

# Marine Diesel Basics – Mid-Season Checklist

A mid-season checklist is valuable because it focuses on problems that commonly develop after 50-150 hours of operation – issues that may not have been apparent during the pre-season inspection. Regular inspections help keep your diesel system reliable throughout the boating season. During the season:

- belts may stretch, lose tension, become misaligned, or produce belt dust
- hose clamps may loosen or break if weakened by corrosion or fatigue
- fuel filters may collect water and debris stirred up in the fuel tank
- electrical connections may loosen due to vibration or corrosion
- small fuel, oil, or coolant leaks may go unnoticed

Finding minor issues early reduces the likelihood of an expensive breakdown or a loss of propulsion, which could be especially dangerous in harbour entrances, and tight marina spaces. Remember to record all findings in the Maintenance Logbook. A mid-season inspection typically takes less than one hour and often reveals small issues before they become expensive breakdowns. Most engine failures don't happen without warning – they simply go unnoticed for too long.

## 1. Engine

- ☐ check engine oil level and condition – is it time for an oil change?
- ☐ check for any oil, fuel or coolant leaks (use a flashlight if necessary)
- ☐ inspect engine mounts for movement or damaged rubber.
- ☐ check the condition and tension of all belts (alternator and raw water pump etc.)
- ☐ check that throttle and gear control connections are secure

1 measure distance between crankshaft pulley & alternator pulley

2 calculate correct deflection for distance (see Table below)

3 depress belt inwards with thumb or finger apply "firm" pressure not excessive

Apply "firm" thumb pressure mid-way between pulleys

too much tension strains & damages alternator bearing may also compromise alignment

too little tension will quickly destroy belt black dust sign of loose belt or misalignment

too much deflection (ie. too loose) rotate alternator outwards

belt too stiff (ie. too tight) rotate alternator inwards

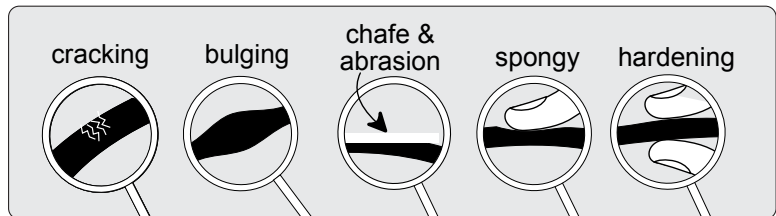
| distance between pulleys |        | belt deflection |          |
|--------------------------|--------|-----------------|----------|
| cm                       | inches | mm              | fraction |
| 30                       | 12     | 2 mm            | 3/16"    |
| 35                       | 14     | 5 mm            | 1/4"     |
| 40                       | 16     | 6.5 mm          | 1/4"     |
| 45                       | 18     | 7.5 mm          | 9/32"    |

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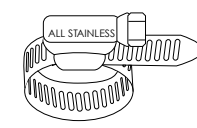
### 2. Fuel System

- ☐ inspect the fuel filter bowl for signs of water, sludge, or microbial growth. Any contamination found may indicate a problem inside the fuel tank
- ☐ drain any water or contaminants from the primary fuel filter/water separator, if found
- ☐ visually inspect and feel along fuel hoses for chafe, cracking, hardening, softening, or sponginess
- ☐ check hose clamps for looseness, corrosion, or damage. A loose hose clamp can allow air to leak into the fuel system, as well as fuel to leak outs
- ☐ check fuel system fittings for any signs of leaks
- ☐ confirm that spare fuel filters have been restocked and are available onboard

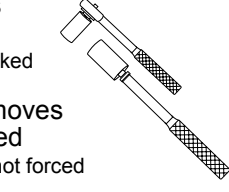
Hoses should be replaced at least every ten years – they do not last for ever.



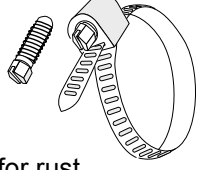
① best practice is to inspect **all** hose clamps regularly, at least every three months especially those that are hard to access & often overlooked



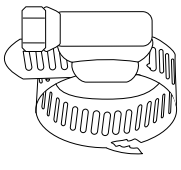
② check the hose band moves when screw is turned clamp should be snugly tight, not forced



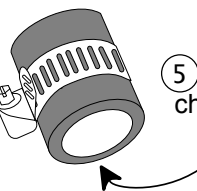
③ replace hose clamp if: screw is loose screw turns but band is frozen often caused by crevice corrosion



④ replace hose clamp if the band is torn

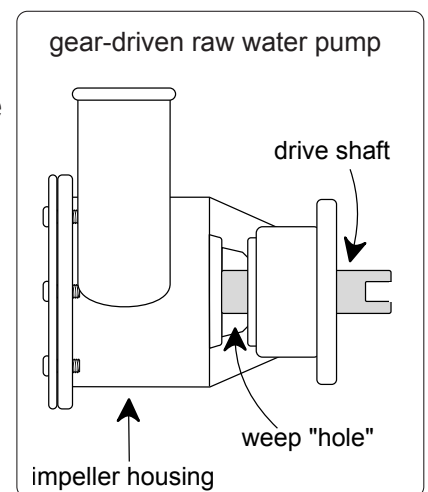


⑤ check on the underside for rust stainless steel should not rust



### 3. Cooling System

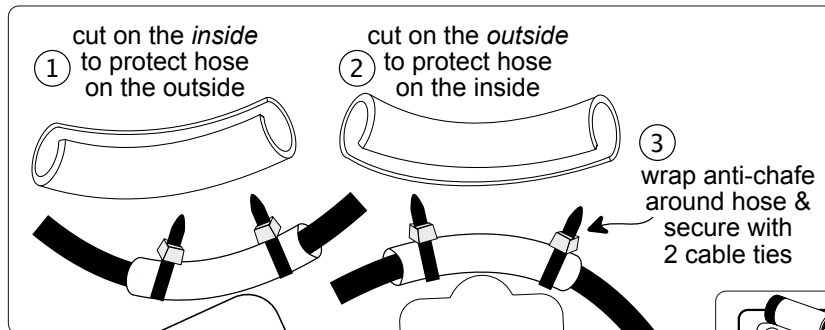
- ☐ check coolant level in the header tank or overflow bottle
- ☐ visually inspect and feel along all coolant hoses and hose clamps for leaks, damage, deterioration, hardening, or softening (sponginess)
- ☐ check and clean the raw-water intake strainer, if necessary
- ☐ check the outside of the raw-water pump for leaks. On gear-driven pumps, inspect for any leaks from the centre drain/weep hole, which may indicate a failing pump seal
- ☐ confirm strong water flow from the exhaust outlet – if flow is less than normal, the impeller may need to be changed
- ☐ inspect the coolant circulation pump (water pump) for any coolant dripping down the front of the engine, which may indicate a failing pump seal



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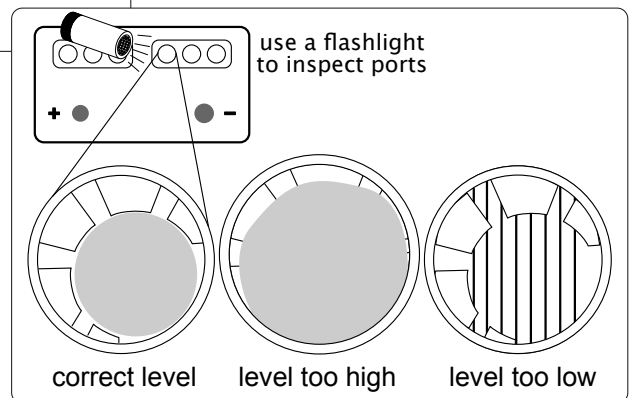
### 4. Electrical System

- ☐ check that all battery terminals are tight and free from corrosion. A loose connection can cause intermittent problems, such as non-starting, that are difficult to trace
- ☐ inspect battery cables for corrosion, damage, or signs of overheating at terminals and connection points
- ☐ verify that battery hold-down straps or restraints are secure, battery boxes are properly supported, and battery covers are in place
- ☐ check alternator output voltage. A slipping belt reduces alternator speed, lowering charging output. A polished or shiny ("glazed") belt is a common sign of belt slippage
- ☐ inspect wiring for loose connections, damaged insulation, or chafe
- ☐ test engine alarms. Turn the ignition/key switch ON without starting the engine and confirm that warning alarms and indicator lights operate. Confirm that the low oil pressure alarm stops after the engine starts and oil pressure builds
- ☐ flooded lead-acid batteries only – check the electrolyte level in each cell. Record the levels in the Maintenance Logbook for future reference
- ☐ check sacrificial anodes underwater for visible deterioration and secure attachment. An anode that has deteriorated significantly more than expected since the start of the season may indicate a galvanic corrosion or stray current issue requiring immediate investigation. Replace anodes when approximately 50% consumed.



Chafe protection prevents vibration and movement from wearing through wiring, hoses, and other components, reducing the risk of failures that can be difficult to diagnose.

Maintaining the correct electrolyte level in flooded lead-acid batteries ensures the plates remain covered, helping prevent damage and extending battery life.



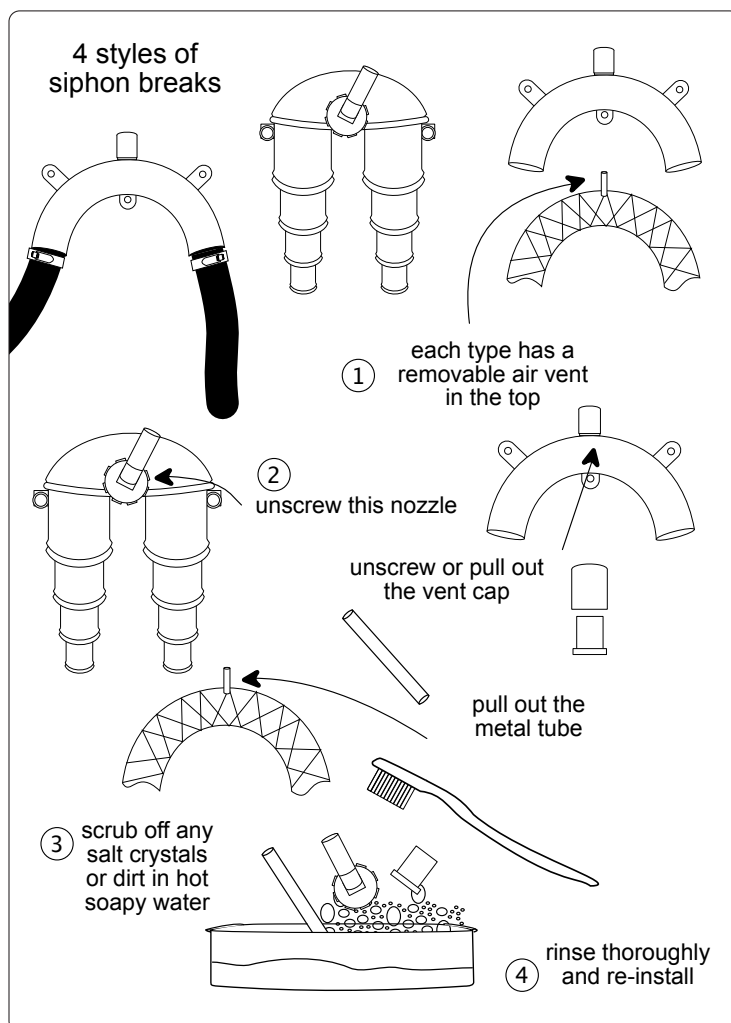
### Transmission and Saildrive

- ☐ check the transmission ATF or oil level and inspect the oil for any change in colour, contamination, or burnt smell. If the oil smells burnt, change it immediately and investigate the cause (eg. rope was caught around the prop, a collision)
- ☐ **saildrives only** – check the gear oil level and inspect the oil for signs of water contamination (milky oil). Water entering through a leaking propeller shaft seal can rapidly damage gears and bearings. Replace the oil and investigate the cause

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### 5. Exhaust & Ventilation

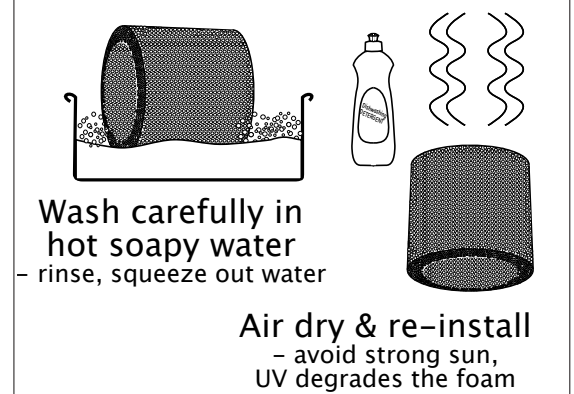
- ☐ check the condition of the air filter (esp. in dusty locations or with animals aboard)
- ☐ inspect the entire length of the exhaust hose for soft spots, cracking, swelling. Any hose failure can allow toxic exhaust gases and seawater to enter the vessel
- ☐ check that all exhaust hose clamps are tight and free from corrosion
- ☐ disassemble and rinse **anti-siphon valves** (raw water and head systems) with fresh water to remove salt deposits and ensure proper operation. A sticking valve can prevent air from entering the system, allowing seawater to siphon back into the engine or vessel
- ☐ ensure engine-room ventilation openings are clear and unobstructed. The temperature in the engine room should not be more than 16°C above ambient (outside) air temperature
- ☐ check ventilation hoses have not collapsed or kinked. Thin-walled ventilation hoses are especially prone to restriction if bent too tightly
- ☐ check for signs of exhaust leakage, such as soot marks, staining, unusual odours, or excessive heat around exhaust components



#### Five reasons why it's important to rinse all the siphon breaks

1. removes salt crystals that can stick open or closed preventing the valve from operating correctly
2. ensures the valve can open to admit air when required
3. greatly reduces the risk of seawater siphoning into the engine or the toilet system
4. extends the service life of the anti-siphon valve
5. takes only a few minutes and can prevent sinking the boat!

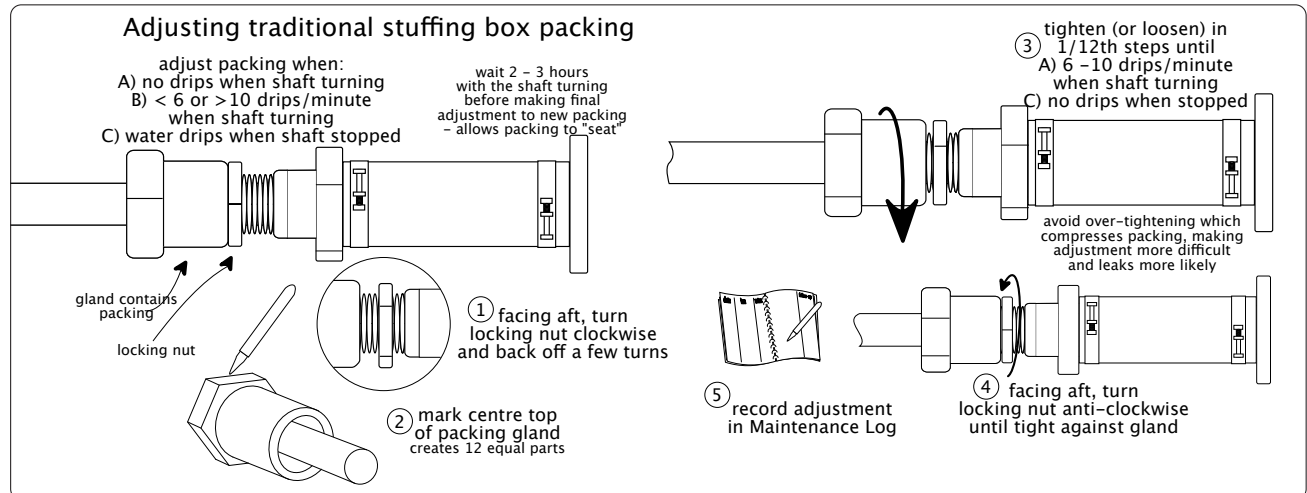
#### Cleaning a foam air filter



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### 5. Propulsion System

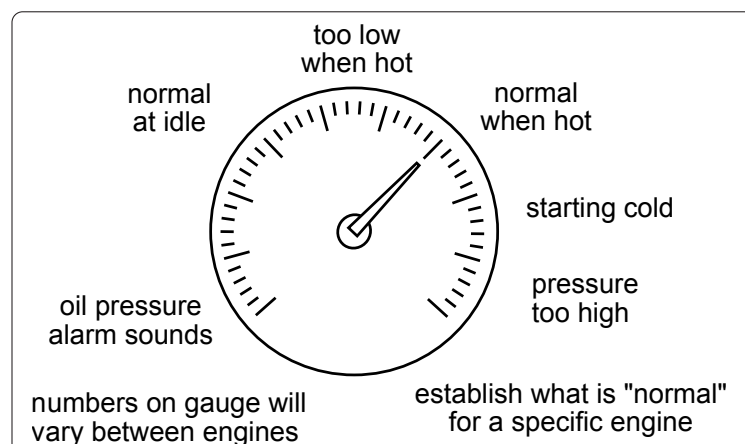
- ☐ check propeller shaft coupling bolts for tightness and inspect for any signs of movement. Misaligned reference marks between the coupling and shaft indicate movement and require investigation. Investigate before further operation
- ☐ inspect the shaft coupling for corrosion, movement, or signs of wear
- ☐ check the propeller shaft seal or stuffing box for leaks and correct adjustment



### 6. Engine Operating Checks (eg. while under way)

The purpose is to verify that the engine is performing normally under operating conditions, not just sitting at the dock. With the engine fully warmed and operating under normal load:

- ☐ check maximum RPM
- ☐ verify normal oil pressure, while engine under load
- ☐ confirm the engine reaches and maintains normal operating temperature under load
- ☐ check the alternator's charging voltage
- ☐ listen for new noises and vibrations while underway. Investigate and record in the Maintenance Logbook. Most new sounds are harmless, but may be an early warning!
- ☐ check for any change in exhaust smoke compared with normal operations
- ☐ after shutdown, inspect the engine while it is still warm for signs of any leaks



Normal oil pressure varies from one engine to another and changes with engine speed, oil temperature, and oil viscosity. The important point is to know what is normal for your engine under load. A noticeable change from its usual oil pressure may be an early indication of a developing problem.

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### The Value of *your* Maintenance Logbook

One of the most important, and easiest, ways to ensure the health and longevity of all mechanical equipment on a boat is keep a Maintenance Log. The more comprehensive and detailed, the more useful the logbook becomes over time:

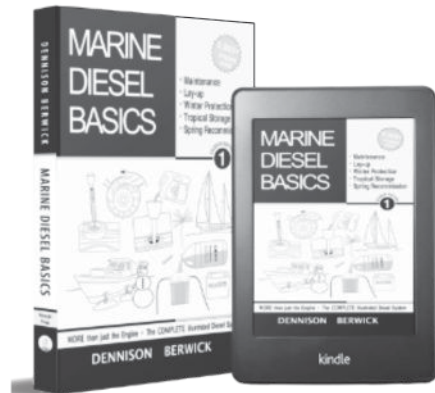
A Maintenance Log has four main functions:

1. recording details of work done and equipment serviced, when and by whom
2. system history – model and serial numbers etc. of equipment installed. Saves time later!
3. time and details of any changes in performance, new sounds etc.
4. early warning of potential problems. Most problems develop slowly and are often simple to correct if caught early

A Logbook pays for itself in time saved – whether it's your time or a professional marine mechanic searching for serial numbers and the correct belt sizes!

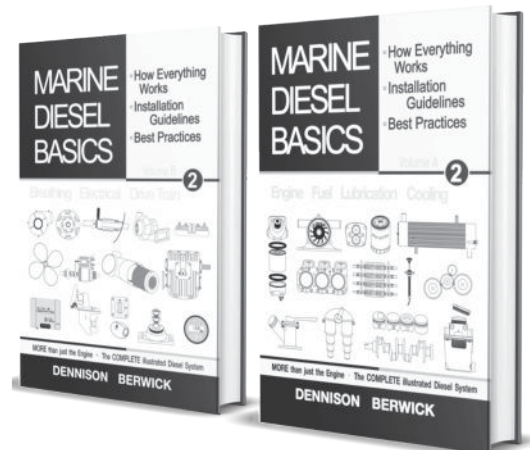


All drawings are taken from *MDB1 – Maintenance* and *MDB 2 – How Everything Works*



### *Marine Diesel Basics 1*

Maintenance, lay-up, tropical storage and recommissioning **made easy**  
141 tasks + 350+ drawings



### *Marine Diesel Basics 2*

**See** how marine diesel systems work  
680 pages + 2700+ drawings

## Praise for Marine Diesel Basics 2

*"I'm impressed by this new book from Dennison Berwick. There is a lot of information but there are charts and illustrations on every page to make it clear and easy to understand. I think the book has a good balance of information and practical tips. If you liked Marine Diesel Basics 1, you will also enjoy this larger second book."*  
Amazon reader

## Praise for Marine Diesel Basics 1

*"The best guide on the subject I've seen, this book has a place on every diesel-equipped boat."*

Peter Nielsen, Sail Magazine

*"...clearly knows the subject intimately and has the rare gift of being able to transfer his knowledge to the reader in an extremely easy-to-understand manner."*

Dick McClary, editor Sailboat Cruising

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