



# STEEL COALESCING SYSTEMS AND CHAMBERS

OPERATION AND SERVICE GUIDE  
O-425B  
AUG. 1997

MODELS	PRICE CODE NOS.	PARTS LIST
1F8KG	79-0909-1	P-3951
2F8KG	79-0909-2	P-3951
4F8KG	79-0917	P-3850

Refer to Bulletin F-303.

## SAFETY PRECAUTIONS BEFORE STARTING

1. Read Operating Instructions and directions supplied with chemicals or solutions to be used.
2. Refer to Chemical Resistance Data chart for compatibility of materials with solution.
3. Note temperature and pressure limitations of equipment.
4. Personnel operating equipment should always wear suitable protective clothing: face mask or goggles, apron and gloves.
5. Do not use piping as handles or steps.
6. Always close valves slowly to avoid hydraulic shock.
7. Ensure that all fittings and connections are properly tightened.
8. All external piping must be supported and aligned independently of the chamber.

## DESCRIPTION

A separation coalescer takes oil out of rinse water, cleaning solutions, waste effluents and pollution control systems, and separates water from oil in hydraulic systems and other applications of water/oil contamination. It handles dissimilar liquids with a specific gravity difference of 0.09 and greater, and leaves the effluent with less than 10 ppm of the discontinuous phase. Coalescer separation is highly effective. It separates oil and water by coalescing and gravity separation. The oil/water mixture is pumped through the coalescing element which holds small droplets until they grow enough to float off. Oil rises to the top, water sinks to the bottom and accumulated oil or water is periodically bled off. The coalescing element normally has an indefinite life. Replace it only when it becomes plugged with solid particles. If particulate matter is a problem, a separate filtration system should be installed to remove bulk particulate matter.

## PRE-START-UP AND PREPARATION OF COALESCING ELEMENT

1. Review accompanying pump-motor operating instructions to assure proper start-up.
2. Install all hoses (disconnected for shipping) and tighten hose clamps.
3. Check that chamber wing lock nuts are secure and vent valve is open on filter chamber and coalescing chamber.
4. Wet coalescing element with primary phase of solutions being separated (water or oil) etc. This can be achieved by removing the element and immersing it in the pure primary solution or filling the chamber with same.

## START-UP

1. Secure hoses so they do not move or fall out of tank.
2. Prime pump according to pump operating instructions and energize motor.
3.  Open vent valves in cover to release air from chambers. Close vent valve when solution level rises to the top of the chamber. DO NOT close vent valve until the chamber is completely purged of air.

## PRE-FILTER

1. If the oil/water mixture is contaminated with particulate, a prefilter is strongly recommended. If the particulate matter circulates through the coalescing element, filtration will occur in the element causing a reduction in separation. The life of the coalescing element will be significantly shorter if particulate is not prefiltered.
2. Install cartridges in the filter chamber (it is shipped empty).
3. Remove and replace filter cartridges as required. The usual indicators for cartridge replacement are a reduction in flow rate, or an increase in gauge pressure.
4. Refer to Filter Chamber Parts List for cartridge replacement.

## COALESCING CHAMBER AND ELEMENT

NOTE: Solution flow through the coalescing element is from inside to outside.

1. The coalescing chamber works on the principle of coalescing finely divided droplets into large droplets on the outside surface of the element. These large droplets form, and because of differences in specific gravity, float to the top of the chamber or fall to the bottom.
2. The primary phase, whether heavy or light, is usually a constant flow and recirculated to the original reservoir. For solution transfer, the primary discharge may be directed to a second reservoir.
3. The secondary phase, whether heavy or light, may be "drawn off" manually or automatically. Recommended automatic methods are: timer, or conductivity devices wired to solenoid valve. Automatic means of emptying the coalescing chamber of the secondary phase solution are available.
4. Be sure the coalescing element is wetted with the primary phase being separated prior to operation (i.e. if it is a rinse water-oil contaminated system, wet with clean

- water. If water contaminated oil, wet with clean oil).
- The flow rate and degree of separation will vary with the system. If too much oil is accumulated in the chamber, oil will carry over with the water (or other liquid) discharged. If the flow rate is too high, oil will be entrained in the discharge flow instead of floating to the top of the chamber. Throttling the discharge valve will correct this condition.

- For replacement coalescing elements refer to Parts List or Bulletin M-210.

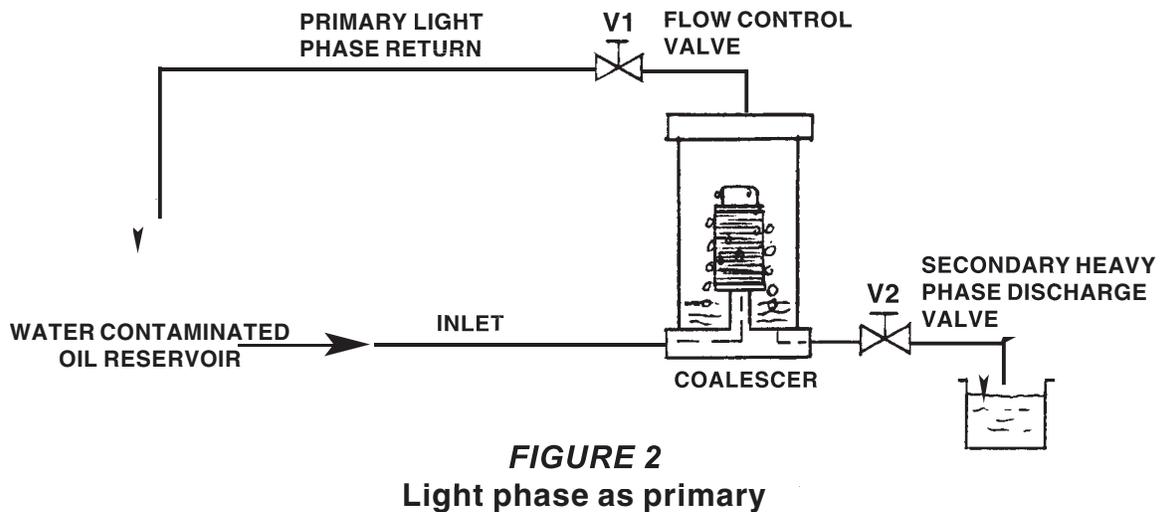
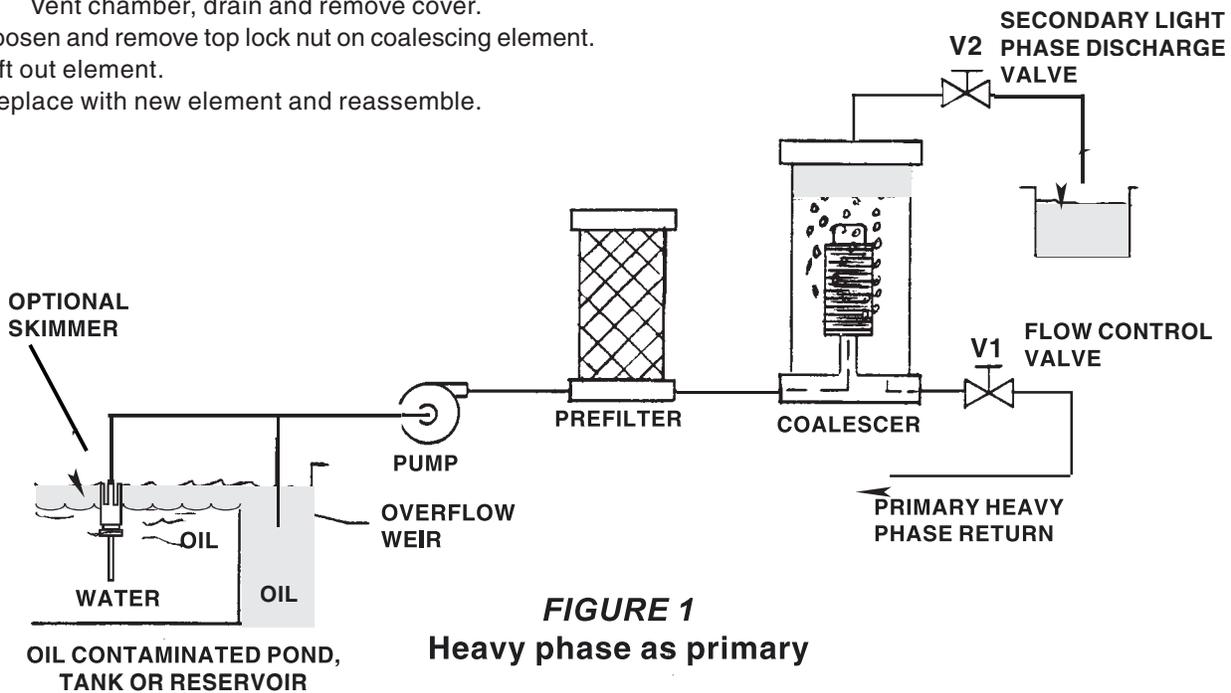
**NOTE:** The coalescing chamber may be piped in place without use of a pump. Be sure to pay particular attention to correctly install the inlet, light and heavy phase connections.

**SKIMMER**

A floating weir skimmer is recommended for collecting surface oils from tanks without an overflow weir.

**TO REPLACE COALESCING ELEMENT**

-  Vent chamber, drain and remove cover.
- Loosen and remove top lock nut on coalescing element.
- Lift out element.
- Replace with new element and reassemble.



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