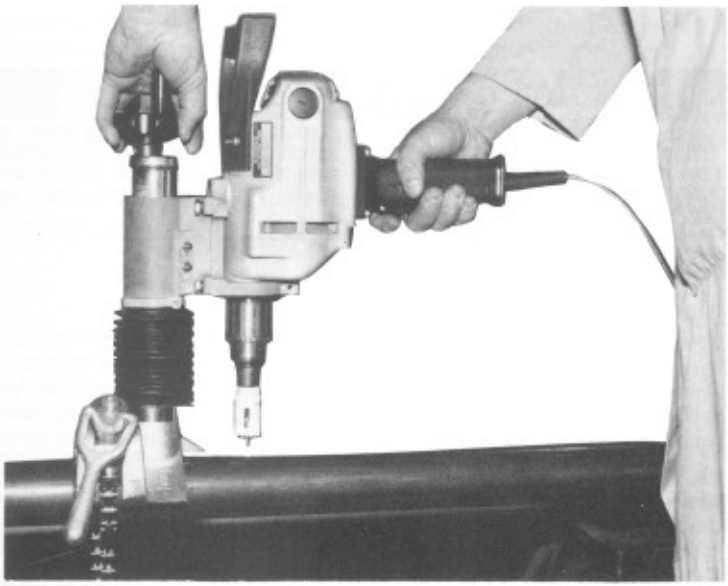
Victaulic®

HCT-904
Operating Instructions



CAUTION

This tool is designed for cutting holes in pipe. To accomplish this function requires some dexterity and mechanical skills, as well as sound safety habits.

Although these tools are manufactured for safe, dependable operation, it is impossible to anticipate those combinations of circumstances which could result in an accident. The following instructions are recommended for safe operation of the tool. Failure to follow these instructions could result in personal injury, incorrect dimensions or improper installation.

Victaulic Tool Company • 1326 Tatamy Road • Easton, PA 18042 • 215/559-3300 • FAX: 215/250-7065

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HCT-904 OPERATING INSTRUCTIONS

The HCT-904 is designed only for cutting holes in steel pipe. To accomplish this function requires some manual dexterity and mechanical skills, as well as sound safety habits. Although this tool is manufactured for safe dependable operation, it is impossible to anticipate those combinations of circumstances which could result in an accident. The following instructions are recommended for safe operation of the tool. The operator is cautioned to always practice "Safety First" during each phase of use, including setup and maintenance of this unit.

DANGER

TO REDUCE RISK OF ELECTRICAL SHOCK, CHECK THE ELECTRICAL SOURCE FOR PROPER GROUNDING AND FOLLOW THE INSTRUCTIONS BELOW.

BEFORE PERFORMING ANY REPAIR OR MAINTENANCE, DISCONNECT THE TOOL FROM ELECTRICAL SOURCE. ALWAYS UNPLUG TOOL AFTER USE.

WARNING

BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY, INCLUDING THE FOLLOWING.

1. **Read and understand this Tool Operating Instructions Manual.** Before operating or performing maintenance on this tool, read carefully the operator's manual. Become familiar with the tool's operations, applications, and limitations. Be particularly aware of its specific hazards. Store the operator's manual in a clean area and always at a readily available location. Additional copies are available upon request by writing to the Victaulic Tool Company.
2. **Ground all tools.** Tool is equipped with a three-prong plug and should be plugged into a three-hole electrical receptacle. If adapter is used to accommodate two-prong receptacle, the adapter wire must be attached to a known ground. Never remove third prong.
3. **Inspect the equipment.** Prior to starting the tool, check the movable parts for any obstructions. Be certain that tool parts are properly installed and secured.
4. **Keep work area clean.** Cluttered areas and benches invite accidents.
5. **Avoid dangerous environments.** Don't expose tools to rain. Don't use tool in damp or wet locations, and keep work area well lit.
6. **Keep visitors away.** All visitors should be kept a safe distance from work area.
7. **Disconnect power cord prior to servicing.** Changing saw blades, maintenance and repair should be attempted only by authorized personnel. Always disconnect power cord or power before servicing or making any adjustments.
8. **Keep the work area adjacent to the tool clear of clutter for unobstructed movement of the operator.** Remove all oil or coolant spills. Remove shavings from the tool as required to maintain operating clearance.

9. **Store idle tools.** When not in use, tool should be stored in a dry, high and locked-up place.
10. **Don't force tool.** It will do the job better and safer at the rate for which it is designed.
11. **Use right tool.** Don't force small tool or attachment to do the job of a heavy duty tool.
12. **Wear proper apparel.** No loose clothing or jewelry to get caught in moving parts. Rubber gloves and footwear are recommended when working outdoors.
13. **Keep alert.** Do not operate machine if ill or drowsy from medication or fatigue. Avoid horseplay around equipment and keep bystanders a safe distance from equipment.
14. **Use safety glasses with tools.** Ear protection may also be necessary. Also, a face or dust mask, if cutting operation is dusty.
15. **Don't abuse cord**. Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.
16. **Secure work.** Use clamps or a vise to hold work. It's safer than using your hand, and it frees both hands to operate tool.
17. **Don't overreach.** Keep proper footing and balance at all times.
18. **Maintain tools with care.** Keep tools sharp at all times, and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
19. **Disconnect tools** when not in use, before servicing, when changing accessories such as blades, arbor and chuck or before removing coupon from saw.
20. **Remove adjusting keys and wrenches.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
21. **Avoid accidental starting.** Don't carry plugged-in tool with finger on switch. Be sure switch is off when plugging in.
22. **Outdoor use extension cords.** When tool is used outdoors, use only extension cords marked and suitable for use outdoors.
23. **Do not operate tools in gaseous or explosive atmospheres.** Motors in these tools normally spark, and the sparks might ignite fumes.

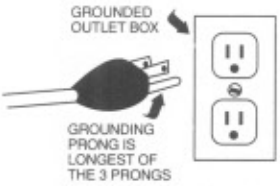


Figure A

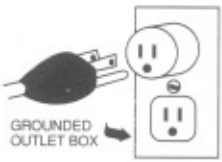


Figure B

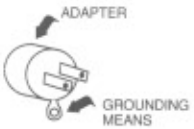
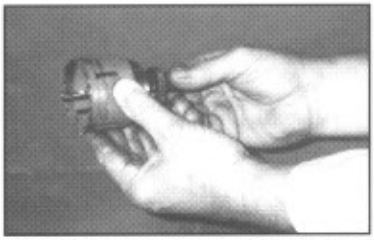


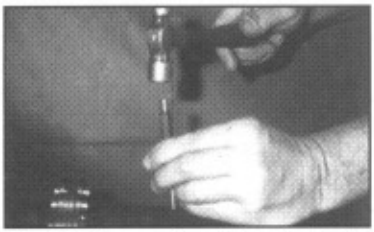
Figure C

This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with an approved three-conductor cord and three prong grounding type plug to fit the proper grounding type receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal. If your unit is for use on less than 150 volts, it has a plug like that shown in Figure A. An adapter, Figures B and C, is available for connecting Figure A plugs to two-prong receptacle. The green-colored rigid ear, lug, etc. must be connected to permanent ground, such as a properly grounded outlet box.

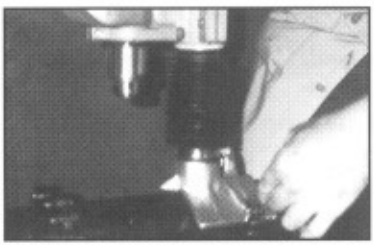
TOOL SET-UP AND OPERATION



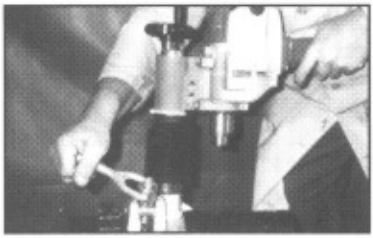
1. Remove arbor assembly and select correct hole saw (consult the table on page 4). Thread the locking ring back as far as it will go. Thread the saw onto the arbor until it is flush up against the arbor flange. Back off the hole saw just enough to line up the holes in the top of the saw with the drive pins. Thread the locking ring down all the way making sure the pins engage in the top of the saw. Be sure the locking ring is firmly tightened. Use of pliers or a similar tool for tightening is recommended.



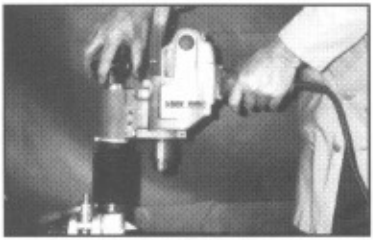
2. Locate the center of the desired hole on the pipe run and mark it clearly with a center punch. When selecting hole location, take into account the width of the Mechanical-T outlet to ensure it will fit and not interfere with pipe couplings or grooves and also to allow room on the pipe to mount the hole cutting tool.



3. Place hole cutting tool onto the pipe. Hook the chain around the pipe and insert in slot on the side of the base.

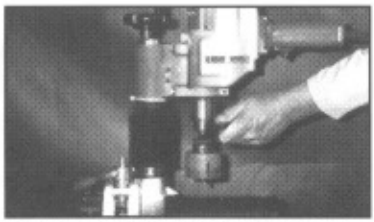


4. Leave chain loose enough to allow base movement. Be sure to loosen the vise handle enough to allow tightening of the chain around the pipe.

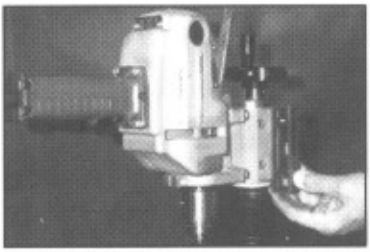


5. Raise the drill motor to its highest position by rotating "Feed Knob" (see tool nomenclature) counterclockwise.

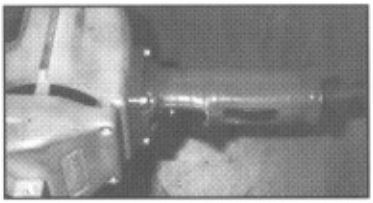
6. Take the "hex"- shaped end of the arbor and put it into the chuck of the drill motor. Tighten securely with the key provided.



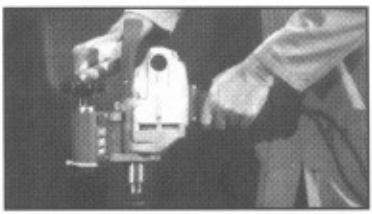
7. Turn the chuck manually to make certain the arbor assembly is properly installed. Should the arbor assembly seem to wobble, loosen the chuck, remove arbor assembly, repeat insertion and tighten the chuck, and check for wobble. Repeat as necessary to assure proper installation.



8. Locate arbor assembly over center punch mark and tighten Hole Cutting tool in the same manner as a pipe vise. A level may be placed against the "Traveling Bracket" (See tool nomenclature) to assist in alignment.



9. Check the switch on the underside of the handle of the drill motor. Make sure it is in the "forward" mode. Plug the drill motor cord into appropriate outlet or extension cord. (See power requirements.)



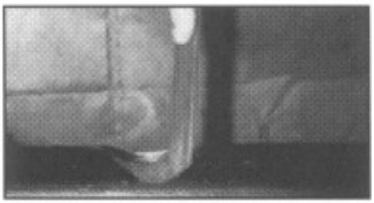
CAUTION

The HCT-904 should never be used on applications where spark hazards or contact with water exists.

10. Switch on the motor and begin feeding the saw by turning the Feeder Knob clockwise. Feed the saw so that binding does not occur. Operation of the feed is easily accomplished with one hand. If excessive force is required, check for obstructions. If the saw should become bound, switch off the motor immediately and back the hole saw off the pipe. Restart the motor and slowly apply feed pressure until a smooth cut is achieved.

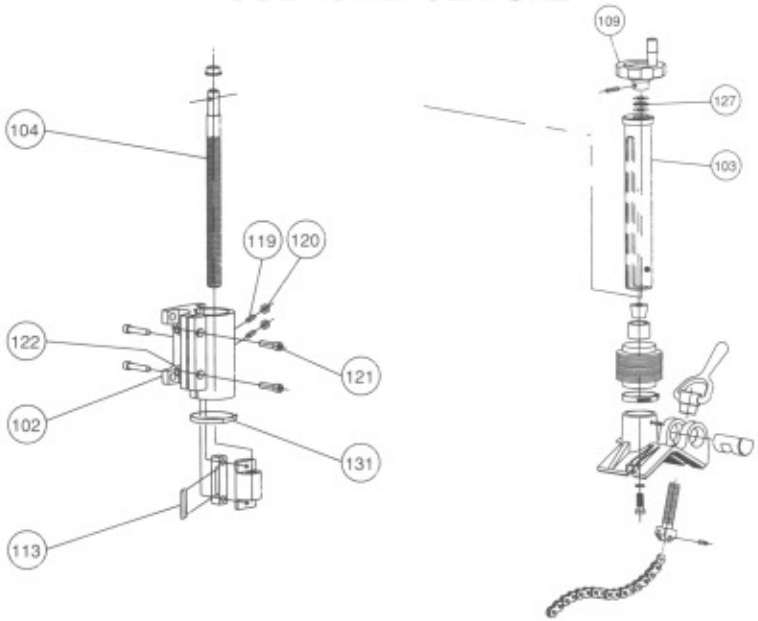
11. After completing the cut, stop drill motor, retract hole saw and move the tool away from the hole. Remove the coupon from the saw. Don't leave coupon inside of pipe. This can be done by using the coupon removal tool as shown. Make sure not to damage the wire wound into the drill. It is there to keep the coupon from falling into the line after cutting the hole. Also, avoid touching the coupon since it may be VERY HOT and SHARP. Remove any chips from the pilot drill.

12. Dismount hole cutting tool from pipe. Loosen vise handle and unhook chain from slot, remove tool from pipe.



13. Brush away shavings from around the hole so that the gasket of the Mechanical-T, Hooker, Snap-Let, Vic-Let or Vic-O-Well outlets can seal properly on the pipe. Use file if necessary to remove burrs or scratches from the gasket sealing area. Pipe surface within ⅝" of the hole must be clean, smooth and free from indentations which might affect gasket sealing. The pipe around the entire circumference within the "A" dimension (see chart and illustration-page 7) must be free from any dirt or projection which might prevent Victaulic hole cut products from seating fully on the pipe.

TOOL NOMENCLATURE

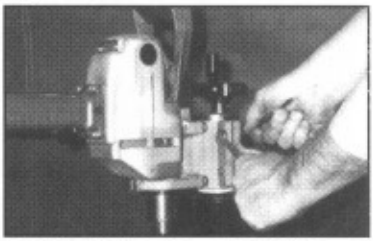


MAINTENANCE PROCEDURES

Lubrication- The HCT-904 Hole Cutting Tool is lubricated at the factory. However, periodic lubrication of the "Feeder Rod" (Item 104) and "Bearing" (Item No. 127) with light oil is recommended.

Adjustments- After many uses, play may develop at the "Gib" (Item No. 113), allowing excessive side to side movement of the drill assembly. This is easily corrected using the screw adjustment provided. Loosen "locknuts", (Item No. 120), adjust the "Screws" (Item No. 119) to take up any slack.

Retighten the lock nuts while holding the screws in place. Check the side play in the assembly. Run the assembly up and down, using the "Feeder Knob, (Item No. 109), checking for excessive-drag. When properly adjusted, very little side motion will be allowed and very little drag will be felt when rotating Feeder Knob.



Should there be excessive wear between the "Post" (Item No. 103), and the "Traveling Bracket" (Item No. 102), allowing objectionable play in the drill assembly relative to the base assembly, the clearance between the Traveling Bracket and the Post can be adjusted using "Screws" (Item No. 121) and "Nuts" (Item No. 122). Loosen Nuts, then tighten the two screws evenly until excess play is removed. Run the assembly up and down, using the Feeder Knob, checking for excessive drag. Only small adjustments are needed. **DO NOT OVERTIGHTEN**, as movement of the

Traveling Bracket on the Post will be effected. Once a good fit has been attained where play has been minimized, but no excessive drag has been realized, tighten nuts while holding the cap screws.

Note: Plastic Clamp (Item No. 131) is adjusted at the factory so as not to cause binding of the Traveling Bracket. **DO NOT OVERTIGHTEN.**

INTRODUCTION

The Victaulic HCT-904 Hole Cutting Tool is specifically designed for use on steel pipe to cut a hole for branch connections utilizing Victaulic Styles 920, 921, and 929 Mechanical-T, Style 922 Hooker, Style 923 Vic-Let , Style 924 Vic-O-Well and Style 925 Snap-Let. Not intended for use on cast iron or plastic pipe. The saw blades are of predetermined size and, by following the table below, you can easily select the proper saw for whatever Victaulic component you are installing. The HCT-904 is rated for 1¼ to 8" run sizes and up to 2 ¾" hole sizes.

RECEIVING TOOL

The HCT-904 is packed individually in a wooden storage box designed for safe transportation of the tool. Upon receipt of the tool, check to be certain all necessary parts are included.

The box should contain:
1 drill motor assembly with chuck key
1 extra pilot drill with coupon saver
1 arbor assembly
1 coupon remover tool
2 sets of instructions

Saw blades must be ordered separately but will be shipped in the carton with the HCT-904 if ordered at the same time.

Should the box not contain appropriate components, notify Victaulic.

NOTE: IF TOOL IS RENTED, BE CERTAIN TO SAVE THE WOODEN STORAGE BOX FOR RETURN SHIPMENT.

POWER REQUIREMENTS

DANGER

TO REDUCE RISK OF ELECTRICAL SHOCK, CHECK THE ELECTRICAL SOURCE FOR PROPER GROUNDING AND FOLLOW THE INSTRUCTIONS BELOW.

BEFORE PERFORMING ANY REPAIR OR MAINTENANCE, DISCONNECT THE TOOL FROM ELECTRICAL SOURCE. ALWAYS UNPLUG TOOL AFTER USE.

Always plug the drill motor into a grounded single phase electrical outlet. 115 volt models require a 115 VAC, 15 amp, 50/60 cycle power supply, 220 volt models require a 220 VAC, 10 amp, 50/60 cycle power supply. See page 11 for recommended extension and conductor size at various lengths.

The HCT-904 is designed solely to cut holes in pipe. Damage resulting from any other use will be the user's responsibility.

HOLE SAW SIZES

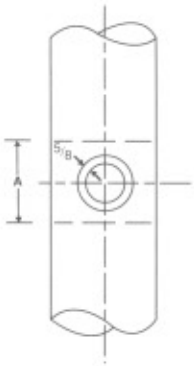
See the chart below for the hole size required for proper assembly of Victaulic hole cut products. Hole Saw size is slightly larger than the collar for the Mechanical-T, Hooker, Snap-Let, Vic-Let, or Vic-O-Well outlets to allow room for proper engagement.

Product Branch Size (Inches)	Hole Saw Blades	
	Size (In.)	Part Number*
1¼ 922/925 - ½, ¾, 1	1**	N-M18-000-011
1 ½ 922/925 - ½, ¾, 1	1**	N-M18-000-011
2 922/925 - ½, ¾, 1	1¼	N-M18-000-016
2 ½ 922/925 - ½, ¾, 1	1¼	N-M18-000-016
923 - ½, ¾	1 ½	N-M18-000-021
924 - ½, ¾	1 ½	N-M18-000-021
921 - ½, ¾, 1	1 ½	N-M18-000-021
2 921 - 1¼, 1 ½	1¾	N-M18-000-026
2 ½ 921 - 1¼, 1 ½	2	N-M18-000-031
920/929 - 1¼, 1 ½	2	N-M18-000-031
920/929 - 2	2 ½	N-M18-000-037
920 - 2 ½	2¾	N-M18-000-040

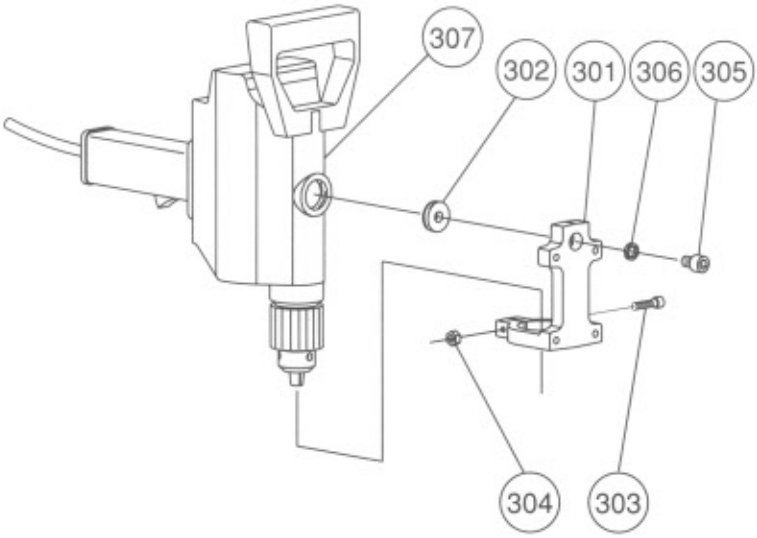
*Hole saw blades are not supplied with the HCT-904 and must be ordered separately.

**1" size hole saw blade requires arbor N-M14-000-007 not supplied with HCT-904. Part must be ordered separately.

Mech-T Branch Size (Inches)	"A" Dimension
½	3½
¾	3½
1	3½
1¼	4
1½	4
2	4½
2 ½	4¾



PARTS LIST
Drive Unit Assembly



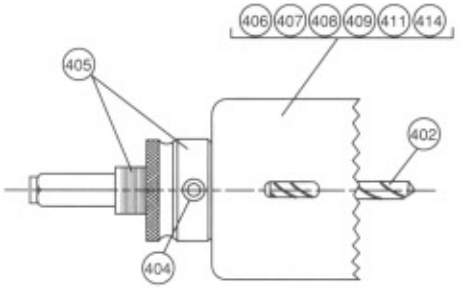
Item Number	Quantity	Part Number	Description
301	1	R-301-904-HCT	Adapter Bracket
302	1	R-302-904-HCT	Plug Adapter
303	1	NS03040100	Socket Head Cap Screw, ¼- 20 X 1" Long
304	1	NN01040000	Hex Nut, ¼- 20
305	1	NS03060008	Socket Head Cap Screw, ⅜ -16 X ½ Long
306	1	NW05060000	High Collar Lockwasher, ⅜
307	1	NM20000003	Milwaukee Compact Hole Shooter, Catalog Number 1660-1 Rev. 120 Volt
307A	1 (Optional)	NM20000005	Milwaukee Compact Hole Shooter, Catalog Number 1662-3 240 Volt AC

PARTS LIST

Mandrel Assembly —For 1 ¼" or Larger Hole Saws

Item No.	Part No.	Qty.	Description
400	R-400-900-HCT	Ref.	Mandrel Assembly
402	R-402-900-HCT	1	Slug Saver Drill Bit
404	N-S90-050-010	1	Nyloc Half Dog Set Scr
405	N-M14-000-008	1	Mandrel
406	N-M18-000-021	*	Hole Saw ¼"
407	N-M18-000-031	*	Hole Saw 2"
408	N-M18-000-037	*	Hole Saw 2½"
409	N-M18-000-040	*	Hole Saw 2¾"
411	N-M18-000-016	*	Hole Saw 1¼ "
414	N-M18-000-026	*	Hole Saw 1¾ "

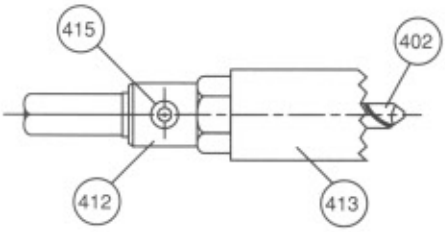
* Hole Saws Purchased Separately



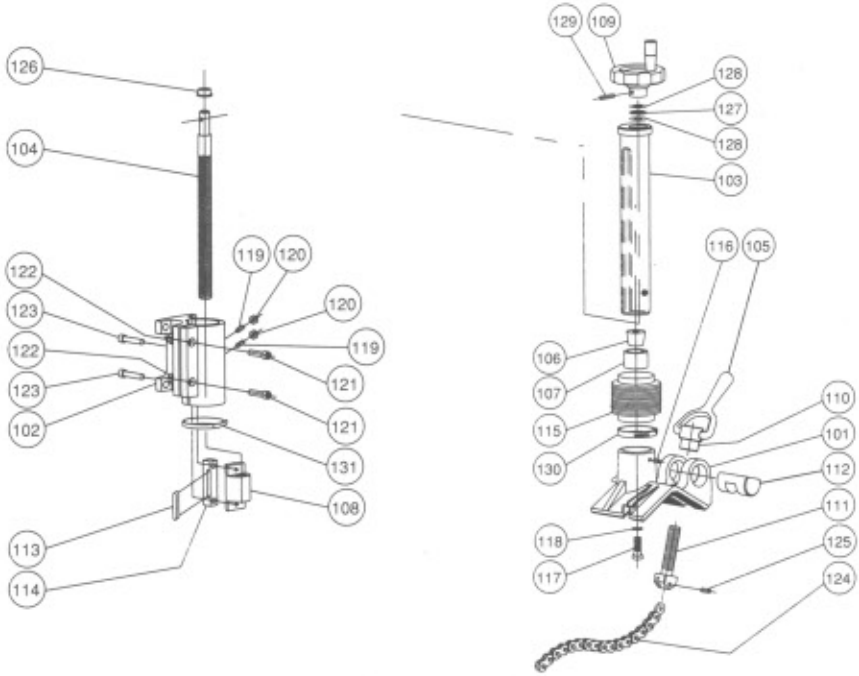
Mandrel Assembly —For 1" Diameter Hole Saw

Item No.	Part No.	Qty.	Description
450	R-450-900-HCT	Ref.	Mandrel Assembly
402	R-402-900-HCT	1	Slug Saver Drill
412	N-M14-000-007	1	Mandrel
415	N-S90-050-004	1	Nyloc Half Dog Set Scr.
413	N-M18-000-011	*	Hole Saw 1"

* Hole Saws Purchased Separately



PARTS LIST
Base Assembly



Item #	Qty.	Part No.	Description
101	1	R-101-904-HCT	Base, Machined
102	1	R-102-904-HCT	Traveling Bracket, Machined
103	1	R-103-904-HCT	Post
104	1	R-104-904-HCT	Feeder Rod
105	1	R-105-904-ASC	Chain Nut Handle
106	1	R-106-904-HCT	Taper Plug
107	1	R-107-904-HCT	Taper Bushing
108	1	R-108-904-HCT	Traveling Nut
109	1	R-109-904-HCT	Feed Knob
110	1	R-110-904-HCT	Chain Nut
111	1	R-111-904-HCT	Chain Screw
112	1	R-112-904-HCT	Trunnion
113	1	R-113-904-HCT	Gib
114	1	R-114-904-HCT	Key
115	1	R-115-904-HCT	Bellows
116	1	NP01003006	Roll Pin, 3/16 X 3/8 Lg.
117	1	NS20060100	Low Head Socket Cap Scr. 3/8 -16 X 1" Lg.
118	1	NW05060000	High Collar Lockwasher, 3/8

Item #	Qty.	Part No.	Description
119	2	NS94010100	Cup Pt. Set Screw No. 10-32 X 1" Lg.
120	2	NN02010000	Hex Nut, No. 10-32
121	2	NS03040100	Socket Head Cap, 1/4- 20 X 1 Lg.
122	2	NN01040000	Hex Nut, 1/4 -20
123	2	NS03040108	Skt. Hd.CapScr. 1/4 -20 X 1 1/2 Lg.
124	30 in.	NM09000008	Morse Wrench Chain, 48 Links
125	1	*	Pin,.20 Dia. X .56 Lg.
126	1	NB21050001	Flange Bearing, Oilite FF-636-3
127	1	NB03050001	Bearing, Torrington NTA-815
128	2	NB05050001	Thrust Washer, Torrington TRA-815
129	1	NP01003100	Roll Pin, 3/16 X 1 Lg.
130	1	NM39000001	Clamp, S.S.1/2 Wide Suitable for 2 1/8" Diameter Helical Style
131	1	NM39000002	Clamp, Plastic Pull-Style, Suitable for 2 1/8" Diameter

*Supplied with Item 124

PARTS ORDERING INFORMATION

When ordering parts the following information is necessary for the Victaulic Tool Company to process the order promptly and send the correct part(s).

1. **Tool Number.** HCT-904
2. **Tool Serial Number.** The Tool Serial Number is located on the base casting.
3. **(Quantity), Item Number, Part Number, and Description.**
   Example: (1),127, NB 030 50001,Bearing,Torrington MTA-815
4. **Where to send the part(s).**
   Company Name
   Address
5. **To whose attention to send the part(s).**
   Person's name
6. **Purchase Order Number**

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Base will not fully tighten on pipe.	Vise handle has run out of thread.	Loosen vise handle and position one link tighter on chain slot. Retighten vise handle.
Motor will not run.	Tool not plugged in. Fuse is blown or circuit breaker is off or tripped. Motor trigger switch is defective. Plug not making good contact with receptacle.	Plug tool into proper voltage outlet. Check power supply fuse or breaker and correct. Replace switch. Inspect connection and make repairs as necessary.
Pilot drill will not cut.	Drill motor is being run in reverse. Pilot drill is not tight in arbor. Pilot drill is dull.	Move motor switch to the forward position. (See page 6). Tighten arbor set screw making sure it engages pilot drill flats. Replace pilot drill.
Pilot drill does not retain coupon.	Coupon retaining drill bit is damaged.	Replace pilot drill.

TROUBLE SHOOTING (Cont'd.)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Hole saw blade will not cut.	Drill motor is being run in reverse. Hole saw blade is dull. One or more teeth have been broken off hole saw blade. Pipe has a hard spot or hard weld seam.	Move motor switch forward position (See page 6). Replace hole saw blade. Replace hole saw blade. Inspect cut for teeth lodged in the cut. Remove lodged teeth with center punch or small chisel (wear eye protection). Use a sharp hole saw blade and generously lubricate cut with thread cutting oil. Cut hole slowly.
Drill motor gets very hot.	Holes are being cut too fast. Hole saw blade is dull. Too thin or too long an extension cord is being used.	Feed saw into cut at a moderate rate and do not bog down motor. Replace hole saw blade. Replace extension cord with one of proper size and length, see extension cord chart below.
Excessive side to side play.	Gib out of adjustment.	Adjust Gib. See maintenance section.
Excessive play between the Traveling Bracket and the Post.	Traveling Bracket Wear.	Adjust Traveling Bracket. See maintenance section.
Excess torque required to rotate Feeder Knob.	Drill motor being run in reverse. Lack of lubrication on Feeder Rod. Gib too tight. Traveling Bracket too tight.	Move motor switch to forward position. (See page 6). Lubricate Feeder Rod. See lubrication section. Readjust Gib. See adjustment section. Readjust Traveling Bracket. See maintenance section.

VICTAULIC EXTENSION CORD REQUIREMENTS FOR ELECTRICALLY POWERED TOOLS

When prewired outlets are not available and an extension cord must be used, it is important to use the proper cord size (e.g., conductor size American Wire Gauge). Cord size selection is based upon tool rating (amps) and cord length (ft.). Use of a cord size (gauge) thinner than required will cause a significant voltage drop at the tool while the tool is operating. The voltage drop may cause damage to the tool and can result in failure of the tool to operate properly. Use of a heavier than necessary cord size (gauge) is acceptable.

Listed in the chart below are the recommended cord sizes (gauge) for cord lengths up to and including 100 feet. Use of cords beyond 100 feet in length should be avoided.

RECOMMENDED EXTENSION CORD CONDUCTOR SIZE (AWG)AT VARIOUS CORD LENGTHS (FT.)

Tool	Circ. Rating Volt/Amps	Cord Lengths		
		25 Feet	50 Feet	100 Feet
HCT-904	115/15	12	12	10
	240/10	14	14	12