MOJO mechanical information:

Main engine: Cummins 6BTA 5.9M 250 hp medium continuous duty diesel
Engine build date: 03/28/1989
5.9 liter (359 cu in) displacement
594 lb-ft peak torque at 2,000 rpm. Max rpm = 2,500. Cruise rpm = 1,500 to 1,600
2.7 gph fuel consumption @ 7.5 kts
Max fuel consumption at 2,500 rpm full load = 12 gph
Engine hours = < 4,000 hrs

Transmission: BW61 with 4.63:1 gear reduction – continuous duty rated
"Continuous duty" defined as continuous operation with little or no variations in engine speed and power, where typical application is displacement hull heavy duty commercial vessels, tugs, fishing boats.

Fuel: Estimated 1,450 gallons in 4 tanks, port and starboard, 2 forward & 2 mid ships
Consumption is ~2.7 gph at cruising speed of 7.5 kts
Conservative Cruising range with 10% reserve is in excess of 3,000 nautical miles.

Generator: Kohler 120/240v single phase 60 hz 9kw diesel
Model 9CCOZ with remote start kit and 2 meter start panel (oil pres, water temp)
Yanmar 3 cylinder 3TN78E-RK continuous duty at 1800 rpm (automatically governed)
Automatic safety shutdown for High Exhaust Temp, Low Oil Pres and High Water Temp.
Fuel Use:

25% load	.33 gph
50% load	.47 gph
75% load	.63 gph
100% load	.83 gph

Engine Hours = < 2,000 hrs

SeaPower: MOJO incorporates a 5 kw variable speed a/c generator belted to the front of the main engine. The SeaPower unit provides 40 amps of pure sine wave 120v a/c power at rpms above about 1,200. Voltage and frequency are automatically regulated independent of engine speed. Automatic switching allows the power to be split between both legs of the main 240 v electrical system. This means 120 v loads on either or both legs can be run simultaneously. When underway, the SeaPower can run the Hot Water heater, can run the deckhouse 16,000 BTU air conditioner and can power the 2,000 watt inverter with 105 amp battery charger. See SeaPower company brochure for more information.

Solar: MOJO is outfitted with 1,000 watts of solar panels on her deck house roof top. These panels connect to a Outback Power FLEXMax FM80 MPPT solar controller. We routinely see ~300 a/h per day of charging on sunny days, even at New England latitudes. This provides all the power needed during extended stays at anchor other than making hot water (10 min of generator time) or running air conditioning. Batteries are topped up at the end of the day and gentle solar charging significantly extends battery life.

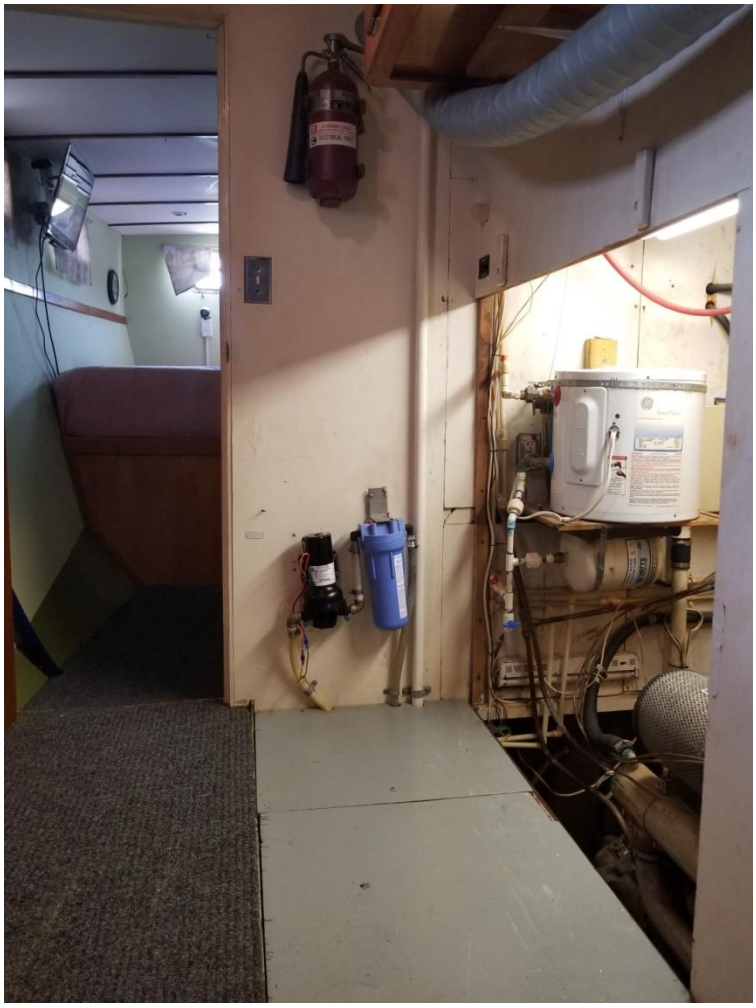
MOJO Engine Room

The engine room on MOJO is located amidships, forward of the aft master stateroom. It is accessed by a doorway from the below decks main saloon area and includes the passageway to the aft cabin. The passageway is on the starboard side of the boat and like all spaces in MOJO has full height standing headroom. The engine is enclosed in a sound insulated compartment on the centerline of the vessel. Both side panels and the front panel are removable for excellent access to the main engine.

Looking aft in engine room passageway. Door is to aft master stateroom. Starboard side of engine compartment with removable panel is shown. The gray floor comes up to access the batteries. Note fresh water pump & filter on bulkhead, easily accessible for maintenance, winterization, etc.

Floor panels removed to show battery box. Engine start battery is at top of picture (aft end of box). House bank is 10 6v golf cart batteries. Yellow box in lower right is 2kw pure sine wave inverter with 105 amp charger. The white box mounted at the lower (forward) end of the battery box is a spare 2kw inverter/charger. Since we rely on a/c power to run the fridge and freezer, best to have a spare inverter! To the right of the battery box are several plastic bins with thousands of dollars in spare parts, including fresh water pumps, 2 complete engine raw water pumps, an engine fresh water pump, spare belts and belt tensioner, spare filters, a full set of hull zincs and multiple collar shaft zincs, etc., etc., etc.

Starboard side of engine box opened:

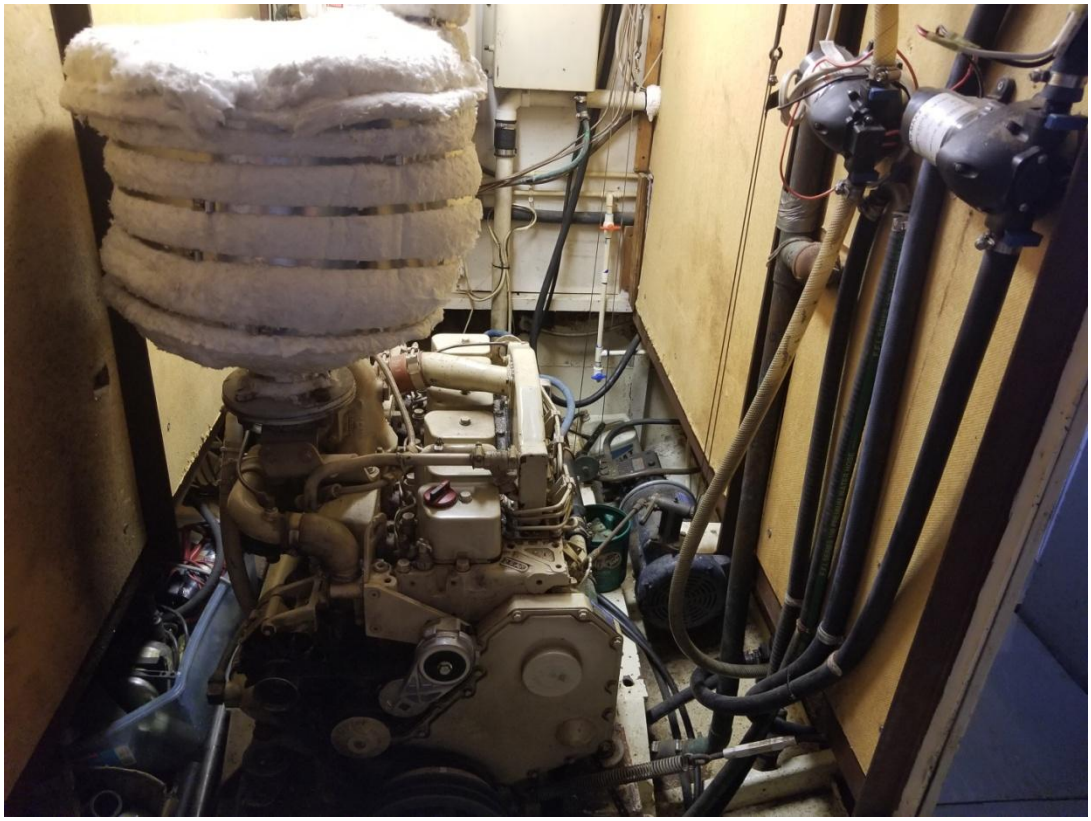


Starboard side of engine w/6 gal Hot Water Heater:

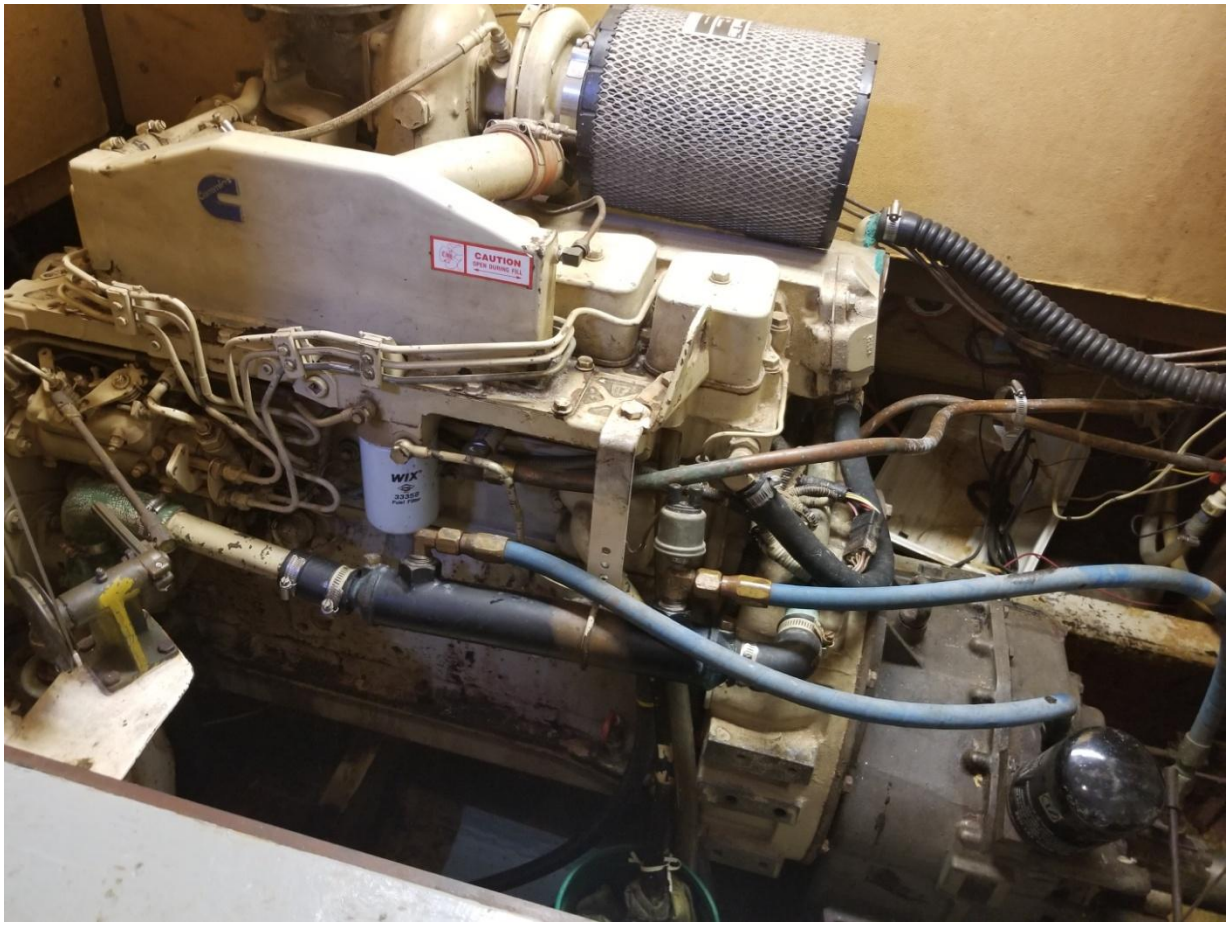
Port side of engine room showing workshop with bench, vice, drill press and grinder.

33 gph watermaker mounted on aft bulkhead in workshop area. Note port side engine access panel on left side of picture

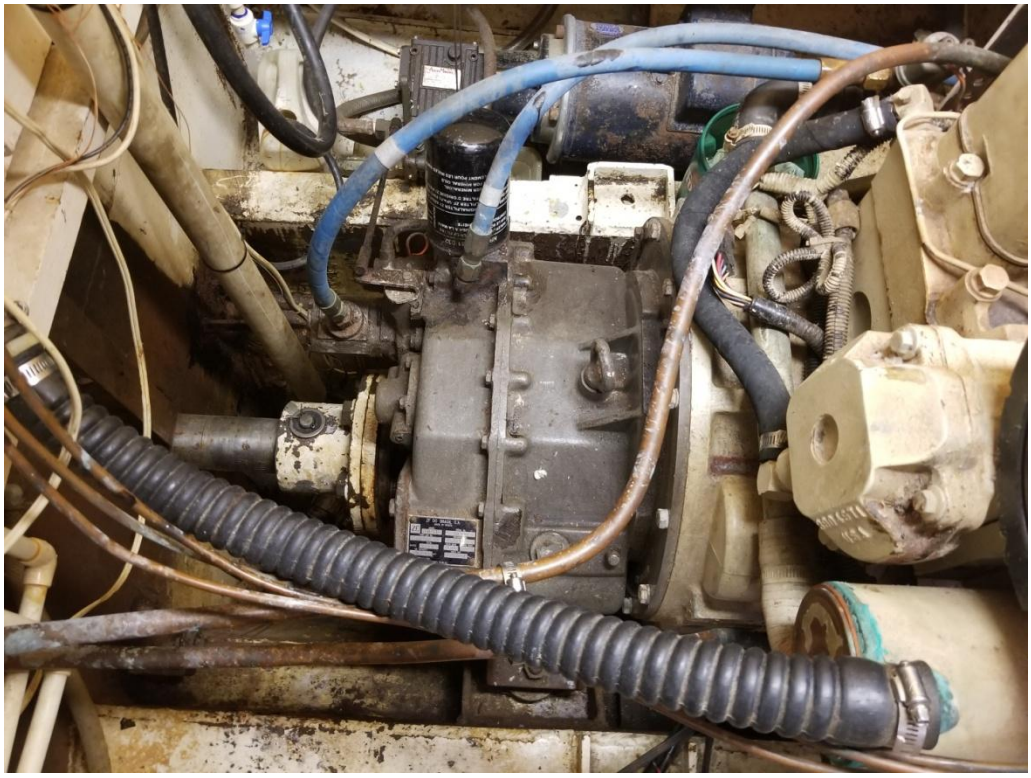
Main engine viewed with forward access panel removed (looking aft). Two pumps in upper right are for upper and aft electric head intakes. Easy to access for service.



Main engine viewed from port side with port side access panel removed

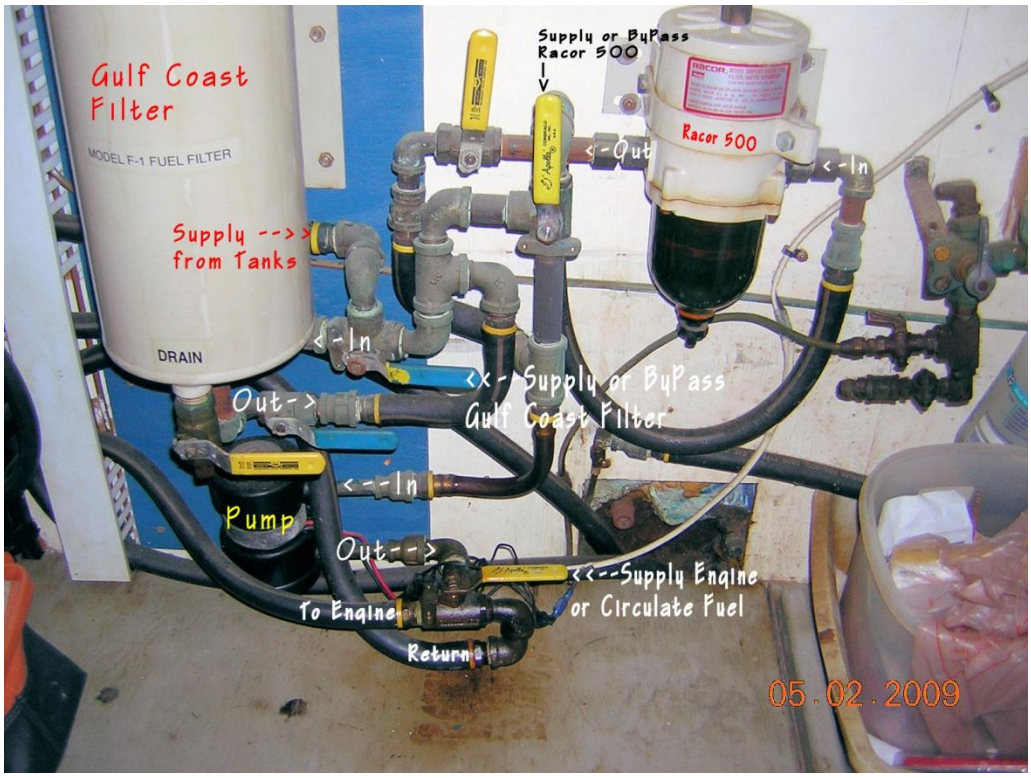


Transmission is a ZF BW61 with a 4.63:1 gear reduction viewed here from the starboard side looking down. Power transfer consists of a 3” stainless steel shaft bolted and pinned to the coupling and turning a 40” x 34” 4 blade bronze wheel. At 1,600 rpm, the prop is turning a lazy 345 rpms!



9kw Kohler generator with Yanmar 3 cyl. Diesel engine and full sound shield is located below floor boards forward of main engine. Floor boards are removable for generator access. Top and side panels of sound shield have been removed to reveal genset engine. Remote start and engine gauges are located in helm area on engine control panel. Front of main engine is shown on left side of picture. Generator has separate fuel piping from starboard aft tank thru dedicated Racor 500 fuel filter.

Fuel plumbing. MOJO has 4 fuel tanks. Valving allows fuel to be selected from any tank and returned to any tank. Fuel is filtered through a Gulf Coast fuel filter (large gray cylinder) and/or through a Racor 500 fuel filter. We rarely use the Racor, it's installed as a back up in the event of a filter clog in the Gulf Coast filter (has never happened) and is selectable by simply moving a couple of valves. A separate pump pulls fuel from the selected tank, through the selected filter(s) and then to the engine. This pump allows easy filling of the filters and also allows fuel to be recirculated through the filter system for fuel cleaning/polishing. Even though MOJO carries over 1,400 gallons of fuel, we do not use fuel stabilizer chemicals, preferring instead to simply re-circulate and polish the fuel in each tank for 24 hours once per year. This has kept our fuel clear and clean without microbial growth or water accumulation. While it looks complicated, it is quite easy to select which filter to use (or use both in series) and whether to send fuel to the engine or back to a tank for polishing. This setup can also be used to move fuel from one tank to another (i.e., port to starboard) to correct any list due to fuel consumption. This generally isn't necessary if fuel tanks are switch at the beginning of each day's run. Tanks and filters can be switched underway without shutting down the engine providing continuous long distance cruising.



At normal cruising speed of 7.5 kts, fuel consumption is approximately 2.7 gallons per hour. With ~1,450 gallons of fuel, this gives a range of over 3,600 nautical miles with a 10% fuel reserve. Total range w/out reserve would be over 4,000 nm. For long range passagemaking planning purposes, I would use a fuel burn rate of 3 gph and a speed of 7 kts, giving a very conservative range with 10% reserve of just over 3,000 nautical miles. With solar panels and the SeaPower variable speed engine driven generator, main genset use is minimized, but at a full load of 9 kw, the generator burn rate is less than 1 gph. Fuel capacity is not be a limiting factor on MOJO!

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