



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

MODEL
TCC Optimum™

DRAWING NUMBERS
AD557DV
AD557DY

MANUAL NUMBER
IOM-186

REVISION
Rev. F, 1/17/2017

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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® Transportable Crude Oil Container, TCC Optimum™. 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 Transportable Crude Oil Container 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 Transportable Crude Oil Container, please contact a Welker® representative immediately.

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 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® *TCC Optimum™* Transportable Crude Oil Container is designed for ease of use when collecting and transporting stabilized liquid product. When incorporated into a sampling system, a weigh scale can be used to indicate product level in the TCC Optimum™.

The limited weight of the TCC Optimum™ reduces the physical strain on the operator during installation and removal. The quick-connect stems allow the TCC Optimum™ to be quickly installed to and disconnected from a sampling system or mixing skid equipped with flexible hoses with quick-connects. The TCC Optimum™ can be installed to a laboratory mixing skid to mix the collected sample for laboratory analysis and to clean the TCC Optimum™ after use.

Welker may custom design the TCC Optimum™ 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 customizations of your equipment.**

Table 1: TCC Optimum™ Specifications	
Applications	Collection of Products That Are Stable or Stratify at Atmospheric Conditions Transportation of Samples to Laboratory for Mixing and Analysis
Materials of Construction	316/316L Stainless Steel Container With Stainless Steel Fittings
Maximum Allowable Operating Pressure	136 psig @ -20 °F to 100 °F (9 barg @ -28 °C to 37 °C)
Volume	2.5 US Gallons (9.4 Liters) 5 US Gallons (18.9 Liters)
Weight	2.5-Gallon: 15 lb (Dry) 5-Gallon: 22 lb (Dry)
Features	Internal Fill Marks at 7 and 7.2 Liters (2.5-Gallon Model Only) Portable Precision Spray Bar Pressure Gauge ProSlick™ Finish Quick-Connects Relief Valve Ring Chime Base Rounded Bottom Single Handle Vacuum Breaker ASME Code Stamped DOT Approval (2.5-Gallon Model Only) Transport Canada Approval (2.5-Gallon Model Only)
Options	Quick-Connect Body Screw-Tight Lid

1.4 Equipment Diagrams

Figure 1: 2.5-Gallon TCC Optimum™ Diagram

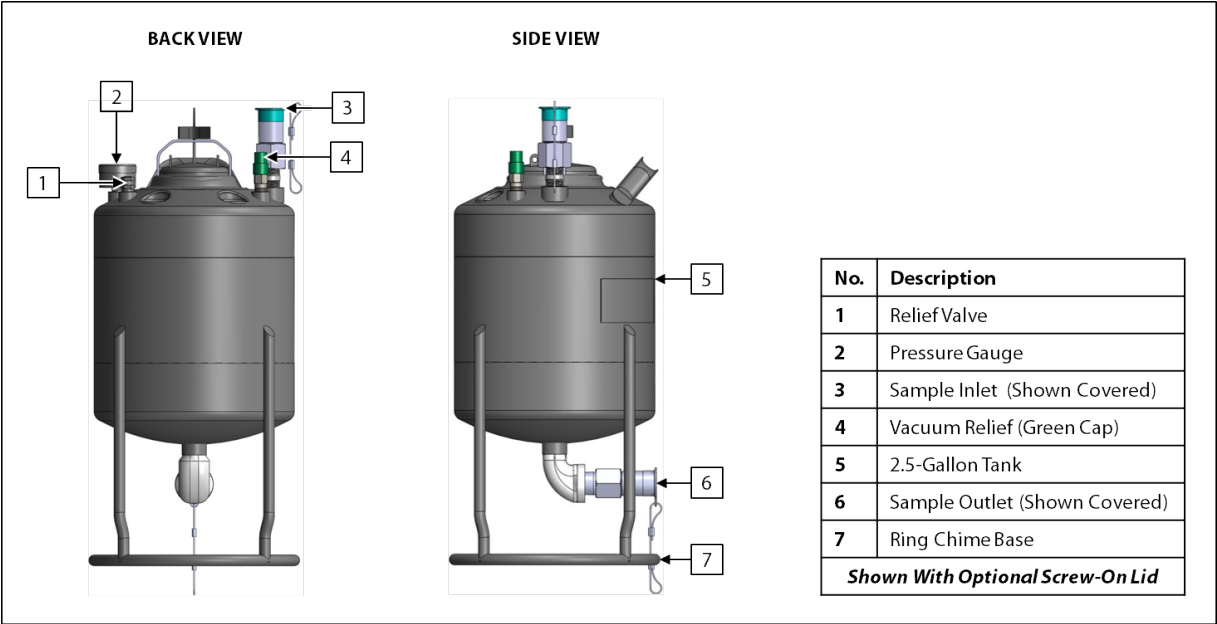


Figure 2: 5-Gallon TCC Optimum™ Diagram

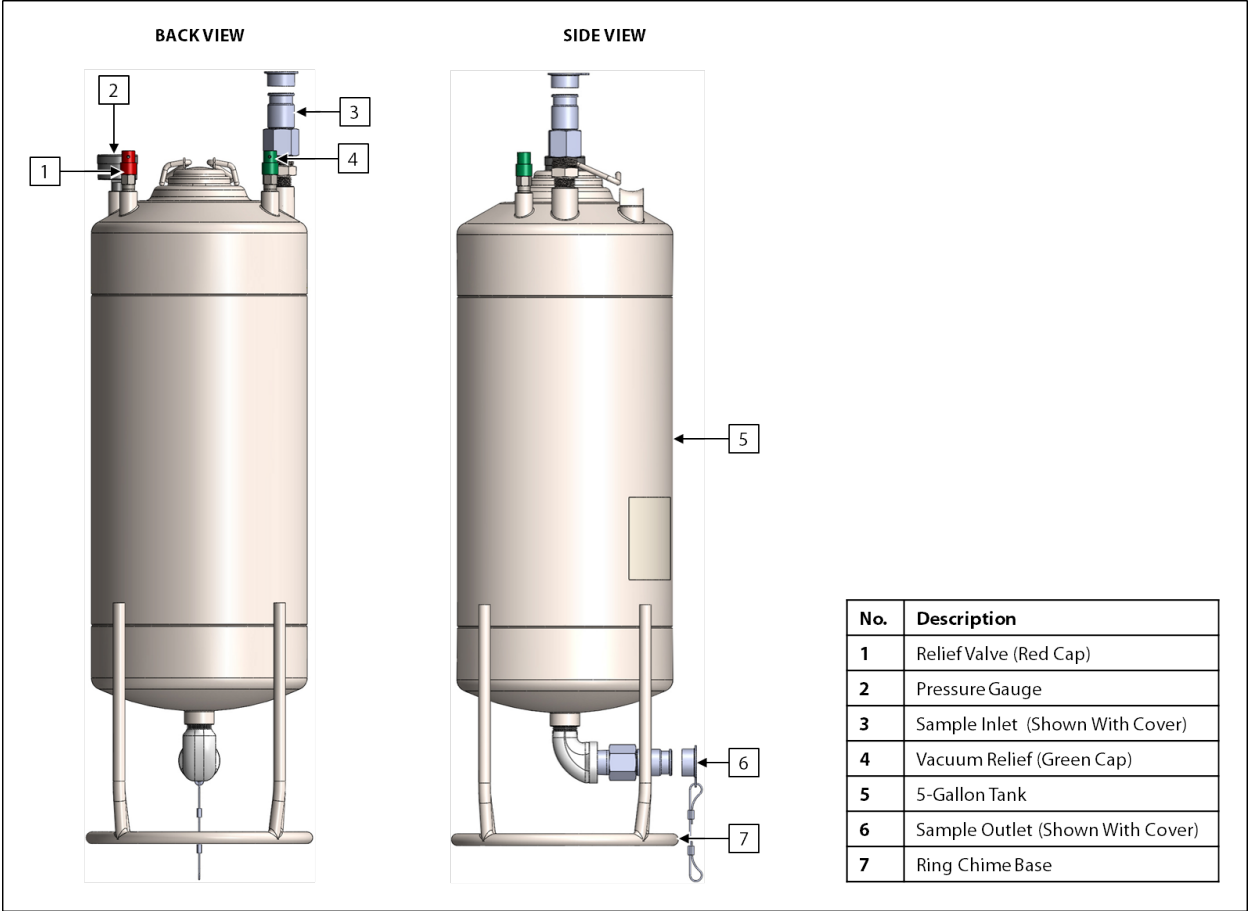


Figure 3: TCC Optimum™ Standard Lid Diagram

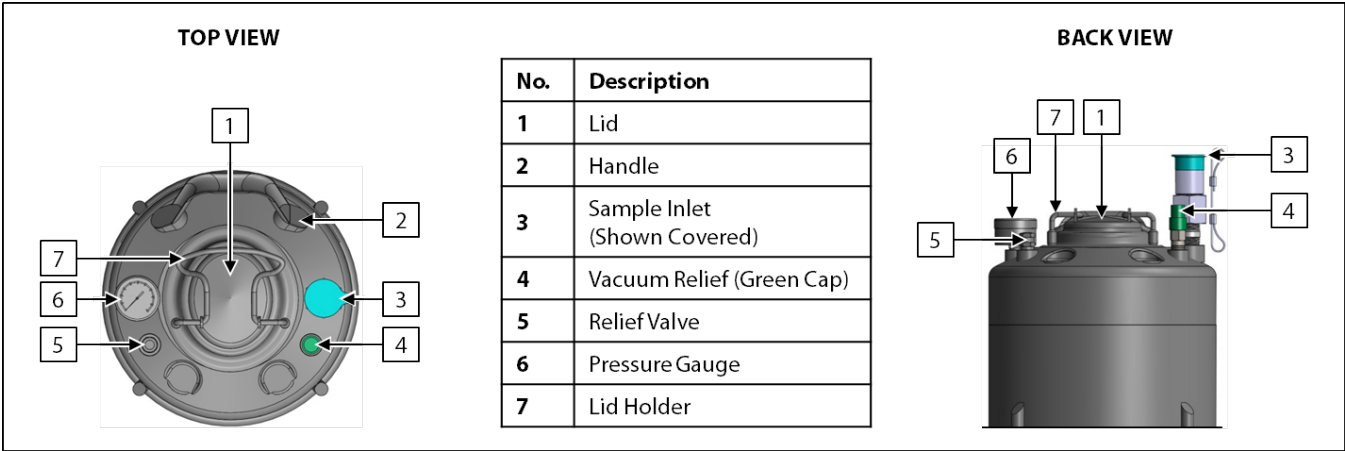
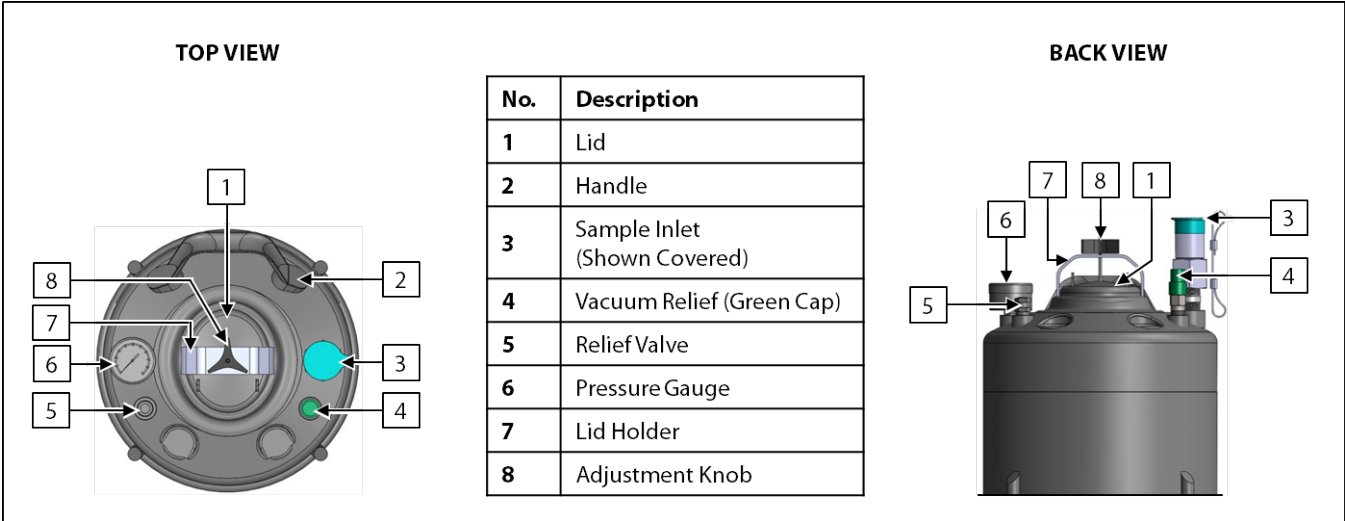


Figure 4: TCC Optimum™ Screw-Tight Lid Diagram



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.



These instructions are written with the assumption that a Welker® MSTCC Laboratory Mixing Skid will be used to mix the contents of the TCC. While it is possible to use the MSTCC and the TCC with equivalent third-party equipment, the MSTCC has been designed to take full advantage of the features of the TCC to provide a quality sample for basic sediment and water (BS&W) monitoring.



Ensure that the TCC is clean and free of contaminants that might affect the sample. See *Section 3.2, Cleaning the TCC Optimum™ Without Using an MSTCC*, or refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the Welker® MSTCC Laboratory Mixing Skid for instructions on properly cleaning the TCC.

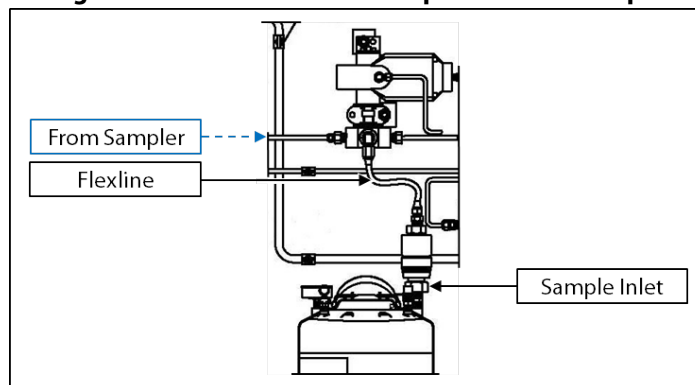
2.2 Installing the TCC Optimum™ to the Sampling System



All fittings have been aligned for optimal performance and user convenience. Do not change the fitting alignment.

1. Remove the product inlet cover from the product inlet port on the TCC Optimum™ (*Figure 3 or Figure 4*).
2. Using ¼" flexline with a maximum allowable operating pressure (MAOP) of 136 psig (9 barg) or greater, connect from the sampler outlet port to the product inlet port on the TCC Optimum™. The sampler should be positioned above or level with the product inlet on the TCC Optimum™ (*Figure 5*).

Figure 5: Orientation of TCC Optimum™ to Sampler



2.3 Closing the Lid of the TCC Optimum™



If the lid of the TCC is not properly closed before operation, the sample may be compromised. An improperly closed lid may allow water to enter or vapors to escape the sample.



If the TCC Optimum™ is equipped with the standard lid, continue to step 1.

If the TCC Optimum™ is equipped with the screw-tight lid, proceed to step 4.

Standard Lid

1. Lightly lubricate the O-ring on the lid. The O-ring may become brittle and crack if not covered with a thin layer of lubricant prior to use.



Welker recommends a silicone-based lubricant, such as Molykote® 111, for use with this unit.

2. Gripping the lid holder, situate the lid inside the opening of the TCC Optimum™.
3. Gently pull up on the lid while pushing down on the lid holder (*Figure 3*). The lid holder should close with a small amount of pressure. If you meet resistance requiring more than gentle pressure, check the alignment of the lid before proceeding, as it may need to be corrected.



Do not push down on the lid holder with excessive force or try to force the lid holder into place. Doing so may bend the prongs, the lid, or the tank itself. This will permanently ruin the lid alignment, and the tank will leak until serviced or replaced.

Screw-Tight Lid (Optional)

4. Lightly lubricate the O-ring on the lid. The O-ring may become brittle and crack if not covered with a thin layer of lubricant prior to use.



Welker recommends a silicone-based lubricant, such as Molykote® 111, for use with this unit.

5. Gripping the lid holder, situate the lid inside the opening of the TCC Optimum™.
6. Gently pull up on the lid while hand-tightening the adjustment knob (*Figure 4*). Stop tightening the adjustment knob once resistance is met.

2.4 Mixing Operations

1. Ensure that the lid of the TCC Optimum™ is properly closed. See *Section 2.3, Closing the Lid of the TCC Optimum™*, for instructions on properly closing the lid of the TCC Optimum™.



If the lid of the TCC is not properly closed before operation, the sample may be compromised. An improperly closed lid may allow water to enter or vapors to escape the sample.

2. Invert the TCC Optimum™ once to incorporate any condensation into the crude oil.
3. Install the TCC Optimum™ to a Welker® MSTCC Laboratory Mixing Skid. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the MSTCC for instructions on installing the TCC Optimum™ to the skid.
4. To retrieve a homogenous sample from the TCC Optimum™, refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the MSTCC for correct operating procedures.
5. Allow the contents of the TCC Optimum™ to mix in accordance with company policy.
6. Once the contents of the TCC Optimum™ have been thoroughly mixed, take a spot sample. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the MSTCC for instructions.



Consult company policy for the volume of sample required for testing.

7. After extracting the required amount of sample, the TCC Optimum™ can be cleaned using the MSTCC. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the MSTCC for instructions on cleaning the TCC Optimum™ while the skid is still in operation. To clean the TCC Optimum™ without using the MSTCC, see *Section 3.2, Cleaning the TCC Optimum™ Without Using an MSTCC*.

3.1 Before You Begin

1. **Welker recommends that the TCC Optimum™ be cleaned after each use.** If the TCC Optimum™ is stored for some time prior to use, the TCC Optimum™ may need to be cleaned prior to being installed to a sampling system.
2. All maintenance and cleaning of the unit should be performed on a smooth, clean surface.

3.2 Cleaning the TCC Optimum™ Without Using an MSTCC



The TCC may be drained and cleaned while still connected to the Welker® MSTCC Laboratory Mixing Skid. Refer to the *Installation, Operation, and Maintenance (IOM) Manual* for the MSTCC for instructions.

1. Drain the contents of the TCC Optimum™.
2. Relieve pressure within the TCC Optimum™.



The TCC must be depressurized before opening the lid of the TCC. Removing the lid of the TCC under pressure could cause severe injury.

3. Open the lid of the TCC Optimum™.



If the TCC is equipped with the optional screw-on lid, the adjustment knob needs to be loosened before the lid of the TCC can be removed.

4. Wipe down or flush the TCC Optimum™ with a cleaning solvent.



Welker recommends cleaning the TCC with a quick-evaporating solvent, such as acetone. Refer to the appropriate company policy for the approved quick-evaporating solvent. Use chemical solvents safely, following all personal protective equipment (PPE) and usage directions listed on the solvent label and Material Safety Data Sheet (MSDS).

5. Carefully dry the inside of the TCC Optimum™ with a clean, dry cloth.
6. If the cloth becomes dirty or if product is visible on the cloth when drying the TCC Optimum™, repeat steps 4 and 5 until the cloth is clean upon removal.
7. Close the lid of the TCC Optimum™. See *Section 2.3, Closing the Lid of the TCC Optimum™*, for instructions on properly closing the lid of the TCC Optimum™.
8. The cleaned TCC Optimum™ may be installed to a sampling system. See *Section 2.2, Installing the TCC Optimum™ to the Sampling System*, for instructions.

APPENDIX A: REFERENCED OR ATTACHED DOCUMENTS

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

- IOM-036: Welker® MSTCC Laboratory Mixing Skid
- IOM-136: Welker® MSTCCA Laboratory Mixing Skid
- IOM-205: Welker® MSTCCJ Laboratory Mixing Skid

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

- Generant Vent Relief Valve Series VRV (Welker® IOM-V175)
- Parker Hannifin Corporation Snap-tite 71 Series High Pressure, Push-to-Connect Non Spill-Quick Couplings (Welker® IOM-V333)
- PIC Gauges 302DNF All Stainless Center Back Mount Gauges (Welker® IOM-V335)
- Swagelok® Check Valves C, CA, CH, CP, and CPA Series (Welker® IOM-V076)
- Swagelok® Quick-Connects QC, QF, QM, and QTM Series (Welker® IOM-V088)

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

- Assembly Drawing: AD557DV (2.5-Gallon TCC Optimum™)
- Assembly Drawing: AD557DY (5-Gallon TCC Optimum™)

NOTES



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