizing the rig during drilling operations.

FOREMOST EXPLORER 1500

SPECS & PERFORMANCE

Rotary Head Stroke	23 ft (7 m)
Compressor Drive	Clutch off deck engine
Chassis Feature	Hydraulic deck leveling (0-20°)
Cab	Enclosed - 3 person
Steering	40° frame articulation
Turning radius	28 ft 8 in (8.7 m)
Tires/Undercarriage	66 x 43 - 25 Terra
Ground Pressure	*24.2 psi (1.7 kg/cm ²)
Maximum Speed	10 mph (16 km/h)
Dimensions	
Length	37 ft 4 in (11.4 m)
Height (mast down)	12 ft 10 in (3.9 m)
Height (mast up)	35 ft (10.7 m)
Width	11 ft 4.5 in (3.47 m)
Weight	58,500 lb (26 590 kg)

COMMON DRILL SPECS

Pulldown - 16,500 lbs (7 500 kg); 0 - 138 ft/min (0 - 42 m/min)
Pullback (hydraulic cylinder & cable) - 37,700 lbs (17 100 kg); 0 - 90 ft/min (0 - 27 m/min)
Top drive rotary torque (dual motors) rated at 5,000 lb ft (6 780 Nm) 0 - 120 rpm
Rated drilling depth - 1,500 ft (455 m) using 3 3/4 in (9.5 cm) R/C pipe
Minimum horsepower rated at 470 hp (352 kW)
Rexroth piston pumps
Water injection system - 10 or 20 gpm (37.9 or 75.8 l/min)
Hydraulic breakout wrenches
Compressor - 900 cfm @ 350 psi (25.5 m ³ /min @ 2 414 kPa)
0 - 45° angle drilling
Tip-out rotary drive
Height (mast down)
Height (mast up)
On-board pipe rack

** 3 in penetration ** 1 in penetration. Performance specifications are theoretical maximums. Actual performance may vary.*



SUPPORT VEHICLE



THE FOREMOST SUPPORT VEHICLE COMPLETES THE PACKAGE

The Support Vehicle provides the ability to move the necessary extra pipe, water and fuel to the drill hole, covering the same ground as the drill. Long life of the Support Vehicle is assured by using many of the same unique design features and reliable components as our Exploration Series drills.

SUPPORT VEHICLE SPECIFICATIONS

Minimum horsepower rated at 325hp (243 kW)

Eaton 9-speed transmission

Planetary final drive

23.5 X 25 16PR tires

Wet disc brakes

Articulated frame

900 gallon (3,410 L) water tank

Two 100 gallon (379 L) fuel tanks

Storage for 70 pieces of 4 in x 10 ft (10.2 cm x 3m) R/C pipe

Steel plated cargo deck with wood planking

DIMENSIONS

Length 32 ft 4 in (9.9 m)

Width 9 ft 6 in (2.89 m)

Height 11 ft 2 in (3.38 m)

WEIGHT

Net weight 34,500 lbs (15,700 kg)

Gross vehicle weight 56,500 lbs (25,500 kg)

** 3 in penetration ** 1 in penetration. Performance specifications are theoretical maximums. Actual performance may vary.*

EXPLORATION SERIES ADVANTAGES

- Exploration with small drilling pads or without roads
- Low environmental impact
- Excellent stability while driving
- Set up quickly & easily
- On-board pipe tub makes the rig self-contained for operation
- on drill sites where there is no room for a support vehicle

OUTFIT YOUR RIG TO MEET YOUR REQUIREMENTS

- Choice of reverse circulation drill pipe and sizes
- Optional sampling cyclone to safely monitor and collect cuttings
- Available hydraulic pipe handler arm for semi-auto handling of tubulars to increase productivity, reduce labour and enhance operator safety





Mining & Drill Tooling

Foremost drill tooling helps to maximize drilling productivity and uptime in various applications. Our mining & drill tooling equipment is designed to minimize wear and tear damage and reduce maintenance while maximizing the lifespan of your equipment.



FLOATING CUSHION SUB MODEL 375300/ 359150

INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Foremost floating cushion subs (FCS) are utilized in both slant and vertical drilling operations to reduce vibration and wear of the drill string and drill rig components. Foremost manufactures several FCS models for mining, construction, water well and oilfield applications.

The floating cushion sub performs two important functions. It provides a means of making up and breaking out threaded connections on casing and drill pipe, and also prolongs bearing and gear life in the top drive rotary box. By incorporating a certain amount of axial movement below the top drive quill, the sliding spindle of the cushion sub will allow the threads of the mating drill string components to float together or apart during rotation without any axial movement of the rotary head.

Models 359150 and 375300 are utilized in vertical and angle drilling operations where the rig is equipped with a top drive rotary gear box. The allowable movement of the sliding spindle within the cushion sub housing decreases the impact on the rotary drive spindle when the mating threads are stabbed together. It will also decrease the load on the flanks of the threads at mating components.



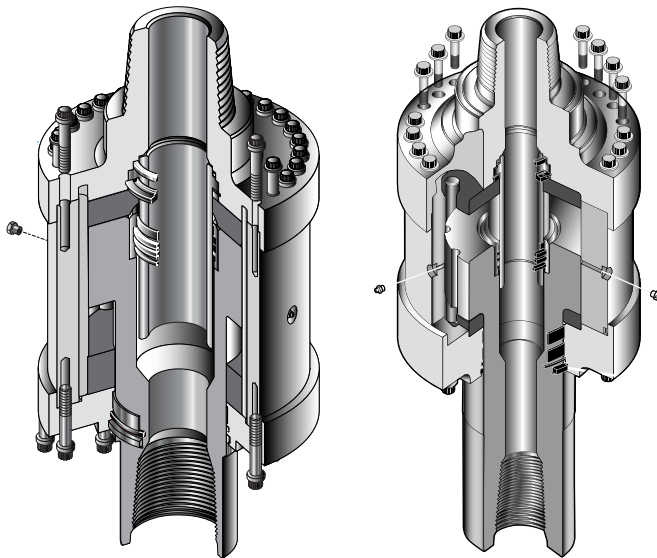
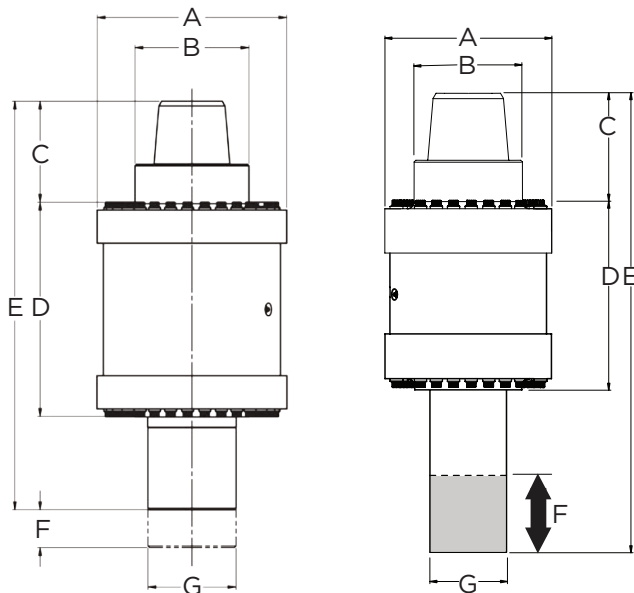
FCS 375300 / 359150 SPECIFICATIONS

SPECIFICATIONS

Model: 359150		Model: 375300	
Hoist	300,000 lbs.	Hoist	600,000 lbs.
Pulldown	300,000 lbs.	Pulldown	600,000 lbs.
Torque	35,000 ft-lbs.	Torque	32,000 ft-lbs.
Stroke	3 inch	Stroke	4 inch
Weight	750 lbs.	Weight	1100 lbs.

DIMENSIONS

A	15.00"	A	16.75"
B (max.)	9.75"	B (max.)	10.75"
C	7.12"	C	9.00"
D	17.00"	D	19.35"
E	31.50"	E	45.00"
F (ext.)	3.00"	F (ext.)	4.00"
G (max.)	7.00"	G (max.)	7.70"



Model: 359150

Model: 375300

FEATURES

- Splined drive assembly
- Floating spindle
- Upper and lower cushions
- Accessible lubrication fitting
- Protective surfaces on wear parts
- Standard seals and guide rings

BENEFITS

- Direct torque transfer
- Reduction in thread damage
- Shock and vibration is minimized
- Component life is extended
- Minimum maintenance requirements

ORDERING INFORMATION

- Drill make and model
- Thread type and size
- Spindle and pipe diameter
- Wrench flat details
- Thread configuration (Pin x Box)

FLOATING CUSHION SUB MODEL 306130



INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Foremost floating cushion subs (FCS) are utilized in both slant and vertical drilling operations to reduce vibration and wear of the drill string and drill rig components. Foremost manufactures several FCS models for mining, construction, water well and oilfield applications.

The floating cushion sub performs two important functions; it provides a means of making up and breaking out threaded connections on casing and drill pipe without loading the flanks of the threads and it also prolongs bearing and gear life in the top drive rotary box. By incorporating a certain amount of axial movement below the drill's rotary drive spindle, the sliding spindle of the cushion sub will allow the threads of the mating drill string components to float together or apart during rotation without any axial movement of the rotary head. Urethane cushions utilized at the upper and lower ends of the floating spindle absorb the shock transmitted by the bit and also reduce the impact on the rotary drive bearings and gear box assembly.

The allowable movement of the sliding spindle decreases the impact on the rotary drive when the two mating threads are stabbed together and it also decreases the load on the flanks of the threads of the mating components.



FCS 306130 SPECIFICATIONS

SPECIFICATIONS

Hoist	200,000 lbs.
Pulldown	200,000 lbs.
Torque	20,000 ft-lbs.
Stroke	2.50 inch
Weight	195 lbs.

DIMENSIONS

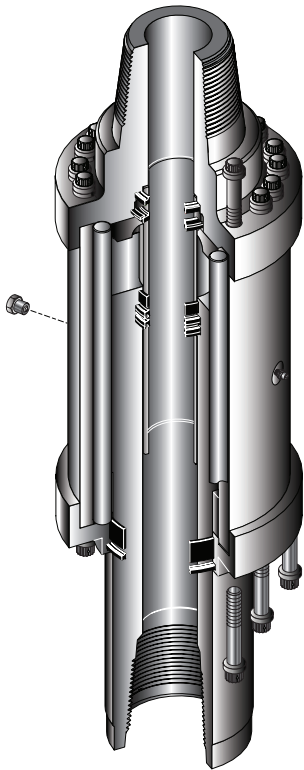
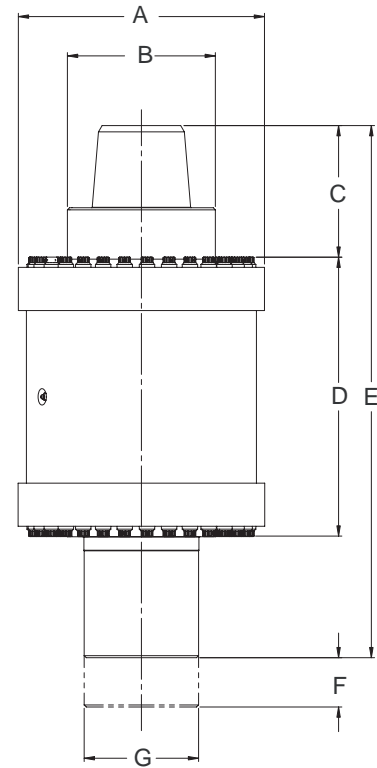
A	10.00"
B (max.)	6.75"
C	6.25"
D	14.50"
E	32.00"
F (ext.)	2.50"
G (max.)	5.87"

FEATURES

Splined drive assembly	Direct torque transfer
Floating spindle	Reduction in thread damage
Upper and lower cushions	Shock and vibration is minimized
Accessible lubrication fitting	Component life is extended
Protective surfaces on wear parts	Minimum maintenance requirements
Standard seals and guide rings	

ORDERING INFORMATION

Drill make and model
Thread type and size
Spindle and pipe diameter
Breakout flat details



FLOATING CUSHION SUB MODEL 306430



INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Foremost floating cushion subs (FCS) are utilized in both slant and vertical drilling operations to reduce vibration and wear of the drill string and drill rig components. Foremost manufactures several FCS models for mining, construction, water well and oilfield applications.

To provide a means of mating together threaded connections on drillpipe without heavily loading the flanks of the threads. By incorporating a certain amount of axial movement below the rotary drive spindle, the sliding spindle of the cushion sub will allow the threads of the mating drill string components to float either together or apart during rotation without any movement of the rotary head. This amounts to only the friction and weight of the sliding spindle in the cushion sub on the threads of the drill components rather than the weight of the complete rotary drive.

Reduction in both axial and torsional shock during the drilling operation will decrease maintenance to the drill and extend the life of valuable components. Thread damage to drill pipe and bits during the thread make-up and break-out process will be virtually eliminated by utilizing the floating spindle within the cushion sub. The end result will be increased drill performance, higher drill utilization and lower operating costs.



The Model 306430 Floating Cushion Sub has been designed specifically to fit all mid range and large blast hole rotary drills which are utilized in soft to medium hard rock formations. The sub will accommodate various drill string combinations up to and including nine and one quarter inch drill pipe diameters. Although the main purpose of the sub is to reduce damage to the threads on the drill string, the unique configuration of the drive system and the cushions incorporated into the design will also provide both axial and torsional dampening of shock and vibration generated by the bit in either DTH or rotary drilling applications.

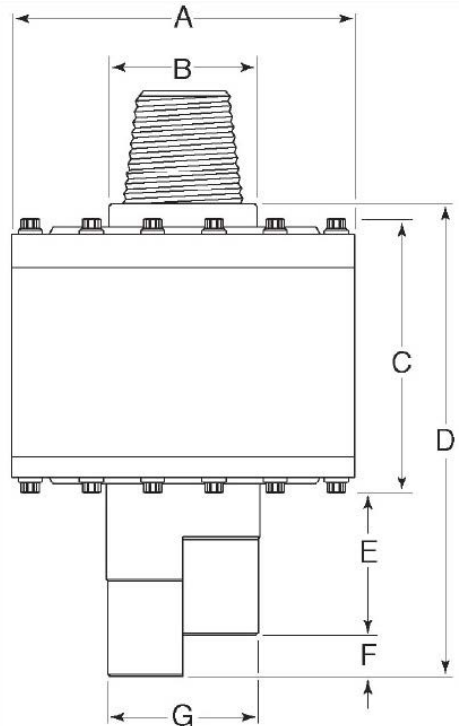
FCS 306430 SPECIFICATIONS

SPECIFICATIONS

Hoist	200,000 lbs.
Pulldown	200,000 lbs.
Torque	30,000 ft-lbs.
Stroke	2.50 inch
Weight	1,050 lbs.

DIMENSIONS

A	18.00"
B (max.)	9.00"
C	16.37"
D	29.50"
E	8.00"
F (ext.)	2.50"
G (max.)	9.00"



FEATURES

Sliding spindle with 2 1/2 inches of extension

Standard seals, wipers and wear rings are utilized to isolate drilling fluids and air

Unique drive system to transfer rotary torque to the drill string

Precision machined components manufactured from high strength alloy steel

Manufactured to suit O.E.M. drill specifications

Large through bore in a stationary wash pipe assembly

Heavy duty urethane upper and lower cushions

BENEFITS

Sliding spindle reduces thread damage to drill pipe and allows drill operators to quickly and easily make-up and breakout connections

Reduced maintenance to rotary drive bearings and gears

Repairs and rebuilds can be accomplished at the mine property

No modifications to the carousel or drill are required

No restriction of air flow to the bit

Maintenance costs on the drill and drilling tools are greatly reduced

Shock reduction in torsional and axial directions

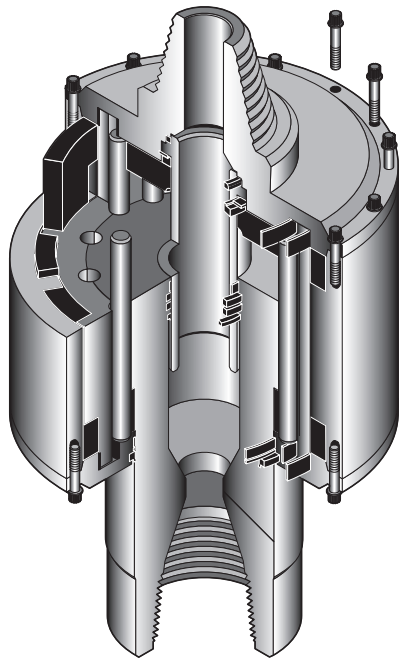
ORDERING INFORMATION

Drill make and model

Thread type and size

Spindle and pipe diameter

Breakout flat details



FLOATING CUSHION SUB MODEL PD6-2

INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Foremost floating cushion subs (FCS) are utilized in both slant and vertical drilling operations to reduce vibration and wear of the drill string and drill rig components. Foremost manufactures several FCS models for mining, construction, water well and oilfield applications.

The floating cushion sub performs two important functions; it provides a means of mating threaded connections on drill pipe without heavily loading the flanks of the threads and it also reduces shock and vibration created by the bit. By incorporating a certain amount of axial movement below the drill's rotary drive, the sliding spindle of the cushion sub allows the drill operator to lower the top drive with minimal force being applied to the drive spindle and drill string components. Urethane cushions utilized at the upper and lower ends of the floating spindle absorb the shock transmitted by the bit and also reduce the impact on the rotary drive bearings and gear box assembly.

The Foremost floating cushion sub will increase your drills utilization time by removing a high percentage of the factors which affect bearing and other gear box failure related problems. The PD6-2 is utilized on small and mid-range drills for both DTH hammer and rotary drilling applications. In most cases no modifications are required to the drill or drill string.



FCS PD6-2 SPECIFICATIONS

SPECIFICATIONS

Hoist	125,000 lbs.
Pulldown	125,000 lbs.
Torque	12,000 ft-lbs.
Stroke	.75 inch (H.D. Cushions) 1.75 inch (L.D. Cushions)
Weight	165 lbs.

DIMENSIONS

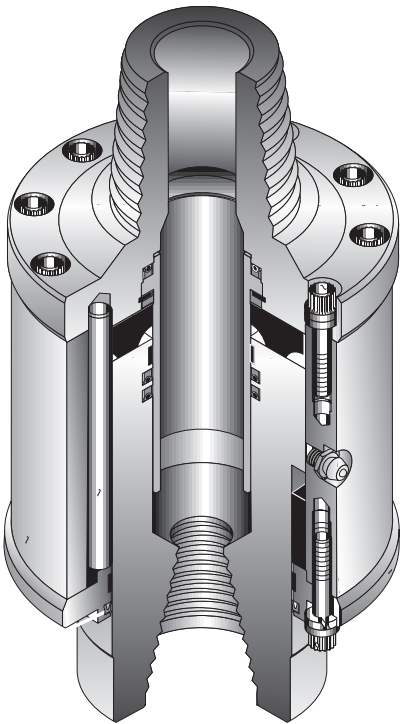
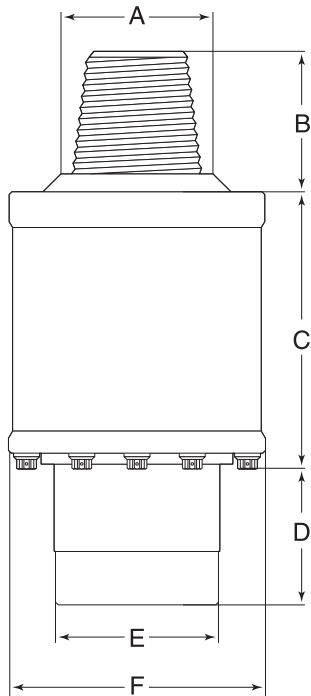
A (max.)	6.75"
B	4.87"
C	10.00"
D (ret.) (ext.)	3.12" 3.87
E	5.87"
F (ext.)	9.25"
G (max.)	9.00"

FEATURES

Multi-pin drive splines	Direct transfer of spindle torque
Floating Spindle	Reduction in thread damage
Upper and lower cushions	Shock and vibration is minimized
Accessible lubrication fitting	Component life is extended
Threaded connections top and bottom	Minimum maintenance requirements
Stationary washpipe and seals	

ORDERING INFORMATION

- Drill make and model
- Thread type and size
- Spindle and pipe diameter
- Breakout flat details



FLOATING CUSHION SUB MODEL 400127

INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Foremost floating cushion subs (FCS) are utilized in both slant and vertical drilling operations to reduce vibration and wear of the drill string and drill rig components. Foremost manufactures several FCS models for mining, construction, water well and oilfield applications.

Floating Cushion Subs are installed on rotary drilling equipment for applications in construction, quarrying, open-pit mining and oil and gas drilling applications. By incorporating a certain amount of axial movement below the rotary drive, the sliding spindle of the cushion sub will allow the threads of the mating drill string components to float together or apart during rotation without any axial movement of the rotary head. Urethane cushions utilized at the upper and lower ends of the floating spindle absorb the shock transmitted by the bit and also reduce the impact on the rotary drive bearings, hydraulic motors and the gear box assembly.

Foremost offer a wide range of cushion subs designed to meet the demanding requirements of rotary drills utilized in a large variety of applications. The cushion sub will significantly increase the number of operating hours on the rotary head between rebuilds.

The 400127 assembly is applicable to a majority of mining operations that utilize mid range rotary drills such as the Atlas Copco DML, PV235, Caterpillar MD6240, MD6290, Sandvik D50KS and D55SP where production encounters very difficult drilling conditions. This heavy duty cushion sub will exceed the limitations of the smaller 306130 assembly.



FCS 400127 SPECIFICATIONS

SPECIFICATIONS

Hoist	200,000 lbs.
Pulldown	200,000 lbs.
Torque	35,000 ft-lbs.
Stroke	2.50 inch
Weight	550 lbs.

DIMENSIONS

A	12.00"
B (max.)	7.75"
C	7.50"
D	15.50"
E	31.75"
F (ext.)	2.50"
G (max.)	6.95"

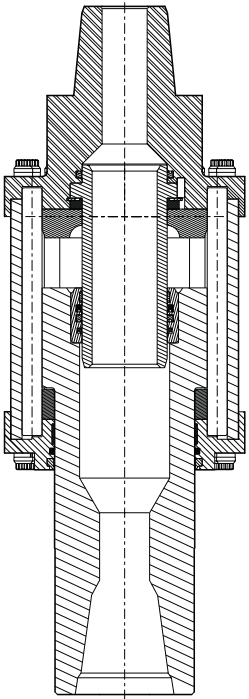
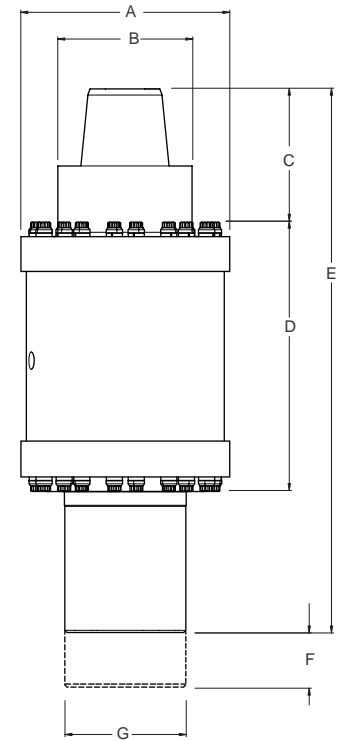
FEATURES

Splined drive assembly	Direct torque transfer
Floating spindle	Reduction in thread damage
Upper and lower cushions	Shock and vibration is minimized
Accessible lubrication fitting	Component life is extended
Protective surfaces on wear parts	Minimum maintenance requirements
Standard seals and guide rings	

ORDERING INFORMATION

Drill make and model
Thread type and size
Spindle and pipe diameter
Breakout flat details
Thread configuration (Pin x Box)

The 400127 assembly is designed to be implemented with drill rod of 5 1/2" through 7" diameter when utilizing high performance DTH hammers of 6.5" through 8" for drilling production holes. Foremost have a reputation for supplying High Quality Drilling Tools designed for reliability and longevity resulting in the lowest total operating cost available.



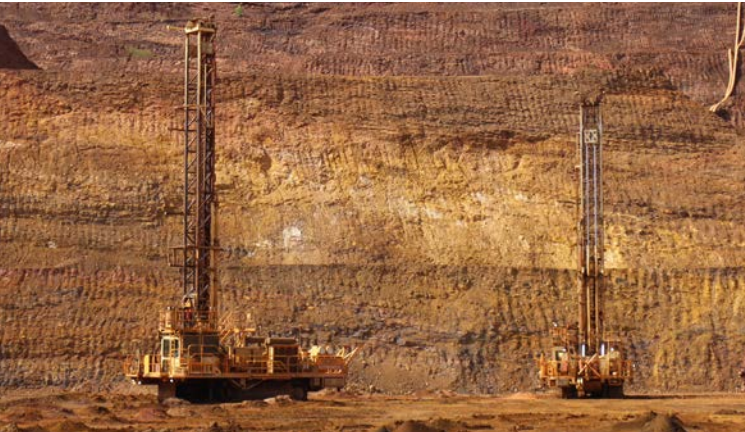
SHOCK SUBS

MODELS: 18-120-6363 | 14-30-6353 | 14-40-6353 | 14-50-6353

INCREASE PRODUCTION TIME PROTECT YOUR INVESTMENT

Threaded directly into the drive spindle of the rotary gear box, the Foremost Cushion Connector will assist in protecting the rotary drive and mast assemblies against both torsional and axial vibrations/shock loading in moderate and extreme drilling conditions. The results will be reduced drill maintenance, increased drill availability and lower production cost.

Disc springs are utilized within the connector assembly to allow for a certain amount of axial movement between the drill stem and the rotary drive. The disc springs will accommodate operating loads ranging from 8,000 to 120,000 pounds thus in most cases, this will help to maintain the tri-cone bit in continuous contact with the formation thereby reducing the possibility of fracturing or breaking the carbides in the bit. Urethane drive blocks located within the connector assembly serve to provide 100% transfer of rotary torque from the drive spindle to the drill stem as well as absorb torsional vibration transferred by the bit.



SHOCK SUBS SPECIFICATIONS

APPLICATION

Foremost Cushion Connectors are utilized on midrange and large blast hole drills, which are utilized in production mining applications around the world. The opportunity to select from any one of four independent assemblies allows the operations personnel to select the connector that is most suitable for the drilling application and equipment preferred to perform the drilling. Typical applications would include but not be limited to coal, iron ore, copper, and gold mining operations. In most cases, no modifications are required to the drill. Installation of the connector is made directly into the rotary drive spindle via a threaded connection and usually a saver sub is utilized on the lower end of the connector to make up to the drill stem.

PERFORMANCE

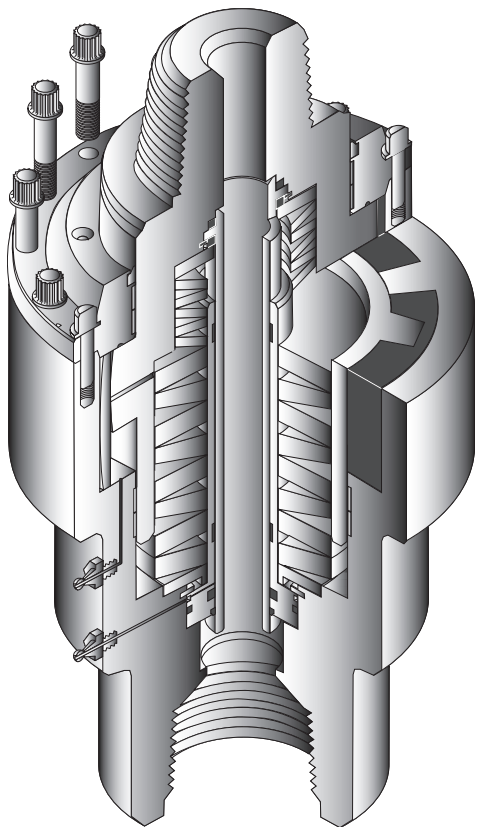
Foremost Cushion Connectors have proven track records in a variety of locations and applications. It is not uncommon to increase drill availability by an average of 15% to 20% and decrease maintenance cost by 25% to 40%. An average return on investment can be as few as 6 to 12 months. Typical replacement of seals and wear items within the connector assembly may be required on an annual basis, however, the cost is extremely low when compared to other competitors products.

SPECIFICATIONS

Cushion Connector Model Number	Recommended Pull Down Load Range (000's of lbs)	Torque Rating (HP @ 100 rpm)	Weight(lbs)
14-30-6353	8 to 40	265	660
14-40-6353	12 to 50	265	670
14-50-6353	12 to 60	265	680
18-120-6363	20 to 120	400	1000

DIMENSIONS

	18-120-6363	14-30-6353 14-40-6353 14-50-6353
A (max.)	18"	14 1/2"
B	11"	9 1/2"
C †	10 3/4"	9"
D ‡	2 3/4"*	2 3/4"*
E	2"	2"
F (ext.)	9"	9"
G (max.)	7 1/2"	4"
H	9"	8 1/4"
I	29"	26"
J †	10 3/4"	9 1/2"
K	14"	12"



FEATURES

- 100% rotary torque transfer capability
- Controlled axial movement
- Alloy steel construction for increased wear life and strength
- Available with standard thread configurations
- Disc springs incorporated for various-drill applications
- Replaceable wear parts, seals, guiderings etc.

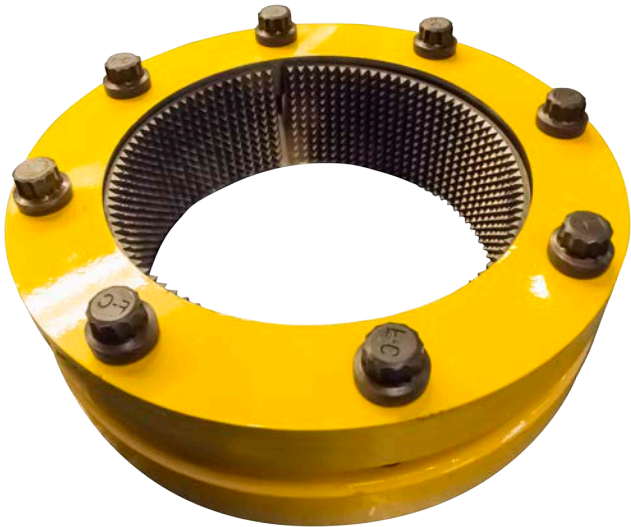
BENEFITS

- No H.P. loss between the rotary drive and the drill stem
- Vibration and shock loading is drastically reduced
- Reduced maintenance to rotary drive bearings and gears
- No modifications are required to the operators drill
- Shock reduction is achieved under all types of drilling conditions
- Repairs and maintenance can be accomplished at the mine site

ORDERING INFORMATION

- Cushion connector model number
- Drill manufacturer and model
- Maximum pull down
- Average pull down
- Pin and box thread type and size
- Drill steel diameter
- Break-out configuration (sketch of details may be required)

DIAMOND SERRATED TOOL JOINT CLAMP



INCREASE INSTALLATION COST PROTECT YOUR INVESTMENT

The Tool Joint Clamp consists of two flanges manufactured from high strength alloy steel and a diamond shape serrated tooth insert also machined from alloy steel and heat treated to provide maximum strength. These parts are utilized to form an integral assembly using high strength 12 pt. cap screws. The flanges are machined with a tapered bore and oppose each other to centralize a split serrated insert machined to suit the bore flanges. As the cap screws are tightened, the taper configuration will wedge the insert tighter around the outside circumference of the two parts you wish to secure.

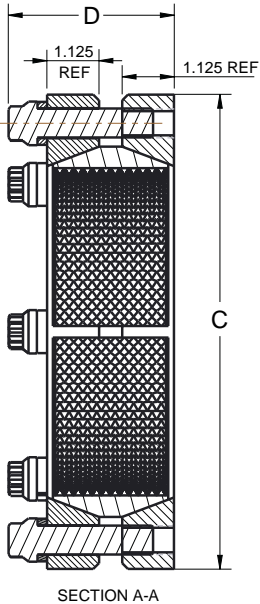
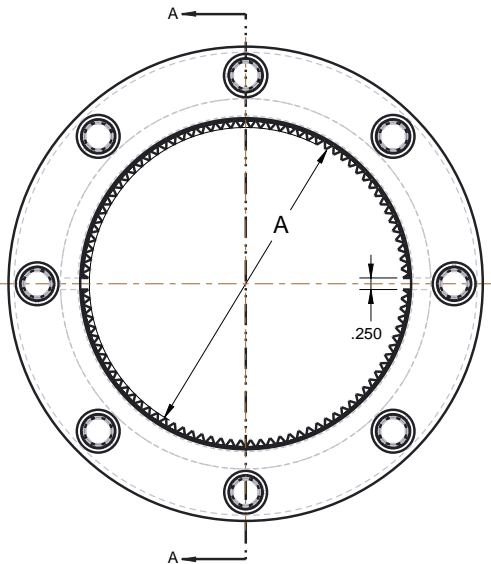
The gripping pressure of the clamp is always uniform around the shaft for full engagement to prevent the threaded tool joints from backing off. Tested to withstand rotational torque exceeding 45,000 lbs.

DIAMOND SERRATED TOOL JOINT CLAMP SPECIFICATIONS

PYRAMID SERRATED SLEEVE STYLE CLAMP

Part Number	Shaft Diameter "A"	Weight	Flange Diameter "C"	Width "D"
397943	4.50"	32 lbs	9.00"	3.60"
397944	4.75"	31 lbs	9.00"	3.60"
397945	5.00"	29 lbs	9.00"	3.60"
397946	5.50"	26 lbs	9.00"	3.60"
397900	5.75"	38 lbs	10.25"	3.60"
397899	5.87"	37 lbs	10.25"	3.60"
397898	6.00"	36 lbs	10.25"	3.60"
397897	6.37"	34 lbs	10.25"	3.60"
394369	6.75"	31 lbs	10.25"	3.60"
397947	7.50"	39 lbs	11.50"	3.60"
397948	7.62"	39 lbs	11.50"	3.60"
397949	7.75"	37 lbs	11.50"	3.60"
397950	8.00"	35 lbs	11.50"	3.60"
397951	8.25"	46 lbs	12.50"	3.60"
397952	8.50"	43 lbs	12.50"	3.60"
397953	8.62"	42 lbs	12.50"	3.60"
397954	8.87"	40 lbs	12.50"	3.60"
397955	9.00"	38 lbs	12.50"	3.60"

*Additional sizes available on request



INSTALLATION

Slip the clamp over the shaft you wish to secure and tighten the cap screws slightly so as the clamp will not slide down further than is necessary to torque the threads of the two mating items. Apply the proper thread compound to the tool joints and make up the threads to the suggested API torque. Loosen the cap screws on the clamp to centralize the assembly vertically around the shafts at the point where the tool joints shouldered together. Begin to tighten the cap screws alternating at 180 degrees to maintain even pressure around the clamp applying force against the outside circumference of each shaft.

VARIABLE RANGE TOOL JOINT CLAMP



INCREASE INSTALLATION COST PROTECT YOUR INVESTMENT

The Tool Joint Clamp consists of a split hub, tong dies and cap screws all of which are manufactured from alloy steel, heat-treated for maximum strength and gripping ability. Each assembly is machined to incorporate tong dies held in a dove tail groove machined the entire length of the hub. Cotter pins at each end of the tong die prevent the die from falling out of the assembly. The high strength cap screws equally spaced vertically along each side of the hub are tightened to displace the clamp force evenly along the entire length of the tong die. The gripping pressure of the clamp will prevent the threaded tool joints from backing off.

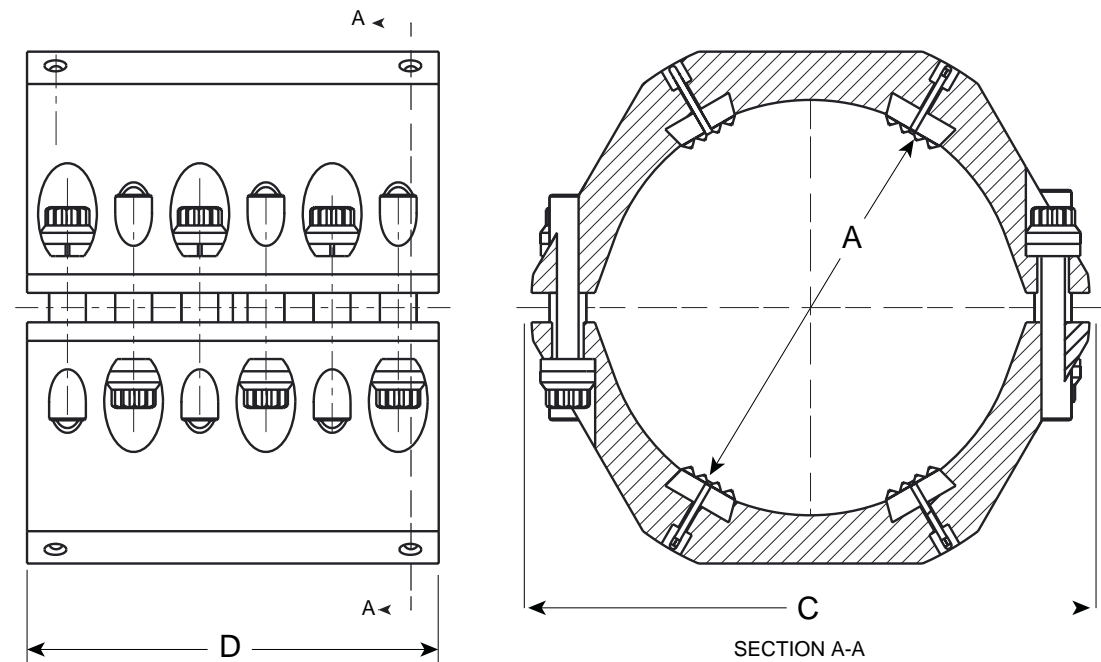
VARIABLE RANGE TOOL JOINT CLAMP SPECIFICATIONS

VARIABLE RANGE TOOL JOINT CLAMP				
Part Number	Shaft Diameter "A"	Weight	Clamp Diameter "C"	Width "D"
396337	5.75" – 6.37"	47 lbs	8.75"	7.00"
396339	6.50" – 7.12"	48 lbs	9.50"	7.00"
396341	7.25" – 7.88"	57 lbs	10.37"	7.00"
396065	7.75" – 8.25"	86 lbs	11.75"	7.00"
396343	8.25" – 8.88"	60 lbs	11.37"	7.00"

*Additional sizes available on request

INSTALLATION

Apply the proper thread compound to the tool joints and make up the threads to the suggested API torque. Remove the cap screws from the assembly and separate the two halves of the clamp. Position the two halves to centralize the assembly vertically around the shafts at the point where the tool joints shouldered together. Begin to tighten the cap screws alternating at 180 degrees to maintain even pressure on each side of the clamp applying force against the outside circumference of each shaft as the cap screws are tightened.



ROTARY DECK BUSHINGS



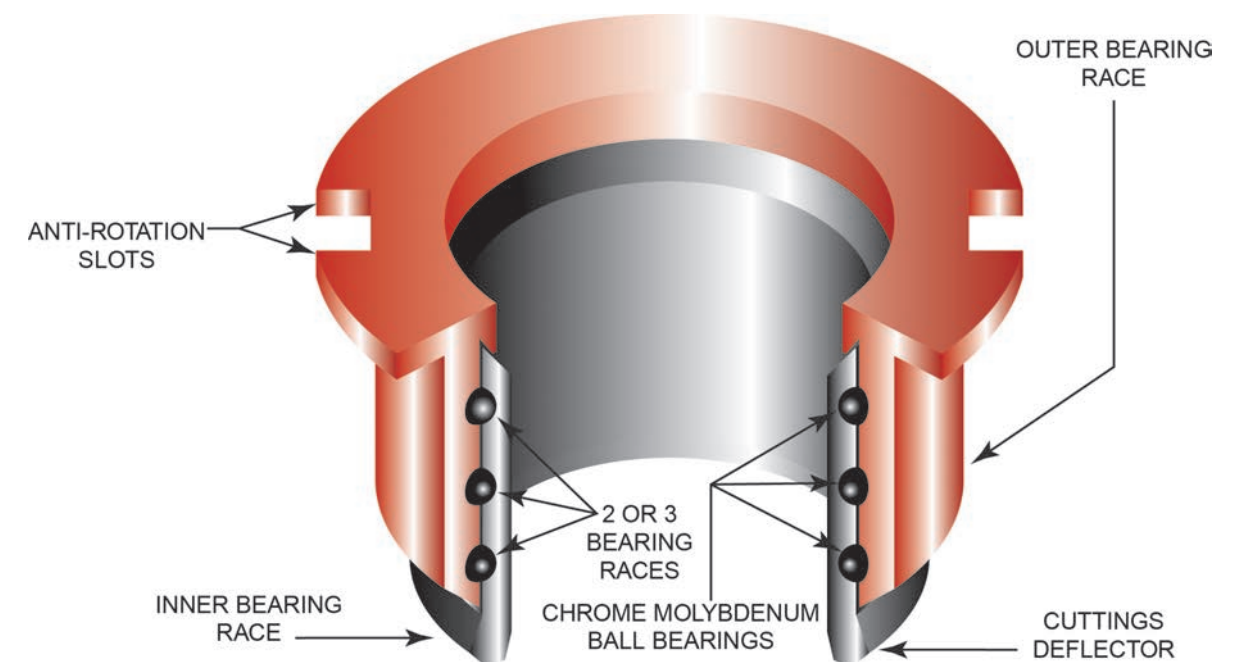
The Foremost Rotary Deck Bushing is a two-piece bearing assembly which replaces the friction or non-rotating bushing which sits in the deck of a blast hole drill. The inner bearing race of the rotary bushing will rotate with the drill steel when sufficient surface contact is made by the rotating drill steel as it passes through the centre bore of the bushing.

The outer race of the bushing is held stationary in the deck of the drill by means of locating flats and or lugs which are positioned on the circumference of the flange that is integral with the outer race. The flange supports the bushing assembly in the deck hole which maintains the central position with the drill steel.



Foremost Rotary Deck Bushings deliver increased drilling production and reduced maintenance costs for blast hole drills. Precision machined by Foremost, the Rotary Deck Bushing is a ball bearing assembly with 2 or 3 bearing races situated between a stationary outer body and a rotating inner sleeve. The sealed bearings require no lubrication.

The inner bearing race of the rotary bushing will rotate with the drill steel when sufficient surface contact is made by the rotating drill steel as it passes through the centre bore of the bushing. The outer race is held stationary in the deck of the drill by means of locating flats and or lugs which are positioned on the circumference of the flange that is integral with the outer race. The flange supports the bushing assembly in the deck hole which maintains the central position with the drill steel.





Pipe Handling Systems

The Foremost Pipe Handler is mounted directly to and parallel to the mast of the rig. Pipe Handlers are designed to engage drill pipe and collars that are positioned on a horizontal plane parallel beside the drill rig and within reach of the pipe handler jaw assembly. The rod handler jaw assembly firmly clamps the outside diameter of the drill pipe in two positions. Once engaged, the carriage assembly is raised along the length of the mast to a point where the drill rod can be positioned parallel with the mast. The drill rod is then articulated directly under the spindle of the rotary drive. With the rod held stationary in the clamped position, the rotary drive is lowered until the spindle engages with the thread at the top of the drill pipe. The spindle is rotated to make up the threaded connection utilizing the pipe handler jaw assembly as a back-up. With the connections made up to the proper specification, the jaw assembly is disengaged, articulated back to the side of the mast and repositioned to the loading height at the base of the mast.

FEATURES

- Operator controlled mechanical arm
- Directly mounted to mast
- Allows for full torque back-up of the top drive
- Compatible with most mast designs
- Capable of handling various lengths, weights and diameters of drill pipe (up to Range III)
- Can be used in vertical, angle or horizontal directional drilling operations

BENEFITS

- Operations are controlled by the driller with no other assistance necessary
- Ensures straighter connections
- Less time per connection; typical connection times of less than 45 seconds
- No additional back-up equipment is required for make-up or break-out

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