Installation, Operation, & Maintenance Manual

Welker® Manual Insertion Diffusing Probe

Model
MIDP

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.

The Welker Manual Insertion Diffusing Probe (MIDP series) is designed to be used in conjunction with an injection pump to diffuse a product into a flowing stream across the full inside diameter of the pipeline. This diffusing probe can be manually inserted and withdrawn from a pipeline through a 2" full ported ball valve, where the pipeline pressures do not exceed 100 psi. **Where the pressures exceed 100 psi, we recommend the pipeline being depressurized before insertion or withdrawal of the Welker Manual Insertion Diffusing Probe.**

1.2 Specifications

Products Injected:	Odorant, methanol, condensate, refined hydrocarbons, water, and all other gas or liquid products compatible with materials of construction
Materials of Construction:	Lubricator body, carbon steel; wetted parts, 316SS
Insertion Length:	38 Inches
Viscosity Range:	10 - 50° API gravity
Temperature Range:	-20°F to 250°F (-28.9°C to 121.1°C)

Maximum Line Pressure:	1,480 psi (102 bar) ; determined by flange rating
Pipeline Connection:	2"-150 ANSI RF
Inlet Connection:	1" FNPT
Outlet Connection:	1/4" FNPT
Area Classification:	Can be used in hazardous areas

Options

Materials of Construction

Pipeline/Isolation connection

Flow rates / Pressure Drops / Injection Rates

Inlet / Outlet Ports (Sizes)

High or low temperatures

Higher pressures and flange ratings

2. Installation Instructions

2.1 Installing the Diffuser Probe

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.

2.1.2 The diffuser installation location should be in a relatively turbulent portion of the flowing stream for maximum diffusion of the injected product.

2.1.3 Determine the amount of insertion travel desired by measuring from the top of the pipeline isolation valve to the bottom of the pipeline.

2.1.4 With the diffuser on a bench or clean working surface, loosen the lock collar and manually draw the diffusing probe up into the lubricator body and spool.

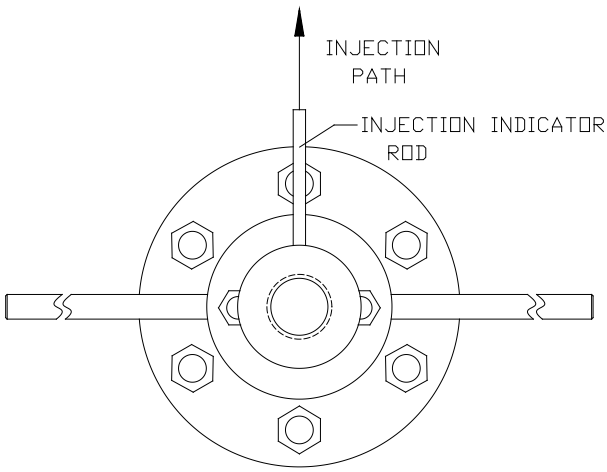

FIGURE 1

2.1.5 Line up the injection indicator with the injection path of the openings in the diffusing probe so the directions of the openings are known when the probe is inserted into the pipeline (see Figure 1). Once the unit is connected to the pipeline isolation valve, there will be an external reference point to the diffusing probe openings.

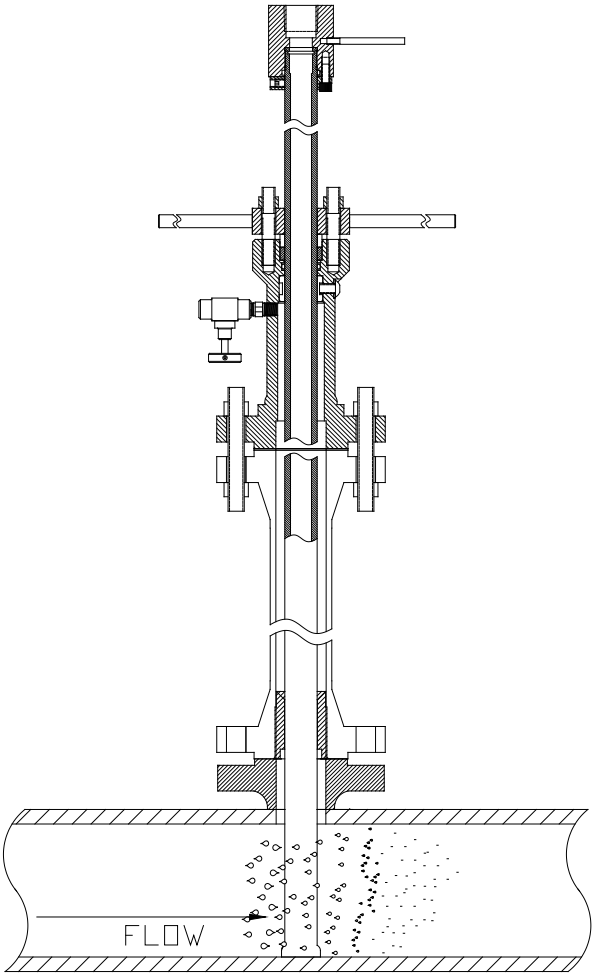

FIGURE 2

NOTE: The diffuser openings must face into the oncoming flowing stream. Also, when the unit is mounted to the pipeline isolation valve, the alignment/injection indicator rod must face upstream and into the direction of the

oncoming flow. This may require some minor adjustments of the lock collar and diffuser probe alignment prior to installation (see Figure 2).

2.1.6 Measuring from the top of the lubricator body to the bottom of the lock collar, move the lock collar to a point on the diffusing probe that is equal to the desired insertion depth, and then tighten the lock collar firmly. Example: If the insertion travel desired is 12 inches, measure upward from the top of the lubricator body to a point on the probe 12 inches high and tighten the lock collar at this position. Therefore, the travel will be limited to this distance.

NOTE: This procedure assures the insertion will be limited by the lock collar.

2.1.7 The unit is now ready to be attached to a full ported pipeline isolation valve.

2.1.8 Connect the customer-supplied inlet line to the 1" FNPT probe adapter inlet port.

2.1.9 Slowly open the pipeline isolation valve and check for leaks.

2.1.10 Using the insertion handles, manually push and guide the diffuser probe into the pipeline with the alignment/injection indicator rod parallel to the pipeline and facing upstream.

NOTE: Secure the diffusing probe into place by guiding the lock collar over the lubricator body stud bolts and tighten the nuts firmly. Do not overtighten. **Do not let go of the diffusing probe until this step is complete!**

2.1.11 The installation process is now complete.

2.1.12 Open the end user's inlet injection valve and begin injection.

2.1.13 During operation, some product may leak just below the lock collar. Simply tighten the nuts that are located on the lock down studs (see Figure 3).

Caution: Use only enough tension to stop the leak. **DO NOT OVERTIGHTEN THE PACKING**.

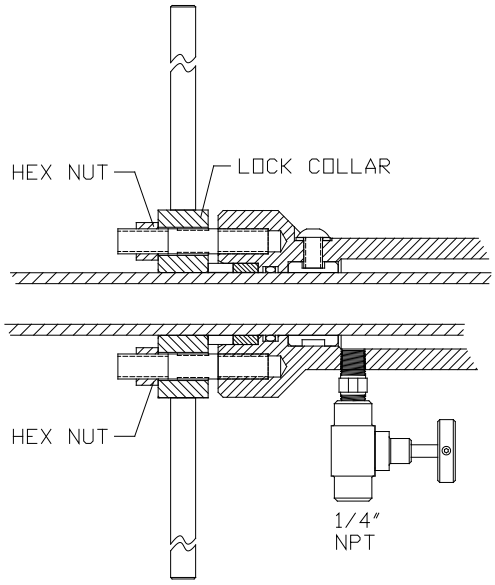

FIGURE 3

2.2 Withdrawal Instructions

2.2.1 Close the end user inlet injection valve.

NOTE: If the pipeline pressure is greater than 100 psi, the pipeline pressure must be dropped or depressurized.

2.2.2 Push in on the diffusing probe handles firmly and remove the stud nuts that hold the lock collar down.

2.2.3 You will need to apply a force down on the diffusing probe just enough to control the rate at which it is withdrawn. The pipeline pressure **(below 100 psi only)** will push the probe out of the pipeline. If there is no pressure on the pipeline, the diffusing probe must be pulled by the handles through the lubricator body and spool manually.

CAUTION: Only remove the diffusing probe from the pipeline when there is 100 psi or less in the pipeline.

<u>WARNING</u>: AT PRESSURES ABOVE 100PSI, YOU WILL NOT BE ABLE TO CONTROL THE RATE AT WHICH THE DIFFUSING PROBE COMES OUT. PLEASE RELIEVE THE LINE PRESSURE TO BELOW 100PSI BEFORE REMOVING THE PROBE TO AVOID POSSIBLE INJURY.

2.2.4 When the diffusing probe has been completely retracted from the pipeline, close the pipeline isolation valve.

2.2.5 Bleed any trapped pressure in the diffusing probe assembly by slowly opening the lubricator body purge valve.

2.2.6 The diffusing probe can now be removed from the pipeline isolation valve.

3. Maintenance Instructions

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 bi-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.

Disassembly should be done in as clean an environment as possible. 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.

The following tools will be required:

- 6" adjustable wrench
- 8" channel lock pliers
- 12" adjustable wrench
- Allen wrench set

NOTE: The diffuser assembly must first be removed from the pipeline in order to perform maintenance.

3.2 Disassembly

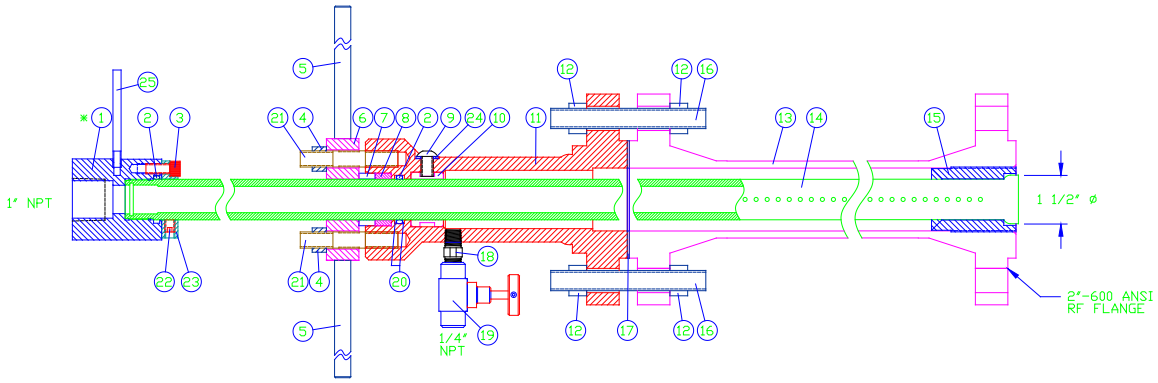

FIGURE 3

Refer to Figure 3.

3.2.1 Remove the diffusing probe from the pipeline following Section 2.2 guidelines.

3.2.2 Place the diffusing probe assembly on its side in a clean work place.

3.2.3 Remove the socket head cap screw #3 from the locking clamp #23.

3.2.4 Loosen the set screws #22 (3) in the locking clamp.

3.2.5 Remove the probe adapter #1 and the locking clamp from the diffusing probe #14.

3.2.6 Remove the hex nuts #4 (2) from the lock down studs #21 (2), and loosen the lock collar #6 from the diffusing probe #14.

3.2.7 Slide the lock collar off the probe taking care not to scratch it, and set it aside with the packing ring #7.

3.2.8 Loosen the socket screw #9 slightly and push the diffusing probe through the lubricator body #11 towards the spool #13 far enough so that the probe can be pulled out of the spool.

3.2.9 Inspect the probe for surface defects or damage that might not allow the assembly to seal properly. Contact the Welker Service Department if there are any concerns.

3.2.10 Make sure to keep the adapter bushing #15 in the spool.

3.2.11 Remove and replace the graphoil packing #8 and seals #2 and #20 (2) from the lubricator body.

3.2.12 Replace the gasket #17 between the lubricator body and the spool if required, using standard industry practices.

3.2.13 Reinsert the diffusing probe, threaded end first, back into the spool toward and through the lubricator body taking care not to damage the new seals.

NOTE: Take care when pushing the probe threaded end past the graphoil packing as the packing will have to be held in place by hand.

3.2.14 Replace the packing ring, lock collar and nuts but don't tighten any of the nuts or bolts more than hand tight.

3.2.15 Replace the seal #2 in the probe adapter.

3.2.16 Slide the locking clamp back onto the probe, taking care not to scratch the surface.

3.2.17 Screw the probe adapter back onto the threaded end until it is hand tight.

3.2.18 Slide the locking clamp up against the probe adapter and replace socket cap screw.

3.2.19 Verify that the injection indicator #25 is pointing in the direction of the diffuser openings.

3.2.20 Tighten the set screws in the locking clamp.

3.2.21 Tighten the socket screw in the lubricator body.

3.2.22 The diffusing probe is now ready to be reinstalled. Please refer to the Installation Instructions for complete details.