



*Installation, Operation, and
Maintenance Manual*



Welker[®] Absorbent Tube Cylinder
Model
WATC

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, Warnings, and Cautions



NOTE

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



CAUTION

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



WARNING

Warnings alert users 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 Absorbent Tube Cylinder is a safe, effective, and environmentally friendly way to extract product for use with detector tubes available in the industry. Through controlled extraction of the gas from the process into the cylinder, a set amount of product may be extracted, the pressure will be reduced to atmosphere, and the detector tube can be installed. The product is then pushed through the tube, and into the back side of the cylinder for safe disposal with no pollution. The operator is not exposed to the product, and the process is simplified.



SPECIFICATIONS

1.3 Important information



WARNING

Please read the following information in its entirety upon receiving the Welker equipment.

1.4 Specifications



NOTE

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

Specifications	
Materials of Construction:	Aluminum or 316 Stainless Steel, Teflon Plating, Viton [®] , others available.
Maximum Allowable Operating Pressure:	300 PSIG @ -20°F to 120°F
Inlet Port:	1/4" NPT
Outlet Ports:	1/4" NPT
Products Tested:	Gases compatible with the materials of construction.
Maximum Product Volume:	1,000cc standard, others available.

SPECIFICATIONS

1.5 System Components

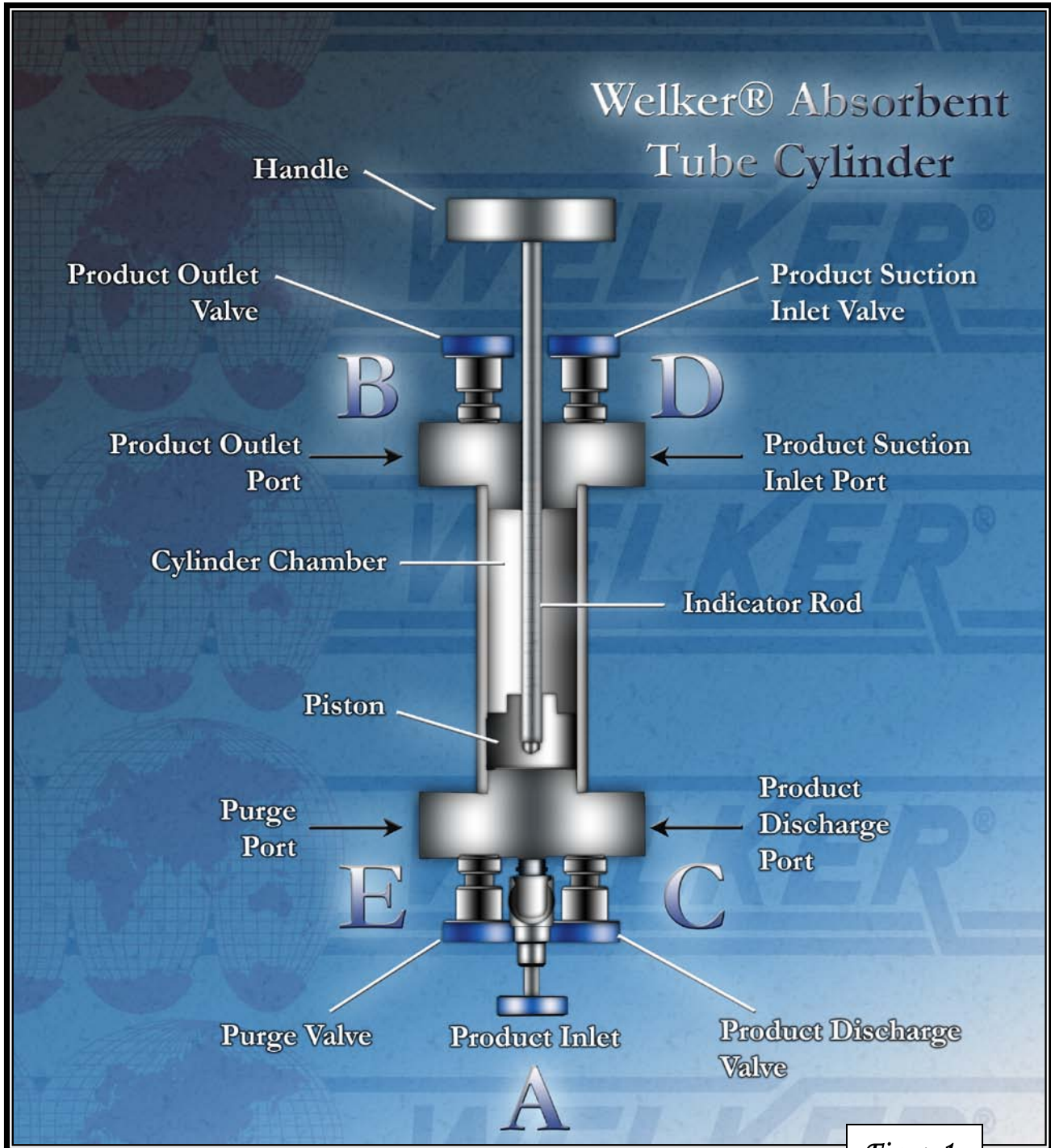


Figure 1

Refer to above Figure throughout manual

INSTALLATION & OPERATIONS

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.

N NOTE

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.

W WARNING

When working with possibly toxic substances, please ensure you are wearing personal protective equipment. Consult your company procedures and policies.

- When analysis is complete, the cylinder should be emptied safely and in a safe area by following the tested product removal/purging procedures in Section 2.4.
- Welker recommends cleaning and leak testing of the cylinders after each use.

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.

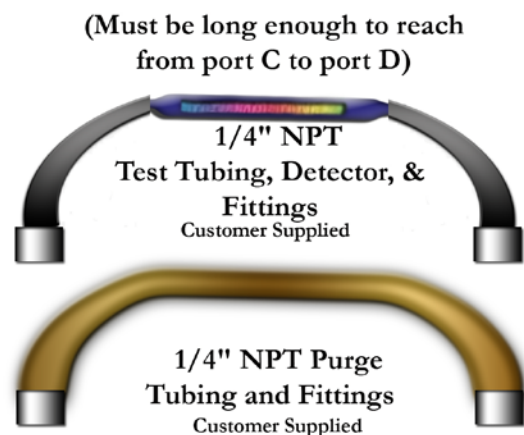
- Adjustable wrench
- 1/4" NPT test tubing & fittings
- Absorbent tube or detector tube
- 1/4" NPT purge tubing and fittings
- Safe auxiliary gas for complete purging

N NOTE

These instructions are written in accordance with procedures for use with detection tubes to test product at maximum cylinder volume (1,000cc standard) or below.

W WARNING

Always open and close valves slowly; this will prevent handle, indicator rod, and piston assembly from slamming back and forth and possibly injuring someone.



INSTALLATION & OPERATIONS

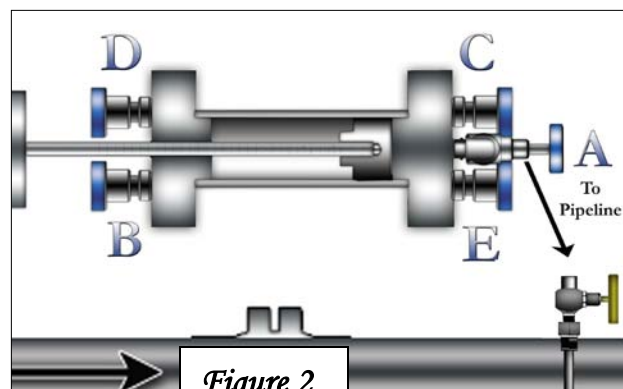
2.2 Installation Instructions

W WARNING

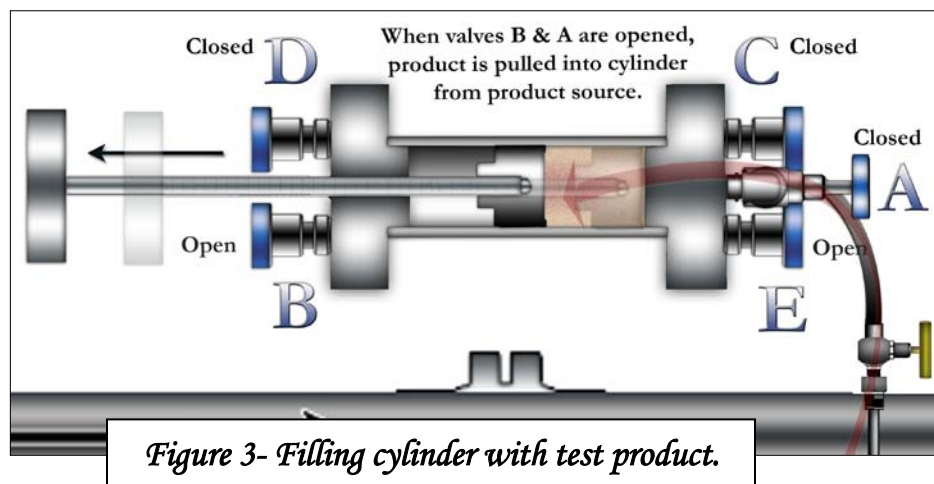
Always depressurize the product source (i.e. pipeline) to 300 PSIG when installing, operating, or removing the WATC.

N NOTE

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



1. Make sure all valves are closed.
2. Connect cylinder product inlet port "A" directly to product source (See Figure 2), or as close as possible, using $\frac{1}{4}$ " NPT fitting (Welker suggests using a quick connect fitting with double-end shut-off, in order to minimize escape of any pollutants during disconnection of cylinder).
3. Open product source valve.
4. Slowly open product inlet valve "A", and product outlet valve "B", allow handle to retract outward to desired collection amount as marked on the indicator rod. This will extract an exact volume of product to be tested into the cylinder. See Figure 3
5. Close valves "A" and "B" tightly, and, close product source valve.
6. Disconnect cylinder inlet Port "A" from product source.
7. Proceed to Section 2.3 on the next page.



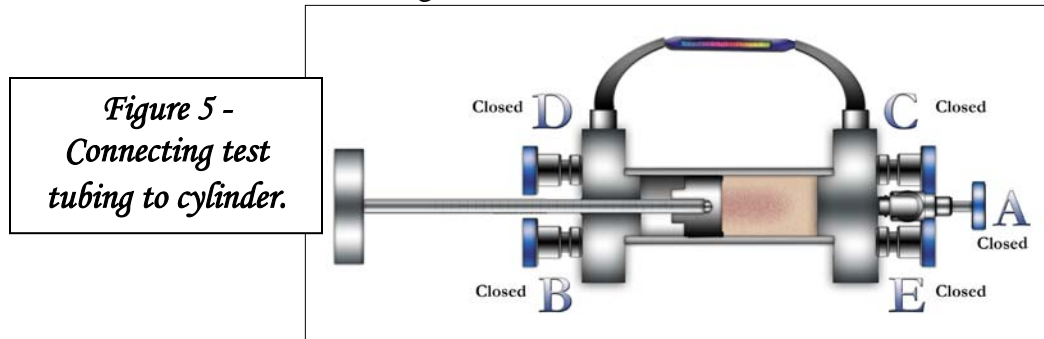
INSTALLATION & OPERATIONS

2.3 Operation/Testing Instructions

N NOTE

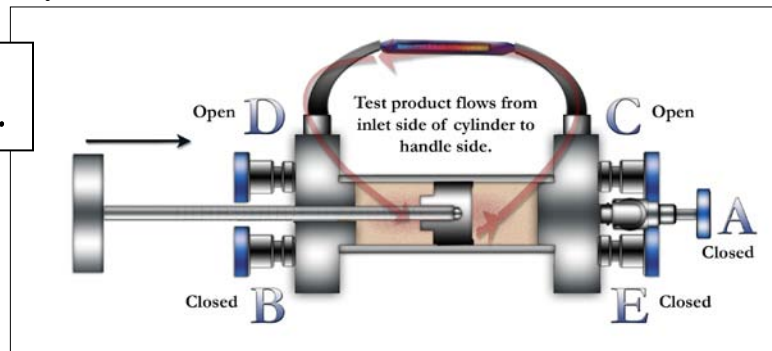
Testing may be performed on site, or cylinder may be carried to an on-site testing facility where there is a safe disposal recovery system in which excess gas can be flared.

1. All valves should remain closed.
2. Connect test tubing to product discharge outlet port "C", and product suction inlet port "D" so that absorbent/detection tube is in the middle of the tubing. Be sure to open absorbent tube on both ends according to manufacturer's instructions.



3. Slowly open valves "C" and "D", and push down handle. This will push product through tubing, and back into cylinder. See Figure 6.

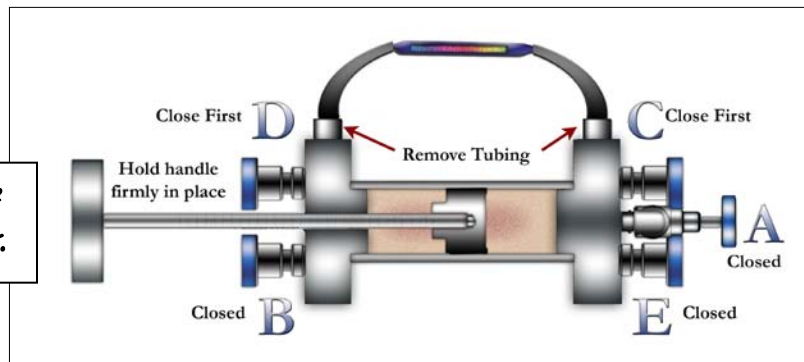
Figure 6 - Pushing test product through testing tube.



4. Close valves "C" and "D".
5. Carefully remove absorbent tube and test tubing from cylinder. See Figure 7.

6. The contents of the absorbent tube may now be examined.

Figure 7 - Disconnecting the test tubing from the cylinder.



INSTALLATION & OPERATIONS

2.4 Tested Product Removal/Purging



Purging should be performed in a well ventilated area in case there is some microscopic toxic product residue remaining in cylinder.

1. All valves should remain closed.
2. Connect product outlet port "B" to a safe disposal recovery system in which excess gas can be flared or vented.
3. Connect purge tubing to product discharge outlet Port "C" and product suction inlet port "D".
4. Connect a safe auxiliary gas to purge gas port "E" regulated to approximately 20 psi. See Figure 8.

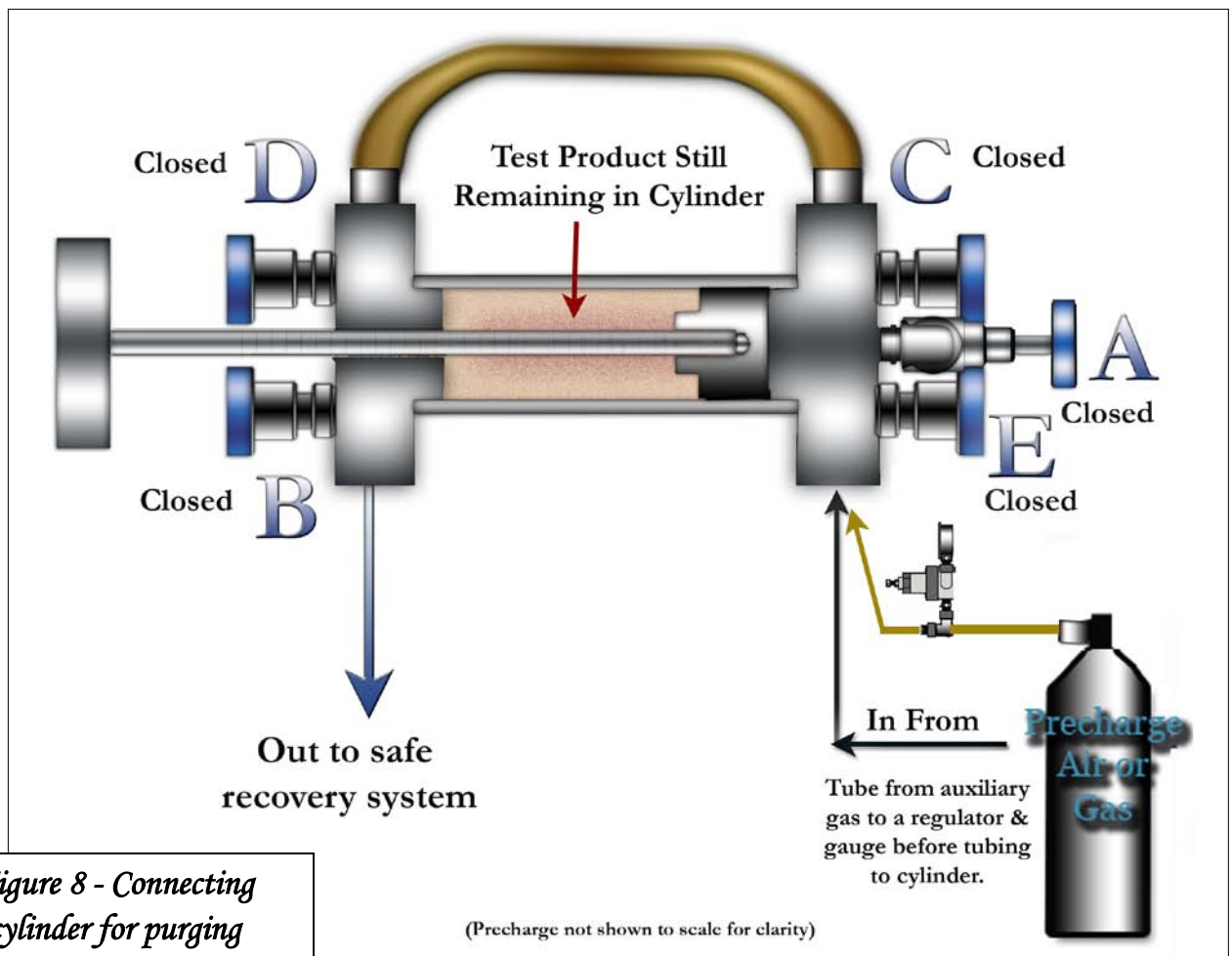
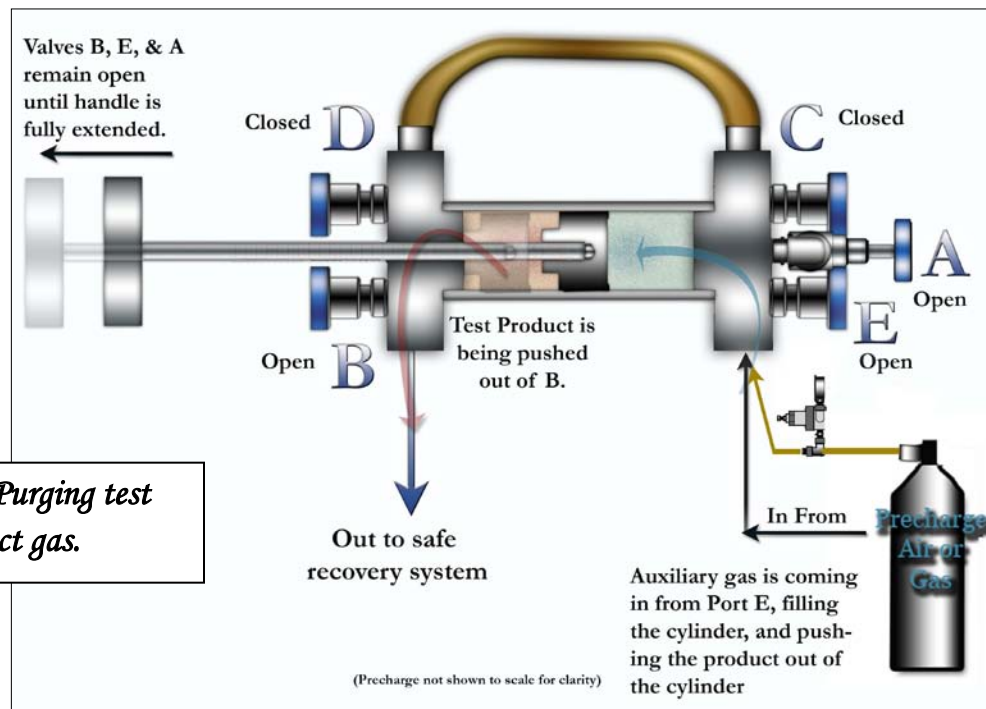


Figure 8 - Connecting cylinder for purging

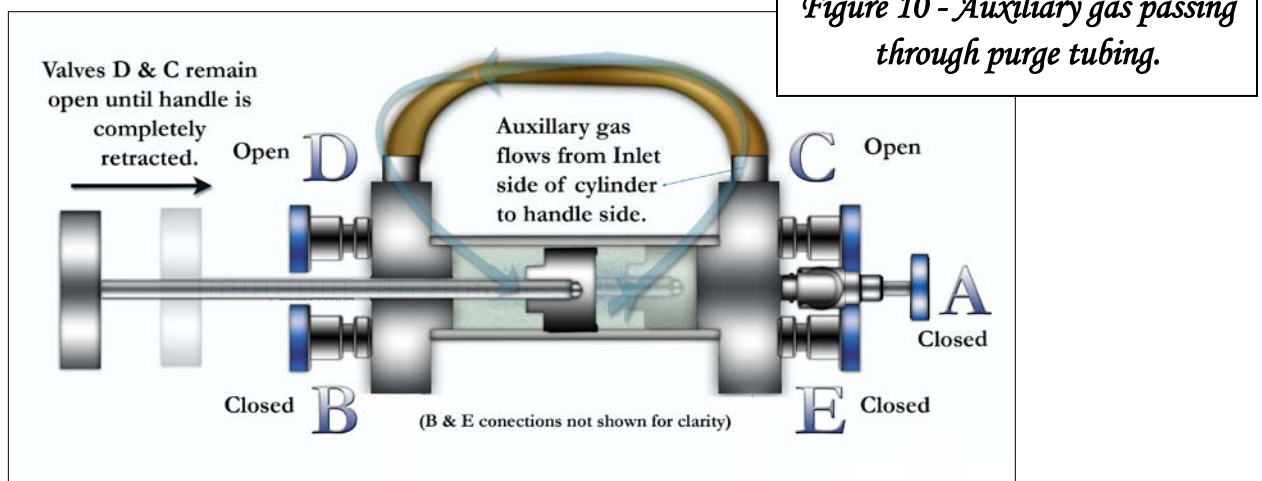
INSTALLATION & OPERATIONS

2.4 Tested Product Removal/Purging (Continued)

5. Slowly open valve purge gas valve "E".
6. Very slowly open valves "A" and "B". Purge gas should push the product out the outlet, and handle should push out. If necessary, pull handle all the way out. This will purge product remaining in cylinder, and cylinder will fill with safe auxiliary gas. Close all valves. See Figure 9.



7. Open valves "C" and "D", and push handle all the way back into the cylinder. This will allow safe purge gas to pass through purge tubing, and back into the other side of the cylinder. See Figure 10.



INSTALLATION & OPERATIONS

2.4 Tested Product Removal/Purging (Continued)

- To empty cylinder after step 7, do not open purge gas valve "E". Open valves "A" and "B", since there will be no pressure from purge gas you will need to pull handle out. This will purge remaining safe auxiliary gas out of the cylinder. See Figure 11.

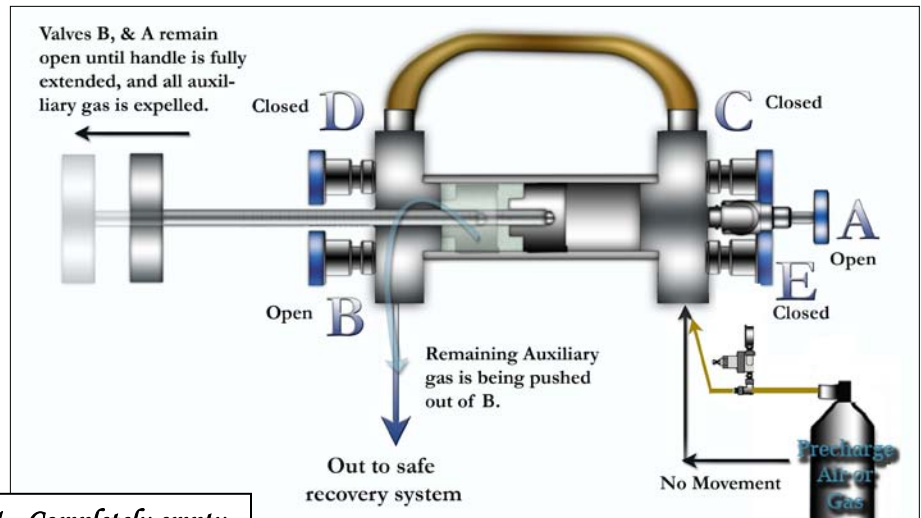


Figure 11 - Completely empty cylinder after Purging.

- Close valves "A" and "B".
- Repeat steps 5 through 9 continuing to fill and empty cylinder with purge gas, at least once more to insure all residual product is purged out of the system.
- Remove purge tubing from port "C" and port "D". Open valves "C" and "D", and push handle back into system to allow safe gas to escape cylinder and ready cylinder for next use.

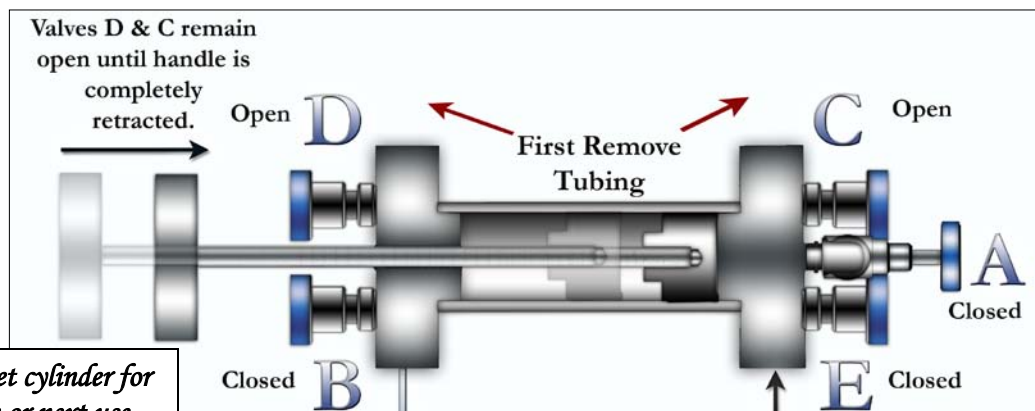


Figure 12 - Reset cylinder for transportation or next use.

- Close valves "C" and "D".
- Disconnect cylinder from all ports.
- Cylinder is now purged and ready for maintenance or next test.

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 unexpected wear or faulty seals. All maintenance and cleaning of the unit should be done on a smooth, clean surface.

N NOTE

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.

N NOTE

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.

In the case of Constant Pressure Sample Cylinders, the lubrication grease should be applied sufficiently but lightly (Krytox[®] is preferred). Wipe excess lubrication from the seals, as it may have an adverse effect on some analytical instrument results.

Recommended Tools

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

- Small hex key set
- 6" adjustable wrench
- 10" adjustable wrench
- 10" channel lock pliers
- Fine grit sandpaper
- Flat blade screwdriver



Refer to Figure 13 throughout maintenance process.

MAINTENANCE

3.2 Disassembly

1. Make sure the unit is purged prior to maintenance, see Section 2.4.
2. Remove the four nuts (Part 4) and the four tie bolts (Part 3).
3. Remove both the handle side end cap (Part 5) and the product inlet side endcap (Part 16).
4. Unscrew the handle (Part 1) and remove from the end cap.

3.3 Maintenance

1. Remove and replace the backup (Part 8), wiper ring (Part 6), and the O-rings (Part 7) and Part 9) on the handle side end cap.
2. Replace the O-ring (Part 7) on the product inlet side end cap.
3. Remove and replace the U-cups (Part 15) on the piston.
4. Wipe down the inside of cylinder (Part 11), handle (Part 1), piston assembly (Part 14, 13, & 12), and indicator rod (Part 10) and dry carefully.
5. Closely examine the honed surface of the cylinder. Scratches and pits will cause the seals to leak.

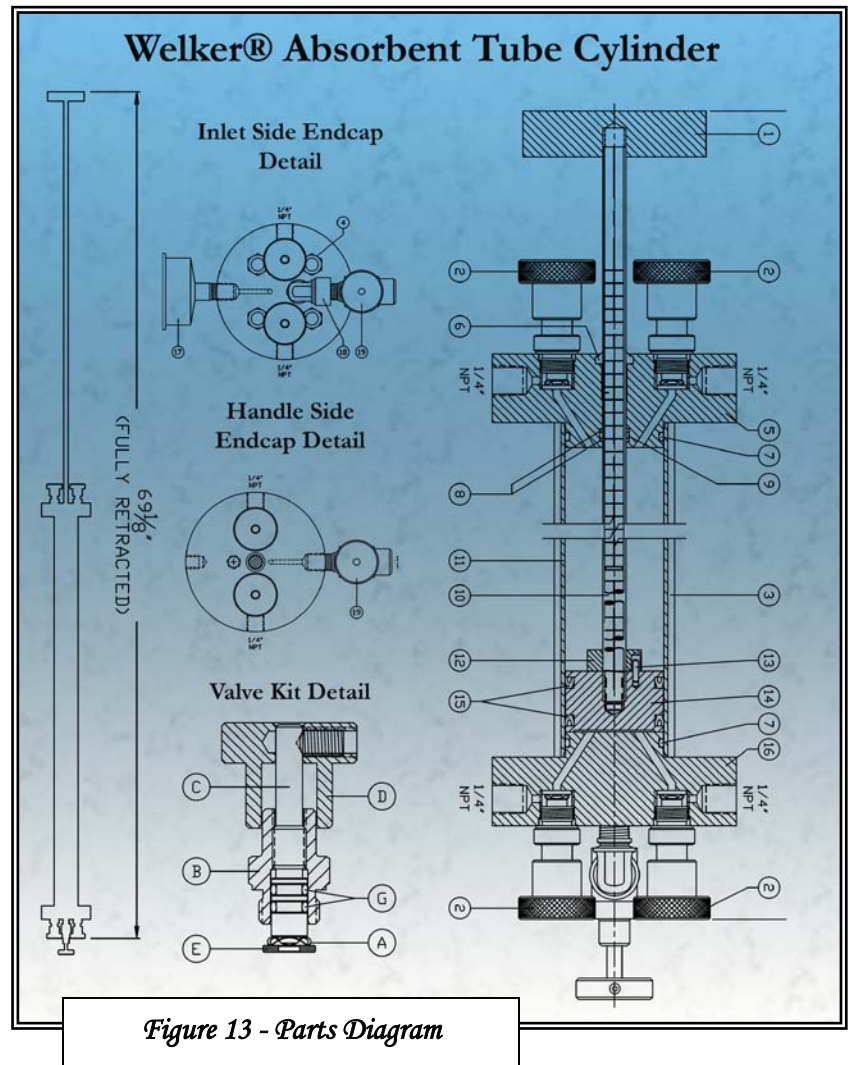


Figure 13 - Parts Diagram

3.4 Reassembly

1. Replace the handle (Part 1) by screwing it back into the end cap. Slide piston into cylinder.
2. Reattach both handle side end cap (Part 5) and the product inlet side end cap (Part 16) onto the cylinder.
3. Reattach the four tie bolts (Part 3) and tighten the four nuts.
4. The unit is now ready for next test.

TROUBLESHOOTING

4. Troubleshooting Guide

The following is a troubleshooting table of issues most commonly associated with the Welker Liquid Knockout System models. If you are having a problem that is not listed, or if the solution provided does not repair the problem, please call Welker for service options.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Gauge indicates a loss of pressure.	<ul style="list-style-type: none"> • There is a leak from one of the fittings. • The cylinder experienced a temperature drop. • There is a defective valve. 	<ul style="list-style-type: none"> • Check all fittings for leaks with leak detector. Replace thread sealant. • Restore the temperature to pipeline temperature. • Repair or restore the defective valve.
Pressure is leaking across the piston.	Seals in the piston are leaking.	Disassemble and clean the unit. Inspect cylinder for scratches. Replace seals in the piston and reassemble.
Pressure is leaking from the indicator rod/handle.	Seals in the end cap are leaking.	Disassemble the unit. Replace the end cap seals. Inspect the rod for scratches and reassemble.
One of the end caps are leaking.	<ul style="list-style-type: none"> • There is a loose fitting. • The seat on purge valve is leaking. 	<ul style="list-style-type: none"> • Tighten the fittings. • Replace the seat.



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