



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER® DEHYDRATION ASSEMBLY

MODEL
DA-1HP

DRAWING NUMBER
AD285CO.3

MANUAL NUMBER
IOM-166

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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® Dehydration Assembly, DA-1HP. 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 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 Dehydration Assembly 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 Dehydration Assembly, you should immediately contact a Welker® representative.

Phone: 281.491.2331

Address: 13839 West Bellfort Street
Sugar Land, TX 77498

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® DA-1HP Dehydration Assembly is designed to filter, dry, and regulate high-pressure natural gas or instrument air for use as a pneumatic instrument supply. The system incorporates filters to remove unwanted elements from the instrument supply, as well as first-stage regulators to reduce the pressure of the supply prior to entering the instrumentation. This system utilizes a backup filter; in the event that the primary filter or regulator becomes obstructed and requires maintenance, the backup filter automatically goes into service, allowing operation to remain uninterrupted.

This system requires a downstream relief valve; if noted at the time of order, Welker® can equip the system with a relief valve with or without a pressure gauge to monitor the pressure of the pneumatic supply in the system if noted at the time of order. A drip pot upstream of the primary filter and a secondary filter downstream of the primary filter are options that can be added for increased liquid removal from the pneumatic supply. This additional free liquid removal will decrease the frequency of maintenance required for the filter cartridges.

Welker® may custom design the DA-1HP 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: DA-1HP Specifications	
Products	Natural Gas and Instrument Air Supply Systems
Materials of Construction	316/316L Stainless Steel, Brass, Buna, Carbon Steel, PTFE Others Available
Maximum Allowable Operating Pressure	2160 psig @ -20 °F to 100 °F (148 barg @ -28 °C to 37 °C)
Maximum Allowable Operating Temperature	200 °F (93 °C)
Inlet & Outlet Connections	¼" FNPT Others Available
Flow Rate	Up to 50 scfm
Nominal Filter Rating	3 Micron
Filter Media	Silica Gel and Activated Charcoal Others Available
Options	Drip Pot Moisture Indicator Pipe Stand Relief Valve With Pressure Gauge Secondary Filter

Figure 1: DA1-HP Diagram

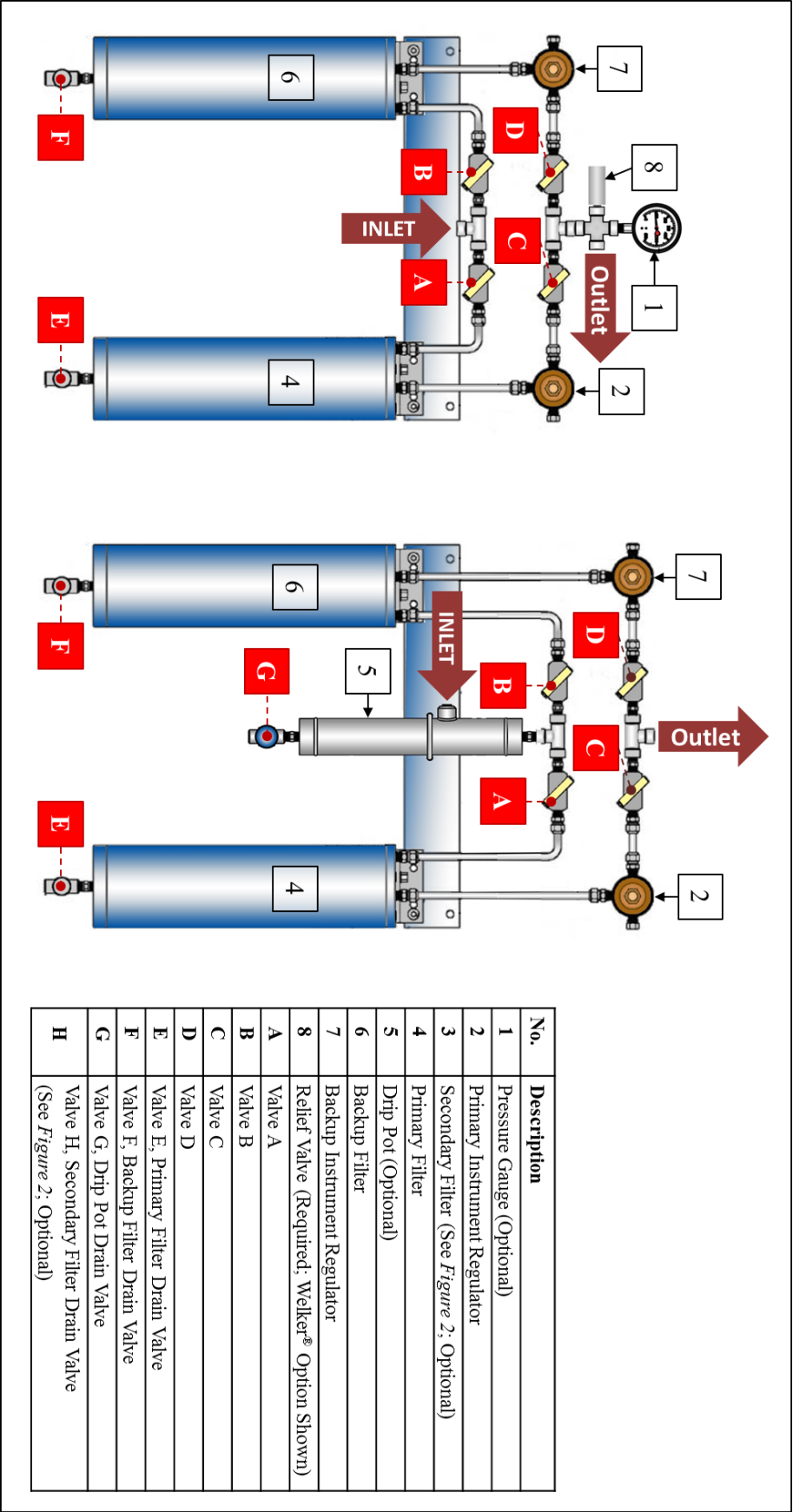
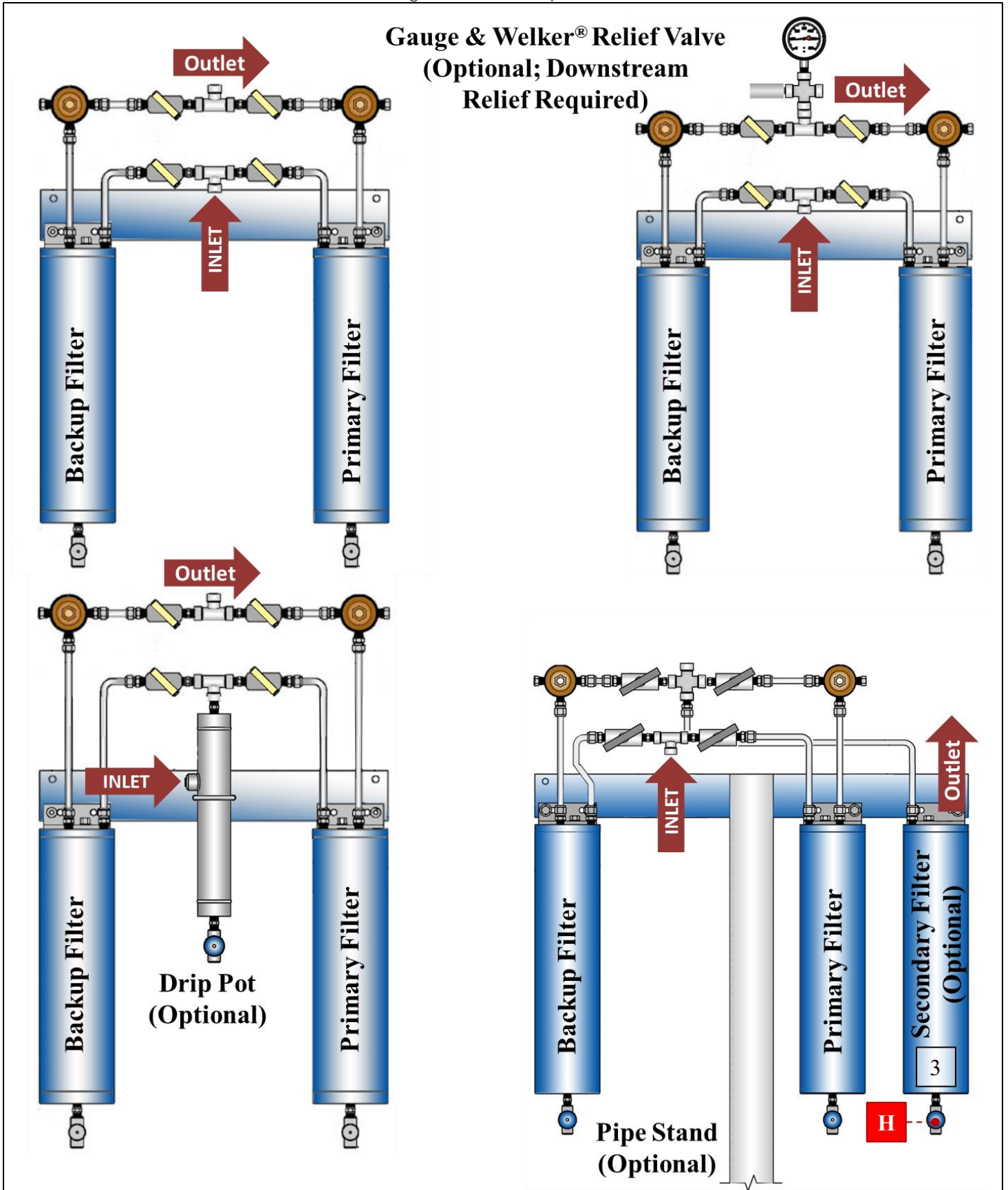


Figure 2: DA1-HP Options



2.1 Before You Begin



After unpacking the unit, check the equipment for compliance and for 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 & Operation

1. Mount the DA-1HP securely to a wall mount, pipe stand, or other mounting surface. If a pipe stand is provided, secure the stand to the floor or ground.
2. Ensure that all valves on the DA-1HP are closed.
3. Connect the inlet of the DA-1HP to a pressurized pneumatic supply source.
4. Connect the outlet of the DA-1HP to the inlet port of the instrument to be supplied with the filtered natural gas or instrument air.
5. To prevent over-pressurizing the instrument to be supplied with the filtered natural gas or instrument air, back the instrument regulators off completely before beginning installation.
6. Open the valve of the pressurized pneumatic supply source to begin supply flow to the DA-1HP.
7. Open valves A and B.
8. Open valve D. Ensure that valve C is closed.
9. Check for leaks and repair as necessary.
10. Set the instrument regulator on the backup filter to 80 psig. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the appropriate instrument regulator for instructions on setting the regulator.
11. Close valve D.
12. Open valve C.
13. Set the instrument regulator on the primary filter to 100 psig. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the appropriate instrument regulator for instructions on setting the regulator.



Setting the regulator on the primary filter to a higher pressure than the regulator on the backup filter ensures that the pneumatic supply will flow only to the outlet on the primary filter until the primary filter requires maintenance.

14. Open valve D.
15. Set the relief valve approximately 5 to 10 psig above the set point of the instrument regulator on the primary filter. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the relief valve for instructions on setting the relief valve.
16. If a valve is installed between the DA-1HP and the instrument to be supplied with the filtered natural gas or instrument air, open that valve to allow the pneumatic supply to reach the instrument.
17. Ensure that valves A, B, C, and D are open.
18. The unit is now operational.

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. This eases the installation of the seals and reduces the risk of damage when positioning them on parts. Welker recommends non-hydrocarbon-based lubricants, such as Krytox®, for use with all sample cylinder seals and silicone-based lubricants, such as Molykote® 111, for use with seals not exposed to the sample product.



Wipe excess lubricant from the seals, as it may adversely affect analytical instrument results.



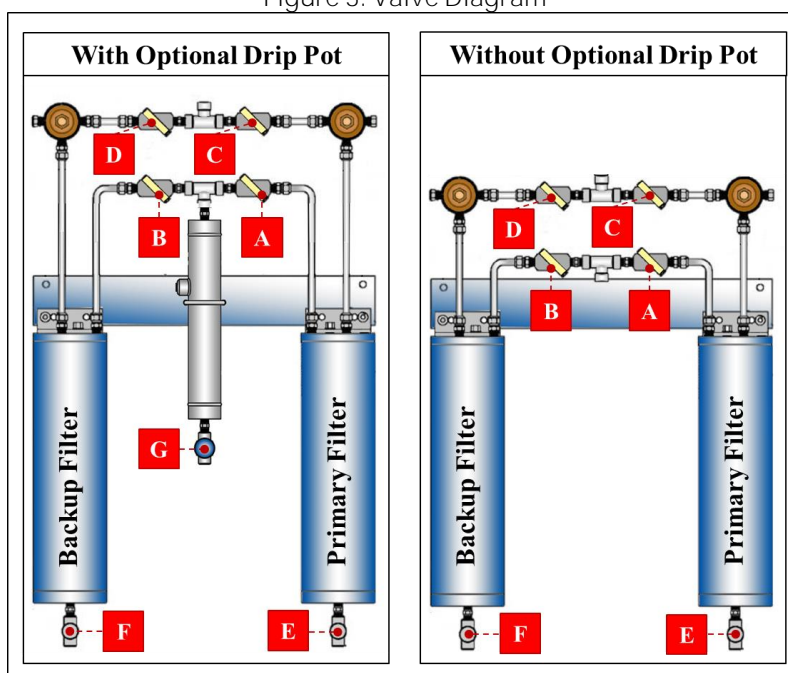
After the seals are installed, the outer diameter of shafts and inner diameter of cylinders may be lubricated to allow smooth transition of parts.

3. All maintenance and cleaning of the unit should be performed on a smooth, clean surface.

3.2 Maintenance

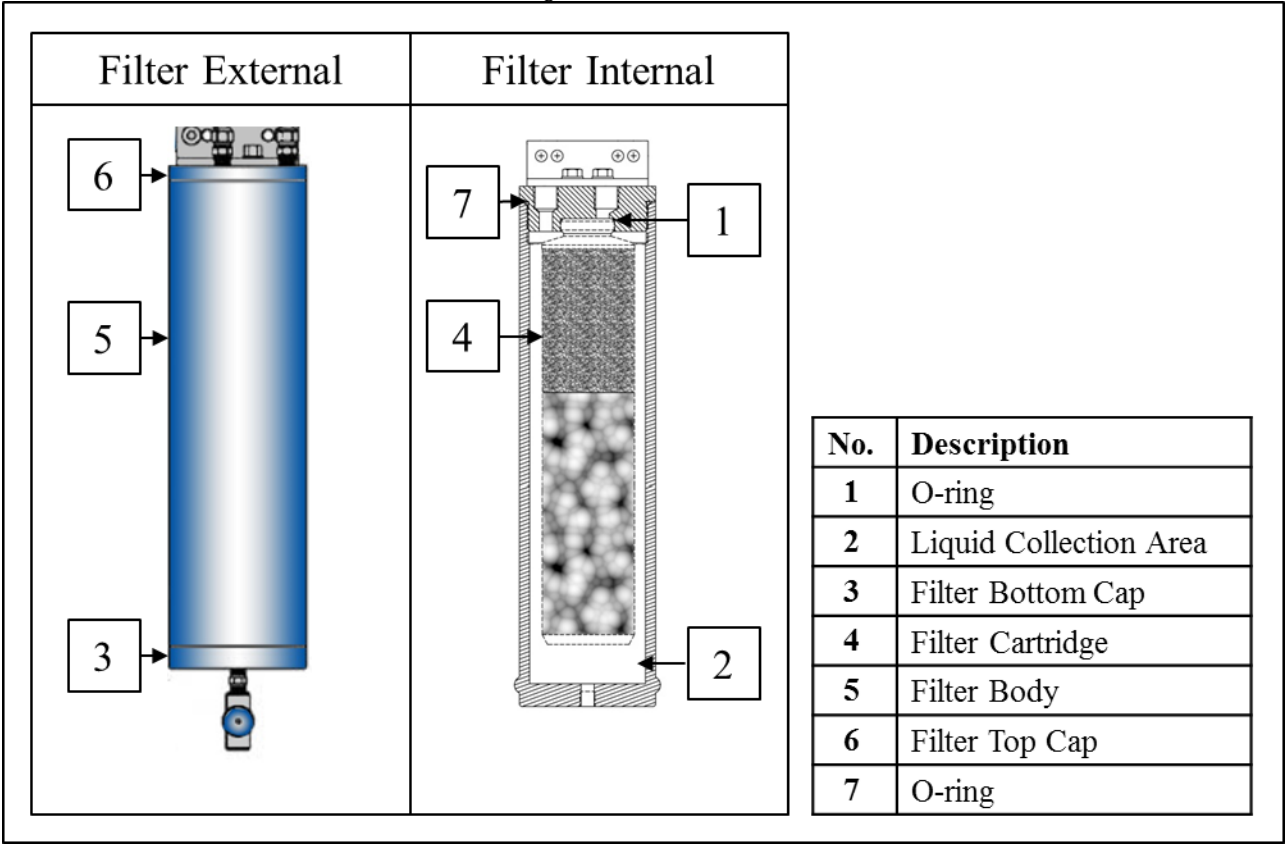
1. If the DA-1HP is equipped with an optional drip pot, determine how frequently free liquids accumulate by regularly opening drip pot drain valve G. Routinely open valve G and allow moisture to drain from the drip pot (*Figure 3*).
2. Determine how quickly free liquids accumulate in each filter by frequently opening drain valves E and F. Routinely open valves E and F to allow moisture to drain from each filter (*Figure 3*). If the DA-1HP is equipped with an optional drip pot, draining of liquid from valves E and F indicates that the drip pot is not being drained frequently enough.

Figure 3: Valve Diagram



3. Monitor the pressure on the DA-1HP. If at any time the pressure drops 5 to 10 psig, this is an indication that the primary filter is not functioning and that the backup filter has gone into service. Maintenance on the primary filter may be required.

Figure 4: Filter Detail



Maintenance on Primary Filter While Maintaining Supply to Instrument

4. Close valves A and C. A small drop in pressure may be noticed as the backup filter takes over operation.
5. Slowly open drain valve E to vent any pressure remaining in the primary filter assembly.
6. Remove the filter body.
7. Unscrew the filter top cap. If necessary, replace the O-rings inside the top cap.
8. Remove and replace the cartridge inside the filter.
9. Apply a small amount of anti-galling compound or thread lubricant to the top cap threads.
10. Screw the filter top cap back into the filter body.
11. Securely reattach the filter body.
12. Maintenance may now be performed on the instrument regulator. To perform maintenance on the instrument regulator, refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the appropriate instrument regulator.
13. Close drain valve E on the primary filter.
14. Slowly open valve A. Check the unit for leaks and repair as necessary.
15. Open valve C. The primary filter will now resume operation at the normal set pressure.
16. Maintenance may now be performed on the backup filter and optional secondary filter.

Maintenance on Backup Filter While Maintaining Supply to Instrument

17. Close valves B and D.
18. Slowly open drain valve F to vent any pressure remaining in the backup filter assembly.
19. Remove the filter body.
20. Unscrew the filter top cap. If necessary, replace the O-rings inside the top cap.
21. Remove and replace the cartridge inside the filter.
22. Apply a small amount of anti-galling compound or thread lubricant to the top cap threads.
23. Screw the filter top cap back into the filter body.
24. Securely reattach the filter body.
25. Maintenance may now be performed on the instrument regulator. To perform maintenance on the instrument regulator, refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the appropriate instrument regulator.
26. Close drain valve F on the backup filter.
27. Slowly open valve B. Check the unit for leaks and repair as necessary.
28. Open valve D.
29. Maintenance may now be performed on the optional secondary filter. If there is no optional secondary filter, proceed to step 42.

Maintenance on Optional Secondary Filter

30. Prior to performing maintenance on the optional secondary filter, halt all operations of the DA-1HP.
31. Close valves A, B, C, and D.
32. Slowly open drain valve H to vent any pressure remaining in the secondary filter assembly.
33. Remove the filter body.
34. Unscrew the filter top cap. If necessary, replace the O-rings inside the top cap.
35. Remove and replace the cartridge inside the filter.
36. Apply a small amount of anti-galling compound or thread lubricant to the top cap threads.
37. Screw the filter top cap back into the filter body.
38. Securely reattach the filter body.
39. Close drain valve H on the secondary filter.
40. Slowly open valves A and B. Check the unit for leaks and repair as necessary.
41. Open valves C and D. The primary filter will now resume operation at the normal set pressure.

Maintenance on Relief Valve

42. Prior to performing maintenance on the relief valve, halt all operations of the DA-1HP. To perform maintenance on the relief valve, refer to the *Installation, Operation, and Maintenance (IOM) Manual* of the relief valve.
43. Maintenance is now complete.

Attached Documents

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

- IOM-025: Welker® IR-1, IR-2, IR-4, IR-6 Instrument Regulators
- IOM-033: Welker® RV-1, RV-2, RV-2CP, and RV-3 Relief Valves
- IOM-169: Welker® F-5XHP & F-5XXHP Filter / Dryers

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

- **Appropriate manufacturer's IOM for the instrument regulator if other than the Welker® IR Instrument Regulators.**
- **Appropriate manufacturer's IOM for the relief valve if other than the Welker® RV Relief Valves.**

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

- Assembly Drawing: AD285CO.3

NOTES



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