Welker® Adjustable Probe

Model
AP3

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.

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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.

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 Adjustable Probe is designed for use in systems where it is desirable to insert or retract the probe while the pipeline remains pressurized. The preferred location for installation of the probe is in a straight section of inlet piping in which the product is well mixed, before the flowing stream is subjected to turns and impingements that can result in turbulent flow.

SPECIFICATIONS

1.3 SPECIFICATIONS

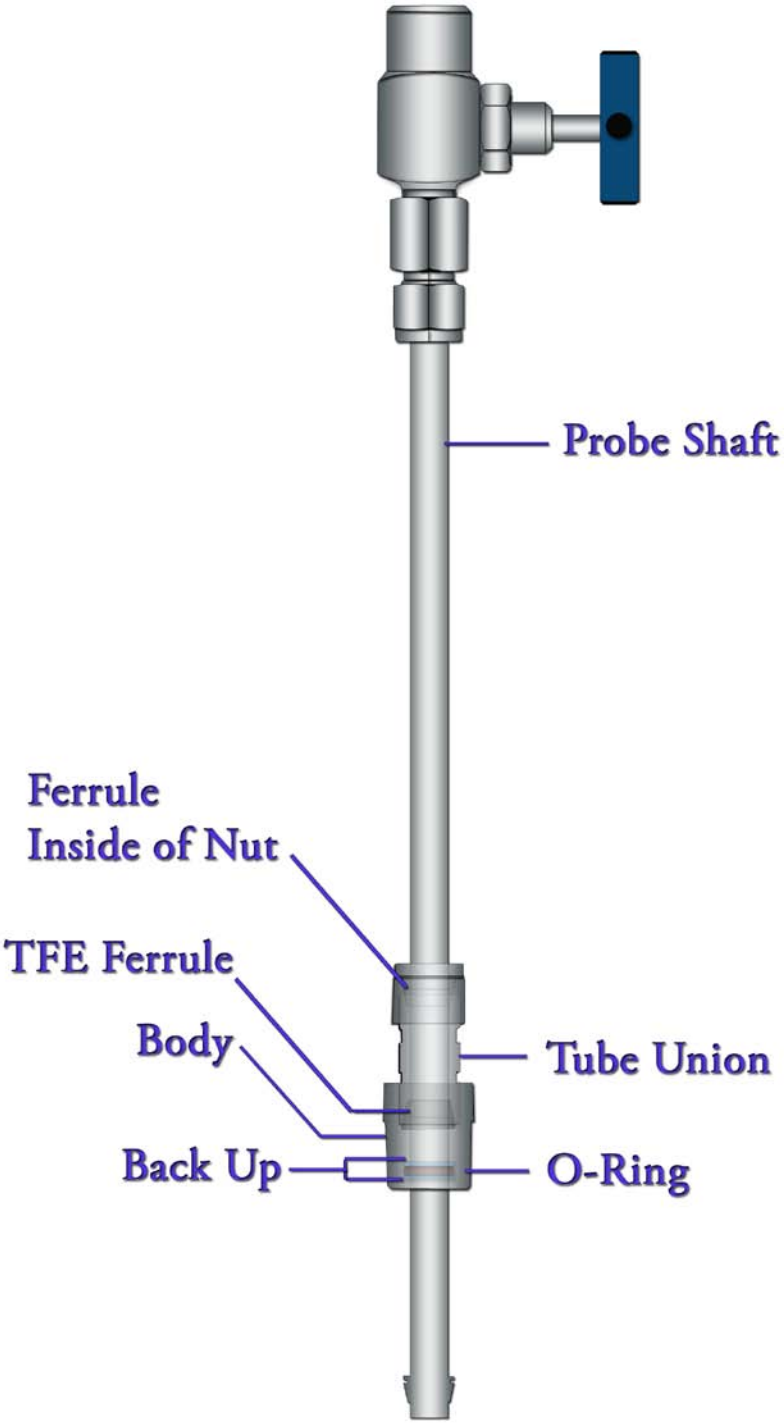
The specifications listed in this section are generalized for this equipment. Welker can modify the equipment according to your company's needs. However, please note that ***the specifications may vary depending on the customization of your product.**

Table 1

General	
Products	Gases/Liquids
Materials of Construction	316 Stainless Steel, Viton and PTFE (others available)
Insertion Length	18" (457mm) Standard {others available in 1" (25.4mm) increments}
Viscosity Range	0.009 cp to 2,000 cp @ 68° F (20°C)
Pipeline Connection	½", ¾" or 1" NPT for ¼" tubing ¾" or 1" NPT for ⅜" tubing 1" NPT for ½" tubing
Sample Outlet Connection	¼" NPT for ¼" and ⅜" tubing ¼" or ½" NPT for ½" tubing
Maximum Insertion/Retraction Pressure	For ¼" tubing: 1,000psig (69barg) maximum For ⅜" tubing: 500psig (34barg) maximum For ½" tubing: 250psig (17barg) maximum
Maximum Allowable Operating Pressure	1,440 psi @ -20° F to 100° F (99 bar @ -29° C to 38° C)
Maximum Allowable Temperature	400° F @ 1,030 psi (204° C @ 71 bar)

SPECIFICATIONS

1.4 DIAGRAM



2. INSTALLATION & OPERATION INSTRUCTIONS

2.1 GENERAL

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

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.

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

Recommended Tools

It would be advisable to have the following tools available for installation of the unit; however, tools used will vary depending on model.

- Measuring tape
- 6" adjustable wrench
- 10" adjustable wrench
- Permanent marker
- Tubing cutters
- Fine grit sandpaper
- Small file

2.2 PREPARING THE PROBE FOR INSTALLATION

1. ***Determining the insertion length***
   Before installing the unit, determine the length the insertion shaft will need to travel inside the pipeline. Measure from the top of the pipeline's isolation valve to the center one-third of the pipeline.

2. ***Setting the insertion length on the shaft***
   Once the insertion length of the shaft is determined, this length should be measured on the shaft itself (Refer to Figure 2 following steps 2a-2e on the next page.)

a. Fully retract the probe from the tubing union assembly and base.
b. Begin at the top of the tubing union assembly and measure up on the shaft to the desired length.
c. Mark this point on the shaft, as this is where you will lock the assembly.
d. Move the tubing union assembly up on the shaft to the marked point.
e. Use an adjustable wrench to tighten the tubing nut onto the tubing union. The ferrule will clasp onto the shaft, locking the assembly in place.
f. Loosen the nut and slide the base down until it stops.

Do not tighten the tube union to the base. The TFE ferrule is a back up to the primary seal (O-ring), and should only be tightened if the primary seal or O-ring leaks.

3. Cutting off excess tubing from the shaft

a. Measure up on the shaft approximately two inches from where the tubing union assembly is now positioned. Mark this point on the shaft.
b. Using tubing cutters, remove the excess tubing from the two-inch mark on the shaft.
c. File and smooth the cut edge of the shaft.
d. Replace the valve onto the shaft, and crimp the ferrule to lock it into place. Make sure the valve is closed.

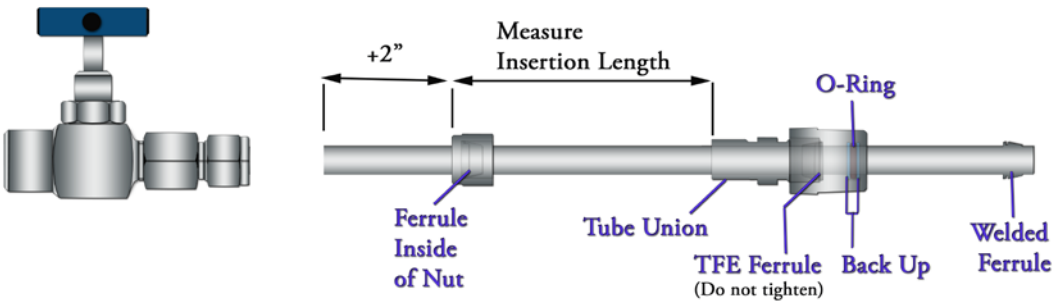


Figure 1

2.3 INSTALLING THE PROBE

1. Make sure all valves on the unit are closed.
2. Retract the shaft from the base and tubing union assembly until the welded ferrule hits the body.
3. With the pipeline isolation valve closed, install the unit onto the pipeline isolation valve.
4. Slowly open the pipeline isolation valve until it is completely open, and push the shaft down into the pipeline.

When pushing the shaft down into the pipeline, push straight down and do not allow the shaft to bend.

As pipeline pressure will be pushing up on the shaft, you will have to firmly push down on the unit in order to insert the shaft. **Maximum Allowable Insertion/Retraction Pressure is located on page 4 of this manual. Do not insert the probe at pressures higher than the maximum.**

5. Tighten the tubing union assembly onto the base to hold the shaft in the pipeline.

Do not let go of the unit until the tubing assembly is securely tightened.

6. Connect the product out valve to the end user product or apparatus.
7. Open the valve.

2.4 HELPFUL HINTS

1. Avoid rough handling of the unit and bending of the shaft. The shaft has a polished surface that travels through seals.
2. Operate the unit slowly and smoothly while inserting and retracting.
3. The entire unit should be treated with care

2.5 RETRACTING THE PROBE

Pipeline pressure will be forcing the shaft out of the pipeline. Failure to push down on the unit while loosening the assembly could cause a rapid retraction of the probe from pipeline, possibly resulting in injury. Maximum Allowable Insertion/Retraction Pressure is located on page 4 of this manual. Do not remove the probe at pressures higher than the maximum.

1. Close the valve.
2. Disconnect the end user product or apparatus.
3. Firmly push down on the unit while **slowly** loosening the tubing assembly from the base.
4. Make sure the probe has completely retracted from the pipeline by pulling up on the shaft until it stops.

The most common cause for repairs to an adjustable probe is due to the pipeline isolation valve closing on the probe while the probe is still inserted into the pipeline. Please avoid this practice.

5. Close the pipeline isolation valve.
6. Loosen and remove the unit from the pipeline isolation valve.
7. The unit is now ready for maintenance or to be moved to another location.

3. MAINTENANCE

3.1 GENERAL

Maintenance should not be necessary unless a leak occurs due to improper or excessive use of the unit. 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.

Recommended Tools

It would be advisable to have the following tools available for installation of the unit. However, tools used will vary depending on cylinder model and connectors used.

- 6" adjustable wrench
- 10" adjustable wrench
- Tubing cutters
- $^{1}/_{4}$" stainless steel ferrule set
- fine grit sandpaper
- small file

Refer to diagram on page 5.

1. Loosen and remove the valve from the top of the shaft.

2. Loosen the tubing nut from the shaft.

3. Cut and remove the shaft tubing from the unit's components. The tubing can be discarded.

4. Remove the tubing union assembly and base from the shaft tubing.

5. Replace the O-ring inside the base.

6. Replace the tubing and stainless steel ferrule set.

7. Proceed to installation instructions on page 6 to reinstall the probe.

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