



Inboard Engine Winterisation

It is of the most utmost importance that marine engines and their ancillary equipment are properly serviced and maintained, it is equally important that they are protected from the effect of frost and freezing during the winter.

This does not qualify owners to service or winterise their own engines but the list below is a guide to the minimum of work required.

Winterisation

The amount of work recommended to lay up an engine adequately varies from one manufacturer to the next. However, the following is a guide to the minimum that should be done to protect your engine over winter.

Before the boat comes out of the water or with a water supply on land

1. Run engine up to working temperature, drain/remove old and replenish with new, fit new oil filter.
2. Re-run engine and check oil filter for leaks, recheck oil level, and top up if necessary.
3. Renew fuel pre-filter (water trap) and engine fine filters.

Out of the water

4. Drain down the raw water system and flush with freshwater and then add anti-freeze.
5. Remove water pump impeller to allow the blades to relax whilst not in use, tie impeller to somewhere like the master switch or ignition switch so you will remember to refit it in the Spring.
6. Check/replenish anti-freeze in your freshwater system if your engine is an indirect cooling system.
7. Check anodes/hoses/clips.
8. If you have noticed that your engine has been black smoking; then this is a good time to remove the injectors, and have them serviced. If you have removed the injectors then add a small amount, two or three squirts, of oil into each cylinder and rotate very slowly by hand, plug holes with good fitting wood plug or anti-corrosion paper.
9. Plug air inlet and also exhaust outlet in transom. This will stop moist air entering, and circulating through the open exhaust/inlet vales rusting the vale stems.
10. Relax the drive belts.
11. Check the gearbox oil level/quality.





Note

If a raw water-cooled engine cannot be run up to operating temperature the thermostat will have to be removed (if fitted) to ensure that the cylinder block receives adequate protection from the anti-freeze/inhibitor.

Some questions to make your mind work:

1. Why do we seal the air and exhaust when laying an engine?
2. Should you change the engine oil and filter before the winter or prior to starting the new season?
3. When laying up a raw water engine ashore how can you ensure that complete protection of the cooling system with anti-freeze/inhibitor mix?
4. What would you need to do after fitting new fuel filters?



Fault Finding

Trouble shooting can be extremely difficult and in many cases should be undertaken by a specialist or manufactures agent. However below is a list of possible problems, it is not intended to be a complete guide but more to stimulate ideas.

Engine Will Not Start

Problem

No fuel in the tank
Fuel supply tap shut
Incorrect start/procedure
Engine in gear
Electrical connections loose

Poor quality fuel
Air in fuel system
Fuel connection loose
Water in system
Cranking speed to low
Blocked fuel filters
Low compression

Faulty injectors
Blocked air inlet

Solution

Fill with fresh fuel
Open
Check and read operators manual
Check controls/check adjustments
Check and tighten loose and clean connections
Drain/replace with new
Bleed and vent air from system
Tighten/bleed system
Drain and replenish fuel
Check battery/and charge/test
Renew filters/bleed
Piston ring or valves (Check if decompression lever is in the off position)
Remove test /service
Check ventilation (this can cause a lack of supply to the engine compartment)

Engine Runs Rough

Problem

Faulty injection pump
Faulty injectors
Propeller damage
Air in fuel system
Faulty engine mounts
Wrong valve clearance

Solution

Refer to specialist
Refer to specialist
Check prop for damage/balance
Bleed/vent fuel system
Check engine mount condition
Check/adjust valve clearance

Black or Grey Smoke

Problem

Dirty air filters
Faulty injectors
Faulty injector pump
Engine compartment; ventilation
Damage exhaust hose
Dirty hull

Solution

Renew air filter
Service/overhaul injectors
Service/overhaul pump
Check ventilation is clear
Check for internal damage
Clean hull



Blue or White Smoke

Problem

Too much oil in sump
Worn valve guides
Worn piston rings
Seized piston rings
Head gasket leaking
Too much crankcase pressure

Solution

Reduce amount/pump out
Replace with new
Replace with new
Replace with new
Test head gasket/renew
Check crankcase breather

Excessive Vibration

Problem

Damage propeller shaft
Damage propeller
Broken /loose mounting
Loose coupling
Misalignment

Solution

Check prop shaft for straightness
Check prop damage/balance
Check engine mount condition
Check coupling/tighten
Check / adjust alignment

Lack of Performance

Problem

Dirty hull
Damage/incorrect propeller
Controls slack
Extra weight in boat
Block fuel system
Injector pump faulty

Solution

Lift vessel/pressure wash
Check prop damage/balance
Adjust control cables
Check equipment not needed
Check filters/fuel lines
Service/overhaul pump