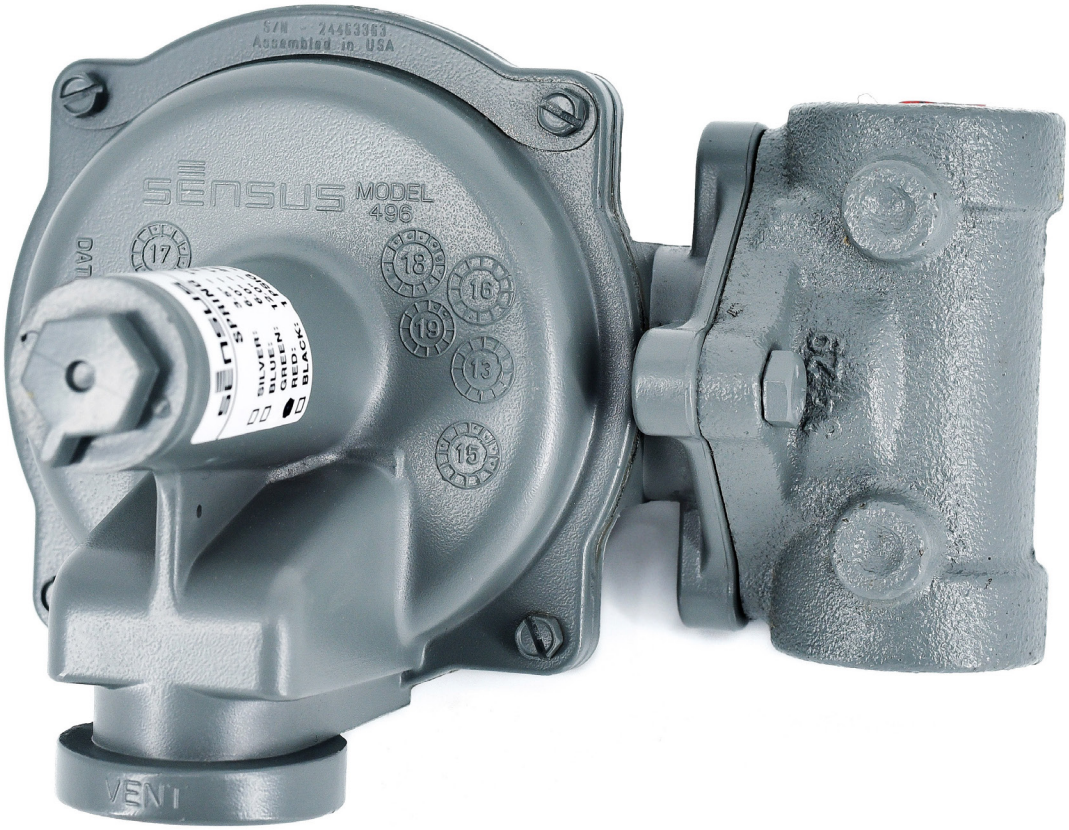
UTILITY SOLUTIONS GROUP

Model 496 Regulator

Installation and Maintenance Manual



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Introduction

The Model 496 is a general purpose gas pressure regulator for natural gas, air, CO_2, propane, butane, nitrogen, and other gases. It can be used for gas service to homes, commercial establishments, and small industries, as well as burners, unit heaters, boilers, and other equipment.

NOTE: All regulators include an internal relief valve.

Installation and Start-Up

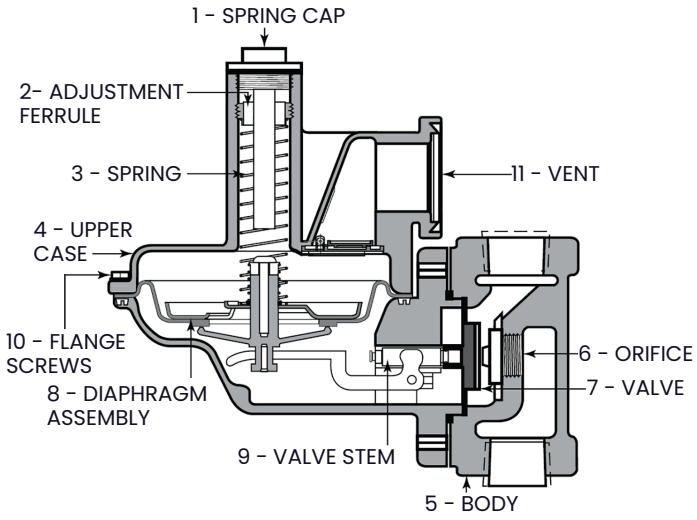
1. Remove the shipping plugs from both the regulator inlet and outlet connections.
2. Make certain that the inside of the piping and the regulator inlet and outlet connections are clean. The connections must be free of dirt, pipe dope, and other debris.
3. Use pipe joint material only on the male threads 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. Make certain that the gas flow through the regulator is in the direction indicated by the arrow on the regulator body. Regulators may be installed in any position: right-side up, upside down, vertical piping, diagonal piping, etc. If required, the diaphragm case can be rotated 360°, in 90° increments.

To rotate the 496-diaphragm case, detach the diaphragm case from the body by removing the two body-to-diaphragm case screws. After repositioning the diaphragm case to the desired position, reinstall the body-to-diaphragm case screws. Ensure that the body-to-diaphragm case screws are tightened to the recommended 35 to 50 ft-lbs of torque to reseal the regulator. The diaphragm case vent (**11**) should be positioned to minimize the chances of moisture collecting on the vent side of the diaphragm. The upper diaphragm case (**4**) may be rotated to a downward position by removing the flange screws (**10**).

Note: The diaphragm case vent must be positioned to protect against flooding, rain, ice formation, traffic, tampering, etc. The vent must be protected against nest building animals, bees, insects, etc. to prevent vent blockage and minimize the chances of foreign material collecting in the vent side of the regulator diaphragm. If required, the upper diaphragm case may be rotated by removing the upper-to-lower case flange screws and rotating the upper diaphragm case to the desired position. Reinstall the diaphragm flange screws and tighten to hold the diaphragm case in position and reseal. Verify that there aren't any leaks by using a soap and water solution, or other utility-approved method.

5. Make certain that all connections are tight; ensure proper seal and verify no leaks by using a soap and water or other utility-approved method.
6. Turn the gas on very slowly.
7. If necessary, adjust outlet pressure (set point) by removing cap (**1**) and turning the adjustment ferrule (**2**). Turn clockwise to increase and counter-clockwise to decrease outlet pressure. Only adjust when gas is flowing through regulator. Be sure to reinstall the cap.

Model 496 Regulator



CAUTION

The vent connection is an escape path for regulated gas and needs to be located, or piped, so that potential discharge occurs in a safe area. Depending upon the type of gas, discharged materials may be flammable (natural gas or propane). It is the user's responsibility to ensure that all regulator vents and/or vent lines exhaust individually to a non-hazardous location, away from any potential sources of ignition. Common vent lines, using a single vent line for multiple vents, are prohibited. Regulators installed indoors or in an unventilated area must be vented to the outside. Routing vent lines to the exterior ensures that internal relief valve discharge is released safely to the atmosphere, without excessive pressure increase to the regulator and downstream piping. Vent piping must allow passage of air and gas flow, unobstructed by nearby buildings/structures that could result in localized collection of discharged gases.

NOTE: For outdoor installation, it is recommended that the regulator be installed so that the regulator vent faces downward. This avoids the potential for water and other foreign matter from entering the regulator and interfering with proper operation.

CAUTION

Regulators are pressure control devices with numerous moving parts that are subject to wear, independent of operating conditions. To ensure continuous satisfactory operation, a periodic inspection schedule must be adhered to. The frequency of inspections is determined by the severity of service and applicable laws and regulations. Physical damages to the regulator could result in personal injury and property damage.

Servicing

Valve Access

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**).
2. Remove spring (**3**) from regulator.
3. For access to the valve (**7**) and orifice (**6**), remove body-to-diaphragm case screws from body (**5**) with a 1/2" standard socket (or standard screwdriver) and remove diaphragm case assembly from body (**5**).
4. To replace valve pad (**7**), simply pull off valve stem (**9**) and replace with new pad.
5. To replace orifice (**6**), unscrew from body using a 7/8" hex socket wrench. Apply sealant on threads of orifice when installing replacement orifice. The replacement orifice must be installed at 50 to 60 ft-lbs. of torque.
6. To replace diaphragm assembly, remove flange screws (**10**) and disassemble diaphragm assembly (**8**). Make certain all parts are reassembled in their correct order and all threads and joints are tightened evenly and firmly.
7. 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

Protects 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 and state codes, or other applicable standards. The method of protection can be a relief valve, monitor regulator, shutoff device, or similar mechanism.

Maximum Emergency Pressures

The maximum pressure to which the regulator inlet may be subjected under abnormal conditions, without causing damage to the regulator, is the stated Maximum Inlet Pressure + 50 psi.

The maximum pressures which these regulators cases may be subjected to under abnormal conditions, without causing damage to the internal parts, are: Set point plus 3 psi. If the outlet pressure exceeds this pressure, the regulator must be removed from service and carefully inspected. Damaged or otherwise unsatisfactory parts must be replaced before returning the regulator to service.

The maximum outlet pressure that can be safely contained in the diaphragm case is 10 psi.

NOTE: "Safely contained" means no leakage as well as no bursting. Before using any of the above data, make sure this entire section is clearly understood.

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.

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