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Volume

Filterdyne Filtration Systems
1334 Greenville Road
LaGrange, GA 30240

OPERATING MANUAL

858 Series

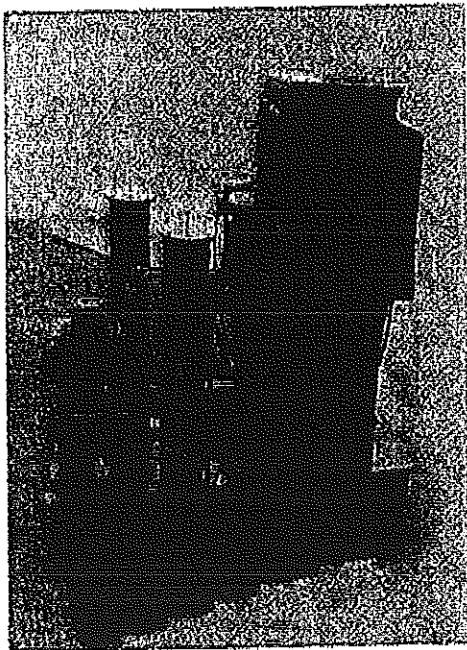
VACUUM DEHYDRATOR

Dyna-Vac®
Operating Manual
858 SERIES

How the 858 Dyna-Vac® Works

General Description

The 858 series of Dyna-Vac® Oil Purification equipment is an engineered filtration system for removing water, gases and particles from lubricating and hydraulic oil.



How The 858 Works

Oil contaminated with water and particulate is drawn into the 858 from your oil reservoir or oil sump by vacuum and the feed pump. This pump pushes the oil through a bank of heaters and a pre-filter. The heater raises the oil to 150° F. The contaminated oil is first processed in the pre-filter where a majority of the particle fines are removed. The oil then enters the vacuum process chamber through a control valve. The vacuum process chamber is actually two in one. The vacuum process chamber is held at a low vacuum of 26" Hg and a temperature of 150° F. When these conditions are maintained, the water will turn to steam and separate from the oil. The first chamber has special dispersing elements to accelerate the process of separating the water from the oil. The second chamber is the Dyna-Dry® heat exchanger. The steam passes over into the chamber and is condensed into water. This water is pumped by the vacuum pump into a holding reservoir where it collects and over flows into the waste drain. The dry oil is pumped out of the Dyna-Dry® chamber and sent back to the main reservoir for continual circulation or to an optional post filter. The optional post filter will remove any residual particles from the dry oil. NOTE: Dryness levels below 70 PPM are easily achieved.

Dryness levels of 70 PPM are easy to obtain.

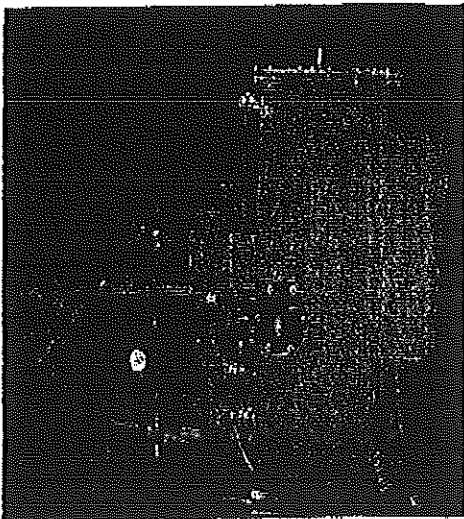
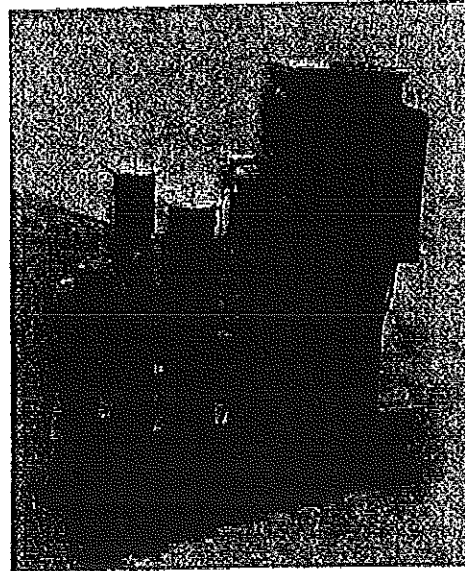
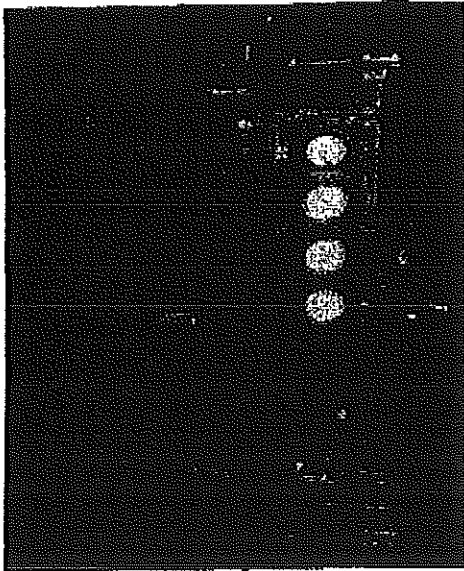
Your Dyna-Vac® has been equipped with the necessary safety features to ensure continuous unattended operation. Daily checks of the unit are recommended, and periodic inspection and changing of the filter elements are required. We have included in Chapter 4, a daily maintenance record for you to maintain historical information.

**DO NOT PROCESS FLAMMABLE SOLVENTS
SUCH AS GASOLINE OR KEROSENE
WITH A FLASHPOINT UNDER 225° F**

ABOUT THE 858 DYNA-VAC®

Introduction

This manual covers the installation and operating procedures for the 858-600-804 models. This particular model has several options which alter its appearance but not the basic performance. Shown below are several model configurations. Your particular model may have similar options or combinations of these or other variations. Follow the setup instructions and you shouldn't have any trouble running and maintain your model.



Set-Up Instructions

Filter Installation

QUICK START

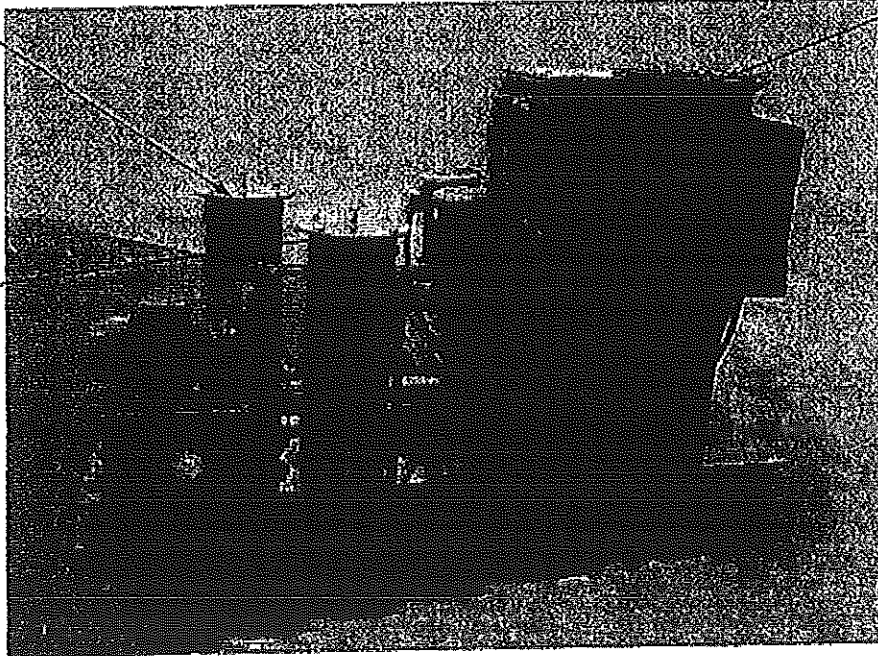
- Install Filter Elements in Pre-Filter.
- Install Dispenser Elements in Vacuum Chamber.
- Check all gaskets for damage.
- Replace the lids and torque the bolts to 15 ft.-lbs.

- Remove the pre-filter lid and the lid gasket. Install the appropriate filter element. The most common element is a 5 micron. Check the spare parts list section for other options available. Screw the filter element into the threaded connection at the bottom of the pre-filter. Hand tight is sufficient to seat the o-ring seal. The hex head is for removal of the filter element. Check the lid gasket for damage. Replace it if there is any damage. Place the lid on the vessel. Align the bolts and tighten them to 15 ft.-lbs torque. Over tightening will cut the lid gasket.
- Remove the vacuum process chamber lid and the o-ring. Install the appropriate dispenser elements. Check the spare parts list section for other options available. Screw the dispenser elements into the manifold at the bottom of the vacuum process chamber. Hand tight is sufficient to seat the o-ring seal. The hex head is for removal of the filter element. Place the lid on the vacuum process chamber. Check the gasket for damage. Replace it if there is any damage. Stretch the o-ring gasket over the lid. Slightly lift up the corners of the lid so the o-ring slips inside the gap between the lid and the flange of the vacuum process chamber and past the bolt holes. Reinsert the bolts and tighten them to 15ft.-lbs torque.
- *Note: Follow the same procedure as the pre-filter if the unit has the optional post filter.*

Gasket 122-3

Gasket 122-3

vacuum chamber



Filter Installation

(4)

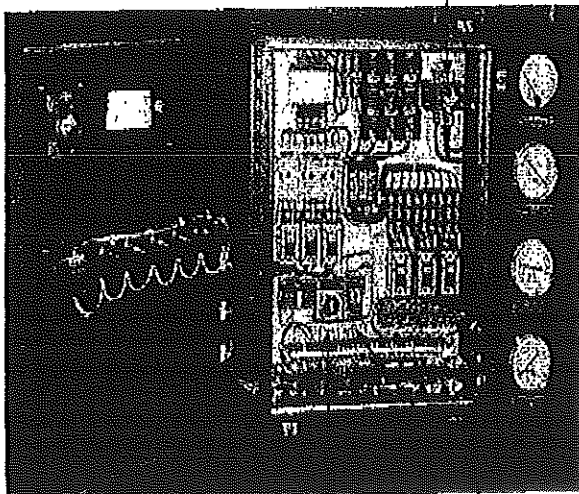
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Set-Up Instructions Wiring Installation

QUICK START

- Connect power
- Check Rotation
- Set Temp. to 150° F
- Set timer to 30 seconds

Connect L1, L2, L3
to terminals



Temperature
controller

Timer

Wiring Installation

- The total amperage and voltage requirements are stamped on the electrical cabinet nameplate. Determine the appropriate size electrical wire requirements needed to meet your local, plant, and state code requirements. Refer to the wire size tables in the Appendix section of this manual to determine wire size needed to minimize voltage drop from the 858 to the connection point. We recommend the incoming power line be connected to a fused disconnect.
- The incoming power line is connected to the line disconnect located inside the control cabinet. Unscrew the cabinet latches and turn the line disconnect switch to off. The door will not open until the disconnect is off. Punch a hole in the electrical cabinet and run the line power through a suitable strain relief. (We recommend you punch the hole in the bottom of the cabinet to prevent moisture and oil entering the cabinet.) There are three terminals located on the top portion of the disconnect. Connect the power leads L1, L2, L3 from your disconnect to these terminals.
- Set the oil temperature controller to 150° F. Be sure the controller is well seated in its socket.
- Set the delay timer for 30 seconds. Check Appendix for more detail on this device and its use.
- Close the panel door and turn the line disconnect switch to on. Make sure the on-off switch on the front panel is in the off position. Turn power ON from your source.
- Turn the 858 on and off momentarily to "Bump" motors to determine rotation. Check the rotation arrows on the pumps and motors for correct rotation. The only motors that will run are the feed and vacuum pump motors. Check one of the motors to make sure the rotation is correct, if so all other motors will also be correct.
- If rotation is incorrect turn the power off at the source. Open the electrical cabinet of the 858 and reverse L1 and L2 at the line disconnect inside the electrical panel.
- Close the electrical panel and turn power off.

(5)

Set-Up Instructions

Cooling Requirement Installation

Note: The 858 unit will require one of the following three installation procedures to be followed concerning cooling water for the system.

- Customer will need to supply cooling water to the system and a drain.
 - The unit will ship with the exclusive Dyna-Save® water recirculation package.
 - The unit will ship with the Dyna-Save® water recirculation package from a remote location.
1. **Customer supplied cooling water**
 - a. Plumb either chilled or mill water to the inlet water connection on the back of the vacuum chamber. Check Chapter 1 page 4 for the appropriate flow rate requirements.
 - b. Plumb excess water overflow port on the water reservoir port to a floor drain.
 - c. Turn on cooling water and allow reservoir to fill until water flows out of the overflow port.
 - d. Turn water off.
 - e. Prime the vacuum pump before start up. Remove the vacuum pump prime port plug, and pour approximately 1 pint of water into the vacuum pump, then replace the plug.

2. **Dyna-Save® option**

- a. Plumb the waste water outlet to the floor drain.
- b. Remove plug from the vacuum pump inlet suction port.
- c. Fill the vacuum pump water reservoir through the vacuum pump inlet suction port until water flows out of the waste water outlet drain.
- d. Replace the plug on the vacuum pump inlet suction port.
- e. Start system and allow to run approximately 1 minute. This will allow the unit to fill the radiator and all associated piping with water from the vacuum water reservoir. You should notice a positive pressure on the gauge immediately following discharge of the water recirculation pump.
Note: It may be necessary to refill the vacuum pump water reservoir to an acceptable level. To do this, simply repeat the same procedure for the initial fill of the vacuum pump water reservoir.

Set-Up Instructions

Cooling Requirement Installation

continued....

- 3 Dyna-Save® from remote location
- a Install the Dyna-Save® cooling unit to the remote area
 - c Plumb outlet of the water recirculation pump located on the 858 unit to the inlet of the Dyna-Save® cooling unit.
 - c Plumb the return of the Dyna-Save® cooling unit to the water reservoir located on the 858 unit.
 - d Install the electrical connections for the cooling unit to the motor starter inside the electrical cabinet. This motor starter is marked "water recirculation system". *Note: It is necessary to insure the fan on the cooling unit is rotating correctly. If it becomes necessary to reverse the rotation, simply reverse L1 and L2 at the motor starter for the water recirculation system.*
 - e Once you have installed the plumbing and electrical to the Dyna-Save®, located in the remote location, follow the instructions as outlined in the Dyna-Save® option (page3).

COOLING WATER FLOW RATE

Model	Flow Rate
300	
858-400-803	1 - 2 GPM
858-600-804	2 - 4 GPM
858-900-868	4 - 6 GPM

IMPORTANT NOTE

The optimum temperature for the vacuum pump reservoir water is 75° F. The cooling water should never exceed 100° F. Temperature at this level will cause the vacuum pump to cavitate and loose vacuum.

Set-Up Instructions

Oil Line Installation

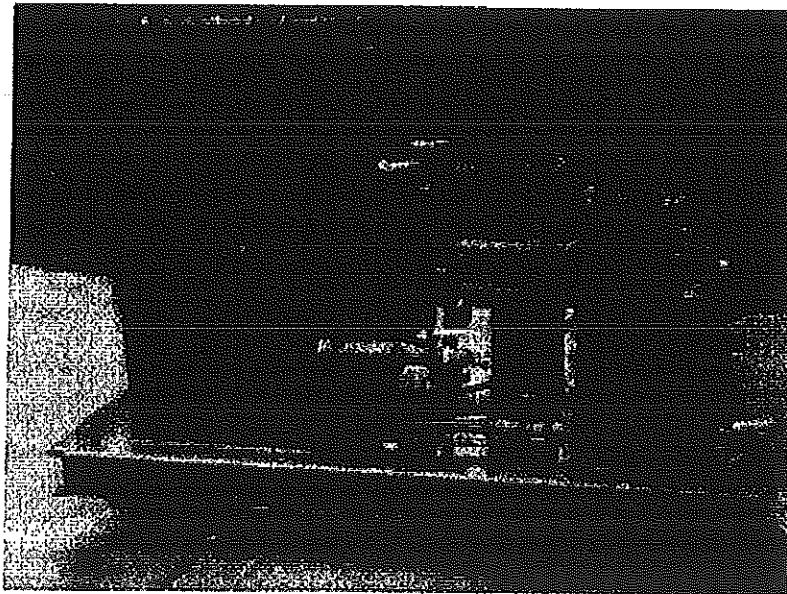
Connect the Unit to the oil reservoir as follows:

Plumb the oil from the oil reservoir to the inlet pump of the 858. If you are using the hoses supplied with the unit you must use the vacuum rated hose (Black hose) as the suction hose

The inlet connection of the incoming oil to the Filterdyne 858 purifier is very important. In connecting the purifier to an oil reservoir where the water contamination is minimal (under 2%), the connection should be made at the lowest point in the tank. This will insure the 858 will remove all the water from the oil in the reservoir.

If you expect large amounts of water to be present, it is best to drain this out first. In these cases the tank or reservoir should be equipped with a low point drain. This drain should be opened periodically to drain any free water that has settled to the bottom of the tank. The natural effect of gravity will allow easy removal of free water accumulation. Use the 858 purifier to get the oil bone dry

Connect the outlet hose (red) to the 858 outlet connection.



Oil Inlet (note: inlet locations vary)

Oil Outlet (note: outlet locations vary)

VERY IMPORTANT ADVICE

One of the most common problems with installation is improper sizing of the hose or pipe used as the suction or inlet line. To reach top performance of the Model 858, the net suction head at the inlet to the feed pump should not be greater than 10" Hg. If over 10" Hg, give some consideration to shortening the lines, increasing the line size, removing elbows, using full port valves, etc.

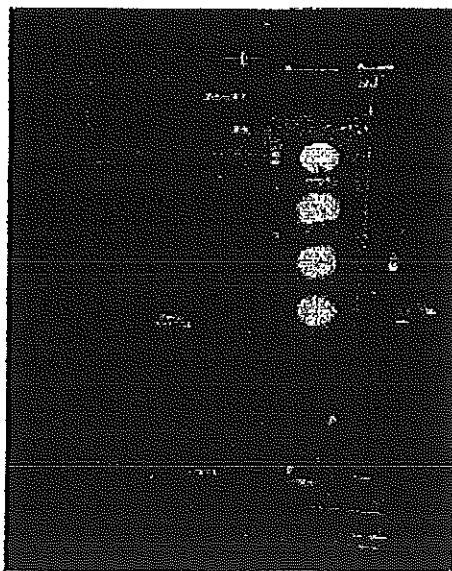
4.89 psi

Set-Up Instructions

Starting the Unit

QUICK START

- Open all valves
- Turn power on
- Check gauges



Disconnect
Switch

On/Off
Switch

- Open all valves to allow oil flow in and out of unit.
- Turn power disconnect switch to ON.
- Turn ON/OFF switch on.
- The vacuum gauge should start to rise and level off between 25" to 27" Hg.
- If for any reason adjustment of the vacuum level is necessary, this may be accomplished by adjusting the vacuum relief valve located on the vacuum process chamber.
- The pre-filter inlet and outlet gauges should have a positive pressure reading after approximately 5 minutes of operation. It is normal for this gauge to read vacuum on initial start up. Under normal operating conditions this gauge should read between 15 to 40 pounds of pressure.
- If you have the post filter option you will not see pressure indications on the post filter inlet and outlet gauges until a minimum oil level has been achieved inside the vacuum process chamber. There is a low level float inside the vacuum process chamber that will not allow the discharge pump to energize until the minimum oil level has been achieved. Once the low level float has been energized by the rising oil level inside the vacuum process chamber, it energizes the Discharge Pump Start Delay Timer inside the electrical cabinet. When this timer, times out, it then energizes the Discharge Pump and you should see positive pressure readings on the post filter Inlet and outlet gauges. If for any reason the minimum oil level is not maintained inside the vacuum chamber the low level float will de-energize the Discharge Pump Start Delay Timer, which in turn de-energizes the Discharge Pump, and the previously mentioned cycle will repeat itself.

The purpose of the low level float is to prevent the positive displacement discharge pump from running dry.

NOTE: It is not uncommon for the low level float to energize under certain conditions, i.e., if you are pumping cold, thick oil it is normal for the low level float to cycle on and off until the oil reaches operating temperatures of 150° F, and flow could be maintained.

Set-Up Instructions

Starting the Unit (cont'd)

QUICK START

- Adjust timer if necessary
- Check the heater
- Check the vacuum
- Check the pressure
- Open the air cock valves

- The Discharge Pump Start Delay Timer is user adjustable . If your oil conditions warrant more or less dwell time on the timer, the timer can be set to time seconds, minutes, and even hours simply by moving the wording in the view slot to the desired increment of time, and turning the adjustment wheel to the desired fraction of the time increments chosen; i.e. the timer is set at the factory with "min." showing in the view slot and the adjustment wheel set between zero and one . If the adjustment wheel was set at one the timer would give a one minute delay. If the word "sec" was in the view slot and the adjustment wheel was at one, the timer would give a one second delay. If the word "Hrs" was in the view slot and the adjustment wheel was at one, the timer would give a one hour delay. We recommend using "min" set between zero and one.
- As oil flow begins to be maintained through the 858, the oil heater will come on. This is indicated by the "Heater On" light on the front panel. It is normal for this circuit to "chatter" and for the light to blink for a few seconds during initial start up.

This heater will control the temperature of the oil at 150° F.

When the unit is running and vacuum is at 26" Hg, there is a pressure reading on the gauge, and the heater is on - open the air cocks on top of the filter housings . Allow the air to "bleed off" the vessels. *BE CAREFUL: Oil will flow through the vent very quickly.*

- Your unit should now be operating correctly. If not, go back through the start up and operation procedure and be sure you have followed the instructions step by step. If after rechecking the unit is not running correctly, turn the unit off and contact your Filterdync representative.

System Shut-Down Instructions

System Shut-Down

- 1 Turn the power disconnect ON/OFF switch to OFF.
- 2 Close the inlet and the outlet valve.
- 3 Close the inlet water valve on models connected to an inlet water supply.
- 4 If the unit is to be stored for long periods of time, remove the vacuum pump prime port and put approximately 1 pint of anti-freeze in the pump to resist corrosion.
- 5 Do not store the unit in areas where the temperature will be 32° F or below.

HELPFUL HINT

When setting up to purify oil, it is best to plan enough time to dry the oil completely rather than shutting the unit down and moving it to a new reservoir. The longer the 858 operates, the dryer the oil will become and the purifier itself will be completely purged of moisture.

DAILY MAINTENANCE

DAILY MAINTENANCE:

Record daily readings of temperature, pressure of the filter vessels, vacuum level, and height of oil in the sightglass. Record this on a form similar to that included in the Appendix Section of this manual. These readings should be compared periodically. This procedure will help operator to determine if the equipment is running correctly from day to day. Deviations from the daily records will help trouble shoot the unit and help predict when elements will need changing.

- 1 Check Temperature
- 2 Vacuum Level should be 25" -27" Hg
- 3 Check height of oil in sightglass
- 4 Check differential pressure in filter vessel
- 6 Cooling water less than 100°F. (See Chapter 1 page 4 for flow rate)
- 7 Check for leaks