

# OPERATION & SERVICE MANUAL

WHEEL-MOUNTED PORTABLE COMPRESSORS \ 375–450 CFM



**D375PHJD4(AF)**  
**D400PHHJD4(AF)**  
**D450PJD4(AF)**

JOHN DEERE DIESEL ENGINE  
TIER 4 FINAL

# 4 OPERATION

## TOPICS IN THIS SECTION:

» General Operating Safety .....	20
» Preparing for Initial Start-Up .....	20
» Normal Starting .....	20
» Loading .....	20
» Unloading .....	20
» Normal Stopping .....	21
» Emergency Stop .....	21
» Low Fuel/Adding Fuel .....	21
» Low DEF/Adding DEF .....	21
» Operating Under Extreme Conditions .....	22
» Pneumatic Tools Application .....	23
» Jump-Starting Battery .....	24

## 4.1 GENERAL OPERATING SAFETY

- » Maintain 10 feet of unobstructed area in front of cooling air inlets and outlets to ensure good airflow.
- » If compressor is connected to a common header with one or more compressors, a check valve must be provided between each compressor and header.
- » Check instruments periodically during operation. If readings are abnormal, refer to *Chapter 6 TROUBLESHOOTING* on page 37.
- » Make sure that the correct type and viscosity of lubricating oils and fuel are used, especially in extreme ambient temperatures.
- » Replace any faulty gauge immediately.
- » Keep batteries fully charged and properly maintained.
- » Properly drain and dispose of any fluids in the containment cage.

## 4.2 PREPARING FOR INITIAL START-UP

1. Inspect the compressor, engine, and other assemblies for damage or loose connections which might have occurred during shipment. Detect and repair leaks immediately.
2. Check the engine's crankcase oil level. If required, add oil as recommended in the Engine Manual.
3. Check the radiator coolant level. Also, if the machine will be exposed to sub-freezing temperatures, check the specific gravity to ascertain the freezing point of the coolant.
4. Fill the fuel tank with fuel recommended in the Engine Manual. Do not use unapproved containers, e.g. buckets, bottles, or jars. Use fuel storage containers and approved dispensers.

**CAUTION!** Never add gasoline to diesel fuel tank - serious damage to the engine will result.

5. Check Diesel Exhaust Fluid (DEF) level. If necessary fill with DEF meeting ISO 22241-1 standard.
6. Check battery posts and cable clamps to ensure they are properly connected.

## 4.3 NORMAL STARTING

1. Close service valves.
2. Turn the Battery Disconnect switch to the ON position (*Figure 4-1*).
3. Press the top of the ignition switch to ON position (*Figure 4-2*).
4. The Sullivan-Palatek Electronic Controller will now initiate the I/O devices. Once they are properly communicating and the parameters are met, a "Start" image will appear in the bottom right of the Controller screen. Press the "Start" image and hold to crank the engine. The image will disappear when the engine is started.

**CAUTION!** If the engine stops, do not attempt to restart with the oil receiver under pressure.

## 4.4 LOADING

1. Before the Controller will allow the machine to load, the engine water temperature and the compressor discharge temperature must reach 100°F with 30 psi sump tank pressure.
2. Load the compressor by pressing the top right (R1) button on the Controller interface.
3. The unit will remain on the last used setting.

## 4.5 UNLOADING

1. To Unload, press the top right (R1) button on the Controller interface. This will automatically return the compressor to the UNLOADED state and the engine will throttle down and the inlet valve will close.

**NOTE!** For more detailed information about adjusting the PSI and CFM parameters, please refer to the *Murphy PowerView PV780 Controller Operator's Guide*.

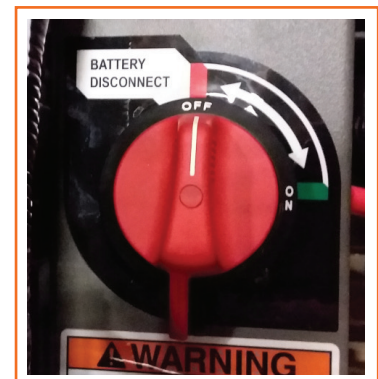


FIGURE 4-1. BATTERY DISCONNECT



FIGURE 4-2. IGNITION SWITCH ON INSTRUMENT PANEL

## 4.6 NORMAL STOPPING

1. After the unit is unloaded, press the ignition switch to OFF. This will put the machine into a mandatory cooldown state. The machine will continue to run for 4 minutes (240 seconds) and will automatically shut off.
2. If continued use of the machine is required before the timer expires, return the ignition switch to the ON position. The display will revert back to the Home screen.

---

**NOTE!**

*The machine will only enter Cooldown if the engine RPM exceeds 1500 RPM for any reason since first started.*

3. After the engine has shut down, **wait at least 2 minutes** before turning off the Battery Disconnect Switch. This is required by engine manufacturers to allow the engine to properly shut down the engine ECM(S).
4. The Master Disconnect **MUST** be turned off when the machine is not in use. The batteries will drain if it is not turned off.

---

**NOTE!**

*For more detailed information on the display, including menu navigation and warning screens, please refer to the Murphy PowerView780 Controller Operator's Guide.*

## 4.7 EMERGENCY STOP

Press the E-stop button.

## 4.8 LOW FUEL/ADDING FUEL

When the fuel level reaches 10% of capacity, a warning screen on the display will appear. At 8% of capacity the LOW FUEL icon on the display begins to flash. Between 8–7% capacity the compressor is forced to unload. At <7% capacity the machine shuts down.

The compressor will need to be shut down in order to add fuel. The following steps will need to be completed before attempting to restart the engine:

1. Follow normal stopping procedures in 4.6 *Normal Stopping*.
2. Fill fuel tank with Ultra Low Sulfur Diesel fuel only.
3. Press the ignition switch to ON.
4. Restart the engine. Follow procedures in 4.3 *Normal Starting*.

## 4.9 LOW DEF/ADDING DEF

Diesel Exhaust Fluid (DEF) is a precisely mixed solution of 32.5% high purity chemical grade urea and 67.5% de-ionized water that is injected into the exhaust system to reduce NOx emissions.

---

**CAUTION!**

**DEF is corrosive and must be stored in tanks constructed of approved materials. DEF also degrades in quality if not stored in proper conditions. Refer to the Caterpillar Operation and Maintenance Manual for more information.**

### 4.9.1 WARNINGS AND STATUS

When the Diesel Exhaust Fluid (DEF) level reaches 18% of capacity, a yellow warning icon will appear on the display. At 11% of capacity multiple engine warnings will occur. At 5% capacity the engine torque will derate 37.5%, and compressor will go to idle. When the DEF tank is empty the DEF symbol will flash red and the engine shutdown light will appear, then the engine will shut down. (See *Figure 4-3* and *Figure 4-4*.)

The compressor will need to be shut down in order to add DEF. The following steps will need to be completed before attempting to restart the engine:

1. Follow normal stopping procedures in 4.6 *Normal Stopping*.
2. Clean the fill area prior to refilling. Avoid transfer containers when possible. If transfer containers are used, keep the container clean and dedicated for DEF.
3. Fill DEF tank with DEF meeting ISO 22241-1 standard. Take care not to contaminate tank with dirt, debris or diesel fuel.
4. Close the access panel door completely. If left open, the DEF tank will overheat.
5. Press the ignition switch to ON.
6. Restart the engine. Follow procedures in 4.3 *Normal Starting*.

DEF Tank Level Worldwide							
	Normal Operation	Initial Indication	Level 1	Level 2		Level 3	
				* Reduced Performance	* Reduced Time	* Reduced Performance	* Reduced Time
Inducement Trigger	> 20% DEF Level Reading	<20% DEF Level Reading	< 13.5% DEF Level Reading	Mild: <7.5% DEF Level Reading Severe: 1% DEF Level Reading	Mild: < 7.5% DEF Level Reading	3% DEF level reading + Empty Tank	3%
Inducement	None	None	None	Mild: None Severe: 37.5% Torque	Mild: None	Shutdown or Idle only	Shutdown or Idle only
Notification	 DEF Level OEM Gauge Display Required	 OEM Gauge + Low DEF Lamp	 OEM Display + Low DEF Level + EESF Lamp (Solid Low DEF Lamp + EESF Lamp)	 OEM Display + Low DEF Lamp + EESF Lamp (Slow Flash)	 OEM Display + Low Level + EESF Lamp (Fast Flash) + Stop Lamp (Solid)		

\* Reduced Performance and Reduced Time inducements are selectable parameters for Engine Emissions Operator Inducement Progress Configuration using Cat ET. Refer to section 18.

FIGURE 4-3. INDUCEMENT STRATEGY FOR DEF TANK LEVELS

DEF Quality/Tampering/Dosing Interruption/Impeded EGR Worldwide					
	Normal Operation	Level 1	Level 2	Level 3	Safe harbor Override
Inducement Time 1st Occurrence	Until Fault	Q/T/D = 2.5 hours E = 35 hours	60 Minutes	Until fault heals	20 Minutes Initiated by 1st key cycle after Level 3
Inducement Time Repeat Occurrence	Until Fault	5 minutes	5 Minutes	Until fault heals	20 Minutes 1st key cycle after Level 3
Inducement	None	None	None	Shutdown or Idle only	None
Notification (Commercial)	None	 steady	 Slow Flash (SF)	 Fast Flash + Steady	 SF

Note: Q = DEF Quality, T = Tampering, D = Dosing Interruption, and E = Impeded EGR

FIGURE 4-4. INDUCEMENT STRATEGY FOR DEF QUALITY/TAMPERING/DOSING INTERRUPTION

## 4.10 OPERATING UNDER EXTREME CONDITIONS

Make sure that the correct type and viscosity of lubricating oils and fuel are used, especially in extreme ambient temperatures.

### 4.10.1 COLD WEATHER OPERATION

- » Use the correct coolant anti-freeze solution for the lowest possible temperature expected.
- » When operating the compressor at ambient temperatures below 20°F, use lubricants suited for these conditions. Refer to 5.3 *Compressor Lubrication on page 29* for lubricating oil specifications.
- » Optional starting aids and component pre-starting warming devices are available for some models for cold weather starting.

---

**WARNING!** *Do not inject ether starting fluid directly into air intake.*

---

#### **4.10.2 HOT WEATHER OPERATION**

- » Keep the engine cooling system filled with clean coolant.
- » Check the coolant level daily or before each shift.
- » Keep the outside of the radiator and oil cooler clean.
- » Locate the unit in a well-ventilated area.
- » When operating in humid conditions, drain condensate from compressor oil more frequently.

#### **4.10.3 DUSTY OR SANDY AREAS**

- » When possible, wet down the area surrounding the operating site to keep dust and blowing sand to a minimum.
  - » Inspect air filters before each operating shift or daily.
  - » Keep radiator and oil cooler clean. Check daily and wash or blow clean as needed.
- 

**WARNING!** *Check the compressor sump oil level only when the compressor is not operating and system is completely relieved of pressure. Open pressure relief valve to ensure relief of system air pressure when performing maintenance on compressor air/oil system. Failure to comply with this warning may cause property damage and serious bodily harm or death.*

---

### **4.11 PNEUMATIC TOOLS APPLICATION**

---

*Compressed air can be dangerous. Serious injury or death can result from the improper selection, use or application of tools and attachments to this compressor.*

*Never inject compressed air into a bodily orifice.*

*Never direct compressed air at or toward a person or animal.*

*Do not breathe air produced by a portable air compressor.*

---

- » Install an appropriate flow-limiting valve between the compressor service air outlet and the shut-off (throttle) valve when an air hose exceeding 0.5-inch inside diameter is to be connected to the shut-off (throttle) valve. This is to reduce pressure in case of hose or connection failure, per OSHA Standard 29 CFR 1926.302 (as) (7).
  - » When a hose will be used to supply a manifold, install an appropriate flow-limiting valve between the manifold and each air hose exceeding 0.5-inch inside diameter that is to be connected to the manifold. This will reduce pressure in case of hose failure.
  - » Provide an appropriate flow-limiting valve for each additional 75 feet of hose in runs of air hose exceeding 0.5-inch inside diameter to reduce pressure in case of hose failure.
  - » Flow limiting valves are listed by pipe size and rated CFM. Select appropriate valves accordingly.
  - » Do not exceed manufacturer's rated safe operating pressures for these items.
  - » Secure all hose connections by wire, chain, or other suitable retaining devices to prevent tools or hose ends from being accidentally disconnected. Unrestrained disconnected hoses can flail around and cause injury or damage.
  - » Vent and release all internal pressure prior to opening any line, fitting, hose, valve, drain plug or connection. This includes components such as filters, line oilers and optional airline anti-icing systems.
- 

**WARNING!** *Serious injury can result from the direct discharge of compressed air. Do not allow personnel to be in line or front of the discharge opening of the service valve, hoses or tools or other points of compressed air discharge.*

*Serious injury or death may result from horseplay with air hoses and compressed air. HORSEPLAY - DO NOT DO IT, DO NOT ALLOW IT!*

---

## 4.12 JUMP-STARTING BATTERY

---

### WARNING!

*Always wear an acid-resistant apron, face shield with goggles, and gloves when working with batteries! Batteries may contain hydrogen gas which is explosive and flammable! Keep flames, sparks and any other source of ignition away. Batteries also contain acid which is corrosive and poisonous. DO NOT allow battery acid to contact eyes, skin, or fabrics. Serious personal injury or property damage could result! Flush any contacted areas thoroughly with water immediately and seek medical attention.*

---

1. Make sure both compressor and starting vehicle have the ignition "OFF" before connecting the jumper cables.
  2. Remove all vent caps from the battery or batteries in the compressor. Do not permit dirt or foreign matter to enter the open cells. (The use of maintenance-free batteries may eliminate this step.)
  3. Check fluid level. If low, bring to a proper level before attempting to jump-start. (The use of maintenance-free batteries may eliminate this step.)
  4. Attempt jump-starting from another vehicle or equipment with a negative ground electrical system and with the same voltage and battery size as the battery or batteries supplied with the compressor.
- 

### WARNING!

*Do not attempt to jump-start using motor generator sets, welders, or other sources of DC power. Serious damage may result.*

---

5. Bring the starting vehicle beside the compressor, but do not permit metal-to-metal contact between the compressor and the starting vehicle. Set the parking brakes of the compressor (if provided) and the starting vehicle, or chock or block both sides of all wheels.
6. Place the starting vehicle in neutral or park, turn off nonessential accessory electrical loads and start its engine.
7. Use only jumper cables that are clean, in good condition, and are heavy enough to handle the starting current.

### CAUTION!

**Prevent accidental contact between jumper cable terminal clips or clamps or any metallic portion of either the compressor or the starting vehicle to eliminate the possibility of arcing, which might serve as a source of ignition.**

---

### NOTE!

*Positive battery terminals are usually identified by a plus (+) sign on the terminal and the letters POS near the terminal. A negative sign (-) or the letters NEG near the terminal usually identify the negative battery terminals.*

---

8. Connect one end of a jumper cable to the positive (POS) battery terminal in the starting vehicle. When jumpstarting a 24V compressor, and if the starting vehicle is provided with two (2) 12V batteries connected in series, connect the jumper cable to the positive (POS) (+) terminal of the ungrounded battery.
9. Connect one end of the other jumper cable to the grounded negative (NEG) terminal of the battery in the starting vehicle. When jump starting a 24V compressor, and if the starting vehicle is provided with (2) 12V batteries connected in series, connect the jumper cable to the negative (NEG) terminal of the grounded compressor battery.
10. Check your connections.

### CAUTION!

**Do not attempt to start a 24V compressor with a 12V system in the starting vehicle. Do not apply 24V to a 12V system in the compressor.**

---

11. Connect the other end of the same jumper cable to a clean portion of the compressor engine block away from fuel lines, the crankcase breather opening, and the battery.
12. Start the compressor following normal procedure. Avoid prolonged cranking—damage to the starter may occur. Allow the compressor to warm up.
13. When the compressor is warm and operating smoothly at normal idle RPM, disconnect the jumper cable from the engine block on the compressor, and then disconnect the other end of the same cable from the grounded negative (NEG) terminal of the battery on the starting vehicle.

14. Disconnect the other jumper cable from the positive (POS) (+) terminal of the battery in the compressor, or if provided with (2) 12V batteries connected in series, from an ungrounded battery in the compressor, and then disconnect the other end of the same jumper cable from the positive (POS) (+) terminal of the battery in the starting vehicle, or from the positive (POS) (+) terminal of the ungrounded battery in the starting vehicle if it is provided with two (2) 12V batteries connected in series.
15. Remove and carefully dispose of the dampened cloths. They may be contaminated with acid. Replace vent caps.





# 5 MAINTENANCE

## TOPICS IN THIS SECTION:

» Maintenance Schedule .....	28
» Bolt Torque Guidelines .....	29
» Compressor Lubrication .....	29
» WEATHER-ALL™ Compressor Lubricant.....	30
» Oil Sample for Analysis .....	31
» Compressor Oil Filter .....	32
» Engine Lubrication .....	32
» DEF Filter .....	32
» Grease .....	32
» Air Intake Filter .....	32
» Oil Return Line .....	32
» Air/Oil Separator .....	33
» Thermal Valve .....	33
» Compressor Shaft Oil Seal .....	33
» Oil Cooler .....	34
» Capacity and Pressure Adjustments .....	34
» Recommended Spare Parts.....	35
» Service Kits .....	35

## 5.1

## MAINTENANCE SCHEDULE

COMPRESSOR MAINTENANCE SCHEDULE								
PROCEDURE	FREQUENCY (HOURS)						SEE NOTE	REF.
	DAILY	50	250	1000	2000	4000		
Check oil level (before starting)	x						1	5.3
Check radiator coolant level	x						1	
Check fuel supply/DEF supply (after starting)	x						1, 8	
Check air filter elements	x						1,7	
Check for fuel, oil air and water leaks	x						1	
Drain water from compressor sump		x					2	
Drain water and sediment from fuel tank		x					2,7	
Change oil filter element		x		x			6	5.6
Change compressor oil				x		x	5	5.3, 5.4
Check drawbar and bolt torque			x				3, 9	5.2
Check wheel lug nuts			x				3, 9	
Check tire pressure			x				3, 9	
Inspect lifting frame (before each lift)			x				3	
Change compressor air filter element				x			4,7	5.10
Check axle spring shackles and mounting bolts				x			4, 9	
Clean battery terminals				x			4	
Check battery hold-downs and cables for wear				x			4	
Check compressor shaft seal for leaking				x			4	5.14
Check air filter piping, fittings and clamps				x			4	
Check radiator hoses and clamps				x			4	
Check engine and compressor supports				x			4	
Replace air/oil separator element					x		5	5.12
Check all door gaskets, hinges and latches					x		5	
Drain engine radiator coolant and replace					x		5	
Clean and flush cooling system					x		5	5.15
Check protective circuits and verify proper function					x		5	
Check sump pressure relief valve					x		5	
Replace DEF filter						x	8	5.8
Inspect and clean oil system thermostat						x	6	
Re-pack wheel bearings						x	6, 9	

### NOTES

1. Or every 10 hours of operation or on rent return
2. Or weekly
3. Or before returning to ready line
4. Or 6 months
5. Or annually
6. After first 50 hours of operation
7. More frequently in extreme operating conditions (dusty, humid, low temperature)
8. For machines with Diesel Exhaust Fluid
9. On portable units only

### NOTE!

For engine maintenance, please refer to the engine manufacturer's Maintenance Manual.

## 5.2

# BOLT TORQUE GUIDELINES

## 5.2.1 INCH FASTENERS

INCH FASTENERS TORQUE				
Size	SAE Grade 5 (ft-lb)		SAE Grade 8 (ft-lb)	
	Dry	Oiled	Dry	Oiled
¼-20	8	6	12	9
⅕-18	17	13	25	18
⅜-16	30	23	45	35
⅞-14	50	35	70	55
½-13	75	55	110	80
⅝-12	110	80	150	110
⅚-11	150	110	220	170
¾-10	260	200	380	280

## 5.2.2 TORQUE SEQUENCE

TYPICAL BOLT TORQUE PATTERNS		
Circular Pattern (8-Bolt)	Square Pattern	Flange Pattern

## 5.3

# COMPRESSOR LUBRICATION

*Change oil at least once a year, even if the normal oil change period in hours has not yet been reached.*

### CAUTION!

**Never mix synthetic lubricants with hydrocarbon lubricants. Never mix synthetic lubricants manufactured from different base products. Severe damage to the compressor system may result.**

Contamination of non-detergent mineral oils with traces of ATF, or detergent motor oils, may lead to problems such as foaming and plugging of filters, orifices, and lines. Lubricant manufacturers include a variety of additives in the blending process to enhance lubrication, product life and performance. Mixing different types or brands of lubricants is not recommended due to the possibility of a dilution of the additives or a reaction between additives of different types.

Environmental conditions in the area of compressor operation such as the presence of reactive gases or vapors in the air may lead to chemical changes and premature degradation of the lubricant. The useful life of synthetic lubricants may extend the normally recommended drain and replace period; however, the user is encouraged to closely monitor the lubricant condition and to participate in an oil analysis program with the fluid supplier. When ambient conditions exceed those noted, or if conditions warrant use of "extended life" lubricants, contact Sullivan-Palatek for a recommendation.

### 5.3.1 CHECK

*The oil level should be checked daily.*

1. Shut down the compressor (or check before the compressor is turned on).
2. Wait two minutes after the compressor stops to allow the pressure to be relieved and the oil to settle.
3. Observe the oil level in the fluid sight glass. The fluid sight glass should be ½ to ⅔ full.
4. While the compressor is running, the oil should be visible in the sight glass.

### 5.3.2 FILL

Before adding or changing compressor oil, completely relieve the sump of pressure. Venting the sump tank pressure relief valve will do this. Oil is added at the fill plug.

### 5.3.3 LEVEL

The proper oil level, when unit is shut down and oil has had time to settle, is across the center of the oil level sight glass. For oil sump capacity, see the Technical Data in the Parts & Specifications manual.

#### WARNING!

**Compressor must be shut down and pressure completely relieved from system before checking fluid levels. Open pressure relief valve to assure relief of system air pressure. Failure to comply with this warning may cause property damage and serious bodily harm or death.**

### 5.3.4 DRAIN

Always warm compressor thoroughly prior to changing the compressor oil. When changing the oil, make sure system is completely drained to reduce potential contamination.

#### WARNING!

**Do not attempt to drain water, remove the oil level fill plug, or break any connection in the air or oil system until all the pressure has been relieved. Check by manually opening the sump pressure relief valve. Serious injury or death may result if this warning is not followed.**

## 5.4

### WEATHER-ALL™ COMPRESSOR LUBRICANT

All of Sullivan-Palatek's portable air compressors are initially filled with Sullivan-Palatek's WEATHER-ALL HP™ Compressor Fluid at factory. This custom-formulated, multi-viscosity 5W-20 lubricant is specifically designed for long life under severe, demanding conditions. Maximum protection against scuffing and wear to bearings and rotors, and wear-control for steel and brass parts when operating at maximum pressure ratings results in extended compressor life. Extensive testing has shown this fluid exhibits excellent resistance to foaming, oil oxidation and corrosion of yellow metals and limits rust of ferrous metals.

This synthesized hydrocarbon-based fluid provides quick water separation which enhances equipment protection in wet and humid service environments. It offers an excellent viscosity index of 180 as well as low pour point of -40°F.

Sullivan-Palatek strongly advises the continued use of WEATHER-ALL to ensure optimal compressor performance, and lower equipment maintenance costs.

LUBRICANT SPECIFICATIONS			
ISO Viscosity Grade	32	Normal Service Life	1000 hours*
SAE Viscosity Grade	5W-20	Viscosity Index	180
Viscosity, cst. 210°F	50 SUS	Pour Point	-40°C / -40°F
Viscosity, cst. 100°F	170 SUS	Flash Point	199°C

#### NOTE!

*These values are not intended for use in preparing specifications.*

\*Service life is only a guideline for typical oil life if temperature is the only variable to be considered. Many variables affect the oil life, i.e. environmental impact from various gases, dust and dirt, compressor short cycling, etc.

**Sullivan-Palatek recommends oil sampling as the best guide for your fluid change interval.** Changing fluid once a year may not be adequate or it can be excessive. For this reason an hourly service on lubricants is merely a guide. Please consult your factory-trained servicing distributor for questions concerning your lubricant life and Sullivan-Palatek's lubricant sampling program. See 5.5 *Oil Sample for Analysis* for additional information.

## 5.5

### OIL SAMPLE FOR ANALYSIS

The first oil sample should be drawn after the compressor has run for 500 hours or 3 months. Intervals for following oil samples will be determined by the analysis results.

#### SAMPLE OIL FROM SUMP TANK

1. Run the compressor long enough to reach normal operating temperatures.
2. Turn compressor OFF and allow pressure to blow down to 0 psi.
3. Remove the drain plug from the end of the drain line at the bottom of the sump tank.
4. Open the drain valve and drain any water from the sump tank. Discard in an approved manner.
5. Fill the clear sample bottle (2) with oil. The sample bottle (2) must be at least one-third full.
6. Close the drain valve and replace the plug in the drain line.
7. Start the compressor according to 5.3 Normal Starting procedures.
8. Check the oil level during operation. Add oil if necessary according to 5.3.2 Fill procedures.



FIGURE 5-1. OIL ANALYSIS KIT (P/N K00031-005)

#### SUBMIT OIL SAMPLE

1. Fill out all the information on the oil sample form (3) provided with the oil analysis kit. Please make sure the form is completely and legibly filled out.
2. Place the oil sample bottle (2) inside the black canister and put the lid on.
3. Mail the sample with the form to:  
**Wear Check**  
501 Madison Avenue  
Cary, NC 27513

#### INTERPRET RESULTS

Once the sample is processed the laboratory will e-mail the results of the oil analysis to the sender of the sample. The analysis report includes customer unit information, sample data, spectrochemical analysis, physical properties, additional test results and analysis recommendations. If previous oil samples have been submitted for analysis, that information will also be on the report. Information to assist in understanding the analysis report is included on the front of the report.

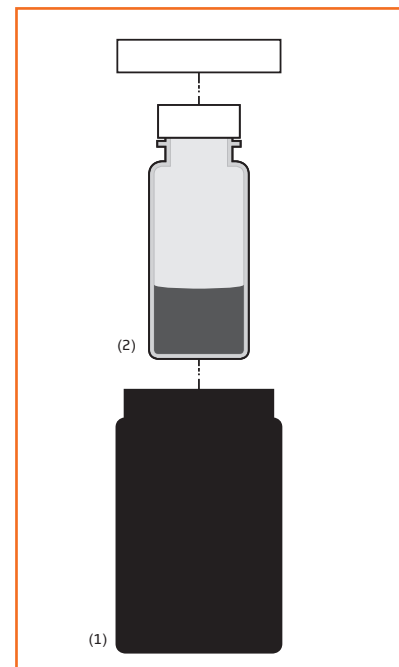


FIGURE 5-2. MAIL ANALYSIS KIT

## 5.6 COMPRESSOR OIL FILTER

Replace the oil filter element once after the first 50 hours of operation, then every 1,000 hours. Replace more frequently in extreme operating conditions.

### 5.6.1 INSPECTION

The compressor oil filter should be checked making sure it has the correct element and it is properly installed and not leaking.

### 5.6.2 REMOVAL

1. Make sure the system pressure is relieved.
2. Place oil spill pan under filter.
3. Remove oil filter element by unscrewing it from the filter head (turn counter-clockwise) and discard. The use of a strap-type wrench may be necessary.

### 5.6.3 INSTALLATION

1. Apply a thin film of oil to the seal of a new oil filter.
2. Thread the oil filter on by hand, turning it clockwise until the gasket seats. Then turn an additional  $\frac{1}{2}$  to  $\frac{3}{4}$  turn by hand.
3. Check for leaks in operation.

## 5.7 ENGINE LUBRICATION

Refer to Engine Maintenance Manual for recommended engine lubricating oil, service intervals, and maintenance practices.

## 5.8 DEF FILTER

Replace the Diesel Exhaust Fluid (DEF) filter every 5,000 hours, or as needed. Refer to Engine Operation and Maintenance manual for maintenance details.

## 5.9 GREASE

Use a multi-purpose type grease (MKG) or multi-purpose type grease with molybdenum disulfide (MPGM) conforming to MIL-L-7866 for all parts except wheel bearings. Use wheel-bearing grease (WBG) for lubricating the wheel bearings.

## 5.10 AIR INTAKE FILTER

Check daily, every 10 hours of operation or on rent return. Replace every 1,000 hours or 6 months. Replace more frequently in dusty conditions. Empty the evacuator valve (dust boot) daily.

### 5.10.1 REMOVAL AND INSPECTION

1. Open the locking devices to remove air filter cover. Remove and inspect the used primary element by turning counter-clockwise to unscrew. Pull used primary element to remove.
2. Remove and inspect the secondary filter. The air filter elements should be thoroughly inspected for holes by placing a lamp inside the element and carefully checking for areas of bright light passing through the element and seal.

### 5.10.2 INSTALLATION

1. Screw the new filter(s) into place by turning clockwise
2. Install air filter cover making sure evacuator valve is at the 6 o'clock position.
3. Place cover back on air filter and close locking devices.

## 5.11 OIL RETURN LINE

Check the oil return line periodically to make sure that it does not become clogged. A clogged line results in excessive oil consumption and oil in the service lines.

### 5.11.1 INSPECTION

Inspect oil return line for clogging.

### 5.11.2 CLEANING

If clogging is indicated, check and clean the entire line, including the orifice fitting at the compressor end, and the siphon tube inside the separator. Blowing with a reverse flow of compressor air will clean the line.

## 5.12 AIR/OIL SEPARATOR

Replace the air/oil separator every 2,000 hours, annually, or when differential exceeds 10 psi. The air/oil separator employs a unitized element.

The separator element is a single piece unit, which requires replacement when it fails to remove the oil from the discharge air. Prior to replacing the separator element be sure to check the oil return line and orifice for plugging or restrictions.

---

**WARNING!** *Prevent separator flash or fire. Maintain the separator element in proper condition and do not allow it to become plugged with dirt and oxidized oil; be certain that the sump lid is properly grounded to the sump when installing a new separator. DO NOT REMOVE THE GROUNDING STAPLES IN SEPARATOR GASKET.*

*The combination of a build-up of dirt and oxidized oil can clog the element causing an increase in air velocity at narrow points on the element media. Elevated temperatures at these points can result in ignition of the fluid in the oil sump.*

---

### 5.12.1 REMOVAL

1. Relieve sump pressure to zero pressure.
2. Disconnect oil return line. Loosen fitting and pull siphon tube up out of separator.
3. Remove service air piping from minimum pressure valve.
4. Mark and disconnect necessary tubing at separator cover and then remove cover.

### 5.12.2 INSTALLATION

---

**WARNING!** *Failure to properly ground the sump lid and separator can result in the build-up of an electric charge leading to ignition inside the sump. DO NOT REMOVE THE GROUNDING STAPLES IN SEPARATOR GASKET. Failure to comply with this warning may cause property damage and serious bodily harm or death.*

---

1. Remove and replace element.

---

**WARNING!** *Lid and sump tank top must be clean to ensure proper grounding between element and tank. Make sure grounding staples are in top and bottom gasket.*

---

2. Replace separator cover; tighten bolts gradually in an opposing manner until required torque is reached. Refer to 5.2 Bolt Torque Guidelines.
3. Clean oil return line and orifice.
4. Install service air piping and reconnect all tubing. When replacing the oil return siphon tube, allow it to contact the bottom of the sump tank then back off no more than 1/16 inch.

---

**NOTE!** *If the separator element has to be replaced frequently because it is plugged, it is an indication that dirt is entering the inlet system, the compressor oil filter is faulty, or the oil is breaking down. The complete inlet system, starting with the air cleaner, and all joints in piping to the inlet valve, should be checked for leaks.*

---

## 5.13 THERMAL VALVE

Inspect and clean the thermal valve if the unit shuts down because of high compressor discharge oil temperature.

### 5.13.1 INSPECTION

Inspect the valve by removing it from the bypass housing. Sediment particles may lodge in the valve-seating surface and prevent it from opening, thereby allowing hot oil to pass directly to the compressor without being cooled.

## 5.14 COMPRESSOR SHAFT OIL SEAL

Check the compressor shaft seal for leaking oil every 1,000 hours or 6 months.

### 5.14.1 INSPECTION

Inspect the compressor shaft seal for signs of leaking oil.

---

**NOTE!** *If replacement is necessary, removal and installation instructions will be provided with the shaft seal kit.*

---



## 5.15

### OIL COOLER

The interior of the oil cooler should be cleaned when the pressure drop across the cooler at full load exceeds 25 psi.

#### 5.15.1 INSPECTION

Inspect compressor oil system for signs of varnish.

#### 5.15.2 REMOVAL

1. Drain compressor fluid.
2. Remove oil cooler.

#### 5.15.3 CLEANING

Circulate a suitable solvent to dissolve and remove varnish and sludge.

#### 5.15.4 INSTALLATION

1. Replace oil cooler and fill compressor with fresh oil.
2. Operate the machine normally for 50 hours. After 50 hours, change compressor oil and install a new oil filter element.

## 5.16

### CAPACITY AND PRESSURE ADJUSTMENTS

The engine speed governor and pressure regulator are preset at the factory and normally require no servicing.

#### 5.16.1 ENGINE SPEED

Engine speed is controlled by the Sullivan-Palatek Electronic Controller (SPEC). The full load and idle speeds are programmed at the factory and there should be no need for adjustment. If the machine is experiencing speed problems please contact our Service Department.

## 5.17

## RECOMMENDED SPARE PARTS

### D375PHJD4/D400PHHJD4/D450PJD4

ITEM	PART NUMBER	DESCRIPTION	QTY
1	01900522 0150	ELEMENT, AIR FILTER (PRIMARY)	2
2	01900522 0151	ELEMENT, AIR FILTER (SECONDARY)	2
3	01903000 0460	ELEMENT, AIR FILTER, 1 MICRON [AF MODELS ONLY]	1
4	01903000 0461	ELEMENT, AIR FILTER, .01 MICRON [AF MODELS ONLY]	1
5	00520-021	ELEMENT, OIL FILTER (COMPRESSOR) 350 PSI	1
6	01900520 0030	ELEMENT, OIL FILTER (ENGINE)	1
7	05018000 0003	ELEMENT, AIR/OIL SEPARATOR	1
8	05018155 0035	FILTER ASSEMBLY, FUEL	1
9	05018155 0034	FILTER ASSEMBLY, FUEL/WATER SEPARATOR	1
10	01900520 0046	FILTER, ELEMENT FUEL TANK VENT 10 MICRON	1
11	01900522 0136	ELEMENT, FILTER DEF MODULE	1
12	05018155 0036	FILTER, CRANK CASE JD4045TFC03	1
13	09505-015	ELEMENT, THERMOSTAT 140°F	1
14	03909280 5312	SOLENOID, 12VDC 2-WAY NC, 1/2"	1
15	05019205 0009	SENDER, PRESSURE 0-750 PSI	1
16	05019415 0029	SWITCH, TEMPERATURE 265 DEG	1
17	05019430 0067	SWITCH, EMERGENCY STOP PUSH	1
18	05019430 0075	SWITCH, 3-WAY R-G MOMENTARY 24V	1
19	05019610 0027	VALVE, MINIMUM PRESSURE 2" SAE CODE 61	1
20	01901174 0017	PROBE, LOW COOLANT LEVEL SENSOR, JOHN DEERE	1
21	01901174 0010	PROBE, TEMPERATURE 4-20MA (DISCHARGE TEMP. SENDER)	1
22	01900152 0077	BELT, FAN JD4045HFC T4F	1
23	05017457 0032	CAP, FUEL - VENTED 2" LOCK GRN	1
24	01900248 0036	CAP, COOLANT SURGE TANK FILLER	1
25	K09790-015	KIT, 4" INLET VALVE REPAIR	1
26	00823062 0008	OIL, WEATHER-ALL, 1 GAL	1
	00823062 0009	OIL, WEATHER-ALL, 5 GAL PAIL	1
	00823062 0010	OIL, WEATHER-ALL, 55 GAL	1

### NOTE!

Use only service parts supplied or recommended by Sullivan-Palatek. Use of substitutes may void warranty. See STANDARD WARRANTY for details. Refer to the PARTS & SPECIFICATIONS manual for a complete parts listing including assembly drawings.

## 5.18

## SERVICE KITS

Service kits are available for basic servicing of the compressor and engine. Buying kits offers savings over buying individual parts. The annual kits (wet or dry) are for a year's worth of compressor and engine servicing and line service kits are for a single compressor and engine service.

DESCRIPTION	CONTENTS	PART NUMBER
SERVICE KIT, ANNUAL (WET)	4	ELEMENT, AIR FILTER (PRIMARY)
	4	ELEMENT, AIR FILTER (SECONDARY)
	2	ELEMENT, OIL FILTER (COMPRESSOR)
	2	ELEMENT, OIL FILTER (ENGINE)
	2	ELEMENT, FUEL FILTER
	1	ELEMENT, SEPARATOR
	2	ELEMENT, FUEL/WATER SEPARATOR
	4	FLUID, COMPRESSOR WEATHER-ALL (5 GALLON)
SERVICE KIT, ANNUAL (DRY)	4	ELEMENT, AIR FILTER (PRIMARY)
	4	ELEMENT, AIR FILTER (SECONDARY)
	2	ELEMENT, OIL FILTER (COMPRESSOR)
	2	ELEMENT, OIL FILTER (ENGINE)
	2	ELEMENT, FUEL FILTER
	1	ELEMENT, SEPARATOR
	2	ELEMENT, FUEL/WATER SEPARATOR
SERVICE KIT, LINE (WET)	2	ELEMENT, AIR FILTER (PRIMARY)
	2	ELEMENT, AIR FILTER (SECONDARY)
	1	ELEMENT, OIL FILTER (COMPRESSOR)
	1	ELEMENT, OIL FILTER (ENGINE)
	1	ELEMENT, FUEL FILTER
	1	ELEMENT, FUEL/WATER SEPARATOR
	1	FLUID, COMPRESSOR WEATHER-ALL (5 GALLON)

# **Sullivan**

---

# **Palatek**

## **AIR COMPRESSORS**

1201 West US Highway 20  
Michigan City, Indiana 46360

Phone: 219.874.2497

Fax: 219.809.0203

info@palatek.com

www.sullivan-palatek.com

