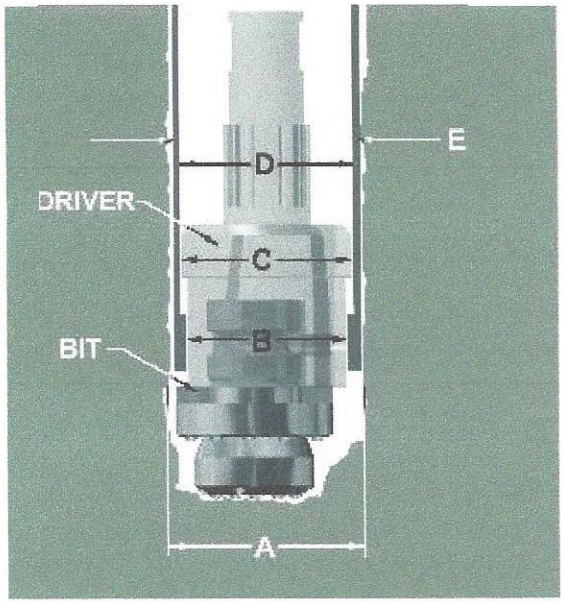
Underreamer Systems Compared

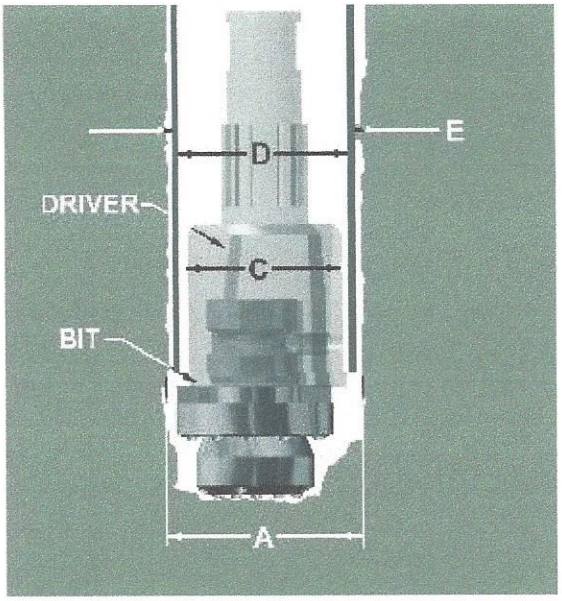
Shoe Style



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.

Casing Driver Style



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 umderreaming with a casing driver but is an effective casing installation system.

Maximum Gauge
Surface Contact

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.

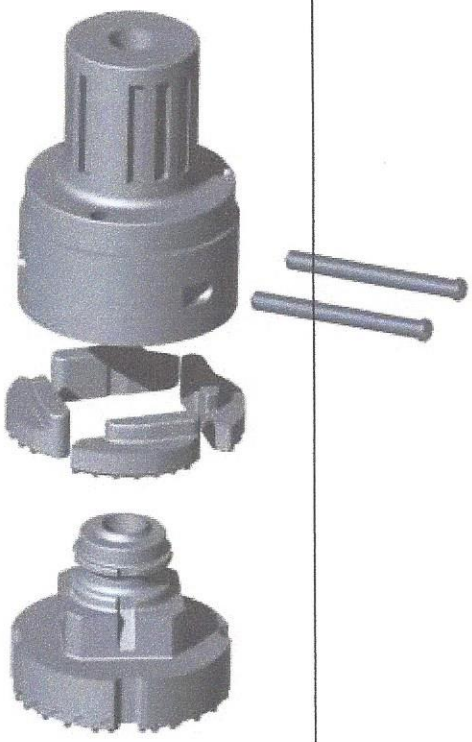
The ring bit system is available in 6" through 12". Other sizes are available upon request.

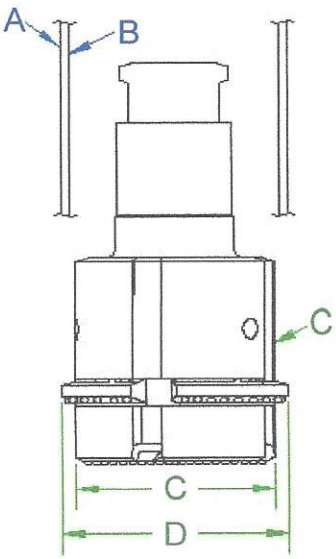
URG® UNDERREAMER

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"