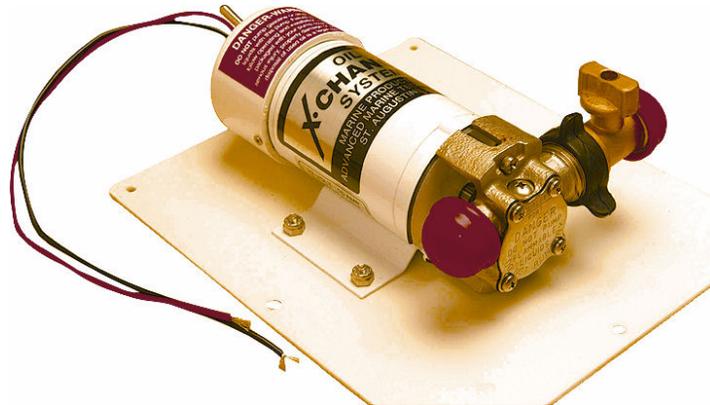


OIL X-CHANGE-R[®] SYSTEM

Models 912B & 922B



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INSTALLATIONS AND OPERATING INSTRUCTIONS

1.0 DESCRIPTION

Your X-Change-R® Oil Change System is one of the following:

Model 912B – Designed to remove crankcase oil from one diesel or gas engine and to refill the crankcase oil pan with fresh oil.

Model 922B - Designed to remove crankcase oil from two sources, one diesel or gas engine and a generator, one diesel engine and transmission, or two engines gas or diesel, and to refill the crankcase oil pan with fresh oil.

The oil flow from each engine is controlled by an individual shut off valve which designates the flow from the engine(s), transmission and/or a designated generator.

2.0 SPECIFICATIONS

MOTOR:	Heavy duty DC 15 AMP, 12 volt (24V also available)
PUMP:	Solid Brass, Self-priming, Nitrile impeller, Stainless Steel Shaft
FUSE HOLDER:	15 AMP, Built In
DIMENSIONS:	Width - 8.8"
	Height - 10.1"
	Depth - 3"
	Weigh - 5 lbs.

3.0 LOCATION AND INSTALLATION

This is a permanent system for mounting on a horizontal or vertical surface in the engine room. The system should be located in a readily accessible location to allow easy operation and service. The both the Model 912B & 922B have excellent priming characteristics and is capable of lifting liquids on the suction side as high as 7 feet. However, as a general rule, the suction lift should be kept as limited as possible by placing the system as central as central to all engine sources as possible.

Installing the unit requires general knowledge of engine service and electrical wiring skills. If you are not familiar with these techniques, it is recommended an experienced marine mechanic be engaged to install the X-Change-R®. The Model 912B & 922B are delivered with the pump attached to a backing plate with access to the four mounting holes. Secure the system to a flat surface through the mounting holes which accommodate ¼" X 20 mechanical screws.

4.0 ELECTRICAL WIRING REQUIREMENTS

The Model 912B & 922B are designed for use with a 12V (24V also available) power source. When wiring the system, choose UL approved marine-grade wire and connectors.

A built in fuse holder is located on the top of the housing and utilizes a ¼" X 1 ¼" glass, fast action **15 amp fuse**. Replacement fuses are available at any marine or automotive outlet. The motor will safely operate with fuses rated 15 to 20 amps. **Do not exceed 20 amps.**

Connecting the power leads:

1. Connect the BLACK (negative or -) lead to the negative side of a properly ground DC power source.
2. Connect the RED (positive or +) lead to the positive side of the suitable DC power source.

5.0 INSTALLATION OF THE HOSES

Because oil is a viscous fluid (particularly when cool) every attempt should be made to keep the length of the hose runs at a minimum. When changing engine oil or transmission oil, a small amount of waste oil will return to the system along with the fresh oil. This is acceptable for hose runs of 15 feet or less. Hose runs of 20 feet or more should be avoided, especially when connected to transmissions or small engines. Care should also be taken to avoid sharp bends in the hose and direct exposure to hot surface. When installing the hoses, design the layout symmetrically. It is easier to determine the location of the lines and presents a neat appearance.

5.1 Connecting Engine(s), Transmission, and/or Generator Oil Pan Hoses

1. Drain oil from engine(s), transmission, and/or generator
2. If the engine(s), transmission, and/or generator is not equipped with a factory installed oil pan drain hose, replace the oil pan drain plug with a drain hose assembly supplied by the engine manufacturer, or install a compatible fitting that will accommodate a ½" ID oil drain hose. An adapter may be required.
3. Connect properly measured lengths of approved ½" ID hose from the engine's oil pan drain to the appropriate valve on the X-Change-R®.
4. After completing the hose installation, carefully inspect the hose to insure each connection includes a hose clamp and that the clamp is in place and secure.

5.2 Connecting Drain/Fill Clear Hose (Wand)

1. Connect the Drain/Fill Clear Hose (Wand) provided with your X-Change-R® to the drain/fill outlet found on the left side of the unit.

6.0 DRAINING USED OIL FROM THE ENGINE(S), TRANSMISSION, GENERATOR

To insure the oil maintains proper viscosity during the removal process, it is recommended the operator run the engine long enough to permit the engine block to become warm – at least 140°. Shut the engine down and allow ample time for the circulated oil to return to the oil pan.

1. Warm engine to at least 140°F, then turn engine off.

2. Insert the PVC wand of the Drain/Fill hose into a container suitable for waste oil collection. (Remember, it is a legal requirement to dispose of waste oil in a responsible manner.)
3. Loosen the oil filler cap on the engine or remove the dip stick to allow air to enter the crankcase.
4. Open the *engine* valve shut-off. (SPECIAL NOTE FOR 922B MODEL: Open only one valve at a time with other valve closed tight to prevent accidental draining of other engines.)
5. Flip the motor control switch to the "DRAIN" position. The pump will start immediately. You should hear a noticeable change in the sound (speed) of the pump motor when the used oil enters the pump.
6. Continue to operate the pump until there is a noticeable change in the sound (speed) of the pump motor, which is an indication air is being drawn into the crankcase oil hose and that the specified crankcase is now empty. Oil is drained at the rate of about a gallon each 30 seconds (2 gallons a minute).
7. Return the pump motor control switch to the "OFF" position when the crankcase is empty and close *engine* valve shut-off.

7.0 FILLING THE ENGINE(S), TRANSMISSION, GENERATOR

Before attempting to fill an engine, make certain the engine has been completely drained or is in need of a measured amount of additional oil. **DO NOT OVER FILL!** Next, determine the type and the amount of oil recommended by the manufacturer for each engine. Remember, **FOUR QUARTS = ONE GALLON.**

There are two commonly used methods to determine when the proper amount of oil has been delivered to the engine.

Pre-measured Method – this method requires the operator to set aside a known quantity of oil prior to filling. For example, if the engine requires 22 quarts of oil, the operator may want to pump from a 5-gallon container, adding 2 additional, quarts as the container empties.

Timed Method – the timed method is used when pumping from a container of unknown capacity or a reservoir. The flow of the oil through the system varies primarily with the viscosity and temperature of the oil. Under normal conditions (75° - 85°), the system pumps approximately 1 – 2 gallons per 60 seconds. Filling time is a function of several factors, including oil temperature and weight.

1. Insert the PVC wand of the Drain/Fill hose into a container suitable for waste oil collection. (Remember, it is a legal requirement to dispose of waste oil in a responsible manner.)
2. Loosen the oil filler cap on the engine or remove the dip stick to allow air to vacate the crankcase.
3. Open the *engine* valve shut-off. (SPECIAL NOTE FOR 922B MODEL: Open only one valve at a time with other valve closed tight to prevent accidental draining of other engines.)
4. Flip the motor control switch to the "FILL" position. The pump will start immediately. You should hear a noticeable change in the sound (speed) of the pump motor when the new oil enters the pump.

5. Continue to operate the pump until a measured amount of oil has been pumped into the engine's crankcase. Fresh oil is pumped at the rate of approximately 1-2 gallons per minute. If you do over fill an engine, you may simply flip the motor control switch to the "DRAIN" position for a few seconds to remove the overage.
6. Once filled, return the pump motor control switch to the "OFF" position and close the engine shut-off.

8.0 TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
No Liquid Delivery	1) Closed valves	1) Open valves
	2) Plugged suction	2) Eliminate restriction
	3) Air leak at suction	3) Locate and repair leak
	4) Suction lift too high	4) Do not exceed vapor pressure of liquid
	5) Motor wired incorrectly	5) Check wiring instructions
Low Liquid Delivery	1) Pump shaft speed incorrect	1) Check driver speed
	2) Discharge pressure too high	2) Reduce downstream pressure
	3) Air leak at suction	3) Locate and repair leak
	4) Worn or damaged pump	4) Inspect and repair as required
	5) Low viscosity	5) Verify original application conditions
Gradually Losses Prime	1) Suction lift too high	1) Improve suction pressure
	2) Air or gas in fluid	2) Eliminate air or gas from fluid
	3) Air leak at suction	3) Locate and repair leak
	4) Worn or damaged pump	4) Inspect and repair as required
Noisy	1) Cavitating	1) Improve system suction pressure
	2) Solid particles in fluid	2) Install suction strainer
	3) Air or gas in Fluid	3) Eliminate air or gas in fluid
	4) Worn or damaged pump	4) Inspect and repair as required
Motor Runs Hot or Overloads	1) Discharge pressure too high	1) Reduce downstream pressure
	2) Shaft speed too fast	2) Reduce speed
	3) Fluid viscosity higher than expected	3) Change to larger horsepower
	4) Incorrectly wired motor	4) Check wiring instructions
	5) Binding internal pump parts	5) Inspect and correct condition
	6) Motors normally feel hot	6) Verify if actual amperage draw is within range
Seal Leaks	1) Dry running	1) Open valves, prime pump
	2) Solids in fluids	2) Add suction strainer
	3) Seal material incompatible with fluid	3) Verify original application conditions