



*Installation, Operation, and
Maintenance Manual*

***Welker® Instrument Supply Pressure
System
Model
WIC***

The information in this manual has been carefully checked for accuracy and is intended to be used as a guide for the installation, operation, and maintenance of the Welker equipment described above. Correct operating and/or installation techniques, however, are the responsibility of the end user. Welker reserves the right to make changes to this and all products in order to improve performance and reliability.

13839 West Bellfort
Sugar Land, TX 77498-1671
(281) 491-2331 - Office
(800) 776-7267 - USA Only
(281) 491-8344 - Fax
<http://www.welkereng.com>

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SPECIFICATIONS

1. GENERAL

1.1 Introduction

We appreciate your business and your choice of Welker products. The installation, operation, and maintenance liability for this product becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manual* prior to installation and operation of this equipment is required for a full understanding of its application and performance prior to use. If you have any questions, please call 1-800-776-7267 in the USA or 1-281-491-2331.

The following procedures have been written for use with standard Welker parts and equipment. Assemblies that have been modified may have additional requirements and specifications that are not listed in this manual.

Notes, Warnings, and Cautions



NOTE

Notes emphasize information or set it off from the surrounding text.



CAUTION

Caution messages appear before procedures that, if not observed, could result in damage to equipment.



WARNING

Warnings alert users to a specific procedure or practice that, if not followed correctly, could cause personal injury.

1.2 Description of Product

The *Welker® Instrument Supply Pressure System (WIC)* is designed to heat and regulate line pressure gas for use with your pneumatic instruments. The standard unit is comprised of two (2) pressure-regulated volume chambers in a column-mounted system. Optional heaters, materials, filter desiccants, and regulators can be designed into the system.



SPECIFICATIONS

1.3 Specifications

N NOTE

The specifications listed in this section are generalized for this equipment. Welker can modify the equipment according to your company's needs. However, please note that **the specifications may vary depending on the customization of your product.**

Table 1

Specifications	
Column Height:	71"
Foot:	10" square base flange
MAOP:	1,500 psig (standard)
Inlet port:	1/4" NPT
Outlet port:	1/4" NPT
Column Body:	Carbon Steel

1.4 System Components

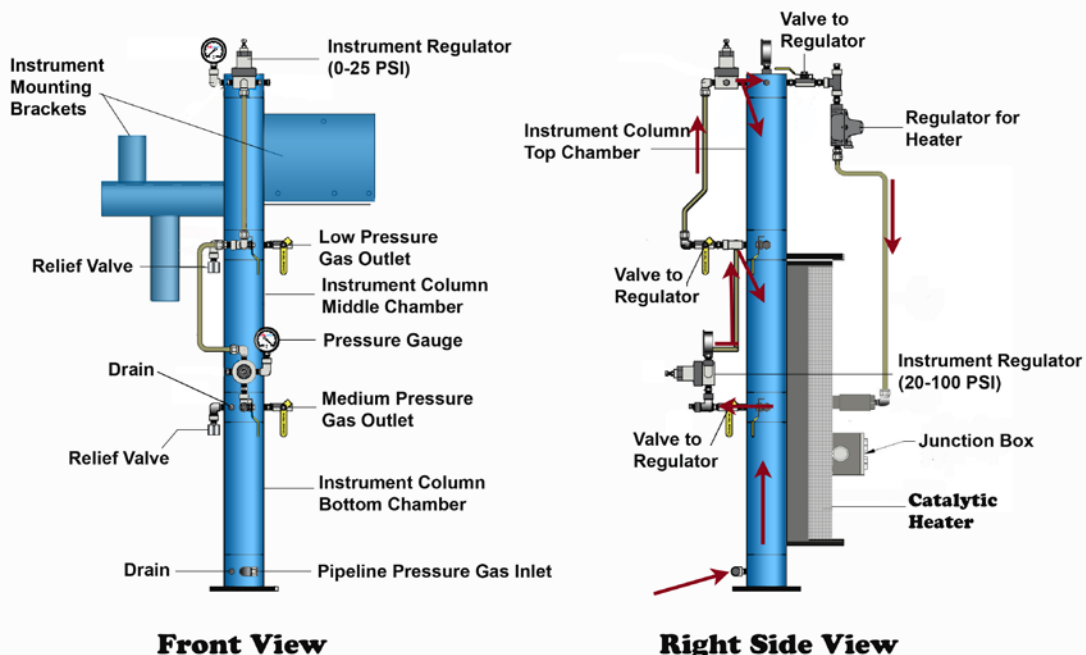
- Three (3) Chambered Instrument Column
- Instrument regulator (20-100 PSI)
- Instrument regulator (0-25 PSI)
- Generant relief valve (Set at 35 PSI)
- Generant relief valve (Set at 135 PSI)
- Pressure gauges
- Regulator for heater
- Catalytic heater
- Needle valves and associated piping, fittings, etc.

SPECIFICATIONS

1.5 Principle of Operations

1. The bottom chamber of the instrument column is filled with gas from the pipeline, at pipeline pressure, through the gas inlet.
2. Once the bottom chamber is filled with gas, the gas will pass through the first instrument regulator, which will be set at approximately 100 PSI. This will reduce the gas pressure from pipeline pressure to 100 PSI.
3. The instrument regulator is equipped with a relief valve that will be set at 130 PSI, and will release gas should the instrument regulator fail to work. (This relief valve is used as a safety measure, so the equipment will be protected from high pressure.)
4. The gas will then begin to fill the middle chamber at the intermediate pressure of 100 PSI. This gas may be used to supply pneumatic instrumentation at 100 psi through the medium pressure gas outlet.
5. Once the middle chamber is filled with gas, the gas will pass through the second instrument regulator, which will be set at approximately 25 PSI. This will reduce the gas pressure from 100 PSI to 25 PSI.
6. The instrument regulator is equipped with a relief valve that will be set at 35 PSI, and will release gas should the instrument regulator fail to work. (This relief valve is used as a safety measure, so the equipment will be protected from high pressure.)
7. The gas will then begin to fill the top chamber at the low pressure of 25 PSI. This gas may be used to supply pneumatic instrumentation at 25 psi through the low pressure gas outlet.
8. Once the top chamber is filled with gas, the low pressure gas will also be used to supply pressure for the catalytic heater. First the low pressure gas will pass through a regulator for the catalytic heater, and then the gas will be used to power the catalytic heater. The heater will heat the entire system, and keep the equipment and pressure reduction supply from the possibility of freezing.

Welker® Instrument Supply Pressure System



INSTALLATION & OPERATIONS

2. INSTALLATION INSTRUCTIONS

2.1 General

After unpacking the unit, check it for compliance and for any damages that may have occurred during shipment.

N NOTE

Claims for damages caused during shipping must be initiated by the receiver and directed to the shipping carrier. Welker is not responsible for any damages caused from mishandling by the shipping company.

N NOTE

When sealing fittings with PTFE tape, refer to the proper sealing instructions for the tape used.

2.2 Installation & Start-Up Instructions

Welker[®] Instrument Supply Pressure System

N NOTE

The above equipment will ship from the manufacturer, Welker, panel mounted and “hard tube” connected and ready for installation.

1. Bolt the bottom metal base plate to a level surface.
2. Make sure all valves on the system are closed.
3. Connect the electrical wiring to the catalytic heater according to manufacturer recommendations.
4. Tube the pipeline pressure gas inlet supply to the pipeline.
5. Apply pipeline pressure to the system.
6. Open the valve to the instrument regulator.
7. Set the instrument regulator (IR4SS) to desired pressure setting:
 - Loosen or tighten the adjusting screw until the gauge reads the desired pressure for outlet (See Figure 1&2).



Figure 1
Setting the
Instrument
Regulator

INSTALLATION & OPERATIONS

2.2 Installation & Start-Up Instructions (Continued)

- Tighten the jam nut on the adjusting screw to secure it into place.
 - The regulator is now in operation.
8. Allow the middle chamber to fill with gas.
 9. Open the valve to the low pressure regulator.
 10. Follow step 7 of this section to set the low pressure instrument regulator.
 11. Allow the top chamber to fill with gas.
 12. Open the valve to the regulator for the heater.
 13. Set the regulator to the heater. *(Refer to the manufacturer's recommended procedures for setting the regulator to the heater).*
 14. Actuate the catalytic heater. *(Refer to the manufacturer's recommended procedures for start-up procedures of the catalytic heater).*
 15. Connect desired pneumatic instrument to be supplied with 100 PSI to the medium pressure gas outlet.
 16. Open the medium pressure gas outlet valve.
 17. Connect the desired pneumatic instrument to be supplied with 25 PSI to the low pressure gas outlet.
 18. Open the low pressure gas outlet valve.
 19. Check the system for leaks.
 20. The system is now in operation.

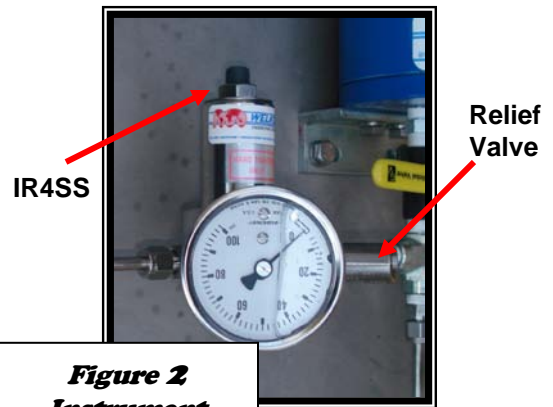


Figure 2
Instrument
Regulator &
Relief Valve

MAINTENANCE

3. MAINTENANCE

3.1 General

Prior to maintenance or disassembly of the unit, it is advisable to have a repair kit handy for the system in case of unexpected wear or faulty seals. All maintenance and cleaning of the unit should be done on a smooth, clean surface.

N NOTE

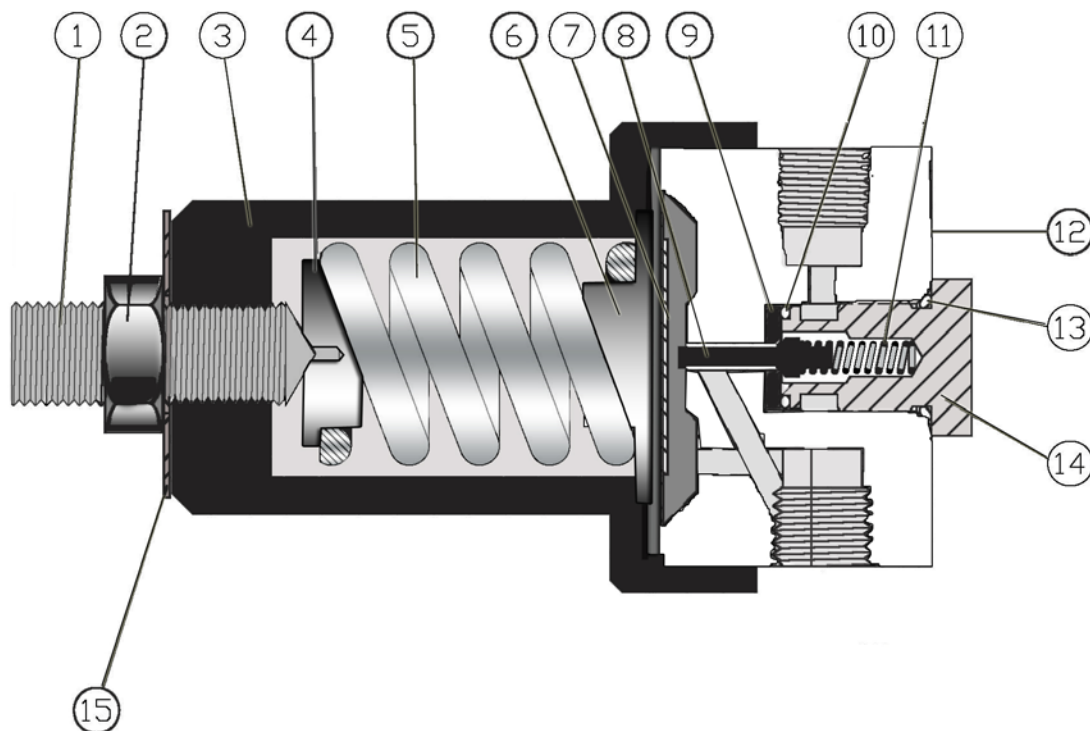
We recommend that the unit have annual maintenance under normal operating conditions. In the case of severe service, dirty conditions, excessive cycling usage, or other unique applications that may subject the equipment to unpredictable circumstances, a more frequent maintenance schedule may be appropriate.

3.2 System Maintenance

1. Follow instructions in Section 3.3 for maintenance of the instrument regulator.
2. Follow manufacture instructions for maintenance of the catalytic heater and the regulator for the heater.
3. Inspect all fittings, valves, and tubing, and check for leaks.
4. Reconnect all system components disassembled during maintenance procedures.
5. Proceed to step 2 in Section 2.2 for reinstallation and start-up procedures.

MAINTENANCE

3.3 Instrument Regulator (IR4SS Maintenance)



Part No.	Description	Part No.	Description
1	Adjusting Screw	9	Seat
2	Adjusting Nut	10	O-Ring
3	Spring Housing	11	Poppet Spring
4	Top Spring Guide	12	Body
5	Spring	13	Seal
6	Bottom Spring Guide	14	Flow Ring
7	Diaphragm Assembly	15	Spring Range Disk
8	Poppet		

MAINTENANCE

3.3 Instrument Regulator (Continued)

1. Turn off the inlet supply pressure to the regulator inlet.
2. Disconnect the inlet supply from the regulator inlet port.
3. Disconnect the instrument from the regulator outlet port
4. Loosen the adjusting nut (Part 2) on the adjusting screw (Part 1).
5. Loosen the adjusting screw to relieve tension on the spring (Part 5).
6. **Disassemble Diaphragm Assembly:**
 - a) Unscrew the spring housing (Part 3) and remove.
 - b) Remove the top spring guide (Part 4) and the spring (Part 5).
 - c) Remove the bottom spring guide (Part 6).
 - d) Remove the diaphragm assembly (Part 7). Inspect for wear, and replace if necessary.
 - e) Set the diaphragm back into place.
 - f) Set the bottom spring guide back into place on top of the diaphragm.
7. Set the spring (Part 5) back into place.
8. Set the top spring guide (Part 16) back into place on top of the spring.
9. Reattach the spring housing (Part 3) securely. Hand-tighten the housing.

Lower housing maintenance

10. Unscrew the flow ring (Part 14) from the regulator body (Part 12) (also see Figure 9).

Figure 9
Flow Ring



MAINTENANCE

3.3 Instrument Regulator (Continued)

11. Replace the seal (Part 13) on the flow ring.
12. Remove the poppet spring (Part 11) and the poppet (Part 8) (also see Figure 10).
13. Examine the poppet and poppet spring. Replace if necessary.
14. Use a pointed instrument to carefully pick the seat (Part 9) out of the body.
15. Examine the seat and replace if necessary.
16. Set the seat back into place.

N NOTE

Debris or scratches on either the poppet or seat will prevent positive shut-off of the regulator.

17. Guide the poppet into the seat.
18. Reattach the poppet spring and flow ring.
19. Tighten the flow ring securely.
20. The unit is now ready for reinstallation

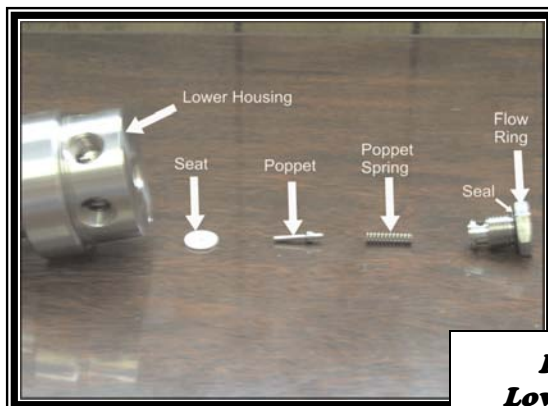


Figure 10
Lower Housing



13839 West Bellfort, Sugar Land, Texas 77498-1671

Phone: (281) 491-2331

Fax: (281) 491-8344

Toll Free: (800) 776-7267

Web Page: www.welkereng.com