

# Installation, Operation and Maintenance Instructions



## HYDROFLOW

**CRS SS  
COOLANT  
RECYCLING  
SYSTEM  
WITH COALESCER**

# Introduction

This manual describes Eriez' CRS SS Coolant Recycling System with Coalescer.

A careful reading of these Installation, Operation and Maintenance Instructions will assure the most efficient and dependable performance of this equipment.

Please include the model and serial number found on the nameplate with any correspondence concerning your CRS SS Coolant Recycling System with Coalescer.

If there are any questions or comments about the manual, please call the factory at 814-835-6000 for CRS SS Coolant Recycling System with Coalescer assistance.

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## Safety Information

- **To avoid possible injury, read manual for full operating procedures before attempting operation of the CRS System.**
- **Wear safety goggles to protect eyes from splashing liquids when transferring coolant into or out of the clean or dirty coolant tanks. This is important, even if the fluids are not caustic or otherwise harmful. Metal particles suspended in the liquid could still cause serious eye injury.**
- **Immediately clean up any spilled coolant to avoid slippery floors and dangerous falls.**
- **DO NOT use this unit for solvents, flammable (low flash point) or other volatile liquids; use only for water-soluble coolants.**
- **This unit is to be operated and maintained by authorized personnel only.**



### **CAUTION**

**Safety labels must be affixed to this product. Should the safety label(s) be damaged, dislodged or removed, contact Eriez for replacement.**

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## Installation

1. Place the CRS System in the desired location. The system can be placed with the back side against a wall; leave a 3' (1 m) wide aisle in the front and on both sides to provide access to the various components. The system should be leveled at the time of installation.
2. The Coolant Proportioner concentrate draw tube is removed prior to shipment to prevent damage or loss and therefore, must be installed as follows:  
Connect the Coolant Proportioner concentrate draw tube to the lower valve screw on the pump head. (Refer to Coolant Proportioner manual.)
3. Plumb the inlet water supply to the system. A 3/4" (19 mm) supply line with a minimum of 30 PSI (2.1 bar) is required. If you do not have a deionizer, the maximum allowed water line pressure is 60 PSI (4.1 bar).
4. Plumb a line for shop compressed air to the air filter/regulator that is located on the side of the control panel. A minimum of 50 PSI (3.5 bar) and a maximum of 100 PSI (6.9 bar) of air pressure is required.
5. A single 115-volt electrical drop must be made to the system's control panel.
6. Make sure the float switches have had the packing straps removed and allow them to hang straight down into the tanks.
7. Place a drum of coolant concentrate next to the CRS System and near the Coolant Proportioner. Insert the weighted end of the draw tube (refer to Step 2 above) into the 3/4" (19 mm) bung opening of the drum. Insert the low level drum switch assembly, which was factory-wired to the system, into the 2" (50 mm) bung opening of the concentrate drum.
8. Place an empty 55-gallon drum or other suitable container next to the system to collect the discharged tramp oils. Connect a hose (supplied) or hard plumbing to the tramp oil outlet on the Coalescer and direct this to the drum.

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## Recycling

Typical coolant recycling with a HydroFlow CRS System follows a predetermined process that is repeated for each machine tool sump:

- Operator fills clean compartment of the Sump Cleaner (purchased separately from the CRS System) with clean, recycled coolant from the clean coolant holding tank on the system.
- Operator transports the Sump Cleaner to the machine tool and vacuums the dirty coolant, chips, and swarf into the dirty compartment of the sump cleaner.
- When machine tool sump is clean, operator immediately fills the sump with clean coolant stored in the clean compartment of the sump sucker, a coolant cart, or through overhead piping.
- Operator transports dirty coolant back to the system and discharges it into the system for recycling.

# Operation

Pump dirty coolant that has been filtered through a Sump Cleaner filter basket, or through another suitable means of filtering out the metal chips, dirt, and fines, into the dirty tank of the system by connecting the sump cleaner hose to the system.

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**⚠ CAUTION**  
**DO NOT TRY TO RECYCLE RANCID COOLANT.**

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Rancid coolant (EXTREMELY BAD SMELLING) cannot be recycled and will cause contamination of the other non-rancid coolant in the plant.

**NOTE:** Filtration of the solids from the dirty coolant is very important. Proper filtration minimizes the amount of solids build-up in the bottom of the dirty tank and in the Coalescer.

Make sure the coalescer tank 1" ball valve is closed.

Make sure the floating skimmer is placed in the dirty tank. The center fluid intake should be set so it is just below the surface of the coolant. You want to see a slight swirl of fluid going into this port. But you do not want to see an open vortex in the center as that means you are sucking in air which can cause foam in the coalescer.

Turn on the dirty coolant feed pump to begin processing the dirty coolant. The pump will collect the coolant and tramp oils with the floating oil collector, and pump the fluid into the Coalescer where the separation of coolant and tramp oils will occur.

Adjust the tramp oil discharge in the Coalescer so that the surface of the Grey PVC discharge pipe is 1/8"-3/16" above the coolant level in the tank. As tramp oils separate from the coolant they will float on top of the coolant in the tank. When the tramp oil level is high enough, they will automatically drain out of the tank through the tramp oil discharge port. It is normal and preferred to have a layer of tramp oil in the tank. The thicker the layer of tramp oil that is allowed to form, the less coolant will be discharged with the tramp oils.

The discharge line of the coalescer is plumbed to the clean tank. **Many coolants need more than one pass through the coalescer to remove all free tramp oils.** A crossover is installed between the clean tank and the dirty tank to allow the fluid in the clean tank to flow back into the dirty tank for reprocessing.

The coalescer will operate all the time unless a high level is achieved in the clean tank and the high level float switch trips.

Periodically check the tramp oil drum to prevent overfilling. Remove the full drum and replace with an empty drum. Arrange to have the full drum of tramp oil hauled away or disposed of properly.

The Coolant Proportioner will premix coolant concentrate with water at a set ratio. The Coolant Proportioner is connected electrically to the mid level float switch in the dirty coolant tank, the low level drum float switch and the solenoid valve on the downstream side of the Coolant Proportioner. The Coolant Proportioner will automatically turn on when the level in the dirty tank falls below the float switch, unless the concentrate drum is empty.

The Coolant Proportioner will now mix the coolant concentrate with water at the desired ratio. This fresh coolant will mix with the recycled coolant in the clean coolant tank to provide a source of coolant for the plant. The mixing of fresh coolant with recycled coolant will replenish any part of the coolant that may have been depleted in the machining process and will reset the concentration to the desired ratio for the plant. (Refer to the Coolant Proportioner manual for operating and maintenance instructions.)

The Coolant Proportioner automatically turns off when the coolant level in the dirty tank has reached the level of the float switch, or when the concentrate drum is empty as indicated by the low level drum float switch. When the concentrate drum is empty, the low level drum switch illuminates a light on the control panel to indicate this condition. Connect a full drum of concentrate in the same manner as done in Step 7 of the Installation instructions.

## OPTIONAL COOLANT PROPORTIONER LEVEL SENSOR CONTROLS

Some customers need more make up coolant than what the standard mid-level float switch will allow the Coolant Proportioner to make up. For those customers, an optional float switch selector switch is provided. This switch on the control panel is wired to both the clean tank mid-level float switch and the high-level float switch. If more make-up coolant is needed, place the Coolant Proportioner SHUT OFF selector switch in the high level position. The Coolant Proportioner will then fill the clean tank up to the high-level float switch and then shut off. If more make up coolant is not needed, keep the Coolant Proportioner SHUT OFF selector switch in the mid-level position.



## OPTIONAL PREFILTER

### Set up:

Be sure a filter cartridge or bag has been placed in the filter housing; refer to the filter manual for instructions. Make sure the filter housing drain is closed. Open the air vent valve on top of the filter housing by loosening the black needle valve two full turns, or remove it entirely.

Adjust the air pressure regulator on the air feed pump to 60-80 PSI.

Look at the pressure settings of the two pressure gauges before and after the filter housing. When the pressure gauges show a 35 PSI pressure drop across the filter housing, the filter cartridge or bag must be changed.

### To change the filter cartridge:

- Shut electric power off by turning the main electrical power off by turning the main disconnect handle to the off position.
- Close the manual dirty coolant feed valve to the coalescer; open the filter housing drain valve and drain the coolant from the housing.
- Change out the filter cartridge; refer to the filter manual.
- **Remove clean coolant from the clean tank with a Sump Cleaner or pump.**
- Connect the Sump Cleaner hose to the clean tank port using the quick-disconnect fitting.
- Turn the sump cleaner on and turn to the suction mode to fill the sump cleaner with clean coolant.

**NOTE:** This should only be done with a twin compartment sump cleaner, with a dedicated clean tank, to ensure that the clean coolant is not contaminated by any dirty coolant in the sump cleaner.

## OPTIONAL CLEAN COOLANT DISTRIBUTION PUMP

Your HydroFlow CRS System may have been fitted at the factory with a pump on the clean coolant tank. This pump can be used to fill a clean coolant-transporting unit, such as a coolant cart. If sized properly, this pump can be plumbed throughout the plant with clean coolant drops at the machine tool sumps. If you do not have a factory-installed pump, you can add one at any time. Contact your HydroFlow representative for particulars.

Periodically check the amount of solids that have settled out and accumulated in the dirty tank. Remove solids as often as possible. The Sump Cleaner can be used for cleaning out this tank.

Periodically check the amount of solids that have settled out and accumulated in the Coalescer. Remove the plate packs and use the Sump Sucker to clean out these fines.

## Operating Tips

Most coolant recycling programs work best when each machine tool is recycled well before the coolant needs to be dumped. Pick a time mid way of the time cycle observed before implementing recycling. If the fluid was dumped every 6 months, the fluid should be recycled every 2 to 3 months. Some machine tools will require recycling more often and others can go longer between pump outs. This schedule can be tailored for your plant to account for these differences.

In most cases, a single pass through the Coalescer will remove the free-floating tramp oils. If one pass does not remove enough tramp oil, the CRS System is equipped with a crossover between the clean and dirty tanks to allow the coolant in the clean tank to flow back to the dirty tank where it will be fed to the Coalescer for additional passes.

If multiple passes through the Coalescer still do not remove enough tramp oil, it is an indication that the tramp oil has become emulsified into the coolant. Using a high-speed disc bowl centrifuge (available as an option or as a retrofitted component of the CRS System), to remove this tramp oil. The centrifuge's rotating bowl applies over 6000 G's to the coolant and will remove 99.5% of the tramp oil in one pass.

If a high-speed disc bowl centrifuge is not economically feasible, investigate a change in coolant. Your local vendor can assist you in selecting a coolant that will not only give you good performance at the point of cut, but also reject the tramp oils to enable the system to perform as expected.

# Maintenance

Refer to the Owner's Manual for maintenance of the transfer pump (See Appendix).

A periodic check of the system's overall condition is recommended.

Repair or replace damaged components.

Consult with HydroFlow Filtration and Fluid Recycling as necessary. Our engineers and service technicians can be reached at 814-520-8545.

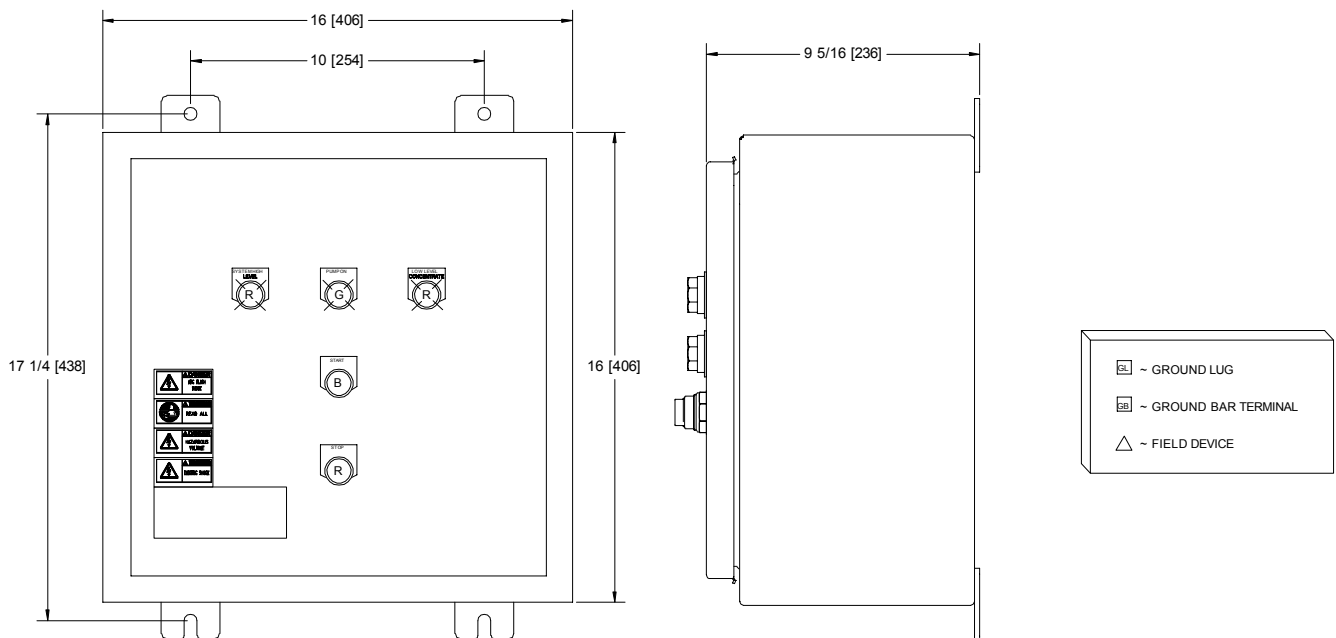
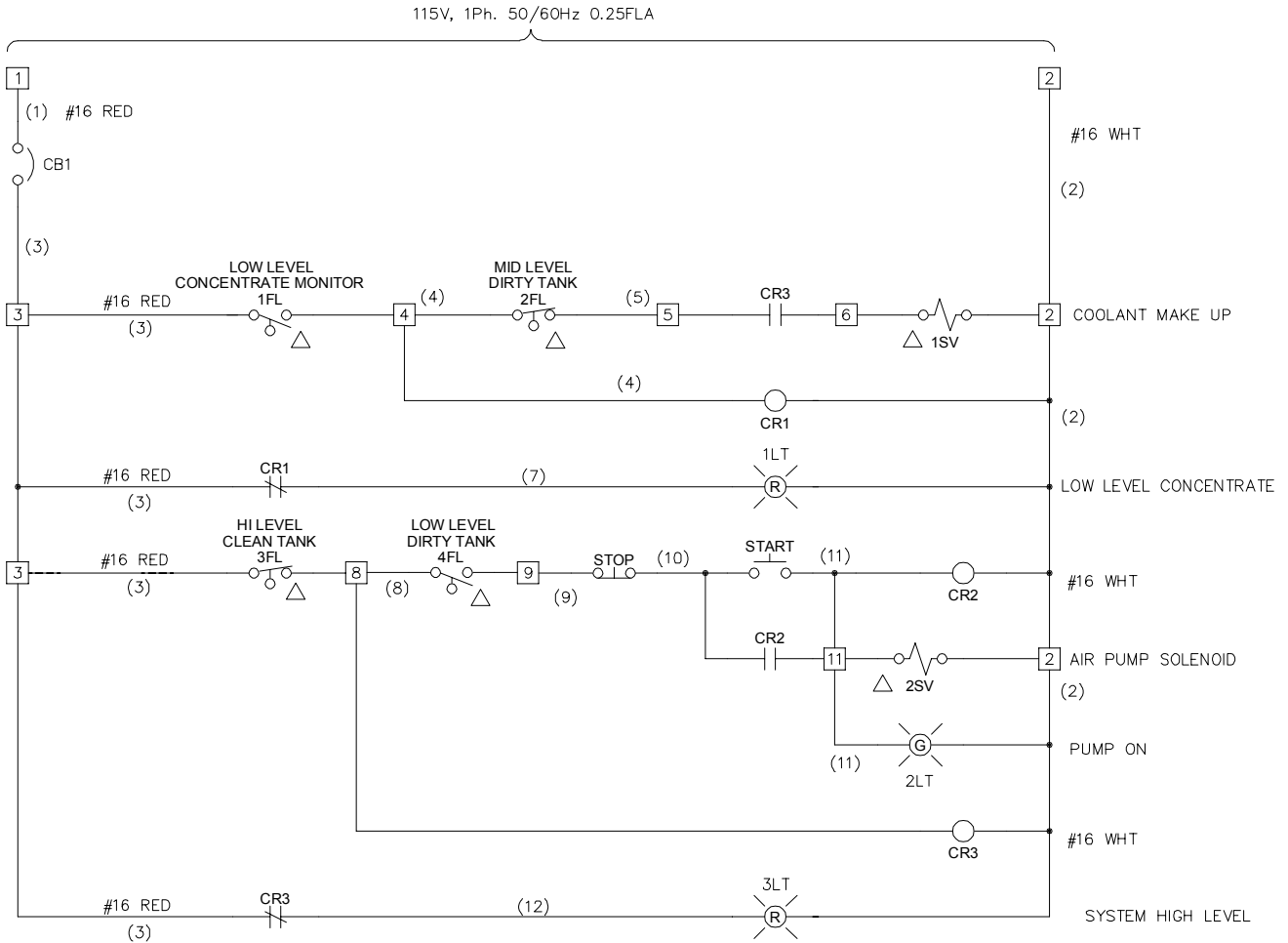
# Trouble Shooting

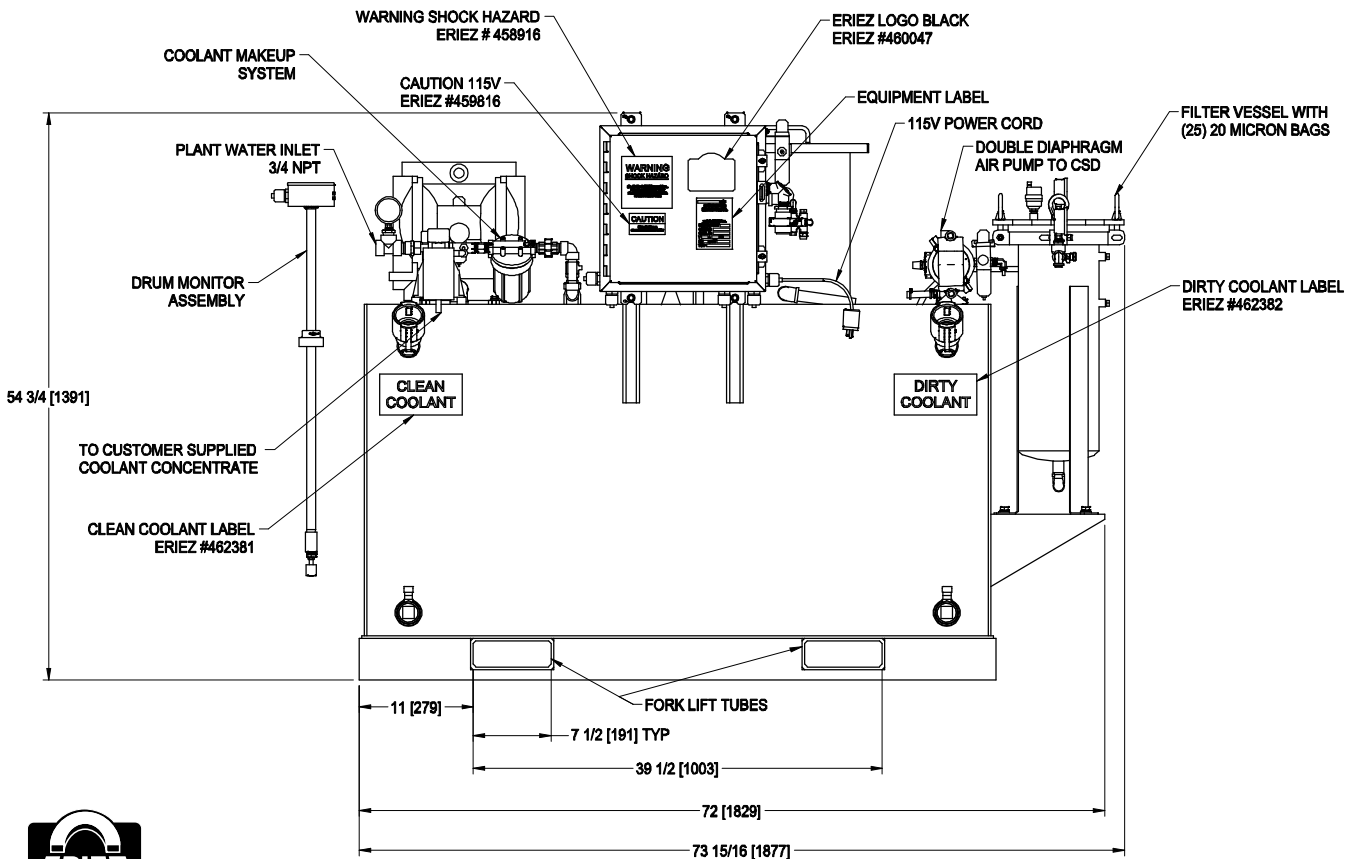
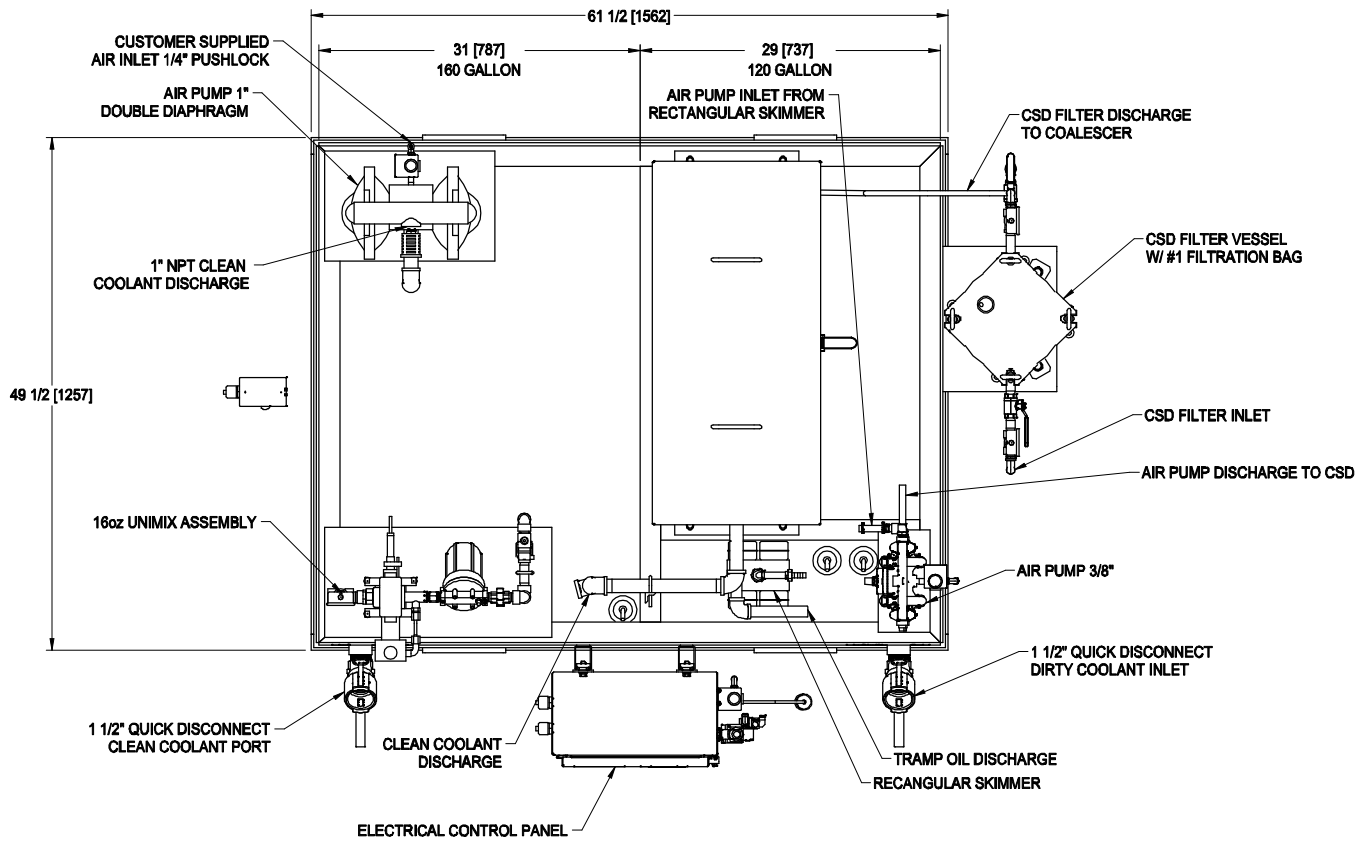
Refer to the Coalescer Owner's Manual (See Appendix) for problems specific to those components.

Complaint	Possible Cause	Solution
1. Pump does not run	1. No power to pump	1. a. Check that air is turned on at the system 2. b. Check solenoid on air line at control panel
3. Pump does not transfer Fluid	2. a. Clogged floating skimmer 2. b. Clogged pump	2. a. Inspect for blockage; clean skimmer 2. b. Inspect pump; clean, refer to pump Owner's Manual
4. Float switches do not Operate	3. a. Electric power disconnected 3. b. Float switches faulty	3. a. Check connection; reconnect if necessary 3. b. Check float switches for continuity in latched state; replace if faulty

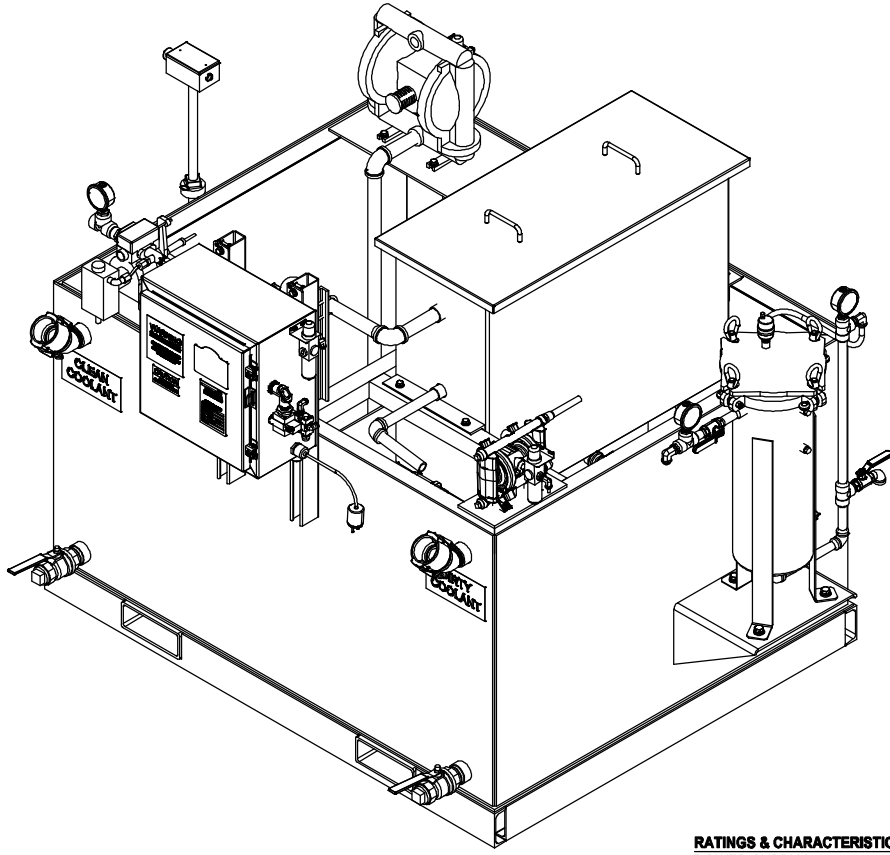


# CRS with Coalescer Electrics







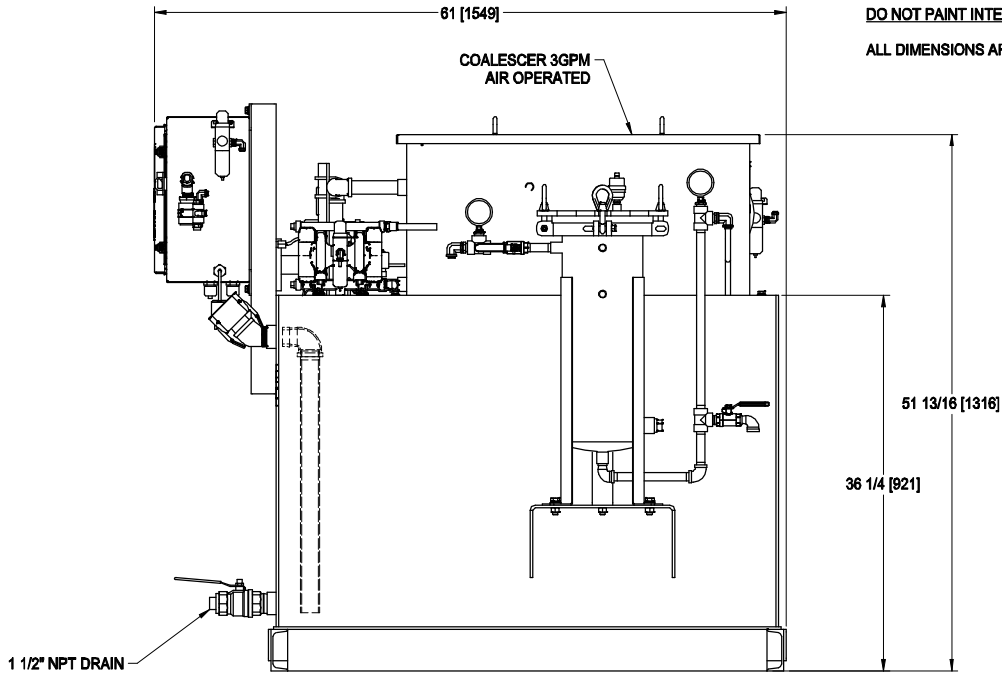


**RATINGS & CHARACTERISTICS**

POWER SUPPLY: 120V/60Hz/1PH  
 FULL LOAD POWER: 1 AMP  
 NOMINAL OPERATING PRESSURE: AIR 60-80 PSI, WATER 30-60 PSI  
 APPROXIMATE WEIGHT: 2394 LBS  
 FINISH: PAINT EXTERIOR ERIEZ ORANGE #241013

**DO NOT PAINT INTERIOR**

ALL DIMENSIONS ARE FOR REFERENCE ONLY









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