

**SPIN-BLAST  
INTERNAL-PIPE BLAST TOOLS  
O. M. 06157**

DATE OF ISSUE: 08/15/77

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**! WARNING**

**Do not use this equipment before READING this MANUAL and UNDERSTANDING its contents.**

**These WARNINGS are included for the health and safety of the operator and those in the immediate vicinity. Failure to read and understand these warnings can result in injury or death.**

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

© 2021 CLEMCO INDUSTRIES CORP.

One Cable Car Dr.

Washington, MO 63090

Phone (636) 239-4300

Fax (800) 726-7559

Email: [info@clemcoindustries.com](mailto:info@clemcoindustries.com)

[www.clemcoindustries.com](http://www.clemcoindustries.com)



**1.0 INTRODUCTION**

**1.1 Scope of Manual**

1.1.1 These instructions cover setup, operation, maintenance, troubleshooting, and replacement parts for the Spin-Blast Internal-Pipe Blasting Tool.

1.1.2 The instructions also contain important safety information for operating the Spin-Blast. All operators and personnel involved with the operation and maintenance of the tool must read and understand the contents of these instructions, including the orange cover. It is equally important that the operator is trained and qualified to safely operate the blast machine, remote controls, and all other equipment used with the blast machine.

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), which is included with every Clemco blast machine, also is available in Spanish (Stock No. 22931) and contains important safety information about abrasive blasting that may not be included in equipment operations manuals. To request additional copies, visit [www.clemcoindustries.com](http://www.clemcoindustries.com) or 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.**

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**1.4 Cautions on Use of the Tool**

***NOTICE***

**Failure to make initial adjustments, provide run-in period, and maintain this tool per these instructions will damage the bearings and other parts of the tool within a short time. Failures due to lack of maintenance are not covered under warranty.**

**1.4.1** This tool requires an initial drag adjustment, as explained in Section 6.5, and a run-in period without abrasive before use. It will perform as designed if it is provided with adequate compressed air and if it is properly maintained. Make sure that all instructions are read and that the adjustments, run-in period, and maintenance are fully understood by operators and maintenance persons. Any tool that is damaged due to lack of maintenance is not covered under warranty.

**2.0 COMPONENTS and OPERATING PRINCIPLES**

**2.1 Spin-Blast Components – Figure 1**

**2.1.1 For blasting 8" ID to 36" ID pipe:** The primary components of the 02601 Spin-Blast are shown in Figure 1 and include: The basic Spin-Blast Tool, 10 leather dust seals, small-diameter rotating nozzle-head, and two 1-3/4" long nozzles. 01408 1/4" orifice nozzles are provided unless others are specified at the time the order is placed. Optional nozzles are listed in *Section 11.5: Spin-Blast Replacement Parts*.

**2.1.2 For blasting 36" ID to 60" ID pipe:** The primary components of the 10547 Spin-Blast are shown in Figure 1 and include: The basic Spin-Blast Tool, 10 leather dust seals, large-diameter rotating nozzle-head, which utilizes two long venturi blast nozzles (ordered separately). Optional nozzles are listed in *Section 11.5: Spin-Blast Replacement Parts*.

**2.2 Centering Carriages – Figure 2**

Centering carriages are sold separately and depend on pipe sizes, as follows and shown in Figure 2.

**2.2.1 Centering Carriages for 8" to 36" ID pipe**

Stock No.	Description	For Pipe ID
03641	Adjustable Carriage .....	8" to 17"
04971	Carriage .....	12" to 36"

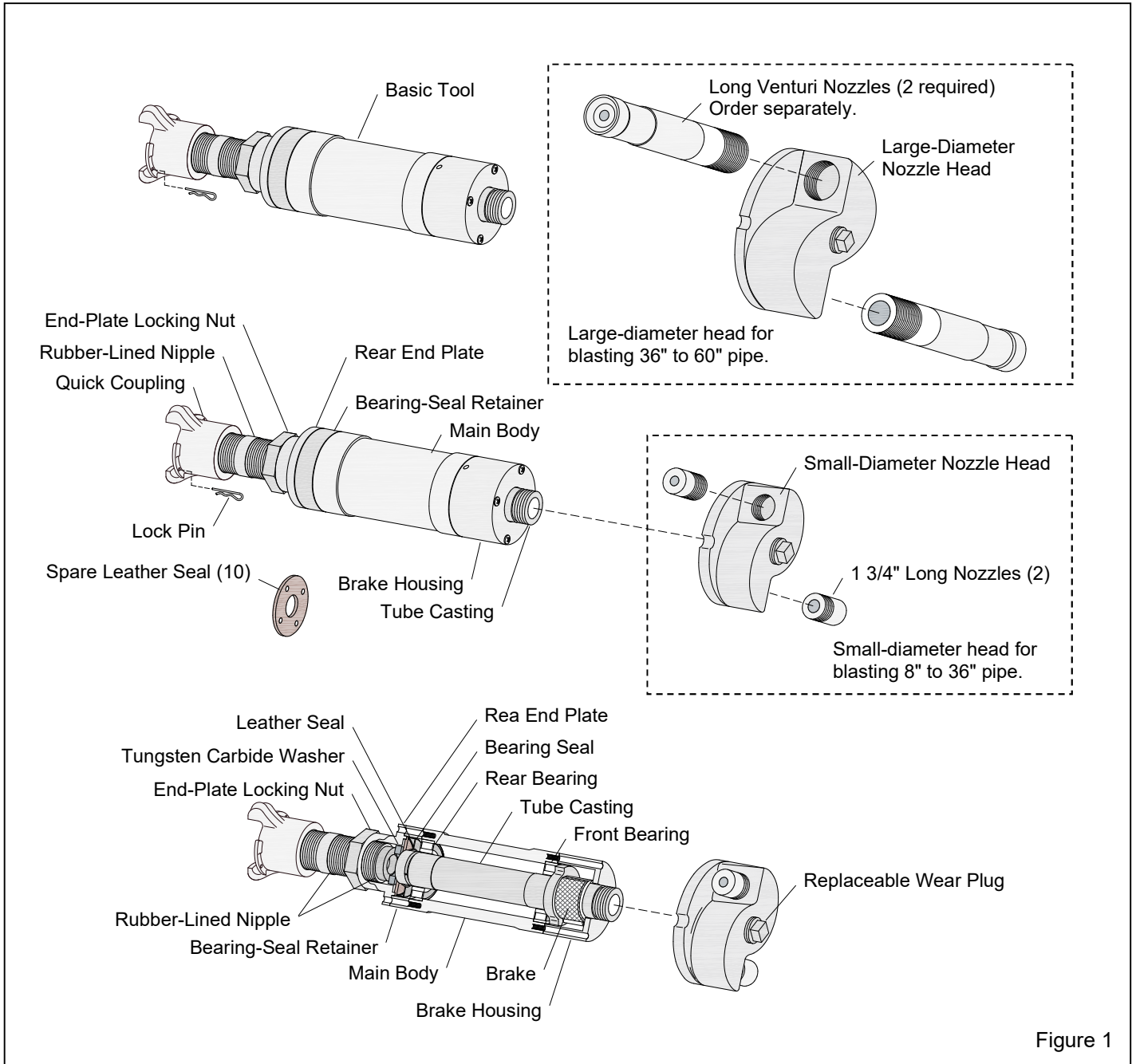


Figure 1

**2.2.2 Centering Carriage for 36" ID to 60" ID pipe**

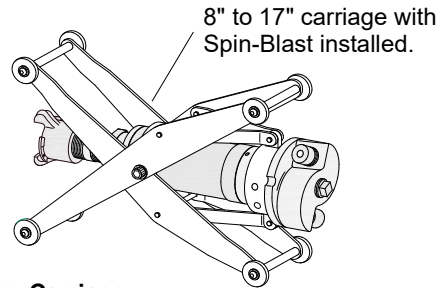
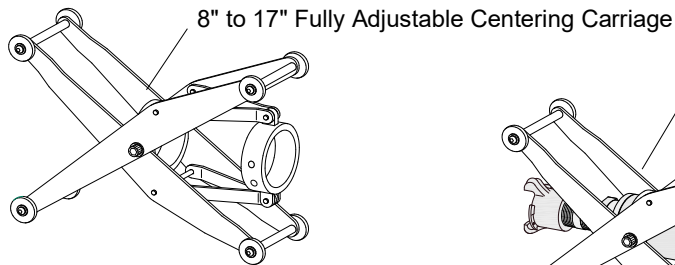
NOTE: To center the carriage in 36" to 40" ID pipe, the 36" legs may need to be cut.

Stock No.	Description	For Pipe ID
10560	Carriage	36" to 60"
10559	36" leg set, expands 04971, 12" to 36" carriage to use with 36" to 60" ID pipe.	

**2.3 Spare Parts Kits: Spare parts will be needed to service the Spin-Blast.**

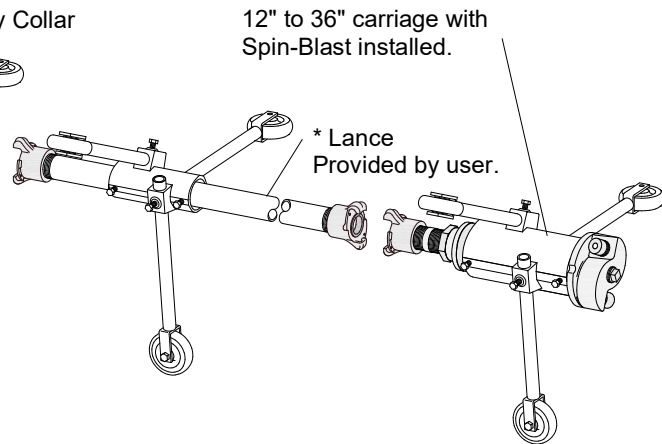
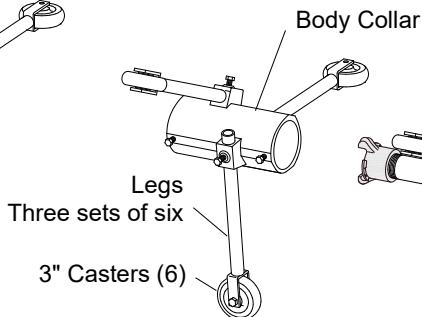
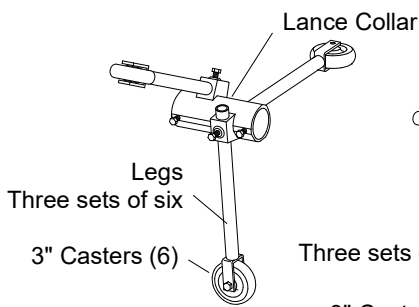
**2.3.1** To avoid unscheduled downtime, it is highly recommended that a service kit be kept readily available.

8" to 36" ID tool requires	02603 Spare parts kit
36" to 60" ID tool requires	10894 Spare parts kit



**03641 Adjustable Centering Carriage**

Centers the tool in 8" to 17" ID pipe. Refer to Section 5.1 for installation instructions.



**04971 Centering Carriage**

Refer to Section 5.2 for installation instructions.  
Centers the tool in 12" to 36" ID pipe.  
Includes collars and 3 (6 each) leg set, as noted below:  
4" long – for 12" ID to 14" ID diameter pipe.  
8" long – for 14" ID to 20" ID diameter pipe.  
17" long – for 21" ID to 36" ID diameter pipe.

**10560 Large Diameter Centering Carriage**

Refer to Section 5.2 for installation instructions.  
Centers the tool in 36" ID to 60" ID pipe.  
Same as 04971, except instead of 3 sets of shorter legs, it includes:  
1 set 36" long legs – for 40" ID to 60" ID diameter pipe.

\* Refer to Section 4.1 to setup the lance.

Figure 2

**2.4 Theory of Operation**

**2.4.1** The Spin-Blast Internal-Pipe Blast Tool blast cleans the interior of pipe up to 40 ft long and ranging in size from 8" to 60" ID, depending on the model and centering carriage option, as noted in Section 2.1 and 2.2. The adjustable centering carriages center the tool within the pipe.

**2.4.2** The Spin-Blast tool attaches to the end of a blast hose and pipe lance in place of a standard nozzle. Refer to Section 3.5 for additional information on the lance),

**2.4.3** After being correctly set up to a blast machine and run through the adjustment and run-in period, the Spin-Blast tool is inserted into the pipe and pushed to the opposite end. When the operator begins blasting, air and abrasive exit the two nozzles, causing the nozzle head to rotate and blast the inside of the pipe as the tool is pulled through. A brake retards the rotation of the head to keep it at optimum blasting speed.

**3.0 ANCILLARY EQUIPMENT REQUIREMENTS**

**3.1 Blast Machine and Accessories**

**3.1.1 Blast machine:** The blast machine should be of at least 6-cuft capacity and have a minimum of 1-1/4" piping.

**3.1.2 Blast hose:** The minimum recommended blast hose is 1 1/4" ID. Coupled as follows:

- 1-1/4" ID x 2-braid hose coupled with 00570 aluminum or 00565 brass couplings.  
**or**
- 1-1/4" ID SUPA hose coupled with 00569 aluminum or 00564 brass couplings.

**3.2 Compressed-Air Requirements:** The minimum recommended inside diameter (ID) of the compressed-air supply line between the compressor and blast machine depends on the nozzle orifice size. The table in Figure 3 shows the recommended hose size and cfm consumption at 100 psi (minimum pressure) when nozzles are new and when they are considered worn (1/16" larger than the original orifice size). These requirements are needed to provide proper volume of compressed air and air pressure to carry blasting abrasive to the nozzle head and to rotate the head. Consult with an air compressor supplier for compressor recommendations.

Nozzles (2) Orifice Size	Air Consumption CFM at 100 PSI		Minimum ID Air Line
	New	Worn	
1/4"	165 to	275	1-1/2"
5/16"	275 to	395	2"
3/8"	395 to	510	2-1/2"

The table shows the minimum recommended ID for the air-supply line to the blast machine. CFM shown is the approximate cfm consumed by two nozzles when the nozzles are new and when worn. A nozzle is considered worn when the orifice is 1/16" larger than its original size.

Figure 3

***NOTICE***

**Inadequate air supply can cause low nozzle pressure. Low nozzle pressure can lower velocity within the blast hose and nozzle, which can prevent the nozzle head from rotating.**

**3.3 Personal Protective Equipment**

**3.3.1** Operators and anyone else who may be exposed to the hazards generated by the blasting process must wear appropriate protective gear, including abrasive-resistant clothing, leather gloves, eye and hearing protection, and a NIOSH-approved Type-CE supplied-air respirator.

** WARNING**

**Before blasting, test the coating and substrate for toxic materials, such as lead or other heavy metals, or asbestos. These hazards require special measures to protect the operators and the environment.**

**Obtain a safety data sheet (SDS) for the blast abrasive to identify hazardous substances. Silica sand (crystalline) can cause silicosis, lung cancer, and breathing problems in exposed workers. Slag abrasives may contain trace amounts of toxic metals such as arsenic, beryllium, and cadmium. Any abrasive dust has potential to cause lung disease.**

**Abrasive blasting operations can create high levels of dust and noise. No dust is safe to breathe. Abrasive blasting can produce harmful dust. Failure to wear NIOSH-approved respirators can result in serious lung disease or death. The respirators must be properly fitted and maintained, and be NIOSH-approved, Type-CE supplied-air respirators approved for abrasive blasting.**

**During abrasive blasting, abrasive particles and dust in the area around the blast machine and blast nozzle become airborne. Everyone working near abrasive blasting must wear properly maintained, NIOSH-approved respiratory protection and eye protection appropriate for the job site hazards.**

**Loud noise generated by the use of compressed air can cause hearing damage. Everyone in the blasting area must wear approved hearing protection.**

**It is the employer's responsibility to train employees to identify hazardous substances and to provide suitable policies, procedures, monitoring, recordkeeping, and personal protective equipment.**

**3.3.2** Don protective blasting attire outside the blast area in a clean nonhazardous environment, free of contaminants, where the air is safe to breathe.

**3.3.3** When finished blasting and after cleanup is completed, remove the respirator and protective clothing outside the respirator-use area in a clean environment where the air is safe to breathe.

**3.4 Nozzle and Carriage Recommendations**

Pipe ID	Nozzle Orifice Size and Stock No.	Carriage Size and Stock No.
8" to 12"	*1/4" x 1-3/4" – 01408	Small – 03641
12" to 24"	5/16" x 3" – 01409	Large – 04971
24" to 36"	3/8" x 4" – 01408	Large – 04971
36" to 60"	1/4" SAS-4 – 28079	Large – 10560
	5/16" SAS-5 – 28080	Large – 10560
	3/8" SAS-6 – 28081	Large – 10560

\* 5/16" x 1-3/4" and 3/8" x 1-3/4" nozzle are also available.  
Carriages are listed in *Section 11.3: Carriage Assemblies*.  
Optional nozzles are listed in *Section 11.5: Spin-Blast Replacement Parts*.

Figure 4

**3.5 Pipe Lance – Provided by User**

**3.5.1** The pipe lance is section(s) of 1-1/4" NPT pipe that fits between the blast hose and Spin-Blast tool, and it is usually the same length as the pipe being blasted. Space limitations may require the lance to be shorter.

**3.5.2** The rigid pipe lance provides a means to feed the tool through the pipe, and to withdraw it without the sudden surge jolts that can occur with slack blast hose. It also affords a straight path for the blast stream to enter the tool, which prevents hot spots and uneven wear.

**3.6 Staging Platform**

**3.6.1** Providing a structural support to elevate the pipe off the ground make is easier to observe the tool's operation as it travels through the pipe.

**3.6.2** Provide an exit ramp or platform for the carriage wheels to ride on at the entrance/exit end of the pipe. **Do not manually lift the tool in or out of the pipe while blasting.** Use a shroud at the ends of the pipe to contain blasting abrasive.

**3.7 Abrasive**

**3.7.1 Slag abrasive:** The tool is best suited for use with slag products between 16-mesh and 35-mesh that are specifically manufactured for abrasive blasting.

**3.7.2 Crushed glass:** Crushed glass may be used, but it does not clean as fast as slag or give the same profile.

**3.7.3 Aggressive abrasive:**

**Garnet** may be used, but consideration must be given to the accelerated wear on any parts the abrasive contacts, and additional maintenance required to keep the parts in good working order.

**Aluminum oxide and silicon carbide** should be avoided due to the rapid wear on the tool.

**3.7.4 Steel Grit:** Do not use.



**CAUTION**

**Do not use metallic abrasives with the Spin-Blast tool. Metallic abrasives will damage the bearing and threads.**

**4.0 INITIAL SETUP**

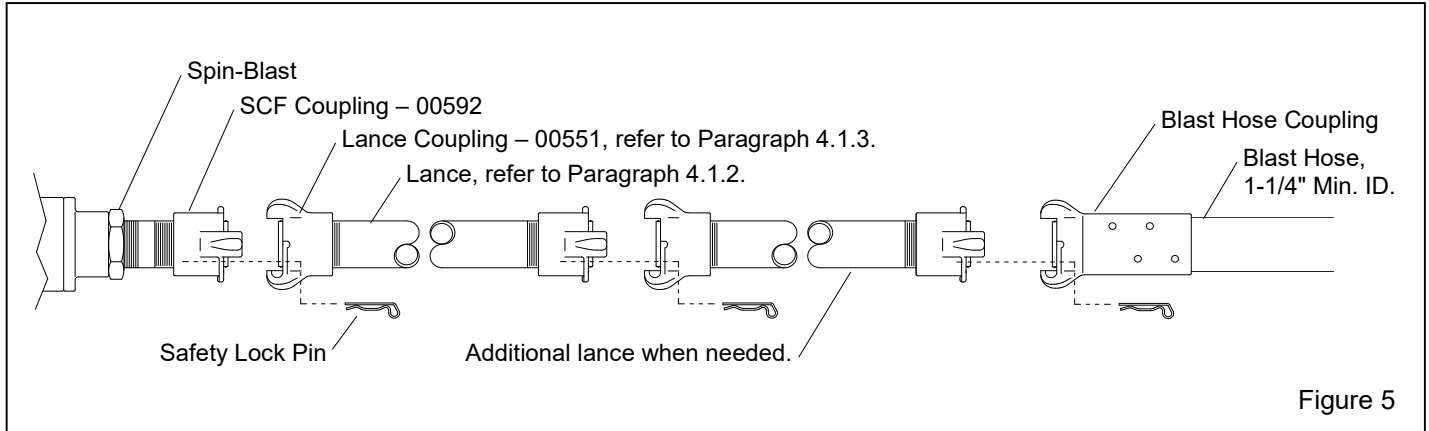
NOTE: The sequence for the initial setup can be done in any order convenient for the user.

**4.1 Lance Setup – Figures 2 and 5**

**4.1.1** The Spin-Blast tool comes with a **Clemco SCF Coupling, Stock No. 00592**, which provides a quick connection to the pipe lance using standard Clemco quick couplings.

**4.1.2** A lance is one or more length of standard schedule 40 pipe connected end-to-end to equal the length of pipe being blasted. Sections of pipe may be coupled or uncoupled as needed as the tool is moved through the pipe.

**4.1.3** If there is no need to attach or remove pipe lance sections while blasting, standard pipe couplings may be used to connect pipe sections together. When sections do need to be added or removed, use a **Clemco quick coupling, Stock No. 00551** on each end of the lance sections, as shown in Figure 5, to quickly add or remove the section.



**NOTE:** When preparing the lance for the 04871 (12" to 36") carriage and 10560 (36" to 60") carriage, slide the lance collar over the lance before installing the second coupling.

## 4.2 Blast Machine and Ancillary Equipment

**4.2.1** Set up all ancillary equipment following instructions in their operations manuals.

## 5.0 CENTERING CARRIAGE SETUP

**NOTE:** The quick coupling or nozzle head must be removed to insert the tool into the carriages. If the tool's drag has been adjusted (as noted in Section 6.5), either remove the head, or make sure the rubber-lined nipple (drag) adjustment does not change when removing or reinstalling the coupling.

Review the carriage setup process before beginning. After the operation is learned, the sequence for the setup can be done in any order convenient for the user.

### 5.1 8" to 17" Small Adjustable Centering Carriage Figure 6

**5.1.1** Adjust drag, per Section 6.5.

**5.1.2** Remove the nozzle head, per Section 6.3, and insert the tool through the back of the carriage, as shown in upper illustration in Figure 6, guiding the brake housing through the rear collar and then the front until the housing extends about 1/2" past the front collar.

### 5.1.3 Adjust carriage to center it in pipe

**5.1.3.1** Refer to the PIPE ID column in the table in Figure 7 to find the ID of the pipe to be blasted and refer to the DISTANCE BETWEEN WHEELS column to find the distance to initially set the carriage wheels.

**5.1.3.2** Refer to the lower illustration in Figure 6, which show from which points on the carriage the DISTANCE BETWEEN WHEELS measurements is taken.

**5.1.3.3** Expand the carriage to adjust it to fit the pipe: Slide the tool within the carriage collars, as needed to keep the brake housing, main body, and/or the bearing seal retainer under the collar's setscrews. Use a 3/16" hex key to snug the two setscrews.

**5.1.3.4** Place the tool and carriage in the pipe to make sure the carriage fits correctly. Make any minor adjustments as needed and then tighten the setscrews to secure the tool in the carriage and maintain the carriage adjustment.

**5.1.4** Screw the nozzle head onto the tool, per Section 6.2.



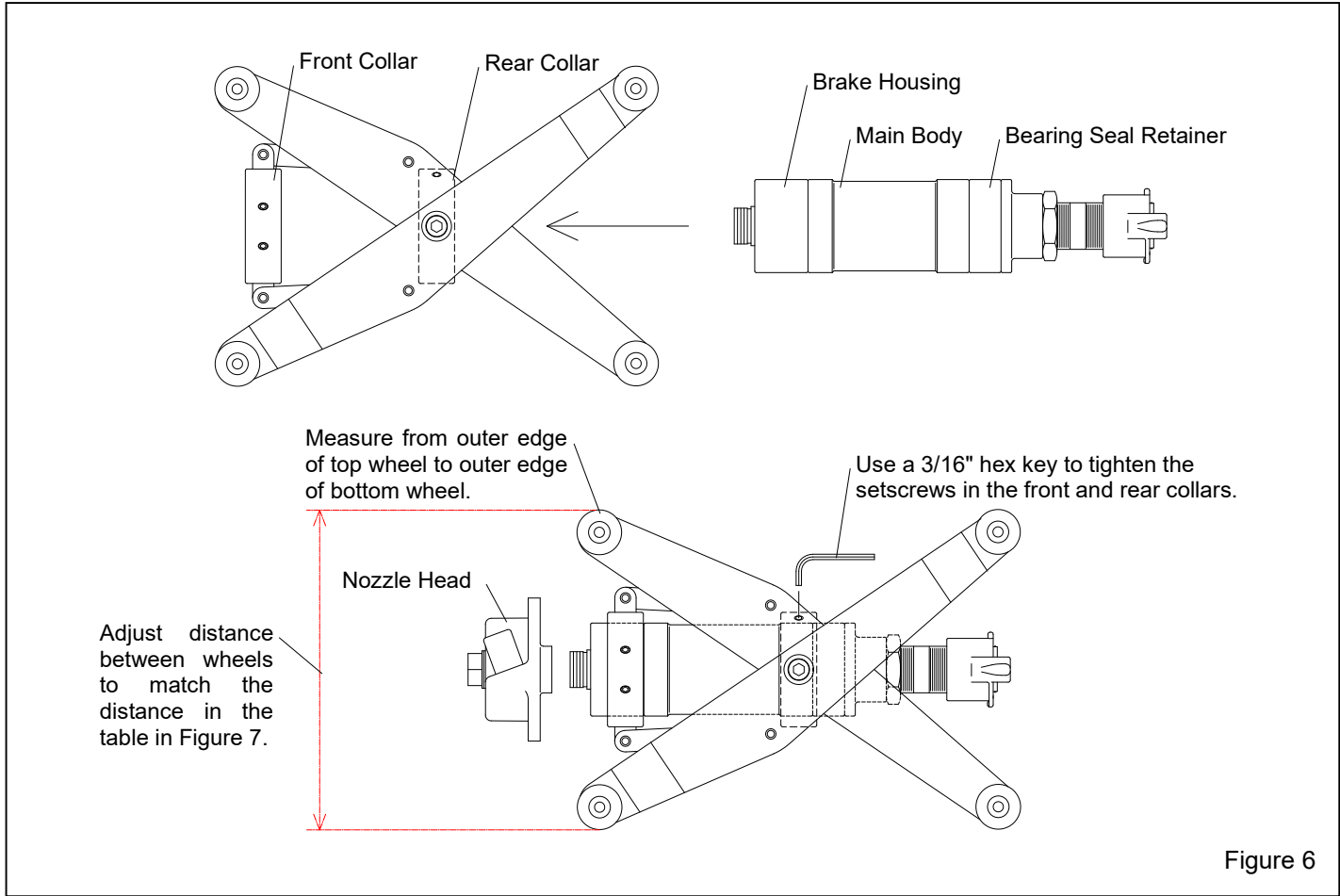


Figure 6

PIPE ID	DISTANCE BETWEEN WHEELS, AS SHOWN IN FIGURE 6.
8"	6-1/4"
9"	7-1/2"
10"	8-1/2"
11"	9-3/4"
12"	10-3/4"
13"	11-3/4"
14"	12-7/8"
15"	13-7/8"
16"	15"
17"	16-1/8"

NOTE: The distance shown is for an initial adjustment, which approximately centers the tool in the pipe. Minor readjustment may be needed to fit the carriage to the pipe.

Figure 7

**5.2 12" to 60" Large Centering Carriages  
Figures 8 and 9**

- o 04971 – 12" to 36" Carriage
- o 10560 – 36" to 60" Carriage

**04971 Carriage:** Consist of the (smaller) lance collar, (larger) body collar, six wheel assemblies with pins, and six each 4" long, 8" long, and 17" long legs.

**10560 Carriage:** Consist of the (smaller) lance collar, (larger) body collar, six wheel assemblies with pins, and six each 36" long legs. NOTE: To center the carriage in 36" to 40" ID pipe, the 36" legs may need to be cut.

**5.2.1 Adjust carriage to center it in pipe**

**5.2.1.1** Refer to the following list to determine which legs to use with pipe diameters:

- 4" long leg – for 12" ID to 14" ID diameter pipe.
- 8" long leg – for 14" ID to 20" ID diameter pipe.
- 17" long leg – for 21" ID to 36" ID diameter pipe.
- 36" long leg – for 40" ID to 60" ID diameter pipe.

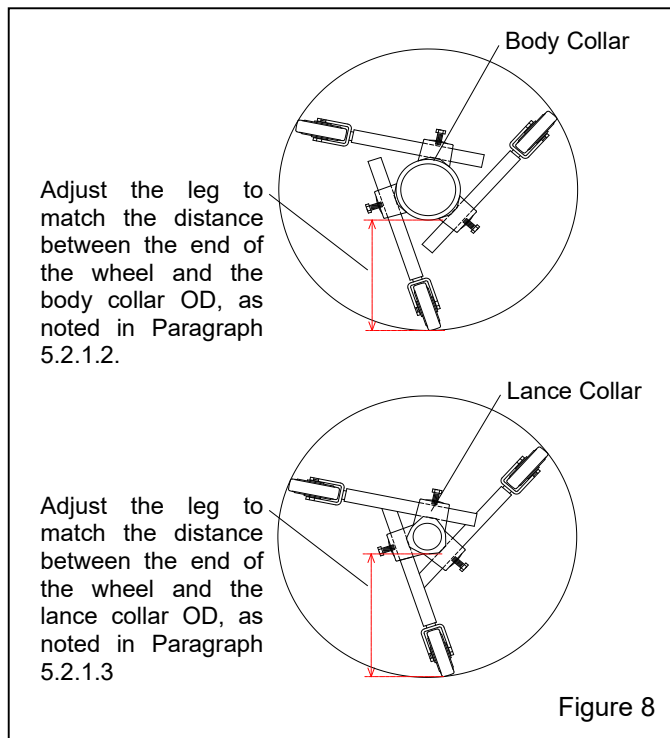
Connect the wheel assemblies to the legs, using the clevis pins and hitch pins provided.

**5.2.1.2** To find the approximate offset distance between the body collar and wheels, measure half the diameter of the pipe to be blasted, less 2". For the example shown in Figure 8, the offset for 18" ID pipe is 7" ( $18 \div 2 = 9 - 2 = 7$ ).

**5.2.1.3.** To find the approximate offset distance between the lance collar and wheels, measure half the diameter of the pipe to be blasted, less 1-1/4". For the example shown in Figure 8, the offset for 18" ID pipe is 7-3/4" ( $18 \div 2 = 9 - 1-1/4 = 7-3/4$ ).

**5.2.1.4.** Refer to the illustrations in Figure 8, which show from which points on the carriages the wheel offset distance measurements are taken. Align the wheels to fore and aft, as shown, and snug the leg bolts after adjusting each leg.

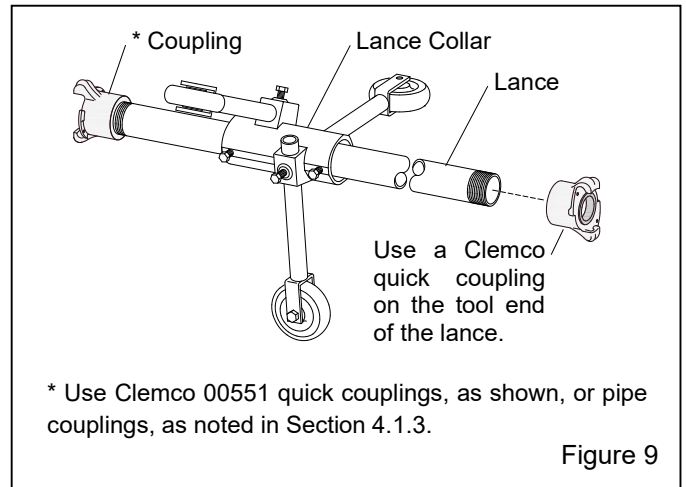
**5.2.1.5.** Place both carriage collars in the pipe to make sure they fit correctly. Make any minor adjustments as needed and then tighten the bolts to secure the legs in the collars and maintain the adjustment.



**5.2.1.6** Install a quick coupling (or pipe coupling, as noted in Paragraph 4.1.3) to one end of the lance, as shown in Figure 9, and slide the lance collar onto the lance before installing the second coupling.

**5.2.1.7** Slide the collar about halfway onto the lance and tighten the collar bolts to secure it.

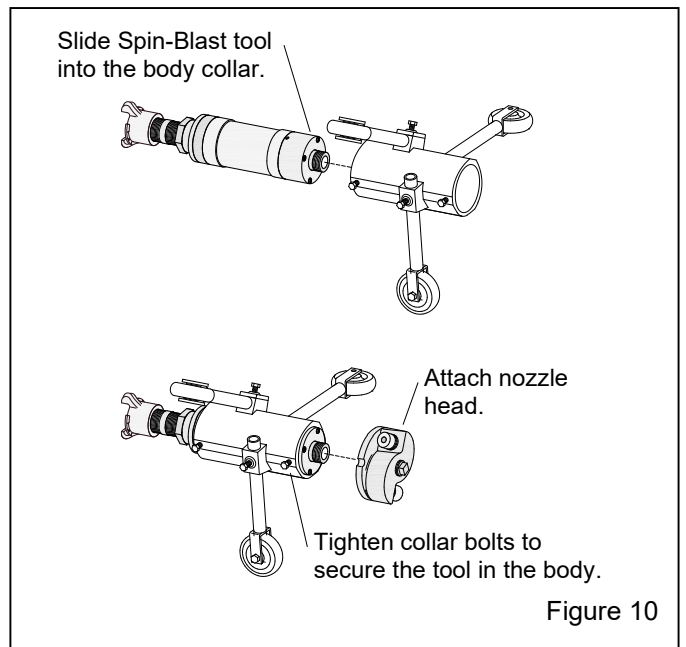
**5.2.2 Attach the carriage to the tool**



**5.2.2.1** Adjust the drag, per Section 6.5.

**5.2.2.2** Remove the nozzle head, per Section 6.3, and insert the tool through the large carriage collar, as shown in upper illustration in Figure 10, The tool can be inserted into either end of the collar.

**5.2.2.3** The front of the brake housing should extend about 1/2" past the end of the collar. Tighten the two collar bolts to secure the tool and collar.



**5.2.2.4** Screw the nozzle head onto the tool, per Section 6.2.

**6.0 TOOL SETUP and ADJUSTMENTS**

**6.1 Lock the Tube to Remove and Install the Nozzle Head – Figure 11**

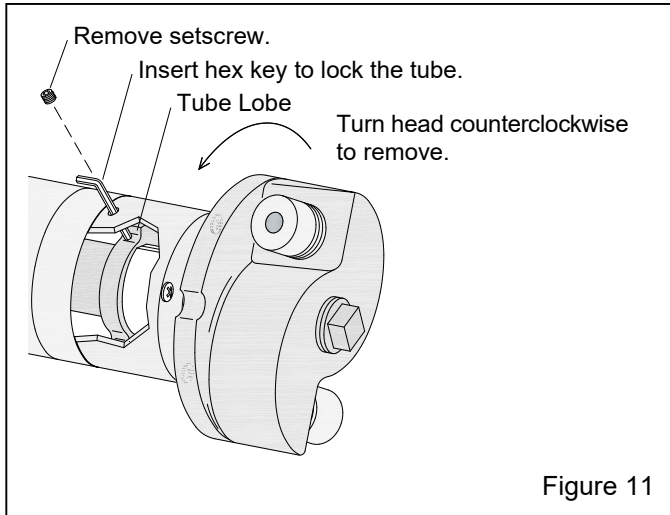


Figure 11

**6.1.1** Use a 1/8" hex key to remove the setscrew (plug) from the break housing.

**6.1.2** Insert the hex key, drive pin, a screwdriver or similar object into the setscrew hole.

**6.1.3** Turn the nozzle head counterclockwise to remove it and clockwise to install it. As the tube casting turns within the tool, the lobe on the tube catches on the key, preventing it from turning.

**6.1.4** Replace the setscrew when the head is reinstalled.

**6.2 Attaching the Nozzle Head**

**6.2.1** Make sure the nozzle-head threads and tube-casting threads are clean and clear of abrasive before screwing the head onto the end of the tube casting.

**6.2.2** Screw the head onto the tube by turning it clockwise when viewed from the nozzle end. If the tube turns with the head, lock it, per Section 6.1. During operation, the head spins clockwise, in the tightening direction, ensuring that the head does not spin off the tube.

**6.2.3** Attach the nozzles, per Section 6.4.

**6.3 Removing the Nozzle Head**

**6.3.1** Unscrew the head from the tube by turning it counterclockwise. If the tube turns with the head, lock it, per Section 6.1.

**6.4 Attach Nozzles to the Nozzle Head**

**NOTE: Nozzles should match. They should have the same orifice size and be the same length.**

**NOTICE**

**Nozzles having different orifices or lengths can cause an imbalance in the rotating head, which could damage the head and nozzles.**

**6.4.1** Make sure the nozzle threads and nozzle-head threads are clean and clear of abrasive before screwing the nozzles into the head.

**6.5 Adjusting the Drag**

**6.5.1** The drag provides pressure on the leather dust seal, slows the head rotation, and seals the bearings from the abrasive stream. As the tube turns, grooves in the tube make an impression in the leather seal, as shown in Figure 12. The grooves seal the bearing from the blast stream. As the tube turns against the leather seal, the seal compresses and requires readjustment or replacement before it wears too thin. The leather seal must never be allowed to wear through.

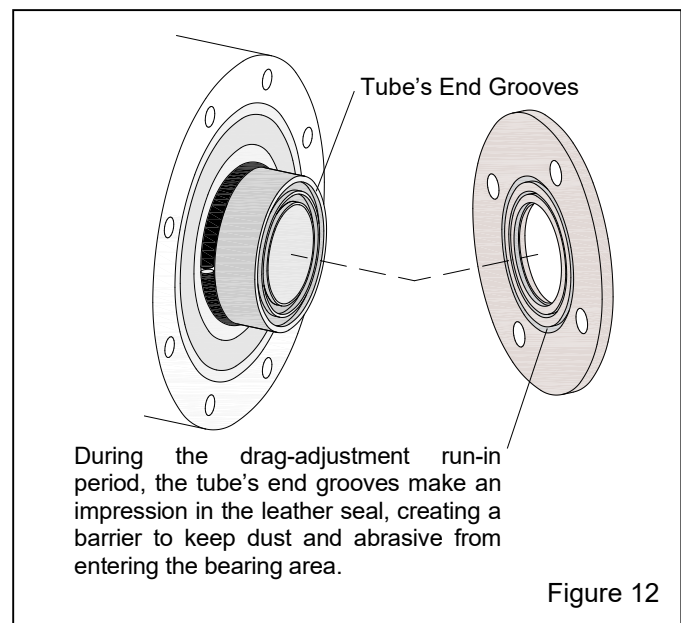


Figure 12

## NOTICE

**Failure to correctly adjust and maintain the drag allows the air and abrasive stream to enter the bearing area and rapidly cause bearing damage. Bearing failure and wear due to insufficient drag is not covered under the warranty.**

Drag Adjustment Notes: All hose connections must be secured with safety lock pins to prevent hose from disconnecting while under pressure, and secured with safety cables to prevent hose from whipping should separation occur.

## ⚠ WARNING

**Hose disconnection while under pressure could cause serious injury or death. Use safety lock pins or safety wire to lock twist-on couplings together and prevent accidental separation, and also use safety cables to prevent hose from whipping should separation occur. Safety lock pins and safety cables are listed in *Section 11.1: Accessories*.**

- The instructions explain the process for adjusting the drag with the air supply on a solid fixture and the tool threaded on the fixed rubber-lined nipple. The drag can also be adjusted with the tool mounted in a vise or other hold-down device, and the rubber-lined nipple threaded into the tool. Refer to the warning below and make sure all couplings are secured with two safety lock pins.
- Adjustments may also be done at the entry end of the pipe to be blasted if the carriage can support

the tool while making the adjustment. Make sure the nozzles clear all objects when the head spins. This method is useful when a readjustment is needed during the blasting process, as noted in Paragraph 6.5.10.

**6.5.2** Couple the Spin-Blast (with the nozzle head and nozzles attached) onto a fixed air supply or blast line, as shown in Figure 13. The supply line must be capable of maintaining at least the same air volume and pressure as when the tool is in operation, and fitted with a quick coupling and shutoff valve.

**6.5.3** Loosen the end-plate locking nut and turn the tool to thread the rubber-lined nipple further into the rear end plate. Continue to tighten the nipple until ample resistance (drag) is felt when turning the nozzle head by hand.

**6.5.4** Slowly open the shut-off valve (air only no abrasive) to start the head rotation.

**6.5.5** Tighten or loosen the rubber-lined nipple until the head rotates at about 100 rpm. Snug the locking nut to prevent the rubber-lined nipple from moving in the rear end plate.

**6.5.6** Let the head rotate for several minutes, readjusting the drag as needed to maintain the correct rpm.

**6.5.7** After the run-in period, feel around the four relief holes in the rear end plate to make sure no air is leaking through the holes, as noted in Figure 14. If air is felt leaking from the holes, tighten the drag until no air escapes. The goal is for the head to rotate with no air venting from the holes.

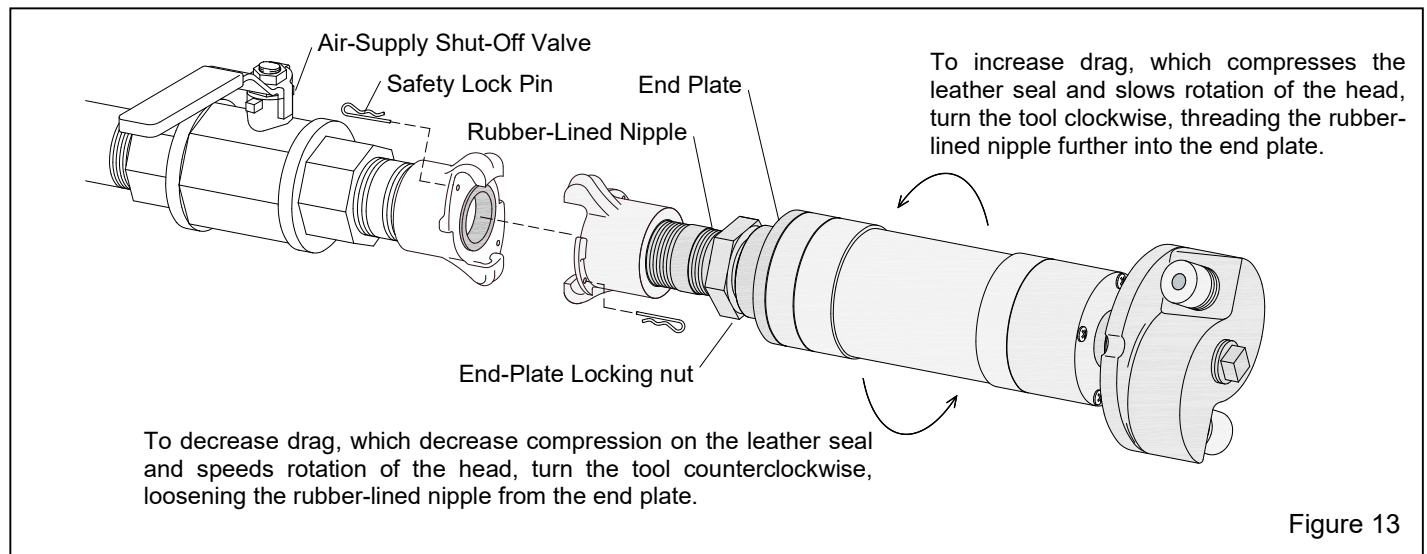
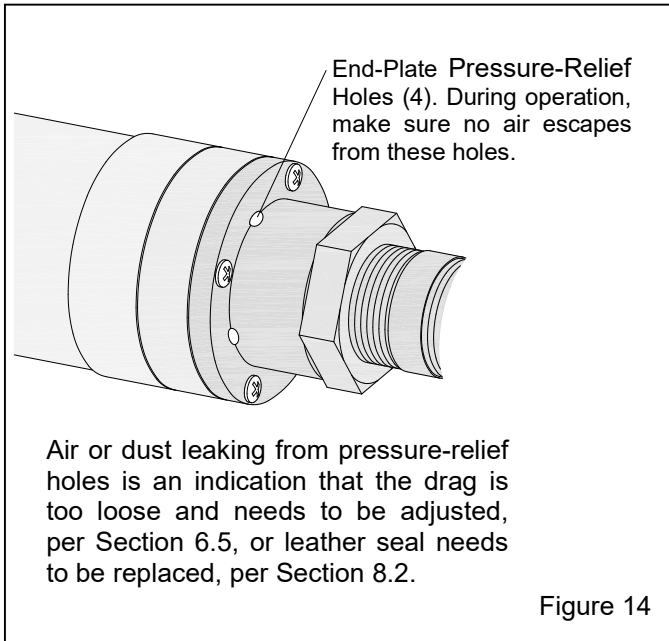


Figure 13



**6.5.10** To check drag while blasting, (the tool is inside pipe) mark the lance to indicate its position in the pipe and pull the tool to the end of the pipe. Check drag and readjust as needed by tightening the rubber-lined nipple. Push the tool back to the marked position and resume blasting.

**6.6 Attach Centering Carriage**

**6.6.1** Attach and adjust the centering carriage, per Section 5.0.

**6.7 Connect Blast Hose and Lance – Figure 15**

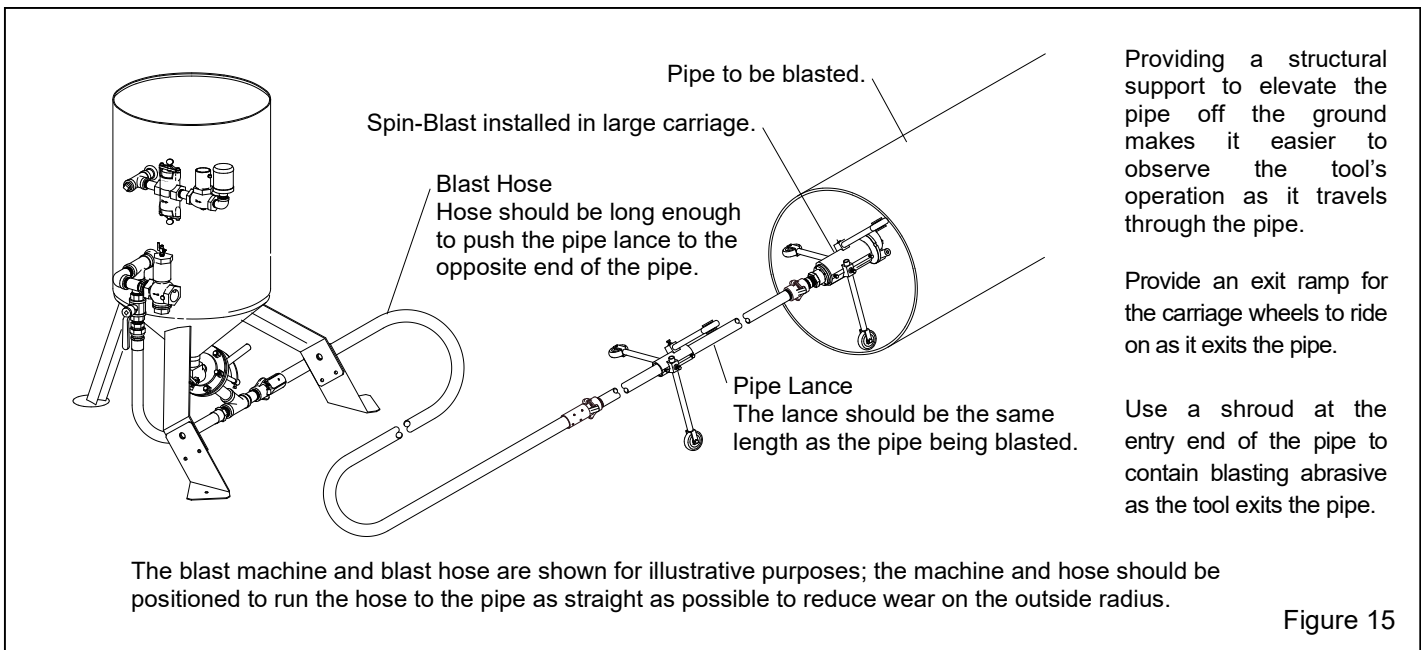
**6.7.1** Refer to Section 4.1 for the initial setup of the lance. Connect the lance and blast hose between the blast machine and Spin-Blast.

Use one of the following hose assemblies:

- 1-1/4" ID x 2-braid hose coupled with 00570 aluminum or 00565 brass couplings.
- or**
- 1-1/4" ID SUPA hose coupled with 00569 aluminum or 00564 brass couplings.

**6.5.8** After the drag is correctly set, securely tighten the locking nut to prevent the rubber-lined nipple from moving.

**6.5.9** Recheck the drag after the first 15 minutes of blasting and at least every 30 minutes thereafter.



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## 7.0 OPERATION

7.1 Make sure all ancillary equipment is set up and operational.

7.2 Make sure all hose connections are secured with safety lock pins to prevent couplings from disconnecting while under pressure.

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## WARNING

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**Hose disconnection while under pressure could cause serious injury or death. Use safety lock pins or safety wire to lock twist-on couplings together and prevent accidental separation, and also use safety cables to prevent hose from whipping should separation occur. Safety lock pins and safety cables are listed in Section 11.1: Accessories.**

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7.3 Place the tool just inside the pipe and, if needed, make minor final adjustment to center the tool in the pipe.

### 7.4 Check the Drag

7.4.1 Close the abrasive metering valve to make sure no abrasive enters the Spin-Blast tool until the drag adjustment is checked. Make sure that no air leaks from the relief holes:

7.4.2 Pressurize the blast machine.

7.4.3 Check the drag and head rotation. Make sure no air or dust comes from the end-plate pressure-relief holes.

7.4.4 Open the abrasive metering valve and adjust abrasive flow. The air-abrasive mixture should be rich. A lean mixture will cause premature wear on the nozzle head.

7.4.5 Readjust the drag if needed, per Section 6.5, to maintain head rotation.

7.4.6 Depressurize the blast machine and use the pipe lance to push the tool through the pipe until the blast head is at the opposite end of the pipe.

### 7.5 Begin Blasting

7.5.1 Repressurize the blast machine and begin blasting.

7.5.2 Pull the tool through the pipe at a constant speed to achieve the desired degree of blast cleanliness.

7.5.3 Check the drag after the first 15 minutes of blasting and at least every 30 minutes thereafter. To check drag when the tool is in the middle of the pipe, mark the lance to indicate its position in the pipe and pull the tool to the end of the pipe. Check drag and readjust as needed. Push the tool back to the marked position and resume blasting.

7.5.4 Listen to the rotation speed of the blast head. If it speeds up considerably, mark the lance and pull the tool to the end, and check and readjust drag as needed. Push the tool back to the marked position and resume blasting.

7.5.5 As the tool exits the pipe, check for air coming from the end-plate pressure-relief holes. If air does come from the holes, tighten the drag, per Section 6.5, or inspect the leather dust seal, per Section 8.2.

### 7.6 Stop Blasting

7.6.1 Shut off the abrasive flow and depressurize the blast machine when air only, without abrasive, exits the nozzle. Doing so ensures the blast hose and lance are empty and reduces the chance of abrasive entering the tool before adjusting the drag.

7.6.2 When finished blasting, shut down all equipment as described in the applicable operations manuals.

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## 8.0 DAILY PREVENTIVE MAINTENANCE

All parts exposed to abrasive and any moving parts are subject to wear. To avoid unscheduled downtime, follow recommended inspections and maintenance schedules and replace all spare parts as they are used. When doing large jobs, consider having a spare pipe tool for use while rebuilding the initial tool.

### 8.1 Check the Drag

8.1.1 Adjust the drag, per Section 6.5. Check drag:

- After the first 15 minutes of blasting and at least every 30 minutes of blasting thereafter.
- When the head rotation increases noticeably.
- After each pipe section is blasted.
- Before each use.

### 8.2 Inspect and Replace Leather Dust Seals

8.2.1 To prevent wear-through and bearing failure, inspect the leather seal every three to four hours.

NOTE: The drag presses the tube against the leather dust seal. As the tube turns, grooves in the tube make an impression in the leather seal, which seals the bearing from the blast stream. As the tube turns against the leather seal, it gets thinner and requires readjustment or replacement before it wears too thin. The leather seal must be kept under adequate pressure to seal the blast stream and never be allowed to wear through.

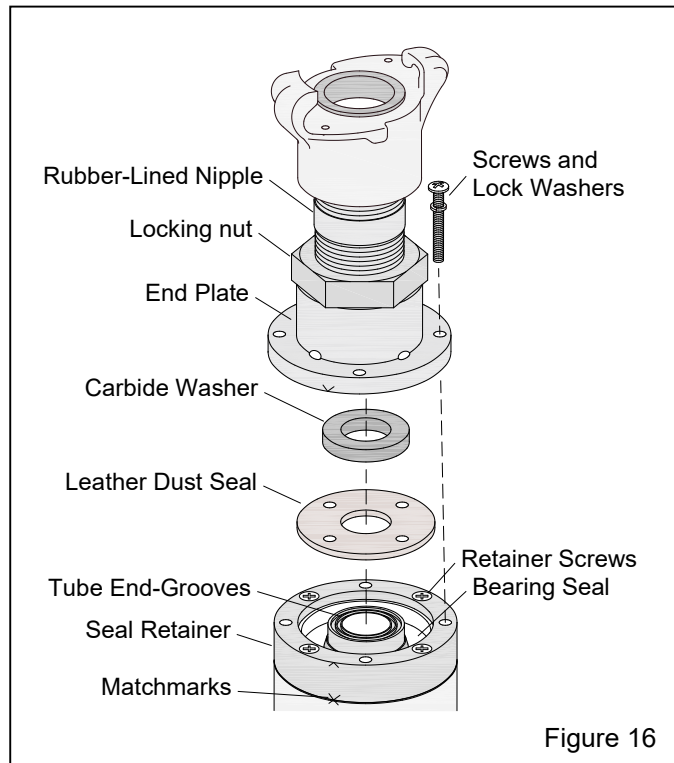
**8.2.2** Loosen the locking nut and unscrew the rubber-lined nipple about two turns.

Note the matchmarks (alignment marks) shown in Figure 16. Use the marks to align mating parts on the body, brake housing, bearing seal retainer, and end plate, during reassembly.

**8.2.3** Remove the four retaining screws and lock washers. Remove the end plate, being careful not to drop the tungsten carbide washer. The washer is extremely brittle.

**8.2.4** Remove the carbide washer and leather seal.

**8.2.5** Clean the exposed bearing seal and the tube's end grooves. If the seal retainer and bearing seal are gritty, remove the retainer and clean them with detergent or solvent. Thoroughly dry and reinstall them after inspecting the seal, per Paragraph 9.2.4.4, and the tube, as noted in Paragraph 8.2.6.



**8.2.6** Inspect the end of the tube to make sure the grooves, shown in Figure, 12 and 16, are clean and not worn. The carbide washer will rapidly wear the end grooves if the leather dust seal is not replaced before wearing through. Replace the tube, per Section 9.5, if the grooves are worn; the end grooves are critical for creating the barrier between the blast stream and bearings.

## **NOTICE**

**Leather dust seals and the tube must be inspected at least every three hours of use. Failure to replace the leather seal before worn through will damage the tube's end grooves from the tube turning against the carbide washer. Replace the tube if the end grooves are worn. The grooves imbedding into the leather seal protect the bearings from the blast stream.**

**8.2.7 Reassemble rear end – Figure 16**

**8.2.7.1** Clean and inspect all parts for wear, replacing any that are worn.

**8.2.7.2** Smear cup grease or similar grease around the end of the tube, where the bearing seal meets the tube, and on the smooth side of the leather seal. Insert the leather into the seal retainer, smooth side toward the tube. Arrange the leather so the four holes align with the retainer screws. This step aligns the holes with the end-plate pressure-relief holes when the end plate is installed. Clean grease from the inside of the tube air path to prevent contaminating of the pipe.

**8.2.7.3** Place the carbide washer on the leather seal,

**8.2.7.4** Align the matchmarks and reassemble the end-plate assembly.

**8.2.8** Adjust the drag, per Section 6.5.

### **8.3 Rotate Nozzles**

**8.3.1** Rotate both nozzles one-quarter turn daily. Rotating the nozzles promote even nozzle wear and assures the longest possible nozzle life.

### **8.4 Nozzle Head and Wear Plug**

**8.4.1** Replace the wear plug every eight hours unless experience indicates a longer or shorter life.

**8.4.2** Replace the nozzle head when it wears out. Refer to Section 6.3 to remove the head.

**8.5 Brake Lining**

**8.5.1** Inspect the brake lining daily. Replace the brake, per Section 9.3, before the lining wears through to the shoe and damages the brake housing.

**9.0 SERVICE MAINTENANCE**

**Note the matchmarks (alignment marks) shown in Figure 17. During assembly, use the marks to align mating parts on the body, brake housing, bearing seal retainer, and end plate.**

**9.1 Remove Nozzle Head, per Section 6.3.**

**9.2 Disassemble Rear End Assembly – Figure 17**

NOTE: Disassemble only as much as needed to perform the maintenance service.

**9.2.1 Rubber-lined nipple and locking nut**

**9.2.1.1** Loosen the locking nut and unthread the nipple from the end plate. If a wrench is needed to remove the nipple, place it on the unthreaded area. There is no need to remove the coupling unless the coupling or nipple needs to be replaced.

**9.2.1.2** Unthread the locking nut from the rubber-lined nipple.

**9.2.1.3** Replace the rubber-lined nipple if:

- The rubber liner is worn larger than the ID of the tube.
- The threads are damage and prevents installation of the locking nut or prevents the nipple from full engagement into the end plate.

**9.2.2 End plate**

**9.2.2.1** Remove the four retaining screws and lock washers. Remove the end plate, being careful not to drop the tungsten carbide washer. The washer is extremely brittle.

**9.2.2.2** Replace the end plate if:

- The threads are damaged.
- The underside ridge is damage, preventing compression of the leather dust seal.
- It is abrasive worn.

**9.2.3 Tungsten Carbide Washer**

**9.2.3.1** Replace the carbide washer if:

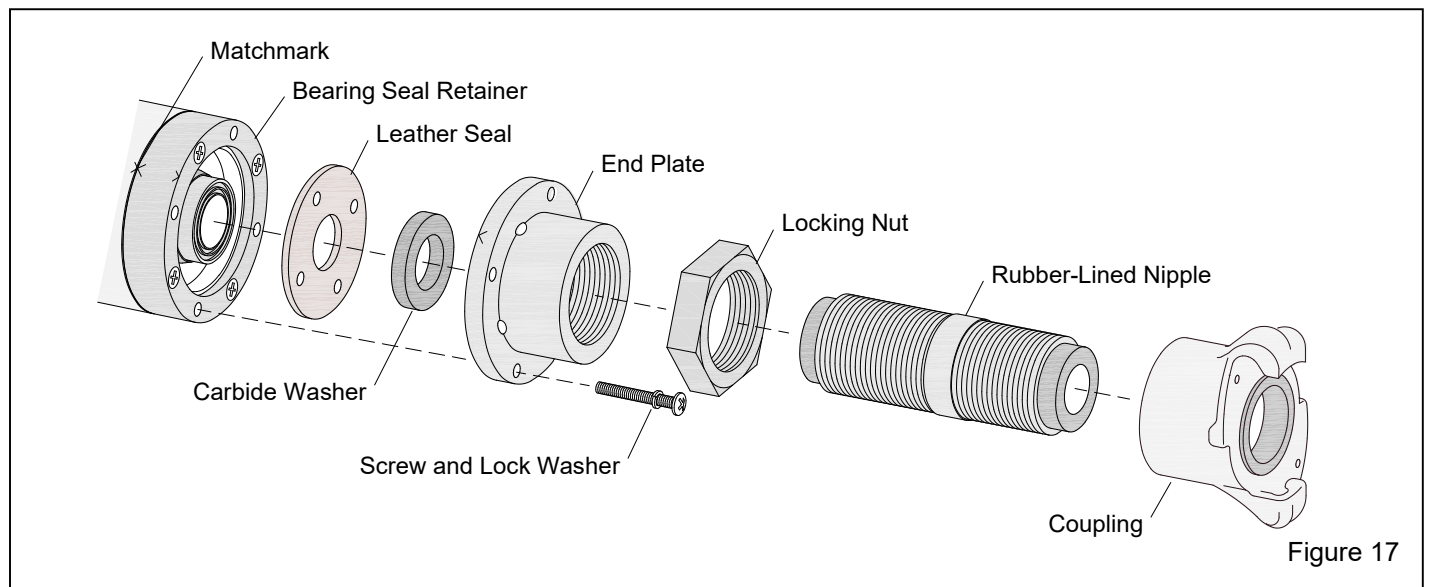
- It is chipped
- The ID is worn larger than the ID of the tube.

**9.2.4 Bearing seal and retainer – Figure 18**

**9.2.4.1** Remove the four screws holding the bearing-seal retainer to the body and remove the retainer and bearing seal.

**9.2.4.2** Clean the retainer to remove grease and dust residue.

**9.2.4.3** Replace the seal retainer if it is damaged.

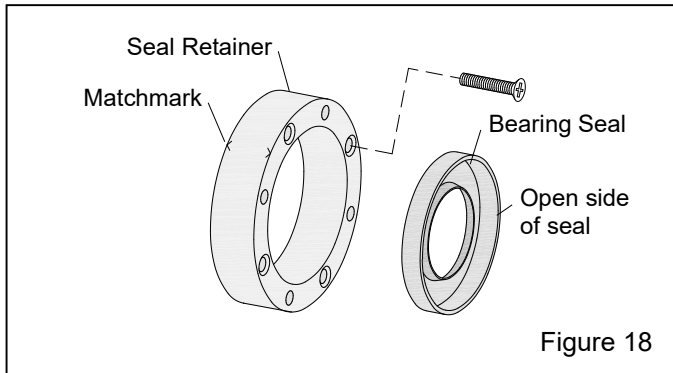


**Figure 17**



**9.2.4.4** Replace the bearing seal if:

- It is damaged.
- The rubber seal fits loosely over the tube.
- The tube is replaced.
- Dust or abrasive is noted between the seal and bearing.
- The seal is removed from the retainer. (Never reuse bearing seals.)



**9.2.4.5** Remove the old seal by driving or pressing it from the retainer.

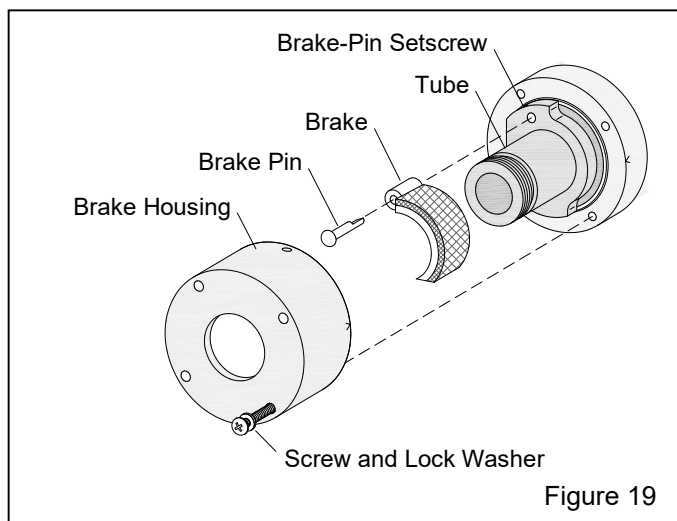
**9.2.5** If no other service is required, reassemble rear end assembly per Section 9.7.

**9.3 Disassemble Front End Assembly – Figure 19**

**9.3.1** Remove the nozzle head, per Section 6.3.

**9.3.2 Brake housing**

**9.3.2.1** Loosen the four brake housing screws and remove the brake housing.



**9.4 Disassemble the Tube and Bearings – Figure 20**

**Replace bearings after all other probable causes, as noted in Section 10.2, are eliminated:**

**Disassemble as much as needed to perform the service.**

**9.4.1** Remove the nozzle head, per Section 6.3.

**9.4.2** Remove the rear end assembly, per Section 9.1

**9.4.3** Remove the front end assembly, per Section 9.3.

**9.4.4** Remove the locking ring from the entry end (grooved end) of the tube. Do not reuse the locking ring.

**9.4.5** Use a wooden dowel or similar tool (there is no need to protect the tube from damage if it is worn and will be replaced) or a press, to drive the tube from the exit end of the body.

**9.4.6** To remove the bearings, drive or press the rear bearing from the body. The front bearing may come out with the tube or stay inside the body. Drive or press the bearing from either part it stays with.

**9.4.7** Reassemble the tube and bearings, per Section 9.5.

**9.5 Reassemble the Tube and Bearings – Figure 20**

**Make sure any parts that are reused are in good condition, clean, and free of dust or abrasive.**

**9.5.1 Replace front bearing:** Use a press to push the front bearing into the bearing recess on the body and to press the tube into the bearing. The bearing can be field installed by uniformly tapping the inner race to guide the bearing onto the tube and uniformly tapping the outer race to guide it into the body.

**9.5.2 Replace rear bearing:** Use a press to push the rear bearing over the grooved end of the tube and into rear bearing-recess on the body. The bearing can be field installed by uniformly tapping the inner and outer races to seat the bearing. Refer to the note in Paragraph 9.5.3.2 for alternate method.

**9.5.3 Replace Tube**

**9.5.3.1** Insert the grooved end of the tube through the front bearing.

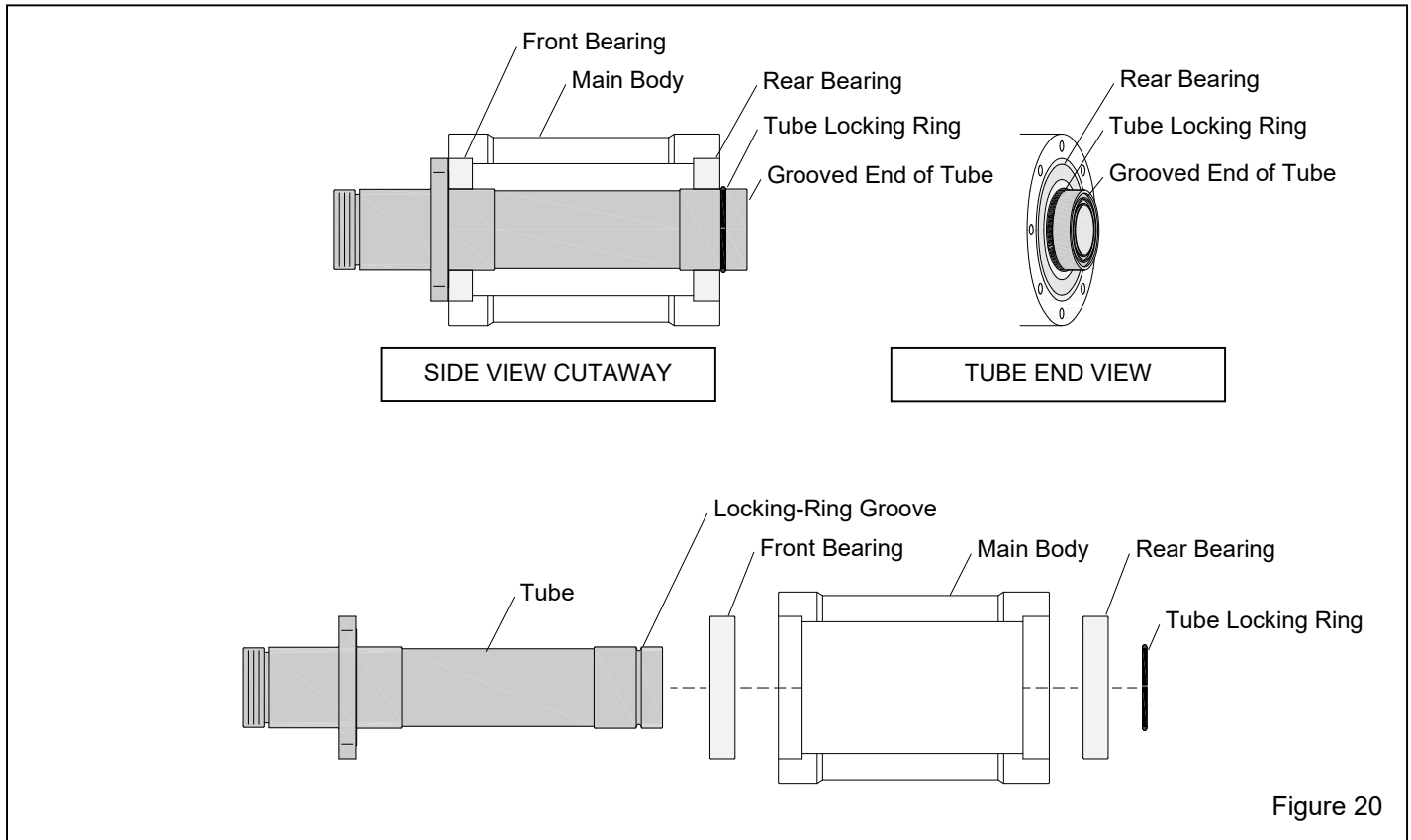


Figure 20

**9.5.3.2** Tap or press the tube into position, making sure the tube is aligned with the rear bearing as it is pressed into place.

Note: The rear bearing may also be pressed into place after the tube is in its final position.

**9.5.3.3** Work a new locking ring over the grooved end of the tube and slide it into the locking-ring groove.

**9.6 Reassemble Front End Assembly – Figure 19**

**9.6.1** Slide the brake pin into the notched side of the brake and insert the pin, with brake attached, into the pin hole in the tube. Make sure the flat side of the pin is facing toward the setscrew.

**9.6.2** Use a 3.32" hex key to tighten the brake-pin setscrew. Swing the brake to make sure it moves freely on the tube.

**9.6.3** Align the matchmark on the housing with the mark on the body and tighten the housing screws

**9.7 Reassemble Rear End Assembly – Figure 21**

**Make sure any parts that are reused are in good condition, clean, and free of dust or abrasive.**

**9.7.1 Bearing seal and retainer – Figure 18**

**9.7.1.1** Place a new seal into the retainer, as shown in Figure 18. The open side of the seal faces the side of the retainer with the countersunk screw holes.

**9.7.1.2** Press or gently tap the seal into place so that it is about halfway into the retainer.

**9.7.1.3** Place the retainer, with seal installed, into place on the body. Make sure the end of the tube extends about 1/8" past the rubber on the seal. If it does not, remove the retainer and readjust the seal as needed.

**9.7.1.4** Align the matchmarks on the retainer with those on the rear of the body, thread the screws into the countersunk screw holes, and tighten to secure.

**9.7.2 End plate assembly – Figure 21**

**9.7.2.1** Clean and inspect all parts for wear, replacing any that are worn.

**9.7.2.2 Carbide washer:** Temporarily place the carbide washer into the flanged end of the end plate.

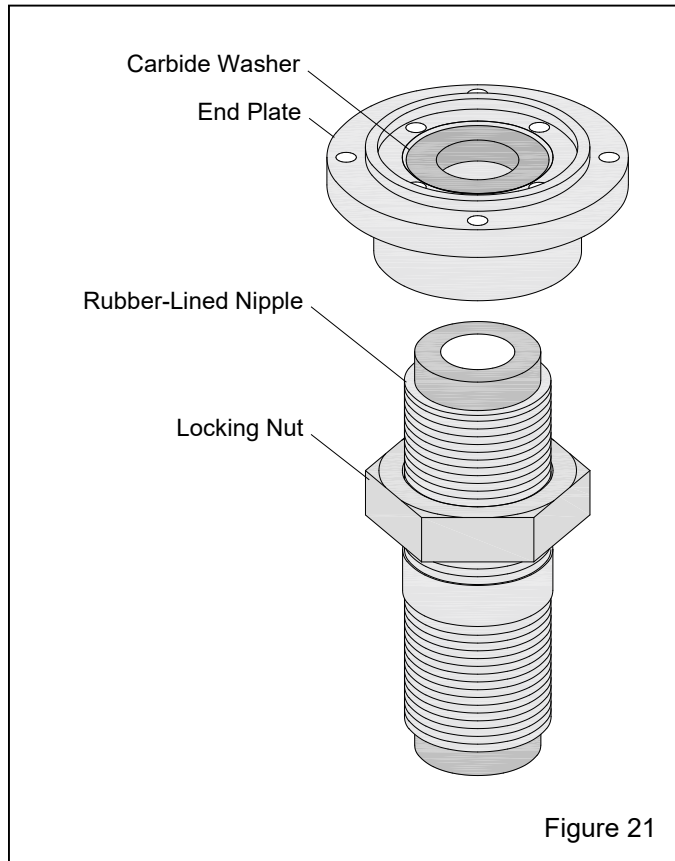


Figure 21

**9.7.2.3** Screw the locking nut onto the long end of the rubber-lined nipple, as shown in Figure 21.

**9.7.2.4** Screw the end of the rubber-lined nipple with the locking nut into the back of the end plate until it barely moves the carbide washer.

**9.7.2.5** Remove the carbide washer from the end plate

**9.7.2.6** Loosely snug the locking nut against the back of the end plate.

**9.7.2.7** Smear cup grease or similar grease around the end of the tube, where the bearing seal meets the tube, and on the smooth side of the leather seal. Insert the leather into the seal retainer, smooth side toward the tube. Arrange the leather so the four holes are aligned with the retainer screws. This step aligns the holes with the end-plate pressure-relief holes when the end plate is installed. Clean grease from the inside of the tube to prevent contamination of the pipe.

**9.7.2.8** Place the carbide washer on the leather seal, as shown in Figure 22.

**9.7.2.9** Align the matchmarks and reassemble the end plate assembly.

**9.7.2.10** Connect the quick coupling to the rubber-lined nipple.

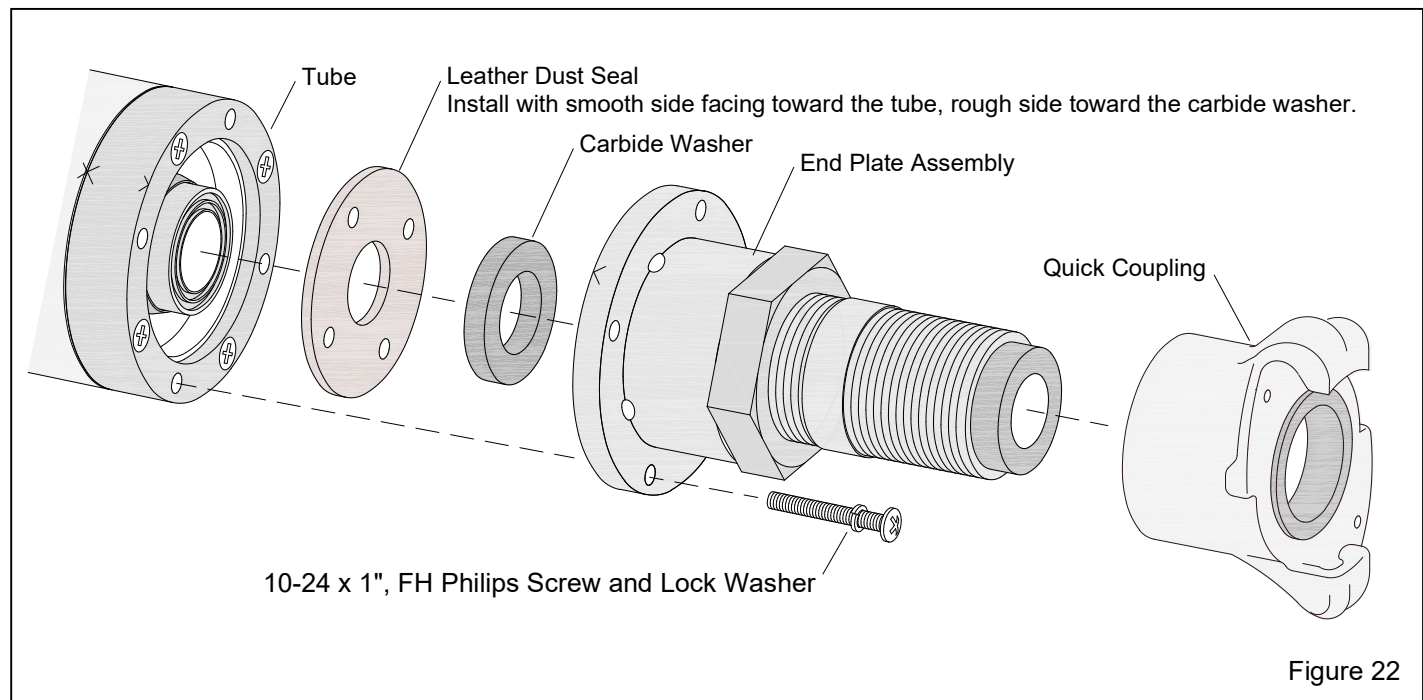


Figure 22

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**9.7.2.11** Attach the nozzle head and nozzles, per Section 9.8.

**9.7.2.12** Adjust the drag per Section 6.5.

## **9.8 Attach Nozzle Head and Nozzles**

**9.8.1** Make sure the nozzle-head threads and tube-casting threads are clean and clear of abrasive before screwing the head onto the end of the tube casting.

**9.8.2** Screw the head onto the tube by turning it clockwise when viewed from the nozzle end. If the tube turns, lock it, per Section 6.1. During operation, the head spins clockwise, ensuring the head does not spin off the tube.

**9.8.3** Make sure the nozzle threads and nozzle-head threads are clean and clear of abrasive before screwing the nozzles into the head.

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## **10.0 TROUBLESHOOTING**

### **10.1 Air, dust, or abrasive escaping through the pressure-relief holes in the end plate**

**10.1.1** Leather dust seal loose: Adjust drag, per Section 6.5.

**10.1.2** Leather dust seal worn: Replace seal, per Section 8.2.

### **10.2 Nozzle head will not rotate or rotates too slowly**

**10.2.1** Insufficient air pressure: Increase pressure.

**10.2.2** Nozzle worn too large for the compressed-air supply: Check nozzles for wear. Replace nozzles if the orifice is worn 1/16" larger than the original size.

**10.2.3** Restrictions in the air-supply line, blast hose, or blast machine plumbing: Refer to Sections 3.1 and 3.2.

**10.2.4** Nozzle(s) plugged: Inspect nozzles for blockage.

**10.2.5** Excessive pressure on leather dust seal: Adjust drag, per Section 6.5.

**10.2.6** Damaged bearings: Replace bearings, per Sections 9.6 and 9.7.

### **10.3 Nozzle head rotates too fast**

**10.3.1** Leather dust seal loose: Check for air or dust escaping from the end-plate pressure-relief holes. Adjust drag, per Section 6.5.

**10.3.2** Leather dust seal worn: Replace seal, per Section 8.2.

**10.3.3** Brake worn: Inspect brake and replace, per Section 8.5.

### **10.4 Tool vibrates**

**10.4.1** One nozzle plugged: Inspect nozzles for blockage.

**10.4.2** Unbalanced nozzles: Nozzles must be of the same lengths and orifice diameter. Inspect nozzles.

**10.4.3** Centering carriage loose: Make sure the tool is fastened securely in the carriage and that the carriage is adjusted to fit the pipe.

### **10.5 Brake housing gets hot**

**10.5.1** Oil accumulation on the brake: Inspect the brake, per Section 8.5, and clean as needed.

**10.5.2** Brake stuck: Inspect brake movement, per Section 9.6.2.

**11.0 ACCESSORIES and REPLACEMENT PARTS**

**11.1 Accessories**

Description	Stock No.
Safety cables	
Hose safety cable for 1-1/2" to 3" OD hose .....	15013
Hose safety cables for 1-1/2" to 4" OD hose .....	27405

**11.2 Spin-Blast Assemblies**

Description	Stock No.
Spin-Blast Tool for 8" to 36" pipe with 1-3/4" long nozzles, without carriage .....	02601
Spin-Blast Tool for 36" to 60" pipe, with large head, without carriage, or nozzles .....	10547

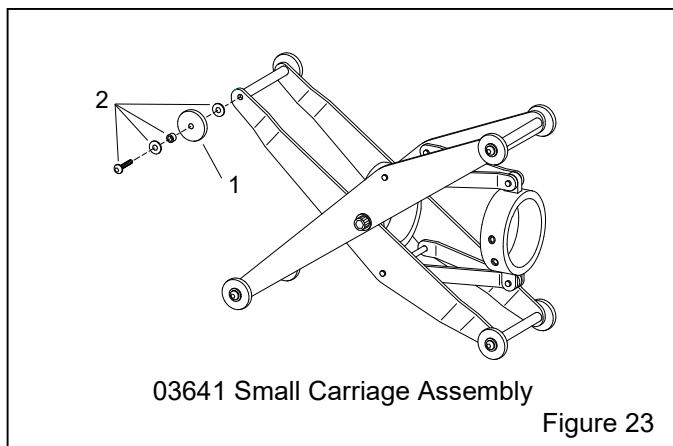
**11.3 Carriage Assemblies**

Description	Stock No.
Carriage assembly	
Carriage for 8" to 17" ID pipe, as shown in Figure 23 .....	03641
Carriage for 12" to 36" ID pipe, includes collars, six each 4", 8" and 17" legs, and six casters. as shown in Figure 24 .....	04971
Carriage for 36" to 60" ID pipe, includes collars, six 36" legs, and six casters, as shown in Figure 24 .....	10560

**11.4 Carriage Replacement Parts**

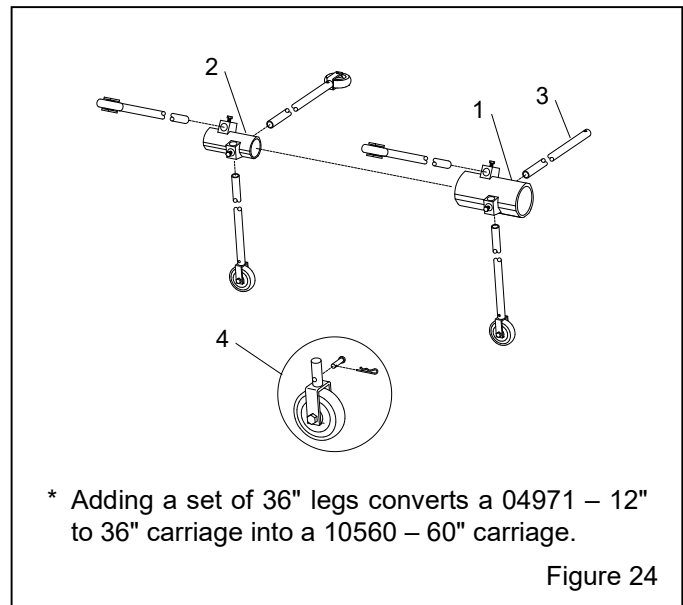
**for 03641 adjustable carriage Spin-Blast – Figure 23**

Item	Description	Stock No.
1.	Wheel, steel .....	03636
2.	Bushing kit, steel wheel (for 1 wheel) .....	03706



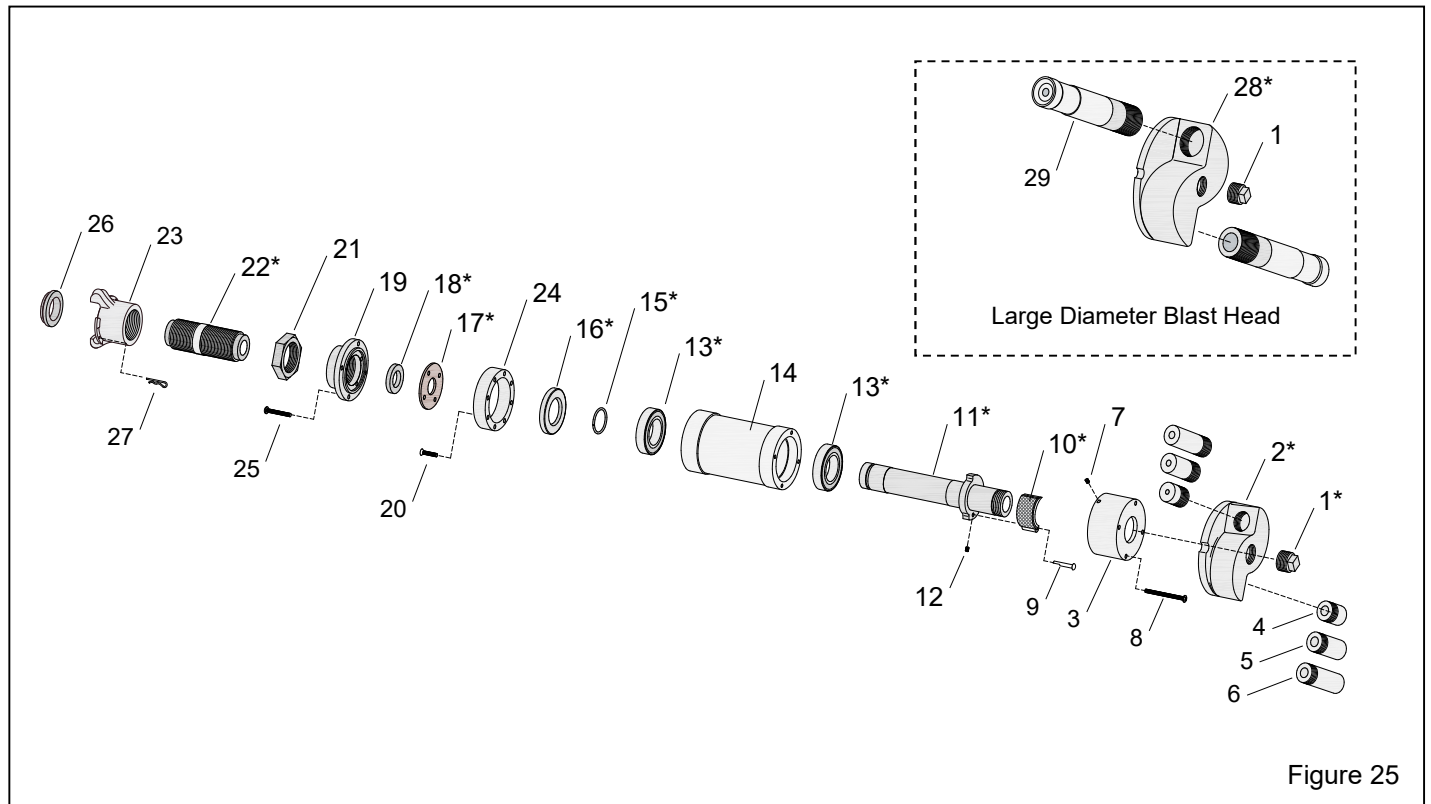
**Carriage for large diameter Spin-Blast – Figure 24**

Item	Description	Stock No.
(-)	Carriage assemblies	
	for 36" to 60" ID pipe, includes collars and six 36" legs w/casters .....	10560
1.	Body (large) collar .....	04937
2.	Lance (small) collar .....	04938
3.	Leg set, includes six legs <u>without casters</u>	
	4" long .....	04896
	8" long .....	04895
	17" long .....	04894
	* 36" long .....	10559
4.	Caster assembly with yoke, clevis pin cotter pin, cap screw, and nut	
	each .....	04898
	set of six .....	04899



**11.5 Spin-Blast Replacement Parts – Figure 25**

Item	Description	Stock No.
(-)	Spare parts kit, 8" to 36" ID tool includes item with * quantities shown in ( )	02603
(-)	Spare parts kit for large diameter Spin-Blast. Includes same items as 02603 except 10546 rotating head replaces 02504	10894
1. *	Plug, 1" NPT* pipe (4)	01761
2. *	Head, rotating nozzle, small (1)	02604
3.	Brake housing, includes (4) 10-24 x 2-1/4" round head machine screws	02606
4.	Nozzle, tungsten carbide lined No. 4, 1/4" orifice x 1-3/4" long	01408
	No. 5, 5/16" orifice x 1-3/4" long	01409
	No. 6, 3/8" orifice x 1-3/4" long	01411
5.	No. 5, 5/16" orifice x 3" long	01410
6.	No. 6, 3/8" orifice x 4" long	01412
7.	Setscrew, 1/4-NC x 1/4" cup point	03071
8.	Screw, 10-24 x 2-1/4" PH Philips	03892
9.	Pin, brake	02628
10. *	Brake with lining, includes item 9 (1)	02608
11. *	Tube, includes items 7 and 15 (1)	02609
12.	Setscrew, 10-24 x 3/16"	03270
13. *	Bearing, double seal (2)	02611
14.	Body, main	10899
15. *	Lock ring, tube (2)	02610
16. *	Seal, bearing (1)	02613
17. *	Seal, leather dust (30)	02614
18. *	Washer, tungsten carbide (2)	02616
19.	End plate, rear	02615
20.	Screw, 10-24 x 1", FH Philips	10897
21.	Locking nut, end plate	02618
22. *	Nipple, rubber-lined (2)	02617
23.	Coupling, SCF	00592
24.	Retaining ring, bearing seal	10898
25.	Screw, (4) 10-24 x 1-1/2" mach.	purchase local
26.	CQG coupling gasket, pack of 10	00850
27.	Lock pins, pack of 25	11203
28. *	Head, rotating nozzle, large (1)	10546
29.	Nozzle, long venturi silicon-carbide lined SAS-4, 1/4" orifice	28079
	SAS-5, 5/16" orifice	28080
	SAS-6, 3/8" orifice	28081



**Figure 25**