TLR-50, 1/2-INCH
PNEUMATIC REMOTE CONTROLS
O. M. 03358

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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 Parts 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 This manual covers installation, operation, maintenance, troubleshooting, and replacement parts for Clemco TLR-50, 1/2" NPT Remote Control System.

1.1.2 These instructions contain important safety information. All operators and personnel involved with the abrasive blast process 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 and remote controls, and all other equipment used with the blast machine. Accessory manuals for equipment that may be used with the remote controls are shown below. Manuals are available on our web site at www.clemcoindustries.com.

Blast Machine, Manual No. 04124
RLX Control Handle, Manual No. 10574

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" is included with every blast machine, and contains important safety information about abrasive blasting that may not be included in equipment operation manuals. To order additional copies, visit www.clemcoindustries.com or email info@clemcoindustries.com.

1.2 Safety Alerts

1.2.1 Clemco uses safety alert signal words, based on ANSI Z535.4-1998, 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 the user of this equipment of potential personal injury hazards.

Obey all safety messages that follow this symbol to avoid possible injury or death.

CAUTION

Caution used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ WARNING

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

⚠ DANGER

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

1.3 General Description

1.3.1 Clemco installs TLR-50 remote controls on 0.5 and 1.0 cu ft. blast machines, models 1028 and 1043.

1.3.2 A remote control system is an OSHA-required safety device when an operator controls and mans the nozzle. The control handle, located near the blast nozzle, is the activator for the remote control valves. When the operator intentionally or unintentionally removes hand-held pressure from the remote control handle, the machine deactivates, stopping air and abrasive flow through the nozzle. The remote control system "fails to safe", which means when any interruption in the control-air circuit occurs, for reasons such as a break in the line, the compressor stops running, or the operator drops the blast hose, the remote control deactivates the blast machine.

⚠ WARNING

Never modify or substitute remote control parts. Parts from different manufacturers are not compatible with Clemco equipment. If ANY part of the remote control system is altered, involuntary activation, which may cause serious injury, can occur.

1.3.3 The components of the remote control system are shown in Figure 1. They include the inlet valve, diaphragm outlet valve, RLX control handle, 25-ft. and 3-ft. long twinline control hoses, 2 control hose unions, and an 18-in. long interconnecting hose.

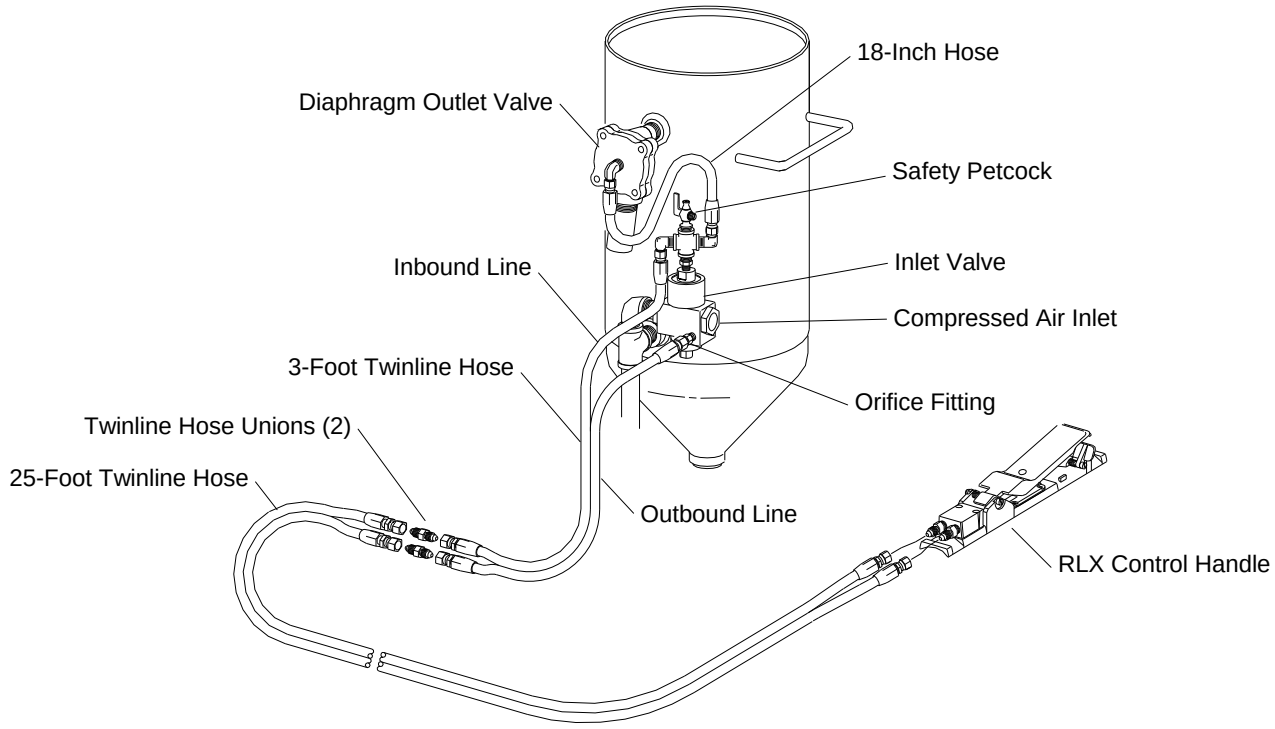

Figure 1

1.3.4 TLR-50 Remote Controls are pressure-release style systems which control the pressurization and depressurization of the blast machine. Pressurization occurs when the control handle is pressed and depressurization occurs when the handle is released.

1.4 Operating Principles

1.4.1 Clemco TLR Remote Controls operate pneumatically on return air (Refer to Figure 1). If the control handle lever (the main activator of the system) is in the up (no blast) position, one stream of air travels down the outbound side of the twinline and escapes through an opening located under the lever. The normally-closed inlet valve remains closed and the normally-open outlet valve remains open. When the control handle lever is pressed, a rubber button seals the opening, and air in the outbound line returns through the inbound line to open the inlet valve and close the outlet valve. This action pressurizes the blast machine and begins the blasting process. Releasing the handle exhausts the control air, closing the inlet valve, and opening the outlet valve to depressurize the blast machine and stop the blasting.

2.0 INITIAL SET-UP

2.1 Factory-Installed Controls: If the remote control has been factory installed, skip to Paragraph 2.3.

2.2 Field-Installed Controls: Refer to Figure 1.

⚠ WARNING

Failure to observe the following procedure could cause serious injury or death from the sudden release of compressed air.

- **Empty the blast machine of abrasive.**
- **Depressurize the blast machine.**
- **Lockout and tagout the compressed air supply.**
- **Bleed the air supply line and remove the air line from the blast machine.**

2.2.1 Remove the existing inlet valve and replace it with the TLR-50 inlet valve. The directional arrow on the valve points toward the blast machine, indicating the direction of air flow.

2.2.2 Remove the existing outlet valve.

2.2.3 Install the diaphragm outlet valve so the 1" NPT exhaust port faces a safe direction. NOTE: The exhaust port usually faces down and pointing slightly away from the inlet valve. However, an optional Clemco exhaust muffler (Refer to Section 7.1) may be installed in the exhaust port with the port facing up, or exhaust piping installed, and vented into a safe area.

⚠ WARNING

If a muffler is not used, the exhaust piping must be plumbed to direct exhausting air in a direction that ensures no persons will be exposed to possible injury from high velocity air and media which escape when the blast machine is depressurized.

2.3 Install Compressed Air Hose Coupling

2.3.1 Connect a compressed air hose coupling to the inlet valve (or optional air filter) that is compatible with the air supply hose. Refer to Figure 1.

NOTE: If the air line supplies air to other pneumatic tools, install isolation valves to enable depressurization of each line for service.

2.4 Blast hose and control hose connections

⚠ WARNING

Moist air that freezes could cause blockage at the control handle or in the control lines. Blockage could cause involuntary activation of the remote controls, or prevent the controls from deactivating upon release of the control handle. This situation could result in serious injury or death. If remote controls are operated in freezing or near freezing weather, install a Clemco Anti-Freeze Injector, stock no. 05537, on the remote control air supply line.

2.4.1 Uncoil the blast hose and lay the 25-ft. twinline hose alongside it.

2.4.2 Band the control handle to the blast hose close to the nozzle holder, using the two nylon ties provided. Once the control is firmly attached, clip the tie ends so they will not snag the operator's clothing or interfere with the operation of the control handle.

2.4.3 Attach the 25-ft. twinline hose to the two fittings on the control handle. Either side of the hose can be attached to either fitting.

2.4.4 Working from the control handle back, band or tape the twinline hose to the blast hose every three to four feet, and as close to the couplings as possible.

2.4.5 Make sure the coupling gaskets are in place and in good condition before connecting the blast hose to the quick coupling on the blast machine. Use safety lock-pins or safety wire to lock the couplings together and prevent accidental separation during blasting.

⚠ WARNING

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

2.4.6 Connect the two hose unions into the unattached fittings of the 25-ft. twinline hose.

2.4.7 Attach the 3-ft. twinline control hose to the inlet valve as shown in Figure 1; One side of the hose connects to the unused upper elbow, the other to the orifice fitting.

2.4.8 Connect the other end of the 3-ft. twinline to the hose unions on the 25-ft. twinline. Either side can connect to either union.

2.4.9 Band the control hoses on the blast machine side of the unions to the quick coupling nipple.

2.4.10 Make sure that all fittings are tight. Leaks will cause the system to malfunction.

3.0 OPERATION

⚠ WARNING

Refer to the manuals listed in paragraph 1.1.2. Do not operate this equipment before reading the instruction manuals for all equipment.

3.1 Routine Set-up

3.1.1 The compressor should be located upwind from the blasting operation to prevent dust from entering the compressor intake.

3.1.2 Make sure the air coupling gaskets are in place and in good condition before connecting a 3/4" ID or larger air line from the compressor to the air supply hose coupling previously installed on the blast machine inlet.

3.1.3 Make sure the coupling gaskets are in place and in good condition before connecting the blast hose to the quick coupling on the blast machine.

3.1.4 Use safety lock-pins or safety wire to lock matting couplings on air hose and blast hose together to prevent accidental separation during blasting.

⚠ WARNING

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

3.1.5 Connect the twinline control hose banded to the blast hose to the control hose on the blast machine.

3.2 Start-Up

3.2.1 Make sure that all blast hose and compressed-air supply hose connections are secured with safety lock-pins and safety cables.

3.2.2 Make sure that the safety petcock located on the inlet valve is open. The petcock is open when the petcock lever is in-line with the petcock, as shown if Figure 2.

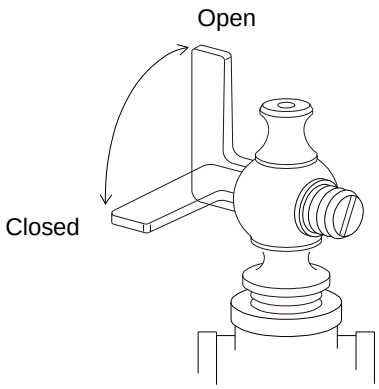

Figure 2

⚠ WARNING

To prevent severe injury from accidental activation of the blast machine, open the safety petcock when the blast machine is not in use. Opening the petcock prevents unintentional blasting. The control handle can not activate the machine when the petcock is open.

3.2.3 Check to make sure the remote control handle lever is in the up (no blast) position, and that the handle lever and safety lock move freely.

⚠ WARNING

A separate manual is supplied with the remote control handle. Do not operate the machine before first reading the remote control handle operating instructions.

3.2.4 Check to make sure that the handle lever will not seal the opening on control handle unless the safety lever lock is pulled down.

⚠ WARNING

Malfunctioning control handles could cause unintentional actuation of a blast machine, or prevent a machine from deactivating upon release. Malfunctioning control handles must be taken out of service immediately and repaired or replaced. Serious injury or death can result from unintentional blasting.

3.2.5 Start the compressor, and bring it up to operating temperature and pressure. The pressure must be more than 50 psi, but must not exceed the blast machine's rated pressure.

3.2.6 Fill the machine with screened, clean, dry abrasive that is manufactured specifically for abrasive blasting.

3.2.7 Open the compressor air supply valve to pressurize the air supply line. Listen for noise that indicates any open lines or leaks.

3.2.8 Do not allow anyone around the blast machine except machine tenders, who are appropriately attired in approved personal protective equipment.

⚠ WARNING

Everyone, except for the blast operator or blast machine tender, must stay clear of the blast machine. The machine tender or blast operator may pressurize or depressurize the machine at any time, which could cause abrasive to vent under pressure and cause dust and toxins to become airborne. Noise is produced by the sudden release of compressed air when the machine is pressurized or depressurized. These conditions could cause injury. Both the operator and machine tender must wear suitable personal protective equipment including an approved respirator, plus approved eye, face, and hearing protection.

3.2.9 When the blast operator is ready to blast, either the operator or the machine tender, while standing back and facing away from the concave filling head of the blast machine and the exhaust muffler, closes the safety petcock, preparing the machine for remote activation by the control handle. Air should be heard escaping from the orifice under the control handle lever but nowhere else. The air escaping at the handle is an audible signal meaning air is supplied to the blast machine, and will activate if the control handle is pressed.

3.3 Blasting Attire

⚠ 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.

No dust is safe to breathe. Abrasive blasting produces harmful dust. Failure to wear approved respirators could result in serious lung disease or death. Blast operators must wear properly-fitted and maintained 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 in the vicinity of abrasive blasting must wear properly-maintained, NIOSH-approved, respiratory protection and eye protection appropriate for the job site hazards.

Noise generated by compressed air could cause hearing damage. Everyone in the blasting area must wear approved hearing protection.

3.3.1 Operators and **anyone else that 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.

3.4 Blasting

3.4.1 Don all protective blasting attire, per Section 3.3.

3.4.2 Hold the blast hose securely and point the nozzle only toward objects intended to be blasted.

3.4.3 Pull back the safety lever lock and depress the remote control handle. Within a few seconds the pop-up valve will automatically close, and the blast machine will pressurize to start blasting.

⚠ CAUTION

Be prepared for recoil from the blast hose. Blasting should begin within a few seconds after pressing the control handle lever.

⚠ WARNING

OSHA requires the use of remote controls on all blast machines when an operator controls the nozzle. To comply with OSHA regulations, the remote control handle, which starts and stops the flow of air and abrasive, must be held down manually. Do not tie down the control handle lever or attempt to bypass any part of the remote control system. Doing so will defeat the purpose of the fail-to-safe feature of the remote control. Serious injury or death could result from uncontrolled blasting. Ref. 29 CFR 1910.244 (b).

3.5 Stop Blasting

3.5.1 To stop blasting, release the control handle lever. The pop-up valve automatically drops when air is expelled from the machine and pressure equalizes.

3.5.2 When the control handle lever is released, the safety lever-lock will flip up to lock the handle lever in the up (no blast) position. Make sure the safety lever-lock is up to prevent the handle lever from engaging.

3.5.3 Always open the safety petcock during work breaks and before filling the blast machine. Opening the petcock prevents unintentional blasting.

3.5.4 When finished blasting, shutdown per Section 3.6.

3.6 Shutdown

3.6.1 Empty the blast machine.

3.6.2 When finished blasting, and after cleanup is completed, remove the respirator outside the respirator-use area where the air is safe to breathe.

3.6.3 Close the compressed-air supply valve at the compressor.

3.6.4 Drain receiver tank, filters, and water collecting devices, and bleed the compressed-air supply hose.

3.6.5 Shutdown the compressor.

3.6.6 Cover the blast machine when not in use.

4.0 PREVENTIVE MAINTENANCE

NOTE: These preventive maintenance instructions pertain to the remote controls only. Also read the manuals for the blast machine and all accessories, for maintenance schedules of that equipment.

4.1 Daily Inspection

4.1.1 With the air off, before blasting, do the following:

- Make sure couplings are secure and lock pins and safety cables are in place.
- Inspect the RLX control handle; look for the following:
  - The lever must not seal the opening on the control unless the safety lever lock is pulled down.
  - The **handle lever** must return to the "up" position when released.
  - The **safety lever lock** must return to the "up" position when the handle lever is released.
  - Both the handle lever and safety lever lock must move freely with no drag or binding.

⚠ WARNING

Malfunctioning control handles could cause unintentional actuation of a blast machine, or prevent a machine from deactivating upon release. Malfunctioning control handles must be taken out of service immediately and repaired or replaced. Serious injury or death could result from unintentional blasting.

4.1.2 During blasting, do the following:

- Check the control handle for leaks.
- Inspect all control hoses, and valves for leaks. If leaks are found, stop blasting and repair.

4.2 Periodic Inspection

4.2.1 The remote control system is a safety device. For safety and to avoid unscheduled down-time, periodically inspect the internal parts of the inlet valve and outlet valve. Inspect for wear and lubrication of o-rings, pistons, condition of springs, seals, and castings. Refer to Service Maintenance in Section 5.

4.2.2 The control handle is the actuator of the remote control system. Periodically clean around the springs, handle lever, and safety lever lock to ensure that the unit

is free of abrasive and debris that could cause the handle lever or safety lever lock to bind. Refer to the RLX manual for service instructions.

4.3 Lubrication

4.3.1 Once per week, while the air is off, put one or two drops of lightweight machine oil in the inlet valve through the safety petcock. This lubricates the piston and o-rings in the inlet valve.

5.0 SERVICE MAINTENANCE

⚠ WARNING

Failure to observe the following before performing any maintenance could cause serious injury or death from the sudden release of compressed air.

- **Depressurize the blast machine.**
- **Lockout and tagout the compressed air supply.**
- **Bleed the air supply line to the blast machine.**

5.1 Inlet Valve, Ref. Figure 5

5.1.1 All service on the inlet valve must be done with the compressed air off and the air supply locked-out and tagged-out.

5.1.2 Use snap-ring pliers to remove the top and bottom retaining rings.

5.1.3 To remove the top cap, twist the petcock/cross assembly while pulling up.

5.1.4 Pull down on the bottom plug to remove it. If necessary, use pliers to grab the wrench flats to remove it from the body. Cup the bottom opening to catch the spring, retainer, and washer as the plug is removed.

5.1.5 If the piston cannot be removed with finger or thumb force, use a wooden dowel or similar object inserted through the bottom opening to push the piston assembly out the top.

5.1.6 Clean all parts and inspect for wear as follows:

- The spring is approximately 1" long. If it is rusted or compressed, replace it.
- Inspect the piston, rubber washer, washer retainer top cap and bottom plug for damage. Replace all damaged parts.
- Look into the bottom opening in the valve body. If the machined seat is worn, replace the body.
- Inspect all o-rings. If any are damaged or flattened, replace them.

5.1.7 Remove the lower twinline hose connection, and remove the orifice fitting for inspection. Clean the 1/16″ orifice and reassemble the connection.

⚠ WARNING

The orifice fitting must not be removed, modified, or substituted with another fitting. Altering the orifice fitting may cause involuntary activation of the blast machine or some other malfunction which could result in serious injury.

5.1.8 Lubricate all o-rings, and use the illustration in Figure 5 as a guide to reassemble the valve in reverse order, assembling the top end first.

5.2 Diaphragm Outlet Valve, Ref. Figure 4

5.2.1 All service on the outlet valve must be done with the compressed air off and the air supply locked-out and tagged-out.

5.2.2 Remove the cap by unscrewing the four cap screws.

5.2.3 Remove the diaphragm and inspect it for wear or damage. Replace as necessary.

5.2.4 Inspect the machined seat in the body. If worn, replace the body.

5.2.5 Reassemble in reverse order.

5.3 Control handle

5.3.1 A separate manual is provided for the control handle. Follow the instructions in Manual No. 10574.

6.0 TROUBLESHOOTING

NOTE: This section applies to the remote control system only. Always refer to the appropriate section of this manual, or manuals for accessory equipment when troubleshooting and before servicing the equipment.

⚠ WARNING

To avoid serious injury or death, observe the following when troubleshooting the remote controls:

- **Turn off the air, and lockout and tagout the air supply.**
- **When checking the controls requires air, always enlist the aid of another person to operate the control handle while holding the nozzle securely and pointing it in a safe direction.**
- **Never strap down the remote control handle lever in the operating position.**

6.1 Blast Machine will not Pressurize

6.1.1 Make sure the compressor is on and all air supply valves to the machine are open.

6.1.2 Make sure the safety petcock on the inlet valve is closed.

6.1.3 With the compressor off and the blast machine depressurized, check the nozzle for blockage.

6.1.4 With the control handle lever up, check for air escaping through the opening under the control handle lever. If no air is escaping, the orifice on the inlet valve (Figure 5, item 9) is blocked, or the outbound line from the orifice to the control handle is blocked and must be cleared.

6.1.5 Check the rubber button on the control handle for wear or damage, and make sure the rubber totally seals the opening when the handle is pressed. (RLX control handle is covered in Manual No. 10574)

6.1.6 Press the control handle lever. Feel for and listen for air leaks anyplace on the handle. No air should escape when the handle lever is pressed. If there is a leak, it must be located and repaired.

6.1.7 Press the control handle lever and check control hoses and fittings for air leaks.

6.1.8 Open the safety petcock and press the control handle lever; the same volume of air that came out the handle should come out of the petcock. If it does not, check the following:

- Opening on the control handle is not sealed off.
- Air leaks in control handle.
- Line from the control handle to the upper fitting on the inlet valve is blocked.
- Diaphragm in the outlet valve is split or damaged.

If air comes out of the petcock, the inlet valve is not functioning. Turn off the compressed air supply and service the valve per Section 5.1.

6.1.9 Close the safety petcock, and press the control handle lever. Make sure no air escapes through the vent hole on the cylinder body of the inlet valve body. Air escaping from this vent indicates a worn piston or piston o-ring in the inlet valve. Refer Section 5.1.

6.1.10 Insufficient-size air-supply hose or reduced-size fittings between the compressor and blast machine. Minimum inside diameter of air supply should be 3/4-inch.

6.1.11 Dirty element in optional air filter. Inspect filter element.

6.1.12 Pop-up valve stuck, or internal piping worn or out of alignment. Inspect internal piping.

6.2 Blast Machine will not Depressurize or Depressurizes Too Slowly

6.2.1 Check the pneumatic adaptor gasket on the control handle for swelling, which restricts air flow through the handle. Refer to the control handle manual.

6.2.2 Check for blockage in the control hoses.

6.2.3 Make sure the lower fitting on the inlet valve (Figure 5, item 9) has not been switched for a fitting with a full-flow orifice. The orifice on the 1/8" NPT end of the fitting must be 1/16" diameter.

6.2.4 With the control handle up, listen for air entering the vessel. If air leaks into the vessel when the control handle is up, the inlet valve is not closing. Service the valve per Section 5.1.

6.3 Pop-up valve seats for a short time and then falls, or fails to seat.

6.3.1 Insufficient air supply. Check the compressor output, air supply hose and isolation valves.

6.3.2 Outlet valve diaphragm may be worn or ruptured. Inspect it and replace worn parts.

7.0 REPLACEMENT PARTS

7.1 Optional Accessories

(-) Exhaust Muffler 05068

7.2 RLX Pneumatic Control Handle

Refer to RLX Control Handle Manual No. 10574 for RLX replacement parts.

7.3 System Replacement Parts, Figure 3

Item	Description	Stock No.
(-)	TLR-50 remote control system	02518
1.	Outlet valve, diaphragm, 1/2" NPT	02512
2.	Inlet valve assembly, 1/2" NPT	02164
3.	RLX control handle	10565
4.	Hose, 25' Twinline coupled	02128
5.	Union, Twinline hose	01944
6.	Hose, 3' Twinline coupled	02240
7.	Hose, 3/16" x 18" coupled	02454
8.	Hose end, reusable	01943

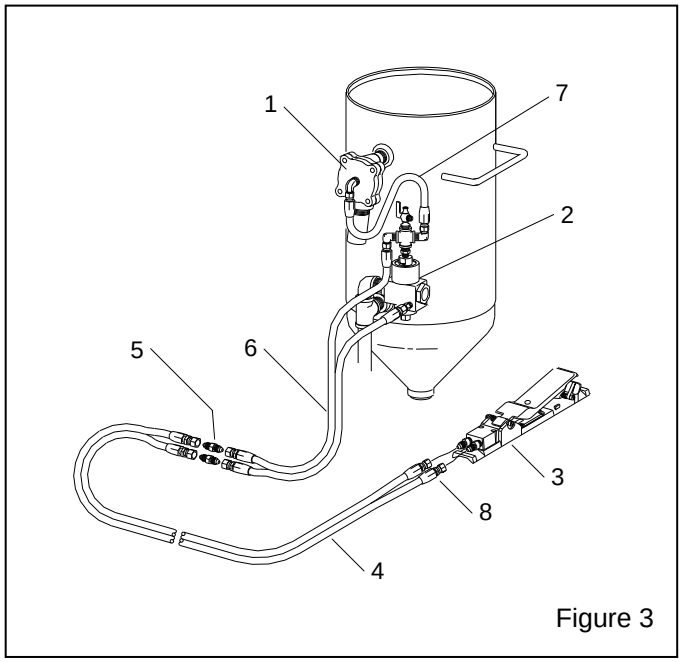

Figure 3

7.4 1/2" Diaphragm Outlet Valve Figure 4

Item	Description	Stock No.
(-)	1/2" NPT Diaphragm outlet valve	02512
1.	Nipple, 1/2" NPT x close	01733
2.	Diaphragm	02511
3.	Washer, 1/4" lock	03117
4.	Elbow, 1/4" NPT adaptor	02513
5.	Cap	02299
6.	Body	02298
7.	Nipple, 1" NPT x 3" TOE	01841
8.	Screw, 1/4-NC x 1" cap	03053

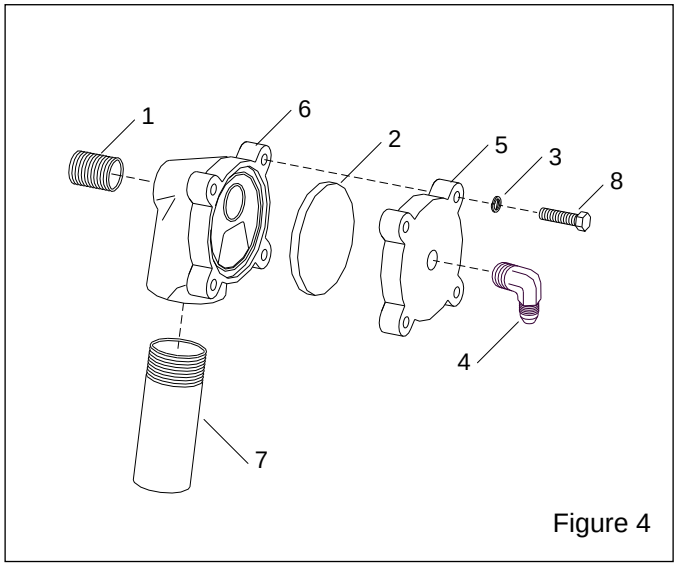

Figure 4

7.5 Inlet Valve, Figure 5

Item	Description	Stock No.
(-)	1/2" Inlet Valve, complete	02164
*	Service kit, 1/2" Inlet Valve (Figure 5a)	07814
1.	Cap	02175
2.	Piston	02192
3.	Body	02170
4.	Plug, bottom	02176
5.	Elbow, 1/4" NPT adaptor	02513
6.	Reducer, 1/4" NPT x 1/8" NPT	02026
7.	Cross, 1/4" NPT brass	02193
8.	Petcock 1/4" NPT	01993
9	Adaptor 1/8" NPT with 1/16" orifice	01945

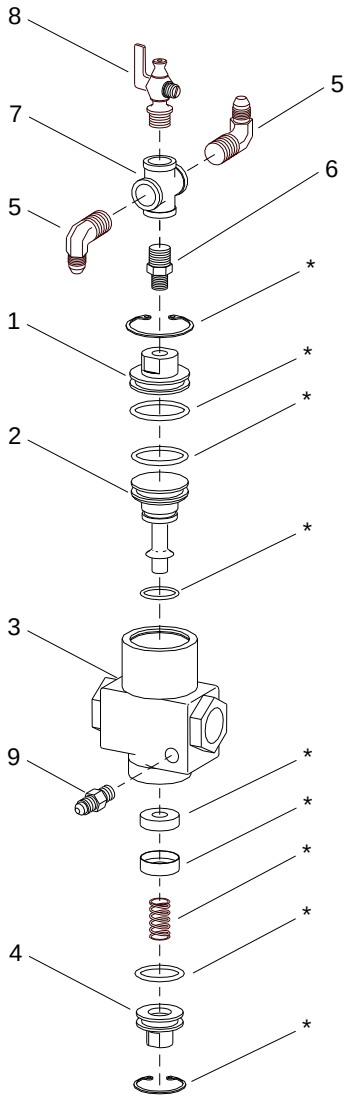

Figure 5

07814 SERVICE KIT
TLR-50 INLET VALVE

Item	Qty.	Description
1.	1	Retaining ring, cap
2.	1	Retainer, washer
3.	1	Spring, 17/32" OD x 1" long
4.	1	Retaining ring, bottom plug
5.	1	O-ring, 7/8" ID x 1/8" C/S
6.	1	Washer
7.	1	O-ring, 3/4" ID x 3/32" C/S
8.	1	O-ring, 1-1/8" ID x 1/8" C/S
9.	1	O-ring, 1-3/16" ID x 1/8" C/S

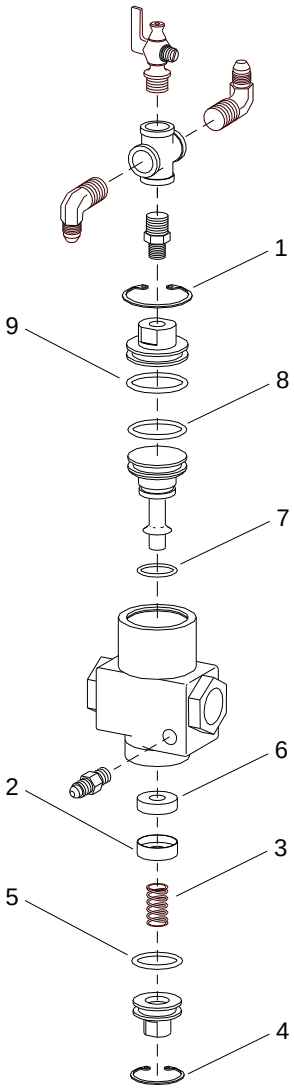

Figure 5a