



PP30 Engine Maintenance

At 500 run hours Maintenance is performed on the following items:

Engine Lubrication

Replace: Engine Oil and Oil filter

Estimated time: 45 minutes

Supplies needed:

12 liters of 15w 40 oil

New oil filter

Strap or oil filter wrench

Oil catch basin

Funnel

Oil absorbent such as kitty litter

Lint-free rags or paper towels

1. Empty engine oil into an oil catch pan.
2. Place the oil catch pan under the drain plug. It must have a capacity greater than 12 liters
 - a. Remove the drain plug from the engine
 - b. After oil flow stops, reinstall the drain plug
3. Remove Oil filter,
 - a. Place the catch pan under the filter
 - b. Unscrew filter using a strap wrench or other suitable wrench, placing the filter on the pan to allow the oil to drain
4. Dispose of used oil and filter following site procedures.
5. Rub some fresh oil on the gasket of the new oil filter and install it on the engine. **Tighten it by hand only**
6. Making sure the oil drain plug is installed and tightened, add new oil [15w40] into the engine using a funnel, being careful not to spill and promptly wiping up any oil that may spill.
 - a. Fill up with between 9 and 12 liters or until the oil dipstick is between low and high.
7. Screw oil cap on to the engine.

8. Recheck oil level after running the engine, and refill if necessary.
9. Check for any excess or spilled oil, wipe it off the machine, use absorbent to pick it up from the floor or ground, and dispose of following site procedures.

Spark Plugs

Check / Clean spark plugs

1. Remove the plug wires from spark plugs being careful to pull on the boots and not the wires. Note the numbering printed on the wires, and if none is present note their locations.
2. Use a ratchet and extension with a spark plug socket to unscrew all the spark plugs. Note their positions, ie: spark plug from cylinder 1, numbered from the right toward the radiator, is marked 1 and so on.
3. Look for any erosion or deposits on the electrodes. Using solvent such as alcohol, a wire brush, or sand blaster clean off any deposits.
4. If center or ground electrodes are rounded or worn, replace spark plugs.
5. Once all the spark plugs are checked and cleaned, install them back to the same cylinder they came from.
 - a. DO NOT OVER TIGHTEN. Hand thread the spark plugs until the gasket reaches the cylinder head. Then using the spark plug wrench, turn it an additional $\frac{1}{2}$ - $\frac{2}{3}$ turn for new plugs, $\frac{1}{3}$ of a turn for used plugs (18-25 ft lbs)
 - b. Plug cables back onto spark plugs, making sure the firing order is correct.

Gaskets

Replace: Governor gaskets (set)

1. Remove sani clamps connecting the governor to the gas lines
2. Dispose of old gaskets according to site guidelines
3. Replace with new gaskets and install governor to gas lines with sani clamps

Battery

Clean battery terminals

CAUTION: Deposits and corrosion are very acidic and may burn clothing or skin

Remove the Battery Terminals starting with the negative cable then remove the positive cable. Using a wire brush and alcohol and/or baking soda and water, clean the battery terminals and clamps of any acid build up or corrosion.

Install the cables back in reverse order - start with the positive cable first and then install the negative terminal. Use a 10 mm wrench to tighten the cables down.