

**HOLLO-BLAST**  
**INTERNAL-PIPE BLAST TOOL**  
**O. M. 06158**

**MC FILE NUMBER: 140-0777**  
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**! WARNING**

**Do not proceed with these instructions\* until you have READ the orange cover of this MANUAL and YOU UNDERSTAND its contents.**

**These WARNINGS are included for the health and safety of the operator and those in the immediate vicinity.**

**\*If you are using a Clemco Distributor Maintenance and Part Guide, refer to the orange warnings insert preceding the Index before continuing with the enclosed instructions.**

**Electronic files include a Preface containing the same important information as the orange cover.**

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## 1.0 INTRODUCTION

### 1.1 Scope

1.1.1 These instructions cover set-up, operation, maintenance, troubleshooting, and replacement parts for Clemco's Hollo-Blast internal pipe blasting tool.

1.1.2 These instructions contain important information required to safely operate of the Hollo-Blast tool. The tool requires a blast machine and accessories to deliver the blast stream to the tool. Before using the Hollo-Blast all personnel associated with the operation must read this entire manual, including the orange cover, and have knowledge of how to safely operate the blast machine and all accessories.

1.1.3 All personnel involved with the abrasive blasting process must be made aware of the hazards associated with abrasive blasting. The Clemco booklet "Abrasive Blasting Safety Practices" (Stock No. 22090) also available in Spanish (Stock No. 22931) contains important safety information about abrasive blasting that may not be included in equipment operation manuals. To request additional copies, email [info@clemcoindustries.com](mailto:info@clemcoindustries.com).

### 1.2 Safety Alerts

1.2.1 Clemco uses safety alert signal words, based on ANSI Z535.4-2011, to alert the user of a potentially hazardous situation that may be encountered while operating this equipment. ANSI's definitions of the signal words are as follows:



**This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**

## NOTICE

**Notice indicates information that is considered important, but not hazard-related, if not avoided, could result in property damage.**

## CAUTION

**Caution indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.**

## WARNING

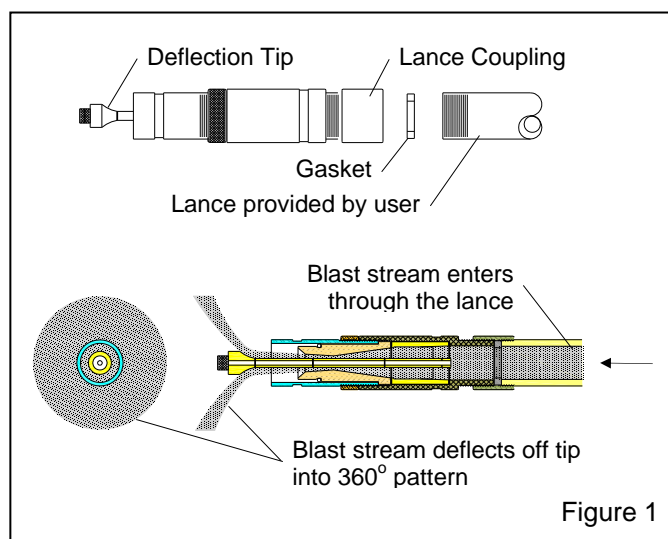
**Warning indicates a hazardous situation that, if not avoided, could result in death or serious injury.**

## DANGER

**Danger indicates a hazardous situation that, if not avoided, will result in death or serious injury.**

### 1.3 Theory of Operation

1.3.1 Refer to Figure 1. When correctly connected to a blast hose and lance, and the blast machine is pressurized, the blast stream flows through the tool and deflects off the deflection tip. This spreads the blast stream into a 360° blast pattern, cleaning the inside of the pipe without having to rotate it.



### 2.0 ANCILLARY EQUIPMENT REQUIREMENTS

#### 2.1 Blast Machine and Accessories.

2.1.1 The Hollo-Blast tool attaches to the end of a pipe lance (section(s) of 1-1/4" NPT rigid pipe) and blast hose in place of a standard nozzle.

2.1.2 The blast machine should have a minimum external piping size of 1-1/4" inside diameter (ID), a blast hose assembly with a minimum of 1-1/4" ID, and quick couplings on both ends (Refer to Section 2.4 for

exceptions). The blast hose should be long enough to feed the lance from the pipe's entrance to the far end.

**2.2 Centering Devices**

**2.2.1** The tool will blast the inside of 2-inch ID pipe without using a centering carriage.

**2.2.2** Use one of the following carriages to center the tool in larger diameter pipe.

- Stock No. 01124, Model HBC-1 Collar and Button Set centers the tool in 3" to 5" ID pipe. Refer to Section 3.1.
- Stock No. 01131, Model HBC-2 Adjustable Carriage fully adjustable carriage centers the tool in 5" through 12" ID pipe. Refer to Section 3.2.

**2.3 Compressed Air Requirements**

**2.3.1** The compressor and air supply lines must be sized to support a blast operation at the pressure and cfm shown in the air consumption table below. The cfm consumption shown are approximate and are based on blasting with pressure set at 100 psi.

Nozzle Stock No.	Orifice Size	New Nozzle and Sleeve	Worn Nozzle and Sleeve
01406	1/2"	200 cfm	340 cfm
01407	5/8"	350 cfm	550 cfm

Nozzles are considered worn out when the orifice increases by 1/16". Carbide sleeves are considered worn out when they are worn to about 1/4".

**2.4 Pipe Lance Provided by User**

**2.4.1 The purpose of the lance**

**2.4.1.1** The lance is section(s) of 1-1/4" NPT pipe that fits between the blast hose and Hollo-Blast tool, and is usually the same length as the pipe being blasted.

**2.4.1.2** The rigid pipe lance provides a means to feed the tool through the pipe. It also affords a straight path for the blast stream to enter the tool, which prevents hot spots and uneven wear. The only application in which a lance may not required is where the ID of the pipe is between 3" and 5" (in this situation the blast hose will not form a bend), and the pipe is short enough to feed the hose without the use of a rigid lance. This exception is shown in Figure 2. Otherwise a lance is always recommended.

**2.4.1.3** A lance must be used on larger diameter pipe because the blast hose will bend near the point of attachment to the tool. Such a bend disrupts the smooth flow of the blast stream to the deflection tip, and leads to excessively rapid wear. A smooth, straight path into the tool is essential for optimum performance.

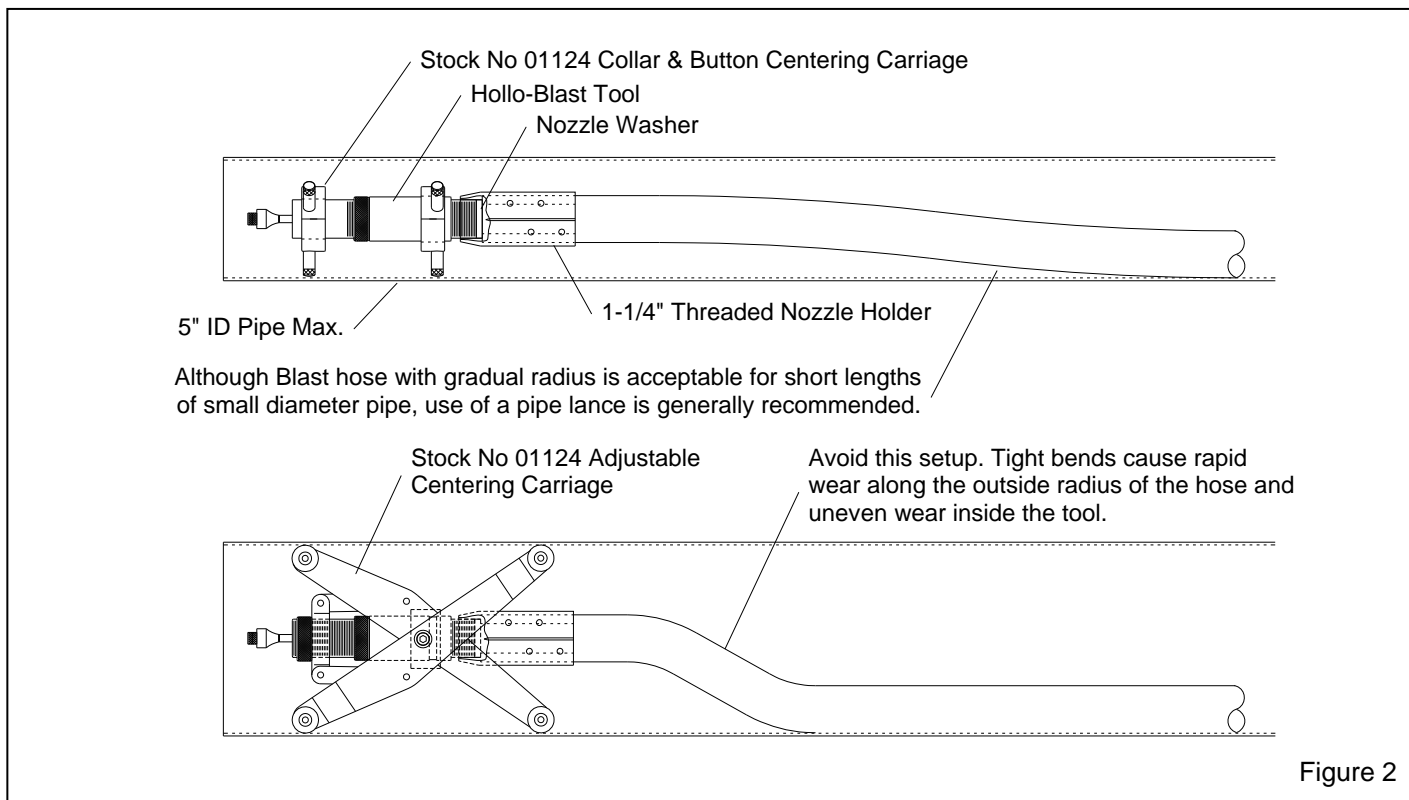
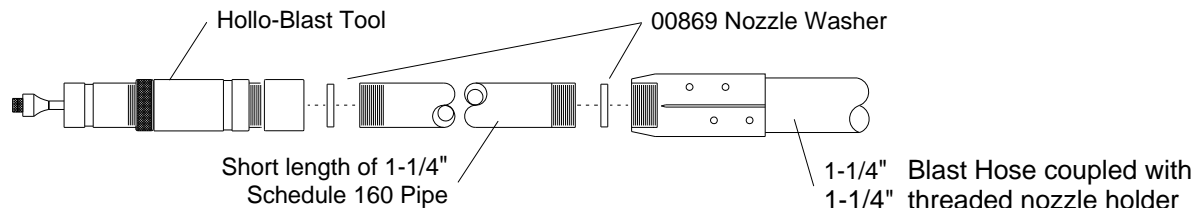


Figure 2

2.4.2 Lance setup

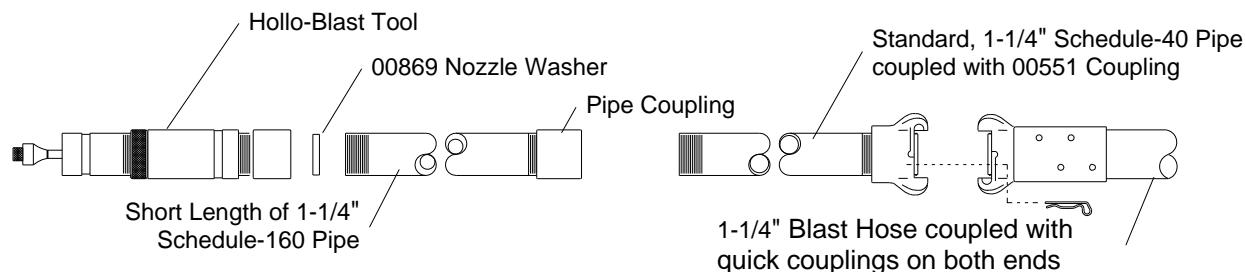
2.4.2.1 The Hollo-Blast has a 1-1/4" NPS-F threaded connection at the entrance of the tool to accommodate the pipe lance. The first two or three feet of the lance should be schedule-160 heavy-walled pipe. The heavy wall compresses the gasket better than thin-walled pipe, and protects the entrance of the tool from the abrasive

stream better than light-walled schedule-40 pipe. The illustrations in Figures 3 A-C show typical lance setups. Each uses the schedule-160 heavy-walled lance attached to the tool and standard schedule-40 pipe to make up the difference. Standard schedule-40, 1-1/4" pipe, comes in 21 ft. lengths. Use multiple lengths coupled as shown in Figures 3-B and 3-C to obtain the required length.



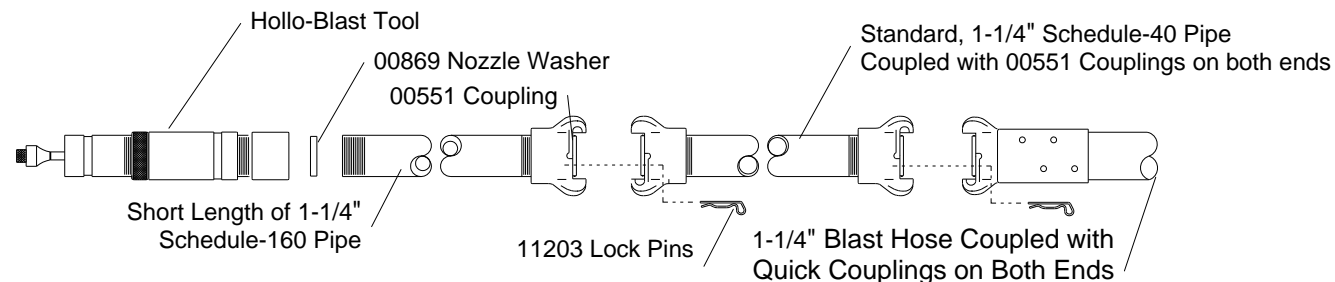
This is the basic setup. Alone it may be used to blast short lengths (three to five feet) of pipe or cylinders. Longer lengths of schedule 160 could be cost prohibitive and cause undue wear on heavy walled pipe.

Figure 3-A



This setup is suitable for blasting lengths of 2" ID to 3-1/4" ID pipe, or 25 foot lengths of larger diameter pipe.

Figure 3-B



This setup should be used when multiple lances are required for blasting longer lengths of 3-1/2" and larger diameter pipe.

Figure 3-C

**Figure 3-A** is the basic setup; it should be used with all lance setups. Alone it is suitable for blasting short lengths (the length of the heavy-walled lance) of pipe or cylinders.

**Figure 3-B** is the basic setup, plus additional standard 1-1/4 pipe lance, attached with threaded pipe couplings. This setup uses standard threaded pipe couplings to connect the lance sections together. Using threaded pipe couplings allows it to fit inside of 3-1/4" diameter and smaller pipe where a quick coupling will not fit. The threaded couplings require the lance be screwed on or off when adding or removing sections. The threads are prone to galling, so the setup in Figure 3-C should be used whenever possible.

**Figure 3-C** is the basic setup, plus additional standard 1-1/4 pipe lances, attached with quick couplings. This uses quick couplings to connect lance sections together. Quick couplings eliminate the need to rotate the lance when adding or removing sections. It is limited to use with pipe diameters that are 3-1/2" diameter and larger that will accommodate the quick couplings.

**2.5 Abrasive**

**2.5.1** DO NOT USE abrasives containing more than one percent crystalline (free) silica. Obtain safety data sheets (SDS) for the blasting abrasive prior to blasting, paying particular attention the health risks and presence of any hazardous/toxic substances. Use only abrasives specifically manufactured for blasting, and that are compatible with the surface being blasted. Abrasive produced for other applications may be inconsistent in size and shape, and contain particles that could jam the abrasive metering valve, or cause irregular wear. Steel grit is an ideal media to use if adequate recovery means are available.

**2.5.2 Silicon Carbide, Aluminum Oxide, and Garnet:** Aggressive abrasives such as these should be avoided unless required by job specification. Service life will be reduced on any components which come in contact with these abrasives. When an aggressive abrasive must be used, use a boron carbide or composite deflection tip and boron sleeves. Boron tips may chip when using large, aggressive abrasive. Use a composite tip for 36-mesh and coarser aggressive abrasive.

**2.5.3 Abrasive Size**

**2.5.3.1** The choice of abrasive size depends on the desired profile, cleaning rate, and nozzle size. Generally, larger and denser abrasives provide a deeper profile, while smaller abrasives clean faster. With the 1/2" orifice nozzle, use 25-mesh and finer; with the 5/8" orifice nozzle, use 16-mesh and finer.

**3.0 Attach Centering Device**

**3.1 Collar and Buttons, 3" to 5", Model HBC-1  
Figures 4-A and 4-B**

Collars without buttons fit inside 2-3/4" ID pipe, which must be smooth and without seams or other protrusions.

**3.1.1** The set comes with two collars of different inside diameters and six each of four different length buttons to center the tool in 3" to 5" pipe. Refer to the following steps for assembly. Additional collar and buttons could be used to support the lance.

1. Slide the front collar over the tip protection sleeve. Align the collar setscrew with the groove in the protection sleeve. Using the 3/16" hex key provided, tighten the setscrew to secure. Repeat the process to secure the rear collar to the tool holder.

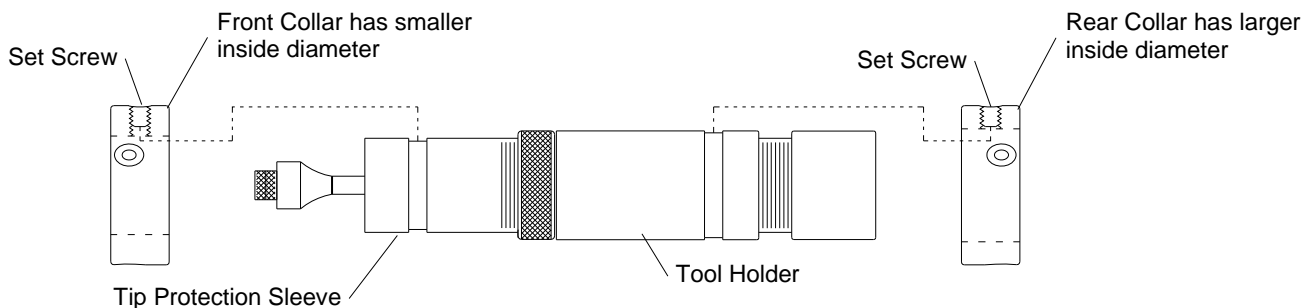


Figure 4-A

2. Determine which set of buttons centers the tool best and install them into the collars as shown.

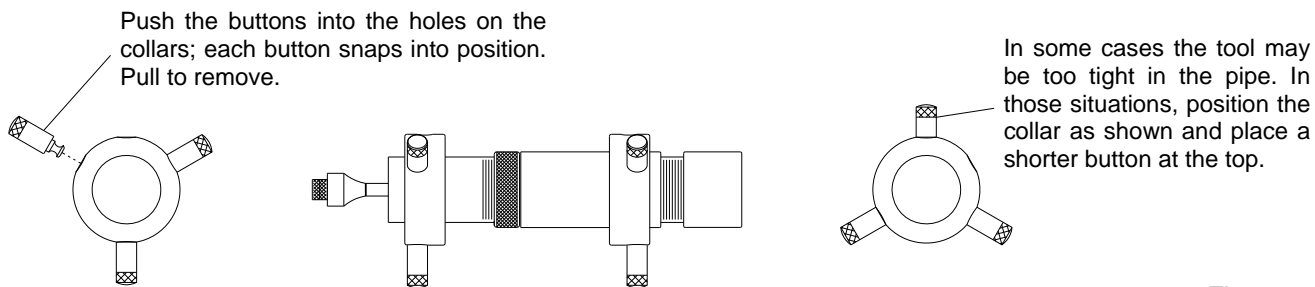


Figure 4-B

**3.2 Adjustable Centering Carriage 5" to 12"  
Model HBC-2 Figures 5-A through 5-I**

**3.2.1** This carriage is completely adjustable to center the tool in 5" to 12" pipe. Refer to the following 10 steps for assembly.

1. Using the 3/16" hex key provided, loosen the setscrew, and then remove the knurled lock-ring and threaded sleeve.

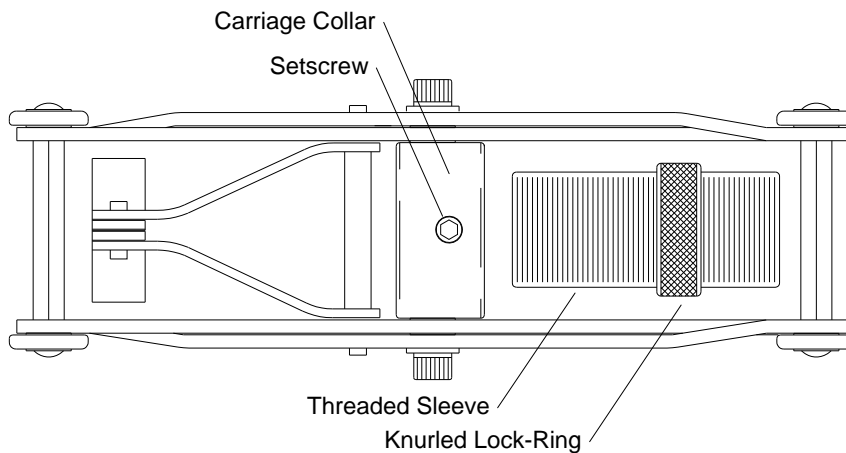


Figure 5-A

2. Loosen the knurled lock-ring on the chrome tip protection sleeve.

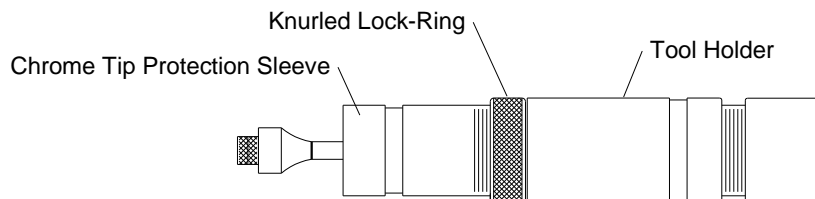


Figure 5-B

3. Unscrew the chrome tip protection sleeve to remove it from tool holder assembly. It may be necessary to hold the nozzle while the chrome sleeve is removed to prevent the nozzle and deflection tip assembly from coming out of the tool holder. Note: The o-ring may slide off the nozzle, if so, retrieve it from inside the chrome sleeve and place into nozzle groove.

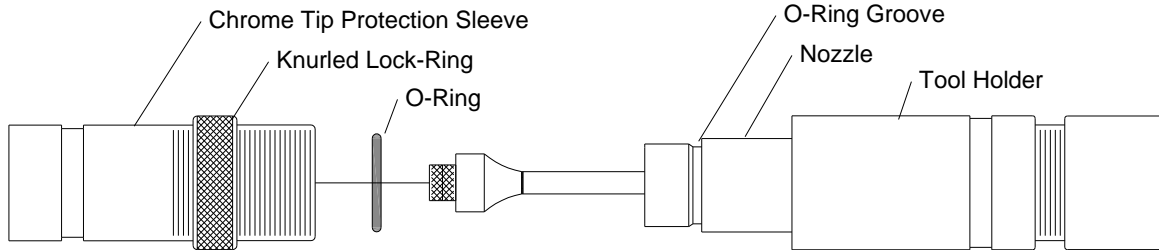


Figure 5-C

4. Position the knurled lock-ring at about the middle of the threaded sleeve.  
5. Make sure the o-ring is in place in the nozzle o-ring groove.

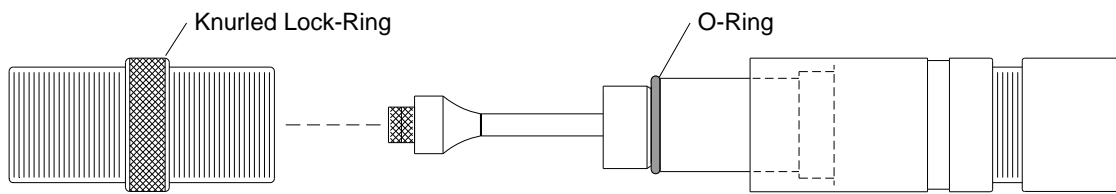


Figure 5-D

6. Screw the threaded sleeve into the tool holder until it is tightly seated against the nozzle flange. Make sure it is the sleeve that is seated against the nozzle, and not the knurled lock ring seated against the tool holder. Rapid wear on the nozzle and tool holder will occur if the tool holder is not tight against the nozzle flange.

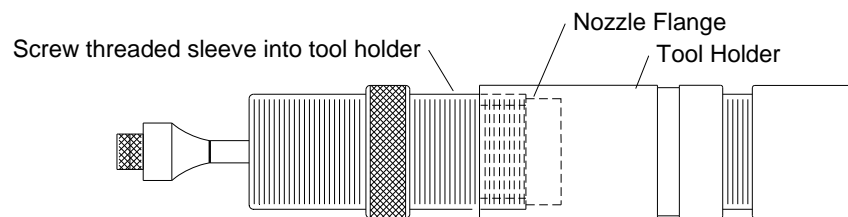


Figure 5-E

7. Screw the lock-ring tightly against the tool holder to lock the threaded sleeve.

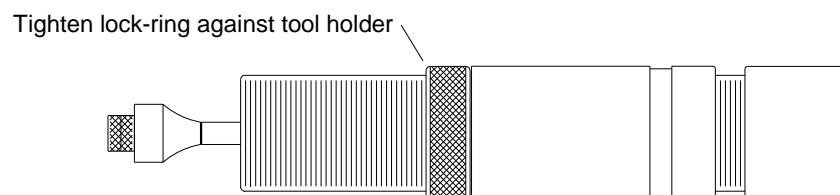


Figure 5-F

8. From the rear of the carriage, insert the reassembled tool through the carriage collar and yoke as shown. Align the groove in the tool holder with collar setscrew, and tighten the setscrew to secure.

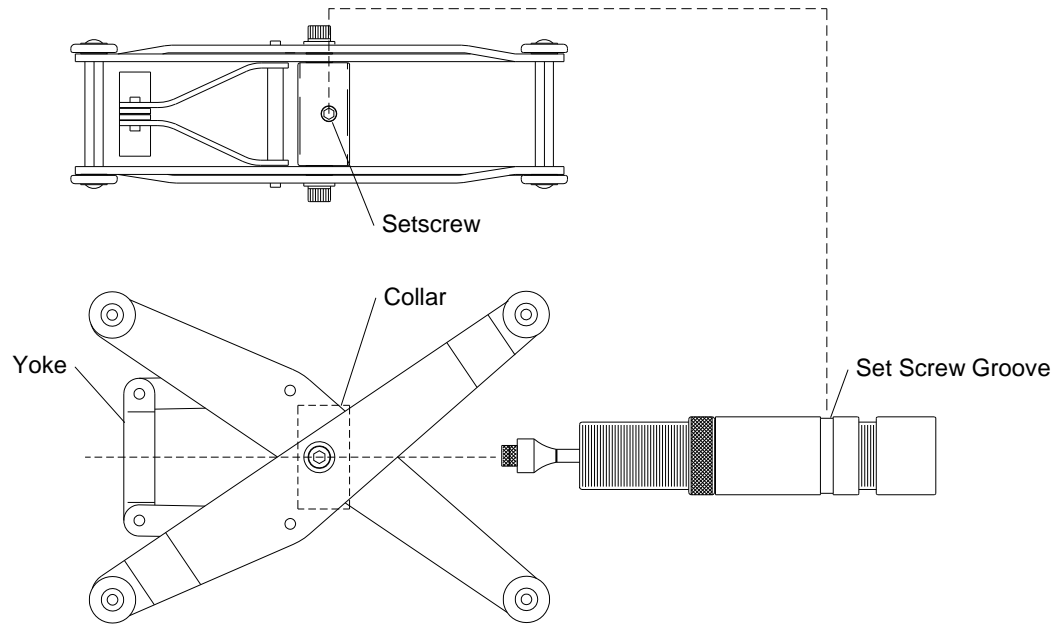


Figure 5-G

9. Screw the remaining lock-ring onto the threaded sleeve.

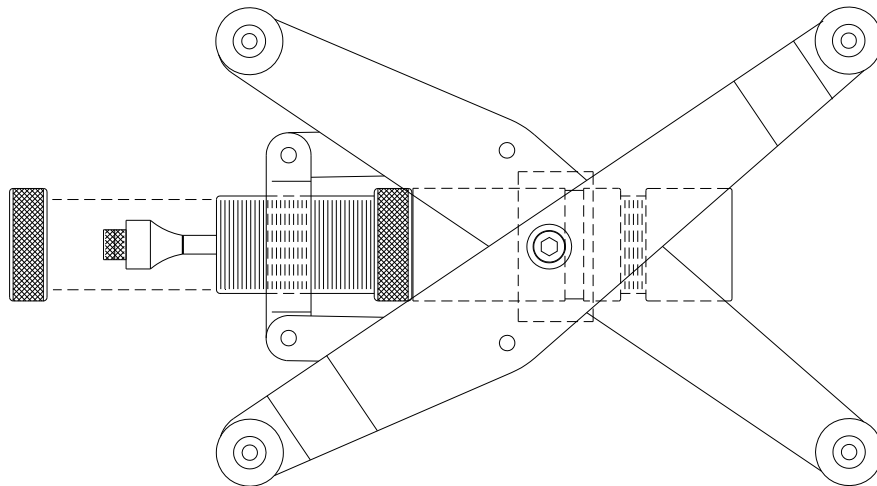


Figure 5-H



10. Adjust the carriage by turning the lock-ring onto the threaded sleeve; the farther the ring is screwed onto the sleeve, the more the carriage expands.

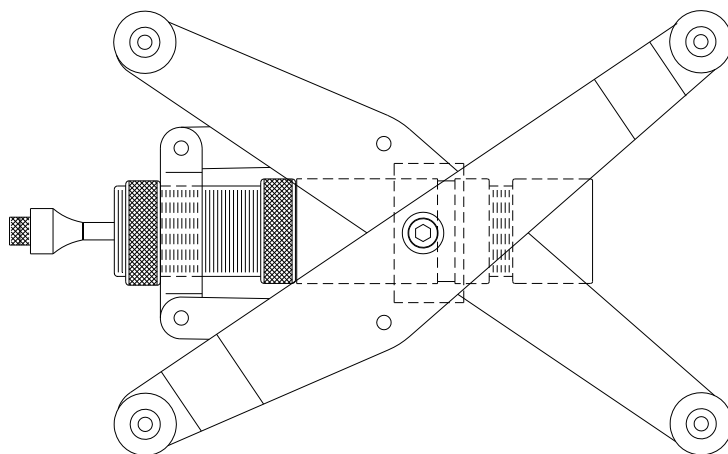


Figure 5-I

#### 4.0 Set-Up and Operation

### **⚠ WARNING**

**Hose disconnection while under pressure could cause serious injury or death. Use safety lock-pins and safety cables on all coupling connections to help prevent hose couplings from accidental disconnection.**

- 4.1** Follow the instructions in the applicable owner's manuals and setup the blast machine and all accessory equipment.
- 4.2** Install the centering device and adjust it to center the tool to the inside diameter of the pipe.
- 4.3** Connect the blast hose and lance to the tool.
- 4.4** Place the tool inside the entrance of the pipe, being careful not to hit the deflection tip against the pipe.
- 4.5** Pressurize the blast machine and begin blasting. Adjust the abrasive flow lean; too much abrasive hampers blasting efficiency and results in heavier wear on the tool part and reduces production.
- 4.6** While the tool is at the entrance of the pipe, determine the best abrasive flow and speed that the tool should be moved to obtain the desired degree of blasting.

- 4.7** Stop blasting and push the tool to the far end of the pipe. Start blasting and pull the lance backward; otherwise abrasive could build-up inside the pipe and slow production. Spent abrasive will blow out the far end of the pipe.

- 4.8** Pipe that requires extensive cleaning may require a second pass. Examine the pipe and repeat the process if necessary. If abrasive remains inside the pipe, shut off the abrasive flow so only air comes out of the tool. Push the tool through the pipe to blow out remaining materials.

- 4.9** If it is necessary to remove the tool for any reason before blasting is completed, mark the lance so the tool can be inserted to the same spot.

- 4.10** Follow the instructions in the applicable owner's manuals and shutdown the blast machine and accessory equipment.

#### 5.0 Maintenance

##### 5.1 Preventive Maintenance, Refer to Figure 6

- 5.1.1** Carbide parts are extremely hard and therefore brittle; they break or chip easily. Be careful not to drop or bump the tool or any of the internal carbide parts.

**5.1.2** When disassembling the tool for inspection, brush abrasive from the thread and clean the parts before reassembly.

**5.1.3** Inspect the following before each use.

- Inspect the rubber nozzle washer and gaskets. Replace them before they wear through.
- Inspect the rubber lining in the tool holder. Replace the tool holder when the rubber is worn.
- Inspect the stem support casing and fins for wear. Replace the stem support before they are worn through.
- Inspect the nozzle and carbide sleeves. Replace the nozzle when the orifice is worn to 5/8". Replace the sleeves when the outside diameter is worn to 1/4".
- Make sure brass washers are placed at each end of the carbide sleeves. They help prevent the sleeves from chipping.
- Rotate the deflection tip for symmetrical wear. Replace the tip if it is undercut, or when any part of the straight outside diameter is worn away.
- Make sure parts are tightly assembled. Loose parts create voids causing turbulence and accelerate wear.

**5.2 Disassembly**

**5.2.1** Remove the tool from the lance.

**5.2.2** Hold the carbide end of the throat rod with a finger and unscrew the tip holding nut. Slide the deflection tip, brass washers (3), and carbide sleeves from the front of the tool.

**5.2.3** Remove the throat rod from the back of the tool.

**5.2.4** Loosen the knurled lock-ring and unscrew the tip protection sleeve and remove the nozzle. The nozzle o-ring may stay inside the protection sleeve. Remove it and replace it on the nozzle o-ring groove.

**5.2.5** Remove the wide stem support washer, stem support, and narrow stem support washer from the front of the tool holder.

**5.2.6** Unscrew the coupling and remove the nozzle washer.

**5.2.7** Inspect all items for wear. Replace worn parts and clean all parts to be reused making sure to brush the threads clean. Always replace the nozzle washer and both stem support gaskets.

**5.3 Reassembly**

**5.3.1** Place the narrow stem support gasket into the tool holder so it rests against the rubber shoulder. Place the stem support (carbide protrudes from the front and is recessed at the back) into the tool holder, and place the wide washer on top of it.

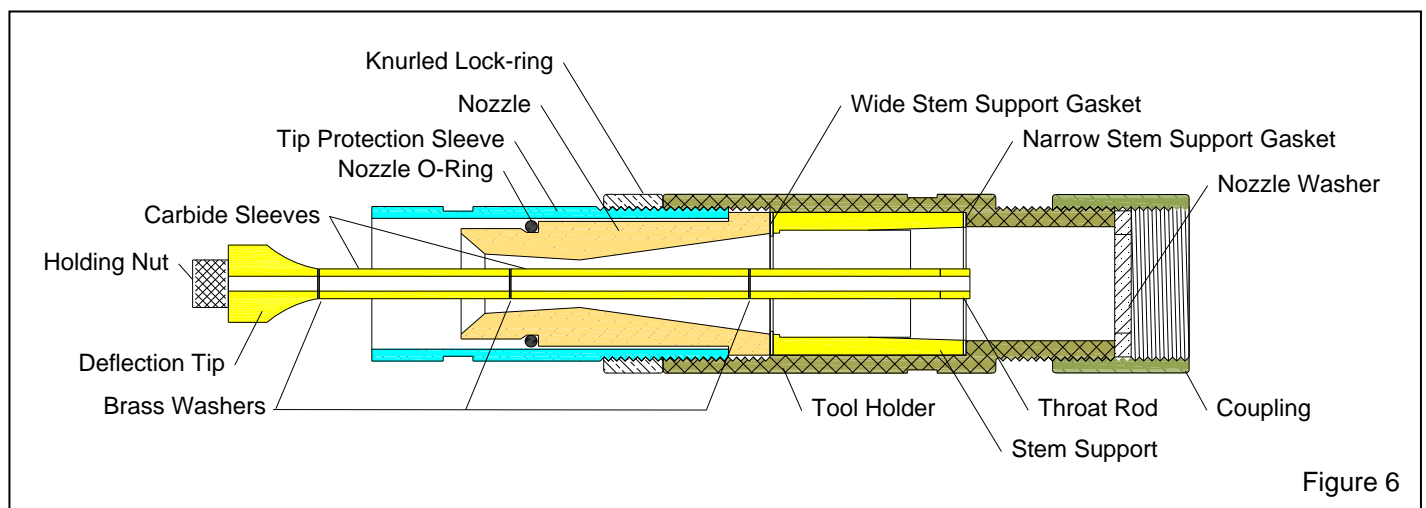
**5.3.2** Place the o-ring on the nozzle. Lubricate the o-ring with silicone spray or other lubricant.

**5.3.3** Thread the lock-ring onto the tip protection sleeve, placing it toward the ends of the threads. Insert the nozzle into the threaded end of the sleeve.

**5.3.4** Thread the tip protection sleeve, with the nozzle fully inserted, into the tool holder. Continue threading it until it bottoms out. Make sure the lock-ring is not against the tool holder and the nozzle is fully seated against the wide stem support gasket.

**5.3.5** When assured that the assembly is tight, firmly hand-tighten the lock-ring against the tool holder.

**5.3.6** Working from the back of the tool, insert the throat rod through the stem support sleeve.



**Figure 6**

**5.3.7** Hold the throat rod in place and install a brass washer and carbide throat sleeve (the longer of the two tungsten sleeves) Note: Boron sleeves are of equal length; so it does not matter which one goes on first. Install another brass washer and the stem extension sleeve (shorter of the tungsten sleeves). Install third brass washer and the deflection tip.

**5.3.8** Firmly hand-tighten the tip holding nut to secure.

**5.3.9** Install the rear coupling, nozzle washer, lance and centering device.

**6.0 REPLACEMENT PARTS**

**6.1 Hollo-Blast Tools, Refer to Figure 7  
(Does Not Include Centering Device)**

Description	Stock No.
Hollo-Blast with tungsten tip and sleeves	
Hollo-Blast with 1/2" orifice nozzle .....	01076
Hollo-Blast with 5/8" orifice nozzle .....	08446
Hollo-Blast less nozzle .....	01077
Hollo-Blast with boron tip and sleeves	
Hollo-Blast, boron with 1/2" orifice nozzle .....	21190
Hollo-Blast, boron with 5/8" orifice nozzle .....	25725
Hollo-Blast, boron less nozzle .....	21191

**6.2 Hollo-Blast**

Item	Description	Stock No.
1.	Nozzle (includes o-ring, item 15) Model HBN-8, 1/2" orifice,.....	01406
	Model HBN-10, 5/8" orifice .....	01407
2.	Tool holder .....	01079
3.	Deflection tip Tungsten carbide, standard .....	01078
	Boron carbide, optional, for use with 40 and finer aggressive abrasive .....	20968
	Composite, optional, for use with 36 and coarser aggressive abrasive .....	25077
4.	Stem support assembly, includes item 8 ...	01080
5.	Throat sleeve, long, tungsten .....	01084
6.	Stem extension sleeve, short, tungsten ....	01085
7.	Throat sleeve, optional boron carbide equal lengths, each, 2 required .....	20969
8.	Throat rod with tip .....	01086
9.	Nut, tip holding .....	01089
10.	Tip protection sleeve .....	01090
11.	Lock nut, knurled .....	01092
12.	Gasket, stem support front, wide .....	01093
13.	Gasket, stem support rear, narrow .....	01094
14.	Washer, brass, 3 required .....	01096
15.	O-ring, 1-1/8" nominal ID .....	01097
16.	Coupling, rear .....	01095
17.	Washer, nozzle, NW-4 pack of 10 .....	00869

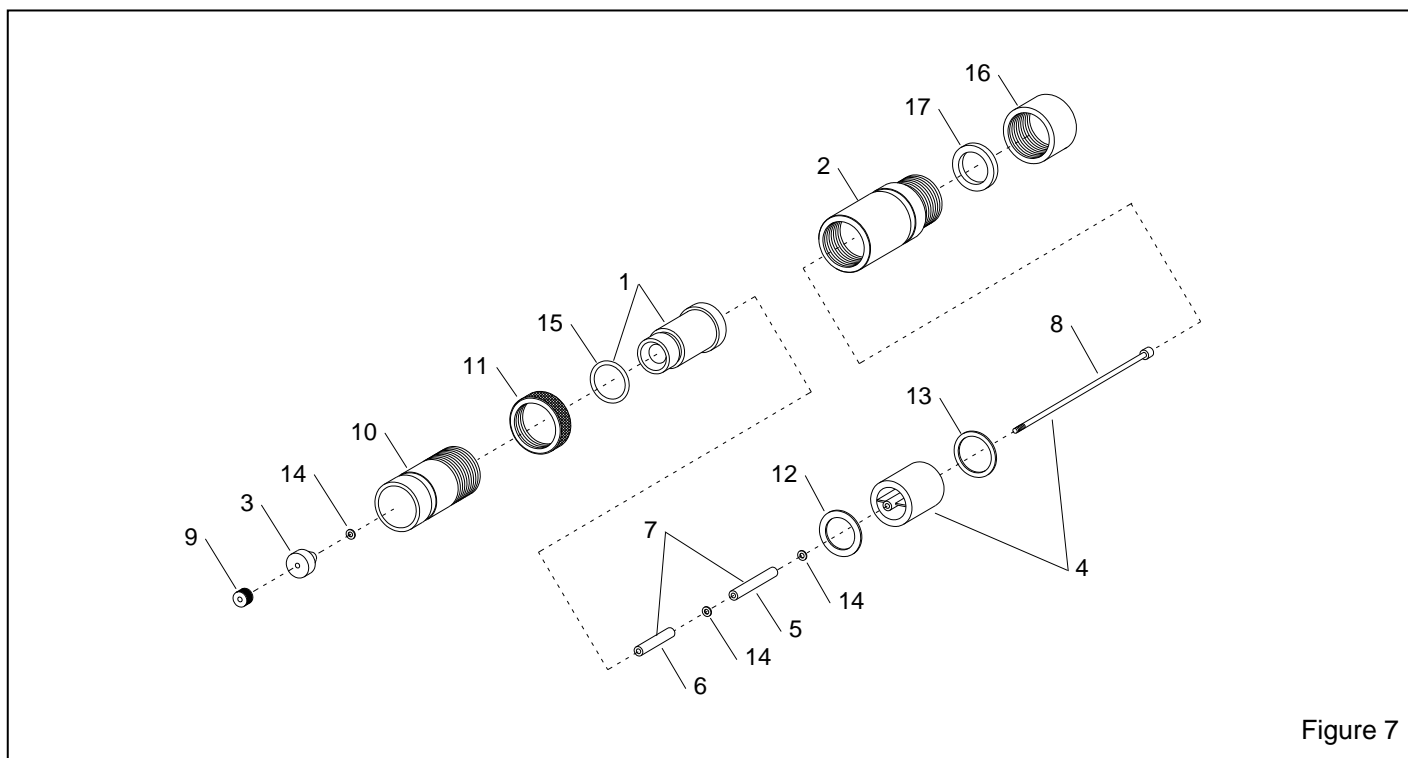
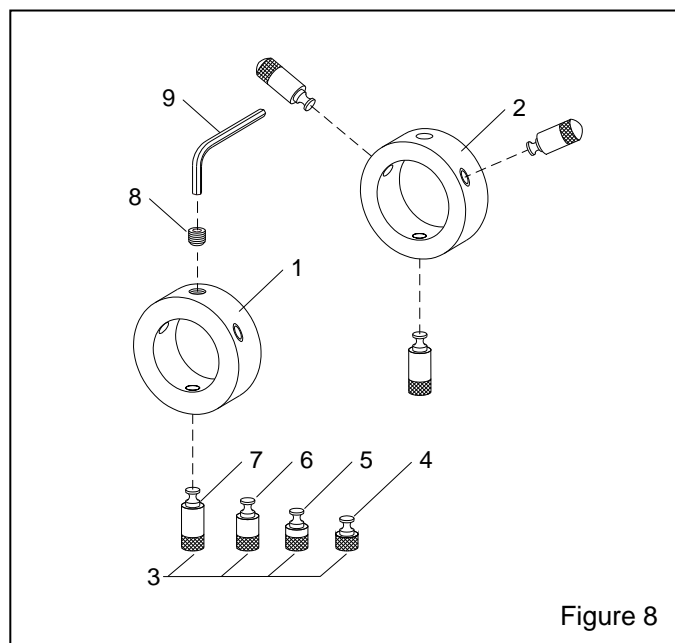


Figure 7

**6.3 HBC-1 Centering Device**  
For 3" to 5" ID Pipe, Refer to Figure 8

Item	Description	Stock No.
(-)	HBC-1 Collar and button set, complete ....	01124
1.	Collar, front, 1-11/16" nominal ID .....	01125
2.	Collar, rear, 1-7/8" nominal ID .....	01126
3.	Button set, includes items 4, 5, 6, & 7 .....	01158
4.	Buttons, 5/16", set of 6, for 3-1/2" pipe ....	01154
5.	Buttons, 9/16", set of 6, for 4" pipe .....	01155
6.	Buttons, 13/16", set of 6, for 4-1/2" pipe ...	01156
7.	Buttons, 1-1/16", set of 6, for 5" pipe .....	01157
8.	Screw, set, 3/8-NC cup point .....	03271
9.	Key, 3/16" hex .....	01139



**6.4 HBC-2 Adjustable Carriage**  
For 5" to 12" ID Pipe, Refer to Figure 9

Item	Description	Stock No.
(-)	HBC-2 adjustable carriage, complete .....	01131
1.	Tip protection sleeve, threaded .....	01091
2.	Lock-nut, knurled .....	01092
3.	Bushing kit, HB and SB carriage wheel ....	03706
4.	Wheel, each .....	01153
5.	Screw, set, 3/8-NC cup point .....	03271
6.	Axle spacer, each .....	01166
7.	Arm pin, 1-1/8" .....	01142
8.	Retaining ring .....	01143
9.	Screw, 3/8-NC x 3/4" Soc. Head .....	03319
10.	Washer, 3/8 flat .....	03317
11.	Key, 3/16" hex .....	01139

