

Before you begin: Assure that proper wire size is provided (refer to the wire size selection chart supplied) and proper oil resistant hose is provided (minimum hose 5/8" ID).

Installation: Select a horizontal or vertical installation location that will assure the shortest possible plumbing runs between the manifold and each engine oil pan to be serviced.

The pump motor is not waterproof, so the installation should be in a location that will not submerge the motor in high bilge water level.

Drill four (4) 17/64" holes in the mount board and fasten securely to an engine stringer or other suitably sturdy platform with 1/4" bolts.

Plumbing: Identify the oil pan drain plug thread size. Then consult a hydraulic fittings and hose manufacturer or distributor to obtain the proper brass or stainless steel fittings to fit your engine oil pans and the manifold of the oil change kit. All manifold ports are threaded 1/2" NPT. In order to minimize plumbing related restrictions that will shorten the life of the pump motor use the largest oil resistant hose size practical between the manifold and the oil pans (5/8" ID is the minimum allowable hose size; 3/4" ID is better).

Do not use hose runs of more than 10 feet, and avoid sags and sharp bends. Note: If long hose runs cannot be avoided consider installing a pump without a manifold (GROCO #331 series) on each engine, rather than a single centrally located pump with a manifold. The cost is about equal.

The pump port on the opposite side from the manifold is threaded 1/2" NPT and may

be fitted with a length of hose. When pumping old oil out of the engines this will be the discharge hose. When pumping fresh oil in this will be the suction hose.

CMX3 Oil Change Systems are equipped with a Pressure Relief System (the plumbing arrangement in front of the pump head) that protects the pump motor when pumping against restrictive plumbing or backpressure in excess of 20 PSIG. In such instances the flow from the excess pressure is directed back to the inlet side of the pump, thus reducing motor load. The pressure relief system functions only when pumping oil into the engine(s).

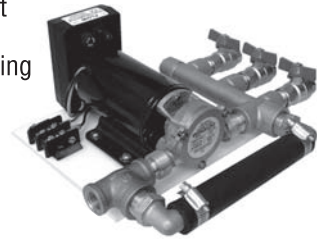
Note: GROCO CMX3 (3-valve) and CMX2 (2-valve) manifolds include 1/2" shut-off valves. Any number of CMX manifolds may be joined using 1/2" nipples to form manifold systems of any combination of valves.

Electrical: Proper wire size is essential for strong pump performance and long motor life. After running the proper wire size from the circuit breaker on the DC distribution panel to the pump, make connections to the terminal block mounted next to the pump motor. Use ring terminals for a secure installation.

Model	Voltage	Breaker
CMX3-60	12V	30 amp
CMX3-60	24V	15 amp
CMX3-80	12V	30 amp
CMX3-80	24V	15 amp
CMX3-80	32V	10 amp

Observe proper polarity as marked on the terminal block. Proper connection will assure that the reversible pump motor runs in the correct direction, and that oil will flow in the direction indicated by switch position.

Before Changing Oil: Plan ahead; if the air temperature is below 60-degrees-F we recommend that you warm the fresh oil by storing it inside overnight the day before a scheduled oil change.



Operation: Before changing oil run the engines for a few minutes to warm the old oil and mix sludge. Open the valve to the first engine to be serviced. Actuate the pump switch for pumping out (pointing away from the manifold). When the first engine has been drained of oil you will hear the pump motor speed increase. Flip the toggle switch to the center (off) position and place the hose into a container filled with the pre-measured volume (refer to the engine manual) of fresh oil to be pumped back in. Now actuate the pump switch for pumping in (pointing toward the manifold). Fresh oil will be pumped back into the engine oil pan. Note that the pumping rate back in will likely be slower than pumping out due to plumbing-related restrictions. Repeat this procedure for each engine to be serviced.

DISPOSE OF USED OIL PROPERLY AND RESPONSIBLY

Before You Start Your Engines: Check to assure that the pump motor reversing switch is in the "off" position, and that all manifold valve handles are closed. Shut off the circuit breaker that supplies power to the pump.