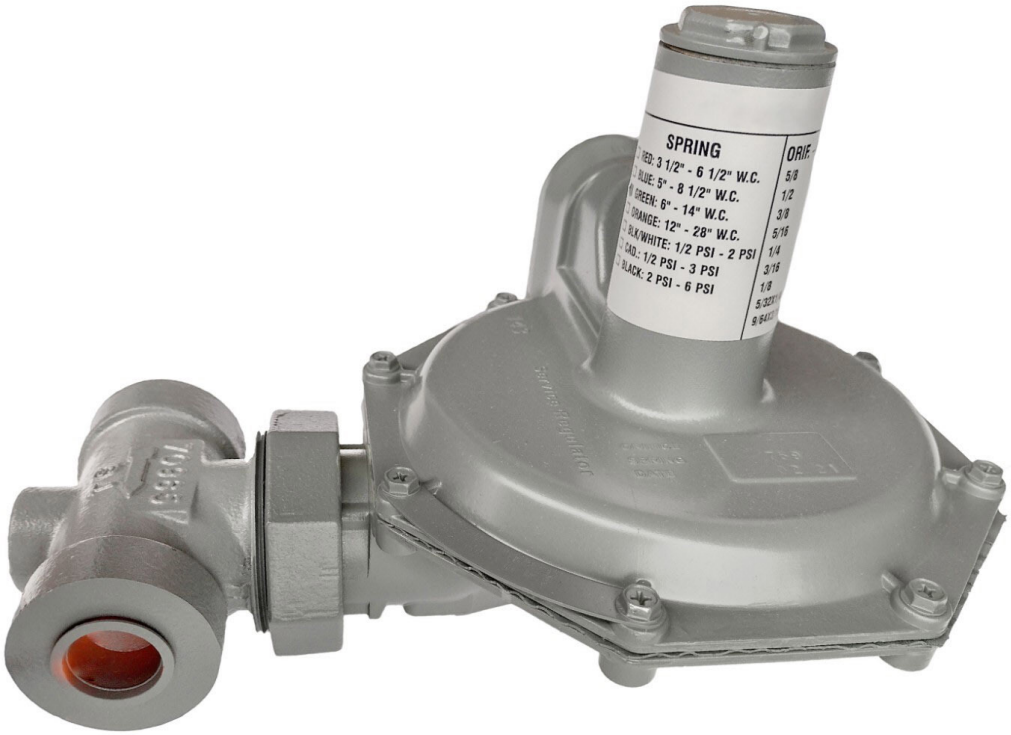
UTILITY SOLUTIONS GROUP

Model 143 Regulator

Installation & Maintenance Manual



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Introduction

The Model 143-80 is a general purpose pressure regulator used for natural gas, air, dry CO_2, propane, butane, nitrogen, and other gases. It can be used for gas services to homes, commercial establishments and small industries as well as burners, unit heaters, boilers, and other equipment. Model 143-80-1 is a standard regulator, Model 143-80-2 includes an internal relief valve, and Model 143-80-6 offers low pressure cut-off.

Gas Device Safety

Gas is potentially dangerous. You must take precautions when working with gas devices to avoid personal injury or damage to property.

Only qualified personnel should install or service a regulator. Regulators should be installed, operated, and maintained in accordance with applicable codes and regulations, and Utility Solutions Group instructions.

- Where vent line are used, it is the user's responsibility to assure that each service regulator is individually vented and that common vent lines are not used.

WARNING

The vent connection is an escape path for the regulated gas. Depending upon the type of gas, it could be flammable as with natural gas and propane.

Vent connections must be located or piped so that potential discharge occurs in a safe area away from buildings, open flames, collection areas, arcing devices, etc.

- It is the user's responsibility to ensure that all regulator vents and/or vent lines exhaust to a non-hazardous location away from any potential sources of ignition.
- For outdoor installations, it is recommended that gas regulators be installed so the regulator vent faces downward to avoid the potential for water or other foreign matter entering the regulator and interfering with proper operation.
- Regulators installed indoors must be vented outdoors. Run all vent pipes from the regulator vent connection to a safe outdoor location in the shortest and most direct route possible.

CAUTION

Regulators are pressure control devices with numerous moving parts subject to wear that is independent upon particular operating conditions. To ensure continuous satisfactory operation, a periodic inspection schedule must be adhered with the frequency of inspection determined by the severity of service and applicable laws and regulations.

Installation and Start-Up

1. Remove the shipping plugs from both the regulator inlet and outlet connections.
2. Ensure that the inside of the piping and the regulator inlet and outlet connections are free of dirt, pipe dope, and other debris.
3. Use pipe joint material only on the male threads of the pipe being connected to the regulator. Do not use pipe joint material on the female threads of the regulator.
4. Install the regulator in the piping.

NOTE: Ensure that the gas flow through the regulator is in the direction as indicated by the arrow on the regulator body.

5. Turn the gas on very slowly.

CAUTION

Turn gas on very slowly. If an outlet stop valve is used, it should be opened first. Do not overload diaphragm with a sudden surge of inlet pressure. Monitor the outlet pressure during start-up to prevent an outlet pressure overload.

6. If installing model 143-80-6 Low-Pressure Cut-Off (LPCO), remove cap (**1**) and pull up pin located inside spring housing to deactivate LPCO device and initiate flow through the regulator.
7. Ensure that all connections are tight and have a proper seal.

NOTE: Verify there are no leaks by using a soap and water solution or other utility-approved method.

8. If needed, adjust outlet pressure (set-point) by removing cap (**1**) and turning adjustment spring button (**2**). Turn clockwise to increase and counter-clockwise to decrease outlet pressure.

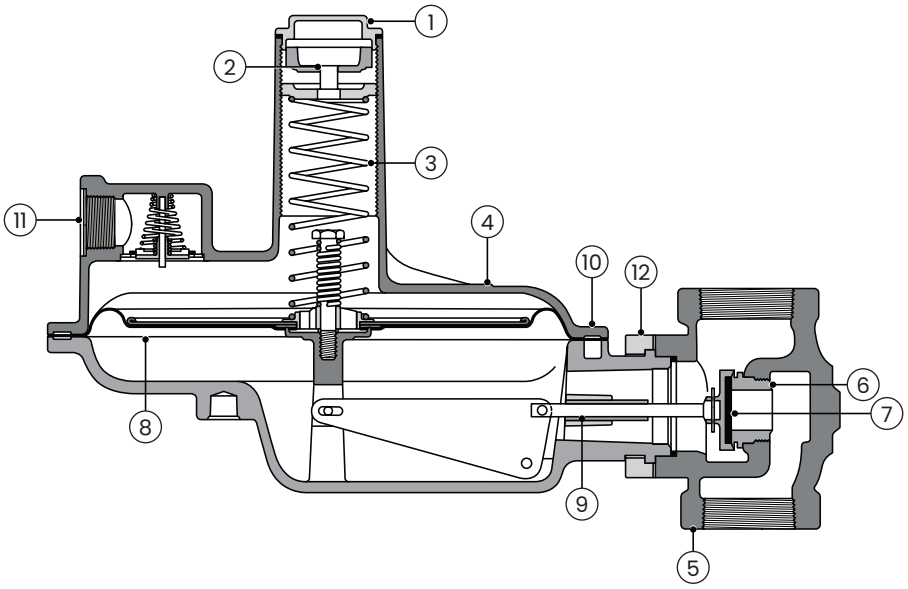
NOTE: Only adjust when gas is flowing through regulator. Reinstall cap once adjustment is made.

CAUTION

Regulators installed indoors must be vented outside. Run vent pipe from the regulator vent connection to a safe place outside. Run vent piping from the regulator vent connection to a non-hazardous location on the outside away from any potential sources of ignition.

The diaphragm case vent must be positioned to protect against flooding, drain water, ice formation, traffic, tampering, etc. The vent must be protected against nest-building material, bees, insects, etc. To minimize the chances for foreign material from collecting in the vent side of the regulator diaphragm.

143 Regulator Section View



Servicing

WARNING

Ensure that flow to the regulator has been shut off and relieve any remaining pressure prior to servicing. Failure to do can result in damage to the regulator or personal injury.

1. To access valve (**7**), orifice (**6**), or diaphragm assembly (**8**), first remove spring compression by unscrewing the spring cap (**1**) and spring adjustment ferrule (**2**). Remove spring (**3**) from regulator.
2. For access to the valve (**7**) and orifice (**6**), completely loosen the coupling nut (**12**) and remove diaphragm case assembly from body (**5**).
3. To replace valve pad (**7**), simply pull off of valve stem (**9**) and replace with new pad.
4. To replace orifice (**6**), unscrew from body using a 1" hex socket wrench "thin-wall" type. Apply sealant on threads of orifice when installing replacement orifice. The replacement orifice must be installed at 50-60 ft-lbs. of torque.
5. To replace diaphragm assembly, remove flange screws (**10**) and disassemble diaphragm assembly. Make certain all parts are reassembled in their correct order and all threads and joints are tightened evenly and firmly.
6. Before reassembling body to diaphragm case, make certain that the O-ring is in position. Ensure proper seal and verify no leaks by using a soap and water solution or other utility-approved method.

Over-Pressurization Protection

The method of protection can be a relief valve, monitor regulator, shutoff device, or similar mechanism. These protect the downstream piping system and the regulator's low pressure chambers against over-pressurization due to possible regulator malfunction or failure to achieve complete lockup. The allowable outlet pressure is the lowest of the maximum pressures permitted by federal codes, state codes, or other applicable standards.

Maximum Emergency Pressure

Before using any of the below data, ensure this entire section is clearly understood.

The maximum inlet pressures which the regulator body may be subjected to under abnormal conditions without causing internal damage is:

Maximum Inlet Pressure ..... + 10 psi

The maximum outlet pressure which the diaphragm may be subjected to under abnormal conditions without causing internal damage is:

Maximum Outlet Pressure ..... set-point + 3 psi

NOTE: The "set-point" is the outlet pressure the regulator is adjusted to deliver.

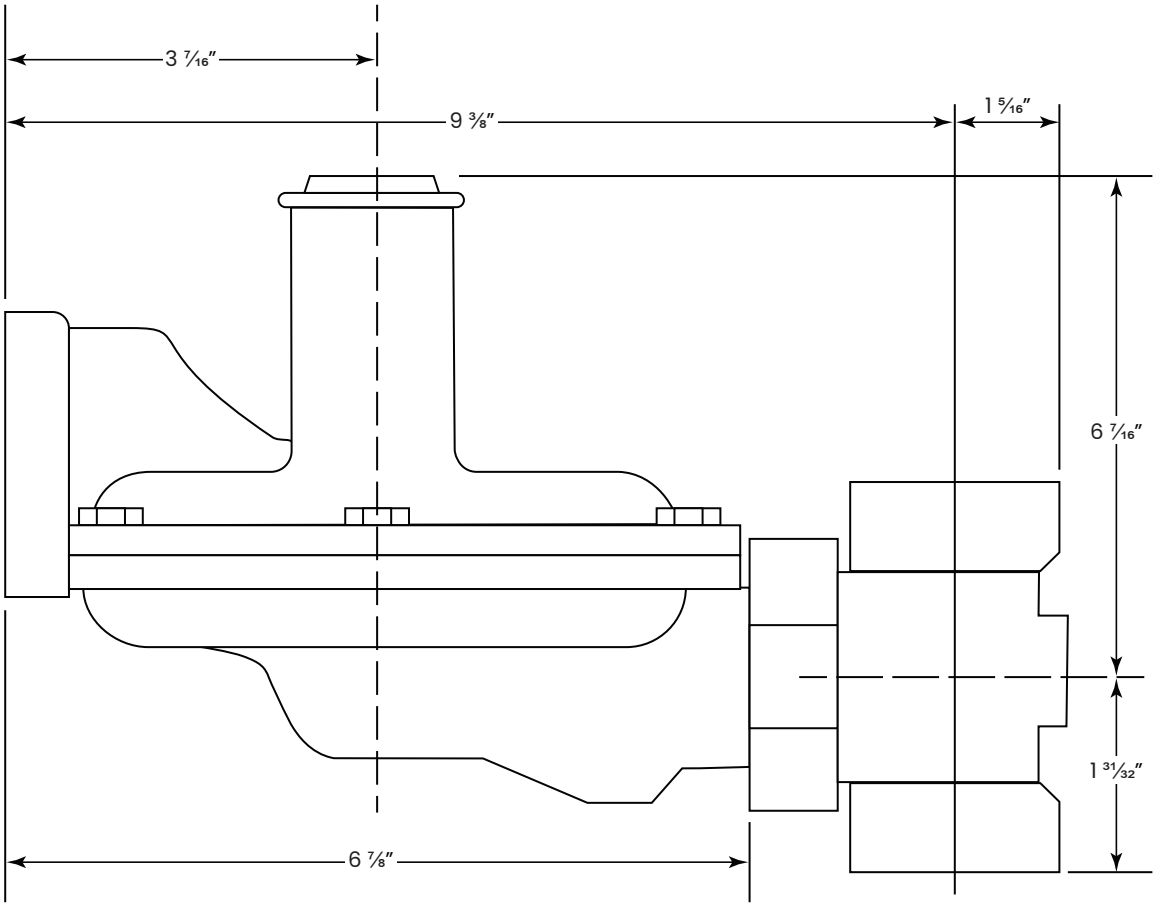
The maximum pressure that can be safely contained by the diaphragm case is:

Maximum Pressure ..... 10 psi

NOTE: Safely contained means no leakage and no bursting.

If any of the pressure limits are exceeded, the regulator must be taken out of service and inspected. All damaged or otherwise unsatisfactory parts must be repaired or replaced.

Dimensions



Temperature Limits

The Model 143 Regulator can be used for flowing temperatures from -20°F to 150°F.

Buried Service

The Model 243 Regulator is not recommended for buried (underground) service.

Valve Body Sizes
3/4" × 3/4"
3/4" × 1"
3/4" × 1 1/4"
1" × 1"
1" × 1 1/4"
1 1/4" × 1 1/4"

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