

Basic Marine Diesel Engine: MWSC 2018 : Phyllis McDonald Presenting

Basic Maintenance Operations

Demo Pictures :: Yanmar 2 cyl Engine

Fundamental Principle:

To operate an internal combustion Engine must have three elemental Conditions met. Ignition (Compression) – Fuel – Air

To continue operating an internal combustion engine must have cooling and lubrication

Lubrication Oil and Filter Change:

Lubrication: Fill: Sump: **Filter:** Circulation

Parts Oil: Oil Filter Fuel Filter

Tools: Oil Extraction Method

Manuel Hand Pump : Pressurized Pump: Powered Pump

Dip Stick Draw or Sump

Installed and/or Remote Mount Options

Strap Wrench : Funnel: Oil Zorb Pads

Drain Water Separator: Fuel Filter Change and Engine Bleed:

Fuel System: Fill: Tank: Draw: Valve: **Filters:** Pumps: Injectors: Return :

Parts Oil: Primary Fuel Filter: Secondary Fuel Filter

Copper washers

Tools Combination Wrench: Strap Wrench: Drainage Containment

Water Impellor Change: In take Strainer Clean

Cooling System: Thru Hull: Valve: **Filter:** Pump: Impeller:

Thermostat: Heat Exchanger: Exhaust: Muffler

Parts : Impellor and Gasket Spare Face Plate Screws

Tools: Flat Blade Screw Drivers

Knife / Razor Knife Emery Cloth Sandpaper

Pliers: Needle Nose : Bend Nose : Locking

Starter Circuit:

Battery: Switching : Solenoid : Stater Alternator Battery

Clean tight connections

Sensors: Temperature : Pressure : Voltage : Panel Buzzers : Guages

Clean tight connections

Controls: Shift : Throttle : Stop

Secure outer cable : lubed inner cable

Common Problems:

Will not start

Operates poorly

Overheats

Common Culprits

Electrical Electrical Electrical Connections

Clogged : or came Loose

Inspections:

Hoses: leaks tighten hose clamps : Caulk

Oil: Level and viscosity

Water: Flow and Temp

Fuel: Check Water Separator :
Know consumption rate and Engine Run time

Preventative Maintenance:

Clean and Dry

Change Filters Regularly

Change Lube Oil Regularly

Check and Change Water Pump Impellers

Checks and Inspection:

Logs: Data Gathering : Hour Meters

Reference Material:

Operations Manuel:

Yanmar 2 YM 15

<http://www.yanmarmarine.com/index.cfm/go/Sailboat-engines>

Resources:

http://en.wikipedia.org/wiki/Yanmar_2GM20

<http://www.yanmarmarine.com/index.cfm/go/Service-and-parts/>

Link to Service Videos on Line

<http://www.yanmarmarine.com/index.cfm/go/Sailboat-engines/>

Link to Yanmar Engine Manuals

<http://www.powerandmotoryacht.com/engines/troubleshooting-101/>

Power and Motor Yacht Resource tend to be larger Engines

<http://www.crowleys.com/> **Chicago Area Service Yard and Provider of
our demonstration Yanmar Engine**

How to Library : Provided by Boat US

http://www.boatus.com/boattech/howto_lib.htm

http://www.boatus.com/boattech/howto_tech.htm

Boat Keeper : Articles Funded by the Alaska Sea Grant

<http://seagrants.uaf.edu/bookstore/boatkeeper/index.html>

Animated Intake / Power/ Exhaust Cycle.

Located on facebook. <http://img.ihere.org/uploads/bff08d143d.gif>

http://windcheckmagazine.com/index.php?view=article&catid=82:cruising&id=237:captain-bernie-weiss&option=com_content&Itemid=404

What every Mechanic wishes a boat owner would know.

<http://www.cruisingworld.com/how-to/systems/bleed-out-the-air>

bleed basics

<http://uk.boats.com/boat-content/2012/03/solve-your-diesel-engine-problems-fuel-air-starting-wiring/>

http://www.onboardwithmarkcorke.com/on_board/2009/01/bleeding-a-diesel-engine.html

Yanmar Bleed PYI INC.

Here are the cross-referenced filter numbers for the Lucas CAV filter mounted on the engine:

Wix 33166, Fram C1191-A, FLEETGUARD FF167,

NAPA Gold 3166, PUROLATOR F50149,

MOTORCRAFT FD157, FILTERMART.COM 28-0187,

CHAMP (STP) L296F

I just finished adding the Racor IN CAV filter adapter and now can use spin-on filters instead of messing with the Lucas CAV filter assembly. Check out this website for an alternate adapter.

<http://www.youtube.com/watch?v=RgkVrCd8Lc8>

<http://www.pbase.com/mainecruising/impeller&page=1> change impellor

Marine Diesel Basics 1: Maintenance, Lay-Up, Winter Protection, Tropical Storage, Spring Recommission [Print Replica] Kindle Edition

by [Dennison Berwick](#) (Author, Illustrator)