Installation, Operation & Maintenance Manual

Welker® Manual Sentry

Model
MLD-7

The information in this manual has been carefully checked for accuracy and is intended to be used as a guide to operations. 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 to improve performance and reliability.

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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 IO&M Manual prior to installation and operation of this equipment is required so that you have a full understanding of its application and performance prior to commencement of use. If you have any questions, please call 1-800-776-7267 or 1-281-491-2331 in the USA.

1.2 Description

The Welker Manual Sentry (MLD Series) is a manual liquid dump device with an integrated regulator. The Sentry has been designed for use in systems where it is desirable to remove excess liquids from a wet gas stream and to regulate the gas to instrumentation pressures.

The Sentry's regulator is non-relieving. Welker recommends that the regulator is used with a relief valve on the downstream side of the regulator body. Welker provides a variety of relief valves depending on application requirements. The Sentry's regulator incorporates a diaphragm for 0–100 psi outlet pressures, which allows for more sensitivity at the lower outlet pressures. Outlet spring ranges are available for the regulator as follows:

0 – 25 psi	Yellow
0 – 50 psi	Green
0 – 100 psi	Red

The Welker Manual Sentry provides the operator with the means to coalesce and manually dump free liquids off an instrument air or gas supply. It also provides coarse filtration of the supply.

The unit should always be mounted vertically as the high-density polyethylene float is attached to a pivot valve arm, which operates correctly only when the assembly is vertical.

The preferred location for installation of a Sentry is in a straight section of inlet piping before and below the instrumentation it supplies. This unit provides a ¾" NPT option port that allows the operator a means of adding a Thermal Dispersion Level Switch that would alarm the operator if the unit was not working properly.

1.3 Specifications

Products Sampled:	Natural Gas or other gaseous fluids compatible with the materials of construction
Materials of Construction:	316 stainless steel, Buna-N, Viton®
Length:	27" (68.6cm)
Diameter:	4 ½" (11.4cm)
Weight:	Approx. 50 lbs. (22.7kg)
Temperature range:	0 to 300°F (-17.7 to 149°C)
Maximum Working Pressure:	1,440 psi (99 bar)
Inlet Connection:	½" NPT
Outlet Connection:	¼" NPT
Area Classification:	Can be used in hazardous areas

2. INSTALLATION AND REMOVAL INSTRUCTIONS

2.1 General

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

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

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

2.2 Helpful Suggestions

2.2.1 The Sentry must always be mounted in the vertical position.

2.2.2 When maintenance is required on assemblies in the lower body, the operator can shut off the end user's inlet valve to the unit, relieve the pressure on the unit as noted in steps 3.1 through 3.5. Then, simply unscrew the bottom cap of the Sentry without removing it from its working location.

2.2.3 When maintenance is required on only the coalescer, the operator can shut off the end user's inlet valve to the unit, relieve pressure on the unit following steps 3.1 through 3.5. Then, remove the inlet piping and simply unscrew the coalescer from the coalescer port without removing the unit from its working location.

2.2.4 When maintenance is required on the regulator portion of the Sentry, the operator can close the end user's inlet valve to the unit, the regulator inlet valve and liquid purge valve, and proceed to relieve the pressure from the regulator portion of the unit by following steps 3.1 thru 3.5.

2.2.5 The fluid being removed may be dumped into an atmospheric container or it may be dumped, by gravity, into a sump. In order to accomplish the latter, it is necessary to have the Sentry's body above the point at which fluid will be dumped into the sump.

2.3 Installation Instructions

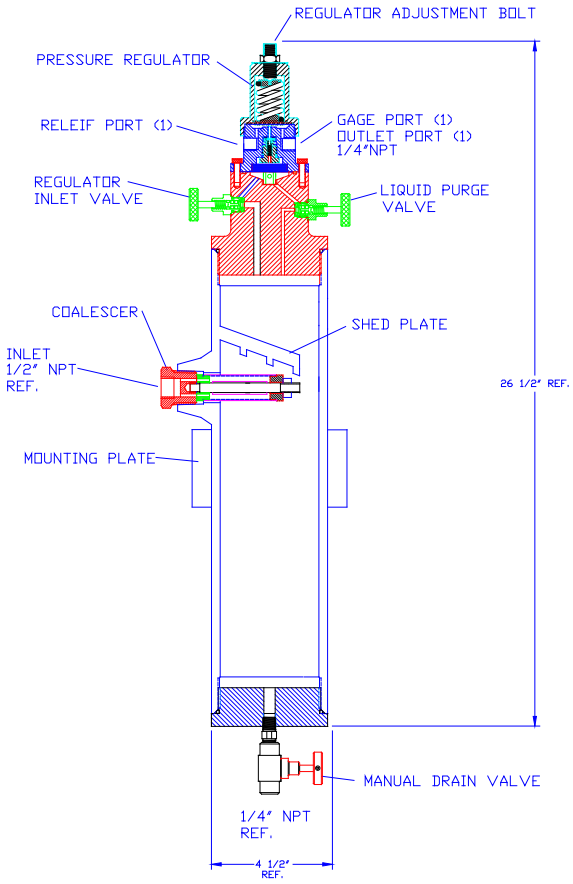

FIGURE 1

To place the unit in service, refer to Figures 1 and 2 and follow these procedures:

2.3.1 Install a relief valve and a gauge in the appropriate regulator ports.

2.3.2 There is a ¼" NPT ported valve in the base of the Welker Manual Sentry. The manual dump valve should be piped off to an appropriate container or sump location.

2.3.3 Loosen the jam nut on the regulator, and turn the adjustment screw in the counter-clockwise direction so that the regulator is closed (i.e., no setting or tension on the spring).

2.3.4 Connect tubing and associated valve from the regulator outlet port to downstream instrument.

2.3.5 Close the valve on tubing run connected to outlet of the regulator.

2.3.6 Connect the inlet tubing to the Sentry inlet.

2.3.7 **Slowly** open the pipeline isolation valve and allow pipeline pressure to the Sentry. **Slowly** pressurize the manual liquid dump body.

2.3.8 Open the regulator inlet valve and the liquid purge valve slowly. Check for leaks.

2.3.9 The outlet gauge of the regulator should read "0" psi, assuring that the regulator is not leaking internally.

2.3.10 Slowly turn the regulator adjusting screw clockwise to set the desired relief pressure.

2.3.11 Set the relief valve (see relief valve IOM).

2.3.12 Turn the adjusting screw in the counterclockwise direction to set the desired outlet pressure and tighten the jam nut.

2.3.13 Check the entire system for leaks.

2.3.14 The unit is now ready for service

IMPORTANT: The fluid being dumped may be dumped into an atmospheric container or it may be dumped, by gravity, into a sump. In order to accomplish the latter, it is necessary to have the dump body above the point that it will be dumped back into the sump.

CAPACITY: At atmospheric pressure, the capacity of the Sentry is approximately 15gph (the same would apply if dumping by gravity into a lower section of pipe) and 25gph when dumping from 500psi to atmospheric pressure.

2.4 Removal

2.4.1 The unit can be removed from the pipe stand or panel for ease of complete unit maintenance.

2.4.2 Close all inlet valves to the unit.

2.4.3 Loosen the regulator jam nut and turn the adjusting screw counterclockwise to close off the regulator.

2.4.4 Bleed any trapped pressure from the tubing between the instrumentation and regulator.

2.4.5 Disconnect the tubing line.

2.4.6 Slowly turn the regulator adjustment screw clockwise to bleed off the pressure in the Sentry's body.

NOTE: Relieve the pressure slowly. If the pressure is relieved too fast, it can cause the float to expand and possibly be damaged.

CAUTION: The regulator inlet valve and the liquid purge valve must be open to bleed the unit's pressure completely.

2.4.7 Open the valve on the manual drain port to drain all remaining free liquids.

2.4.8 Disconnect the inlet tubing to the Sentry.

2.4.9 Remove the unit and take it to a clean area for 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 encountering unexpected wear or faulty seals.

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.

New seals supplied in spare parts kits are not lubricated. They should be lightly coated with lubrication grease (silicone grease or other) before they are installed into the equipment. This helps in the installation of the seals while reducing the risk of damage when positioning them on the parts. After the seals are installed, some additional lubrication can be applied to shafts or cylinder inner diameters to allow smooth transition of parts.

Refer to Figures 1 and 2.

The following tools will be required for disassembly and maintenance:

- Strap Wrench
- 6"Adjustable Wrench
- 12" Adjustable Wrench
- Allen Key Wrench Set
- Screwdriver

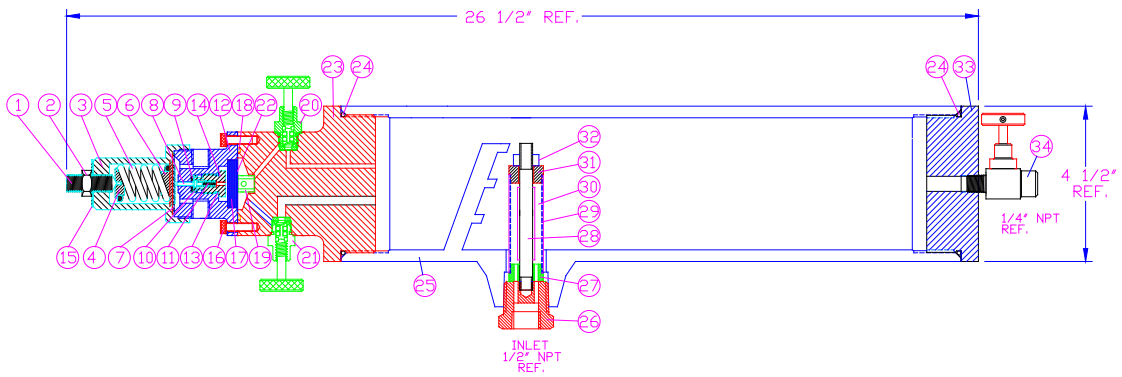

FIGURE 2

3.2 Complete Assembly Maintenance

3.2.1 Lay the Sentry on its side in a clean area and follow steps 3.3.1 thru 3.5.1 for complete maintenance.

3.2.2 Upon completion of maintenance, the Sentry can be reinstalled following steps 2.3.1 through 2.3.14.

3.3 Coalescer Assembly Maintenance

3.3.1 Normally the coalescer will require no maintenance. However, it is a good idea to check the inside of the coalescer occasionally if the flowing fluid is known to have foreign particles (i.e., iron oxide, sand, etc.) present in it.

3.3.2 After relieving pressure from the Sentry and removing the tubing from the coalescer inlet, unscrew the coalescer assembly from the body #25.

3.3.3 Place a wrench on the coalescer inlet reducer #26 flats and unscrew the hex nut #32 from the coalescer tie bolt #28.

3.3.4 Remove the coalescer bottom end cap #31 and slide the shroud #30 off the tie bolt revealing the 10-micron screen #29. If required, replace or clean the screen and reassemble the coalescer.

3.3.5 Screw the coalescer assembly back into the body.

3.3.6 Reattach the inlet tubing.

3.4 Regulator Assembly Maintenance

IMPORTANT: Maintenance on the Sentry's regulator should be performed only after the regulator is isolated from all pressure sources and internal pressure on the regulator has been relieved.

3.4.1 Unscrew the cap screws #16 (8) and remove the regulator subassembly from the Sentry's top cap #23. Clean the micron screen sub-assembly #17 and set it aside to reuse it or replace it. Throw away the membrane #22.

3.4.2 Loosen the jam nut #2 and turn the adjusting screw #1 counterclockwise until there is no tension on the spring #5.

3.4.3 Unscrew the spring housing #3 from the mid-section #12.

3.4.4 Replace the spring #5 and diaphragm assembly #7 if necessary.

NOTE: Make sure that the top spring guide #4 is in place on the spring.

3.4.5 Re-install the spring housing to the mid-section.

3.4.6 Remove the flow ring #14 from the mid-section, and replace the seal #13.

3.4.7 Examine the poppet bevel #8 for damage. Replace if necessary.

3.4.8 Carefully pick out the seat #9 with a pointed instrument. Examine the center hole of the seat for trash and/or scratches. Trash or scratches will prevent positive shut-off of the regulator. Replace the seat if necessary.

NOTE: Handle the seat carefully as it is easily damaged.

3.4.9 Place the poppet and the poppet spring #11 into the flow ring and guide the poppet back into the seat.

3.4.10 Tighten flow ring securely.

3.4.11 Examine the ports on the regulator for cleanliness.

3.4.12 Reuse or replace the micron screen sub-assembly.

3.4.13 The Sentry's regulator is now ready to be reattached to the top cap.

3.4.14 Reinstall the regulator with a new membrane and tighten the hex socket cap screws.

3.5 Valve Replacement Maintenance

3.5.1 If the regulator inlet valve #21 or liquid purge valve #20 do not seal off, or if they start

Welker NV-1 and Welker NV-2 valve kits (see the valve kit instructions).