STANDARD INSTALLATION MANUAL

puraDYN
FILTER TECHNOLOGIES INCORPORATED

Bypass Oil Filtration Systems

MODELS
PFT8 THROUGH PFT60

Table of Contents

Overview

Welcome to Puradyn Filter Technologies Incorporated. This installation manual is designed to assist you in the installation of your new **pura**DYN® Bypass Oil Filtration System.

This manual will go over all aspects of installing the **pura**DYN® System on any oil lubricated equipment. The information in this manual will also assist you in custom installation of a new **pura**DYN® System on genset, marine, heavy construction and other applications. At any time during the installation, if you have questions, our technical support team is only a phone call away.

How the **pura**DYN® *System Works*

The **pura**DYN® Bypass Oil Filtration System has no moving parts and is designed for years of trouble-free operation. The oil enters **pura**DYN® bypass filter through a metering jet located on the side of the unit. The metering jet reduces the flow of oil going through the **pura**DYN® System to approximately 6 gallons per hour. This slow flow rate allows the system to trap particles down to below one micron in particle size. As the oil travels through the filter element, it passes through time-released chemicals designed to help replenish depleted base additives without upsetting the balance of the original additive package. The **pura**DYN® filter element with additives works in conjunction with the OEM full flow filter to remove wear particles, maintain Total Base Number (TBN), Total Acid Number (TAN) and viscosity within an acceptable range as determined through oil analysis. (**Note**: When the circulating oil temperature drops below 150°- Fahrenheit, the Additive release process stops.)

After the oil exits the filter element, it enters the evaporation chamber at atmospheric pressure where it thin-films and flows over an electrically heated 200°- Fahrenheit diffuser plate. This allows the unit to evaporate and vent water and fuel vapors out of your oil before they can re-condense. Clean oil exits the unit via a return line and returns back to the oil pan via gravity. The cycle continues and as long as the engine is running, the unit will be filtering your oil continuously to keep it clean.

Note: Use of anything other than a genuine puraDYN® **Filter Element voids the pura**DYN® **Product Warranty.**

SEQUENCE (I) - *Installation Overview*

Note: See Required Tools section (page 23)

1. Verify parts received.
2. Call Puradyn toll-free 1-866-787-2396 if any parts are missing or damaged.
3. Read this installation manual to get familiar with the installation process. Also please reference our website: www.puradyn.com for Heating Element Troubleshooting.
4. Survey equipment or vehicle at the suggested mounting location.
5. Verify adequate physical unit clearance, accessibility of oil sample valve & room for oil sample bottle; also, check that there is enough clearance to change filter element.
6. Inspect the new pre-assembled unit, identify from Parts Bag (provided), metering jet assembly, air-vent hose, hose clamp and return fitting.
7. Mount pre-assembled unit onto the designed location.
8. Drain old oil completely from equipment.
9. Install new OEM full flow filter per OEM instructions. **Note:** Use of a heavy-duty synthetic media full-flow filter is recommended, allowing for an extended oil service interval.
10. Take an oil sample from the drained oil to use as a reference of the current engine and oil condition.
11. Install **pura**DYN® System oil supply (pressure) line.
12. Install **pura**DYN® System oil return (gravity) line.
13. Install **pura**DYN® System electrical (heater element) wiring.
14. After system installation is completed, please go to System Start-Up section of this manual for step-by-step procedures.

Important Continuous Maintenance Reminders

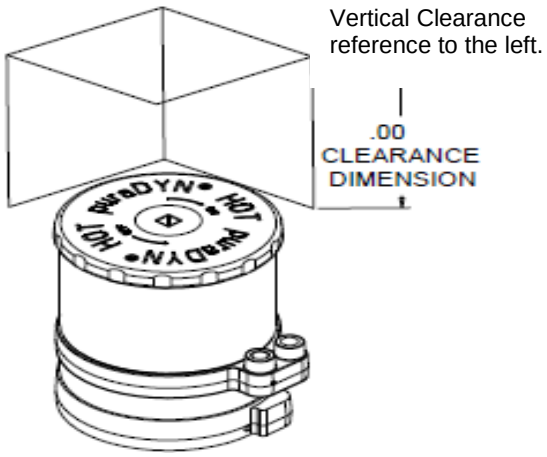
- Please review maintenance schedule for recommended filter change intervals –if you need help generating your oil service interval schedule with **pura**DYN® System, please call Puradyn's technical support staff.
- Use oil analysis to confirm oil is good for continued use.
- Maintain a good preventive maintenance program on engine and equipment.
- Routinely check oil level using engine dipstick.
- Change bypass filter cartridge according to oil analysis recommendation.
- Please reference System Startup page for adding required quantity of (make-up) oil and note, the added oil must be compatible with oil already in the system. Example. API–CJ-4 (API category and brand may have differences in the additive package).

System Mounting Requirements

In order to change the filter after installation, the following minimum height requirements (clearance dimension) **above** each unit must be maintained:

Vertical Clearance Dimension:

PFT 8	**8 inches**
PFT 12	**8 inches**
PFT 24	**12 inches**
PFT 40	**12 inches**
PFT 60	**16 inches**



Location: Choose a secure mounting location on the fender well, firewall, frame rail or cowl that meets these requirements.

- Install system near oil return port (sump) and keep the return hose as short as possible. Do not mount directly onto the engine. (**Note**: Clean oil returns by gravity; return hose must maintain continuous downward-slope).
- Maintain enough space in both the horizontal and vertical direction so the unit (including mounting hardware) will not interfere with engine parts, suspension components, steering linkage, brake lines, electrical system or engine control hardware. Check for moving component clearance: i.e. tire clearance, right full turn, left full turn while suspension is unloaded and fully loaded.
- Maintain position high enough so the outlet for the oil returns line is at least 12 inches above the dipstick oil level on short return lines and as high as possible for longer return lines.
- Select thick gage mounting frame location, so the weight of the unit doesn't cause metal fatigue or damage.
- Keep a safe distance from hot exhaust system components.

CAUTION! Avoid high-vibration mounting locations, which can cause the bolts to loosen during operation.

Mounting Instructions

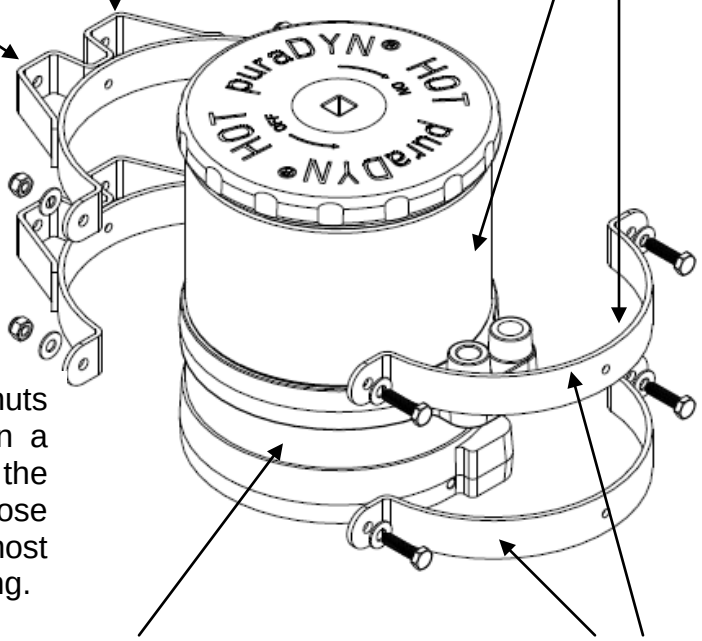
Mount the **pura**DYN® unit vertically and level on top.

Note: *Puradyn Filter Technologies Incorporated stocks various sized pre-drilled mounting plates for installation. If you would like installation technical assistance, please call Technical Support Toll-free at: 1-866-PURADYN (866-787-2396).*

1. Locate and prepare any holes needed to attach the "W" brackets. The holes should be vertically & horizontally aligned.

2. Install the "W" brackets in place.

3. Line up the top bracket onto the unit sleeve.



6. Tighten the locknuts to secure the unit in a position where the position of return hose will have the most clearance for servicing.

5. Check the bottom bracket to ensure it is fitted in the lower bracket groove located on the diffuser casting.

4. Loosely assemble "C" bracket to "W" bracket with the bolts and washers provided

CAUTION: NOT RECOMMENDED *to drill new holes (or weld) into equipment frame rails without first checking with the Original Equipment Manufacturer for approval.*

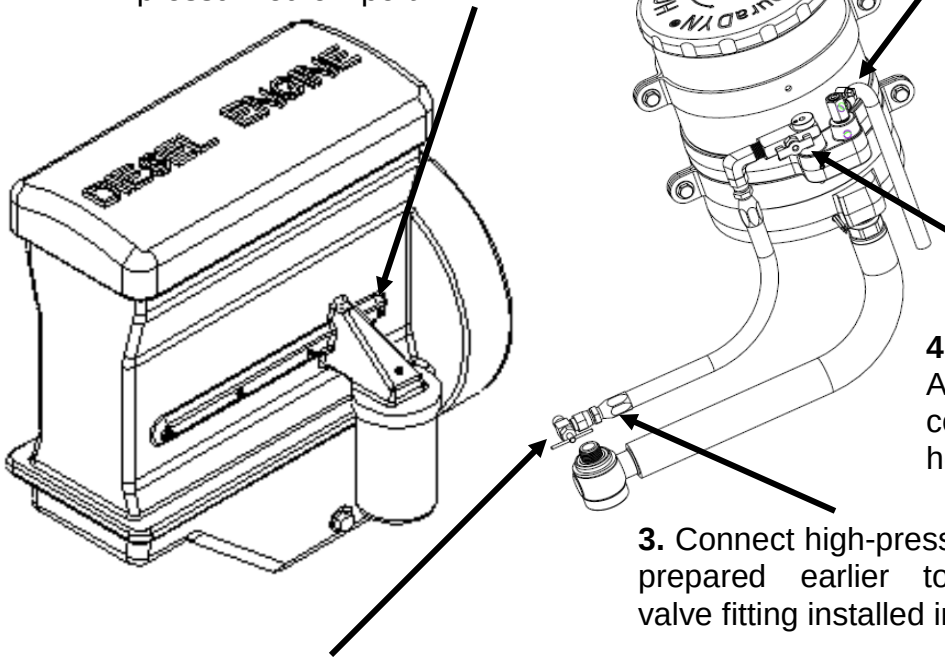
Puradyn recommends *utilizing existing holes in the frame rail or the use of secure clamping devices to mount the unit, where possible.*

Note: Mounting clamps/brackets, pads and hardware may vary from above illustration.

SEQUENCE (II) - *Install Oil Supply (Pressure) Line*

Typical Oil Supply Line Connection

1. Locate oil galley plug, oil pressure sending unit or other pressurized oil port.



5. Install & secure Vent valve hose w/ provided hose clamp & guide hose towards ground or other required routing or system connection. Ex. vapor-canister or air-induction.

4. Install Metering Jet Assembly to Boss & connect to high-pressure hose from **Step 3**.

3. Connect high-pressure hose prepared earlier to shutoff valve fitting installed in **Step 2**.

2. Using the proper sealant, install the 90º shutoff valve (petcock) to the oil port found in **Step 1**- use bushing and street tee, if necessary. **Note: Make sure the shut-off valve is accessible & operable.**

Install pressure port fittings

Step 1. Find the oil pressure sending unit or port plug along oil galley on the engine. The oil pressure sending unit normally has a wire or cable running to the ECU. If you are unable to connect to the oil pressure sending unit, find another pressurized oil port (usually near the factory full-flow oil filter) that you can connect to for oil supply. **Note: It is recommended to put a gauge on selected port and run the engine at high idle to verify the oil pressure under operation. As long as the oil pressure is under 65 psi, you can install the standard metering jet. If the pressure is above 65 psi, please contact Puradyn technical staff for applicability.**

Step 2. After locating the oil port that you will be connecting to, use the 90º shutoff valve supplied from the kits bag, and install the fitting to the oil port (also, a 1/8" street tee and ¼" NPT bushing have been supplied for different adaptation. **Note: 90º shutoff valve fitting is supplied in the "OFF" position. After system installation is complete, remember to open the valve, so the oil can travel from the engine to the pura**DYN® **System.**

Install Fittings to Pressure Hose

The puraDYN® System operates with the use of a pressurized oil supply from the engine oil pump. The return and supply hoses are not included in the standard model, but can be supplied by Puradyn Filter Technologies Incorporated, your dealer, hydraulic parts store, and most auto parts stores– these are sometimes custom made for specific kits where length of hose has been pre-determined.

Specifications

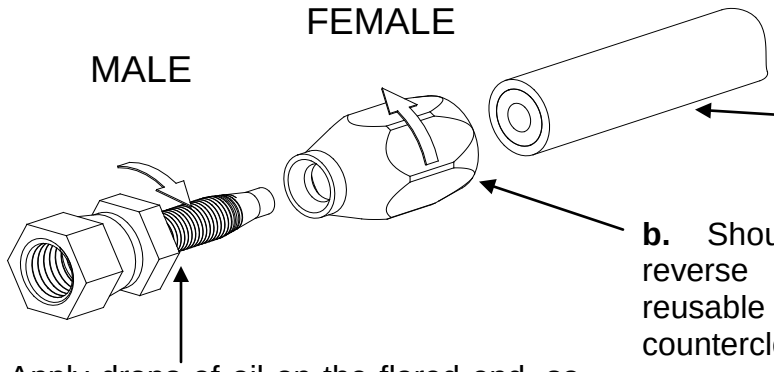
- Use 3/16"I.D., 3000 psi fully braided hose rated for hydraulic oil (Puradyn part# 08-00003 or Weatherhead # H06904 or Aeroquip # FC350-4 or equivalent).
- Use proper sealants for installation of all fittings.

Take the two supplied high-pressure flared reusable fittings and install them in the following manner:

a. The shoulder nut has a reverse thread and must be screwed on in a counterclockwise direction. As soon as the nut starts to thread, insert the flared insert portion into the shoulder nut about three turns.

b. Tighten down the shoulder nut first, with a 5/8" wrench. Next tighten the flared insert, with a 9/16" wrench. Do these steps on both fittings.

c. The next step is to remove both flared inserts, because during the threading process, the inserts pick up a small piece of rubber, which must be completely removed from hose. Then re-install both flared inserts again and blow out with high pressure air to clear out all the debris.



a. Cut high-pressure hose to desired length

b. Shoulder Nut: Install the reverse thread piece of the reusable hose fitting by turning counterclockwise on to the hose

c. Apply drops of oil on the flared end, so that easier to push into the hose. Secure this hose fitting by turning clockwise into the first fitting.

Routing and Connecting Pressure Hose

The kit comes with two reusable hose fittings for the 3/16" ID pressure hose. Measure and cut pressure hose to the proper length. Install reusable hose fittings to the pressure hose (as shown on previous page).

Continued from Step 2 (Page 7)

Step 3. After (engine side) shut-off valve fitting has been installed properly, connect the pressure hose onto the shut-off valve fitting and route the hose to the unit.

Step 4. Install Metering Jet Assembly at the boss of the unit and connect to the supply (pressure) hose that was routed from the engine side (Step 3).

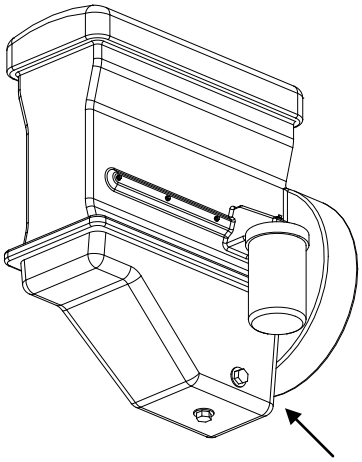
For routing the hose, ensure that the hose is routed in a safe, out- of-the-way location, making sure it does not come in contact with any moving or abrasive parts or hot exhaust components. Secure the pressure hose with supplied tie wraps to avoid moving or hot parts.

Step 5. Install Vent Valve Hose to pre-assembled Vent Valve with provided hose clamp. Guide the Vent Valve Hose toward ground or other required routing or system connection, Ex. vapor-canister or air-induction. Secure Vent Valve Hose to maintain vent direction.

***Note**: The* **pura**DYN® *System will not affect engine oil pressure.*

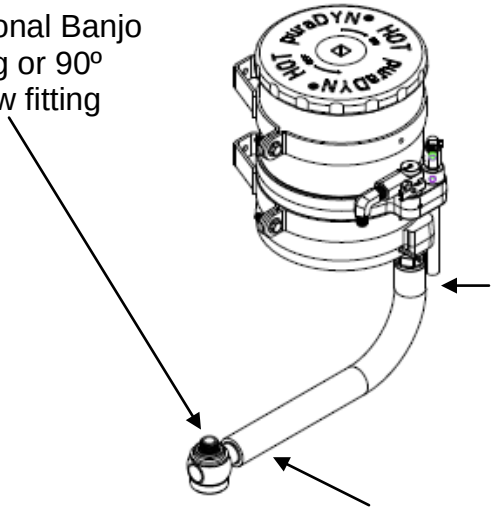
SEQUENCE (III) - *Install Oil Return (Gravity) Line*

Typical Oil Return Line Connection



2. Install the return fitting into the oil drain plug port. You may use a 90º elbow fitting or optional banjo fitting to simplify hose attachment.

Optional Banjo fitting or 90º elbow fitting



1. Install return hose fitting to the bottom of the unit, connect return hose (use hose clamp provided) & secure hose.

3. Route the hose to engine side return fitting (**Step 2**). Lube the inside of the hose and push it all the way onto the fitting.

Note: Banjo fittings are optional. They are NOT supplied with the **pura**DYN® unit.

The return line and supply hose are not included in the standard model, but can be supplied by Puradyn Filter Technologies Incorporated, your dealer, hydraulic parts store, and most auto parts stores– these are sometimes custom made for specific kits where length of hose has been predetermined.

Specification: Use 3/4" I.D., 250 psi, oil-rated push-on hose, (Puradyn part# 08-00004 or Weatherhead #H10112 or Aeroquip #2556-12, or equivalent).

Note: When return hose is not fully shielded, a full braided steel hose should be used with **pura**DYN® System's optional Off Road Kit. Please call Puradyn for consultation, if required.

Unit Return Fitting, Determining Oil Return Location & Hose Routing

Step 1 - Install the supplied hose barb fitting (3/4" Return fitting supplied in the parts bag) into the bottom of the PFT unit. Using supplied hose clamp, connect hose to the hose barb fitting on the Unit.

Step 2 - Determine best locations to attach the oil return fitting.

- The oil pan
- The oil drain port
- An inspection port on the side of the oil pan.

Use the following criteria to select an oil return port on the engine:

- The oil return port must be a non-pressurized port on the engine. There cannot be any backpressure on return flow.
- A non-pressurized oil port location should be used for connection of return line to engine such as the drain plug on oil sump, an alternate oil fill cover, or any other non-pressurized port location on engine.

Determine optional banjo fitting size:

Once a Return location is selected, make sure that you have the correct banjo fitting to attach to the oil pan. If your Banjo fitting size is not listed on website, please call Technical Support at 1-866-PURADYN (787-2396) for assistance.

Return Fitting Connection and Hose Routing

Remove oil pan drain plug and drain the old oil from the oil sump, take an oil sample so that it can be analyzed and compared with future oil analysis.

Step 3 - After replacing the drain plug with **pura**DYN® banjo fitting or a 90º elbow fitting, route the return hose from the PFT unit to the oil pan fitting. Measure and cut return hose to the proper length. Before installing, make sure the hose is clean and there is no debris stuck in the line (use pressurized air to blow out the debris, etc.).

When routing the oil return hose from the puraDYN® **unit to the engine, make sure of the following:**

- **The return hose is constantly descending, (minimum of 12" above running oil level in oil pan) with no dips, traps or sharp bends.**
- **Be sure that the hose does not come in contact with abrasive or moving parts or hot exhaust components. Secure the hose using supplied tie wraps.**

SEQUENCE (IV) – *Install Electrical (Heater) Connection*

THE OWNER OF THIS PURCHASED EQUIPMENT IS RESPONSIBLE FOR ITS INSTALLATION, ROUTINE INSPECTION, CARE, PRODUCT REGISTRATION AND ITS PROPER USE.

IT IS CRITICALLY IMPORTANT TO EMPLOY A LICENSED AND QUALIFIED CONTRACTOR TO INSTALL OR MODIFY THE puraDYN® SYSTEM. ANY ELECTRICAL CONNECTIONS SHALL BE IN COMPLIANCE WITH LOCAL, REGIONAL, OR PERTINENT INTERNATIONAL ELECTRICAL AND SAFETY CODES, STATUTES AND/OR DIRECTIVES.

When ordering and upon pre-installation inspection of the **pura**DYN® System, verify that the voltage supplied to the heating element matches the voltage for which the element is rated. Standard heating elements are single voltage and designed to operate on a 14VDC or 28VDC or 110VAC or 220VAC power source. For special requirements and optional Heating Element, please call Puradyn for consultation.

DETERMINE EQUIPMENT POWER SUPPLY VOLTAGE, SELECT FROM THE FOLLOWING HEATING ELEMENT MODEL AND ITS APPROPRIATE FUSE.

Heater	Current Draw	Fuse
12 VDC	12.5 Amps	15 Amps
24 VDC	6.25 Amps	7.5 Amps
110 VAC	1.36 Amps	3 Amps
220 VAC	0.68 Amps	3 Amps

WARNING! Never connect the heating element directly to the ignition system, brake system, engine control module, or alternator. Total amp load with installed puraDYN® **System must not exceed rated circuit maximum. Direct connection to the battery requires a special pressure switch kit available from Puradyn Filter Technologies, Inc.**

Note: *Please refer to our website www.puradyn.com for:*

- puraDYN® *System Heating Element Troubleshooting Guide.*
- *Other optional equipment installation.*

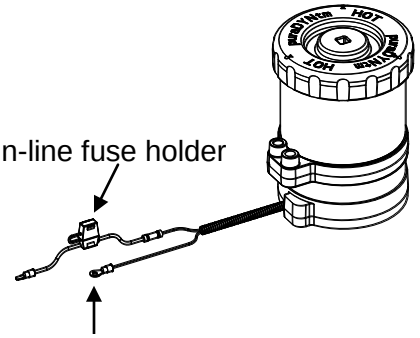
Electrical Connection - Example & Wirings

As a connection example (see the following illustration), for a 12VDC automotive electrical system the alternator output is approximately 14VDC, (heating element is rated 14VDC). Connect one lead of the heating element to the equipment ground. Connect the second lead thru the in-line fuse holder then route the wire to the fuse panel of designated power source (you may need to run the wire along the frame rail, thru the fire wall, etc.); you will need to find an unused accessory circuit that can handle a minimum of 15 amps. Be sure to select a power-source terminal that is "OFF" when the ignition is "OFF.

12 VDC Example

1. Choose a power source that is ignition-controlled; i.e., "off" when the engine is off, "on" when the engine is running.

3. Connect second lead after in-line fuse holder to POSITIVE (+) on the accessory panel (note amperage draw & appropriate fuse for different heater model)



2. Connect one lead of the heating element to a ground source – the ground on a 12 VDC system is connected to the NEGATIVE (-) side of the battery.

WIRINGS FOR DIFFERENT MODELS OF THE HEATER ELEMENT

2 WIRES SINGLE VOLTAGE HEATER: (12 VDC, 24 VDC, 32 VDC, 48 VDC, 110 VAC and 220 VAC)
Connect first Black lead to in-line fuse holder then to POSITIVE (+) of accessory panel. Connect second Black lead to NEGATIVE (-) or GROUND.

3 WIRES DUAL VOLTAGE HEATER: (12 VDC or 24 VDC)

12 VDC – Tie the 2 Black leads together and connect to inline fuse holder then to POSITIVE of accessory panel. Connect Green lead to NEGATIVE (-) or GROUND.

24 VDC – Connect first Black lead to in-line fuse holder then to POSITIVE (+) of accessory panel. Connect second Black lead to NEGATIVE (-). Insulate Green wire use heat shrink seal.

4 WIRES DUAL VOLTAGE HEATER: (12 VDC or 24 VDC)

12 VDC – Tie the 2 Black leads together and connect to in-line fuse holder then to POSITIVE (+) of accessory panel. Tie the 2 Green leads together and connect to NEGATIVE (-) or GROUND.

24 VDC – Connect first Black lead to in-line fuse holder then to POSITIVE (+) of accessory panel. Connect second black lead to NEGATIVE (-). Tie both Green leads together and insulate them both use heat shrink seal.

4 WIRES DUAL VOLTAGE HEATER: (110 VAC or 220 VAC)

110 VAC – Tie the 2 Black leads together and connect to in-line fuse holder then to POSITIVE (+) of accessory panel. Tie the 2 Green leads together and connect to NEGATIVE (-) or GROUND.

220 VAC – Connect first Black lead to in-line fuse holder then to POSITIVE (+) of accessory panel. Connect second black lead to NEGATIVE (-). Tie both Green leads together and insulate them use heat shrink seal.

SEQUENCE (V) - puraDYN® *System Start-Up*

After (**pura**DYN® Bypass Oil Filtration System) installation is completed, please perform the following System Start-up to ensure the **pura**DYN® **System** is working properly:

1. Fill equipment with oil type and quantity as specified by OEM, and open shut-off valve.
2. Start the engine, check for leaks and heating element operation. **Note:** Heating Element should be warm within 5 minutes of start-up. Troubleshoot and correct condition as required.
3. If no other issues arise, let engine run for 15 to 30 minutes and check all connections between engine & **pura**DYN® System again.
4. Shut engine down and let rest for 5 minutes.
5. Open lid and check for oil flow thru filter element. Close lid when done. Alternately, the sample valve may be briefly opened to check for oil flow into unit.
6. **Add make-up oil as indicated below (make sure to use same OEM specified oil).**

Filter Model	Qty.	Unit
PFT8 Filter	¾	Quarts
PFT12 Filter	1 ½	Quarts
PFT24 Filter	2 ¾	Quarts
PFT40 Filter	4	Quarts
PFT60 Filter	6	Quarts

Depending on size and orientation, OEM full flow filters can hold an additional quantity of oil not shown in the oil makeup table above, please add oil as recommended by OEM.

- ✓ Use the engine's oil level dipstick to adjust or determine the proper oil level when installing or replacing oil filters or when performing routine preventive maintenance**.**
- ✓ Whenever using a bypass filter element for the first time (new install or filter element replacement) remember to allow time for the new bypass element to charge (completely fill with oil), and run for a few minutes after it is charged (filtered oil returning to oil pan) before making final adjustments to the oil level using the OEM oil level dipstick.

7. **System Start-Up validated, pura**DYN® **System is ready to work.**

Sampling Oil Procedures

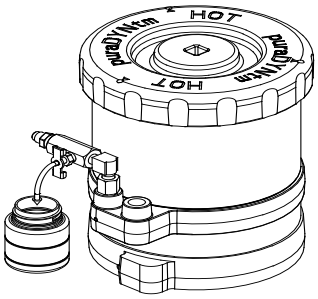
Engine oil may remain in use as long as received oil analysis results from independent lab indicate good oil conditions.

Sampling Steps:

- Start the engine and bring oil to operating temperature
- Open oil sample valve. Caution must be taken to avoid burns due to hot oil.
- Draw off 1 cup of oil to purge sediment from oil sample valve
- Open oil sample bottle and draw off oil to fill until 3/4 full
- Close oil sample valve
- Close lid on bottle
- Fill out oil sample form completely and mail Oil Analysis kit to lab for analysis.

1. Open oil sample valve

3. Draw oil sample in the appropriate sample container and send to analysis laboratory



2. Draw off 1 cup of oil to purge sediment from oil sample valve

IMPORTANT:

After puraDYN® System is installed and Start-Up validated, please complete registration card for warranty coverage and return to Puradyn within 30 days to be in effect. Web registration is also available on our website www.puradyn.com.

Oil Analysis Data Interpretation

The Puradyn Filter Technologies Oil Management Program uses oil analysis results to assist our customers in achieving the benefits of extended oil drain intervals and longer service life for their engines and equipment.

Oil analysis is the key to achieving the benefits of optimizing oil life and extending drain intervals. In addition, oil analysis is the most economical way to measure wear or contamination in the engine or equipment. Of primary importance is the interpretation of the test data. Typical oil analysis reports usually present the data in an easy to understand format and results.

Typical puraDYN® oil analysis conducted by an independent laboratory will contain the following parameters and provide a recommendation to continue usage of oil OR change oil:

- **Additive Metals**
- **Total Base Number (TBN) ability to neutralize acid**
- **Wear metals**
- **Liquid Contaminant**
- **Solid Contaminants**

This data must be monitored to fully evaluate the lubrication system. The analysis will provide a "picture" and / or warning, if necessary, of any existing or potential problems.

Note: Oil analysis is required in order to maintain Puradyn's warranty and ensure your **pura**DYN® System filtered oil meets engine manufacturer's oil specifications**.**

Oil Analysis and Service Schedules

When a puraDYN® Bypass Oil Filtration System is installed as an aftermarket item, prepare the following:

1. Change oil and full flow filter at the time of initial installation. Take a sample from the old and the new oil to establish a baseline for comparison.

2. Then, at one-half manufacturer recommended oil service interval, change the puraDYN® replacement filter, full flow filter and take an oil analysis sample.

3. Thereafter, change the puraDYN® replacement filter and perform oil analysis at the scheduled interval shown below or as oil analysis indicates. Continue using oil if lab report indicates oil is up to spec for continuing use.

Note: Oil samples should be taken while the engine is running at normal operating temperature.

Recommended Oil Analysis & Service Schedule to Extend Oil Life

Service Item	Before Install	After puraDYN® Install	One Half Interval	OEM Interval	OEM Interval	OEM Interval
		(New Oil Baseline)				
Take Oil Analysis Sample	✓	✓	✓	✓	✓	✓
Change puraDYN® Filter		✓	✓	✓	✓	✓
Change Full Flow Filter		✓	✓	✓	✓	✓
Change Oil		✓	*	*	*	*

*** Oil change required when lab results indicate**

Troubleshooting

The puraDYN® unit has been engineered to be as simple and trouble-free as possible. It is manufactured from the highest quality materials available and with superior workmanship. If, however, your puraDYN® unit is not functioning properly, check the following conditions, and correct as indicated:

1. Restricted oil flow — Remedy

- Shutoff valve closed → Open valve
- Filter dirty and clogged → Replace with new filter
- Clogged metering jet screen → Clean screen thoroughly
- Clogged metering jet → Clean assembly thoroughly

2. Oil coming out of vapor tube

- Sharp bend, dip or trap in return hose → reroute hose to correct orientation, making sure that the oil return line is always descending and connects to a non-pressurized location on the engine oil sump.
- For a blocked return line → disconnect, inspect, and clear blockage. **Note:** In the event that the equipment is operating under conditions where excess oil sump pressure is present, the **pura**DYN® Bypass Filtration System may not function optimally. Please contact Puradyn Tech Support at 1 866 PURADYN (787 2396) or +1 561 547 9499.

3. Heater Malfunction

- If the **pura**DYN® unit is not warm after 5 minutes of operation, check fuse – if good, check power source and ground. If these are correct, the heater element is damaged and needs to be replaced.

If you experience any problem with your system not covered in the above trouble shooting guide, please call Puradyn Tech Support at 1 866 PURADYN (787 2396) or +1 561 547 9499.

Questions & Answers

Q. What type of oil should be used with the puraDYN® **System?**

A. Any high quality oil with a high total base number (TBN) that meets or exceeds the specifications established or recommended by the OEM.

Q. Will the puraDYN® **System works with the new extended change interval synthetic oils?**

A. Yes. The **pura**DYN® System is completely compatible with synthetic oils. Although these oils have a superior lubrication value over mineral oils, they are still susceptible to solid contamination buildup and liquid contaminants, such as water and fuel dilution.

Q. Can puraDYN® **System be used on any engine?**

A. The **pura**DYN® System can be installed on almost any engine such as automobiles, trucks, buses, boats, generators or any other types of industrial equipment with an engine or pressurized lubricating system.

Q. Will the installation of the puraDYN® **System on my engine or other type of equipment affect the manufacturer's warranty?**

A. No. The **pura**DYN® System is a bypass unit cleaning the oil at a rate of 6 gallons (24 liters) per hour and is used in addition to the OEM full flow filter. It enhances the OEM full flow filter's performance, greatly extending the oil's life. We have opinion letters from most major engine manufacturers, such as Detroit Diesel, Caterpillar, Cummins, Ford Motor Co., and many others (copies available upon request), which state that the installation and use of a non-factory accessory, such as the **pura**DYN® System, does not, in itself, void the manufacturers warranty.

Q. Can puraDYN® **System be used on other equipment besides engines?**

A. Yes. The **pura**DYN® System can be used on many types of hydraulic equipment, transmissions, etc.

Q. How difficult is it to install the puraDYN® System?

A. The **pura**DYN® System can be easily installed on almost any engine in usually 2 hours or less. Detailed instructions for do-it-yourself installations are provided or any qualified mechanic can easily perform the installation.

Q. Will the puraDYN® System causes a drop in oil pressure?

A. No. The oil will build up a head of pressure against the metering jet at the bottom of the **pura**DYN® System and will not change the oil pressure of the engine or affect the normal operation of the engine or the OEM full flow filter.

Q. At what rate does the puraDYN® System cleans the oil?

A. The **pura**DYN® System cleans the oil at approximately 6 gallons per hour at 65 psi.

Q. What is the puraDYN® System warranty?

A. The **pura**DYN® System carries a 5-year unlimited miles or hours warranty against defects in materials and workmanship, with a six-month money-back performance guarantee, except for the Heating Element which carries a 1 year warranty. Wear items, including the o-rings and gaskets, are not covered. Please call Puradyn for more details.

Q. Should I change my existing oil when fitting a puraDYN® System to my truck, car, or other equipment?

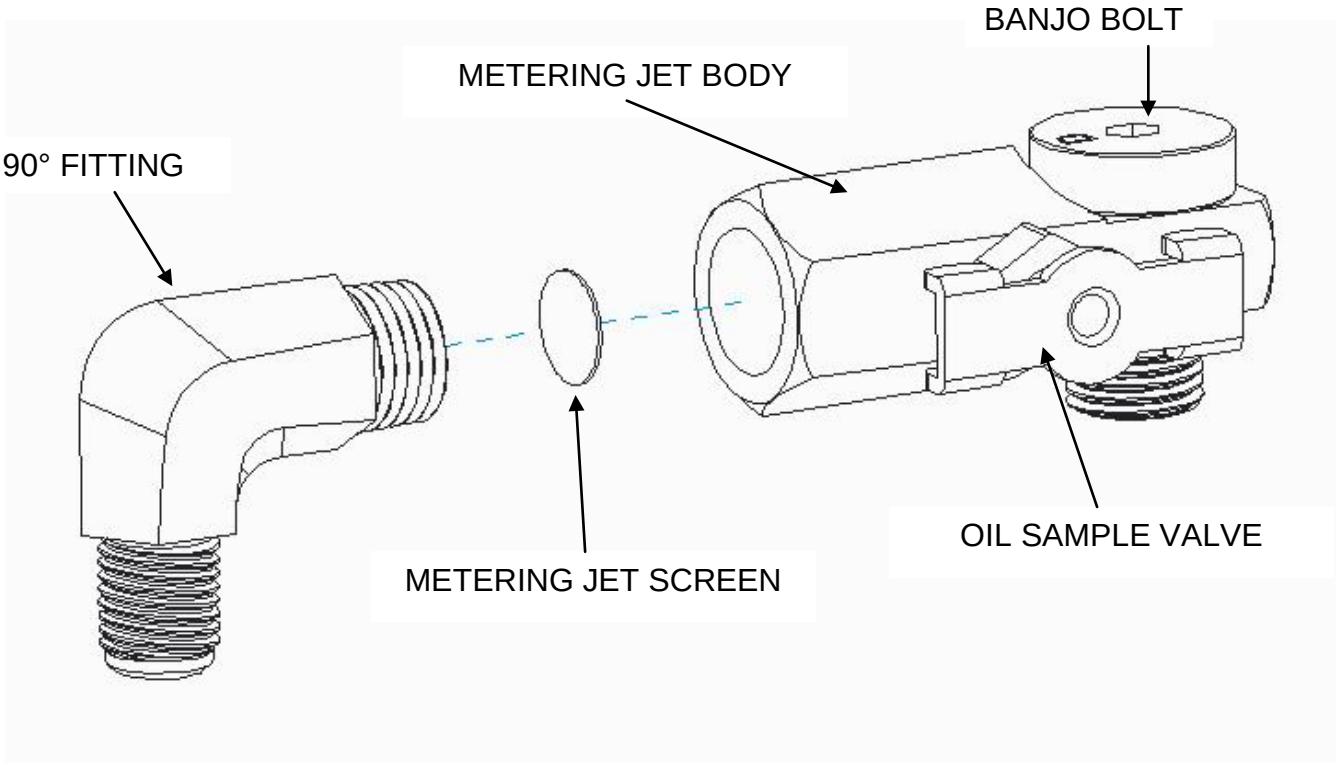
A. Yes. It is best to start out with new oil where the viscosity and additive levels are a known factor. In addition, we recommend taking a sample of the new oil and a sample of the drained oil to establish a baseline for later comparisons.

Maintenance

Cleaning the Metering Jet Assembly

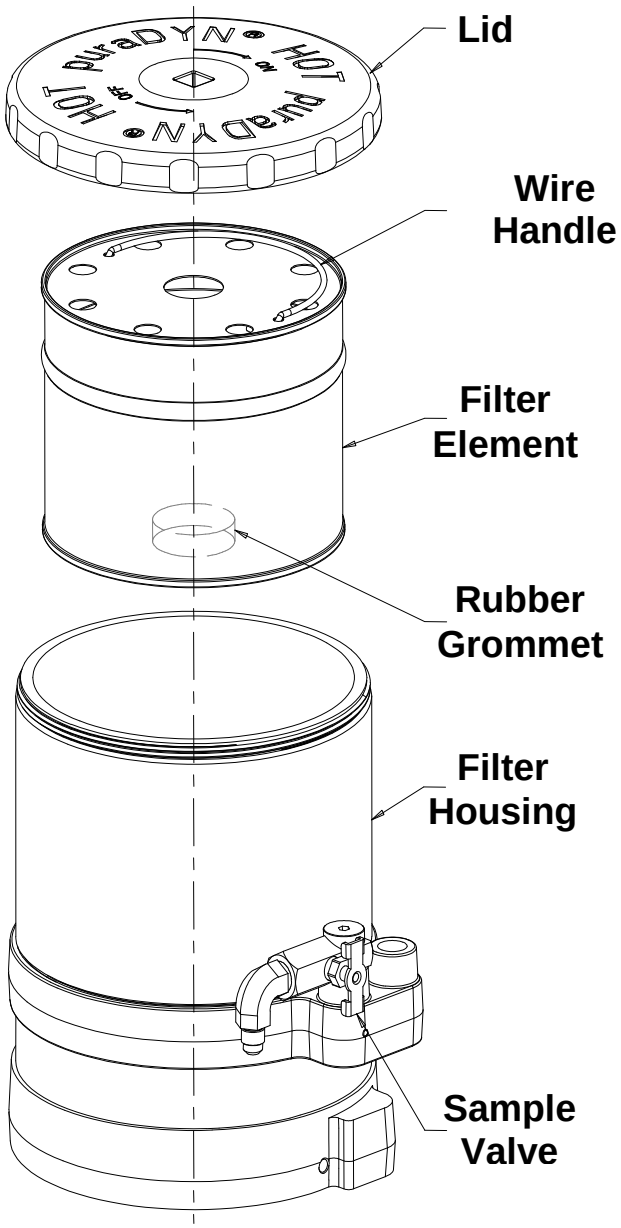
IMPORTANT**: **Carefully blow out the oil pressure hose with high pressure air before proceeding.** **Failure to do so will result in hose, screen or metering jet becoming clogged. To verify metering jet is working, open oil sample valve to confirm oil is flowing. Then tightly close oil sample valve.

1. Remove 90° fitting from metering jet body.
2. Carefully remove metering jet screen.
3. Clear loose debris from screen, right angle fitting, and metering jet body with high pressure air.
4. Soak screen in solvent until clean.
5. Reinstall clean screen into metering jet body.
6. Reinstall 90° fitting to original position.



Filter Element Service Requirements

WARNING:
UNIT IS HOT
USE CAUTION



Lid Removal, Filter Element Replacement and Lid Reinstall

1. Using 24” –long flex handle with ½” drive, turn lid counterclockwise and remove.

2. Reuse (new filter packing plastic bag) disposable bag, remove spent filter gently by pulling up on wire handle/s and drop into the plastic bag for disposal.

3. Install new filter by pushing it gently down into the filter housing; make sure the rubber grommet fits securely over the nipple.

4. Thoroughly clean lid and gasket surface.

5. Lightly lubricate gasket with clean oil.

6. Hand-install and spin lid on clockwise until contact with gasket (hand tight).

7. Tighten Model PFT-12 to PFT-240 lid to (55 to 65 (ft-lb) torque) or approximately additional half turn using the 24”-long flex handle.

8. Tighten Model PFT-8 lid to (30 - 40 (ft-lb) torques).

Required Tools and Items for **pura**DYN® *System Installation*

1. Drill and assorted drill bits
2. Teflon paste or equivalent thread sealant
3. Open-end wrench assortment (3/8", 7/16," ½" 9/16", 5/8", and ¾")
4. 3/8" or ½" drive ratchet with socket assortment (3/8", 7/16," ½" 9/16", 5/8", and ¾")
5. Large, adjustable crescent wrench
6. Cutting, crimping, and wire-stripping pliers
7. Hacksaw
8. Utility knife
9. Center punch
10. "Electrical" Multi-meter or test light
11. Optional banjo fitting to make return hose connection to engine
12. 3/16" I.D. high-pressure hose
13. 3/4" I.D. return hose
14. Oil analysis kit(s)
15. New OEM full-flow oil filter(s)
16. New oil, as recommended by engine manufacturer
17. Oil pressure gauge (to verify oil pressure is below 125 psi)
18. Compressed air to blow out pressure hose upon assembling fittings
19. Safety eye protectors (shop type)
20. Protective gloves to handle hot oil
21. Allen wrenches (U.S. standard sizes)

Best Practices for **pura**DYN® *System Electrical Heater Wiring*

Wiring and / or Troubleshooting Tools:

1. Test light with a probe and ground clip
2. Alligator clip jumper.
3. Ohm Meter with digital voltmeter included.

Basic Tools for Wiring electrical leads:

1. Good pair of wire cutters (worn or “cheap” cutter will tear the wire & leave loose strands).
2. Solderless connector pliers / crimpers.
3. Soldering Gun.
4. 3/16” or 1/4” heat shrink tubing.
5. #10, #12, and #14 stranded automotive wires in various colors as needed.
6. Wire Ties (black).

The following Best Practices is for reference use only, please consult with a licensed electrician for safety and code compliance.

Best Practices for **pura**DYN® System Installation (electrical system):

1. Equipment power source voltage should be verified first before selecting the proper heating element when ordering.
2. Before starting the wiring installation, make sure to disconnect the power source by turning off the breaker and/or removing fuse from the in-line fuse holder.
3. Never run wire through a metal hole without some sort of insulation/grommet between the metal and the wire jacket.
4. NEVER route the wires near heat sources like exhaust components or rotating hardware like fans or drive shafts.
5. NEVER just twist wires together, especially component power wiring.
6. Always size the correct wire for the intended application.
7. Do not use wire nuts on DC circuit.
8. For DC lead wires. Cut and use heat shrink with close-ends to seal the metal leads.
9. If soldering, use of heat shrink is preferable, electrical tape dries out over time and may come off, exposing the bare wires.
10. When using solderless connectors, dab a small amount of white grease on the ends of the wires before crimping. This will help prevent corrosion.
11. Use well maintained crimper to make clean and proper crimping joint.
12. Always secure your wires, tie it up. It is best to route all the wires within a wire loom and use wire ties or electrical harness tape to be sure that they are secure and not easily caught on something.

Puradyn Filter Technologies Incorporated

PRODUCT LIMITED WARRANTY

puraDYN® **Bypass Oil Filtration System**

Limited Warranty

The **pura**DYN bypass oil filtration system is warranted to be free from defects in material and workmanship for a period of five (5) years from the date of purchase, with the exception of the heating element which is warranted for one (1) year from the date of purchase. All optional, off-the-shelf, third party parts are not warranted. This warranty is only available to the original end-user purchaser and is not assignable or transferable. You MUST return the registration card completely filled out (or register and submit the online registration form at www.puradyn.com) within 30 days of your purchase as a condition precedent to receive coverage and performance under our warranty. Further, your failure to provide proof of purchase, which clearly states the date of purchase, shall void this warranty and the obligations and rights hereunder.

The **pura**DYN, including any defective part therein, must be returned to an authorized sales representative, dealer, distributor, or to Puradyn within the material and workmanship warranty period. The sales representative, dealer, distributor, or Puradyn will then execute the warranty procedures on the owner's behalf. Puradyn's responsibility in respect to warranty claims is limited to providing the required repairs or replacements to the product itself, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Puradyn products.

For warranty questions or issues, please contact: Puradyn Filter Technologies Incorporated, Attention: Warranty Department, 2017 High Ridge Road, Boynton Beach, FL 33426 USA (T) +1 561 547 9499. If the product is not free from defects in materials and workmanship during the warranty period, Puradyn, at its option and expense will (i) repair the subject product by your return of the product to Puradyn, (ii) replace the subject product by having the replacement sent to your location, or (iii) refund the purchase price for the product as identified in your proof of purchase. In the event that without prior consultation with Puradyn, repair work or any other change to the damage is executed, the right to warranty is invalidated and Puradyn is not bound to pay any compensation for damage. For other claims, including bodily injury based on the deficiency of the **pura**DYN system, the legal stipulations apply (see below).

This warranty does not cover any economic loss, including without limitation, communication expenses, towing mechanic's travel time and/or mileage, meals, lodging, loss of use of the engine or equipment, loss of time, revenue, inconvenience, cargo damage, premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance, or any other cost or expense resulting from a defect covered by this warranty. Repairs or replacements due to an accident, failure to follow operating instructions, misuse, alteration, misapplication, storage damage, negligence, modification exceeding **pura**DYN system specifications, or improper installation are not covered by this warranty. The above-mentioned warranty and Puradyn's liability will never extend beyond (the consequence of) defects in the **pura**DYN systems themselves. Damage caused by other means or by third parties, such as errors during installation or by incorrect mounting of pieces of hoses, is not covered either by this warranty or by product liability.

This Warranty expires if and when:

a. The **pura**DYN systems are handled without due care or in contradiction with the instructions for use, or if used for purposes other than its appropriate purpose.

b. Cartridges other than the original **pura**DYN filter elements have been applied.

c. The defect and/or damage is a result of a natural disaster, act of God, act of terrorism or military action, improper storage, embargoes, accident, misuse, incorrect use or any other outside cause or condition beyond Puradyn's control.

Puradyn reserves the right to change or improve the design of any Puradyn product without assuming any obligation to modify any Puradyn product previously manufactured. The product may contain certain components that have been remanufactured or refurbished following limited prior use.

EXCEPT AS STATED ABOVE, PURADYN SHALL NOT BE LIABLE IN CONTRACT, TORT, STRICT LIABILITY OR NEGLIGENCE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR BREACH OF ANY WRITTEN OR IMPLIED WARRANTY. PURADYN NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR PURADYN ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. EXCEPT FOR THE EXPRESS WARRANTY STATED ABOVE, THERE ARE *NO WARRANTIES EXPRESSED OR IMPLIED. THIS WARRANTY SHALL BE GOVERNED BY AND CONSTRUED, INTERPRETED, AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF FLORIDA, USA. EXCLUSIVE VENUE AND JURISDICTION SHALL BE IN PALM BEACH COUNTY, FLORIDA, USA.*

Puradyn Filter Technologies Incorporated

PRODUCT LIMITED LIABILITY GUARANTEE

puraDYN® **Bypass Oil Filtration System**

Our Guarantee

Puradyn carries a $1,000,000 (per occurrence) domestic and international Commercial Liability Policy to protect your investment while saving you money. All optional, off-the-shelf, third-party parts are not covered under our product limited liability guarantee.

PFTI shall repair the damage to any engine caused directly and solely by the **pura**DYN provided that **1)** the **pura**DYN is properly installed and maintained in accordance with the prescribed installation guidelines and service intervals contained in the PFTI installation manual; **2)** the **pura**DYN is installed and maintained on an engine which is in normal running and mechanical condition at the time of installation and which continues to be properly maintained in accordance with the engine manufacturer's recommended service intervals (other than recommended oil changes); **3)** the **pura**DYN is installed on an engine in which the replacement engine oil meets or exceeds the engine manufacturer's recommended grade of engine oil; **4)** the proper **pura**DYN filter elements and the engine's standard full-flow filter elements are installed, used and replaced in accordance with the PFTI installation manual; and **5)** the oil analyses are performed by a qualified laboratory at the same intervals you change the **pura**DYN filter element, but at least once a year.

Additionally, within five calendar days following the discovery of such damage, the customer must give written notice to Puradyn Filter Technologies Incorporated, 2017 High Ridge Road, Boynton Beach, Florida 33426, and allow a service representative of PFTI to **(a)** examine the damaged engine on which the **pura**DYN is installed; **(b)** examine the oil inside said damaged engine at the time such damage is discovered; **(c)** examine the required periodic oil analysis reports; and **(d)** examine the installation of the **pura**DYN at the time damage is discovered in order to permit PFTI to determine the extent of damage and whether it was caused solely and directly by the **pura**DYN.

Recording of Oil Analysis & Service Schedule to Extend Oil Life

Interval	Old Oil Baseline	New puraDYN®	One Half Interval	OEM Interval	OEM Interval	OEM Interval
Engine Hours Hrs or Miles		**0 hrs**				
Oil Analysis Sample	Sample Date					
puraDYN® Filter	Change Date					
Full Flow Filter	Change Date					
Lab Results will indicate recommendation	Oil Change No Change	**New Oil**				

NOTES

Puradyn Filter Technologies Incorporated
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Boynton Beach, Florida 33426
(T) 561 547 9499
Toll Free: 866-PURADYN (787 2396)
(F) 561 547 8629
http://www.puradyn.com

Protect Your Investment!

REGISTER YOUR PRODUCT FOR WARRANTY COVERAGE

Online at www.puradyn.com

Purchased by: _____ Date: _____

Installed by: _____ Date: _____

Record unit serial # for future reference: _____

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