

June 2012

## Types 749B and R130 Changeover Manifolds

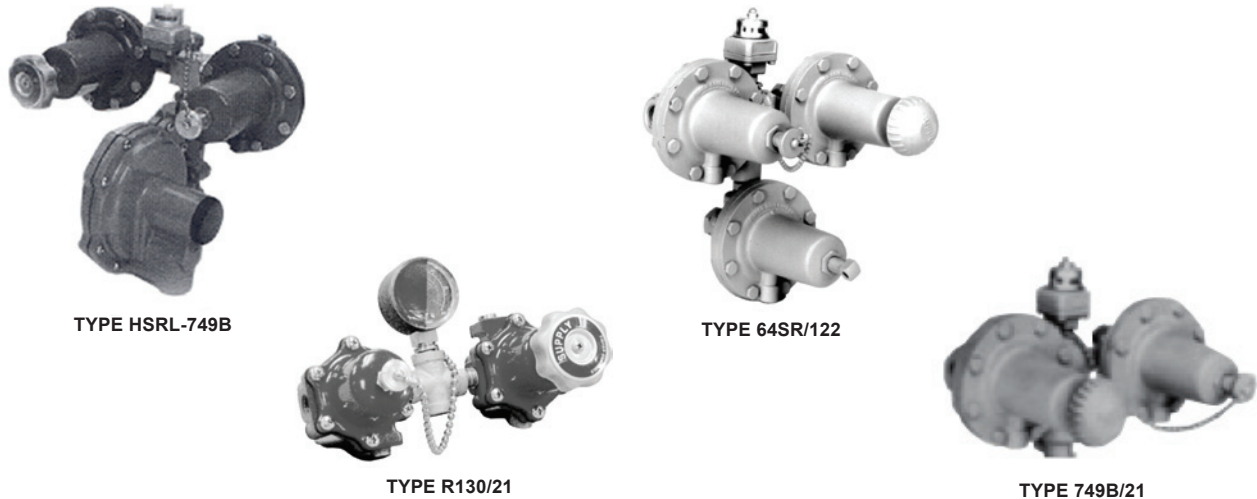


Figure 1. Changeover Manifolds and Regulator Assemblies



### WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.

Fisher® equipment must be installed, operated, and maintained in accordance with federal, state, and local codes and Emerson Process Management Regulator Technologies, Inc. instructions. The installation in most states must also comply with NFPA No. 54 and 58 standards.

Only personnel trained in the proper procedures, codes, standards, and regulations of the LP-Gas industry should install and service this equipment.

### Things to tell the Gas Customer:

1. Point out the regulator's vent to the customer (or vent assembly or vent tube), **and stress that this opening must remain unobstructed at all times.** Tell the customer to be sure to check the vent opening after a freezing rain, sleet storm, or snow to make sure ice has not formed in the vent.
2. Show the customer the shutoff valve on the container. The customer should close this valve immediately if gas is smelled, appliance pilot lights fail to stay on or appear higher than usual, or any other abnormal situation occurs.
3. Tell the customer to call your company to service the regulator if the regulator vents gas or a leak develops in the system. **Only a qualified gas service person should install or service the regulator.**

# Types 749B and R130

## Specifications

The Specifications table lists the specifications for the regulators. Contact the factory if the regulators are to be used on any service other than LP-Gas, natural gas, or air.

### Changeover Manifold Assemblies

| CAPACITY BTU/HR. PROPANE | TYPE    | INLET CONNECTIONS | OUTLET CONNECTIONS | OUTLET PRESSURE SETTING |         |                 |          |
|--------------------------|---------|-------------------|--------------------|-------------------------|---------|-----------------|----------|
|                          |         |                   |                    | Supply Setting          |         | Reserve Setting |          |
| 1,475,000 <sup>(1)</sup> | R130/21 | 1/4-inch FNPT     | 1/4-inch FNPT      | 45 psig                 | 3.1 bar | 30 psig         | 2.1 bar  |
| 1,500,000 <sup>(1)</sup> | 749B/21 | 1/2-inch FNPT     | 1/2-inch FNPT      | 15 psig                 | 1.0 bar | 5 psig          | 0.35 bar |

1. Based on 100 psig / 6.9 bar inlet, reserve setting.

### Commercial Automatic Changeover Regulators

| CAPACITY BTU/HR. PROPANE | TYPE      | INLET CONNECTION | OUTLET CONNECTION | OUTLET PRESSURE SETTING |          | OUTLET ADJUSTMENT RANGE |                 | MOUNTING BRACKET |
|--------------------------|-----------|------------------|-------------------|-------------------------|----------|-------------------------|-----------------|------------------|
|                          |           |                  |                   |                         |          |                         |                 |                  |
| 1,575,000                | HSRL-749B | 1/2-inch FNPT    | 3/4-inch FNPT     | 11-inches w.c.          | 27 mbar  | 9 to 13-inches w.c.     | 22 to 32 mbar   | P100A            |
| 1,210,000                | 64SR/122  | 1/2-inch FNPT    | 1/2-inch FNPT     | 10 psig                 | 0.69 bar | 5 to 20 psig            | 0.35 to 1.4 bar | - - -            |

**Maximum Inlet Pressure**  
250 psig / 17.2 bar

**Temperature Range**  
-20 to 160°F / -29 to 71°C

## Introduction

### Scope of the Manual

The Instruction Manual covers installation and maintenance for the Types 749B, R130 changeover manifolds and the Types 64SR/122 and HSRL-749B commercial automatic changeover regulators.

### Description

#### Changeover Manifold Assemblies

**Type R130/21**—Composed of two Type 67C regulators and a special 0 to 60 psig / 0 to 4.1 bar pressure gauge, the Type R130/21 delivers a 45 psig / 3.1 bar outlet pressure on supply and 30 psig / 2.1 bar on reserve. The gauge, which serves as the changeover indicator, is painted red from 0 to 35 psig / 0 to 2.4 bar. When the dial reads in the 0 to 35 psig / 0 to 2.4 bar range, it indicates that the manifold has switched from the supply to the reserve cylinder.

**Type 749B/21**—Large capacity changeover manifold for commercial and industrial applications. It consists of two Type 64 regulators and a Type 803 direct indicator.

The assembly is used primarily in conjunction with either a Type HSRL or 64SR regulator. The standard outlet setting is 15 psig / 1.0 bar (supply) and 5 psig / 0.34 bar (reserve).



**CAUTION**

**Capacity of all these changeover manifolds is dependent on the size of the second stage regulator with which they are used.**



**WARNING**

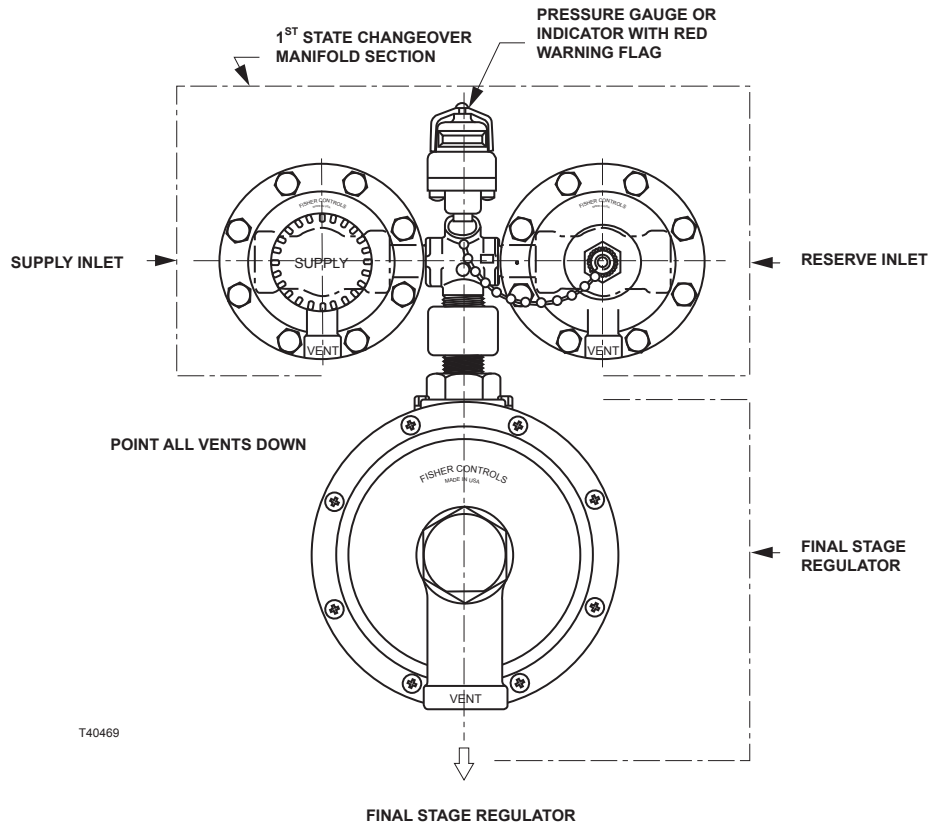
**If the manifolds are used on final-stage (pounds-to-pounds), a relief valve is required in the downstream system.**

#### Commercial Automatic Changeover Regulators

Designed for large capacity multi-cylinder or tank installations, these regulators are used on such applications as bakeries, motels, restaurants, and grain dryers. The manifold portion of the assembly (Type 749B/21) consists of two Type 64 regulators and a direct mounted Type 803 indicator.

**Type HSRL-749B**—For low-pressure service. The Type HSRL second-stage portion has the “drip lip” vent feature and built-in travel stop to open the internal relief valve.

**Type 64SR/122**—For high-pressure (pounds to pounds) service with the second-stage composed of Type 64SR that has internal relief.



**Figure 2. Changeover Regulator**

## Operation

The Changeover Manifold (Figure 2) consists of two regulators (supply and reserve) and an indicator that denotes when the reserve regulator is in operation. The “Supply” regulator has the handwheel labelled “SUPPLY”.

Open both container valves slowly. Gas will now flow from both containers through the piping into the first-stage section of the regulator manifold by way of the inlet fittings. When the reserve pressure setting (see Specifications) is reached in the first-stage regulator manifold, the disk assembly in the reserve regulator will shutoff gas from the “Reserve” container.

Gas from the “Supply” container will continue to enter the supply regulator until the supply pressure setting (see Specifications) is maintained. Any second or final stage regulator reduces this pressure for use by the appliance.

The “Supply” side of the regulator manifold will continue to supply gas as long as sufficient gas remains in the “Supply” container. When pressure in the “Supply” side container drops to the reserve setting, the “Reserve” side of the regulator manifold

will open and maintain the reserve setting to the second-stage regulator, which continues to regulate the pressure to the appliance. At the time the pressure in the “Supply” container drops to the reserve side pressure, a red warning flag appears in the indicator window or the pressure gauge pointer drops into the red section (Type R130) and also on the remote indicator if one is used.

## Switching Supply Containers



**The open line (pigtail or hose) must be capped because gas will escape to the atmosphere through the open connection if pressure in the supply cylinder drops to the reserve pressure setting (red indicator flag visible).**

Refer to Figure 3. Once the “Supply” container is empty, remove the “Reserve” cap (key 4) which is attached to the chain assembly (key 8) and the “Supply” handwheel (key 3) by turning them counter-clockwise. Do not remove the adjusting screw (key 5) or the nut (key 1) on the adjusting screw. Screw the “Supply”

# Types 749B and R130

handwheel into the old reserve side regulator until it cannot be turned any further. **This side is now the new “Supply” side.** Screw the cap and the chain assembly into the old supply side until it cannot be turned any further. **This side is now the new “Reserve” side.**

When the “Supply” handwheel is installed in the new side, the red flag in the indicator should disappear or the pointer in the gauge should move out of the red.



## CAUTION

**There will still be pressure in the empty container equal to the “Reserve” side manifold setting.**

If the containers are cylinders, close the cylinder valve of the empty cylinder to prevent air from entering the cylinder and disconnect the cylinder. Clean the new cylinder’s valve outlet. After the new cylinder is in place, slowly open the cylinder valve. The new cylinder now becomes the reserve cylinder. If only one cylinder, the new supply cylinder, is left connected, the open line (pigtail or hose) must be capped to prevent leakage or contamination.

## Installation



## WARNING

**Personal injury or system damage may result if these regulators are installed without appropriate overpressure protection. Maximum emergency outlet pressure for the Type 67C regulators used on the Type R130 is 50 psig / 3.4 bar over the outlet pressure setting, or 100 psig / 6.9 bar, whichever is greater. Maximum emergency outlet pressure for the 64 regulators used on the Type 749B is 220 psig / 15.2 bar. Maximum emergency outlet pressure for the Type HSRL final stage regulator is 3 psig / 0.21 bar above setpoint. Outlet pressures greater than these above set point may cause damage to regulator parts, leaks in the regulator, or personal injury due to bursting of pressure-containing parts or explosion of accumulated gas.**

**If the regulator is exposed to an overpressure condition, it must be inspected for any damage that may have occurred.**

**Large volumes of gas may discharge through the regulator vent during internal relief valve operation which can result in fire or explosion from accumulated gas.**

**All vents should be kept open to permit the free flow of air into and out of the regulator. Protect openings against the entrance of rain, snow, ice formation, paint, mud, insects, or any other foreign material that could plug the vent.**

**LP-Gas may discharge to the atmosphere through the vent. An obstructed vent which limits air or gas flow can cause abnormally high pressure that could result in personal or property damage.**

Make sure gas flow through the regulator is in the correct direction. There are two 1/4-inch NPT (Type R130) or two 1/2-inch NPT (Type 749B) inlet connections and the “Outlet” connection is clearly marked on the regulator. The installation should be adequately protected from vehicular traffic and damage from other external sources.

Install the regulator high enough above ground level - at least 18 inches / 457 mm - so that rain splatter cannot freeze in the vents. Whether a protective hood is used or not, do not install the regulator in a location where there can be excessive water accumulation or ice formation, such as directly beneath a downspout, gutter, or roof line of a building.

A regulator installed outdoors without a protective hood must have its vent pointed vertically down, see Figure 2, to allow condensate to drain. This minimizes the possibility of freezing and of water or other foreign material entering the vent and interfering with proper operation. Some installations, such as in areas with heavy snow fall, require a hood or enclosure to protect the regulator. Before installing the regulator, check for damage which might have occurred in shipment. Also check for and remove any dirt or foreign matter which may have accumulated in the regulator body or the pipeline. The outlets of the container valves should be cleaned to remove dirt or water. One method of doing

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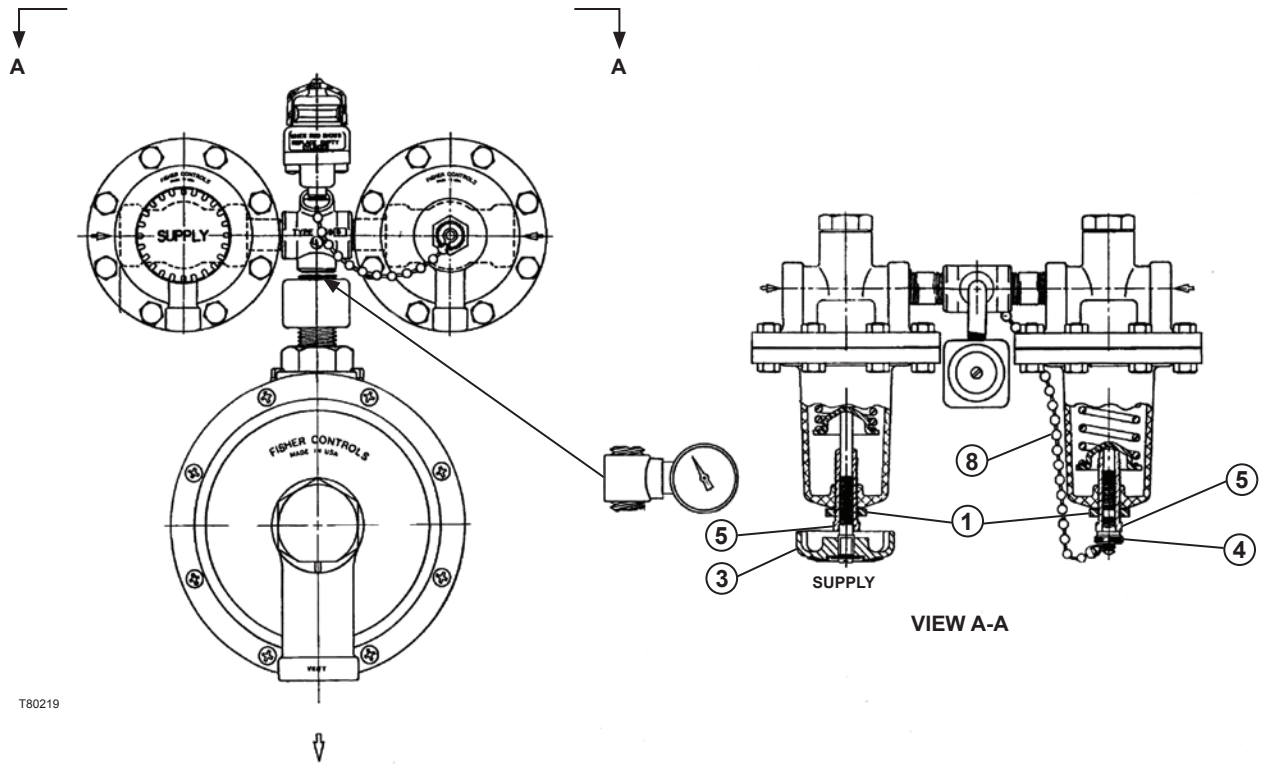


Figure 3. Assembly Drawing

Table 1. Manifold Spring Rates

**749B Series (Type 64 Manifold Regulators)**

| CHANGEOVER REGULATOR SPRING | RESERVE OUTLET PRESSURE STANDARD SETTING AND RANGE                     | APPROXIMATE SUPPLY PRESSURE ABOVE RESERVE SETTING |
|-----------------------------|--|---|
| Zinc<br>1D7515              | 6 psi / 0.41 bar<br>Adjustable Range<br>3 to 11 psi / 0.21 to 0.76 bar | 9 psi / 0.62 bar                                  |
| Blue<br>1D6659              | 5 psi / 0.35 bar<br>Adjustable Range<br>5 to 15 psi / 0.35 to 1.0 bar  | 20 psi / 1.4 bar                                  |

**R130 Series (Type 67C Manifold Regulators)**

|                |   |                   |
|----------------|---|-------------------|
| Blue<br>T14058 | 30 psi / 2.1 bar<br>Adjustable Range<br>5 to 40 psi / 0.35 to 2.8 bar | 14 psi / 0.97 bar |
|----------------|---|-------------------|

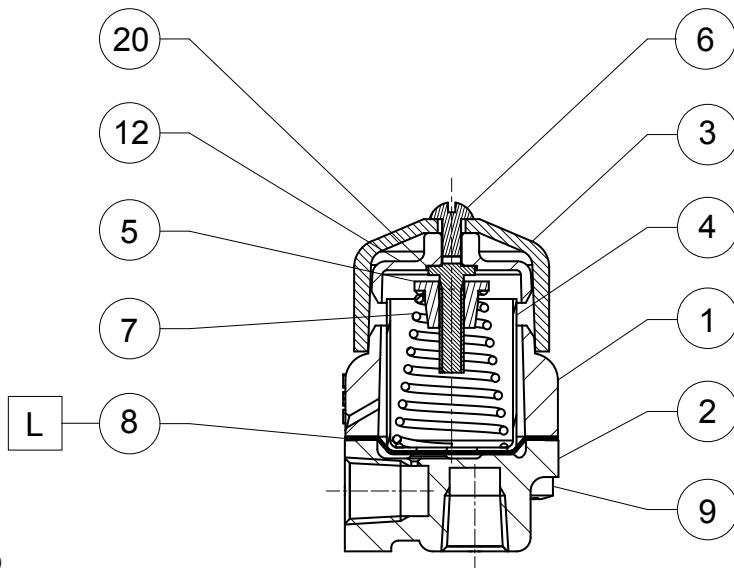
this is by cracking the container valve open for a short time to blow out the dirt. Apply pipe compound to the male threads of the pipe.

A relief valve is required downstream of all the regulators (except Types 64SR or HSRL) used on final-stage service. Both the Types 64SR and HSRL final-stage regulators have an internal relief valve. The internal relief valve opens when downstream pressure reaches approximately 125% to 250% above the set point for the Type 64SR or 200% to 300% above the setpoint for the Type HSRL.

**WARNING**

**Be sure that the changeover manifold regulator assembly is supplying the correct pressure to the appliance. Failure to provide the correct pressure to the appliance can result in personal injury from fire and or explosion or damage downstream equipment.**

# Types 749B and R130



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Figure 4. Indicator Assembly Drawing

## To Change Settings in the Field: See Figure 3.

1. Remove both the supply handwheel (key 3) and reserve cap (key 4) from 1st stage manifold regulators.
2. Install a pressure gauge on the outlet side of the manifold, ahead of any final stage regulator.
3. Close the left side of the container shutoff valve. Loosen the adjusting screw nut (key 1) on the right side manifold regulator. Rotate the right side adjusting screw (key 5) clockwise to increase the reserve pressure or counter clockwise to decrease the reserve pressure. Monitor the manifold outlet pressure with the pressure gauge. Reserve pressure range should remain within the limits specified in Table 1.

4. Close the right side of the container valve and open the left side container valve. Loosen the adjusting screw nut (key 1) on the left side manifold regulator. Rotate the left side adjusting screw (key 5) clockwise to increase the reserve pressure or counter clockwise to decrease the reserve pressure.
5. **IMPORTANT:** Set both manifold regulators to the same reserve pressure setting. Tighten both adjusting screw nuts (key 1).
6. The indicator should show all red at the reserve setting desired.

Replace the supply handwheel (key 3). The indicator should show all silver.

If the reserve setting exceeds 8 psi / 0.55 bar, then the Type 803-21 indicator may not operate with the desired range. If the indicator does not show all red at the reserve pressure or all silver at the supply pressure, then some adjustment to the indicator will be required, or a pressure gauge will have to be installed in place of the indicator.

7. See Figure 4. To adjust the indicator remove the screw (key 6) and the lens (key 3). Using a small slotted screw driver, turn the adjusting screw clockwise to increase the pressure or

## WARNING

Exceeding the reserve limits specified in Table 1 for a given spring will prevent the manifold regulator from being able to produce the desired supply side pressures and could cause the loss of pressure control on the supply side.

counterclockwise to decrease the pressure. The indicator should show red at about 3 psi / 0.21 bar above the new reserve setting. The indicator should show silver at about 6.5 psi / 0.45 bar above the new reserve setting.

## CAUTION

**Set both manifold regulators to the same reserve pressure setting. The supply handwheel when installed, will automatically provide the additional adjustment to set the supply pressure.**

## Maintenance

### WARNING

**To avoid personal injury or equipment damage, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure.**

**Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Fisher® should be used for repairing Fisher regulators. Relight pilot lights according to normal startup procedures.**

**Due to normal wear or damage that may occur from external sources, these regulators must be inspected and maintained periodically. The frequency of inspection and replacement of the regulators depends upon the severity of service conditions or the requirements of local, state, and federal regulations. Even under ideal conditions, these regulators should be replaced after 15 years from the date of manufacture or sooner should inspection reveal the need.**

Visually inspect the regulator each time a gas delivery is made for:

1. Improper installation.
2. Plugged or frozen vent.
3. Wrong regulator or no regulator in the system.
4. Internal or external corrosion.
5. Age of the regulator.
6. Any other condition that could cause the uncontrolled escape of gas.

Failure to do the above could result in personal injury or property damage.

Make sure the regulator vent, vent assembly, or vent tube does not become plugged by mud, insects, ice, snow, paint, etc. The vent screen aids in keeping the vent from becoming plugged, and the screen should be clean and properly installed.

Replace any regulators that have had water in their spring case or show evidence of external or internal corrosion. Checking for internal corrosion may require complete removal of the adjusting screw and shut down of the gas system. Closely examine regulators directly connected to the container valve by means of a solid POL adaptor (horizontal mounting) for signs of corrosion. Correct any improper installations.

Older regulators are more likely to catastrophically fail because of worn or corroded parts. Replace regulators over 15 years of age; other service or environmental conditions may dictate replacement of the regulator before it becomes 15 years old, refer to Fisher Bulletin LP-32.

## Regulator Repair

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Fisher should be used to repair Fisher regulators. Be sure to give the complete type number of the regulator when corresponding with the factory.

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## LP-Gas Equipment

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