

customer manual

ORIGINAL INSTRUCTIONS

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SAFETY PRECAUTIONS AVOID INJURY

Safeguards are designed into this application equipment to protect operators and maintenance personnel from most hazards during equipment operation. However, certain safety precautions must be taken by the operator and repair personnel to avoid personal injury, as well as damage to the equipment. For best results, application equipment must be operated in a dry, dust-free environment. Do not operate equipment in a gaseous or hazardous environment.

Carefully observe the following safety precautions before and during operation of the equipment:

- ALWAYS wear appropriate ear protection.
- ALWAYS wear approved eye protection when operating powered equipment.
- ALWAYS keep guard(s) in place during normal operation.
- ALWAYS insert power plug into a properly grounded receptacle to avoid electrical shock.
- ALWAYS turn off the main power switch and disconnect electrical cord from the power source when performing maintenance on the equipment.
- NEVER wear loose clothing or jewelry that may catch in moving parts of the application equipment.
- NEVER insert hands into installed application equipment.
- NEVER alter, modify, or misuse the application equipment.

TOOLING ASSISTANCE CENTER

CALL TOLL FREE 1-800-722-1111 (CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)

The **Tooling Assistance Center** offers a means of providing technical assistance when required.

In addition, Field Service Specialists are available to provide assistance in the adjustment or repair of the application equipment when problems arise which your maintenance personnel are unable to correct.

INFORMATION REQUIRED WHEN CONTACTING THE TOOLING ASSISTANCE CENTER

When calling the Tooling Assistance Center regarding service to equipment, it is suggested that a person familiar with the device be present with a copy of the manual (and drawings) to receive instructions. Many difficulties can be avoided in this manner.

When calling the Tooling Assistance Center, be ready with the following information:

1. Customer name
2. Customer address
3. Person to contact (name, title, telephone number, and extension)
4. Person calling
5. Equipment number (and serial number if applicable)
6. Product part number (and serial number if applicable)
7. Urgency of request
8. Nature of problem
9. Description of inoperative component(s)
10. Additional information/comments that may be helpful



2700-lb Pneumatic
Power Unit 312522-1
(Ref)

Figure 1

1. INTRODUCTION (Figure 1)

The 2700-lb Pneumatic Power Unit 312522-[] is a pneumatically-powered, bench-mount machine that provides the force necessary to terminate a variety of connectors. The machine accepts one of several die holder assemblies and die insert assemblies to properly apply specific connectors to cable. The tooling assemblies are purchased separately and are supplied with instruction sheets covering installation and crimping procedures.

The pneumatic power unit is available in four different models. The 312522-1 and 312522-4 machines are footswitch actuated. These machines are physically and functionally identical except that the -4 machine does not have an adjustable stroke on the air cylinder. The 312522-2 machine is pushbutton actuated, featuring a two hand, no tie down (THNTD) actuation method. And the 312522-3 machine is bleed-sensor actuated, designed to accept Tyco Electronics slide tooling. The machine specifications and capabilities are provided in Figure 2.



Do NOT use the power unit as a crushing device or for anything other than a crimping machine for the specified product. Inappropriate use of the power unit could result in personal injury OR damage to the power unit.

Machine Dimensions (Approximate)

Length 349.3 mm [13.75 in.]
 Width 139.7 mm [5.50 in.]
 Height 596 mm [23.5 in.]

Machine Weight 22.68 kg [50 lbs]

Noise Level 96dbA Max

Air Requirements

Pressure (Minimum) 551 kPa [80 psi]
 Pressure (Maximum) 690 kPa [100 psi]

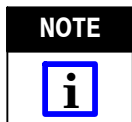
Tooling Assemblies Used With Machine

Tyco Electronics Die Holder Assemblies
 Tyco Electronics Die Insert Assemblies

Connector Application

Various Tyco Electronics Connectors

Figure 2



Due to improvement of the 2700-lb Pneumatic Power Unit, this customer manual will supersede customer manuals 409-5590 (was CM 5590), Rev. A (for 312522-1); 409-5694 (was CM 5694), Rev. A (for 312522-2); and 409-5822 (CM 5822) (for 312522-3). The changes made to the machines include a redesign to the pneumatics system, a redesign to the existing cover, and changes in the ram area. In addition, this manual includes a new -4 model machine, designed with no stroke adjustment.

If you have problems or questions regarding the use of this manual with the machine being used, contact Tyco Electronics for assistance. Refer to page 2 for details.

Reasons for reissue are provided in Section 8, REVISION SUMMARY.

1.1. Safety Precautions

Read this manual thoroughly before operating the machine. The performance of this machine will depend largely upon the intelligent use of the information contained in this manual.

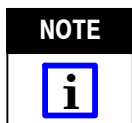
When reading this manual, pay particular attention to **DANGER**, **CAUTION**, and **NOTE** statements.



Denotes an imminent hazard which may result in moderate or severe injury.



Denotes a condition which may result in product or equipment damage.



Highlights special or important information.



Always wear approved eye protection while operating the equipment.



Always wear approved hearing protection while operating the equipment.



Read and understand the entire manual.



Moving parts can crush and cut.



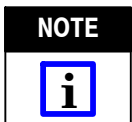
Do not operate the machine if the guards are removed.



Always disconnect the air and lockout the tool when not in use, when performing maintenance on the tool, or when clearing a jammed tool.



There is a risk of whipping if a hose is not properly installed or becomes detached.



Measurements are in metric units [followed by U.S. customary units in brackets]. Illustrations are for identification only and are not drawn to scale.



The unit should ONLY be operated by trained personnel.



If NOT using quick-disconnect fittings to connect the tool to the air supply, provide operators other means to easily disconnect the tool from the air supply.



Stored gas or fluid MAY be a hazard.

1.2. Documentation

Each machine is shipped with a documentation package which should remain with the machine for operator reference and maintenance personnel. The documentation package includes a customer manual for information on safety, receiving inspection and installation, setup and operation, adjustments, troubleshooting, preventive maintenance, and replacement of parts, and assembly drawings of the machine. If you have problems or questions regarding this machine, contact your local TE Field Service Specialist, or

TOOLING ASSISTANCE CENTER (1-800-722-1111)
 TYCO ELECTRONICS CORPORATION
 PO BOX 3608
 HARRISBURG, PA 17105-3608

2. DESCRIPTION

2.1. Physical Description (Figure 3)

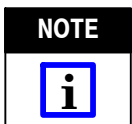
The machine is a compact, bench-mount unit which includes a cast metal base and frame. (A 177.8 x 177.8 mm [7 x 7-in.] bolt hole pattern and 1/4-in.-dia bolts are used for mounting the unit to a bench or table).

The front of the machine features the “target area” which is located between the ram and the base plate surfaces. The target area accepts the upper and lower tooling components for the die holder assemblies and die insert assemblies. The three-stage air cylinder with 101.6 mm [4-in.] bore is capable of exerting 12010 N [2700 lbs] of force at 551 kPa [80 psi] minimum air pressure. The ram, which is mounted to the air cylinder, rides up and down in a bearing. The dowel pin, attached to the ram, is secured through the bearing, and prevents rotation of the ram.



The ram/air cylinder area cannot be repaired by the customer.

The stroke/shut-height adjustment knob (for machines 312522-1, -2, and -3) is used to adjust the shut-height from 0 to 12.7 mm [.50 in.] above the minimum shut-height of the power unit. The adjustment knob is located on top of the air cylinder. Refer to Figure 3.

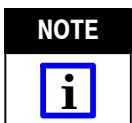


The stroke length of the ram decreases as the shut-height increases.

2.2. Functional Description

For this description, it shall be assumed that the machine has been properly installed, is set up with the appropriate die holder assembly and die insert assembly to apply a particular type and size of connector and cable, is connected to the required air supply, and is ready for normal production operation.

With the cable and connector properly placed in the tooling, the operator actuates the machine. At this point the air pressure is diverted to the extension side (upper port) of the air cylinder and the ram descends to terminate the connector to the cable. The timing sequence begins upon release of the actuator. (The flow control timing valve is factory-set for 1.5 seconds, but can be adjusted for up to 60 seconds per cycle, depending upon the application. When the timing sequence is completed, air is diverted to the lower port of the air cylinder and the ram will retract to the “up” position. See Figure 4.



When the machine is actuated, it will make a single, complete cycle and reset itself.

Machine Component Locations
312522-1 and -4
(Front View)

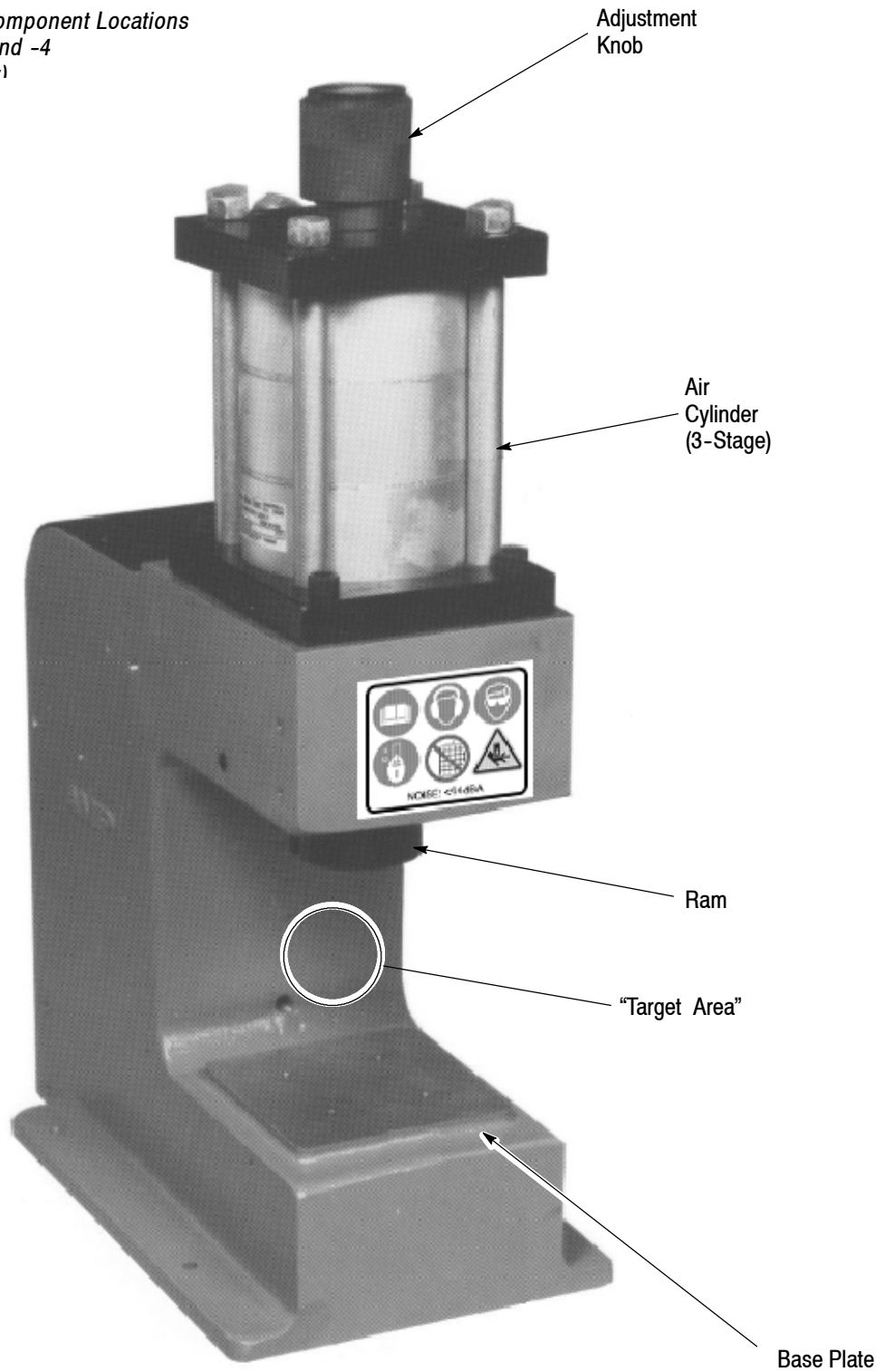


Figure 3

Machine Component Locations for
Pneumatic System 312522-1 and -4
(Back View)

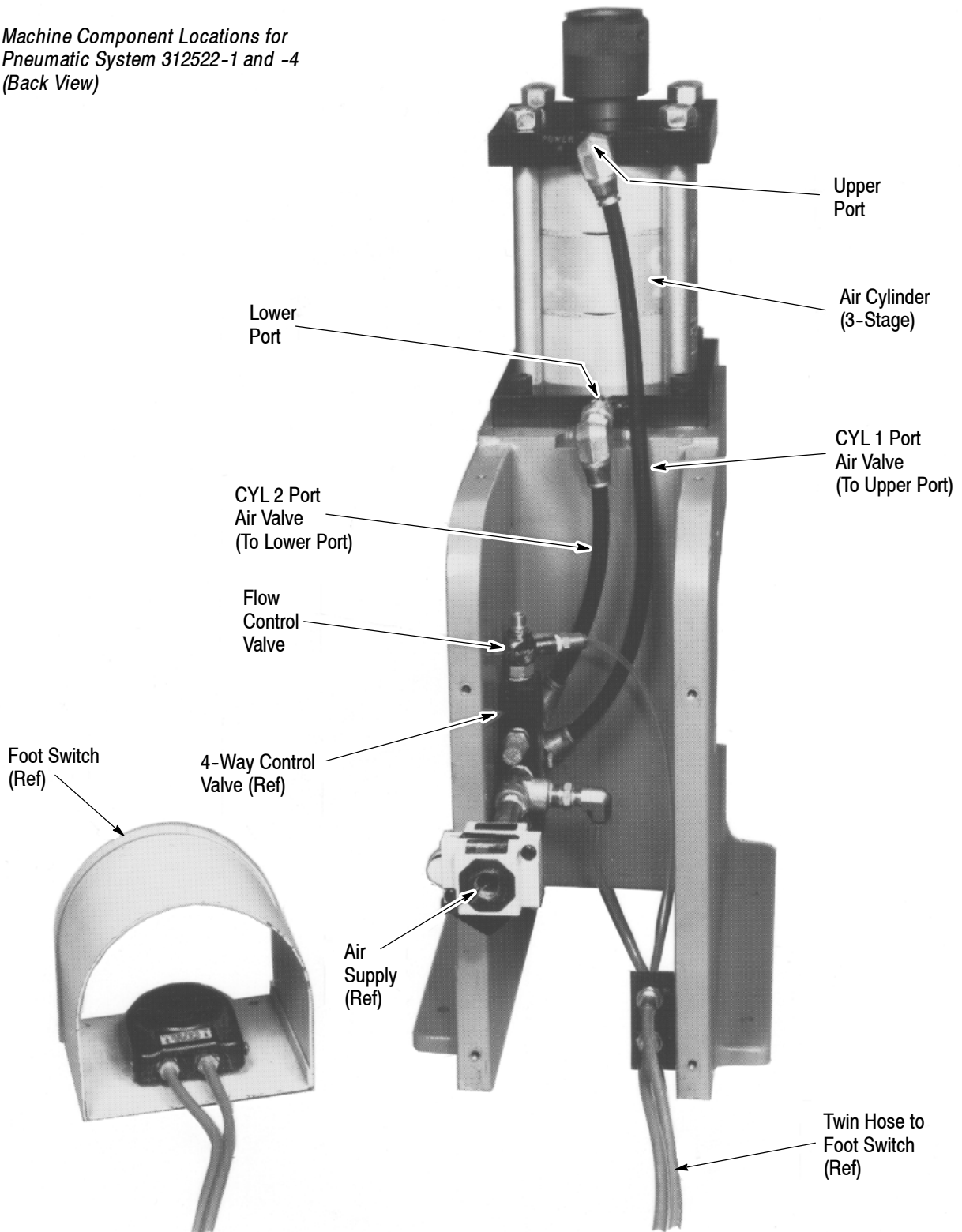


Figure 4

2.3. Pneumatic Description

Figures 5, 6, and 7 show how the pneumatic system works in each machine. (Refer to pneumatic diagrams 312593 and 854880 for more detailed information.)

Pneumatic Diagram for 312522-1 and 312522-4

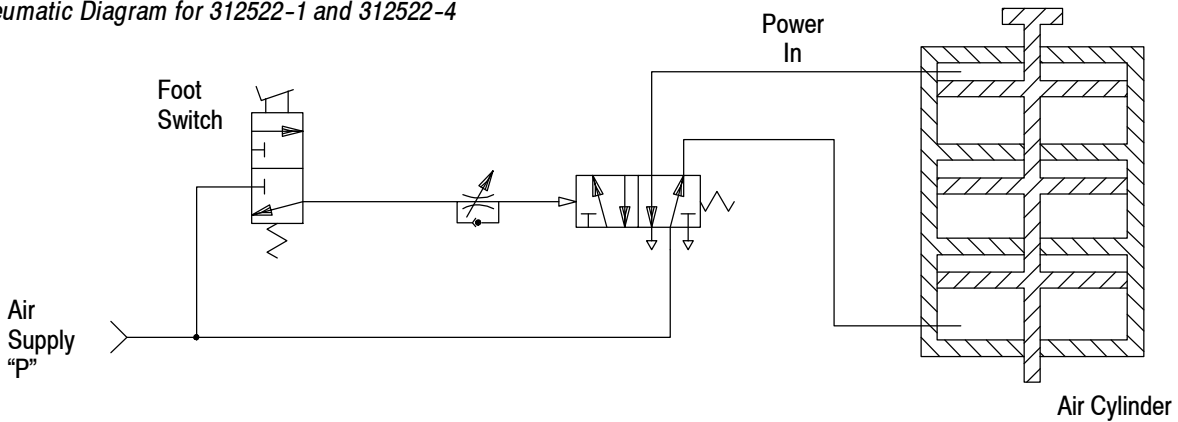


Figure 5

Pneumatic Diagram for 312522-2

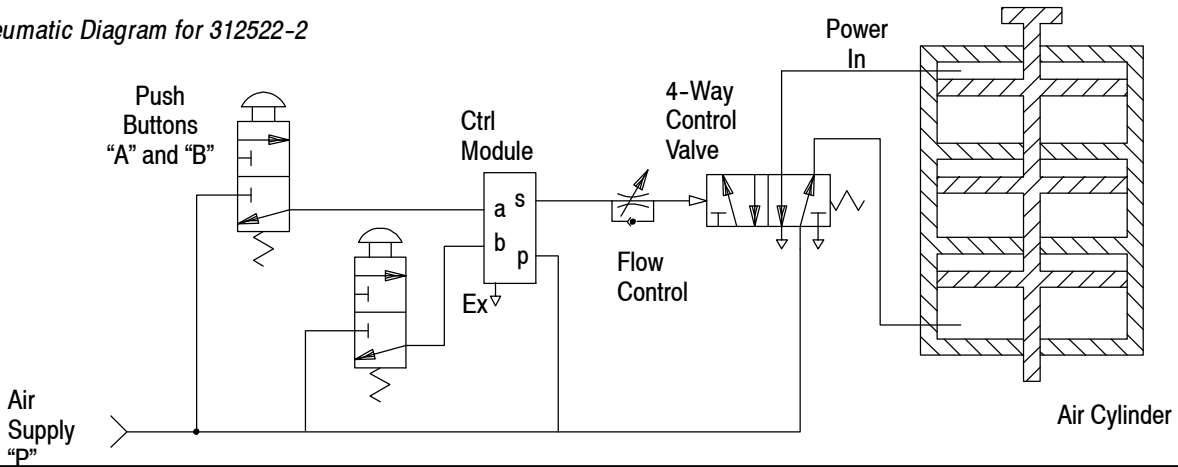


Figure 6

Pneumatic Diagram for 312522-3

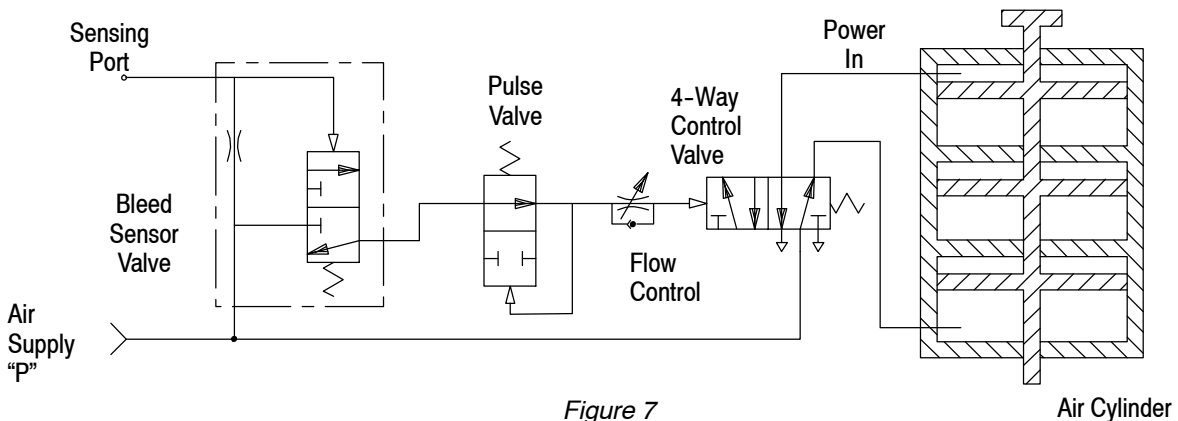


Figure 7

3. RECEIVING INSPECTION AND INSTALLATION

3.1. Receiving Inspection

The machine is thoroughly inspected during and after assembly. Before it is shipped, a final series of tests and inspections is made to ensure proper functioning. However, the following inspection should be performed as a safeguard against problems generated during shipment.

1. Carefully uncrate the machine and place it on a sturdy bench where there is enough light to permit a careful examination.
2. Thoroughly inspect the entire machine for evidence of damage that may have occurred during transit. If the machine is damaged, file a claim against the carrier and notify Tyco Electronics immediately.
3. Check all components and parts to be certain they are secure.
4. Check all air lines for evidence of loose connections or leaks.

3.2. Machine Placement

Proper location of the machine in relation to the operator is essential to both safety and efficiency. Studies have shown that fatigue will be reduced and efficiency increased if particular attention is paid to the bench, the operator's chair, and the placement of the foot switch.

A. Bench

A sturdy bench 686 mm to 762 mm [27 to 30 in.] high aids comfort by allowing the operator's feet to rest on the floor and the weight and leg position to be easily shifted. The bench should have rubber mounts to reduce noise. The open area under the bench should allow the chair to slide far enough in for the operator's back to be straight and supported by the back rest.

B. Machine Location on Bench

The operator's chair should swivel, and the seat and back rest should be padded and independently adjustable. The back rest should be large enough to support the back both above and below the waist. In use, the chair should be far enough under the bench so that the operator's back is straight and supported by the back rest.

C. Foot Switch (for 312522-1 and -4 Machines)

When the operator is correctly positioned in front of the machine, the foot should rest on the foot switch comfortably and easily. The foot switch should be placed on a rubber mat; this allows it be movable and permits the operator to shift position to minimize fatigue, while at the same time the mat prevents the foot switch from sliding unintentionally.

The preference for locating the foot switch varies among operators. Some operators prefer that the foot switch be positioned so that their leg is in a natural sitting position when their foot is on the foot switch. Other operators prefer their foot be slightly in front of the natural sitting position. The important thing is that the foot be about 90° to the calf when resting it on the foot switch. Those who prefer the foot switch slightly forward may require a wedge-shaped block to be placed under the foot switch.

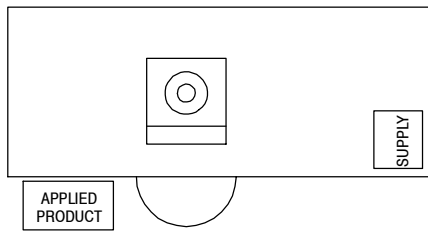
Figure 8 shows proper location and position. Figure 9 shows a typical layout for the efficient handling of materials.



Proper Position, Adjustments, and Locations

Figure 8 shows the recommended physical considerations and the operator in a desirable position. Note that with the chair height and back rest properly adjusted and the chair properly located, the operator's back is straight and supported by the chair and the upper arms are in a direct line with the torso.

Figure 8



Materials Locations - Plan View

Figure 9 is a typical plan view to illustrate the convenience of handling materials afforded by the proper setup.

Figure 9

3.3. Machine Setup

Select an appropriate location for the machine. The location should be well lighted, and should have convenient and adequate air and power supplies. Refer to Figure 2 for machine requirements.

1. Secure the machine to the bench with four 1/4-in. dia bolts or lag screws.
2. Blow air through the air hose to remove any foreign particles before attaching supply hose to the back of the machine.
3. Install air line filter, air pressure regulator, and lubricator (supplied by the customer) between the air supply and hose, as shown in Figure 10. The assembly must be as close as possible to the machine. Fill the air line lubricator with a good grade air line lubricant (as recommended by the filter manufacturer). When machine is not in use, the air supply should be turned "OFF."

It is also recommended that quick-disconnect fittings are used to connect the tool to the air supply. If not using quick-disconnect fittings, provide a pneumatic lock-out on the air line that bleeds air after it is turned off.

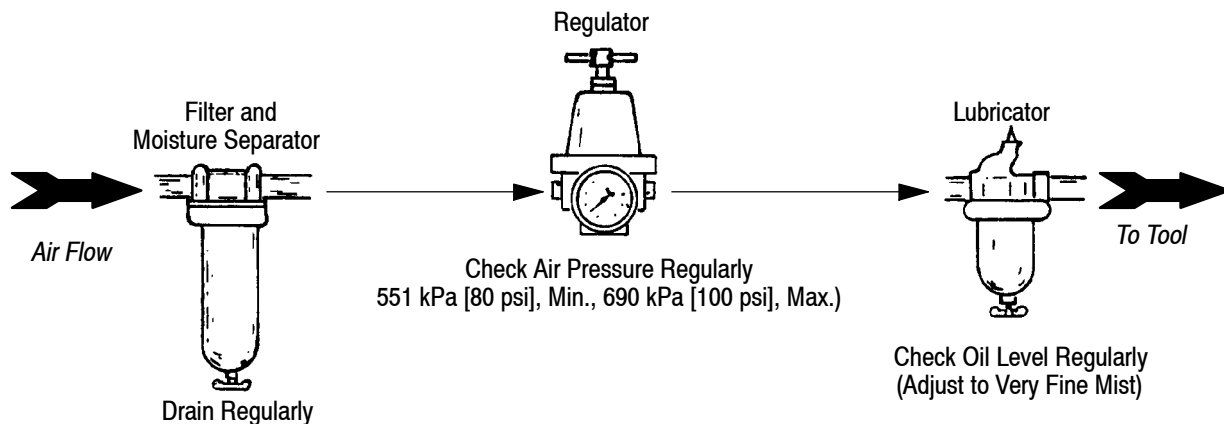


Figure 10

4. Install the appropriate die holder assembly and die assembly in the machine. Use the instructions supplied with the assemblies for additional information on installing tooling assemblies. Figure 11 shows the mounting hole pattern of the base plate (for lower tooling) and ram surface (for upper tooling).
5. Connect air supply to the machine. Turn on the main air valve. The air pressure should be set at 551 kPa [80 psi].
6. Before operating machine at production levels (and at periodic intervals), perform a test termination. Inspect the terminated machine connector using the inspection requirements established in the appropriate application specification (114-series document). If machine adjustments are necessary, refer to Section 4, MACHINE ADJUSTMENTS.

4. MACHINE ADJUSTMENTS

The following adjustments may be required to maintain the machine in continuous operation, and may be required after the replacement of parts.

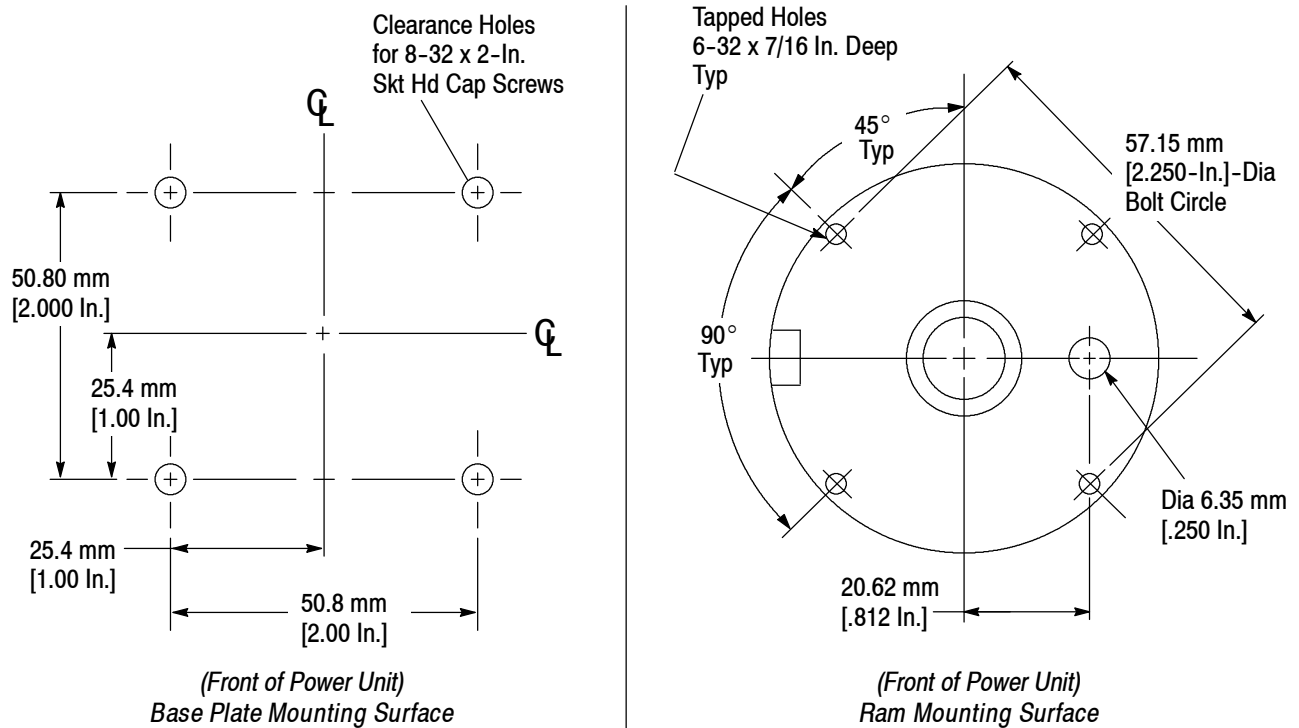


Figure 11

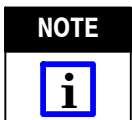


Before performing any adjustments, make sure the air supply is “OFF,” unless otherwise specified in the procedure.

4.1. Shut-Height/Stroke Adjustment (For Machines 312522- 1, -2, and -3 Only)

The machine shut-height is the distance between the mounting surface of the ram and mounting surface of the base plate, when the cylinder is fully extended and the ram is bottomed. See Figure 12. The shut height may vary with application requirements, and can be adjusted from 0 to 12.7 mm [.50-in.] above the minimum shut-height by following these procedures:

1. With air supply disconnected, bottom the ram by applying downward pressure to the knurled adjustment knob on top of the machine.
2. Determine the amount of adjustment required.



Each increment (60 in all) on the face of the adjustment knob will change shut-height .025 mm [.001 in.]. Turning the knob CLOCKWISE will increase the shut-height; turning the knob COUNTERCLOCKWISE will decrease the shut-height.

3. Determine direction to turn adjustment knob; then mark the starting point.
4. Loosen setscrew with a 1/8-in. hex wrench.
5. Before adjusting the shut-height, remove the backlash by rotating the adjustment knob 1/4-in. in the opposite direction of the adjustment direction; then rotate the knob back to the starting point (marked in Step 3).
6. Turn the adjustment knob the correct number of increments to adjust the shut-height. When the proper shut-height is obtained, retighten the setscrew.
7. Perform several test terminations to check the shut-height adjustment.

Shut-Height/Stroke Adjustment
for 312522-1 Machine
(Ref)

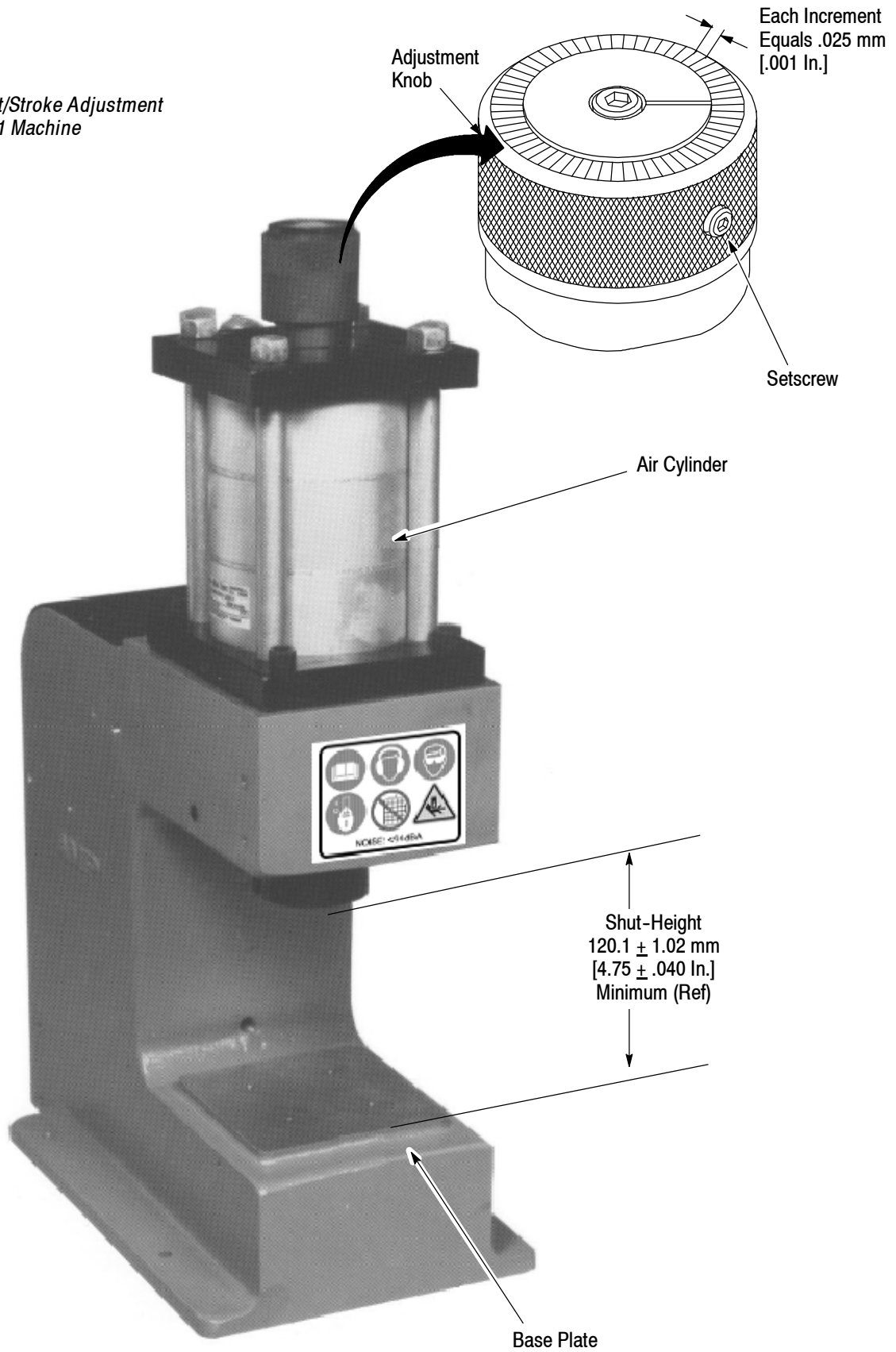


Figure 12

4.2. Time Delay Adjustment for 312522-1, -2, -3, and -4

Adjustment of the time delay is achieved by closing or opening the flow control valve on the 4-way control valve (main power valve). This adjustment is pre-set at the factory to 1.5 seconds and should not require further adjustment. However, if an adjustment is required, turn the flow control adjustment screw **CLOCKWISE** to **INCREASE** the time delay, or **COUNTERCLOCKWISE** to **DECREASE** the time delay. See Figure 13.

5. TROUBLESHOOTING

This section is intended as a guide to help you properly adjust and maintain the machine. For problems not covered in this section, contact your Tyco Electronics Field Service Specialist.

5.1. Troubleshooting 312522-1 and -4 Machines (Figure 13)

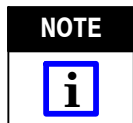
1. Check air supply. If it is turned ON, make certain that the air pressure is at least 551 kPa [80 psi]. If the air pressure is less than 551 kPa [80 psi], the machine will not cycle.



For the following troubleshooting procedures, reduce air pressure to 241 kPa [35 psi]. DO NOT REMOVE AND REPLACE hoses and connections while air supply is ON.

2. Check air supply to and from foot switch. The “IN” and “OUT” ports are marked, as shown in Figure 13.
 - a. Remove clamp and hose from barbed fitting on “IN” port. If air exits from hose when air supply is ON, turn off air and replace hose and clamp. Proceed to “OUT” port on foot switch.
 - b. Remove clamp and hose from barbed fitting on “OUT” port. With air ON and foot switch DEPRESSED, air should flow from “OUT” port. If there is no air flow when the foot switch is depressed, a faulty foot valve is indicated and should be replaced. The foot switch can be replaced following the procedures in Section 7.2.
3. Check 4-Way Control Valve and Flow Control Valve (see Figure 13); proceed as follows:
 - a. Remove the hose from the flow control valve. Remove the flow control valve from the 4-way control valve. Reconnect the hose to the flow control valve. With the footswitch depressed and the air supply ON, air should flow from the flow control valve. If it does not, replace flow control valve with a new one. Re-assemble the hoses after checking the air supply.
 - b. Disconnect hose from CYL 2 port of the air valve. With air supply ON, check the air flow through CYL 2 port. If air flows through CYL 2 port, disconnect the air; then reconnect the hose to the CYL 2 port. If no air flows through CYL 2 port when the air supply is ON, a faulty control valve is indicated and must be replaced. Refer to Section 7.1, Replacement of 4-Way Control Valve for 312522-1, -2, -3, and -4 Machines.
 - c. Disconnect hose from CYL 1 port of the air valve. With air supply ON and footswitch depressed, check the air flow through CYL 1 port. If air flows through CYL 1 port, disconnect the air and reconnect the hose to the CYL 1 port. If no air flows through the CYL 1 port, a faulty control valve is indicated and must be replaced. Refer to Section 7.1, Replacement of 4-Way Control Valve for 312522-1, -2, -3, and -4 Machines.

5.2. Troubleshooting 312522-2 Machine (Figure 14)



The 312522-2 machine is controlled by a control module which requires that both pushbuttons be pushed simultaneously (within ten thousandth of a second of each other) when actuating the machine. If the buttons are not pushed simultaneously, the machine will not cycle.

1. Check air supply to and from the pushbuttons. Refer to Figure 14, and proceed as follows:
 - a. Check the lockout valve to make sure the air is ON.
 - b. Remove the hoses from the “a” and “b” ports of the control module. See Figure 14. With air ON, and **both** pushbutton switches depressed, air should flow from both hoses. If no air flows from either of the hoses, the valve is faulty and must be replaced. See Section 7.4., Pushbutton Replacement for 312522-2 Machine.

4-Way Control Valve and Hardware Attachments
for 312522-1 and -4 Machines
(Back View Shown)

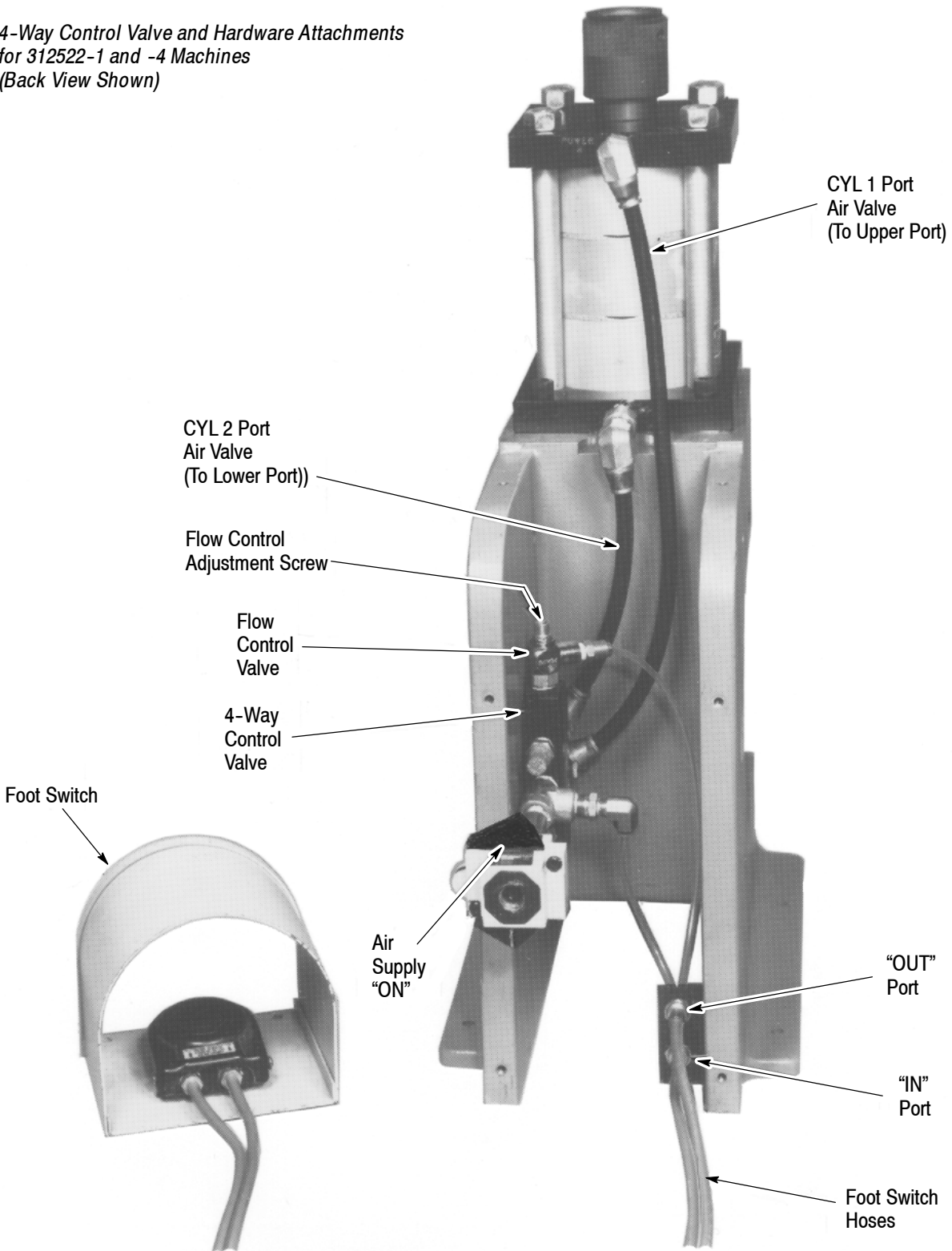


Figure 13

4-Way Control Valve and
Hardware Attachments for
312522-2 Machine
(Back View Shown)

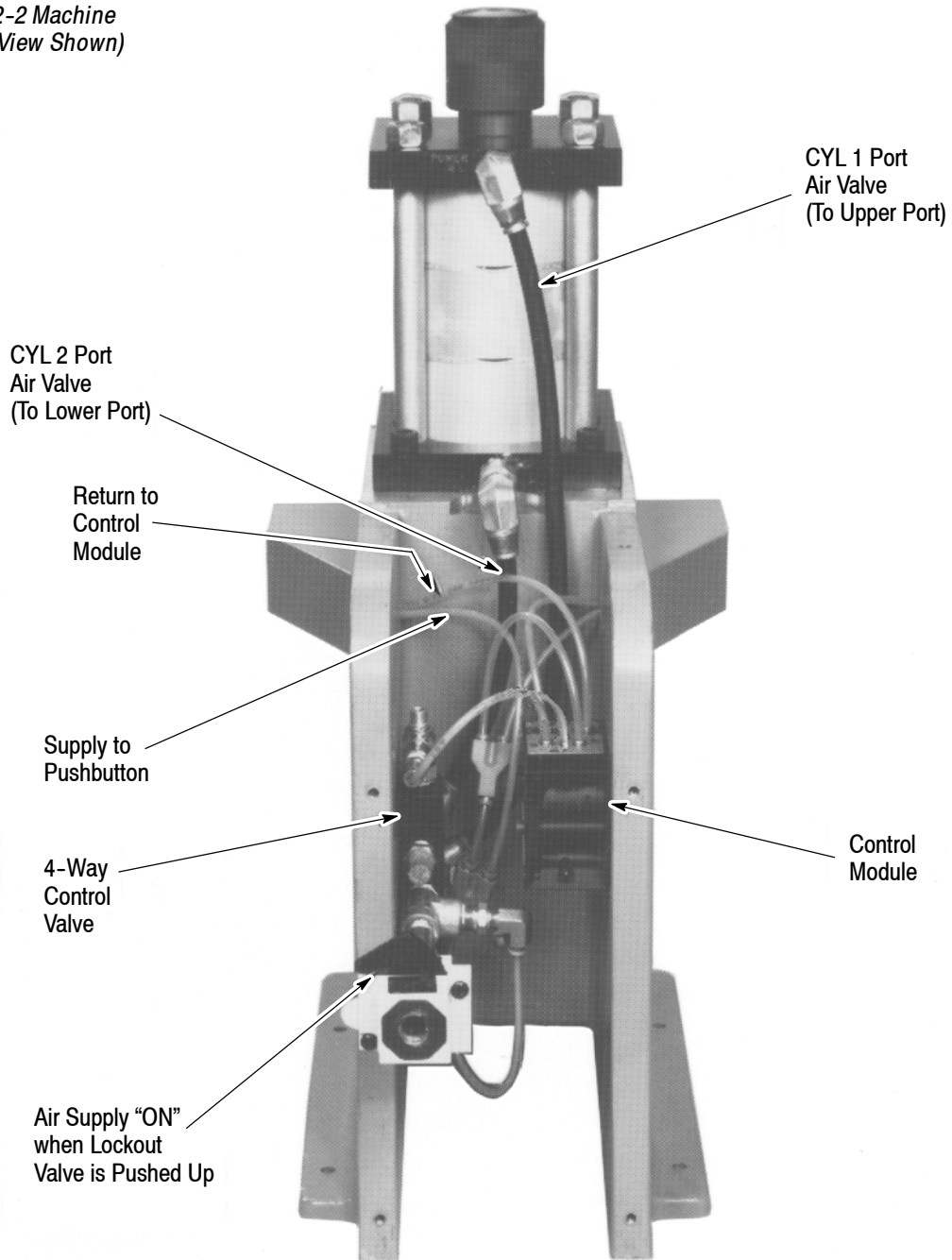


Figure 14

2. Check the Flow Control Valve and Control Module (refer to Figure 14); proceed as follows:
 - a. Remove hose from the flow control valve. With the air supply ON and **both** pushbuttons depressed simultaneously, air should flow from the hose. If air does not flow from the hose, a faulty control module is indicated. Follow the replacement procedure in Section 7.3, Control Module Replacement for 312522-2 Machine.
 - b. Remove the flow control valve from the 4-way control valve. Reconnect the hose to the flow control valve and, with the air ON, depress both pushbuttons simultaneously. Air should flow from the flow control valve. If it does not, replace the flow control valve with a new one.
3. Check the 4-Way Control Valve (refer to Figure 14); proceed as follows:
 - a. Disconnect hose from CYL 2 port of air valve. With air supply ON, if air flows through the CYL 2 port, disconnect the air and reconnect the hose.
 - b. Disconnect hose on CYL 1 port. With air supply ON and **both** pushbuttons DEPRESSED, air should flow through CYL 1 port.
 - c. If no air flows through the CYL 2 port or CYL 1 port, when air supply is ON, a faulty control valve is indicated. Follow the replacement procedure in Section 7.1, Replacement of 4-Way Control Valve for 312522-1, -2, -3, and -4 Machines.

If the machine still fails to cycle after following the above steps, call the Tooling Assistance Center at 1-800-722-1111. (The ram/air cylinder area may be damaged. Contact Tyco Electronics for assistance.)

5.3. Troubleshooting 312522-3 Machine (Figure 15)

1. Check the air supply. If it is turned ON, make certain that the air pressure is a least 551 kPa [80 psi]. If the air pressure is less than 551 kPa [80 psi], the machine will not cycle.



For the following troubleshooting procedures, reduce the air pressure to 241 kPa [35 psi]. DO NOT REMOVE AND REPLACE hoses and connections while the air supply is ON.

2. Check the bleed sensor valve and pulse valve (see Figure 15); proceed as follows:
 - a. Remove the hose from the flow control valve located on top of the 4-way control valve.
 - b. When the sensing port of the bleed sensor valve is blocked, a short pulse of air should be felt in the hose leading from the pulse valve.
 - c. If no air is felt in the hose leading from the pulse valve, the bleed sensor valve should be replaced.
 - d. If a constant stream of air is felt in the hose leading from the pulse valve, the pulse valve should be replaced.
3. Check the 4-way control valve (Figure 15) as follows:
 - a. Disconnect the hose from the CYL 2 port of the air valve. If air flows through the CYL 2 port while the air supply is ON, reconnect the hose AFTER disconnecting the air from the machine.
 - b. Disconnect the hose on the CYL 1 port. With the air supply ON and the bleed sensor port blocked, air should flow through the CYL 1 port.
 - c. If no air flows through the CYL 2 port or through the CYL 1 port when the air supply is ON, a faulty control valve is indicated. Follow the replacement procedures provided in Section 7.1, Replacement of 4-Way Control Valve for 312522-1, -2, -3, and -4 Machines.

If the machine fails to cycle after following the above steps, the ram/air cylinder may be damaged. Contact Tyco Electronics for assistance.

4-Way Control Valve and
Hardware Attachments
for 312522-3 Machine
(Back View Shown)

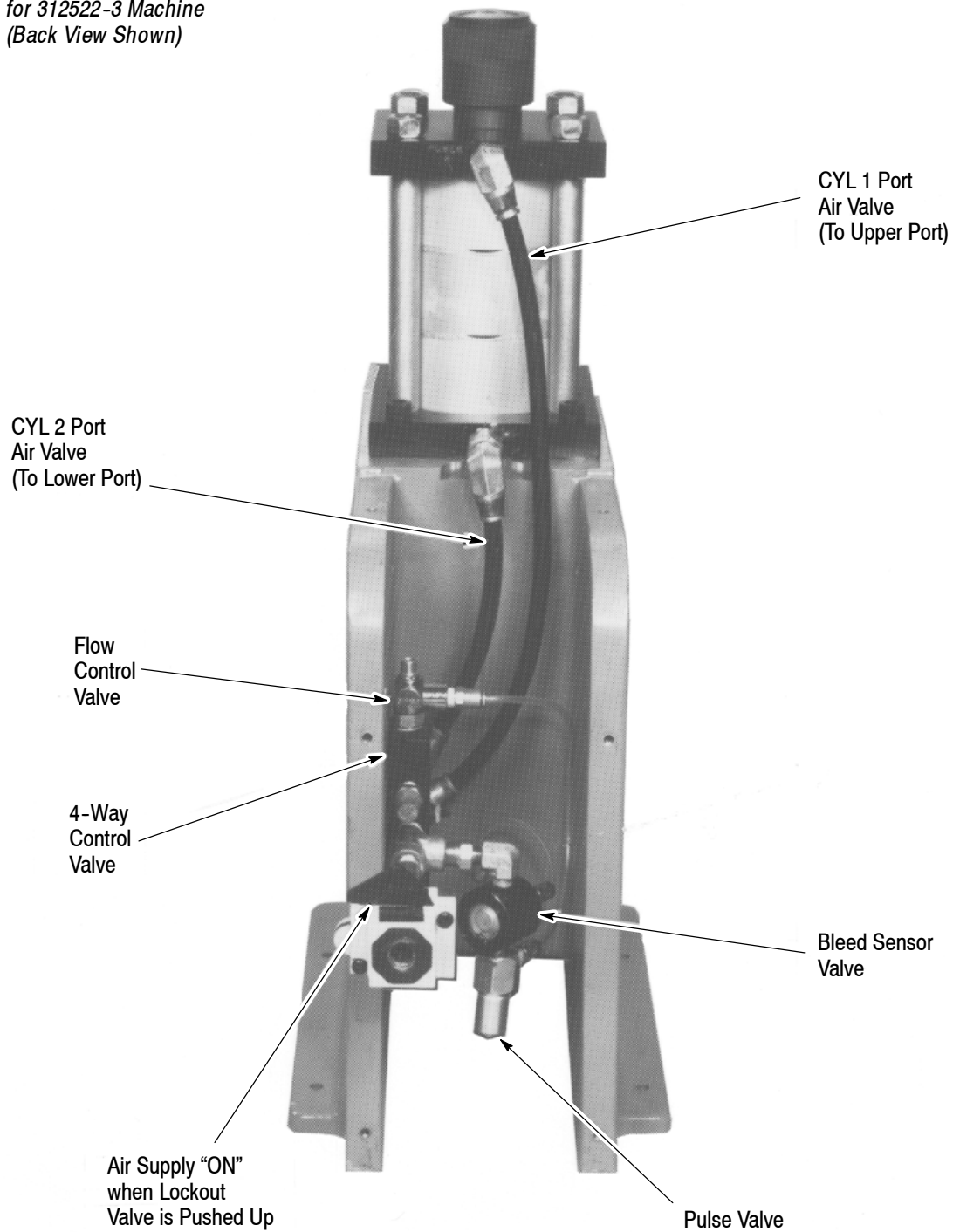



Figure 15

6. PREVENTIVE MAINTENANCE

Preventive maintenance of the machine is limited to periodic cleaning, inspection, and lubrication. Depending on the amount of use, a regular maintenance program should be established and maintained, whether daily, weekly, or monthly. This will greatly reduce downtime for repairs and replacement of parts. When performing preventive maintenance, remove cover to gain access to the machine.

DANGER *When performing preventive maintenance, MAKE SURE that the air supply is turned “OFF.”*




6.1. Cleaning

Prior to operation, or on a daily basis, perform the following:

1. Use a CLEAN, dry cloth to wipe the entire machine. Remove any evidence of dust or other contaminants.
2. Use a solvent or similar cleaning fluid to remove any evidence of oil or grease from areas not requiring lubrication, particularly in the “target area.”
3. Use an approved-type air hose or vacuum to remove any chips or metal particles that may be in the machine.

DANGER *Compressed air used for cleaning must be reduced to less than 207 kPa [30 psi], and effective chip guarding (including eye protection) must be worn.*



6.2. Inspection

Perform the following inspection daily or prior to each time the machine is to be used.


1. Check to ensure all components of the machine are secure, and look for evidence of worn or broken parts.
2. Inspect the pneumatic system for loose connections or leakage in the air lines. Repair and/or replace components as necessary.
3. Check the air supply system and follow the manufacturer’s instructions for maintenance and care of the air supply filter/regulator/lubricator.

6.3. Lubrication

Because the bearing is an oilless-type bearing, no lubrication is necessary. However, the air supply should be lubricated, as recommended by the manufacturer, described in Section 3.3, Machine Setup.

The fluid level in the lubricator should be checked daily.

CAUTION *DO NOT allow any lubricants to enter the “target area.” If this should happen, thoroughly clean the area immediately.*



7. REPLACEMENT OF PARTS

This section covers parts replacement of those recommended spares listed on the Tyco Electronics customer drawings, supplied with the machine. Tyco Electronics recommends stocking spare parts to avoid machine production downtime. If you have questions concerning the replacement of parts, contact your local Tyco Electronics Field Service Specialist or the Tooling Assistance Center.

7.1. Replacement of 4-Way Control Valve for 312522-1, -2, -3, and -4 Machines

The 4-way control valve is a self-contained unit that can be replaced. Refer to the pneumatic diagrams in Figures 5, 6, and 7 and proceed as follows:

1. Make sure air supply is "OFF." Remove the back cover.
2. Remove all hose connections (CYL 1 and CYL 2 hoses, elbow connections from pilot to foot switch, and foot-switch supply hose) from the 4-way control valve. Disconnect hose from the air supply.
3. Remove two bolts (right side) and lift 4-way control valve with remaining connections out of the machine for further disassembly.
4. Transfer all fittings and plumbing from damaged valve to the replacement valve and install parts in the reverse order of removal. Make sure that all air lines and fittings are properly positioned and connected.

7.2. Foot-Switch Replacement for 312522-1 and -4 Machines

To replace foot switch, remove the self-tapping pan head screws which secure the cover, and proceed as follows:

1. Remove cover from foot valve and loosen clamps on the twin hose.
2. Remove hoses from barbed pipe-to-hose fitting; then remove fittings.
3. Replace damaged foot valve. Transfer fittings, twin hose, and clamps, making sure that the air lines are properly positioned and secure.
4. Replace cover and secure with the self-tapping pan head screws.

7.3. Control Module Replacement for 312522-2 Machine

The control module is a self-contained unit that is not repairable. To replace it, remove the back cover and proceed as follows:

1. Remove air lines from the damaged valve.
2. Remove the two 8-32 x 1 3/4-in. socket head cap screws holding the module in place. Replace the module with a new unit.
3. Reposition screws and air lines; then replace cover.

7.4. Pushbutton Replacement for 312522-2 Machine (Figure 16)

To remove the pushbutton from the panel, remove the screws from the pushbutton housing; then remove the pushbutton housing. Proceed as follows:

1. Remove fittings.
2. Unscrew poppet valve from pushbutton adapter.
3. Rotate pushbutton adaptor to UNLOCK position and remove from pushbutton housing.
4. Unscrew adapter nut to remove sealing ring and pushbutton housing from panel.

To re-install a new pushbutton, refer to Figure 7-4 and proceed as follows:

1. Re-install sealing ring onto pushbutton housing.
2. Install pushbutton housing with sealing ring into panel, as shown in Figure 16.
3. Secure adapter nut to pushbutton housing.
4. Install pushbutton adapter against adapter nut. When the adapter is properly positioned, rotate to LOCK position.
5. Secure poppet valve to adapter.
6. Replace fittings and screws to secure pushbutton in place.

Pushbutton Assembly

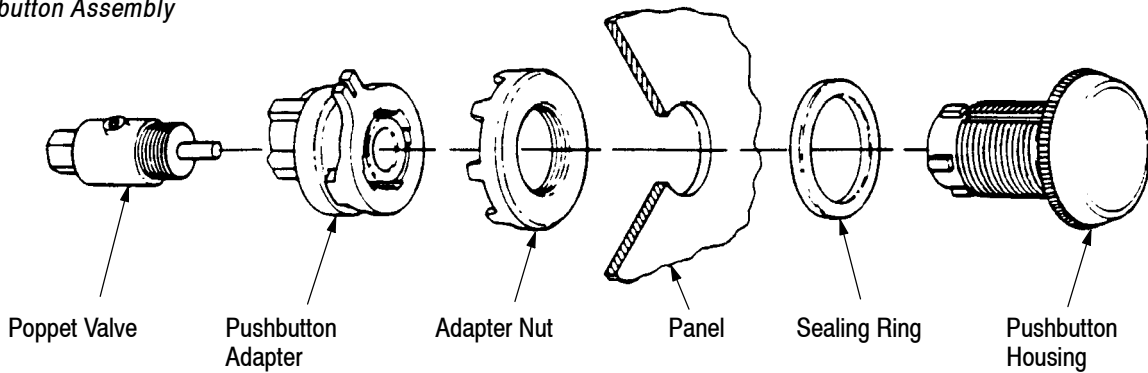


Figure 16

7.5. Bleed Sensor Valve and Pulse Valve Replacement for 312522-3 Machine

These valves are self-contained units that can be replaced. Refer to Figure 15, which shows the 4-way control valve, and to the pneumatic diagram in Section 2.3, Pneumatic Description. Proceed as follows:

1. Make sure that the air supply is OFF; remove the back cover.
2. Disconnect the CYL 1 and CYL 2 port hoses from the control valve. Disconnect the air supply hose from the control valve.
3. Remove the two bolts (right side) and lift the 4-way control valve, bleed sensor valve, and pulse valve with the remaining connections out of the machine for further disassembly.
4. Transfer all fittings and plumbing from the damaged valve to the replacement valve and re-install parts in reverse order of removal. Make sure that all air lines and fittings are properly positioned and connected.

8. STORAGE

If the tool is not used, it must be stored by taking the following precautions:

1. Store the tool indoors.
2. Grease unpainted parts.
3. Protect this tool from knocks or stresses.
4. Protect this tool from high levels of humidity and from big temperature changes.
5. Prevent the tool from coming into contact with corrosive substances.

9. DECOMMISSIONING

In compliance with the regulations in force in the country where the tool is used, the user must make sure that waste produced during operation is correctly disposed of. Disposal of lubricants and parts removed must be carried out in compliance with the standards in force in the country where the tool is used.

10. REVISION SUMMARY

Since the previous release of this manual, the following changes have been made:

- Text in a Safety Icon in Paragraph 1.2 has been modified
- Added new Sections 8 and 9 and renumbered