



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER® ANALYZER LIQUID SHUTOFF

MODEL

ALS-4

DRAWING NUMBER

AD633BF

MANUAL NUMBER

IOM-199

REVISION

Rev. A, 6/1/2016

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IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS



Notes emphasize information and/or provide additional information to assist the user.



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



Warning messages appear before procedures that, if not observed, could result in personal injury.

This manual is intended to be used as a basic installation and operation guide for the Welker® Analyzer Liquid Shutoff, ALS-4. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is provided in the Appendix section of this manual.

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 in this manual. Correct installation and operation, however, are the responsibility of the end user. Welker reserves the right to make changes to this manual and all products in order to improve performance and reliability.

BEFORE YOU BEGIN

Read these instructions completely and carefully.

IMPORTANT – Save these instructions for local inspector’s use.

IMPORTANT – Observe all governing codes and ordinances.

Note to Installer – Leave these instructions with the end user.

Note to End User – Keep these instructions for future reference.

Installation of this Analyzer Liquid Shutoff is of a mechanical nature.

Proper installation is the responsibility of the installer. Product failure due to improper installation is not covered under the warranty.

If you received a damaged Analyzer Liquid Shutoff, please contact a Welker® representative immediately.

Phone: 281.491.2331

Address: 13839 West Bellfort Street
Sugar Land, TX 77498

SECTION 1: PRODUCT INFORMATION

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 Welker at 1-281-491-2331.

**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 Product Description

The Welker® ALS-4 Analyzer Liquid Shutoff acts as a final defense when protecting analyzers from damage and contamination caused by liquids in gas samples.

Gas flows freely through the ALS-4, but if liquid tries to pass through, the internal floating ball will seal, shutting off product flow to the analyzer.

Welker may custom design the ALS-4 to suit the particular application and specifications of each customer.

1.3 Specifications



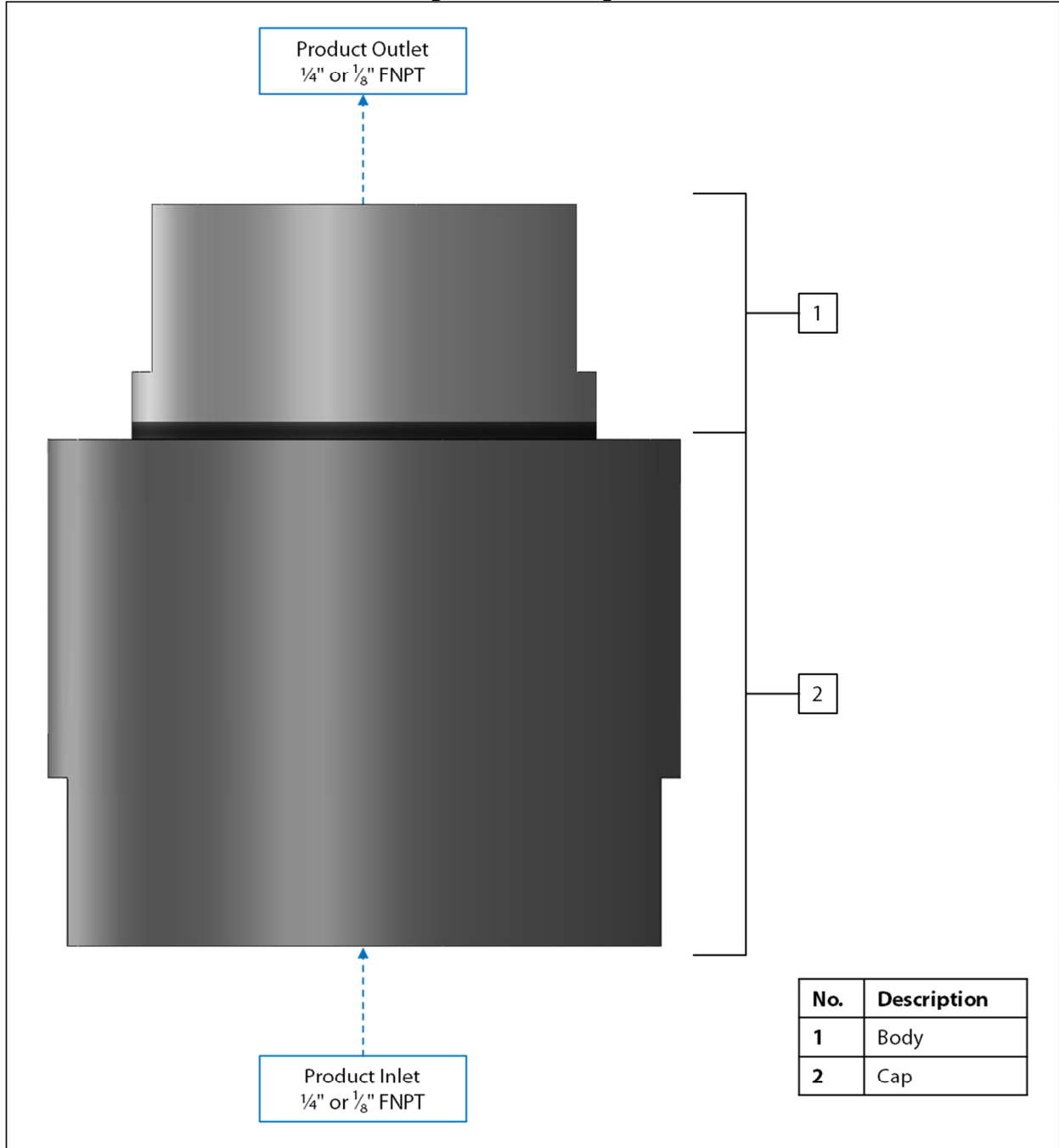
The specifications listed in this section are generalized for this equipment. Welker can modify the equipment according to your company's needs. However, **please note that the specifications may vary depending on the customization of your product.**

Table 1: ALS-4 Specifications

Products	Gases Compatible With the Materials of Construction
Materials of Construction	316/316L Stainless Steel, Aluminum, PTFE, and Viton® Others Available
Maximum Allowable Operating Pressure	2160 psig @ -20 °F to 100 °F (148 barg @ -28 °C to 37 °C)
Connections	Inlet: ¼" FNPT or ⅛" FNPT (Standard) Outlet: ¼" FNPT or ⅛" FNPT (Standard)
Product Certification	NACE Compliance
Option	High Capacity

1.4 Equipment Diagram

Figure 1: ALS-4 Diagram



SECTION 2: INSTALLATION & OPERATION

2.1 Before You Begin



After unpacking the unit, check the equipment for compliance and any damage that may have occurred during shipment. Immediately contact a Welker® representative if you received damaged equipment.



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

2.2 Installation and Operation

1. Halt all product flow to the analyzer.
2. Ensure that there is a valve between the ALS-4 and the analyzer and a valve upstream of the ALS-4.



Upstream and downstream valves are needed to purge the sample line of liquids after installation and after liquids reach the ALS-4, shutting off flow to the analyzer.



For this manual, the term “purge valve” will refer to the valve installed downstream of the ALS-4, and the term “purge drain valve” will refer to the valve installed upstream of the ALS-4.

3. Connect the product supply to the inlet port of the ALS-4 (*Figure 1*).



The ALS-4 must be installed vertically with the inlet port pointing down.



Welker recommends installing a Welker® LE-2 Liquid Eliminator upstream of the ALS-4.

4. Connect the outlet of the ALS-4 to the analyzer (*Figure 1*).
5. Purge the sample line prior to beginning operation. See *Section 2.3, Purging the Sample Line*, for instructions.
6. After the sample line has been purged, begin product flow to the ALS-4 to put it into service.
7. When liquids reach the ALS-4 and flow to the analyzer is shut off, the sample line must be purged. See *Section 2.3, Purging the Sample Line*, for instructions.

2.3 Purging the Sample Line

1. Ensure that the purge valve and the purge drain valve are closed.
2. Connect a safe auxiliary pneumatic supply to the purge valve.



Welker recommends using helium as the auxiliary pneumatic supply, as it will purge and dry the sample line. However, nitrogen or natural gas from the pipeline may also be used.

3. If any sample devices are installed between the ALS-4 and the purge drain valve, ensure that their outlet valves are open. This will allow any liquids present in the ALS-4 to be purged to the drain.
4. Open the outlet valve on the auxiliary pneumatic supply.
5. Open the purge valve. This will apply pressure to the ALS-4, and any liquids in the ALS-4 will be forced to the purge drain valve.
6. Open the purge drain valve to drain any liquid from the system.
7. Once all liquids have been drained from the purge drain valve, close the outlet valve on the pneumatic supply, and then close the purge valve and purge drain valve.
8. Disconnect the auxiliary pneumatic supply from the purge valve.
9. Purging is now complete, and the ALS-4 may be returned to operation.

SECTION 3: MAINTENANCE

3.1 Before You Begin

1. **Welker recommends that the unit have standard maintenance every six (6) months 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. Prior to maintenance or disassembly of the unit, it is advisable to have a repair kit available for repairs of the system in case of unexpected wear or faulty seals.



New seals supplied in spare parts kits should be lightly lubricated before being installed to ease the installation of the seals and reduce the risk of damage when positioning them on parts. Wipe excess lubricant from the seals, as it may adversely affect analytical instrument results.



For sample-exposed seals, Welker recommends non-hydrocarbon-based lubricants, such as Krytox®. For non-sample-exposed seals, Welker recommends either non-hydrocarbon-based lubricants or silicone-based lubricants, such as Molykote® 111.

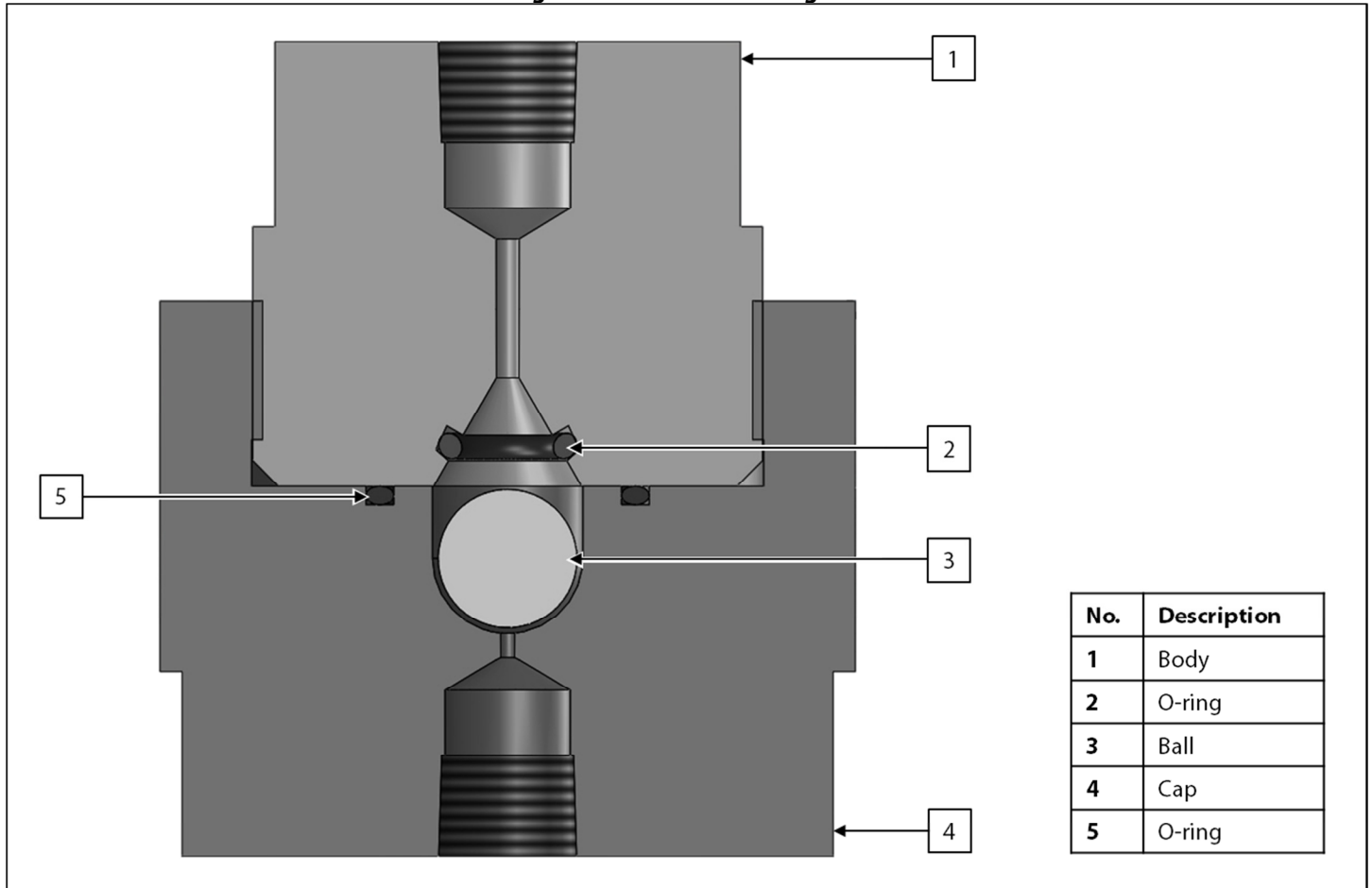


After the seals are installed, the outer diameter of shafts and inner diameter of cylinders may be lubricated to allow smooth transition of parts.

3. All maintenance and cleaning of the unit should be performed on a smooth, clean surface.
4. Welker recommends having the following tools available for maintenance. Please note that the exact tools required may vary by model.
 - a. Crescent Wrench (Qty. 2)
 - b. Seal Pick

3.2 Maintenance

Figure 2: Maintenance Diagram



1. Halt product flow to the ALS-4.
2. Depressurize the ALS-4.
3. Disconnect all tubing from the ALS-4 and remove the ALS-4 from the system.
4. Unscrew the body from the cap, and then replace the O-ring in the body.



DO NOT lubricate the O-ring on which the ball seals (Figure 2, #2).

5. Replace the O-ring in the cap.
6. Inspect the ball for scratches or wear. Replace as necessary.
7. Return the ball to the cap.
8. Return the body to the cap and tighten firmly.
9. The unit is now ready for installation. See *Section 2.2, Installation and Operation*, for instructions on installing the ALS-4.

APPENDIX A: REFERENCED OR ATTACHED DOCUMENTS

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

- IOM-061: Welker® LE-2 Liquid Eliminator
- IOM-069: Welker® LE-2SSKO Probe Mounted Liquid Eliminator
- IOM-168: Welker® Guardian 2

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

- None

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

- Assembly Drawing: AD633BF

