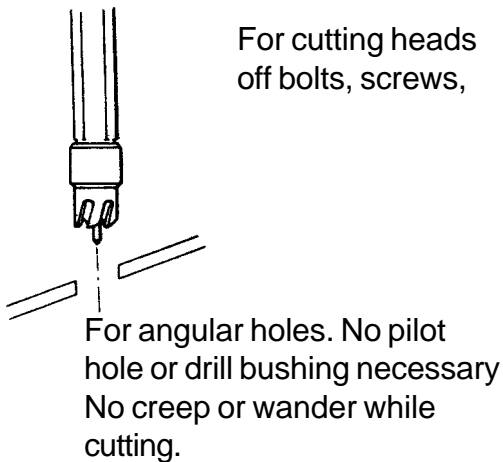
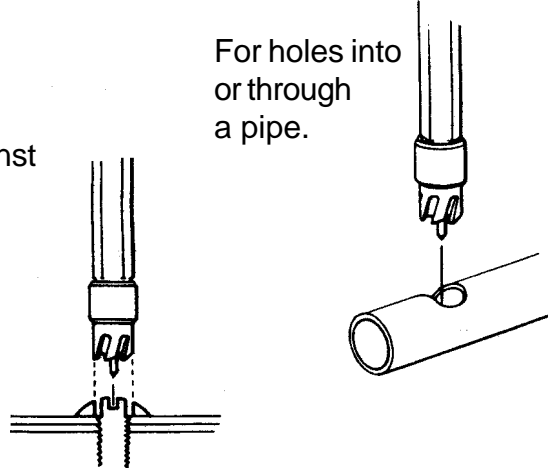
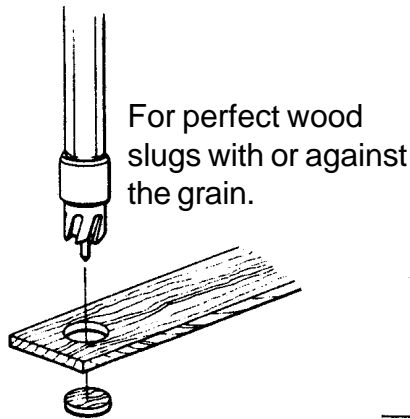
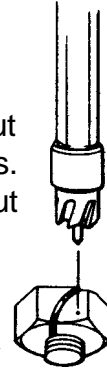


## OPERATION OF ROATBROACH® ARBOR

1. Cutter Removal - Never clamp the arbor. Always use a drill chuck
2. When using the sheet metal cutter for depths over 1/16" raise the cutter occasionally to remove the chips. Oil is essential for maximum blade life. (Use a good quality cutting fluid)
3. If difficulty occurs in keeping the center pilot from skipping at the start of a cut, use the following suggestions.
  - a. Center punch
  - b. Keep pilot sharp. This should be carefully done with a fine grinding wheel.
  - c. Start the cut with light pressure until the cutting path is established.
  - d. Increase the pilot pressure by turning the rear arbor set screw clockwise into the arbor.



Cuts off frozen nuts. (Center punch and cut through nut to threads. Wrench will turn off nut with ease.)



## INSTRUCTIONS For Using ROTABROACH® CUTTERS

### Please Read Carefully. This is a Unique Cutting Concept.

1. Select and use the recommended speed for the type of material being cut. When cutting steel at higher than the recommended speed, cut for very short intervals and abundance of oil. Excessive heat, caused by excessive speed can spell the difference between cutting one hole or thousands.
2. Always center punch. The better the center-punch mark, the less chance of the blade running across the work.
3. When using the annular cutter in a hand drill, place the pilot in center-punch mark. Do not depress or bring blade in contact with the work until motor is started. Then bear straight down with a light pressure to start the cut. When path is well established, heavy pressure may then be applied. It is not necessary to lift cutter to clear the chips, as teeth and gullets are non-clogging.
4. Maximum tension adjustment gives minimum chance of blade jumping out of cutting path. For sheet metal, use maximum tension, just short of deflecting the material.

**When used as directed, Rotabroach cutters will do more cutting jobs better than any other tool. They are unexcelled when used in either hand held electric drills or stationary machines. Sheet metal cutters should be treated with the same respect as any precision high speed steel cutting tool.**

### CAUTION

5. If slug sticks in cutter, use a tapping motion, with arbor and cutter still in the chuck, straight down on a flat surface. This normally will free the slug. NEVER AIM THE CUTTER SO SLUG WILL HIT YOU OR SOMEONE ELSE WHEN IT BREAKS LOOSE. Lubricating oil, along with a SLIGHT rocking motion will minimize slug sticking.
6. Avoid sudden leaning of cutter or changing the direction of cut, when cutter is well down in its cutting groove. This could cause a binding or grabbing condition which could break the cutter. Never cut to full depth of side gullets or cutter breakage may occur.
7. When removing cutter from arbor, use a 3/8" open end wrench on arbor and a 3/4" wrench on stop washer or small pipe wrench or pliers on cutter (if no stop washer is used.)

**WARNING - SAFETY GLASSES SHOULD ALWAYS BE BY PERSONS USING ROTABROACH CUTTERS, INCLUDING ALL PERSONNEL IN THE VICINITY OF THE OPERATION.**

8. Arbor general care: Keep pilot sharp. Lubricate internal parts occasionally. Check for run-out or wobble. Hole can be no more than the cutting path of the cutter.
9. When sharpening cutters, use a cut off wheel approximately 1/16" thick by approximately 2-1/2" in diameter. Grind face of cutting edges as far as wear extends behind cutting edges. Be sure to grind same relief angle that cutters had originally. (Inner edges are radially pointed ahead of center and outer edges are pointed behind center.)
10. Shim stock, gasket material, paper, plastics, wood and fiberboard, etc., should be cut at a high R.P.M. When cutting plastics, experiment to find the right speed and feed, because there is a wide variety of plastics: use water as a coolant if faster cutting speeds are desirable.

Material	Recommended Speed (R.P.M.s)						
Fractional	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"
Metric	8mm	10mm	12mm	14mm	16mm	18mm	20mm
Tool Steel	600	500	450	400	350	300	250
Mild Steel	1200	1000	900	800	700	600	500
Soft Alum.	9600	8000	7200	6400	5600	4800	4000

Tool Steel - Coolant required, slow speed, even feed rate a must  
 Mild Steel - Cutting Oil desirable  
 Soft Aluminum - Cutting Oil is a necessity  
 Mild steel .040 or thinner may be cut at double chart speeds.  
 Stainless steel, tool steel and other hard to cut material - use lower RPM  
 Larger diameters thru 1" and deeper cuts are available. Also special arbors may be provided with chip breakers, positive ejectors and coolant attachments for automation and hand drill applications. Send all details of your job requirements, material, depth cut to:



**HOUGEN MANUFACTURING, INC.**

3001 Hougen Drive  
 Swartz Creek, Michigan 48473  
 Tele: (810) 635-7111  
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 E-Mail: info@hougen.com  
 Online: www.hougen.com

May be covered by one or more of the following patents:  
 3104564, 3180018, 4632610, 4813819, 4952102, 5145296

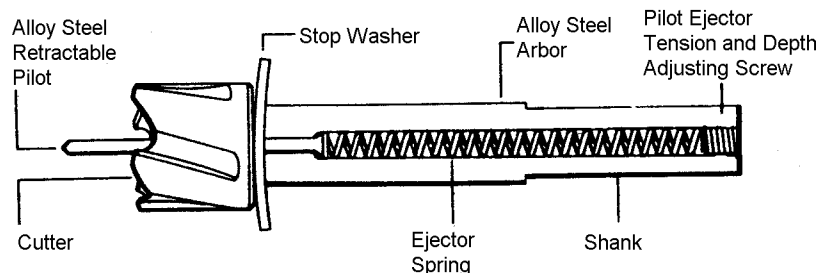


# ROTABROACH® KIT

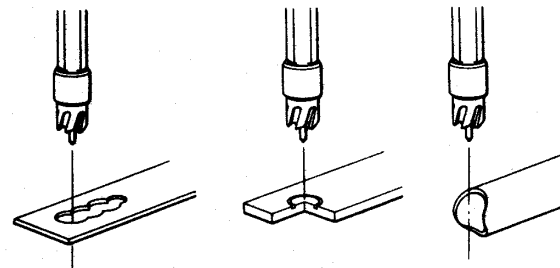
**For Sheet Metal and Materials Up to 1/4" Thick**  
**Kit No. 11075 - Fractional Sizes**  
**Kit No. 11077 - Metric Sizes**

- \* Precision ground high speed steel cutters, 5/16" thru 3/4" or 8mm thru 20mm diameter
- \* Allen wrench adjustment Of Ejector Pilot tension spring.
- \* Precision slug-ejector type alloy steel arbor fits 3/8" and 1/2" chucks
- \* Spring steel Stop Washer for use with cutter diameters 9/16" and larger.
- \* Permanent carrying case.

Super-fast, rugged, heavy duty holemaker.  
 Revolutionary patented step-tooth design for longer cutter life.  
 Cuts holes faster and cleaner than a twist drill.  
 Requires only a fraction of the power and effort needed for twist drilling.  
 Requires much lighter equipment than needed for twist drilling.  
 Much lower cost-per-hole than for twist drills and less fixturing.



**ANNULAR CUTTERS HAVE MANY USES**



For irregular shaped holes slots and many other shapes      For "O" Ring holes to precision depths.      For perfect pipe joints.