Installation, Operation, and Maintenance Manual

Welker® Instrument Air Supply Panel

Model

IASP

Drawing No.: LS3135
Manual No.: IOM-148

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.

This manual is intended to be used as a basic installation and operation guide for the Welker® Instrument Air Supply Panel, *IASP*. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is given in the Appendix section of this manual.

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Section 1:

SPECIFICATIONS

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 (USA) or 1-281-491-2331.

Notes, Cautions, and Warnings

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

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

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

*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.

1.2 DESCRIPTION OF PRODUCT

The Welker® Instrument Air Supply Panel (*IASP*) is designed to be used as part of a complete sampling system, which should include a sample probe and sample pump or a sampler, an instrument regulator with relief valve and gauge downstream of the 4-way electronic solenoid valve actuator, and a constant pressure sample cylinder.

The IASP provides a simple and convenient way to actuate a variety of samplers. A pneumatically-actuated sample pump and probe or sampler may be connected to the IASP and to the product line. Actuation at the panel will pneumatically operate the pump to collect product from the product line and pump the sample into the sample container.

Used as part of a complete sampling system, the IASP will provide the user with an accurate and representative sample of product as presented to the pump.

Welker® may custom design the Instrument Air Supply Panel to suit the particular application and specifications of each customer and to connect to a variety of samplers and sample collection cylinders.

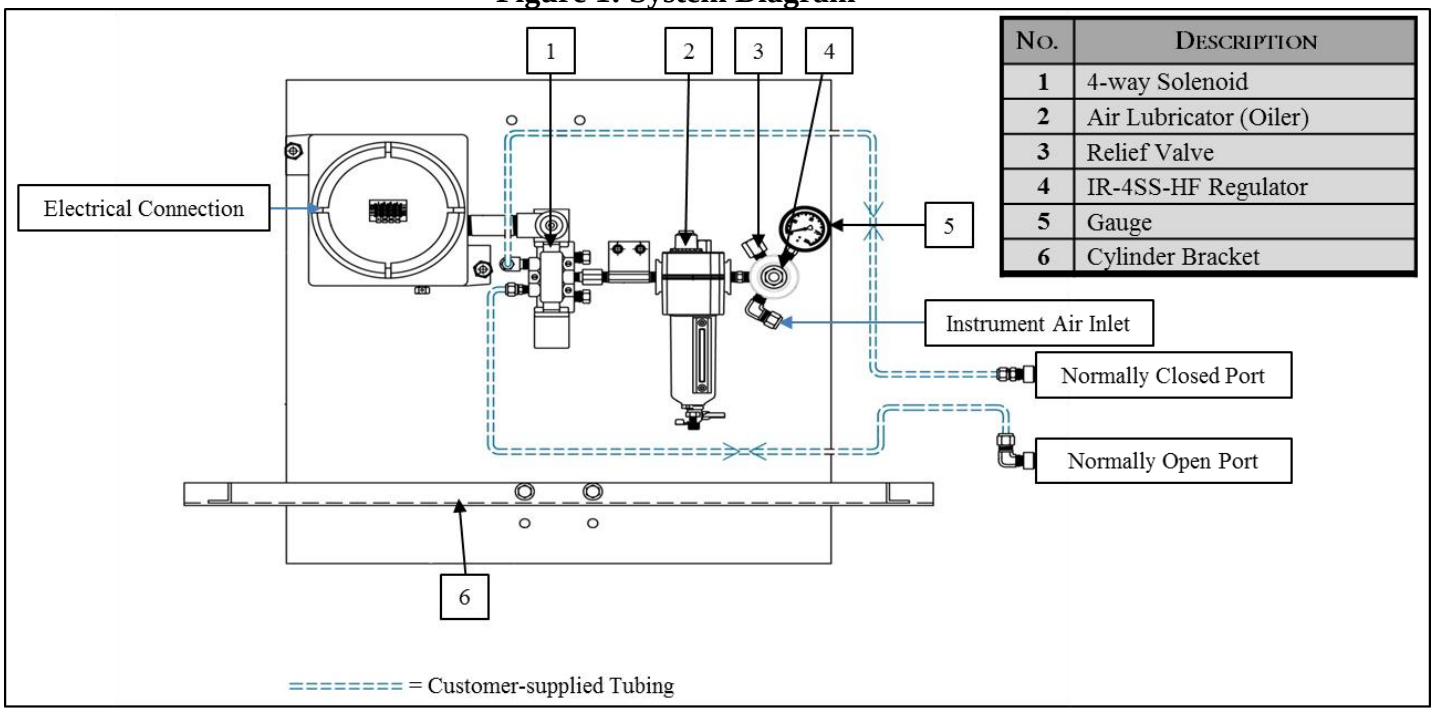
1.3 SPECIFICATIONS

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: System Specifications	
Products Sampled	Gas or Liquid
Materials of Construction	316 Stainless Steel, Viton®, PTFE
Connections	¼" and ⅛" NPT
Maximum Allowable Operating Pressure	285 psi @ -20° to 100°F (20 bar @ -29° to 38°C)
Instrument Regulator Maximum Inlet Pressure	3600 psi (248 bar)
Instrument Regulator Outlet Range	20-100 psi (1.4 to 6.9 bar)

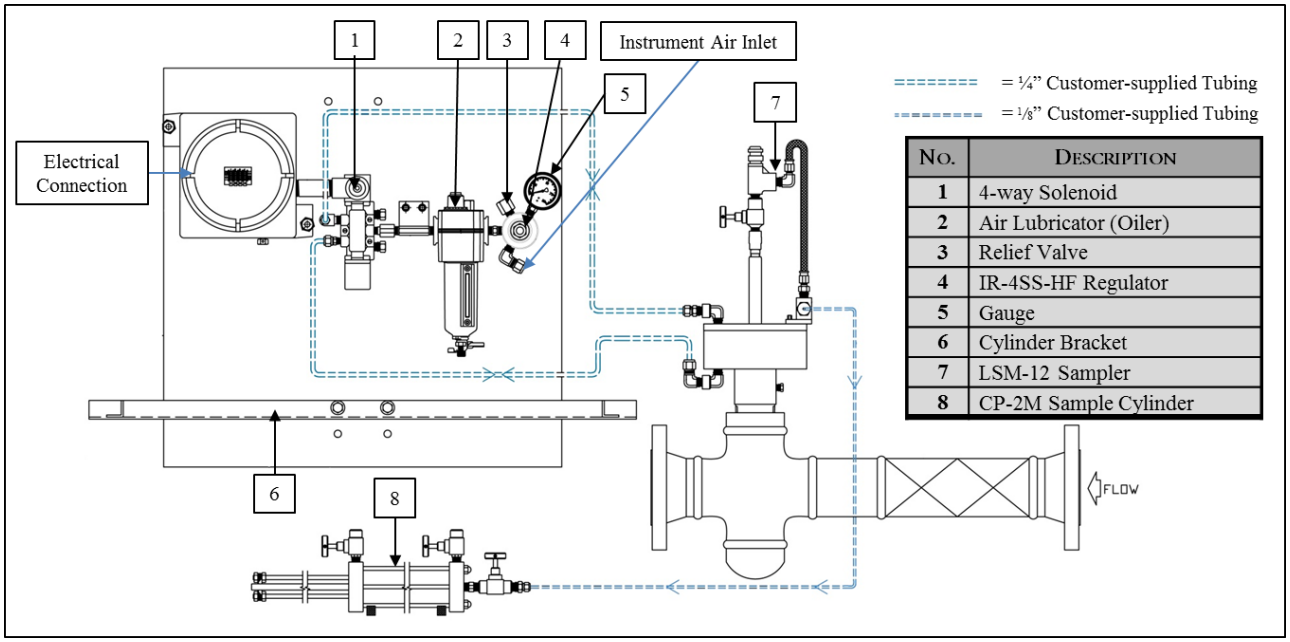
1.4 SYSTEM DIAGRAMS

Figure 1: System Diagram



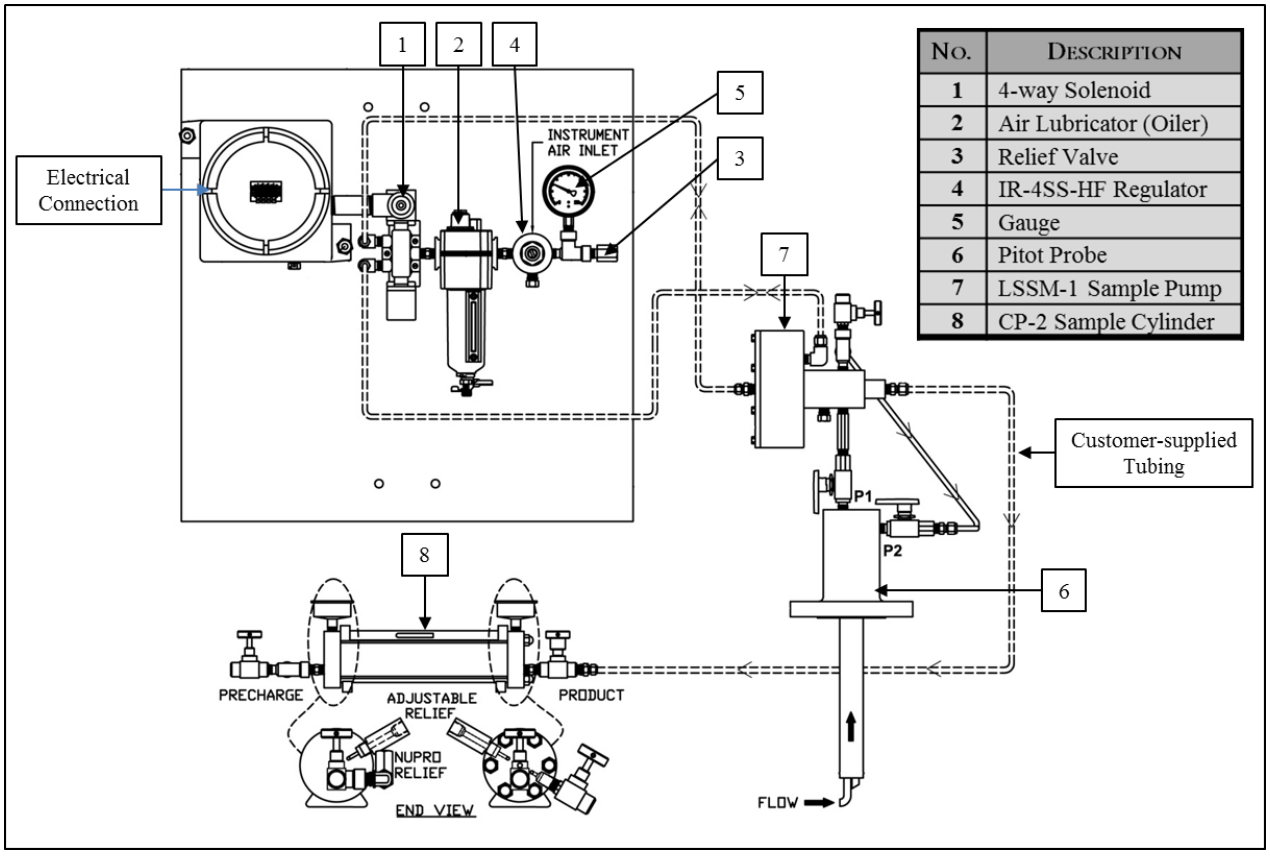
No.	Description
1	4-way Solenoid
2	Air Lubricator (Oiler)
3	Relief Valve
4	IR-4SS-HF Regulator
5	Gauge
6	Cylinder Bracket

Figure 2: Recommended General Arrangement (shown with Isokinetic Sampler)



No.	Description
1	4-way Solenoid
2	Air Lubricator (Oiler)
3	Relief Valve
4	IR-4SS-HF Regulator
5	Gauge
6	Cylinder Bracket
7	LSM-12 Sampler
8	CP-2M Sample Cylinder

Figure 3: Recommended General Arrangement (shown with Sample Pump and Probe)



No.	Description
1	4-way Solenoid
2	Air Lubricator (Oiler)
3	Relief Valve
4	IR-4SS-HF Regulator
5	Gauge
6	Pitot Probe
7	LSSM-1 Sample Pump
8	CP-2 Sample Cylinder

Section 2:

INSTALLATION & OPERATIONS

2.1 BEFORE YOU BEGIN

After unpacking the unit, check the equipment for compliance and for any damage that may have occurred during shipment. **Claims for damage caused during shipping must be initiated by the receiver and directed to the shipping carrier.** Welker® is not responsible for any damage caused by mishandling by the shipping company.

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

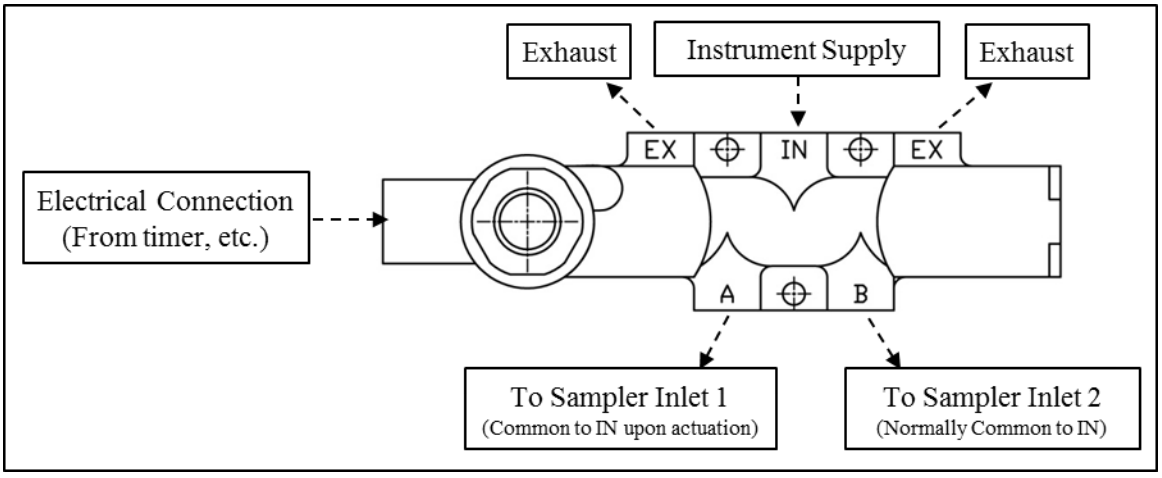
2.2 INSTALLATION

1. Mount a probe onto the pipeline flange connection. Refer to the *Installation, Operation, and Maintenance Manual* for the probe for additional installation and connection instructions.

Welker® recommends the probe be connected to the side of the pipe and inserted into the center one-third (1/3) of the pipeline in a location where the product is well-mixed and will yield an accurate and representative sample.

2. Mount the panel as near as possible to the probe and sample pump, using U-bolts to connect the panel to the pipeline.
3. If the panel and cylinder bracket are separate, mount the cylinder bracket as near as possible to the panel, using U-bolts to connect the bracket to the pipeline. This will not be necessary if the panel is supplied with an attached cylinder bracket.
4. Connect the instrument air supply (e.g., clean, dry instrument air) to the 4-way solenoid on the panel. The instrument supply port of the solenoid should be normally common with solenoid outlet that sets the sampler in the Normally Open position.

Figure 4: Solenoid Connections



5. Set the instrument supply to at least 30 to 40 psi.
6. Connect all customer-supplied tubing as shown in Figure 1, if applicable.
7. Connect any necessary electrical devices (e.g., RTU, flow computer, timer, totalizer, etc.) to the 4-way solenoid at the electrical box (*Figure 1*). Refer to the *Installation, Operation, and*

Maintenance Manual for the appropriate electrical device(s) for any additional installation or set-up instructions.

For this manual, the term "electrical control" will be used to refer to the flow computer, timer, or other signal control system used by the customer to activate and operate the solenoid.

8. Safely ground the equipment at the electrical box.
9. Set the electrical control to actuate using the following calculations (*Table 2*) to fill the cylinder to 80%.

Table 2: Actuation Equations

Equation 1: Number of Samples Needed

$$Number\ of\ Samples\ Needed\ to\ Fill\ to\ 80\% = \frac{Cylinder\ Size\ (cc) * 0.8}{0.5}$$

Equation 2: Proportional-to-Flow

$$Amount\ of\ Flow\ Between\ Sample\ Grabs = \frac{Total\ Volume\ of\ Flow\ During\ Sample\ Period}{Number\ of\ Samples\ Needed\ (Eq.1)}$$

Equation 3: Samples over Time

$$Time\ Between\ Sample\ Grabs = \frac{Total\ Time\ in\ Sample\ Period}{Number\ of\ Samples\ Needed\ (Eq.1)}$$

2.3 Operations

1. Begin with all valves on the system closed.
2. Place a pre-charged cylinder securely onto the cylinder bracket. The cylinder should be pre-charged to at least pipeline pressure. Refer to the *Installation, Operation, and Maintenance Manual* for the cylinder for further instructions on pre-charging and operating the cylinder.
3. Open the necessary valves on the sampler or sample pump to begin product flow through the system. Refer to the *Installation, Operation, and Maintenance Manual* for the sampler or sample pump for detailed operating instructions.
4. Open the product inlet valve on the sample cylinder.
5. Actuate the sampler or sample pump several times by energizing the solenoid valve. Check all connections carefully for leaks and repair as necessary. Ensure product enters the sample cylinder upon each actuation.
6. With product flowing, open the cylinder purge valve. Allow all air to be purged from the cylinder. When product becomes visible, close the cylinder purge valve.
7. Activate the instrument air supply.
8. Activate the electrical control.
9. Actuate the electrical control to fill the cylinder to 80%.

Never fill the cylinder to above 80% capacity. Allow at least 20% room for product expansion should the cylinder be exposed to increased temperatures.

10. Deactivate the electrical control when the cylinder has been filled to 80%.
11. Close the inlet valve on the sample cylinder.
12. Close the necessary valves to cease product flow-through.
13. Relieve any pressure remaining in the system by opening all valves downstream of the isolation valve or other valve(s) closed in step 12.
14. Disconnect the cylinder and remove it from the cylinder bracket. Label and prepare the cylinder for transportation and/or laboratory analysis according to company policy.
15. Refer to the *Installation, Operation, and Maintenance Manual* for the cylinder for further instructions on mixing, transporting, and/or cleaning the cylinder.

Section 3:

MAINTENANCE

3.1 BEFORE YOU BEGIN

1. **Welker® recommends that the unit have annual maintenance under normal operating conditions.** In cases of severe service, dirty conditions, excessive usage, or other unique applications that may lead to excess wear on the unit, a more frequent maintenance schedule may be appropriate.
2. Prior to maintenance or disassembly of the unit, it is advisable to have a repair kit available for repairs of the system in case of unexpected wear or faulty seals.

New seals supplied in spare parts kits are not lubricated. They should be lightly coated with lubrication grease before installation. Welker® recommends Dow Corning 111 [DC 111] or an equivalent lubricant for use with this unit.

3. All maintenance and cleaning of the unit should be done on a smooth, clean surface.

3.2 MAINTENANCE

1. During system operation, check for leaks and repair as necessary.
2. Prior to performing any maintenance on the system, ensure that all valves are closed.
3. Refer to the *Installation, Operation, and Maintenance Manual* for the Norgren® Air Lubricator to perform any routine or necessary maintenance on the air lubricator/oiler. Oil may need to be added routinely to ensure the oiler continues functioning properly.
4. Refer to the *Installation, Operation, and Maintenance Manual* for the Versa® 4-Way Solenoid to perform any routine or necessary maintenance on the solenoid. Oil from the oiler should reduce wear on the solenoid, resulting in a less frequent maintenance schedule for the solenoid.
5. Refer to the *Installation, Operation, and Maintenance Manual* for the regulator to perform any routine or necessary maintenance on the regulator.
6. Refer to the *Installation, Operation, and Maintenance Manual* for the appropriate sampler or sample pump to perform any routine or necessary maintenance on the sampler or sample pump.
7. Refer to the *Installation, Operation, and Maintenance Manual* for the appropriate sample cylinder to perform any routine or necessary maintenance on the sample cylinder.
8. Refer to the *Installation, Operation, and Maintenance Manual* for the probe (if applicable) to perform any routine or necessary maintenance on the probe.

APPENDIX

ATTACHED DOCUMENTS:

Welker® *Installation, Operation, and Maintenance* Manuals suggested for use with this unit:

- Relevant Sampler or Sample Pump with Probe
- Relevant Sample Cylinder
- Relevant Regulator

Other *Installation, Operation, and Maintenance* Manuals suggested for use with this unit:

- L73M, L73C: Norgren® Air Lubricator (Oiler) (Welker® IOM-V013)
- B, V, or T Series: Versa® Solenoid (Welker® IOM-V025 or IOM-V026)

Welker® drawings and schematics suggested for use with this unit:

- System Drawing with Suggested Arrangement: LS3135

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