WELKER

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER® TANKER ODORIZER

OdorEyes by WELKER

MODEL
T0

DRAWING NUMBER
0E125SYS.2

MANUAL NUMBER
IOM-170

REVISION
Rev. A, 10/17/2023

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IMPORTANT SAFETY INFORMATION
READ ALL INSTRUCTIONS

Notes emphasize information and/or provide additional information to assist the user.

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

Warning messages appear before procedures that could result in personal injury if not observed.

This manual is intended to be used as a basic installation and operation guide for the Welker® OdorEyes® Tanker Odorizer, TO. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is provided in Appendix A of this manual.

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® OdorEyes® equipment described in this manual. Correct installation and operation, however, are the responsibility of the end user. Welker® reserves the right to make changes to this manual and all products in order to improve performance and reliability.

BEFORE YOU BEGIN

Read these instructions completely and carefully.

IMPORTANT – Save these instructions for local inspector's use.

IMPORTANT – Observe all governing codes and ordinances.

Note to Installer – Leave these instructions with the end user.

Note to End User – Keep these instructions for future reference.

Installation of this Tanker Odorizer is of a mechanical nature.

Proper installation is the responsibility of the installer. Product failure due to improper installation is not covered under the warranty.

If you received a damaged Tanker Odorizer, please contact a Welker® representative immediately.

Phone: 281.491.2331
Address: 13839 West Bellfort Street
Sugar Land, TX 77498

SECTION 1: PRODUCT INFORMATION

1.1 Introduction

We appreciate your business and your choice of Welker® products. The installation, operation, and maintenance liability for this equipment becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance* (IOM) *Manuals* 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 Welker® at 1-281-491-2331.

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

1.2 Product Description

The Welker® OdorEyes® *TO* Tanker Odorizer is designed to inject a known volume of liquid odorant into the customer vessel.

This skid-mounted manual injection system is composed of a Welker® SSO-8 Sample/Injection Pump and an odorant supply tank. When the user pushes and holds the collection push-button valve, the SSO-8 collects the set volume of liquid odorant from the odorant supply tank. Pushing and holding the injection push-button valve injects the collected liquid odorant into the customer vessel. Product is odorized as it is added to the customer vessel.

To prolong the operational life of the SSO-8, the Welker® F-9 Filter removes particles from the liquid odorant and the Welker® F-5 Filter Dryer conditions the pneumatic supply.

Each odorant supply tank is equipped with a tank fill inlet, vent port, blanket pressure inlet, and level gauge. Every odorant supply tank comes with 110% containment that is sloped to the drain port for easy draining.

Welker® may custom design the TO to suit the particular application and specifications of each customer.

1.3 Safety Warning

Wherever hazardous gases or vapor-producing liquids are used, transported, or stored, the potential for an accidental leak exists. Continuous monitoring of these hazards is essential to ensure personnel safety.

1.4 Specifications

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

Table 1: TO Specifications	
Application	Manual Liquid Odorant Injection
Materials of Construction	**SSO-8:** 316/316L Stainless Steel, Anodized Aluminum, Kalrez®, and PTFE **Tank:** Powder-Coated Carbon Steel
Maximum Allowable Operating Pressure	**Tank:** 600 psig @ -20 °F to 100 °F (*41 barg @ -28 °C to 37 °C*)
Pressure Limits: SSO-8	**Actuation:** 30–400 psig (2–27 *barg*) **Injection:** 1050 psig (72 *barg*) **Power End:** 400 psig (27 *barg*)
Connections	**Blanket Pressure Inlet:** ¼" FNPT **Containment Drain:** 1" **F-5 Drain:** ¼" FNPT **F-9 Drain:** ¼" FNPT **Odorant Tank Fill Valve:** ¼" FNPT **Odorant Outlet:** ½" FNPT **Pneumatic Supply Inlet:** ¼" FNPT **Relief Outlet:** ½" FNPT (2 Places) **Vent:** ½" FNPT
Nominal Filter Rating	**F-5:** 3 Micron
Utility Requirement	Pneumatic Supply to Operate SSO-8 Pneumatic Supply for Blanket Pressure
Volume	**Injection Volume:** 1000 cc **Odorant Supply Tank:** 60 US Gallons
Features	Dip-Tape Visual Level Indicator Regulator for Blanket Pressure Supply Regulator for Pneumatic Supply Skid With 110% Containment Welker® F-5 Filter Dryer for Pneumatic Supply Welker® F-9 Filter for Odorant Supply

1.5 Equipment Diagrams

Figure 1: TO Connections Diagram

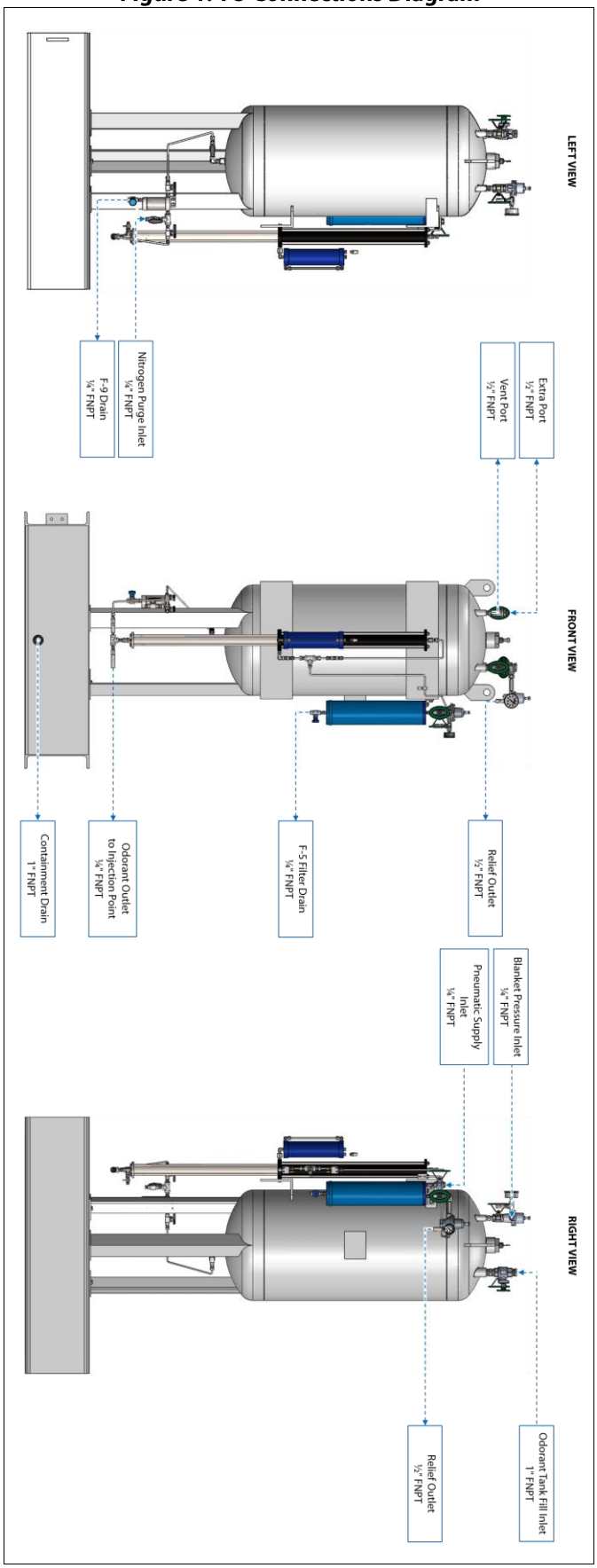
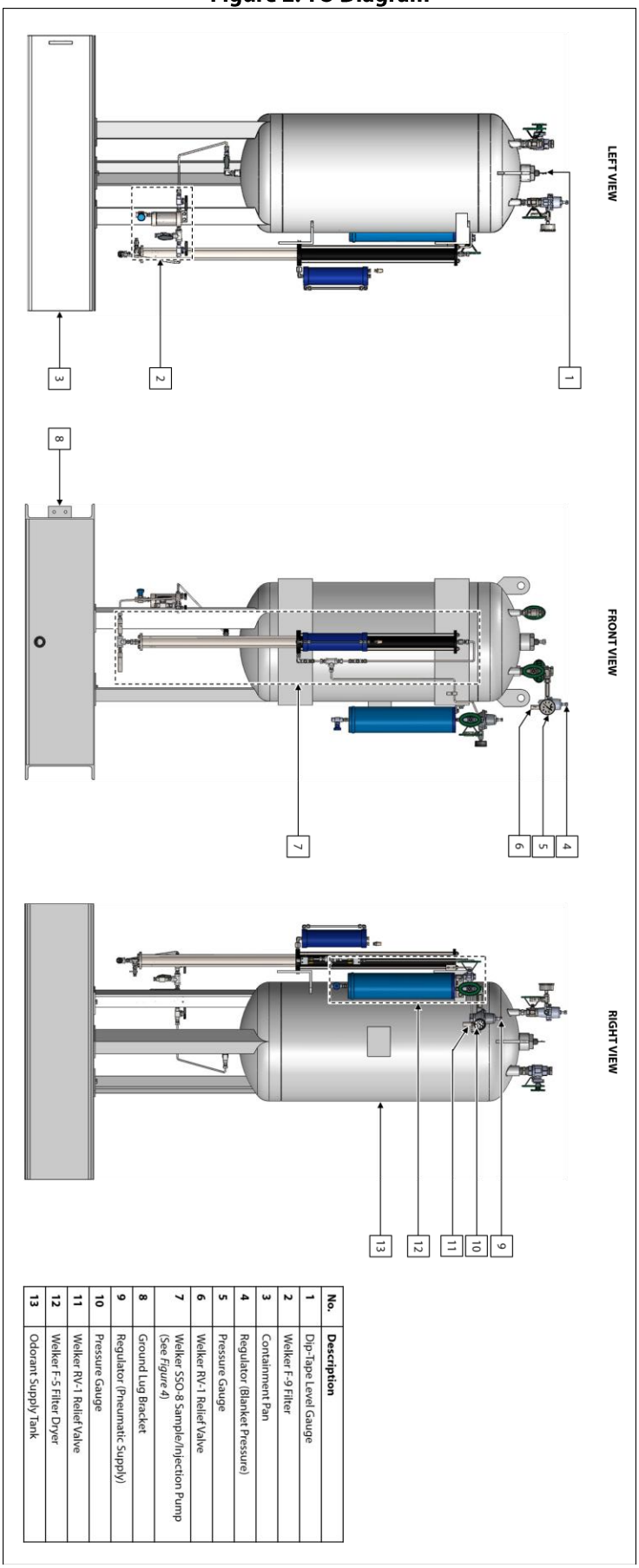
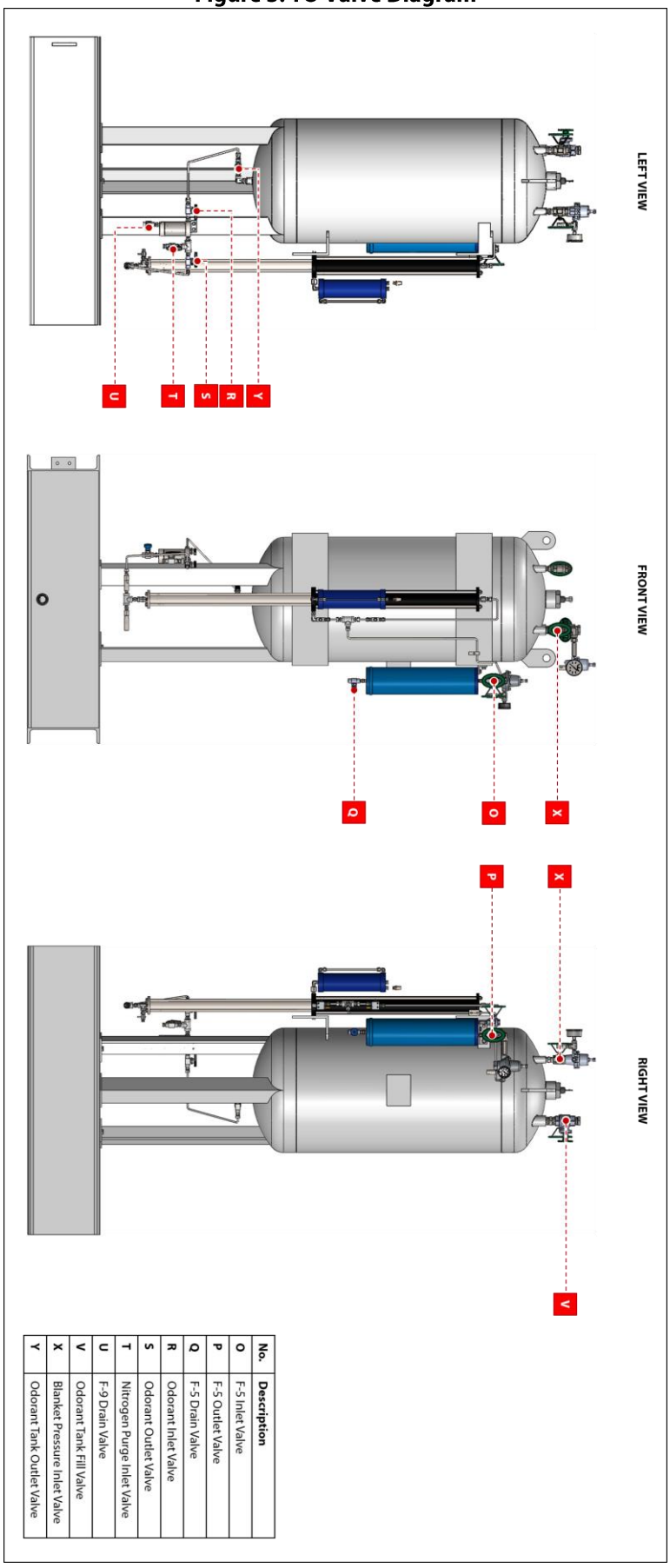


Figure 2: TO Diagram



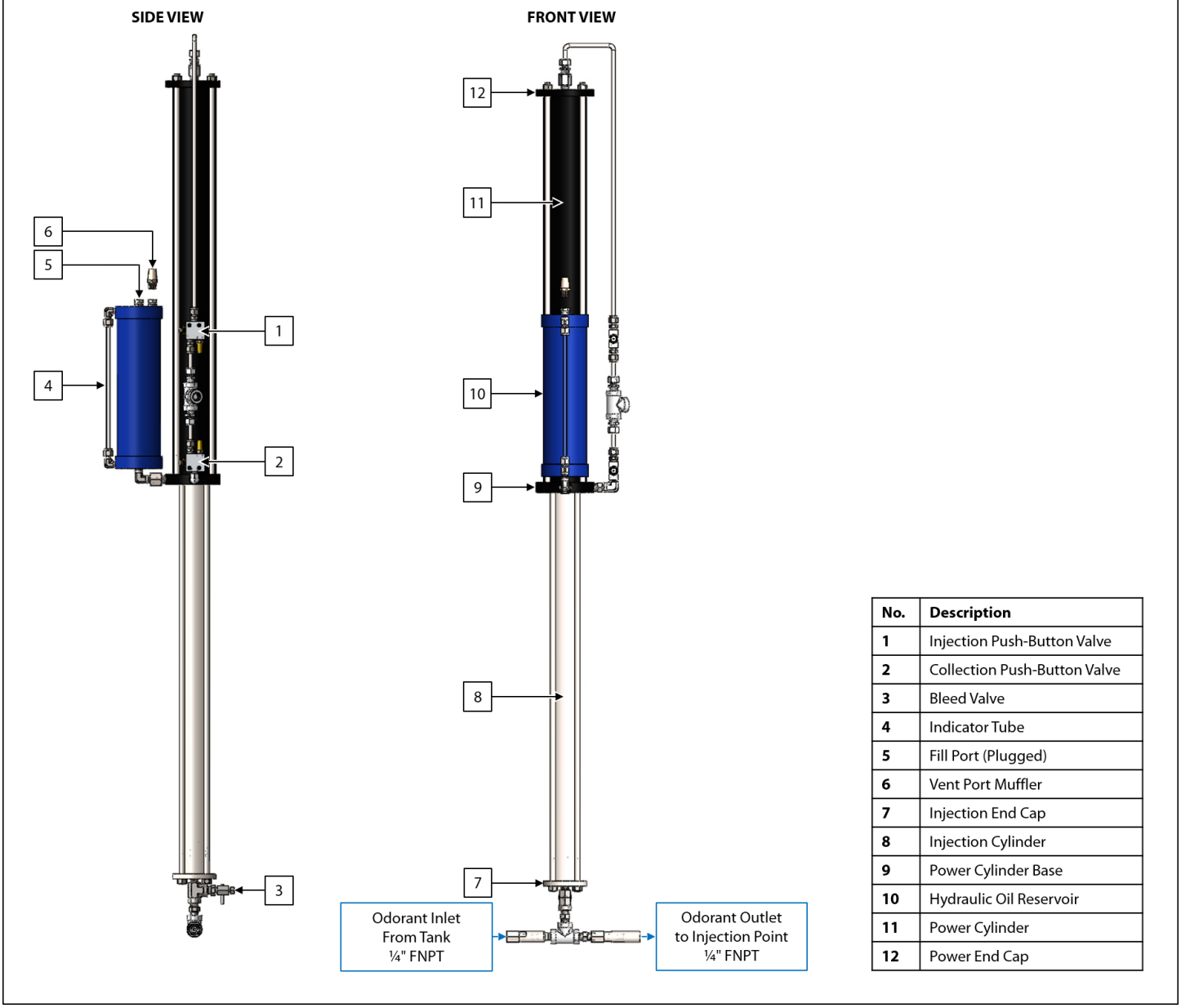
No.	Description
1	Dip-Tape Level Gauge
2	Welker F-9 Filter
3	Containment Pan
4	Regulator (Blanket Pressure)
5	Pressure Gauge
6	Welker RV-1 Relief Valve
7	Welker SSO-8 Sample/Injection Pump (See *Figure 4*)
8	Ground Lug Bracket
9	Regulator (Pneumatic Supply)
10	Pressure Gauge
11	Welker RV-1 Relief Valve
12	Welker F-5 Filter Dryer
13	Odorant Supply Tank

Figure 3: TO Valve Diagram



No.	Description
O	F-5 Inlet Valve
P	F-5 Outlet Valve
Q	F-5 Drain Valve
R	Odorant Inlet Valve
S	Odorant Outlet Valve
T	Nitrogen Purge Inlet Valve
U	F-9 Drain Valve
V	Odorant Tank Fill Valve
X	Blanket Pressure Inlet Valve
Y	Odorant Tank Outlet Valve

Figure 4: Welker® SSO-8 Sample/Injection Pump Diagram



No.	Description
1	Injection Push-Button Valve
2	Collection Push-Button Valve
3	Bleed Valve
4	Indicator Tube
5	Fill Port (Plugged)
6	Vent Port Muffler
7	Injection End Cap
8	Injection Cylinder
9	Power Cylinder Base
10	Hydraulic Oil Reservoir
11	Power Cylinder
12	Power End Cap

2.1 Before You Begin

After unpacking the unit, check the equipment for compliance and any damage that may have occurred during shipment. Immediately contact a Welker® representative if you received damaged equipment.

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

2.2 Installation

System Skid

1. Mount the skid to a flat, level surface, such as a concrete slab.
2. Connect ground wires to the ground lugs on the ground lug bracket to safely ground the system (*Figure 2*).

System Connections

3. As necessary, remove the plug from the hydraulic oil reservoir on the Welker® SSO-8 Sample/Injection Pump and install a muffler in its place (*Figure 4*).
4. Using customer-supplied ¼" tubing, connect from the odorant outlet on the SSO-8 to the injection point (*Figure 1*).

Welker® recommends using stainless steel tubing for all natural gas process lines, as plastic tubing can absorb odorant from the gas.

Welker® recommends installing a valve between the system odorant outlet and the injection point.

5. Using customer-supplied ¼" tubing, connect a customer-supplied unodorized natural gas or inert gas supply to the inlet of the Welker® F-5 Filter Dryer (*Figure 1*).
6. Using customer-supplied ¼" tubing, connect a customer-supplied regulated pneumatic supply to the blanket pressure inlet (*Figure 1*).

A minimum blanket pressure of 30 psig (*2 barg*) is required. Do not exceed the maximum allowable operating pressure of the odorant supply tank.

Welker® recommends a gauge be installed to monitor the pressure of the odorant supply tank.

7. Ensure that all valves on the system are closed.
8. Ensure that all fittings, connections, and bolts are tightened.

2.3 Start-Up Procedures

Odorant Supply Tank

1. Fill the odorant supply tank in accordance with company policy and procedure, taking care not to exceed 80% of the total volume of the supply tank.

> STOP
>
> Welker® recommends a gauge be installed to monitor the pressure of the odorant supply tank.

2. Check the odorant supply tank for leaks and repair as necessary.

Pneumatic Supply

3. Open F-5 inlet valve O and F-5 outlet valve P (*Figure 3*).
4. If customer pipeline pressure is known, the pneumatic supply regulator is factory-set to the setting required to stroke the SSO-8.

Blanket Pressure

5. Open blanket pressure inlet valve X (*Figure 3*).
6. Check the blanket pressure connection for leaks and repair as necessary.

Valve Configuration

7. Slowly open odorant inlet valve R and odorant outlet valve S (*Figure 3*).
8. Slowly open any valves between the system odorant outlet and the injection point.
9. Check for leaks and repair as necessary.

Purging the SSO-8

10. Connect a small hose to the bleed valve on the SSO-8 to collect any chemical that may appear at the purge outlet (*Figure 4*).

> STOP
>
> Take the necessary precautions and wear appropriate personal protective equipment (PPE) to protect from potential harm caused by exposure to the injection chemical.

11. To purge the line from the odorant supply to the inlet, press and hold the collection push-button valve (*Figure 4*). Once the hydraulic oil in the indicator tube has stopped rising and is near the top of the hydraulic oil reservoir, release the collection push-button valve.
12. Press and hold the injection push-button valve (*Figure 4*). Once the hydraulic oil in the indicator tube has stopped falling and is near the bottom of the hydraulic oil reservoir, release the injection push-button valve.
13. Check for leaks in the line from the odorant supply to the inlet and repair as necessary.
14. To purge the line from the outlet to the injection point, slightly open the bleed valve (*Figure 4*). As necessary, repeat steps 11–12 until all air has been purged from the line.
15. Check for leaks in the line from the SSO-8 outlet to the injection point and repair as necessary.
16. Visually verify the correct collection and injection of odorant by the SSO-8.

> Collection and injection of the SSO-8 can be visually verified by referring to:
>
> - a sight glass installed between the SSO-8 and the injection point,
> - a flow indicator or flow switch, or
> - the volume indicator on the connected container.

17. Check for leaks and repair as necessary.
18. Once the collection and injection of liquid odorant have been confirmed, the TO is operational.

2.4 Manual Operation

The SSO-8 should always be left in the inject position when not in use. In the inject position, the hydraulic oil level should be near the bottom of the hydraulic oil reservoir.

When operating the SSO-8, push-button valves must be pushed and held until the pump makes a complete stroke, as indicated by the hydraulic oil level in the indicator tube on the hydraulic oil reservoir.

1. Ensure that odorant tank outlet valve Y is open (*Figure 3*).
2. Press and hold the collection push-button valve (*Figure 4*). Once the hydraulic oil in the indicator tube has stopped rising and is near the top of the hydraulic oil reservoir, release the collection push-button valve.
3. Once the SSO-8 has collected the full volume of odorant, press and hold the injection push-button valve (*Figure 4*). Once the hydraulic oil in the indicator tube has stopped falling and is near the bottom of the hydraulic oil reservoir, release the injection push-button valve.
4. To continue manual injection, repeat steps 2–3.

SECTION 3: MAINTENANCE

3.1 Before You Begin

1. **Refer to *Appendix B, Maintenance Schedule,* for the itemized Welker® recommended maintenance schedule for the Tanker Odorizer.**
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 should be lightly lubricated before being installed to ease the installation of the seals and reduce the risk of damage when positioning them on parts. Wipe excess lubricant from the seals, as it may adversely affect analytical instrument results.

For sample-exposed seals, Welker® recommends non-hydrocarbon-based lubricants, such as Krytox®.
For non-sample-exposed seals, Welker® recommends either non-hydrocarbon-based lubricants or silicone-based lubricants, such as Molykote® 111.

After the seals are installed, the outer diameter of shafts and inner diameter of cylinders may be lubricated to allow smooth transition of parts.

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

3.2 Maintenance

1. During injection, monitor the system for leaks. If leaks are present, halt operation and repair as necessary.
2. Occasionally, a system component may need to be repaired or replaced for manufacturer recommended maintenance. To perform maintenance on components:
    a. Turn OFF all pneumatics to the system.
    b. Depressurize the system and close all valves.
    c. Disconnect the tubing and remove individual system components for maintenance.
    d. For complete and proper maintenance on individual system components, refer to their respective *Installation, Operation, and Maintenance* (IOM) *Manual*. A list of component *Installation, Operation, and Maintenance* (IOM) *Manuals* is available in *Appendix A, Referenced or Attached Documents,* in this manual.
    e. After performing necessary maintenance on system components, reconnect all instrument tubing.
    f. Reinstall the system according to the instructions in *Section 2.2, Installation,* and *Section 2.3, Start-Up Procedures*.

3.3 Troubleshooting Guidelines

Table 3: TO Troubleshooting Guidelines		
Issues	**Possible Causes**	**Solutions**
Odorant is not flowing through the SSO-8.	Odorant tank outlet valve Y is closed.	Ensure that odorant tank outlet valve Y is open (*Figure 3*).
The SSO-8 is not actuating properly.	The pneumatic supply may be too high, too low, or not operating.	Check the pneumatic supply to ensure that air is supplied at the appropriate pressure.
The SSO-8 is not collecting the correct injection volume.	Air is trapped in the SSO-8.	Open the bleed valve on the SSO-8 to remove any air from the pump.
Supply pressure from the F-5 has dropped.	The filter is clogged or filled with liquid.	Drain the F-5 to remove any accumulated free liquids. Refer to the *Installation, Operation, and Maintenance* (IOM) *Manual* for the F-5 for maintenance instructions.

APPENDIX A: REFERENCED OR ATTACHED DOCUMENTS

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

- IOM-033: Welker® RV-1, RV-2, RV-2CP, and RV-3 Relief Valves
- IOM-065: Welker® SSO-8 Sample/Injection Pump
- IOM-105: Welker® NV-1 and NV-2 Instrument Valves
- IOM-169: Welker® F-5 Filter Dryer
- IOM-213: Welker® F-9 and F-10 Filters

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

- Emerson Process Management Regulator Technologies, Inc. Fisher™ 67C Series Instrument Supply Regulators (Welker® IOM-V048)
- Emerson Process Management Regulator Technologies, Inc. Fisher™ 1301 Series High-Pressure Regulators Types 1301F and 1301G (Welker® IOM-V107)
- Inline Industries, Inc. 201F Ball Valve (Welker® IOM-V222)
- Solutions With Innovation L505 Visual Level Indicator Dip-Tape Visual Level Indicator (Welker® IOM-V037)
- Swagelok Company One-Piece Instrumentation Ball Valves 40G Series and 40 Series (Welker® IOM-V085)
- WIKA Instrument Corporation Bourdon Tube Pressure Gauges Type 232.53 and Type 233.53 (Welker® IOM-V171)

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

- System Drawing: OE125SYS.2

APPENDIX B: MAINTENANCE SCHEDULE

Welker® recommends keeping high-wear parts on hand and replacing these parts immediately when worn or damaged.

Refer to the *Installation, Operation, and Maintenance* (IOM) *Manual* for each component for maintenance instructions.

Table B1: TO Maintenance Schedule

Action	Weekly	Every 12 Months	As Necessary
Open F-5 drain valve Q to allow moisture to drain from the filter.	**X**		
Verify the pneumatic supply pressure and blanket pressure.		**X**	
Rebuild the SSO-8 using a Welker® repair kit. • **Replace the O-rings, back ups, U-cups, spring-energized seal, split ring, and retaining ring.** • **Examine the drive shaft for scratches or pits.** • **Examine the cylinders for scratches and pits.**		**X**	
Rebuild the F-5 using a Welker® repair kit. • **Replace the O-rings and filter cartridge.**		**X**	
Inspect the injection pump, tubing, valves, and fittings on the system for leaks.			**X**
Open F-9 drain valve U to allow moisture to drain from the filter.			**X**
Rebuild the F-9 using a Welker® repair kit. • **Replace the O-rings and filter element.**			**X**
Rebuild the RV-1s using a Welker® repair kit. • **Replace the O-rings.** • **Inspect the spring and ball for damage or wear.**			**X**
Maintain the regulators.			**X**

NOTES

13839 West Bellfort Street
Sugar Land, TX 77498
Phone: 281.491.2331

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