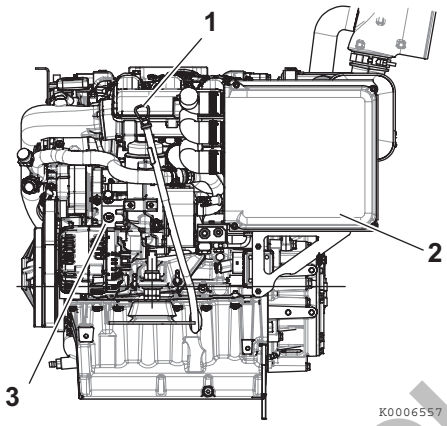
COMPONENT IDENTIFICATION

Figure 1, **Figure 2** and **Figure 3** illustrate a typical version of a 4BY3 engine. Your engine may have different equipment from that illustrated.

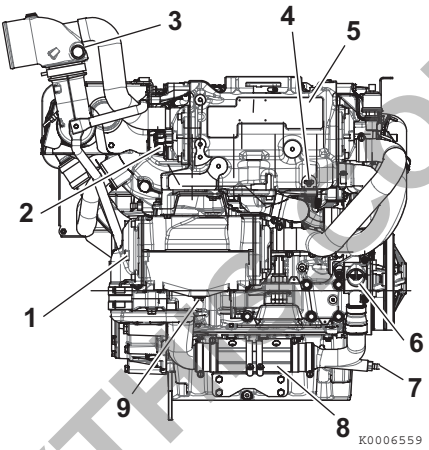
Left Side (as Viewed from Flywheel) - 4BY3



1 – Engine oil dipstick
2 – E-Box panel
3 – High pressure fuel pump

Figure 1

Right Side (as Viewed from Flywheel) - 4BY3



1 – Zinc anode
2 – Zinc anode
3 – Exhaust/water mixing elbow
4 – Coolant drain cock
5 – Heat exchanger
6 – Seawater pump
7 – Seawater drain cock
8 – Hydraulic oil cooler
9 – Coolant drain plug

Figure 2

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SAFETY DECALS

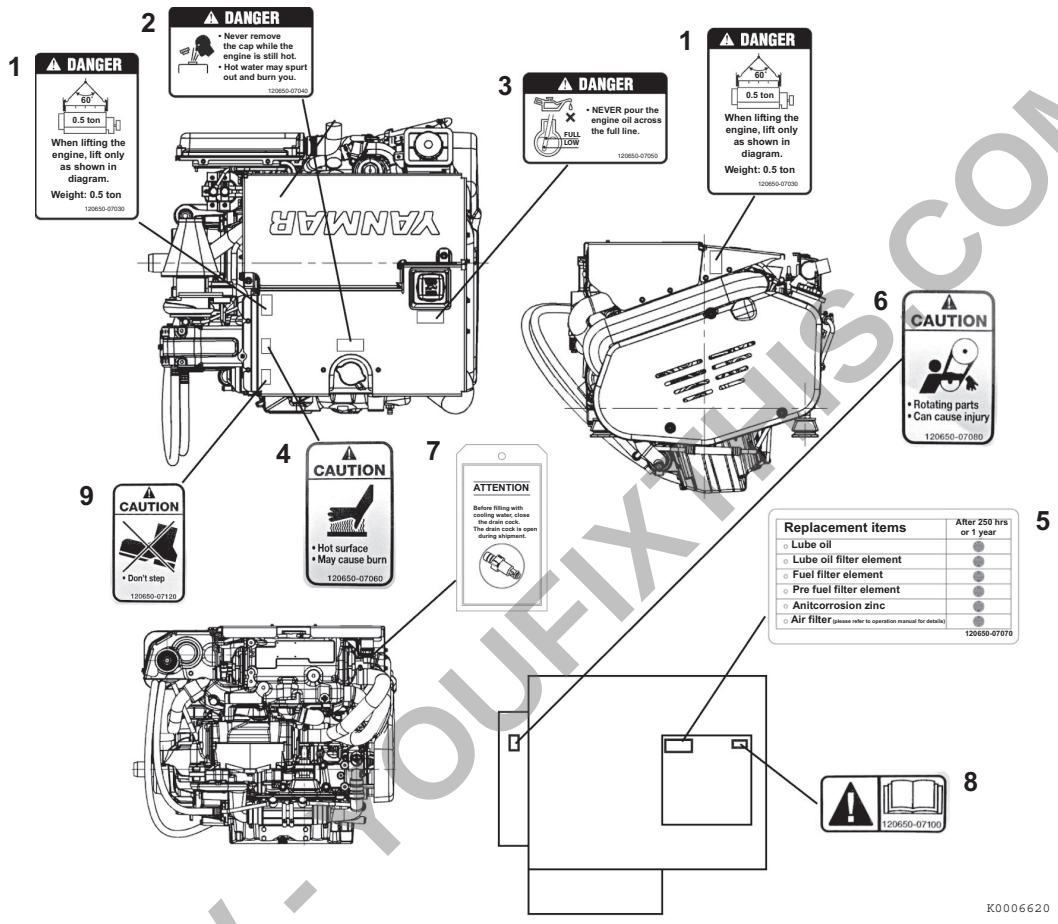


Figure 1

No.	Part Number
1	120650-07030
2	120650-07040
3	120650-07050
4	120650-07060
5	120650-07070
6	120650-07080
7	120650-07090
8	120650-07100
9	120651-07120

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Diagnostic Trouble Code Table

Code	Part or system	Mode	Run or condition	engine can start	Check engine alarm
No code	Coolant temp	Under 0 °C (32 °F)	1000 min^{-1}	Yes	No
No code	Coolant temp	Over 108 °C (226 °F)	Reduce	Yes	No
No code	Coolant temp	Over 110 °C (230 °F)	Reduce	Yes	Alarm
No code	Charge air temp	Over 110 °C (230 °F)	Reduce	Yes	No
No code	Boost pressure reading	4BY2 - over 1.9 bar (27.5 PSI) (relative*) or 2.9 bar (42.0 PSI) (absolute**) 6BY2 - over 2.3 bar (33.3 PSI) (relative*) or 3.3 bar (42.9 PSI) (absolute**)	Reduce	Yes	Alarm
No code	Fuel temperature	Over 90 °C (194 °F)	Reduce	Yes	No
No code	Neutral switch	Only in case of analog throttle or in case of CAN-fault (U0001), wrong configuration - neutral position	No	No	Alarm
P0001	Fuel metering unit	Not connected	Reduce	Yes	Alarm
P0003	Fuel metering unit	Short circuit to ground	No	No	Alarm
P0004	Fuel metering unit	Short circuit to B+	Reduce	Yes	Alarm
P0087	Rail pressure governor deviation	Fuel rail pressure out of range	Reduce or shut off	Depends on fault	Alarm
P0088	Rail pressure governor deviation	Fuel rail pressure out of range	Reduce or shut off	Depends on fault	Alarm
P0089	Rail pressure governor deviation	Fuel rail pressure out of range	Yes	Yes	Alarm
P0090	Fuel pressure control valve	Not connected	No	No	Alarm
	Rail pressure governor deviation	Fuel rail pressure out of range	Reduce	Yes	Alarm
P0091	Fuel pressure control valve	Short circuit to ground	Reduce	Yes	Alarm
P0092	Fuel pressure control valve	Short circuit to B+	No	No	Alarm
P0112	Charge air temp	Over 125 °C (257 °F)	Reduce	Yes	Alarm
	Charge air temp sensor	Short circuit to B+	Reduce	Yes	Alarm
P0113	Charge air temp	Under -20 °C (-4 °F)	Reduce	Yes	Alarm
	Charge air temp sensor	No connection/short circuit to ground	Reduce	Yes	Alarm
P0117	Coolant temp sensor	Short circuit to B+	Reduce	Yes	Alarm
P0118	Coolant temp sensor	No connection/short circuit to ground	Reduce	Yes	Alarm

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TROUBLESHOOTING CHART

Starting Trouble

Problem/Symptom	Cause	Action
Engine will not crank	Discharged battery	Charge/replace battery
	Blown fuse	Replace fuse
	Defective starter motor	See your authorized YANMAR dealer or distributor
	Loose wiring connections	Tighten connections
	Electrical panel power circuit breaker is tripped	Reset circuit breaker
Engine cranks but will not start	No fuel to engine	Check fuel level in tank
		See your authorized YANMAR dealer or distributor
	No fuel to cylinders	Check fuel filter/water separator
		Clean or replace clogged fuel fine filter
		Bleed air from fuel system
		Replace blown fuse (F3)
		See your authorized YANMAR dealer or distributor
	Low ambient temperature	See your authorized YANMAR dealer or distributor
	Oil high	Replace with correct viscosity oil for operating conditions

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SPECIFICATIONS

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○: Check or Clean ◇: Replace ●: Contact your authorized YANMAR marine dealer or distributor

System	Item	Periodic maintenance interval					
		Daily *See Daily Checks on page 51*	Every 50 hours or monthly which-ever comes first	Every 250 hours or one year which-ever comes first	Every 500 hours or 2 years which-ever comes first	Every 1000 hours or 4 years which-ever comes first	Every 2000 hours or 8 years which-ever comes first
Whole	Visual inspection	○ Before					

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After Initial 50 Hours of Operation

Perform the following maintenance procedures after the initial 50 hours of operation.

- **Changing the engine oil and replacing the engine oil filter**
- **Checking shift cable adjustment**
- **Adjusting the propeller shaft alignment (if equipped with marine gear)**

■ Changing the engine oil and replacing the engine oil filter

The engine oil on a new engine becomes contaminated from the initial break-in of internal parts. It is very important that the initial oil replacement is performed as scheduled.

It is easiest and most effective to drain the engine oil after operation while the engine is still warm.

⚠ WARNING

If you must drain the engine oil while it is still hot, stay clear of the hot engine oil to avoid being burned. Always wear eye protection.

1. Turn engine OFF.
2. Remove engine cover.

NOTICE

Prevent dirt and debris from contaminating engine oil. Carefully clean the dipstick and the surrounding area before you remove the cap.

3. Loosen the engine oil filter cap (2, **Figure 1**) 1 - 2 turns with a socket wrench. Allow to sit a few minutes to allow oil to drain into crankcase.

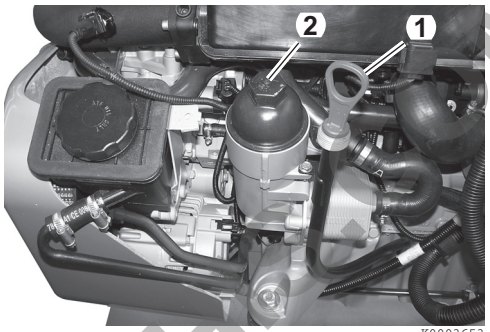


Figure 1

4. Remove the engine oil dipstick (1, **Figure 1**). Attach an oil drain pump and pump out the oil. Dispose of waste properly.
5. Remove the engine oil filter cap and filter assembly.
6. Remove the filter element from stem.
7. Replace the three O-rings (1, **Figure 2**) on the stem.

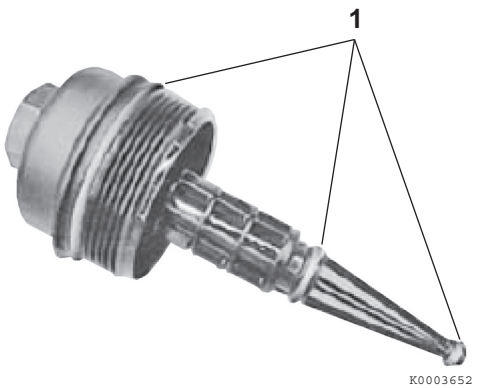


Figure 2

8. Install a new filter element. Ensure the filter fits snugly in the filter cap.

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■ Standard torque values

Hexagon bolts and nuts

Nominal diameter	Grade (lubricated)		
	8.8 or 8	10.9 or 10	12.9 or 12
M4	2.7 N·m (24 in.-lb)	3.88 N·m (34.3 in.-lb)	4.6 N·m (41 in.-lb)
M5	5.5 N·m (48.6 in.-lb)	8 N·m (71 in.-lb)	9.5 N·m (84 in.-lb)
M6	9.5 N·m (84 in.-lb)	13 N·m (115 in.-lb)	16 N·m (142 in.-lb)
M7	15 N·m (133 in.-lb)	22 N·m (195 in.-lb)	26 N·m (230 in.-lb)
M8	23 N·m (204 in.-lb)	32 N·m (24 ft-lb)	39 N·m (29 ft-lb)

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