



## PP30 Engine Check

For a list of all parts of the Power Pallet including a list of parts, definitions and all other useful information see the *PP30 Component Reference* document

**All tasks should be performed after every 140 run hours**

1. Check engine oil level (Image 1)
  - a. Pull dipstick
  - b. Level should be between high and low markers
  - c. Fill with engine 15W 40 oil if needed



Image 1

2. Check/refill engine coolant **WARNING**: Do not open caps (Image 3) if the unit is hot. The unit has a capacity of approximately 7 gallons. It should be filled with a coolant mixture that protects to the expected lowest temperature. Coolant selection should conform to site requirements. Two common coolant charts are listed below:

Freezing Point								
Propylene Glycol Solution (%)	by mass	0	10	20	30	40	50	60
	by volume	0	10	19	29	40	50	60
Temperature	$^{\circ}F$	32	26	18	7	-8	-29	-55
	$^{\circ}C$	0	-3	-8	-14	-22	-34	-48

Freezing Point											
Ethylene Glycol Solution (% by volume)		0	10	20	30	40	50	60	80	90	100
Temperature	$^{\circ}F$	32	25.9	17.8	7.3	-10.3	-34.2	-63	≈ -51	≈ -22	9
	$^{\circ}C$	0	-3.4	-7.9	-13.7	-23.5	-36.8	-52.8	≈ -46	≈ -30	-12.8

Source: Engineering Toolbox

- a. Place a five gallon bucket under Pressure relief valve tube line to catch any coolant that might spill during first fill and start up
- b. Turn Power Pallet power on
- c. Open up 1.5" clear viewport cap on PGHX (Image 2)



Image 2

- d. Fill with coolant to the top and close the cap with a sanitary clamp. Note that in normal operation some air may remain below the viewport
- e. Open up radiator cap
- f. Fill the radiator with coolant



Image 3

- g. When the radiator is full - turn on the pump
- h. On the Deep Sea electronics (DSE) screen turn the coolant pump on (Image Set 4)
  - Use the right or left buttons to scroll to 'PLC Instruments'
  - Use the down button to scroll to 'Force Water (Coolant) Pump On'
  - Press check mark button so the value blinks and change it from 0 -> 1 using the up or down arrows
  - Press the check mark button again to turn the pump on



Image Set 4

- i. Open the bleed valve located near the PGHX by loosening the black cap (Image 5)



Image 5

- j. Add coolant to the radiator as the level drops
  - k. When the radiator is full again check the clear viewport at the top of the PGHX and look for flowing coolant. Alternatively, you can do is put your ear against the engine to PGHX coolant line and listen for flowing coolant
  - l. If coolant is not flowing then turn the pump off by changing the value on the DSE screen to 0 and open the 1.5" cap on PGHX to vent trapped air. Close the cap and repeat step E-K
  - m. Once full, close radiator cap and leave bleeder open to let any excess air out (Image 3 and 5)
  - n. Replace bleeder valve cap when no air comes out (Image 5).
  - o. Turn off coolant pump by changing the DSE PLC value to zero (Image 4)
  - p. Run the unit until the coolant temperature reaches 80°C
    - Start the unit following normal procedures
    - Check coolant temperature on the DSE
    - Use the left and right arrows to scroll to ENGINE
    - Use the down arrow to scroll to coolant temperature, where the temperature will be displayed
    - Operate until it the thermostat opens (about 80°C)
    - Shut the unit down following normal operating procedures
  - q. Repeat the fill procedure
3. Governor Cleaning - Wear gloves during this procedure (Image set 6)
- a. Remove governor
    - i. Unplug the wiring harness
    - ii. Remove sanitary clamps, taking care not to drop the gaskets
  - b. Spray isopropyl alcohol into the inner chamber and onto the throttle and shaft, wipe down and repeat while actuating the throttle plate until it moves freely and closes easily on its own with a snappy motion
  - c. Re install governor
    - i. Position with electrical receptacle facing down
    - ii. Ensure sani gaskets and faces are free of debris and install clamps
    - iii. Reattach electrical plug

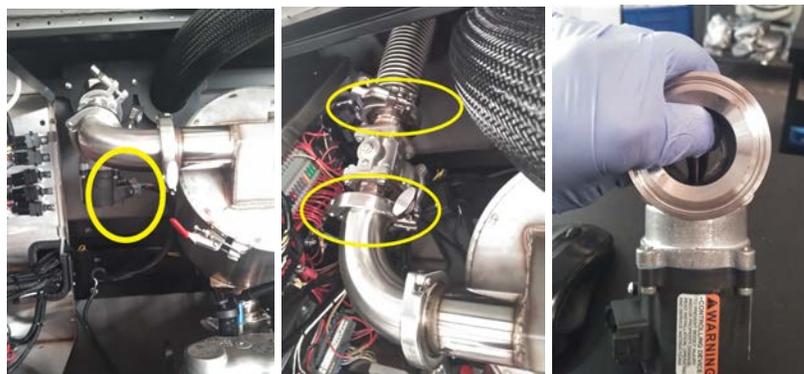


Image Set 6