NuFlo

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CMC-250 Circulating System

User Manual

NuFlo Measurement Systems
A NuFlo Technologies Company

Manual No. 99104500138, Rev. B

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Description

The CMC-250 Circulating System is designed in accordance with API 8.3, to collect, store, and mix sampled product from a sampling device such as the True-Cut C sampler.

The system consists of a stainless steel ASME code stamped receptacle with a quick-release lid, a 1/2-hp explosion proof motor, a circulating pump, and a stainless steel in-line static mixer, all mounted on an epoxy-coated steel skid. The receptacles are available in 5- and 10-gallon sizes. Systems are available for standard duty, severe duty, and offshore applications.

Installation

1. Position the CMC-250 Circulating System upright and as close to the sampler device as possible.
2. Confirm that the piping connections slope downward from the sampling device into the receptacle.
3. Connect the drain valve to a sump or back into the pipeline.

NOTE: Pipeline pressure must be less than 100 psi when returning collected sample back into the pipeline.

4. Install the ON/OFF Switch (supplied by customer) near the CMC-250 Circulating System.
5. Check all electrical connections. All field wiring must conform to the ***National Electric Code, NFPA 70***. Local wiring ordinances may also apply. This equipment is for use in non-classified areas only.
6. The motor is wired to turn in a counterclockwise direction at the factory. Refer to field wiring instructions on the back of the electrical cover on the motor.

Startup Procedures

Perform the following steps before operating the CMC-250 Circulating System. Components are identified by item number in the assembly drawing and Bill of Materials on page 3.

1. Ensure that the motor is OFF.
2. Secure the quick-release cover.
3. Close the drain valve (item 13B).
4. Close the sample draw-off valve (item 8).
5. Open the pump isolation valve (item 13C) and the recirculation valve (item 13A).
6. Close the drain valve (item 13B).

Operation

1. After a sample is received into the receptacle, turn the pump motor ON for *at least* 5 *minutes* to circulate the fluid (see note below).
   - A 5-gal system requires a minimum circulation time of 5 minutes or until the volume in the receptacle is circulated five times.
   - A 10-gal system requires a minimum circulation time of 10 minutes of circulation or until the volume has been circulated five times.

NOTE: The pump is rated at approximately 5.0 gpm at 0 psig backpressure and a fluid viscosity of 100 SUS (21.6 CTS) at 60°F (16°C).

For most light to medium-weight crude oils ranging up to API 24 with a kinematics viscosity less than 160 CTS at 60°F (16°C), 5 minutes of circulation time should adequately mix the tank volume.

For most crude oils heavier than API 24 with a kinematics viscosity greater than 160 CTS and temperatures below 60°F (16°C), consider allowing additional circulation time to ensure the tank volume is thoroughly mixed.

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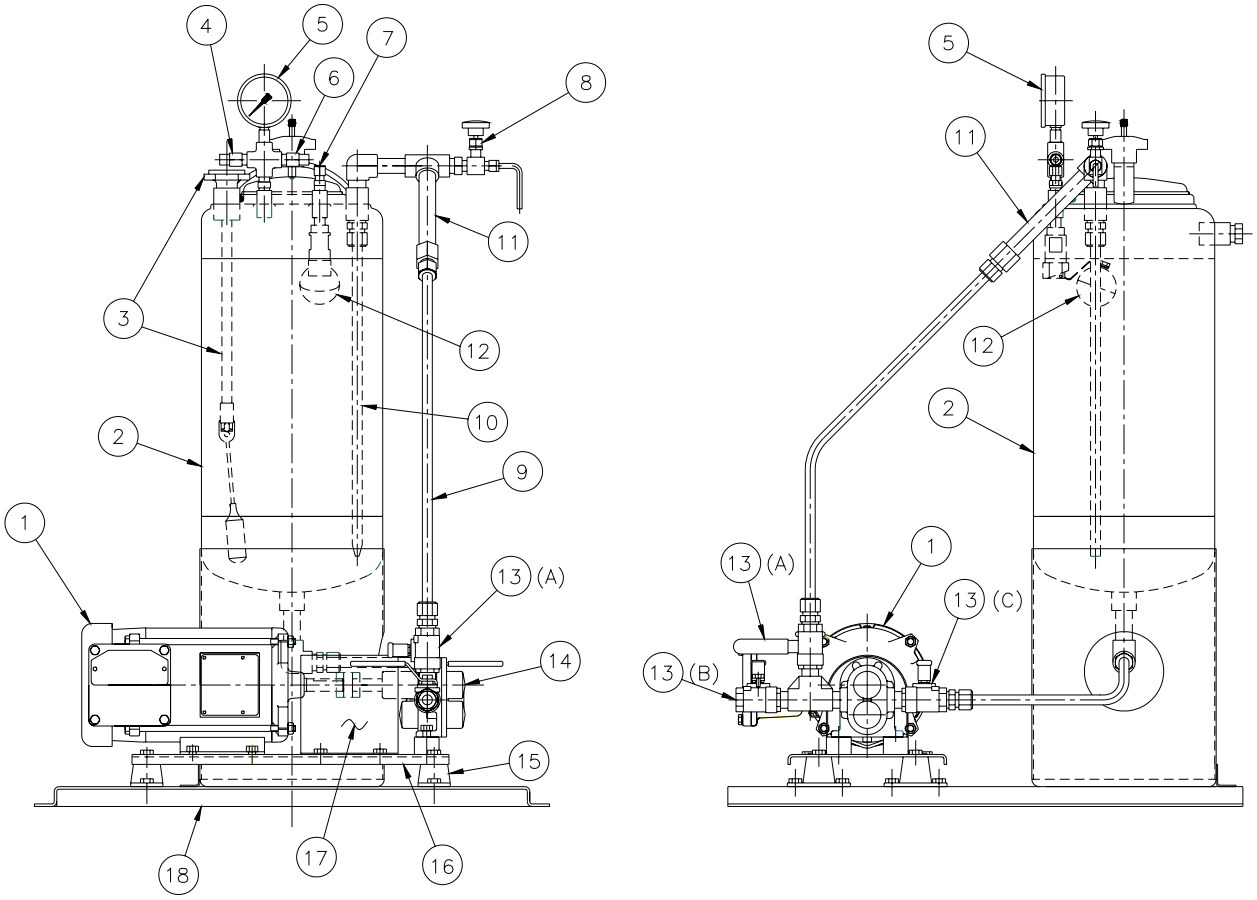
2. While the circulating pump is ON, open the sample draw-off valve (item 8), allowing the sample to flow directly into laboratory glassware. Close the sample draw-off valve (item 8) and cap the laboratory sample transport receptacle immediately.
3. To drain the (tank) receptacle, perform the following steps:
   a. Turn the circulating pump ON.
   b. Close the return valve (item 13A).
   c. Open the drain valve (item 13B) and pump isolation valve (item 13 C), and allow the receptacle to drain.
   d. When the receptacle is empty, close the pump isolation valve (item 13 C) and open the return valve (item 13A) to drain the re-circulating tubing (item 9).
   e. Turn the pump motor off, and close all valves.
4. To remove the cover on the receptacle, perform the following steps:
   a. Open the sample draw-off valve (item 8) to relieve the pressure from the receptacle.
   b. After the pressure is relieved, turn the plastic knob counter-clockwise until threads in the knob disengage from the stud in the top of the lid.
5. Thoroughly clean the receptacle after every sampling batch to prevent cross-contamination of sampled fluids.



CMC-250 Circulating System Bill of Materials

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	50142307002	Motor,1/2 HP, 115/230 VAC, Std. Duty
2	1	50142301720	Tank Assy., 5 Gallon 304SS
2a	1	50142301719	Tank Assy., 10 Gallon 304SS
3	1	50142310029	Level Gauge Assy.
4	1	50142200334	Pressure Relief Valve, 5 psi
5	1	50142381037	0-60 psi, Liquid Filled Pressure Gauge
6	1	50142303543	Vacuum Relief Valve, 1 psi
7	1	50142302882	Inlet Connection, ¼-in. Tbg, SS
8	1	50142208006	Valve, Sample Draw Off
9	1	50142302204	Tubing, ½ in. SS
10	1	50142302204	Spray Bar, Internal, SS
11	1	50142304100	Static Mixer, ½ in., SS
12	1	50142310046	Shut-Off, High Level Assy.
13	3	50142303651	Ball Valve, ½ in., SS
14	1	50142304008	¾-in. NPT Gear Pump
15	4	50142310101	Vibration Mounts
16	1	50142310061	Channel, Motor
17	1	50142307353	Guard, Motor Cplg.
18	1	50142307831	Skid, 30 in. x 32 in.

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