

HOLTE DRILLING TOOLS

HOLTE
HOLTE MANUFACTURING



■ Manufacturing Facility

Holte's *manufacturing facility* in Veneta, Oregon has long been home to some of our most innovations in drilling tools. This is our headquarters housing our design, machining, inventory and shipping center as well as the office and support staff. Feel free to schedule a visit as we have an open door policy extended to Holte customers for tours and consulting.

This facility houses some of the largest CNC machining centers on the west coast, key to making the big hole drilling systems Holte is known for being able to produce. If your project has the need, Holte is set up to manufacture with a quick turnaround time for custom projects.

■ Heat Treatment Facility

Holte's *heat treatment facility* in Springfield, Oregon houses ovens, a pit furnace, an endothermic generator and several styles of quench tanks to ensure that our final products are the ultimate balance between hardness and durability, while allowing careful control throughout the process. In house heat treatment gives Holte the advantage of the fastest turn around and quality control.

■ Fabrication Facility

Holte's *fabrication facility* and storage in Veneta, Oregon is for custom and retrofit work on drill rigs as well as product testing grounds for our tooling.

Holte is known for pride and excellence in workmanship in steel fabrication and welding as well as hydraulic and pneumatic work.

Holte Manufacturing began as a drilling tool innovator almost 40 years ago, founded by Art Holte. Today Holte has many patents and continues the developing and manufacturing of components for drilling tools and complete drilling systems from rig to bit. As the technology for efficient, durable tooling becomes more complex we have found it is essential to design, fabricate, manufacture and heat treat in one location to ensure Holte's quality standards are met. Not only do we do this, we take it a step further and work directly with our customers in the field. Through this constant connection with our customers, the latest machinery and design technology and our willingness to listen, we are able to innovate and build revolutionary systems that continually set the benchmark throughout the industry. Also, through our state of the art manufacturing process and dedicated employees we are able to design, fabricate and manufacture complete drill systems quickly. In the end our vision is simple. We want to work with you to drill faster and further than the competition with the most innovative drilling components, making Holte Drilling System's the right solution for your next job.



**Call Holte Mfg. today at 541-935-5054
and get acquainted with one of our
friendly representatives.**

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HOLTE HAMMERS

The **Holte Down Hole Hammer** is a powerful hammer made simple. The Holte DHH-B models utilize reverse circulation for more efficient large diameter drilling. The heavy construction accommodates a larger piston and durable parts. The patented key drive makes replacing the bit easy. The Holte hammer is designed for easier breakdown and is available with hex connections. The check valve system offers optional grout through capability when grouting holes for pilings is required.



DRILLING TOOLS

REVERSE CIRCULATION DOWN HOLE HAMMERS

RC

		RC14	RC16	RC20	RC24	RC30
	in (mm)*	13.5 (343)	15 (381)	19 (483)	22.8 (579)	28.5 (724)
Length w/o Bit	in (mm)	59 (1499)	59 (1499)	80 (2032)	80 (2032)	99 (2515)
Weight w/o Bit	lb (kg)	2350 (1066)	2680 (1216)	4300 (1950)	6300 (2858)	10000 (4536)
Cylinder Bore	in (mm)	10 (254)	10.5 (267)	13 (330)	14.6 (371)	20.6 (524)
Piston Weight	lb (kg)	385 (175)	450 (204)	615 (279)	845 (383)	1890 (857)
Working Pressure	psi (bar)	100-300 (6.9-20.7)	100-300 (6.9-20.7)	100-300 (6.9 - 20.7)	100-300 (6.9 - 20.7)	100-300 (6.9-20.7)
Maximum Working Pressure	psi (bar)	350 (24.1)	350 (24.1)	350 (24.1)	350 (24.1)	350 (24.1)
CFM Required @ 200 psi	cfm	1000	1200	1800	2200	3500
Standard Top Sub	**	9" Holte Threaded	Holte Hex	Holte Bolted Hex	Holte Bolted Hex	Holte Bolted Hex
Flat On Top Sub In	in (mm)	Specify	Specify	Specify	Specify	Specify
Min/Max Bit	in (mm)	13.5 - 20 (343 - 508)	15 - 22 (381 - 559)	19 - 28 (483 - 711)	22.8 - 36 (579 - 914)	

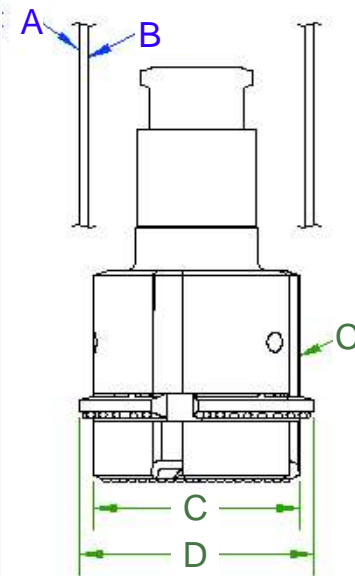
* Minimum outer barrel size available. Larger sizes can be easily accommodated to meet most specifications.
 ** Additional top sub connections available. ** Specifications are subject to change at Holte's discretion

URG® UNDERREAMER

The **Holte URG®** (full gauge underreamer) has three to four extendible arms that underream a full gauge (360 degree) hole. This style will drill faster and straighter than the one side underreamers which swing out on only one side.

This bit design was developed at Holte Manufacturing while researching faster ways to drill large diameter holes. The full gauge URG resembles a conventional hole opener. We offer URG overburden systems between 10"-42" for both conventional and reverse circulation drilling. Casing can be advanced by means of casing drivers, casing rotators or oscillators.

Drive shoe style shown here.



URG® SIZE CHART					
CASING SIZE			BIT SIZE		HAMMER
Nominal	Max O.D. A	Min. O.D. B	Retracted C	Extended D	Sizes
10"	10.75"	10"	9.9"	11.4"	8",10"
12"	12.75"	12"	11.85"	13.7"	8"-12"
14"	14"	13.25"	12.80"	14.80"	10"-14"
16"	16"	15.25"	14.90"	16.80"	12"-16"
18"	18"	17.25"	16.85"	18.80"	12"-18"
20"	20"	19.25"	18.85"	20.80"	15"-20"
22"	22"	21.25"	20.85"	22.80"	15"-22"
24"	24"	23.25"	23"	24.95"	18"-24"

REVERSE CIRCULATION

Holte Reverse Circulation Drill Pipe is a one piece, dual tube joint with no center tube connectors. We have designed and built many custom variations, including a recent design that allows for individual control of multiple, individual chambers within the dual wall pipe, to maximize underwater hammer operation and removal of cuttings.

Holte's standard reverse circulation dual wall pipe allows for air to move through the annulus between the inner and outer pipe, while the cuttings flow freely through the center. All our pipe is made of heavy wall, durable drill steel and formulated and tempered for maximum wear resistance and strength to minimize costly repairs and downtime.

Prior to assembly, each joint (Pin and Box) are machined from high strength steel alloy then heat treated in house to develop a file hard surface and tough core. The pins and boxes are then assembled in a unique, proven manner that ensures the maximum durability and straightness.

Holte RC pipe is available in many sizes. Call a Holte drilling representative to help you select the most efficient pipe size for your drilling application.



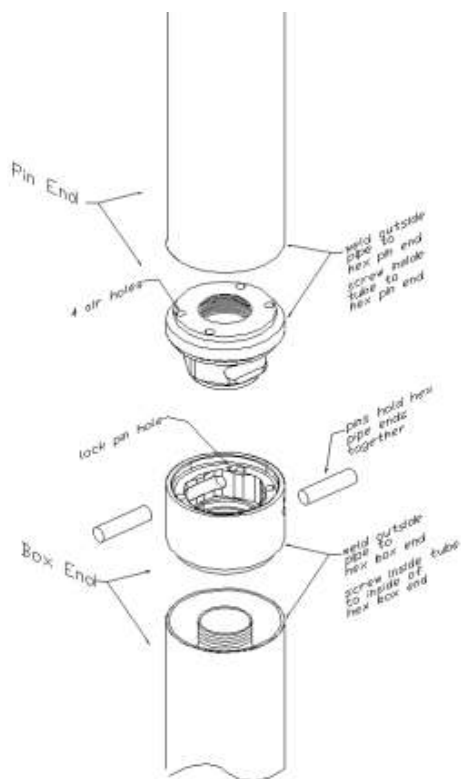
DUAL WALL PIPE

Quick Release Hex Head

The **Holte Dual Wall Pipe with quick release hex head** was created by Holte Manufacturing as a solution to the problem of thread binding. This is particularly a problem with large diameter systems due to the amount of torque used in large diameter drilling. This unique joint also allows the pipe to turn in both directions without the risk of unscrewing.

The quick release hex connection is also available on Holte Reverse Circulation Down Hole Hammers, to easily disassemble hammers in the field.

Drillers can now save time and frustration with this durable pipe. The hex head pipe ends are made of carburized alloy steel and built for long use. The pipe ends are machined with large radiuses, making it easier to plug together.



Holte RC Hex Pipe at the White Stone Bridge in New York

CASING DRIVER

Holte Casing Drivers are designed to be used with a down hole hammer and underreamer. The underreamer drills an oversize hole in overburdened soil, rock layers, clay bedrock, etc.

When the hole is first started, and until gravity is not enough to make the casing follow the underreamer, the casing driver sits inactive on top of the casing and acts as a water diverter. When the underreamer advances 1" ahead of the casing, the casing driver anvil closes, and the 140 lb. piston in the casing driver (shown at right), starts cycling. Holte casing drivers turn on and off automatically just like a down hole hammer. The only exception is that it doesn't blow when the anvil is hanging like a down hole hammer does with the bit hanging.

Accessories available for Casing Drivers are :

- Drill pipe shaft that fits through the casing driver
- Remote controlled air valve
- Air pressure regulator
- 7.5 gallon down hole hammer oiler
- Hydraulic cylinder kit with hoses and P.O. check

DIAMETER DEPTH GUIDE		
Casing Dia.	Hole Depth	CD Model
6"-10"	0' - 400'	CD140
6"-14"	0' - 800'	CD350
10"-20"	0' - 500'	CD550
Over 20"	0' - over 500'	CD1000

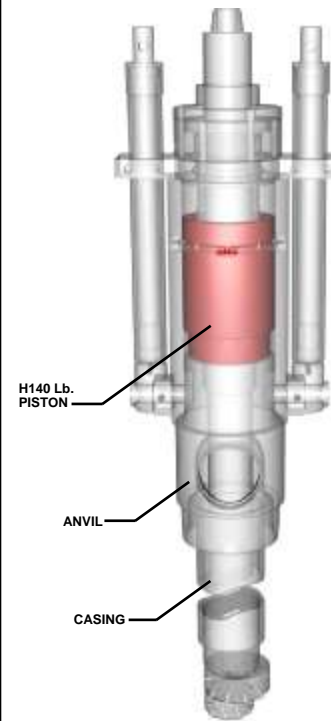
All of these categories are subject to drilling conditions and rig capabilities. Talk to a Holte drilling technician about your specific needs.

SIZE CHART					
MODEL	HEIGHT	DIA.	DRILL PIPE	PISTON	TOTAL
CD 140	40"	12"	4½"	140lbs.	750lbs.
CD 350	50"	15"	4½"	350lbs.	1300lbs.
CD550RC	46"	28"	9"	500lbs.	2800lbs.
CD1000RC	72"	28"	13"	1000lbs.	4800lbs.

NOTE: Model CD550RC and CD1000RC are for large diameter reverse circulation drilling.



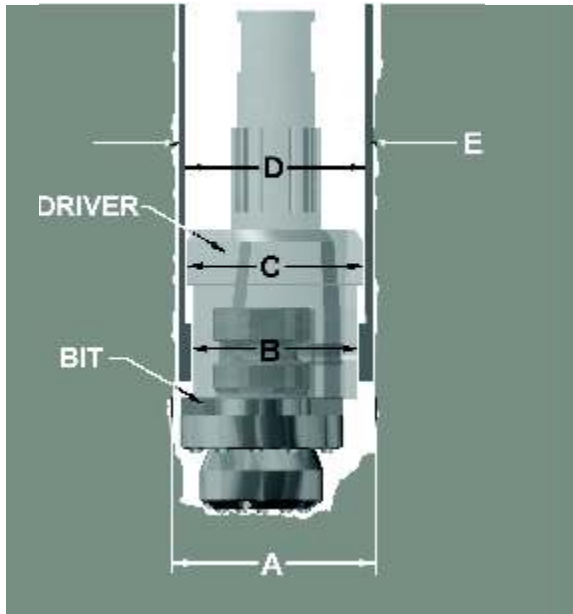
Holte Casing Driver 140, is 45" tall (not including the cylinders) and has a 12" diameter. Weight is approximately 750 lbs. This casing driver is mounted under the top head of a drill rig.



Underreamer Systems Compared

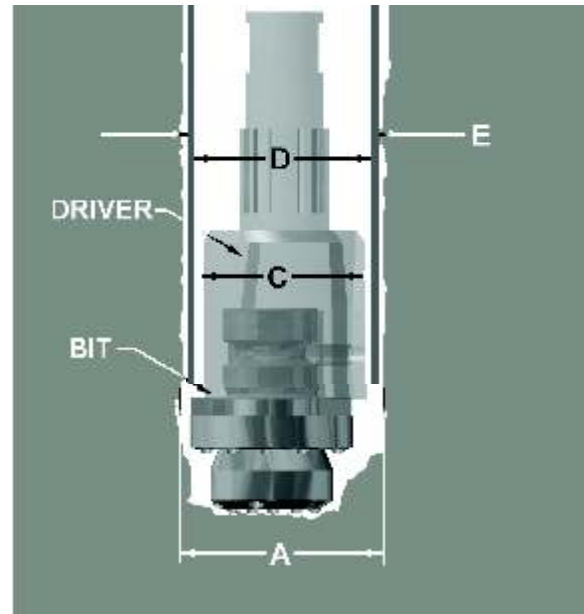
Shoe Style

Casing Driver Style



The name **URE Shoe Style** stands for the eccentric underreamer system requiring a shoe. In this system shown above, the shoe provides a surface that the underreamer (UR) tool can hammer on to drive the casing down. This system of hammering the casing down from the bottom has some limiting factors. The biggest draw back is that the shoe eventually wears out or breaks off from being hammered on by the UR tool. With this threat the operator can not always determine the depth that will be achieved.

Also, with the use of a shoe, the bit must be made slightly smaller to fit through the shoe. Although both Holte UR systems drill the same size hole, the smaller shoe bit system has less surface area contact. Therefore, the UR shoe style bits wear out sooner.



The **URE Casing Driver Style** is a similar underreaming system, only there is no drive shoe at the bottom to worry about. The casing is hammered down from the top by a Casing Driver mounted on the top head drive. Although the Casing Driver down hole underreamer's energy can still be reduced by the flood out factor, the Casing Driver style underreamer does not have to move the casing. Therefore, the Casing Driver Style System drills more effectively in water.

The Casing Driver style system also drills better, because the bit is slightly larger, since it does not need to fit through a drive shoe. In this case there is considerably more bit surface against the wall of the well bore. This larger size bit also lasts longer.

(URE) SIZE CHART					
Casing I.D. (D)	Casing O.D. (E)	Bit Size	Hole Dia. (A)	Driver Dia. (B)	Driver O.D. (C)
5.00"	5.56"	URE5	6.10"	4.50"	4.95"
6.055"	6.625"	URE6	7.60"	5.50"	5.95"
8.07"	8.625"	URE8	9.75"	7.40"	7.90"
10.20"	10.75"	URE10	11.75"	9.15"	10.10"

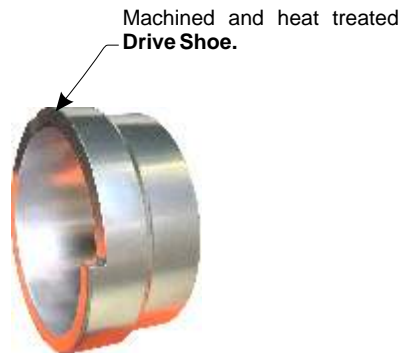
Note: See page 3 for larger Holte Underreamers.

URE Drive Shoe Style

Maximize your underreaming with a Holte URE designed to have a wider cutting edge where you need it most. The Holte oval shape places more cutting edge on the bore hole wall.

The URE Drive Shoe Style Underreamer is similar to the Casing driver style except the driver portion has a **drive shoulder**. This shoulder drives down the **drive shoe** that is welded to the casing. With this system, the down hole hammer is used to both drill and drive casing.

The URE Drive Shoe Style is more limited than underreaming with a casing driver but is an effective casing installation system.



URE Casing Driver Style

The **Holte Percussion Underreamer** is a two piece tool; a driver section & a bit section. The driver (or splined section) fits into a down hole hammer.

The bit section has a pilot portion that is out of center to the rest of the bit and the drill string. As the hammer rotates, the pilot section tries to center itself. The friction of the nose of the bit also helps pull the nose out from under the casing enabling you to drill a larger hole than the OD of the drive shoes on the casing.

The whole bit swings out and has a short heavy pin on the top side that fits into a pocket on the driver. A small portion of the air escapes between the wall of the driver pocket and the pin portion of the bit. This keeps the bit free from sticking in place so that a very minimum of reverse rotation will swing the bit back in alignment with the drill string for retraction.



The percussion underreamer along with a small compact **Holte Casing Driver** (which also serves as a diverter for water and air cuttings) will allow the casing to be placed easily in areas where it would have been a major struggle or next to impossible.



Maximum Gauge
Surface Contact

RING BIT SYSTEM

The **Holte Ring Bit System** is a removable outer ring used with a down hole hammer and casing driver. Its purpose is to underream for casing installation. The ring bit fastens to the driver bit with a press fit which prevents the ring bit from falling off. This system enables a driller to both drill and case simultaneously leaving only the ring in the hole when the job is completed.

This ring portion of the bit is larger in diameter than the casing and has a smooth round outer surface. This is unlike eccentric underreamer bits which get stuck in a hole more easily requiring more torque. This smooth O.D. bit hardly registers on the torque gauge.

This system uses no drive shoe or shoulder when driving casing down from the bottom. Instead, the driving is done from the top by the Holte Casing Driver which turns on and off automatically.

To remove the ring bit, the casing driver is lowered so the casing sits on the ring portion. The down hole hammer is then pulled up while the casing driver is hammering. This drives the ring off so the down hole hammer can be removed, leaving only the ring and the casing in the hole.

The ring bit system is available in 6" through 12". Other sizes are available upon request.



EXTRACTOR HAMMER

The **Holte Extractor Hammer** is a pneumatic hammer available in several models ranging from a 35 lb. to 900 lb. piston sleeve. The outer sleeve of the extractor is a reciprocating weight that is operated by air. It cycles rapidly like a down hole hammer but is used above ground to extract stubborn casing and drill string. While the Holte Extractor Hammer is hammering up, the operator can pull up or push down, twisting simultaneously if desired. Normally, however, you need only to pull. The mid size is the most popular and comes standard with a 4 1/2" API thread at each end of the main body. Using the wide range of subs we manufacture, the extractor can be fastened to the top head drive or kelly of any rig. The sub on the bottom is fastened to the drill rod, casing or whatever you want to extract.

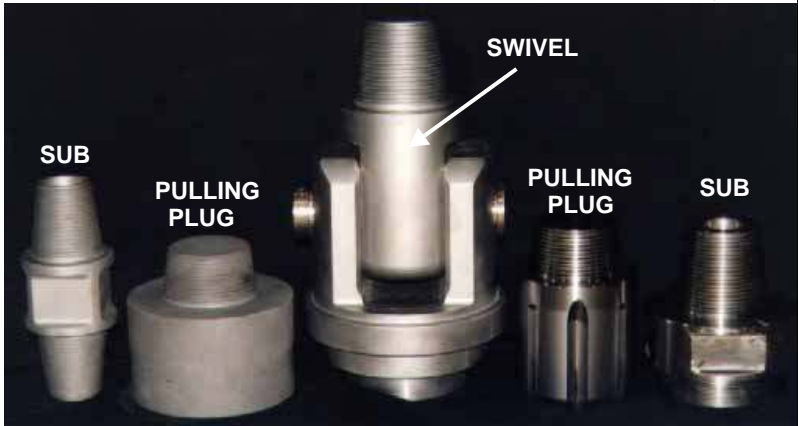
The extractor hammer package includes two subs to adapt to the 4 1/2" API of the tool. The following subs come standard with other options available at an additional cost: 3 1/2" API pin up or pin down (at the top) or 2 7/8" IF pin up or pin down (with a 6" pulling plug at the bottom). Some available subs include threaded casing adapters and a heavy duty hinge that allows the casing or drill pipe to be pulled out away from the rig as the top head is lowered back down.

	SLEEVE	TOP PIN	BOTTOM PIN
Small	35LBS.	3-1/2" API	3-1/2" API
Medium		4-1/2" API	4-1/2" API
Large	450-900LBS.	6-5/8" API	6-5/8" API



Holte Medium Size Extractor Hammer

Extractor Hammer Accessory Parts



AIR INLET

The **Holte Air Inlet**, is also made of a low carbon alloy steel and carburized to file hard prox 62 Rockwell. This gives the rotating seal surface a long lasting, smooth, hard surface. One ring nut on each end provides even pressure to the packing. A lantern ring in the center of each packing distributes lubricant evenly. The Holte Air Inlet will adapt to various drill rigs and drill pipe.

The **Air Inlet** is most commonly used to introduce air into a dual wall pipe chamber for reverse circulation drilling.



TOP HEAD

The **Holte Rotary Top Drive** motor serves several functions, it drives drill pipe and allows casing driver mounting. The large hole through the center allows for reverse circulation discharge internally. This top drive also allows for conventional drilling. This makes it a good choice for drillers currently not running reverse circulation, who are planning to switch to RC drilling in the future.



Customizing Your Top Head

The top head can be purchased with one motor and add up to three more for optimum power. A built in pump supplies lubrication to the main gear bearings. Systems are durable and may be easily upgraded for long-term trouble-free operation.

Rotation speeds are variable in the suggested range 6-20 RPM. Higher RPM is available. Torque ranges are available to 170,000 ft-lbs. Lifting capacity of the top head bearings are good to 1.5 million lbs. Greater capacity may be available according to customer need.

For Your Convenience

The top head drive easily mounts to the drill mast and allows convenient field maintenance and repair with off the shelf universal replacement components. Drive gears are hardened and ground. The large center through holes are up to 8" in diameter.



Reverse circulation (RC) TOP HEAD DRIVE with swivel and discharge elbow.



OILER

The **Holte Manufacturing Oiler** has a positive displacement pump that is air powered. The air gets to the pump through a solenoid valve. The solenoid valve gets a signal from an electronic timer that has a variable frequency set by the operator. Each pulse from the timer results in $\frac{1}{2}$ cubic inch of oil. The pressure ratio between air supplied to the pump and oil coming out of the pump is about 4- $\frac{1}{2}$ to 1. This enables 100 PSI of air to push 450 PSI of oil. When the electronic signal is off, the pump recharges by means of a return spring in the pump. This simple system is durable and dependable.

A diagram on the face of the 7- $\frac{1}{2}$ gallon tank tells the operator the recommended amount of oil to use with the air volume they have available. It then shows where to set the knob for the desired amount of oil.



PERFORATOR

20+ Years of Making Perforators Gives Holte Experience

The Holte Perforator effectively perforates wall of installed steel and PVC casing in a variety of situations. The simply designed body allows the 4", 6" or 10" unit and adapter to be quickly threaded onto your drill string through the use of standard subs. Air or water engages the six point cutter wheel while, down pressure from the rig makes the wheel rotate and perforate to the desired depth. Puncture size is adjustable by several methods to ensure the desired end result is achieved.

Parts Designed to Last

A precision machined and carbon treated body ensures precision fit of internal parts. This results in extending the life of parts that wear as they are not able to warp under the high stresses experienced during usage.

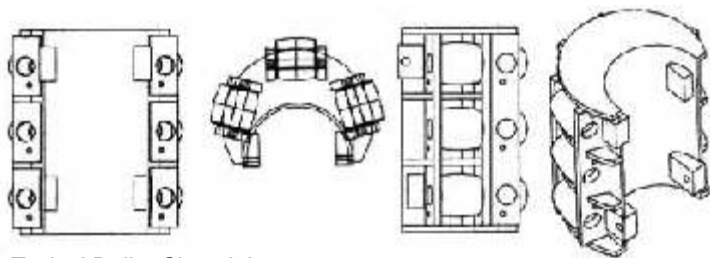
Standard units are designed to perforate up to .375" wall pipe and can be adapted for up to .500" wall.

Slide shoes adapt perforator units to puncture casing close to the nominal size of the perforator while roller shoes are used above 10" to ensure the casing is not able to distort and reduce control of perforations.

Holte stocks a full line of adapters and replacement parts available for same day shipping.

Available in the following sizes:

4" perforator units with adapters to 5" casing.
6" perforator units with adapters through 12" casing.
10" perforator units with adapters through 26" casing.
Larger sizes are also available for custom applications.



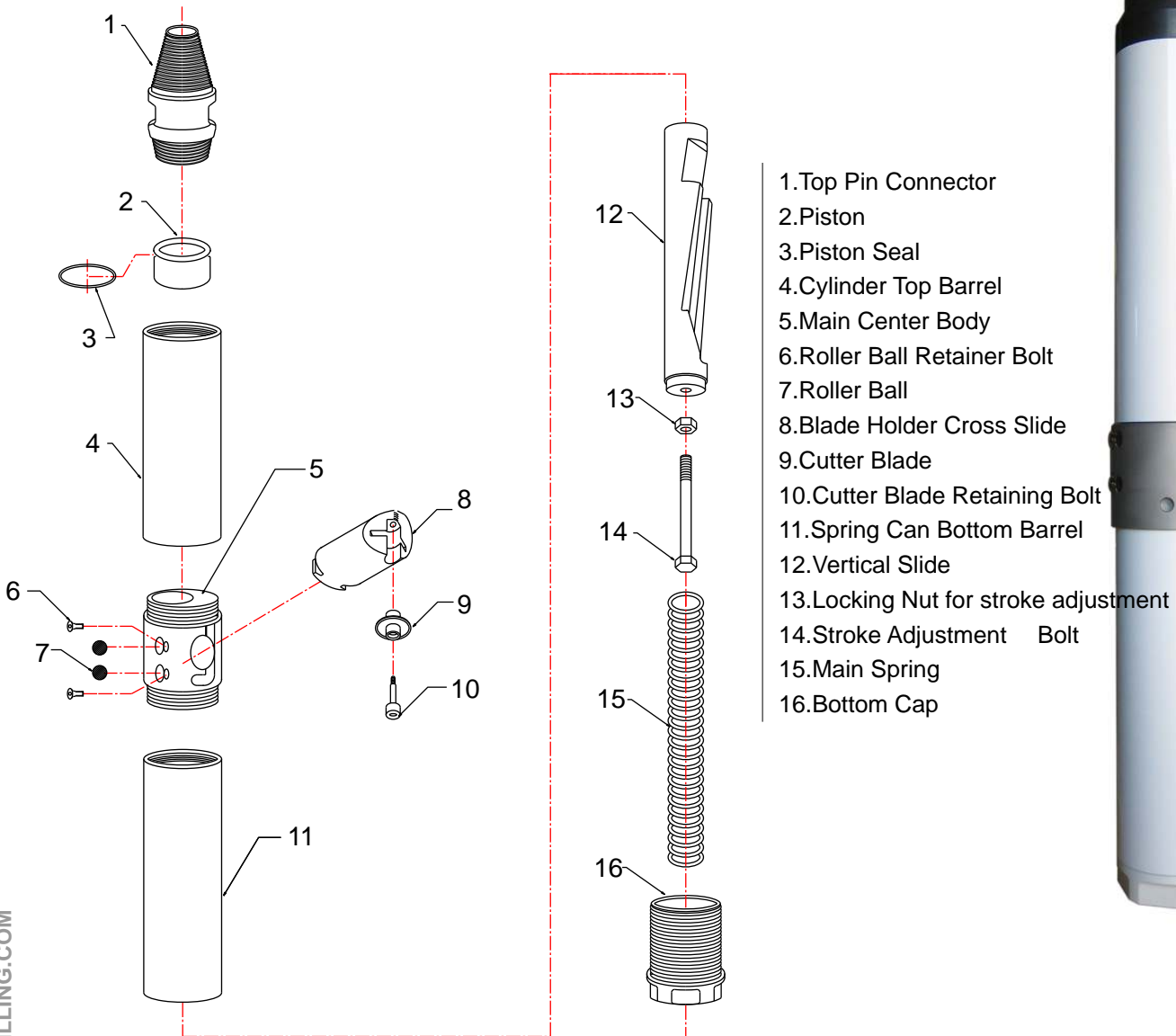
Typical Roller Shoe Adapter



CASING CUTTER

The Holte Casing Cutter cuts casing above or below ground. Cutting pipe can be done quickly and easily by simply lowering the tool to the depth of the cut and rotating it in a clock-wise direction. The operator then slowly brings air pressure up to approximately 150-200 PSI until cut is completed and the air pressure is bled off.

Six inch, .250 wall casing takes approximately 60-90 seconds and 100 revolutions. Blade replacement is very simple and the blades are interchangeable with the adapters used when cutting larger casing. Three adapters are available the 6" casing cutter for 8", 10" and 12" casing. For larger casing, contact Holte for custom casing cutters.



FISHING TOOL

Tapered to a small stabbing nose, the **Holte Fishing Tool** wedges and cuts its way into lost pipe and threads the pipe. Once it is threaded in, the lost pipe can be pulled up with the fishing tool.

Although this tool is hardened steel for durability, the tool may be destroyed in one use. This is due to its abusive application. If it is used and unscrewed carefully, the fishing tool can be used several times.

