



*Installation, Operation, and  
Maintenance Manual*

***Welker<sup>®</sup> Single Cavity Sample Cylinder  
Model  
SC***

***Drawing No.: AD410BI or AD410BJ  
Manual No.: IOM-146***

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<sup>®</sup> equipment described above. Correct operating and/or installation techniques, however, are the responsibility of the end user. Welker<sup>®</sup> reserves the right to make changes to this and all products in order to improve performance and reliability.

This manual is intended to be used as a basic installation and operations guide for the Welker<sup>®</sup> Single Cavity Sample Cylinder (Liquid), SC. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is given in the Appendix section of this manual.

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# Section 1: SPECIFICATIONS

## 1.1 INTRODUCTION

We appreciate your business and your choice of Welker<sup>®</sup> 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 (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<sup>®</sup> 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<sup>®</sup> Single Cavity Sample Cylinder may be used in a variety of applications, including liquid sampling. This is a high-pressure, stainless steel, double-ended sample collection cylinder. This cylinder may be equipped with an optional outage tube to provide appropriate expansion volume remains after filling. Refer to Section 1.5 for more information on expansion volume.

***Welker<sup>®</sup> may custom design the Single Cavity Sample Cylinder to suit the particular application and specifications of each customer.***

## 1.3 SPECIFICATIONS

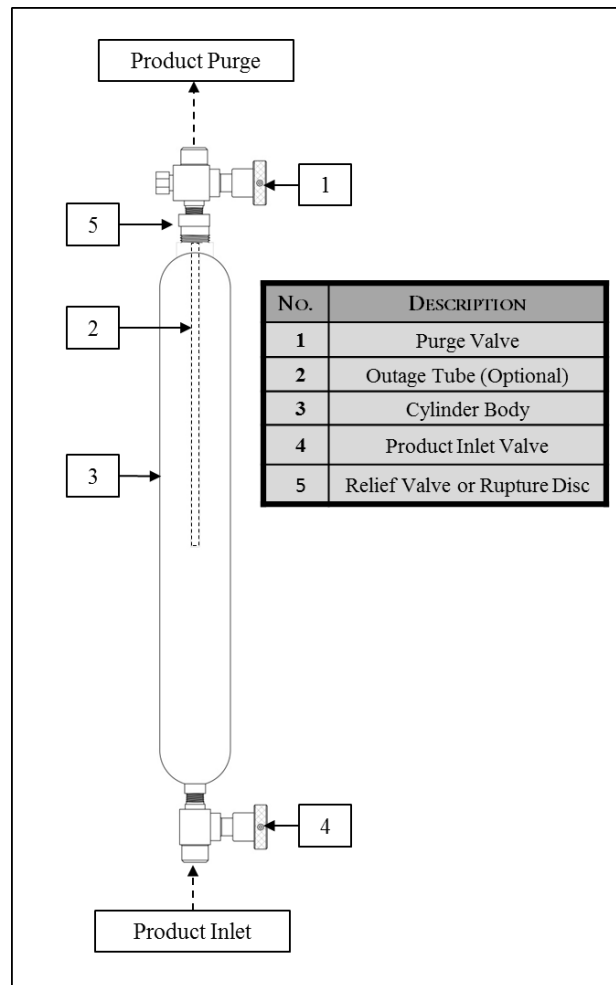


The specifications listed in this section are generalized for this equipment. Welker<sup>®</sup> can modify the equipment according to your company's needs. However, **please note that the specifications may vary depending on the customization of your product.**

Products	Liquids
<b>Materials of Construction</b>	316 Stainless Steel
<b>Volume</b>	300cc, 500cc, 1000cc. Others available upon request.
<b>Inlet Connection</b>	¼" FNPT. Others available upon request.
<b>Outlet Connection</b>	¼" MNPT. Others available upon request.
<b>Maximum Allowable Operating Pressure</b>	5000 psi @ -49° to 160°F (345 bar @ -45° to 71°C) Others available upon request.

## 1.4 SYSTEM DIAGRAM

**Figure 1: Cylinder Diagram**



## 1.5 SAFETY WARNING & IMPORTANT INFORMATION



Please read the following information in its entirety before using the Welker<sup>®</sup> equipment described in this manual. Failure to adhere to these recommendations may result in equipment damage or personal injury.

1. Expansion of product may occur if the cylinder is subject to extreme temperature changes. Never fill the cylinder above 80% if filling with hydrocarbon liquid or refrigerated gas. Allow at least 20% volume for expansion. Operators should be familiar with the physical properties of sampled product and should be able to adequately estimate the expansion potential of the product. Certain products may require a greater proportion of inert gas to product (e.g., 70% product to 30% inert gas) to allow ample room for product expansion.
2. In cases where the cylinder is exposed to extreme or varying temperatures, do not allow the cylinder to exceed the maximum allowable operating pressure (MAOP) indicated in Table 1.
3. The cylinder may contain flammable or hazardous product. Handle with caution.
4. This cylinder is a precision instrument and should be handled with care. Welker<sup>®</sup> recommends that cylinders be cleaned and tested after each use and that the cylinder valves be capped or plugged during transportation and when not in use.
5. When analysis of product is complete, the cylinder should be emptied safely and in a safe area.

Section 2:

# INSTALLATION & OPERATIONS

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## 2.1 BEFORE YOU BEGIN



After unpacking the unit, check the equipment for compliance and for any damage that may have occurred during shipment. **Claims for damage caused during shipping must be initiated by the receiver and directed to the shipping carrier.** Welker® is not responsible for any damage caused by mishandling by the shipping company.



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

## 2.2 INSTALLATION & OPERATIONS

1. This product may be installed and operated according to customer design and specifications.
2. Welker® recommends that installation and operation of this product comply with industry regulations and standards.
3. Operators should refer to the following notes, cautions, and warnings before installing or operating this equipment:



A relief valve should be placed inside (closer to the cylinder body than) any other valves connected to the cylinder.



The sample cylinder should always be filled from the bottom up. The upper end of the cylinder should be labeled.



DO NOT fill the cylinder to above 80% capacity. The upper end of the cylinder is equipped with an outage tube designed to help allow adequate room for product expansion should the cylinder be exposed to increased temperatures.



In order to contain sample product, and to safely relieve cylinder after filling, the upper end of the cylinder should be equipped with a purge valve. If not included as part of customer specifications, this valve will need to be customer-supplied and installed at the purge valve connection.



After removing the cylinder from its connection point, open the purge valve to vent. Vent until excess product is forced out. Quickly close the valve when vapor appears. This will help allow adequate room for product expansion.



After isolating the cylinder, do not move or transport until temperature and pressure have stabilized.

## Section 3:

# MAINTENANCE

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### 3.1 BEFORE YOU BEGIN

1. **Welker® recommends that the unit have annual maintenance under normal operating conditions.** In cases of severe service, dirty conditions, excessive usage, or other unique applications that may lead to excess wear on the unit, a more frequent maintenance schedule may be appropriate.
2. All maintenance and cleaning of the unit should be done on a smooth, clean surface.

### 3.2 MAINTENANCE & CLEANING

Regular cleaning of cylinders is essential for the proper functioning of the device. For cylinders used for sample containment, any debris or residue left in the cylinders may contaminate the results of later samples extracted into the cylinder. Welker® recommends purging and leak testing the cylinder after each use, and cleaning with solvent as part of regularly scheduled maintenance or according to company policy. Also routinely inspect the cylinder for dents, damage, and signs of misuse.

#### **Purging:**

##### **Purging with helium**

1. Fill and empty the cylinder with helium repeatedly.
2. Take a sample of the helium to test for trace amounts of hydrocarbons.
3. If hydrocarbons are present in the analysis, the system has not been adequately cleaned, and further purging will be necessary. If hydrocarbons or contaminants remain present, a solvent cleaning may be required. If no hydrocarbons are found, cleaning is complete.

##### **Purging with new product**

1. Purge the cylinder using the product to be sampled. This can be accomplished each time the cylinder is put into service.



This method is acceptable only if the cylinder will be used in only one location with only one type of product.

#### **Cleaning**

##### **Cleaning with solvent**

1. Fill and empty the cylinder repeatedly with solvent.
2. Use an inert gas to dry and purge the cylinder.
3. Purge with helium to remove the solvent, and analyze the helium to verify that all solvent and hydrocarbons have been removed.

##### **Other cleaning options**

Welker® recommends the Welker® CSVC Steam and Vacuum System for cylinder steam cleaning.

# APPENDIX

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## ATTACHED DOCUMENTS:

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

- None

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

- None

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

- Assembly Drawing: AD410BJ (Standard with Outage Tube)
- Assembly Drawing: AD410BI (Standard with No Outage Tube)
- Assembly Drawing may be modified per customer specifications for customization of this product



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