Installation, Operation, and Maintenance Manual

Welker® CP-30 Validation Receiver with Level Indicator (Non-mixer)

Model

CP-30-CSI CRN

Drawing No.: AD159BKCRN8
Manual No.: IOM-142

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 operations guide for the Welker® CP-30 Validation Receiver with Level Indicator, *CP-30-CSI CRN*. 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® 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® 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® CP-30 Validation Receiver is a constant pressure cylinder designed to provide high volume storage of sampled product. This may be used for calibration checks on analyzing equipment during product sample analysis. This unit is designed to maintain collected product in its original composition and phase state, which allows the collected product to be the same for repeated uses. Because of this, product stored in the validation receiver can be analyzed to produce a "known" value that is repeatable and can be utilized in the future for analyzing equipment calibration, rather than using more expensive certified liquid standard products.

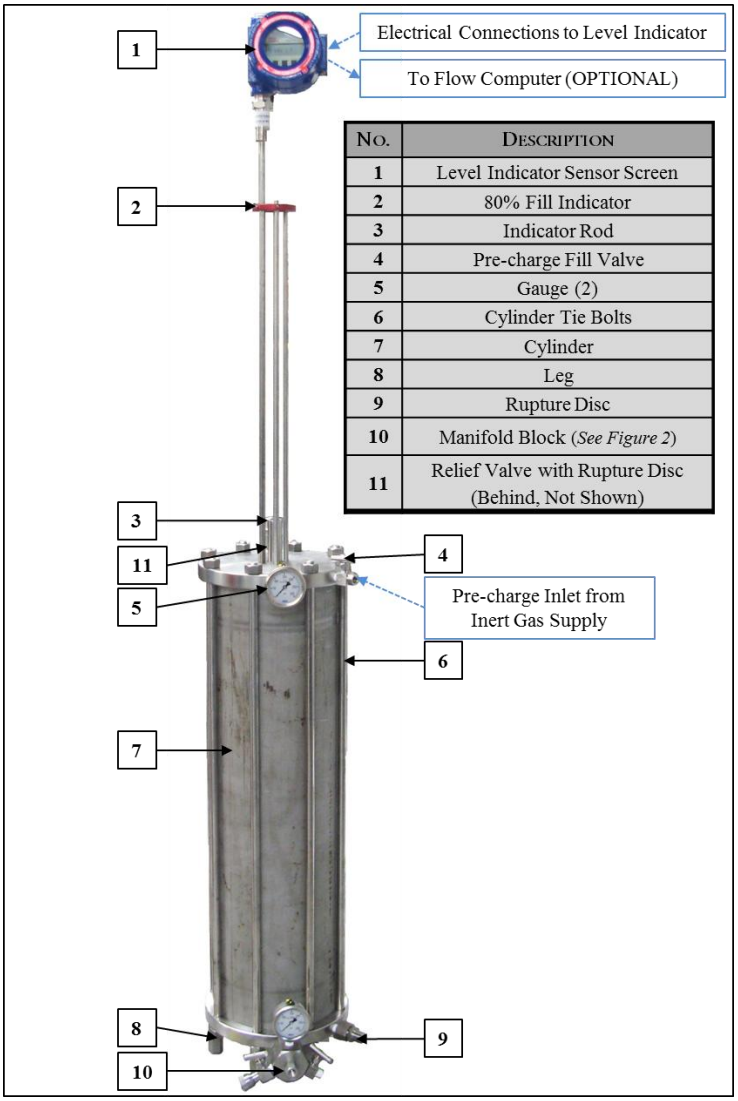
1.3 SPECIFICATIONS

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: System Specifications	
Products	Liquids and Gases compatible with materials of construction
Materials of Construction	316 Stainless Steel, Anodized Aluminum, Viton®, PTFE Others available upon request.
Sample Volume	6.6 gallons Others available upon request.
Inlet & Outlet Connections	¼" NPT
Relief Valve Connection	¼" NPT
Maximum Allowable Operating Pressure	300 psi @ -20° to 120°F (20.7 bar @ -29° to 49°C)

1.4 SYSTEM DIAGRAM

Figure 1: System Diagram



No.	Description
1	Level Indicator Sensor Screen
2	80% Fill Indicator
3	Indicator Rod
4	Pre-charge Fill Valve
5	Gauge (2)
6	Cylinder Tie Bolts
7	Cylinder
8	Leg
9	Rupture Disc
10	Manifold Block (*See Figure 2*)
11	Relief Valve with Rupture Disc (Behind, Not Shown)

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 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

Use caution when lifting; the validation receiver is heavy.

Use caution when lifting or moving. The level indicator protrudes above the validation receiver and may be bent or otherwise damaged if it is not properly supported and protected during lifting or moving. Refer to the *Installation, Operation, and Maintenance Manual* for the level indicator for proper care and maintenance instructions.

1. Locate the validation receiver as close as possible to the analyzing equipment.
2. Secure the validation receiver to a flat, level surface. Ensure that the legs of the validation receiver are stable and that the validation receiver is not in danger of falling or toppling over.
3. Ensure that all valves on the validation receiver are closed.
4. Connect all necessary electrical connections to the level indicator. Refer to the *Installation, Operation, and Maintenance Manual* for the level indicator for installation instructions.
5. OPTIONAL: Connect the level indicator to the Flow Computer, PLC, or DCS to remotely monitor the fill level of the validation receiver.
6. Connect an appropriate customer-supplied inert gas supply container to the pre-charge inlet port (*Figure 3*) with a customer-supplied isolation valve (Valve B) located between the valve on the inert gas supply (Valve A) and the pre-charge fill valve (Valve C) (*Figure 2*).

The pre-charge gas being used must be compatible with the seals in the cylinder. The relief valves and gauges must be adequate for the pressure used to pre-charge the cylinder.

Figure 2: Inert Gas Valves

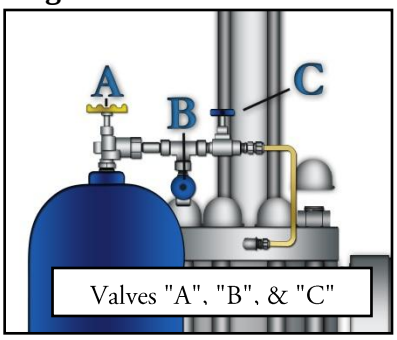
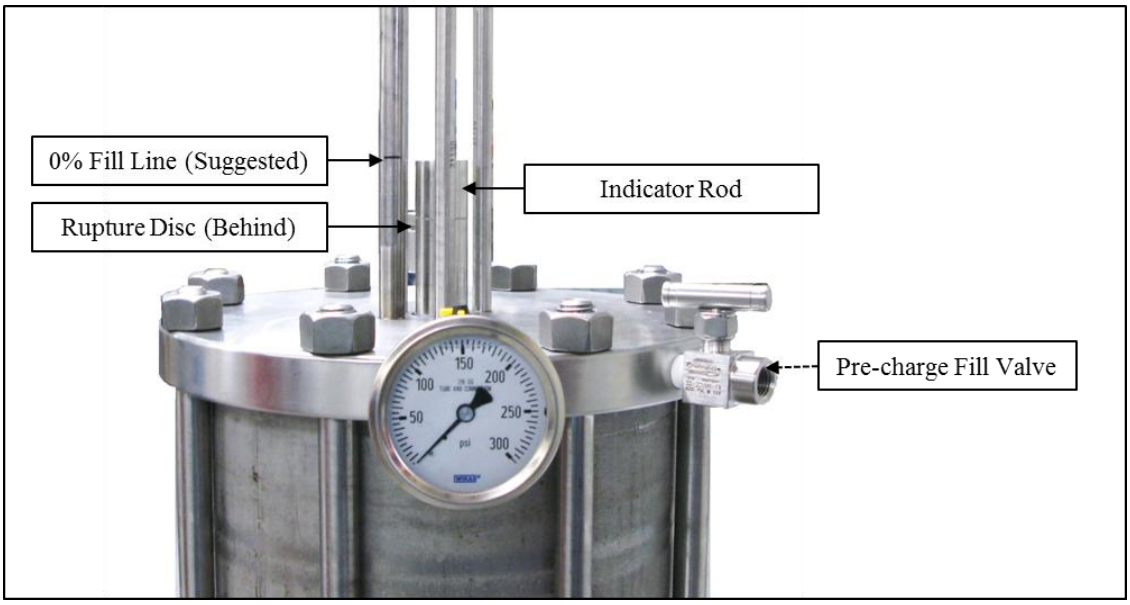
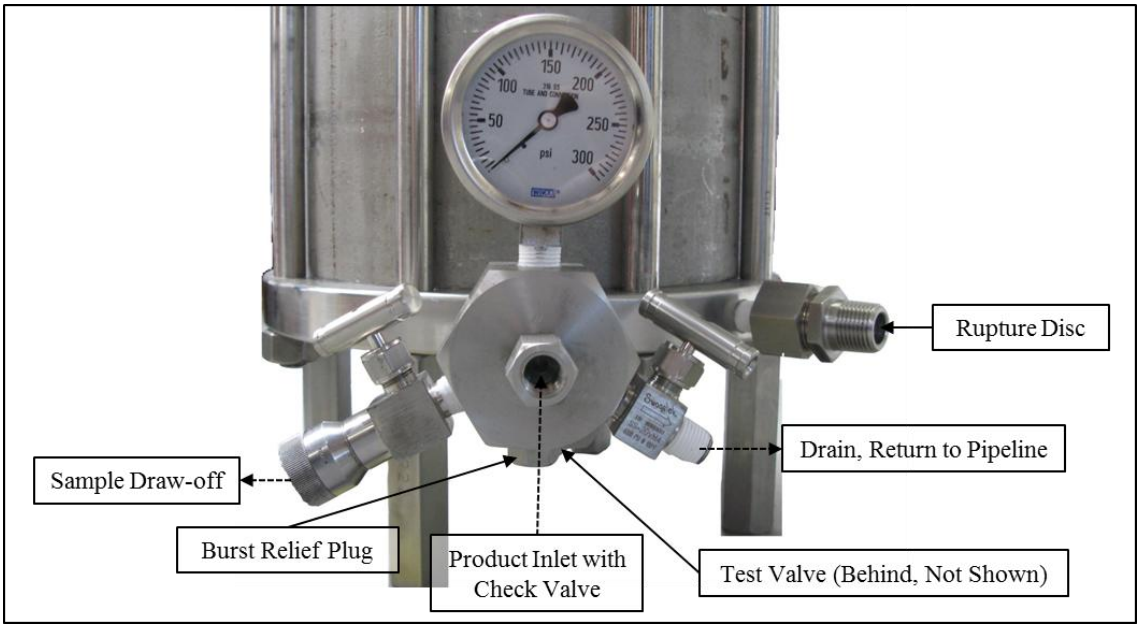


Figure 3: Cylinder Connections, Top Cap



7. Connect the product inlet port on the manifold block to the pipeline connection (*Figure 4*).
8. Connect the drain port back to the pipeline, to a recovery system, or to sump.
9. Connect the rupture disc on the base of the cylinder to a recovery system, sump, or other outlet at atmospheric pressure.

Figure 4: Cylinder Connections, Manifold Block and Base



2.3 OPERATIONS

Pre-charging the Validation Receiver (*Figure 2*):

1. Begin with all valves closed.
2. Slowly open Valve A on the inert gas supply container.
3. Slowly open Valve B, and then slowly open Valve C.
4. Slowly open the test valve (*Figures 4 & 5*) and the draw-off valve on the manifold block (*Figure 4*) to relieve any build-up of pressure. The piston should begin to move.
5. Allow the pre-charge side of the validation receiver to fill until the indicator rod is fully retracted. Use a felt-tip marker to mark this point as the 0% fill mark.
6. Continue to fill until the pressure gauge reads 50 to 100 psi above pipeline operating pressure, not to exceed the maximum allowable operating pressure of the device.
7. Once the indicator rod is fully retracted and the desired pressure has been reached, close Valve B and the draw-off valve. The test valve should remain OPEN.
8. Check the system for leaks and repair as necessary.
9. Close Valves A and C completely.

Purging the Validation Receiver:

10. Open the pipeline connection to allow product to flow to the validation receiver.
11. Slowly open the draw-off valve on the manifold block until air is displaced and product appears.
12. Close the draw-off valve.

Filling the Validation Receiver with Product:

13. Ensure that the pipeline connection is open and product is flowing to the validation receiver.
14. Open the pre-charge fill valve (Valve A) to relieve pre-charge pressure. Valve B should be open. The indicator rod should begin to rise as product fills the validation receiver.
15. When the validation receiver has been filled to 80%, the level indicator may shut off sampling or send a signal to the Flow Computer, depending on its settings.
16. Filling may be stopped manually by closing all valves, *except for* the test valve on the manifold block, which should remain open at all times.
17. To cease filling, the inert gas on the pre-charge side of the cylinder must be higher than pipeline pressure. If necessary, add additional pre-charge inert gas at Valve B.

Never fill the cylinder to above 80% capacity. Allow at least 20% room for product expansion should the cylinder be exposed to increased temperatures.

Withdrawing Product for Validation:

18. To transfer product to a transportation cylinder for use at analyzing equipment, connect a constant pressure cylinder or other transportable container to the draw-off valve.
19. Open the draw-off valve and the inlet valve of the transportable container.
20. Allow the container to fill to 80%, allowing for possible product expansion during transportation.
21. Close the draw-off valve and the inlet valve of the transportable container.
22. Label the transportable container and prepare it for transportation according to company policy.
23. The collected product may be transported and used to calibrate analyzing equipment.

Please note, this product does not come equipped (standard) with a mixer. Welker® recommends that the customer comply with all appropriate industry regulations and standards regarding the calibration of product analyzing equipment.

24. This procedure may be repeated to get full use of the product stored in the validation receiver.
25. When all desired product has been extracted, open the drain valve on the manifold block to drain any remaining product to pipeline, recovery system, or sump.

Section 3:

MAINTENANCE

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. 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 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 done on a smooth, clean surface.

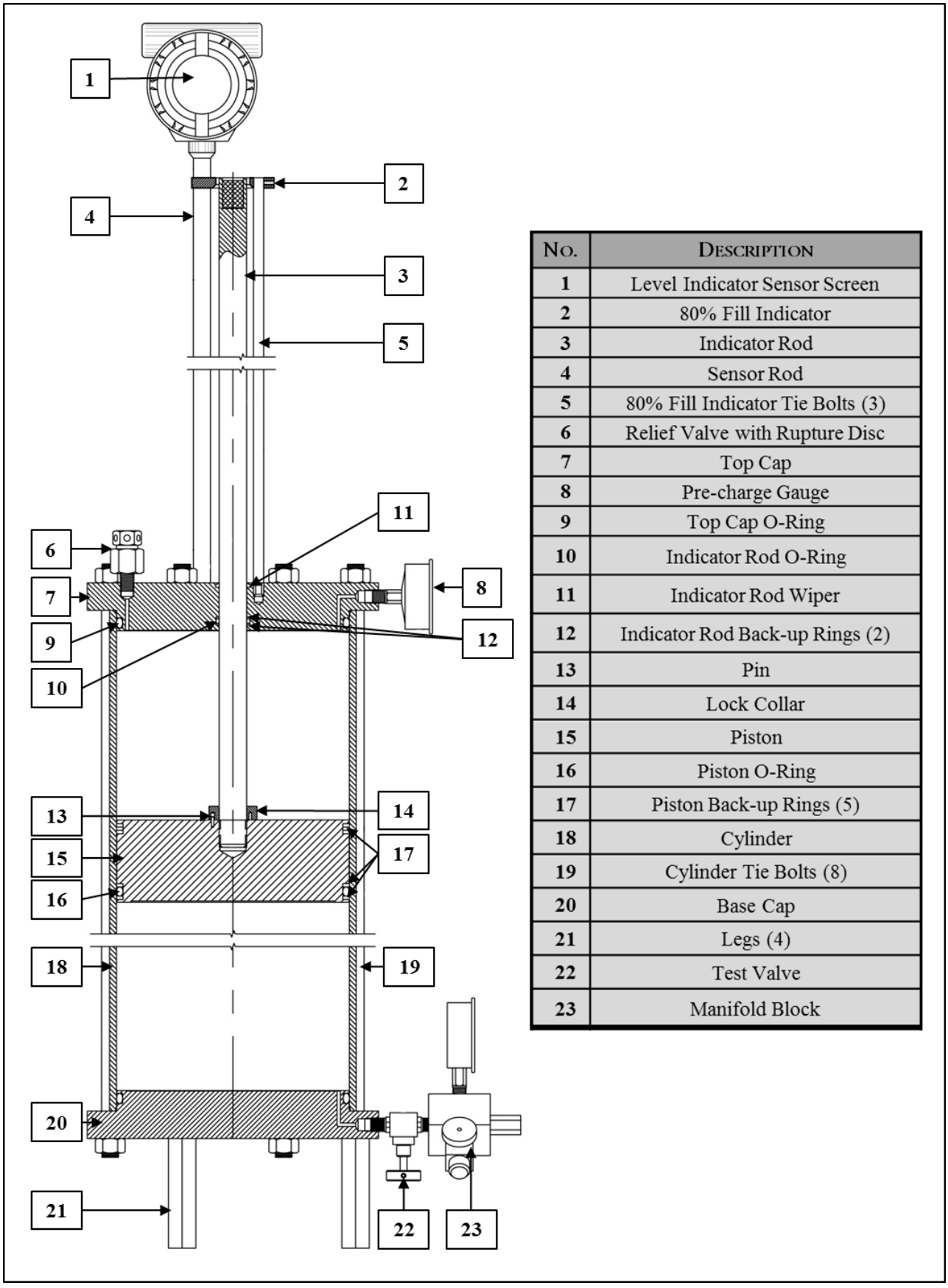
3.2 MAINTENANCE (*FIGURE 5*)

1. Completely depressurize and drain the cylinder prior to performing maintenance.
2. Disconnect all tubing and wiring, including wiring from the level indicator.
3. Using an Allen wrench, remove the level indicator and 80% fill indicator and set them aside.
4. To perform necessary maintenance on the level indicator, refer to the *Installation, Operation, and Maintenance Manual* for the level indicator.
5. Remove the nuts from the top cap.
6. Gently lift the top cap off the tie bolts.
7. Gently slide the cylinder off the base and tie bolts.
8. Remove the piston from the cylinder.
9. Replace all seals in the piston.
10. Inspect the indicator rod shaft for scratches. Remove and polish as necessary.

The indicator rod shaft should only be removed from the piston if it needs to be polished. If removed, reinstall gently and ensure that pins and clamps are back in place.

11. Clean the cylinder thoroughly and inspect for scratches. Polish as necessary.
12. Place the piston back into the cylinder.
13. Gently slide the cylinder onto the base and tie bolts.
14. Gently slide the top cap onto the cylinder and tie bolts.
15. Tighten the nuts back onto the tie bolts.
16. Carefully reattach the level indicator and 80% fill indicator.
17. Reconnect the wiring to the level indicator.
18. Reconnect all tubing as instructed in Section 2.2, *Installation*. The validation receiver is now ready to be returned to operation.

Figure 5: CP-30 Maintenance Diagram



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1	Level Indicator Sensor Screen
2	80% Fill Indicator
3	Indicator Rod
4	Sensor Rod
5	80% Fill Indicator Tie Bolts (3)
6	Relief Valve with Rupture Disc
7	Top Cap
8	Pre-charge Gauge
9	Top Cap O-Ring
10	Indicator Rod O-Ring
11	Indicator Rod Wiper
12	Indicator Rod Back-up Rings (2)
13	Pin
14	Lock Collar
15	Piston
16	Piston O-Ring
17	Piston Back-up Rings (5)
18	Cylinder
19	Cylinder Tie Bolts (8)
20	Base Cap
21	Legs (4)
22	Test Valve
23	Manifold Block

APPENDIX

ATTACHED DOCUMENTS:

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

- OPTIONAL: CP-2 or other Constant Pressure Cylinder

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

- MTS: Wilson® MTS Electronic Level Indicator Sensor (Welker IOM-V036)

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

- Assembly Drawing: AD159BKCRN8

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