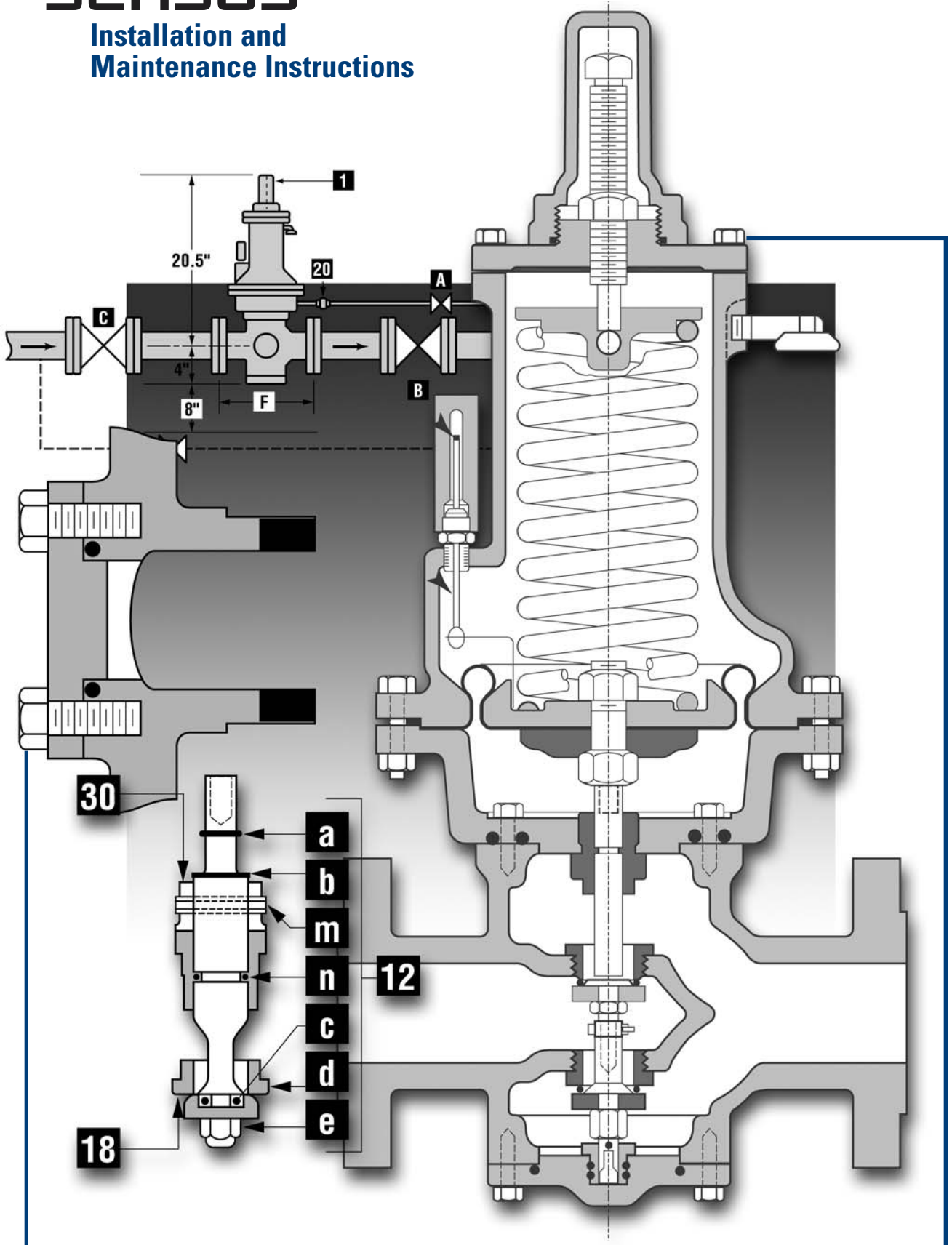


Models 461-57S

Regulator

SENSUS

Installation and Maintenance Instructions



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. If this cannot be done, a filter or strainer should be installed ahead of the regulator (see Sensus Bulletin RDS-1498, Regulator Pressure Ratings). Make certain 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 (be sure that shipping screens or covers, if used, are removed from the inlet and outlet).
On flanges, tighten bolts evenly.
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 1/4" union **20** extend pipe or tubing to the control connection into the outlet piping. (See Figure 1 on page 2.) This control piping should not be less than 1/4" 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 assure 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 assure that each regulator is individually vented and that common vent lines ARE NOT used.

The regulator will work to deliver the pressure, for which it is adjusted, at that point in the outlet piping where the control connection is located.

In general the control connection should be at least eight pipe diameters from the regulator and should be in as straight a run of pipe as possible.

The control connection should be clean and smooth, free of rough edges, welding “icicles”, etc.

Where outlet piping increases in size near the regulator, its generally preferable to locate the control connection in the larger size. The 1/4" union **20** contains a small orifice, approximately 1/16" diameter. This orifice should not be removed. Also, make certain 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 from collecting in the vent side of the regulator diaphragm.

- 4 Check all connections for leaks.
- 5 Put the regulator into operation as follows: (See Figure 1)
 - 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 counter-clockwise 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 locknut **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.

Spring Ranges

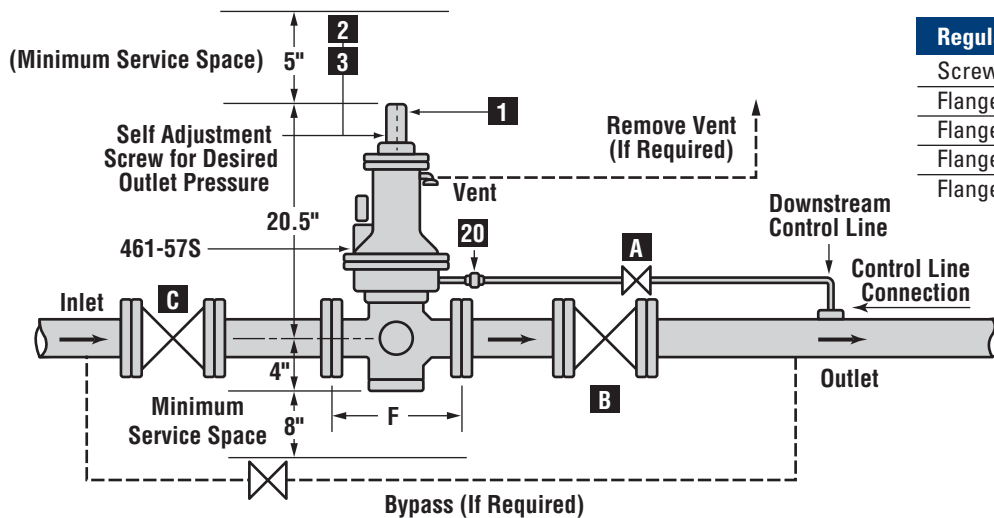
Outlet Pressure Range	Color of Spring	Nominal Diaphragm Size (I.D.)
3 to 6 psi	Yellow	5" all ranges
5 to 9 psi	Gray	
7-1/2 to 15 psi	Blue	
12-1/2 to 30 psi	Red	
25 to 55 psi	Brown	
50 to 75 psi	Black	
70 to 100 psi	Brown plus White*	

*White colored spring is nested within brown.

Maximum Inlet Pressures for all Regulator Body Types

Regulator Body Type	461 Body Materials	Maximum Working Pressure of Body	Maximum Inlet Pressure
Screwed End	Cast Iron (ASTM A126-71 Class B)	250 psi	250 psi
Flanged ANSI 125 lb. FF	Cast Iron (ASTM A126-71 Class B)	175 psi	175 psi
Flanged ANSI 250 lb. RF	Ductile Iron (ASTM A395-71 gr 60-4-18)	575 psi	575 psi
Flanged ANSI 300 lb. RF	Cast Steel (ASTM A216-70a gr WCB)	720 psi	720 psi
Flanged ANSI 600 lb. RF	Cast Steel (ASTM A216-70a gr WCB)	1200 psi	1000 psi

Figure 1. Typical Arrangement and Dimensions (indoor and outdoor installation)



Regulator Body Type	(Face to Face, in.)
Screwed	6-1/2
Flanged ANSI 125	10
Flanged ANSI 250	10-1/2
Flanged ANSI 300	10-1/2
Flanged ANSI 600	11-1/4

Servicing and Adjustment

General Notes (see Illustrations on pages 6 and 7)

- 1 Make sure the regulator is entirely depressurized before servicing.
- 2 A quick 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 the **11h** stud) are interchangeable with the Model 441-57S Regulator. Valve and body parts are interchangeable with other 461 Regulators (461-S, 461-X57, 1100, 1200).
- 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 assure free movement and a tight seal.
An application of lubricant to other O-rings and the tetraseals in the regulator will also help assure 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.

To Service 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 **11h**).
- 3 Unscrew orifice **18** with socket wrench (1-1/2" 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 **11h** until it bottoms and should then be **backed off 1/2 to 1 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. upper half valve assembly - screw **12b** onto **11h** until it bottoms then **back off 1/2 to 1 full turn**.
 - b. orifice **18** - screw firmly into place.
 - c. lower half valve assembly - screw onto upper half by 3 or 4 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**). Then, 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 **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).
 - c. **12g** must tighten against flat area at top of **12h** to correctly lock the adjustment.
- 9 Screw entire valve assembly up (top of **12b** screws onto lower end of **11h** until it bottoms), then **back off 1/2 to 1 full turn - this is important**.
- 10 Complete assembly as per steps 6 thru 10 under "To Assemble 461-57S".

To Service 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 locknut **12e**, then slip off valve **12d** and retainer **12c**. Orifice **18** can be removed with socket wrench (1-1/2" hex, deep socket). Reassemble in reverse order.
- 4 If it should be necessary to remove stem **12b** or valve guide **30**, do so by first removing lower diaphragm case **21** (steps 2 thru 4 under "To Take 461-57S Apart"). Use socket wrench (1-1/2" hex, deep socket) for **30**.
- 5 Note – single seat balanced valve does not require any lock-up adjustment.
- 6 Note – 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 1" size of the other.
- 7 Reassemble as per applicable steps under "To Assemble 461-57S".

To Change Spring

- 1 Remove seal cap **1**, back off adjusting screw **2**, remove housing cover **6**, and remove spring **9**.
- 2 Insert the new spring. Be sure it nests correctly into part **11c** and that travel indicator bracket **36k** is in place. Also, make a visual inspection of the diaphragm before inserting the spring to be sure the roll-out is uniform and in place. (Use a flashlight, if necessary).
- 3 Complete as per steps 8, 9, and 10 under "To Assemble 461-57S".

To Service Diaphragm

- 1 Remove seal cap **1**, back off adjusting screw **2**, remove housing cover **6**, and remove spring **9**.
- 2 Remove bolts **23** and then carefully remove upper diaphragm case **10**.
- 3 Turn diaphragm assembly counterclockwise until **11h** unscrews from **12b**, then remove assembly and inspect diaphragm.
- 4 If a new diaphragm **11d** is required, remove nut **11a** and disassemble.
- 5 When reassembling, **be sure that fabric side and gasket of diaphragm is toward the vent side of the regulator and the rubber side of diaphragm toward the pressure side. The gasket is always placed on the spring side of diaphragm.**
- 6 To minimize rolling friction and prevent sticking, coat the fabric side of the diaphragm with Molycote, or equivalent graphite based lubricant, before installation. Screw diaphragm assembly back into place. (**11h** screws into **12b** until it bottoms), then **back off 1/2 to 1 full turn - this is important.**
- 7 Form roll into roll-out diaphragm **11d**, then carefully reinstall upper diaphragm case **10**. Diaphragm must not be pinched between upper and lower cases, **10** and **21**. Also, roll-out loop must be uniformly full and even. It should be in place as shown of the cross-section drawing. Tighten bolts **23** and nuts **22** evenly.
- 8 Replace spring, etc., per steps 7 thru 10 under "To Assemble 461-57S".

To Take 461-57S Apart

- 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 1-1/2" socket wrench.

To Assemble 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. **11h** screws into **12b** until it bottoms, then **back off 1/2 to 1 full turn – this is important.**
- 5 Install upper diaphragm case per step 7 under "To Service Diaphragm".
- 6 Replace bottom inspection plate **14** (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 spring. Be sure it nests correctly into part **11c** and that travel indicator bracket is in place. Also, make a visual inspection of the diaphragm before inserting the spring to be sure the roll-out is uniform and in place. (Use a flashlight, if necessary).
- 8 Insert top spring button **7a** and ball bearing **7b**. Be sure it is nested correctly on the spring.
- 9 Install housing cover gasket **28** and housing cover **6**. Be sure 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 cap **1**.

CAUTION

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

Installation and Maintenance Instructions

Model 461-57S Regulator



Maximum Emergency Pressures

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

Cast Iron Body, Screwed End	275 psi
Cast Iron, Flanged ANSI 125 lb	200 psi
Ductile Iron, Flanged ANSI 250 lb	630 psi
Cast Steel, Flanged ANSI 300 lb	800 psi
Cast Steel, Flanged ANSI 600 lb	1100 psi

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

All 461-57S set-point + 25 psi

Set-point is defined as the outlet pressure a regulator is adjusted to deliver. 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. The maximum pressure than can be safely contained by the diaphragm case is:

All 461-57S 175 psi

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.

Other Gases

Model 461-57S Regulators are mainly used on natural gas. However, they perform equally well on LP gas, nitrogen, dry CO₂, air and others.

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

For other noncorrosive gases:

$$\text{CORRECTION FACTOR} = \sqrt{\frac{0.6}{\text{Specific Gravity of the Gas}}}$$

For use with gases not listed above, please contact your Sensus representative or Industrial Distributor for recommendations.

Buried Service

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

Temperature Limits

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

Overpressurization Protection

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, Sensus Bulletin RDS-1498, or other applicable standards. The method of protection can be a relief valve, monitor regulator, shutoff device, or similar mechanism.

Condensed Parts List

Illustration Number	Description	Part Number
3	Hex Steel Nut 5/8"-11	921407
4	Tetraseal (or O-Ring) 1-3/4" x 2"	904092
7b	Thrust Bearing-Stainless ball 3/8" Dia.	930510
8	Anti-Friction Bushing Assy.	091-16-373-00
	Spring – Yellow 3 to 6 psi	091-00-021-05
	Spring – Gray 5 to 9 psi	091-00-021-04
	Spring – Blue 7-1/2 to 15 psi	091-00-021-03
9	Spring – Red 12-1/2 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
	Spring – Brown plus White 70 to 100 psi Brown outer spring	091-00-021-01
	White inner spring	091-00-021-08
11a	Hex, Steel Nut 5/8" – 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, 5/8" x 3/4"	902922
11g	Split Lockwasher 5/8"	932531
11h	Diaphragm Stem	091-00-058-00
	1" Double Seat Valve Assembly brass trim, Buna-N	091-16-515-01
	1" Double Seat Valve Assembly stainless trim, Buna-N	091-16-515-03
	1" Double Seat Valve Assembly brass trim, Red Polyurethane	091-16-515-11
	1" Double Seat Valve Assembly stainless trim, Red Polyurethane	091-16-515-13
	1" Double Seat Valve Assembly brass trim, Tan Polyurethane, V-port	091-16-515-65
	11/16" Double Seat Valve Assembly brass trim, Buna-N	091-16-515-00
12	11/16" Double Seat Valve Assembly stainless trim, Buna-N	091-16-515-02
	11/16" Double Seat Valve Assembly brass trim, Red Polyurethane	091-16-515-10
	11/16" Double Seat Valve Assembly stainless trim, Red Polyurethane	091-16-515-12
	1" Single Seat Valve Assembly stainless trim, Red Polyurethane	091-16-515-51
	11/16" Single Seat Valve Assembly stainless trim, Red Polyurethane	091-16-515-50
12a	O-Ring, 3/8" x 1/2"	934007
	Male Valve Stem, 5-1/16" Lg. brass for 1" & 11/16" double seat assembly	091-16-116-02
	Male Valve Stem, 5-1/16" Lg. stainless for 1" & 11/16" double seat assembly	091-16-116-00
12b	Valve Stem – stainless for 1" single seat assembly	091-00-016-07

Items in bold face type denote minimum recommended spare parts.

Condensed Parts List

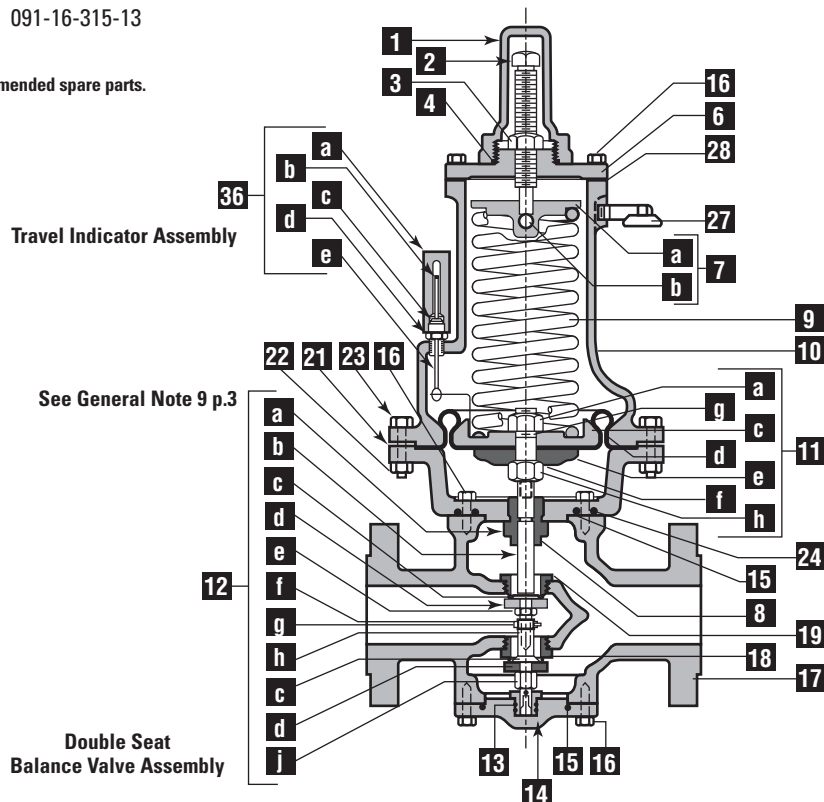
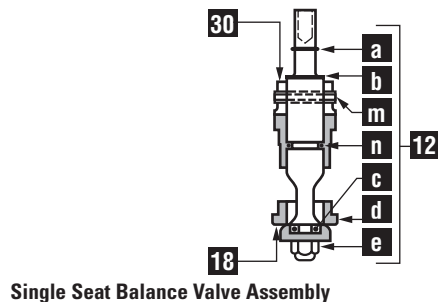
Illustration Number	Description	Part Number
12c	Valve Stem – stainless for 11/16" single seat assembly	091-00-016-06
	Valve Retainer – brass for 1" double seat (2 used)	091-16-018-03
	Valve Retainer – brass for 11/16" double seat (2 used)	091-16-018-02
	Valve Retainer – stainless for 1" single or double seat (1 or 2 used)	091-16-018-01
	Valve Retainer – Stainless for 11/16" single or double seat (1 or 2 used)	091-16-018-00
12d	Molded Valve Buna-N (Black, 45-55 Duro), for 1" double seat all trim	091-16-315-01
	Molded Valve, Buna-N (Black, 45-55 Duro), for 11/16" double seat all trim	091-16-315-00
	Molded Valve, Polyurethane (Red, 65-75 Duro), for 1" double seat all trim	091-16-315-11
	Molded Valve, Polyurethane (Red, 65-75 Duro), for 11/16" double seat all trim	091-16-315-10
	Molded Valve, Polyurethane (Tan, 85-95 Duro), for 1" double seat all trim	091-16-315-15
	Molded Valve, Polyurethane (Tan, 85-95 Duro), for 11/16" double seat all trim	091-16-315-14
	Molded Valve, Viton (65-75 Duro, stamped V), for 1" double seat all trim	091-16-315-13

Items in bold face type denote minimum recommended spare parts.

Condensed Parts List

Illustration Number	Description	Part Number
12d	Molded Valve, Viton (65-75 Duro, stamped V), for 11/16" double seat all trim	091-16-315-12
	Molded Valve, Polyurethane (Red, 65-75 Duro), for 1" single seat	091-16-315-51
	Molded Valve, Polyurethane (Red, 65-75 Duro), for 11/16" single seat	091-16-315-50
	Molded Valve, Polyurethane (Tan, 85-95 Duro), for 1" single seat	091-16-315-60
	Molded Valve, Polyurethane (Tan, 85-95 Duro), for 11/16" single seat	091-16-315-59
	Molded Valve, Viton (65-75 Duro, stamped V), for 1" single seat	091-16-315-58
	Molded Valve, Viton, (65-75 Duro, stamped V), for 11/16" single seat	091-16-315-57
	Stainless Valve – Nylon disc, for 1" double seat	091-16-315-04
	Stainless Valve – Nylon disc, for 11/16" double seat	091-16-315-03
	Stainless Valve – Nylon disc, for 1" single seat	091-16-315-52
	Stainless Valve – Nylon disc, for 11/16" single seat	091-16-315-02

Items in bold face type denote minimum recommended spare parts.



Installation and Maintenance Instructions

Model 461-57S Regulator



Condensed Parts List

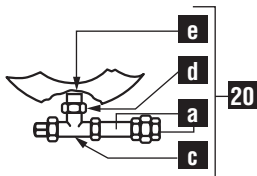
Illustration Number	Description	Part Number
12e	Valve Locknut – brass for double seat assembly	091-16-102-00
	Valve Locknut – stainless for double seat assembly	091-16-102-01
12f	Valve Locknut – 3/8" – 24 Crown Nylok, for single seat assembly	903936
	Valve Stem Locking Ring – stainless for double seat assembly	091-16-043-01
12g	Set Screw – slotted headless or Hex. Soc. cup pt.	907694
12h	Female Valve Stem – brass for double seat assembly	091-16-016-00
	Female Valve Stem – stainless for double seat assembly	091-16-016-03
12j	Valve Guide – brass for double seat assembly	091-16-012-00
	Valve Guide – stainless for double seat assembly	091-16-012-02
12m	Roll Pin – 1/4" x 1-1/2" Lg. for single seat assembly	901707
12n	O-Ring – 3/4" x 1", for single seat assembly	934015
	O-Ring – 9/16" x 3/4", for 11/16" single seat assembly	934011
13	Guide Bushing – brass, with pin	091-16-385-02
	Guide Bushing – stainless, with pin	091-16-385-03
15	Tetraseal (or O-Ring), 2-3/4" x 3"	904079
16	Hex. Cap Screw – 120,000# Tensile, 5/16" - 18 x 1" (24 used)	910030
18	Outlet Orifice – 1" brass	091-16-029-01
	Outlet Orifice – 1" stainless	091-16-029-05
	Outlet Orifice – 11/16" brass	091-16-029-00
	Outlet Orifice – 11/16" stainless	091-16-029-04

Items in bold face type denote minimum recommended spare parts.

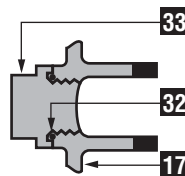
Condensed Parts List

Illustration Number	Description	Part Number
19	Inlet Orifice – 1" brass	091-16-028-01
	Inlet Orifice – 1" stainless	091-16-028-05
	Inlet Orifice – 11/16" brass	091-16-028-00
	Inlet Orifice – 11/16" stainless	091-16-028-04
20a	Nipple, Orifice Plug and Union Assembly	091-00-361-00
20c	Tee (14T)	946150
20e	Pipe Plug (1/4")	906055
22	Hex. Steel Nut – 3/8" – 16 (8 used)	920853
	Hex. St. Bolt – 3/8" – 16 x 1-3/4" Lg. (8 used)	910058
24	Tetraseal (or O-Ring), 4-3/8" x 4-5/8"	904085
27	Vent Cap – 1/4"	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), 1-1/2" x 1-3/4"	904086
36	Travel Indicator Assembly (1/4" scale)	091-00-365-73
	Travel Indicator Assembly (5/8" scale)	091-00-365-75
	Travel Indicator Assembly (1" scale)	091-00-365-77
	Travel Indicator Assembly (1-1/4" scale)	091-00-365-79
36a	Window (opens down 1/4")	091-00-174-76
	Window (opens down 5/8")	091-00-174-80
	Window (opens down 1")	091-00-174-82
	Window (opens down 1-1/4")	091-00-174-84
36b	Tube Cap	950188
36c	O-Ring	950071
36d	Half Union (Imp.48F.1/4NPT)	903984

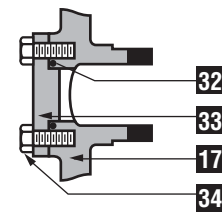
Items in bold face type denote minimum recommended spare parts.



Outlet Control Piping



Screwed Side Inspection Plates



Two Bolt Side Inspection Plates

Models 461-57S Regulator

Installation and Maintenance Instructions



805 Liberty Boulevard
DuBois, PA 15801
800-375-8875
Fax: (814) 375-8460
www.sensus.com/gas

Maximum Emergency Pressure

The Maximum emergency pressure that 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

If pressure exceeds the above values the regulator must be removed from service and inspected. Damaged or otherwise unsatisfactory parts must be repaired or replaced before returning the regulator to service.

The maximum pressure which the diaphragm may be subjected to under abnormal conditions without causing internal damage is the set-point + 25 psi. If the pressure on the diaphragm exceeds set-point by more than + 25 psi, the regulator must be removed from service and inspected. Damaged or otherwise unsatisfactory parts must be repaired or replaced before returning the regulator to service. 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 175 psi. 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.

Other Gases

The Model 461-57S Regulator is mainly used on natural gas services; however, this regulator will perform equally as well on other gases. When using the Model 461-57S Regulator on other gases, the regulator capacities must be adjusted using the following correction factors:

Type of Gas

Correction Factor

Air (specific gravity 1.0)	0.77
Propane (specific gravity 1.53)	0.63
1350 BTU Propane-Air Mixture (specific gravity 1.20)	0.71
Nitrogen (specific gravity 0.97)	0.79
Dry CO ₂ (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 Sensus Energy Metering representative or Industrial Distributor for recommendations.

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.

Authorized Distributor:

Limited Warranty

Seller warrants the Goods to be free from defects in materials manufactured by Seller and in Seller's workmanship for a period of one (1) year after tender of delivery (the "Warranty Period"). THIS LIMITED WARRANTY (a) IS IN LIEU OF, AND SELLER DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, STATUTORY, EXPRESS OR IMPLIED, INCLUDING, WITH LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OF CONFORMITY TO MODELS OR SAMPLES; (b) does not apply to any Goods which have been (i) repaired, altered or improperly installed; (ii) subjected to improper use or storage, (iii) used or incorporated with other materials or equipment, after buyer or anyone using the Goods has, or reasonably should have, knowledge of any defect or nonconformance of the Goods; or (iv) manufactured, fabricated or assembled by anyone other than Seller, (c) shall not be effective unless buyer notifies Seller in writing of any purported defect or nonconformance with (thirty days) after Buyer discovers or should have reasonably discovered such purported defect or nonconformance; and (d) shall only extend to Buyer and not to any subsequent buyers or users of the Goods. Buyer shall provide Seller access to the Goods as to which Buyer claims a purported defect or nonconformance, upon request by Seller, buyer shall, at its own risk and expense, promptly return the Goods in question to Seller's Plant.