Installation, Operation, and Maintenance Manual

Welker® Dehydration Assembly
Model
DA-1

Drawing No.: AD079CO, AD285CR
Manual No.: IOM-018

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.

This manual is intended to be used as a basic installation and operation guide for the Welker® Dehydration Assembly, *DA-1*. 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.

13839 West Bellfort
Sugar Land, TX 77498-1671
(281) 491-2331 - Office
(800) 776-7267 - USA Only
(281) 491-8344 - Fax
http://www.welker.com

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Section 1:

SPECIFICATIONS

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 (USA) or 1-281-491-2331.

Notes, Cautions, and Warnings

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.

*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® *DA-1* Dehydration Assembly is designed to filter, dry, and regulate 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 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.

The system may also be equipped with an optional gauge and relief valve that can be used to monitor the pressure of the pneumatic supply in the system. A drip pot upstream of the primary filter and a second 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-1 to suit the particular application and specifications of each customer.

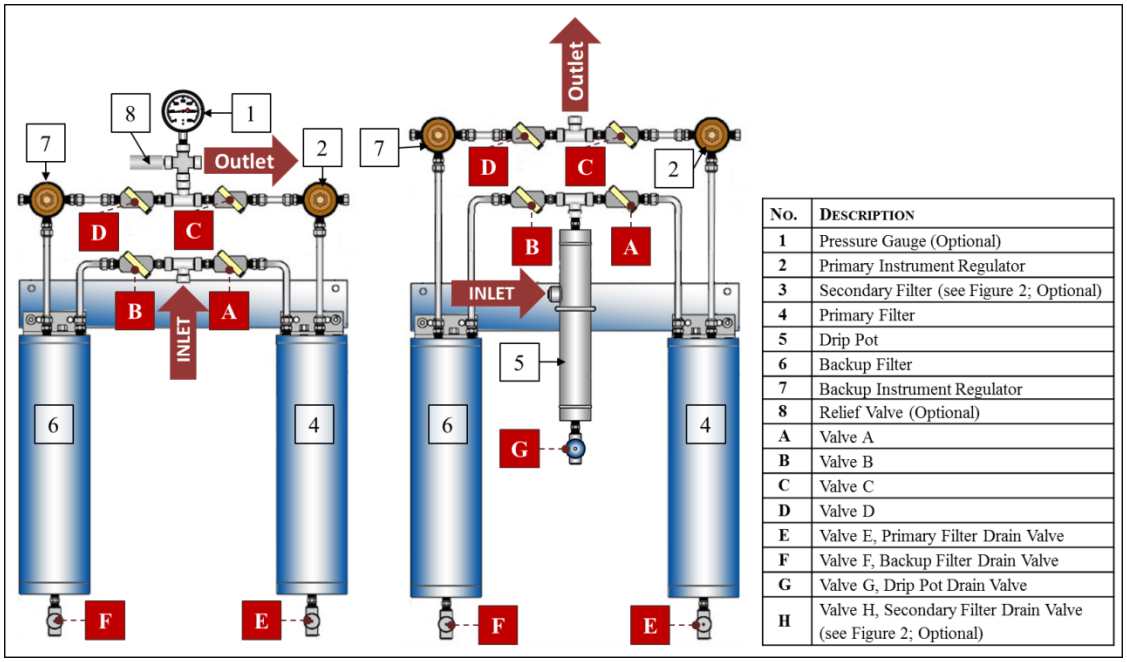
1.3 SPECIFICATIONS

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-1 Specifications	
Products	Natural Gas and Instrument Air Supply Systems
Materials of Construction	316/316L Stainless Steel, Carbon Steel, Brass, Viton®, PTFE Others Available
Maximum Allowable Operating Pressure	1500 psi @ -20°F to 100°F (*106 bar @ -29°C to 38°C*)
Maximum Allowable Operating Temperature	200°F @ 1240 psi (*93°C @ 85 bar*)
Flow Rate	Up to 50 scfm
Filter Media	Silica Gel and Activated Charcoal Others Available
Final Filtration	4 micron
Inlet & Outlet Connections	1/4" FNPT Others Available
Relief Valve Outlet Connection (Optional)	1" FNPT, 1/4" NPT Others Available
Options	Drip Pot Moisture Indicator Pipe Stand Pressure Gauge with Relief Valve Secondary Filter

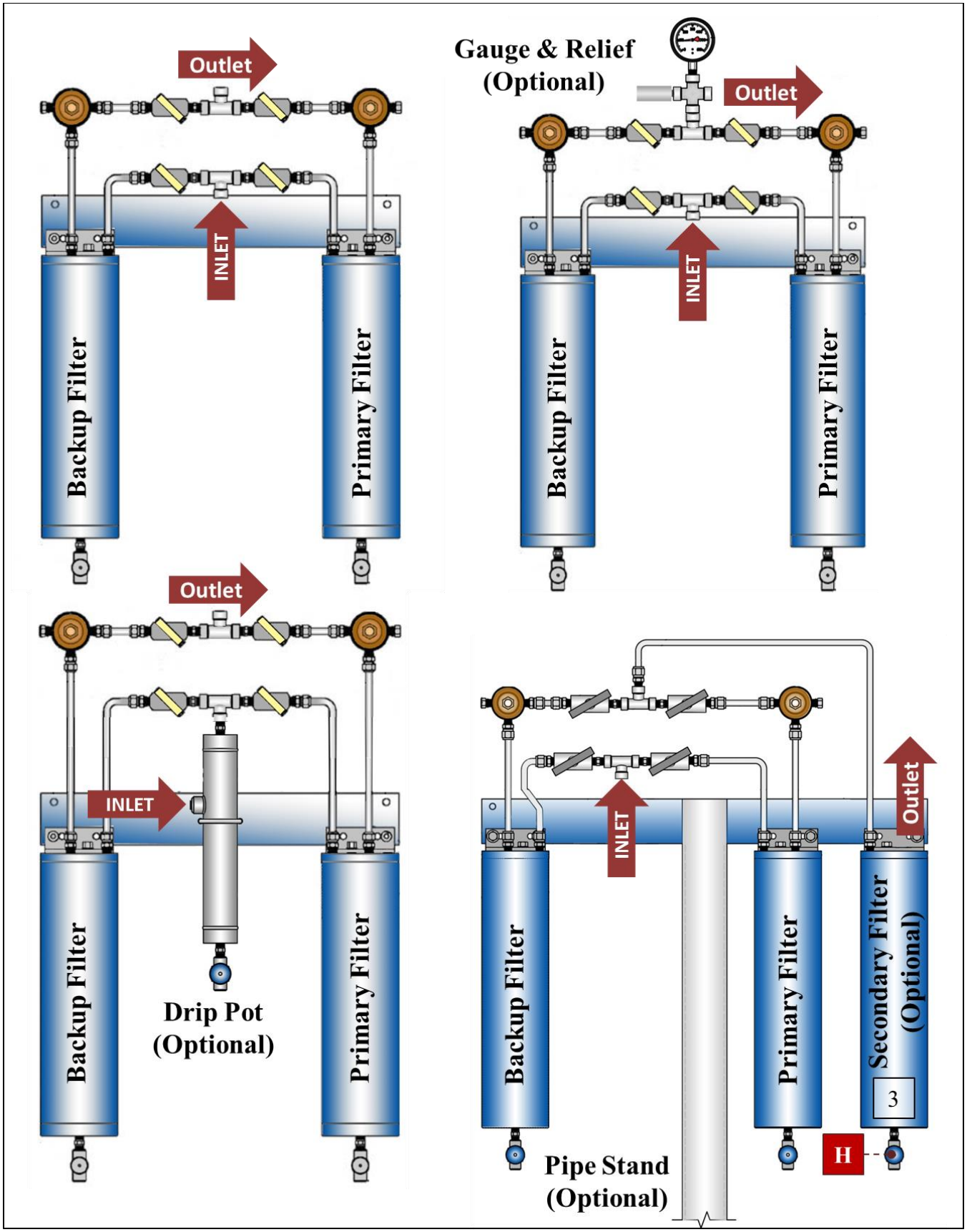
1.4 SYSTEM DIAGRAMS

Figure 1: System Diagram



No.	Description
1	Pressure Gauge (Optional)
2	Primary Instrument Regulator
3	Secondary Filter (see Figure 2; Optional)
4	Primary Filter
5	Drip Pot
6	Backup Filter
7	Backup Instrument Regulator
8	Relief Valve (Optional)
A	Valve A
B	Valve B
C	Valve C
D	Valve D
E	Valve E, Primary Filter Drain Valve
F	Valve F, Backup Filter Drain Valve
G	Valve G, Drip Pot Drain Valve
H	Valve H, Secondary Filter Drain Valve (see Figure 2; Optional)

Figure 2: System Options



Section 2:

INSTALLATION & OPERATIONS

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 shipment 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 carrier.

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

2.2 INSTALLATION & OPERATION

1. Mount the DA-1 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-1 are closed.
3. Connect the inlet of the DA-1 to a pressurized pneumatic supply source.
4. Connect the outlet of the DA-1 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-1.
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 backup regulator approximately 5 to 10 psi below the output pressure desired for the instrument to be supplied. Refer to the *Installation, Operation, and Maintenance* (IOM) *Manual* for 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 the output pressure desired for the instrument to be supplied with the filtered natural gas or instrument air. This should be approximately 5 to 10 psi above the set point of the backup regulator. Refer to the *Installation, Operation, and Maintenance* (IOM) *Manual* of the appropriate instrument regulator for instructions on setting the regulator.
14. Open valve D.
15. If the DA-1 is equipped with the optional relief valve and gauge, set the relief valve approximately 5 to 10 psi above the set point of the instrument regulator on the primary filter. Refer to the *Installation, Operation, and Maintenance* (IOM) *Manual* of the appropriate relief valve for instructions on setting the relief valve.
16. If a valve is installed between the DA-1 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. The unit is now operational.

Section 3:

MAINTENANCE

3.1 BEFORE YOU BEGIN

1. **Welker® recommends that the unit have regular 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 unit in case of unexpected wear or faulty seals.

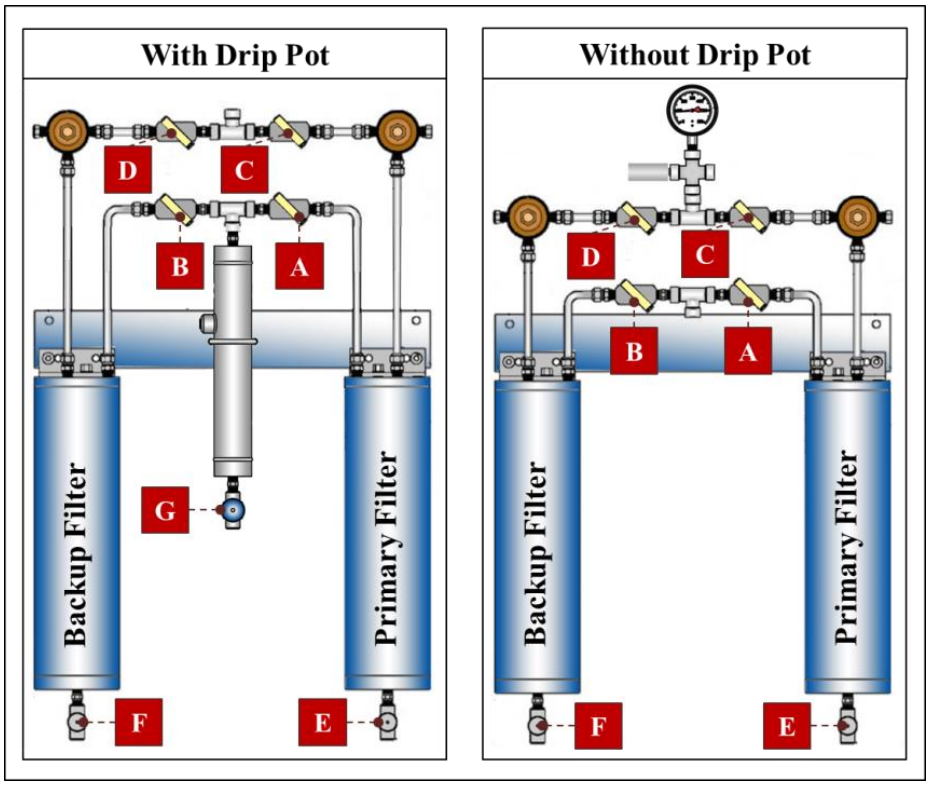
New seals supplied in spare parts kits are not lubricated. They should be lightly coated with lubrication grease before installation. Welker® recommends Dow Corning® 111 (DC 111) or an equivalent lubricant for use with this unit.

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

3.2 MAINTENANCE

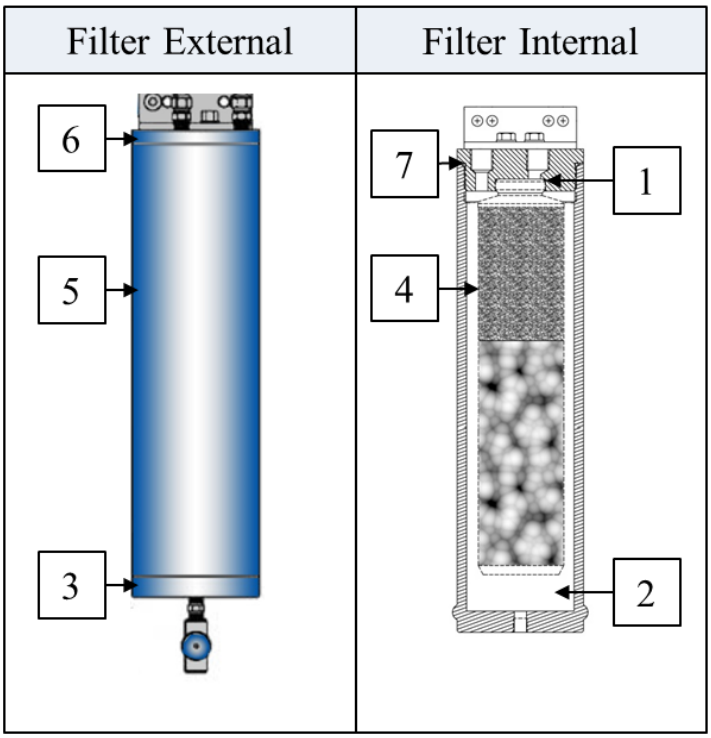
1. If the DA-1 is equipped with an optional drip pot, determine how frequently free liquids accumulate by regularly opening the drip pot drain valve G. Routinely open valve G and allow moisture to drain from the drip pot (*Figure 3*).
2. Determine how quickly free liquids accumulate in each filter by frequently opening the drain valves E and F. Routinely open valves E and F to allow moisture to drain from each filter (*Figure 3*). If the DA-1 is equipped with an optional drain 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-1. If at any time the pressure drops 5 to 10 psi, 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



No.	Description
1	O-ring
2	Liquid Collection Area
3	Filter Bottom Cap
4	Filter Cartridge
5	Filter Body
6	Filter Top Cap
7	O-ring

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 filter assembly.
6. Remove the filter body.
7. Unscrew the filter top cap. If necessary, replace the two 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* for the appropriate instrument regulator.
13. Close the drain valve E on the 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 the drain valve F to vent any pressure remaining in the filter assembly.
19. Remove the filter body.
20. Unscrew the filter top cap. If necessary, replace the two 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. Close the drain valve F on the filter.
26. Slowly open valve D. Check the unit for leaks and repair as necessary.
27. Open valve B.
28. Maintenance may now be performed on the optional secondary filter.

Maintenance on Optional Secondary Filter

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

Maintenance on Optional Relief Valve

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

APPENDIX

ATTACHED DOCUMENTS:

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

- IOM-025: Welker® IR-4 Instrument Regulator
- IOM-033: Welker® RV-1, RV-3 Relief Valve
- IOM-046: Welker® F-4, F-5, F-19, F-23, F-31 Filter / Dryers

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

- Appropriate Manufacturer's IOM for the Catalytic Heater
- Appropriate Manufacturer's IOM for the Instrument Regulator, if other than the Welker® IR Instrument Regulator

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

- Assembly Drawing (Standard): AD079CO
- Assembly Drawing (TransCanada): AD079CA.1
- Assembly Drawing (with Optional Drip Pot): AD285CR
- Assembly Drawing (with Optional Secondary Filter): AD285CR

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