UTILITY SOLUTIONS GROUP

# Model 461-57S Regulator

## Installation & Maintenance Manual

## Contents

**Introduction** ..... 3
**Installation and Start-Up** ..... 3
**Servicing and Adjustment** ..... 4
- Servicing Double-Seat Balanced Valve Assembly ..... 4
- Servicing Single-Seat Balanced Valve Assembly ..... 4
- Changing Spring ..... 5
- Servicing Diaphragm ..... 5
- Disassembling 461-57S ..... 5
- Assembling 461-57S ..... 5

**Model 461-57S Section View** ..... 6
- Model 461-57S Condensed Parts List ..... 7
- Model 461-57S Condensed Parts List (Continued) ..... 8
- Maximum Emergency Pressures ..... 9
- Overpressurization Protection ..... 9
- Other Gases ..... 9
- Monitoring ..... 9
- Temperature Limits ..... 9
- Buried Service ..... 9

**Typical Installation and Dimensions** ..... 10
- Maximum Inlet Pressures ..... 10
- Spring Ranges ..... 10

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## Introduction

The heart of the Model 461-57S is the "Roll-Out" Diaphragm. The 461-57S is a spring regulator with performance which approximates that of a pilot operated regulator. The "Roll-Out" Diaphragm makes this exceptional performance possible because its unique action reduces "droop" to a minimum ("droop" being fall-off in outlet pressure as a spring regulator opens to increase flow).

## Installation and Start-Up

1. Thoroughly purge inlet piping to remove dirt and debris which could damage the regulator or impair its operation.

**NOTE:** If this cannot be done, a filter or strainer should be installed ahead of the regulator (see Utility Solutions Group Bulletin RDS-1498, Regulator Pressure Ratings). Ensure that regulator is free of any dirt or foreign matter that might have collected.

2. Place regulator in the line with high-pressure connected to the inlet side. On flanges, tighten bolts evenly.

**NOTE:** Ensure that shipping screens or covers, if used, are removed from the inlet and outlet.

Where required, the regulator may be inverted. It may also be installed in a vertical line. However, if installed in a vertical line, there could be excessive wear in anti-friction bushing.

3. From the ¼" union (**20**), extend pipe or tubing to the control connection into the outlet piping, (see Typical Installation illustration on Page 2).

**NOTE:** Control piping should not be less than ¼" in size and should be adequately protected against breakage. Regulators will go wide open if the control line is broken.

**CAUTION**

**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. Where vent lines are used, it is the user's responsibility to ensure that each regulator is individually vented and that common vent lines ARE NOT used.**

**NOTE:** The regulator will work to deliver the adjusted pressure, at the point in the outlet piping where the control connection is located. Control connection should be at least eight pipe diameters from the regulator and should be in as straight a run of pipe as possible.

**CAUTION**

**Interior of both the control line and its connections should be clean and smooth to minimize turbulence. Remove any rough edges, welding debris, etc. Where outlet piping increases in size near the regulator, it is recommended to locate the control connection in the larger size. Keep pipe dope and all other foreign substances out of the control line. The ¼" union (20) contains a small orifice, approximately 1/16" diameter. This orifice should not be removed. Ensure this orifice is open and free of foreign material.**

**CAUTION**

**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 animals, bees, insects, etc., to prevent vent blockage and minimize chances for foreign material collecting in the vent side of the regulator diaphragm.**

4. Check all connections for leaks.
5. Put the regulator into operation as follows: (see Typical Installation illustration on Page 10)
   a. Slowly open the downstream control line valve A.
   b. Slowly open the downstream block valve B.
   c. Very slowly open the upstream block valve C.
   d. Set the adjusting screw (**2**) for the required outlet pressure. Turn it clockwise to increase the pressure and counterclockwise to decrease it. Only make this adjustment when gas is actually flowing through the regulator.

**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.**

   e. After adjustment is complete, the lock-nut (**3**) should be tightened firmly and the seal cap (**1**) replaced.
6. To shut down, carefully close valves C, B, and A in that order.

## Servicing and Adjustment

### General Notes

(see Illustrations on Page 6)

1. Make sure the regulator is entirely depressurized before servicing.
2. A visual inspection of the valve can be made by removing inspection plates (**33**) from the sides of the body. These also provide greatly improved access to the valve when servicing or adjusting.
3. The diaphragm (**11d**), the springs (**9**), and all other parts from the diaphragm up, except stud (**11h**), are interchangeable with the Model 441-57S Regulator. Valve and body parts are interchangeable with other 461 Regulators (461-S and 461-X57).
4. Use lubricants sparingly and with care to avoid exposing tacky surfaces to the gas stream. Such surfaces could cause dirt accumulation on close clearance parts. Use moly or silicone type lubricants. Avoid the use of petroleum base types. Lubricate the stem (**12b**), guide (**12j**) and stem O-rings (**12a**) and (**12n**) with dry silicon lubricant to help ensure free movement and a tight seal. An application of lubricant to other O-rings and the tetraseals in the regulator will also help ensure their tightness.
5. When using double-seat balanced valve assembly, bushing (**13**) must be screwed firmly into place. When using single-seat balanced valve assembly, bushing (**13**) must be removed.

## Servicing Double-Seat Balanced Valve Assembly

1. Remove seal cap (**1**), back off adjusting screw (**2**), remove housing cover (**6**), and remove spring (**9**).
2. Remove bottom inspection plate (**14**), and unscrew valve assembly intact from diaphragm assembly, (**12b**) unscrews from diaphragm stem (**11h**).
3. Loosen orifice (**18**) with socket wrench, (1 ½" hex, deep socket). Remove orifice (**18**) and valve assembly intact through bottom opening.
4. If valve assembly and orifice do not warrant replacement, screw orifice (**18**) firmly into place. Replace without disturbing set screw (**12g**). Top end of (**12b**) screws into diaphragm stem (**11h**) until it bottoms and should then be backed off one-half to one full turn.
5. If new parts are needed, disassemble valve assembly by loosening set screw (**12g**) and unscrewing (**12h**) from (**12b**), and then unscrewing nut (**12e**) and part (**12j**).
6. Replace parts as required, then reassemble upper half valve assembly parts (**12a**), (**12b**), (**12c**), (**12d**), (**12e**), and lower half parts (**12f**), (**12g**), (**12h**), (**12c**), (**12d**), (**12j**).
7. Insert through bottom opening:
   a. Screw upper half valve assembly (**12b**) onto (**11h**) until it bottoms then back off one-half to one full turn.
   b. Screw Orifice (**18**) firmly into place.
   c. Screw lower half valve assembly onto upper half by three to four turns, (**12h**) screws onto (**12b**).
8. Make the valve lock-up adjustment. Seat the upper valve against orifice (**19**) while screwing up the lower half valve assembly (**12h**) screws onto (**12b**) until the lower valve is seated against (**18**). Firmly tighten set screw (**12g**).
   a. To seat the upper valve against orifice (**19**), either reach it through the body side opening or remove diaphragm assembly and pull top end of stem (**12b**) upwards.
   b. Tighten set screw(**12g**) with screwdriver through body side opening. If necessary, carefully turn the entire valve assembly. (Do not disturb adjustment to face (**12g**), toward side opening).

**NOTE:** Set screw (**12g**) must tightened against flat area at top of (**12h**) to correctly lock the adjustment.

9. Screw entire valve assembly up, then back off one-half to one full turn, (top of (**12b**) screws onto lower end of diaphragm stem (**11h**) until it bottoms).
10. Complete assembly per steps 6 through 10 of section "Assembling 461-57S" on Page 5.

## Servicing Single-Seat Balanced Valve Assembly

1. Remove seal cap (**1**), back off adjusting screw (**2**), remove housing cover (**6**), and remove spring (**9**).
2. Remove bottom inspection plate (**14**).
3. Remove lock-nut (**12e**), then slip off valve (**12d**) and retainer (**12c**). Orifice (**18**) can be removed with socket wrench (1 ½" hex, deep socket). Reassemble in reverse order.

**NOTE:** If it is necessary to remove stem (**12b**) or valve guide (**30**), do so by first removing lower diaphragm case (**21**), (steps 2 through 4 under "Disassemble 461-57S"). Use socket wrench (1 ½" hex, deep socket) for (**30**).

Single-seat balanced valve does not require any lock-up adjustment.

**CAUTION**

**Orifice (18) must be same size as stem guide (30). [1" (18) with 1" (30), and 11/16" (18) with 11/16" (30)]. Do not use 11/16" size of one with the 1" size of the other.**

4. Reassemble per applicable steps under "Assembling 461-57S" on Page 5.

## Changing Spring

1. Remove seal cap (**1**), back off adjusting screw (**2**), remove housing cover (**6**), and remove spring (**9**).
2. Insert the new spring. Ensure it nests correctly into part (**11c**) and that travel indicator bracket (**36k**) is in place.

**NOTE:** Inspect the diaphragm before inserting the spring to ensure the roll-out is uniform and in place. (Use a flashlight, if necessary.)

3. Complete per steps 8 through 10 of section "Assembling 461-57S".

## Servicing Diaphragm

1. Remove seal cap (**1**), back off adjusting screw (**2**), remove housing cover (**6**), and spring (**9**).
2. Remove bolts (**23**) and carefully remove upper diaphragm case (**10**).
3. Turn diaphragm assembly counterclockwise until diaphragm stem (**11h**) unscrews from (**12b**). Remove assembly and inspect diaphragm.
4. If a new diaphragm (**11d**) is required, remove nut (**11a**) and disassemble.

**NOTE:** When reassembling, ensure fabric side and gasket of diaphragm are toward the vent side of the regulator, and rubber side of the diaphragm is toward the pressure side. The gasket is always placed on the spring side of diaphragm.

To minimize rolling friction and prevent sticking, coat the fabric side of the diaphragm with Molycote, or equivalent graphite based lubricant, before installation.

5. Screw diaphragm assembly back into place. Diaphragm stem (**11h**) screws into (**12b**) until it bottoms, then back off one-half to one full turn.
6. Form roll into roll-out diaphragm (**11d**), then carefully reinstall upper diaphragm case (**10**). Tighten bolts (**23**) and nuts (**22**) evenly.

**NOTE:** Diaphragm must not be pinched between upper and lower cases, (**10**) and (**21**). Roll-out loop must be uniformly full and even. It should be in place as shown of the cross-section drawing, (see illustration on Page 7).

7. Replace spring and reassemble per steps 7 through 10 of section "Assembling 461-57S".

## Disassembling 461-57S

1. Remove seal cap (**1**), loosen nut (**3**), back off adjusting screw (**2**), remove cover cap screws (**16**), remove housing cover (**6**), remove gasket (**28**), and remove spring (**9**).
2. Remove bolts (**23**) and nuts (**22**) and upper diaphragm case (**10**).
3. Unscrew diaphragm assembly (**11**) from stem (**12b**).
4. Remove lower case to body cap screws (**16**) and remove lower diaphragm case (**21**).
5. Remove valve assembly and orifice (**18**) per previous sections on servicing valve assembly.
6. Remove inlet orifice (**19**), or guide (**30**), through top opening using 1 ½" socket wrench.

## Assembling 461-57S

1. Install valve parts as required through top opening (guide (**30**), with stem (**12b**) plus pin (**12m**), or orifice (**19**).
2. Install lower diaphragm case (**21**).
3. Install valve assembly and orifice (**18**) per previous instructions on servicing valve assemblies. Make lock-up adjustment on double-seat valve.
4. Screw diaphragm assembly back into place. Diaphragm stem (**11h**) screws into (**12b**) until it bottoms, then back off one-half to one full turn.
5. Install upper diaphragm case per step 7 under "Servicing Diaphragm".
6. Replace bottom inspection plate (**14**).

**NOTE:** With double-seat valve, engage pin in (**13**) with slot in lower end of (**12j**), then rotate (**14**) until holes line up to install cap screws (**16**).

7. Insert the new spring. Ensure it nests correctly into part (**11c**) and that travel indicator bracket (**36k**) is in place.

**NOTE:** Inspect the diaphragm before inserting the spring to ensure the roll-out is uniform and in place. (Use a flashlight, if necessary.)

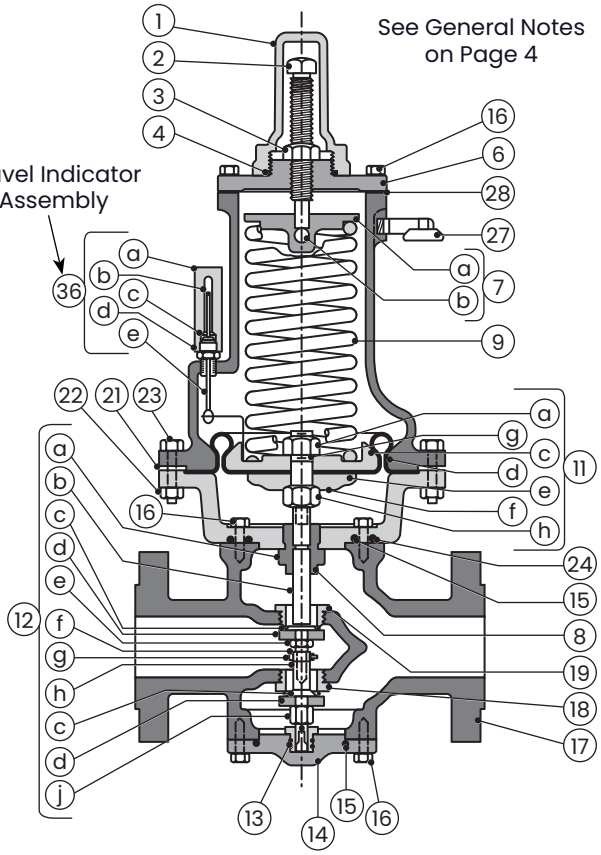
8. Insert top spring button (**7a**) and ball bearing (**7b**). Ensure it is nested correctly on the spring.
9. Install housing cover gasket (**28**) and housing cover (**6**). Ensure the lower end of adjusting screw (**2**) goes into the hole in button (**7a**). Install housing cover screws (**16**).
10. Set adjusting screw (**2**) for desired outlet pressure, firmly tighten nut (**3**) and replace seal (**4**) and seal cap (**1**).

**CAUTION**

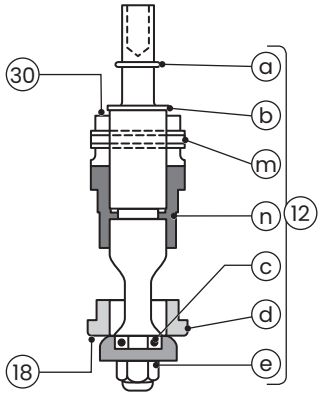
**Regulators are pressure control devices with numerous moving parts subject to wear that is independent upon particular operating conditions. To ensure continuous satisfactory operation, a periodic inspection schedule must be adhered with the frequency of inspection determined by the severity of service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

## Model 461-57S Section View

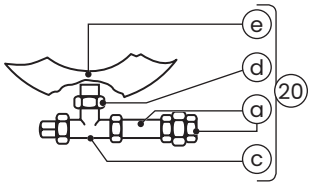
### Double-Seat Balance Valve Assembly



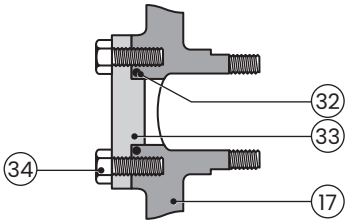

### Single-Seat Balance Valve Assembly



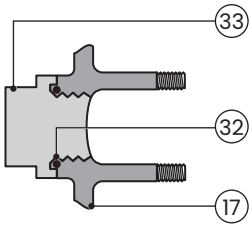
### Outlet Control Piping



### Two Bolt Side Inspection Plates



### Threaded Side Inspection Plates



## Model 461-57S Condensed Parts List

| Illustration Number | Description | Part Number |
|---|---|---|
| 3 | Hex Steel Nut ⅝" – 11 | 921407 |
| 4 | Tetraseal (or O-ring) 1 ¾" × 2" | 904092 |
| 7b | Thrust Bearing-Stainless Ball ⅜" Dia. | 930510 |
| 8 | Anti-Friction Bushing Assy. | 091-16-373-00 |
| 9 | Spring, Yellow 3 to 6 psi | 091-00-021-05 |
| | Spring, Gray 5 to 9 psi | 091-00-021-04 |
| | Spring, Blue 7 ½ to 15 psi | 091-00-021-03 |
| | Spring, Red 12 ½ to 30 psi | 091-00-021-02 |
| | Spring, Brown 25 to 55 psi | 091-00-021-01 |
| | Spring, Black 50 to 75 psi | 091-00-021-00 |
| | Brown plus White Springs, 70 to 100 psi: | |
| | Brown outer spring | 091-00-021-01 |
| | White inner spring | 091-00-021-08 |
| 11a | Hex, Steel Nut ⅝" – 18 | 905993 |
| 11c | Diaphragm Plate, Upper | 091-00-010-00 |
| 11d | Diaphragm, 5" Roll-Out | 091-00-350-00 |
| 11e | Diaphragm Plate, Lower | 091-00-022-00 |
| 11f | O-Ring, ⅝" × ¾" | 902922 |
| 11g | Split Lockwasher ⅝" | 932531 |
| 11h | Diaphragm Stem | 091-00-058-00 |
| 12 | 1" Double-Seat Valve Assembly, Stainless trim, Buna-N | 091-16-515-03 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Red Poly-U, V-port | 091-16-515-13 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Tan Poly-U | 091-16-515-18 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Nylon | 091-16-515-21 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Viton | 091-16-515-27 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Buna-N, V-Port | 091-16-515-25 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Tan Poly-U, V-Port | 091-16-515-64 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Red Poly-U, V-Port | 091-16-515-71 |
| | 1" Double-Seat Valve Assembly, Stainless trim, Viton, V-Port | 091-16-515-72 |
| | 11⁄16" Double-Seat Valve Assembly, Stainless trim, Buna-N | 091-16-515-02 |
| | 11⁄16" Double-Seat Valve Assembly, Stainless trim, Tan Poly-U | 091-16-515-00908 |
| | 11⁄16" Double-Seat Valve Assembly, Stainless trim, Red Poly-U | 091-16-515-12 |
| | 11⁄16" Double-Seat Valve Assembly, Stainless trim, Nylon | 091-16-515-20 |
| | 11⁄16" Double-Seat Valve Assembly, Stainless trim, Viton | 091-16-515-26 |
| | 1" Single-Seat Valve Assembly, Stainless trim, Red Poly-U | 091-16-515-51 |
| | 1" Single-Seat Valve Assembly, Stainless trim, Tan Poly-U, V-Port | 091-16-515-66 |
| | 1" Single-Seat Valve Assembly, Stainless trim, Red Poly-U, V-Port | 091-16-515-70 |

| Illustration Number | Description | Part Number |
|---|---|---|
| 12 | 11⁄16" Single-Seat Valve Assembly, Stainless trim, Tan Poly-U | 091-16-515-00904 |
| | 11⁄16" Single-Seat Valve Assembly, Stainless trim, Red Poly-U | 091-16-515-50 |
| | 11⁄16" Single-Seat Valve Assembly, Stainless trim, Viton | 091-16-515-54 |
| | 11⁄16" Single-Seat Valve Assembly, Stainless trim, Nylon | 091-16-515-60 |
| 12a | O-ring, ⅜" × ½" | 934007 |
| 12b | Male Valve Stem, 5 1⁄16" Lg., Stainless, for 1" and 11⁄16" Double-Seat Assembly | 091-16-116-00 |
| | Valve Stem, Stainless for 1" Single-Seat Assembly | 091-00-016-07 |
| 12c | Valve Stem, Stainless, 11⁄16" Single-Seat assembly | 091-00-016-06 |
| | Valve Retainer, Stainless, 1" Single or Double-Seat, (1 or 2 used) | 091-16-018-01 |
| | Valve Retainer, Stainless, 11⁄16" Single or Double-Seat, (1 or 2 used) | 091-16-018-00 |
| 12d | Molded Valve Buna-N (45-55 Duro), 1" Double-Seat | 091-16-315-01 |
| | Molded Valve, Buna-N (45-55 Duro), 11⁄16" Double-Seat | 091-16-315-00 |
| | Molded Valve, Red Poly-U (65-75 Duro), 1" Double-Seat | 091-16-315-11 |
| | Molded Valve, Red Poly-U (65-75 Duro), 11⁄16" Double-Seat | 091-16-315-10 |
| | Molded Valve, Poly-U (Tan, 85-95 Duro), 1" Double-Seat | 091-16-315-15 |
| | Molded Valve, Poly-U (Tan, 85-95 Duro), 11⁄16" Double-Seat | 091-16-315-14 |
| | Molded Valve, Viton (65-75 Duro, Stamped-V), 1" Double-Seat | 091-16-315-13 |
| | Molded Valve, Viton (65-75 Duro, Stamped-V), 11⁄16" Double-Seat | 091-16-315-12 |
| | Molded Valve, Poly-U (Red, 65-75 Duro), 1" Single-Seat | 091-16-315-51 |
| | Molded Valve, Poly-U (Red, 65-75 Duro), 11⁄16" Single-Seat | 091-16-315-50 |
| | Molded Valve, Poly-U (Tan, 85-95 Duro), 1" Single-Seat | 091-16-315-60 |
| | Molded Valve, Poly-U (Tan, 85-95Duro), 11⁄16" Single-Seat | 091-16-315-59 |
| | Molded Valve, Viton (65-75 Duro, Stamped-V), 1" Single-Seat | 091-16-315-58 |
| | Molded Valve, Viton, (65-75 Duro, Stamped-V), 11⁄16" Single-Seat | 091-16-315-57 |
| | Stainless Valve, Nylon disc, 1" Double-Seat | 091-16-315-04 |
| | Stainless Valve, Nylon disc, 11⁄16" Double-Seat | 091-16-315-03 |
| | Stainless Valve, Nylon disc, 1" Single-Seat | 091-16-315-52 |
| | Stainless Valve, Nylon disc, 11⁄16" Single-Seat | 091-16-315-02 |

## Model 461-57S Condensed Parts List (Continued)

| Illustration Number | Description | Part Number |
|---|---|---|
| 12e | Valve Lock-Nut, ⅜" – 24 Crown Nylok, Double-Seat Assembly | 903936 |
| 12f | Valve Stem Locking Ring, Stainless, Double-Seat Assembly | 091-16-043-01 |
| 12g | Set Screw, Slotted Headless, or Hex Socket cup point. | 907694 |
| 12h | Female Valve Stem, for Stainless 11/16" Double-Seat Assembly | 091-16-016-03 |
| 12j | Valve Guide, Stainless, Double-Seat Assembly | 091-16-012-02 |
| 12m | Roll Pin, ¼" × 1 ½" Lg., Single-Seat Assembly | 901707 |
| 12n | O-ring, ¾" × 1", Single-Seat Assembly | 934015 |
| | O-ring, 9/16" × ¾", 11/16" Single-Seat Assembly | 934011 |
| 13 | Guide Bushing, Stainless with Pin | 091-16-385-03 |
| 15 | Tetraseal (or O-ring), 2 ¾" × 3" | 904079 |
| 16 | Hex Cap Screw, 120,000 lb Tensile, 5/16" – 18 × 1", (24 used) | 910030 |
| 18 | Outlet Orifice, 1" Stainless | 091-16-029-05 |
| | Outlet Orifice, 11/16" Stainless | 091-16-029-04 |
| 19 | Inlet Orifice, 1" Stainless | 091-16-028-01 |
| | Inlet Orifice, 11/16" Stainless | 091-16-028-05 |
| 20a | Nipple, Orifice Plug and Union Assembly | 091-00-361-00 |
| 20c | Tee (14T) | 946150 |
| 20e | Pipe Plug (¼) | 906055 |
| 22 | Hex Steel Nut, ⅜" – 16, (8 used) | 920853 |
| 23 | Hex Steel Bolt, ⅜" – 16 × 1 ¾" Lg., (8 used) | 910058 |
| 24 | Tetraseal (or O-Ring), 4 ⅜" × 4 ⅝" | 904085 |
| 27 | Vent Cap, ¼" | 137-02-505-02 |
| 28 | Housing Cover Gasket | 091-00-066-30 |
| 30 | Valve Stem Guide, Stainless, 11/16" Single-Seat Assembly | 091-16-012-52 |
| | Valve Stem Guide, Stainless, 1" Single-Seat Assembly | 091-16-012-53 |
| 32 | Tetraseal (or O-ring), 1 ½" × 1 ¾" | 904086 |
| 36 | Travel Indicator Assembly: | |
| | a. Window (opens down ¼") | 091-00-174-76 |
| | b. Tube Cap | 950188 |
| | c. O-Ring | 950071 |
| | d. Half Union (Imp. 48F, ¼" NPT) | 903984 |

## Maximum Emergency Pressures

**NOTE:** Ensure this entire section is clearly understood before using any of the following data.

The maximum pressure the regulator inlet may be subjected to under abnormal conditions without causing damage to the regulator are:

| Regulator Body Type | Body Material | Maximum Emergency Pressure |
|---|---|---|
| Threaded | Cast Iron (ASTM A126-71 Class B) | 275 psi |
| Flanged ANSI 125 lb. FF | Cast Iron (ASTM A126-71 Class B) | 200 psi |
| Flanged ANSI 250 lb. RF | Ductile Iron (ASTM A395-71 gr 60-4-18) | 630 psi |
| Flanged ANSI 300 lb. RF | Cast Steel (ASTM A216-70a gr WCB) | 800 psi |
| Flanged ANSI 600 lb. RF | Cast Steel (ASTM A216-70a gr WCB) | 1,100 psi |

The maximum emergency pressure the inlet side of the Model 461-57S Regulator may be subjected to under abnormal conditions without causing damage to the regulator is:

Cast Iron Body..... Maximum Inlet Pressure + 25 psi
Ductile Iron Body..... Maximum Inlet Pressure + 60 psi
Cast Steel Body..... Maximum Inlet Pressure + 100 psi

The maximum pressure the outlet may be subjected to without causing damage to the internal parts of the regulator is:

All 461-57S variants ..... Set-point +25 psi

**NOTE:** Set-point is defined as the outlet pressure a regulator is adjusted to deliver.

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

All 461-57S variants ..... 175 psi

**NOTE:** Safely contained means no leakage as well as no bursting.

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

## Overpressurization Protection

Methods of overpressuirzation protection include relief valves, monitor regulators, shutoff devices, or similar mechanisms. These protect the downstream piping system and the regulator's low-pressure chambers against overpressurization 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, Utility Solutions Group Bulletin RDS-1498, and other applicable standards.

## Other Gases

Model 461-57S Regulators are mainly used with natural gas. However, they perform equally well with liquid propane gas (LPG), nitrogen, dry carbon dioxide ($CO_2$), air and others.

| Type of Gas | Correction Factor |
|---|---|
| Air (Specific Gravity 1.0) | 0.77 |
| Propane (Specific Gravity 1.53) | 0.63 |
| 1350 BTU Propane-Air Mix (Specific Gravity 1.20) | 0.71 |
| Nitrogen (Specific Gravity 0.97) | 0.79 |
| Dry Carbon Dioxide (Specific Gravity 1.52) | 0.63 |

For other non-corrosive gases, use the following formula:

$$\text{Correction factor} = \sqrt{\frac{0.60}{\text{Specific gravity of the gas}}}$$

For use with gases not listed above, please contact your Utility Solutions Group representative or Authorized Distributor.

## Monitoring

The Model 461-57S Regulator makes an excellent monitor. It can act as a standby regulator installed in series which assumes control if a failure in the operating regulator permits the outlet pressure to exceed the set-point. It can be located in either the upstream or the downstream position.

When a Model 461-57S Regulator is used to monitor a regulator with an identical inner valve (another 461-57S Regulator), the total maximum capacity through both regulators can be figured at 70% of the capacity of one regulator alone. This applies with the monitor located either upstream or downstream.

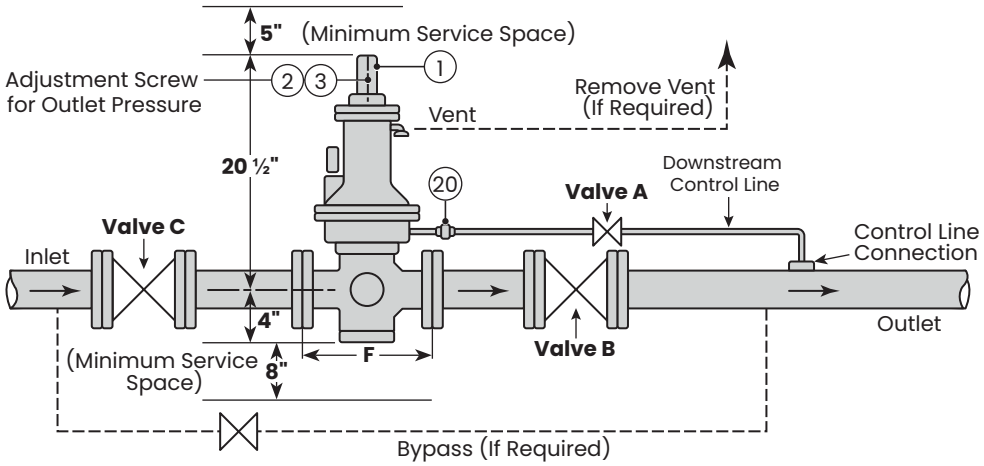
## Temperature Limits

The Model 461-57S Regulator can be used for flowing temperatures from -20°F to 150°F.

## Buried Service

The Model 461-57S Regulator is not recommended for buried service.

## Typical Installation and Dimensions




| Regulator Body Type | F (Face to Face) |
|---|---|
| Threaded | 6 ½" |
| Flanged ANSI 125 lb. | 10" |
| Flanged ANSI 250 lb. | 10 ½" |
| Flanged ANSI 300 lb. | 10 ½" |
| Flanged ANSI 600 lb. | 11 ¼" |

## Maximum Inlet Pressures

| Regulator Body Type | Body Material | Maximum Body Pressure | Maximum Inlet Pressure |
|---|---|---|---|
| Threaded | Cast Iron | 250 psi | 250 psi |
| Flanged ANSI 125 lb. FF | Cast Iron | 175 psi | 175 psi |
| Flanged ANSI 250 lb. RF | Ductile Iron | 575 psi | 575 psi |
| Flanged ANSI 300 lb. RF | Cast Steel | 720 psi | 720 psi |
| Flanged ANSI 600 lb. RF | Cast Steel | 1,200 psi | 1,000 psi |

## Spring Ranges

| Outlet Pressure Range | Color of Spring | Nominal Diaphragm Size (I.D.) |
|---|---|---|
| 3 to 6 psi | Yellow | 5" All Ranges |
| 5 to 9 psi | Gray | |
| 7 ½ to 15 psi | Blue | |
| 12 ½ to 30 psi | Red | |
| 25 to 55 psi | Brown | |
| 50 to 75 psi | Black | |
| 70 to 100 psi | Brown plus White* | |

* White spring is nested within brown.

# UTILITY SOLUTIONS GROUP

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