



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER® STATIONARY CRUDE OIL CONTAINER

MODEL
SCC-3, SCC-5, SCC-10, SCC-15, SCC-20,
SCC-30

DRAWING NUMBER
AD074B0
AD179CB
AD179CO
AD179CO.1
AD350CO
AD578CO
AD578CP
AD673BB
AD673BC
AD703BC
AD703BD
AD703BO.1

MANUAL NUMBER
IOM-034

REVISION
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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 could result in damage to equipment if not observed.



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

This manual is intended to be used as a basic installation and operation guide for the Welker Stationary Crude Oil Container, SCC. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is provided in Appendix A 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 Stationary Crude Oil Container is of a mechanical and electrical 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 Stationary Crude Oil Container, please contact a Welker representative immediately.

Phone: 281.491.2331

Address: 13839 West Bellfort Street
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1.1 Introduction

We appreciate your business and your choice of Welker products. The installation, operation, and maintenance liability for this equipment becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manuals* 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 SCC Stationary Crude Oil Container is designed to be an atmospheric receiver for sampling systems that are looking for basic sediment and water (BS&W).

Product level can be visually verified by referring to the level sight gauge connected to the sample inlet. The following optional equipment can be added to enable remote operation: a high-level switch to signal the Programmable Logic Controller (PLC) once the desired volume of sample has been collected and a flow switch to provide accurate detection of excessive or insufficient flow rates.

The SCC is a self-contained container and mixing system that incorporates a static mixer into the circulation system. The product is contained in the receiver during the sample period and then thoroughly mixed to provide an excellent homogeneous mix of the sample for the lab. The internal spray bar with nozzle ensures that the walls and top of the SCC are reached during mixing and cleaning.



For this manual, the term “Programmable Logic Controller” (PLC) will refer to the PLC, DCS, or other signal control used by the customer.

Welker may custom design the SCC 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. Please note that the specifications may vary depending on the customization of your equipment.

Table 1: SCC Specifications

Products Sampled	Crude Oil and Light Liquids Compatible With Materials of Construction	
Materials of Construction	316 Stainless Steel, Carbon Steel, and Stainless Steel	
Maximum Allowable Operating Pressure	125 psig @ -20 °F to 120 °F (<i>8 barg @ -28 °C to 48 °C</i>)	
Power	AC 110 V, 50 Hz AC 110 V, 60 Hz Others Available	
Connections	High-Level Switch Port: ½" FNPT Inlet: ¼" FNPT Optional Inlet: ½" FNPT Sample Draw Off: ¼" Tubing To Enduser-Approved Collection Location: ½" FNPT	
Container Volume	SCC-3 – 3 US Gallons SCC-5 – 5 US Gallons SCC-10 – 10 US Gallons SCC-15 – 15 US Gallons SCC-20 – 20 US Gallons SCC-30 – 30 US Gallons	
Mounting	Skid-Mounted	
Weight	SCC-3 – Approx. 128 lb SCC-5 – Approx. 230 lb SCC-10 – Approx. 400 lb	SCC-15 – Approx. 400 lb SCC-20 – Approx. 715 lb SCC-30 – Approx. 515 lb
Features	Internal Epoxy Coating Local On/Off Switch Motorized Pump Motor Mounting Plate With Vibration Absorbers Pressure Relief Valve Sample Draw Off Valve Side and Top Spray Nozzle Skid-Mounted Sample Container and Mixing and Cleaning System Static Mixer and Circulation System Subsample Draw Off Valve Tank Volume Level Sight Glass Vacuum Relief	
Industry Standards	API Chapter 8 ASTM D4057 ASTM D4177 ASTM D5854 ISO 3170 ISO 3171	
Options	Flow Switch High-Level Shutoff	

Figure 1: SCC Models

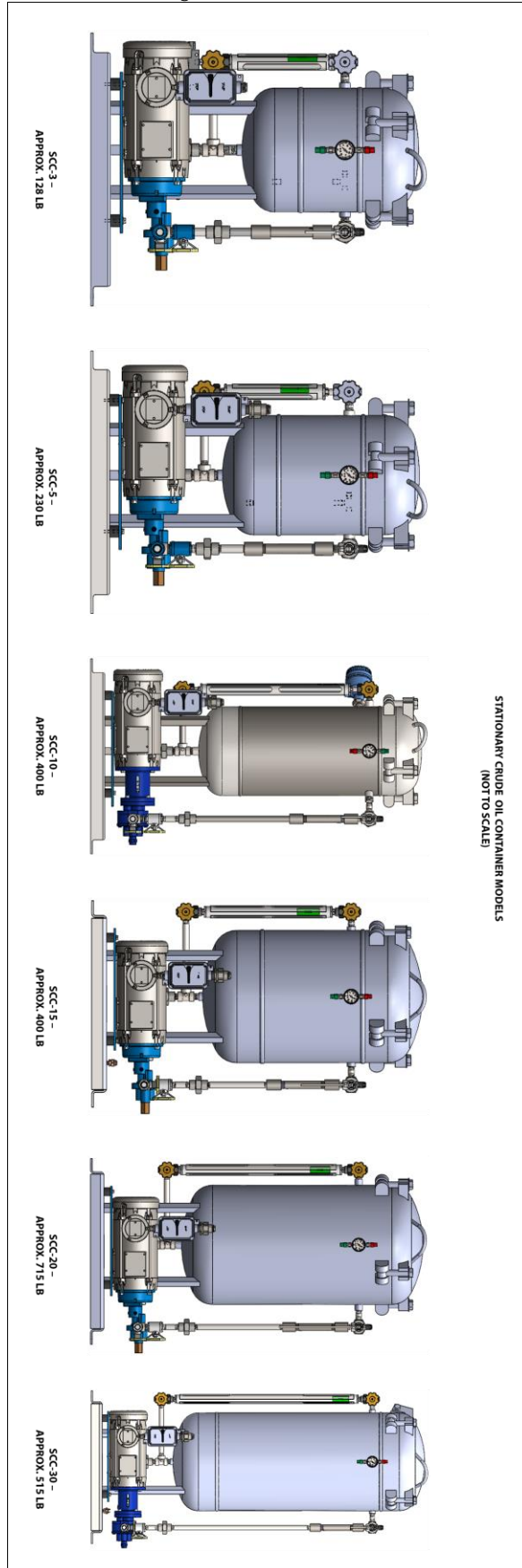


Figure 2: SCC Connections Diagram

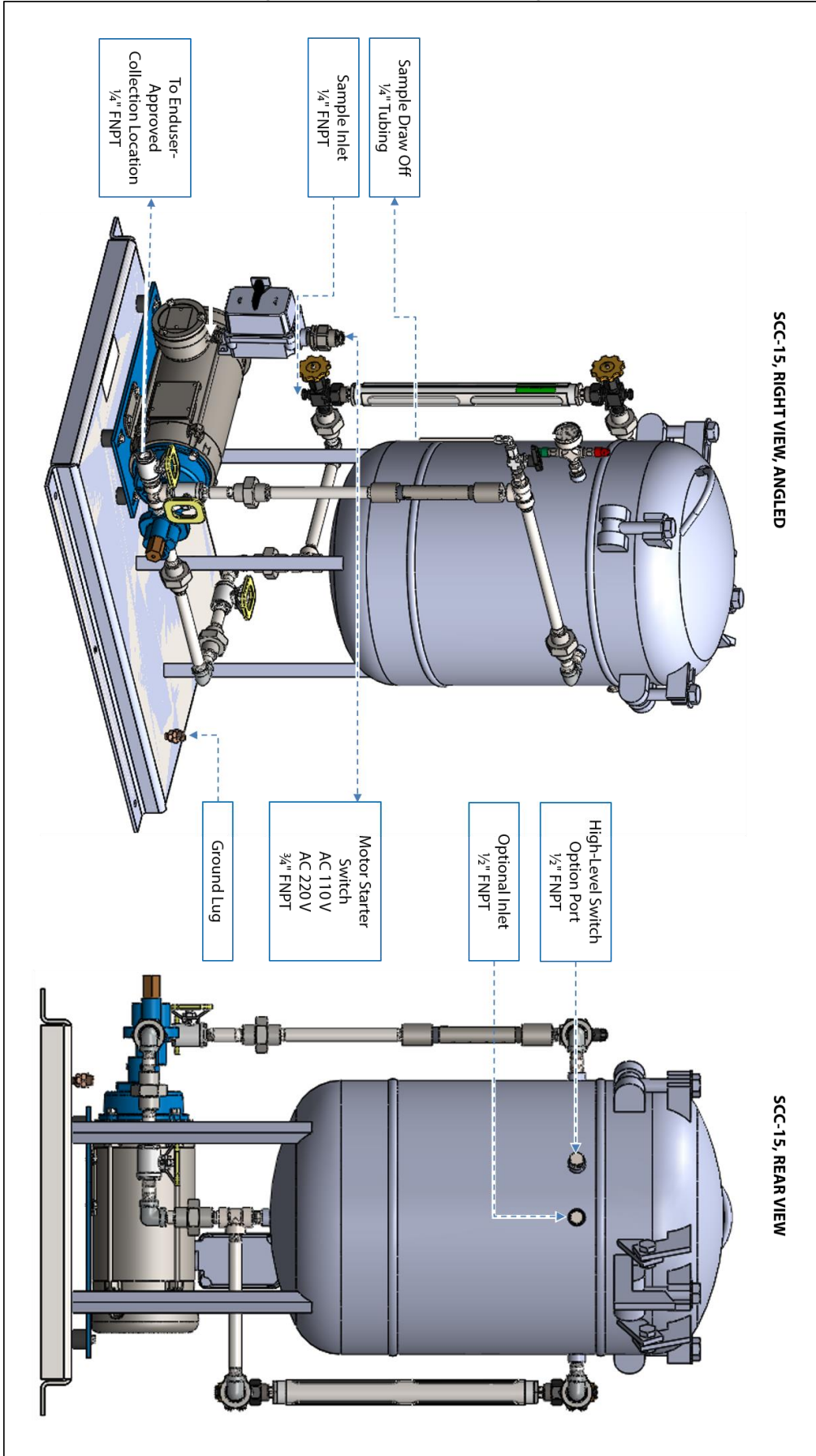
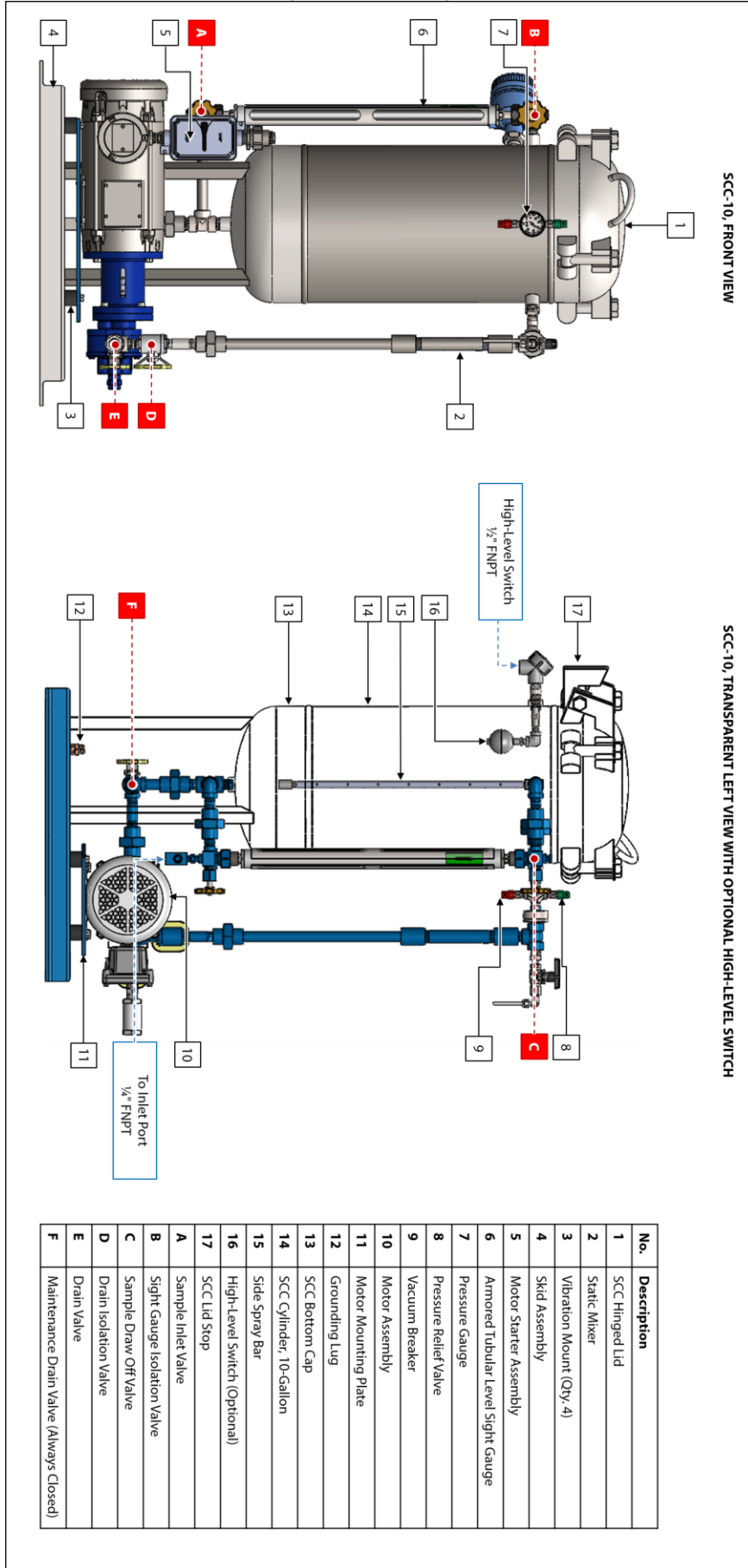
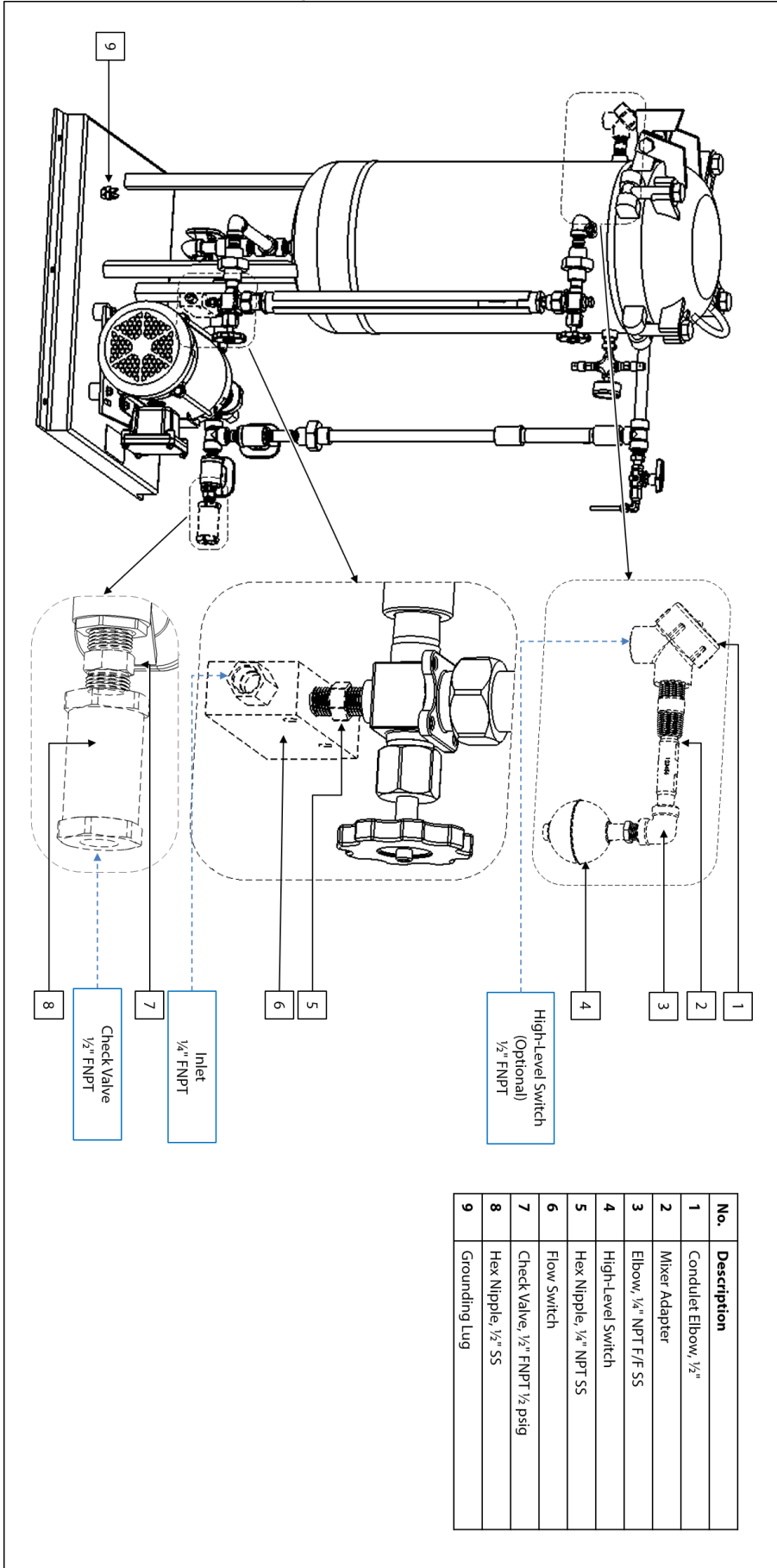


Figure 3: SCC Diagram



No.	Description
1	SCC Hinged Lid
2	Static Mixer
3	Vibration Mount (Qty. 4)
4	Skid Assembly
5	Motor Starter Assembly
6	Armored Tubular Level Sight Gauge
7	Pressure Gauge
8	Pressure Relief Valve
9	Vacuum Breaker
10	Motor Assembly
11	Motor Mounting Plate
12	Grounding Lug
13	SCC Bottom Cap
14	SCC Cylinder, 10-Gallon
15	Side Spray Bar
16	High-Level Switch (Optional)
17	SCC Lid Stop
A	Sample Inlet Valve
B	Sight Gauge Isolation Valve
C	Sample Draw Off Valve
D	Drain Isolation Valve
E	Drain Valve
F	Maintenance Drain Valve (Always Closed)

Figure 4: SCC-10 Detail



No.	Description
1	Condulet Elbow, 1/2"
2	Mixer Adapter
3	Elbow, 1/4" NPT F/F SS
4	High-Level Switch
5	Hex Nipple, 1/4" NPT SS
6	Flow Switch
7	Check Valve, 1/2" FNPT 1/2 psig
8	Hex Nipple, 1/2" SS
9	Grounding Lug

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.



The Welker SCC will ship skid-mounted and "hard-tube connected" with manufacturer-supplied fittings and hardware. However, the customer will need to supply some tubing and fittings in order to complete the installation of the system.

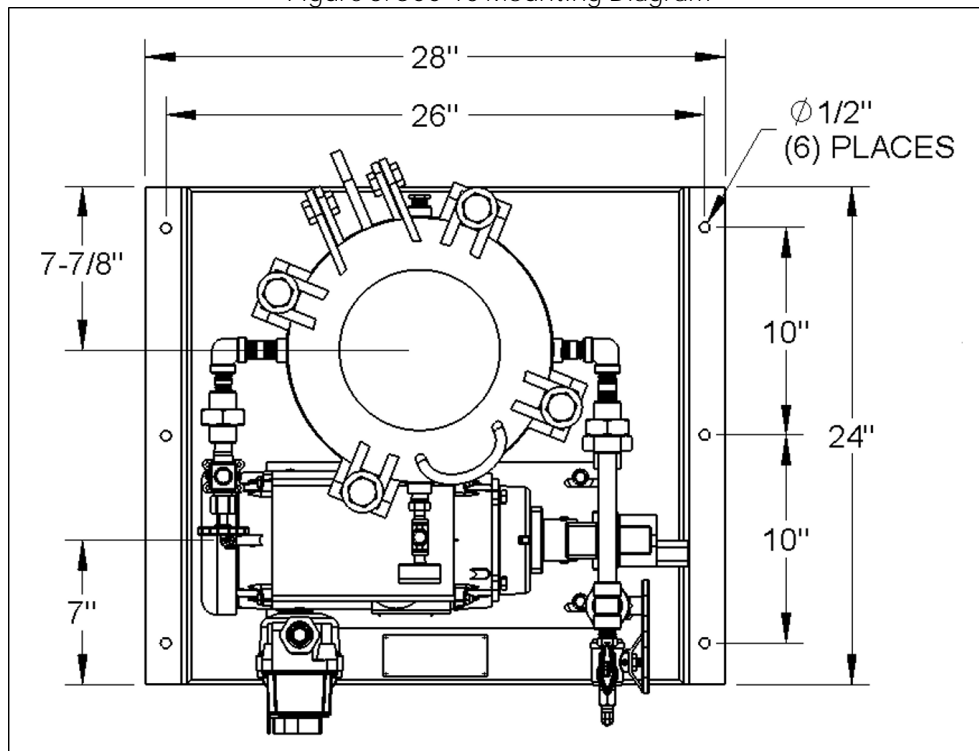


All electrical connections must meet local and national electric codes, and excessive weight added to the conduit run must be supported.

2.2 Installation and Operation

1. Ensure all valves on the unit are closed.
2. Install the SCC to the desired location as close as possible to the power source.
3. Mount the SCC to the desired location in accordance with the mounting diagram (*Figure 5*).

Figure 5: SCC-10 Mounting Diagram



4. Connect a grounding wire to the ground lug to safely ground the skid (*Figure 2* and *Figure 3*).
5. Connect an appropriate electrical supply to the motor starter switch (*Figure 2*).
6. Using $\frac{1}{2}$ " customer-supplied tubing, connect from drain valve E to an appropriate enduser-defined collection location (*Figure 2*).

- Using ¼" customer-supplied tubing, connect from the sample outlet on the sampler to the sample inlet directly below the armored tubular level sight gauge on the SCC (*Figure 2* and *Figure 3*).



Customer-supplied tubing must slope downward from the sampler to the SCC to ensure all of the product sampled flows to the SCC.

- Open sample inlet valve A and sight gauge isolation valve B (*Figure 3*).
- Sampling into the SCC may now begin.

2.3 Mixing and Collection of Composite Sample



Once the desired amount of sample has been collected, the sample can be mixed to ensure a homogeneous sample.

- When sampling is complete, open valve "D" on the static mixer (*Figure 3*).**
- Start the pump by switching the power to the On position.



Never operate the pump with the lid open.



The tank must contain fluid when the motor is operating. Running the pump with no fluid can result in damage to the motorized pump.

- Let the contents circulate for a sufficient period, usually approximately 15 minutes. Or consult your company for a company-approved mixing procedure.



All SCC models have a downcomer with upper and lower spray nozzles affixed. Once mixing begins, this assembly completely washes the lid and the sides of the container to mix any condensation that might have formed due to temperature fluctuation.



Within the motor switch assembly, there is a heat protector. Once the motor reaches a preset temperature, the heat protector interrupts the power to the unit until the motor reaches a lower temperature.

- Place a transport container—the Welker® Portable Crude Oil Container, Model TCC—under the draw-off valve "C" and open the valve. Once the required volume of sample is obtained, close the valve.
- Switch the motor power to the Off position, and proceed to Section 3 Maintenance for cleaning instructions.



To maintain the integrity of the samples collected, the container must be thoroughly cleaned after each sampling cycle. Failure to do so will contaminate further sampling.

3.1 Before You Begin

1. Welker recommends that the unit have standard yearly 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 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. Adjustable Wrench
 - b. Hex Key Set
 - c. Seal Pick
 - d. Tubing Cutters

3.2 Maintenance – Cleaning the SCC

1. Close the circulation valve "D" that is downstream of the mixing pump and within the mixing loop.



Cleaning of the system between batches is important to assure that each sample volume has integrity and is solely representative of that batch.



Check valves for leaks and repair as necessary during reinstallation.

2. When the container needs to be emptied and cleaned, open valve "E" to the appropriate, enduser-approved collection location. It is the valve that is isolated from the mixing loop downstream from the mixing pump.
3. If the motor is not running, switch the power switch to the On position, and allow the motor to pump out remaining product to the appropriate, enduser-approved collection location.
4. When the container is empty (view sight glass for verification), shut off the motor, close valve "E" to the appropriate, enduser-approved collection location and open the container.
5. Wipe off the walls and lid, and fill approximately one half of the container with solvent or kerosene.
6. Close the lid and make sure the circulation valve "D" is open.
7. Turn on the pump motor and run it for three to four minutes.

8. Open valve "E" to the sump and allow motor to pump out the remaining solvent.
9. Once the container is emptied, shut off the pump motor and open the container.
10. Repeat steps 2 through 9 several times until the container is completely clean and no product remains. This will prevent contamination of the next sample batch. Once system has been thoroughly flushed out, proceed to the next step.
11. Open the container, wipe it clean and dry, removing any excess solvent. Then close the lid.
12. Clean the sight glass if necessary.
13. Close valves "C", "D", and "E".
14. The unit is now ready to reuse.

3.3 Maintenance – Ongoing

15. Periodically, check for leaks at all connections.
16. Replace the O-ring lid seal annually or at any indication of damage to the seal.

3.3 Troubleshooting Guidelines

Table 2: Stationary Crude Oil Container Troubleshooting Guidelines

Issues	Possible Causes	Solutions
The sight glass is filling up before the container is filled	Valve "B" is closed on the sight glass.	Open both valves on the sight glass.
There is very slow output of sample coming from valve "C".	The vacuum breaker is not working.	Clean and adjust the vacuum breaker.
The container fills before the sight glass fills.	Valve "A" is closed.	Open both valves on the sight glass.

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

- IOM-016: Welker® CPMCCP Constant Pressure Crude Oil Container
- IOM-117: Welker® TCC-1 Transportable Crude Oil Container (1-Gallon)
- IOM-136: Welker® MSTCCA Laboratory Mixing Skid (Air Motor Model)
- IOM-186: Welker® TCC Optimum™ Transportable Crude Oil Container (2.5-Gallon, 5-Gallon)
- IOM-197: Welker® TCC-5 Transportable Crude Oil Container (5-Gallon)
- IOM-206: Welker® TCC-2 Transportable Crude Oil Container (2-Gallon)
- IOM-207: Welker® TCC-3 Transportable Crude Oil Container (3-Gallon)
- IOM-208: Welker® TCC-10 Transportable Crude Oil Container (10-Gallon)

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

- If necessary, refer to Transportable Crude Oil Container IOMs (listed above) for further IOMs to reference

Welker drawings and schematics suggested for use with this unit:

- Assembly Drawing: AD350CO (SCC-3)
- Assembly Drawing: AD074BO (SCC-5)
- Assembly Drawing: AD179CB (SCC-10)
- Assembly Drawing: AD179CO (SCC-10)
- Assembly Drawing: AD179CO.1 (SCC-10)
- Assembly Drawing: AD673BB (SCC-15)
- Assembly Drawing: AD673BC (SCC-15)
- Assembly Drawing: AD578CO (SCC-20)
- Assembly Drawing: AD578CP (SCC-20 Dual-Sample Container)
- Assembly Drawing: AD703BC (SCC-30)
- Assembly Drawing: AD703BD (SCC-30)
- Assembly Drawing: AD703BO.1 (SCC-30)

NOTES



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