3. Principal Construction

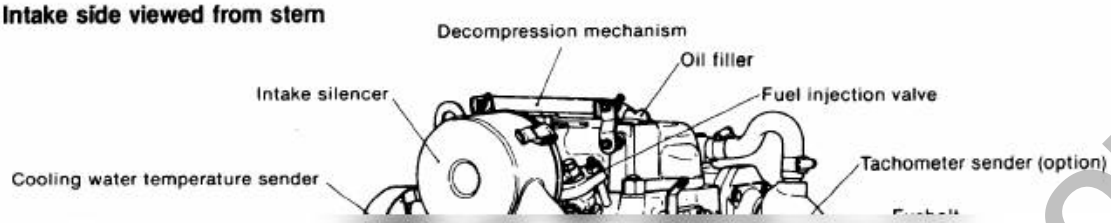
Group	Part	Construction	2QM20 2QM20B	2QM20H	2QM20Y	2QM20F	3QM30	3QM30H	3QM30Y	3QM30F
	Cylinder block	Integrally-cast water jacket and crankcase	○	○	○	○	○	○	○	○
Engine block	Cylinder liner	Wet type coated with anticorrosion point	○	○	○	○	○	○	○	○
	Main bearing	Bearing housing type without intermediate bearing	○	○	○	○				
		Bearing housing type with intermediate bearing					○	○	○	○

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1. Exterior Views

1-1 2QM20H

1-1.1 Intake side viewed from stern





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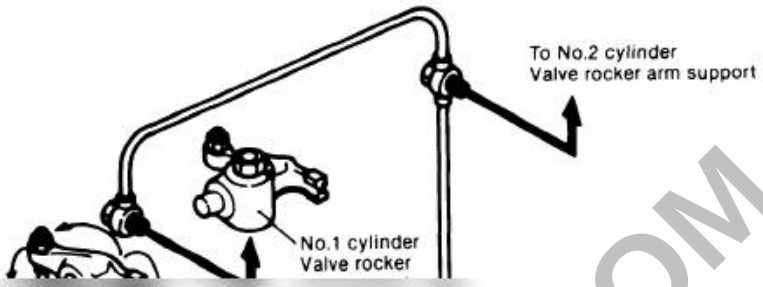
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8-2 Lubrication system

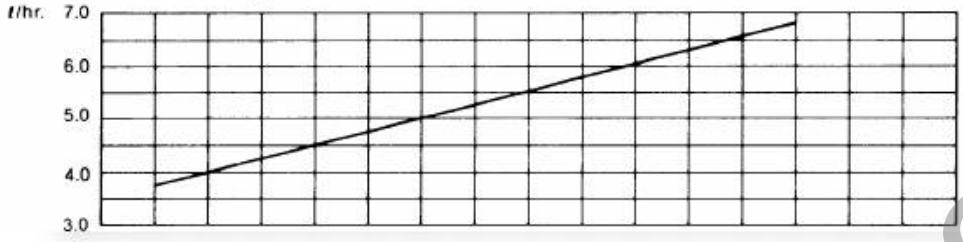
8-2.1 2QM20(H)



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4-2 3QM30(H)

Fuel consumption



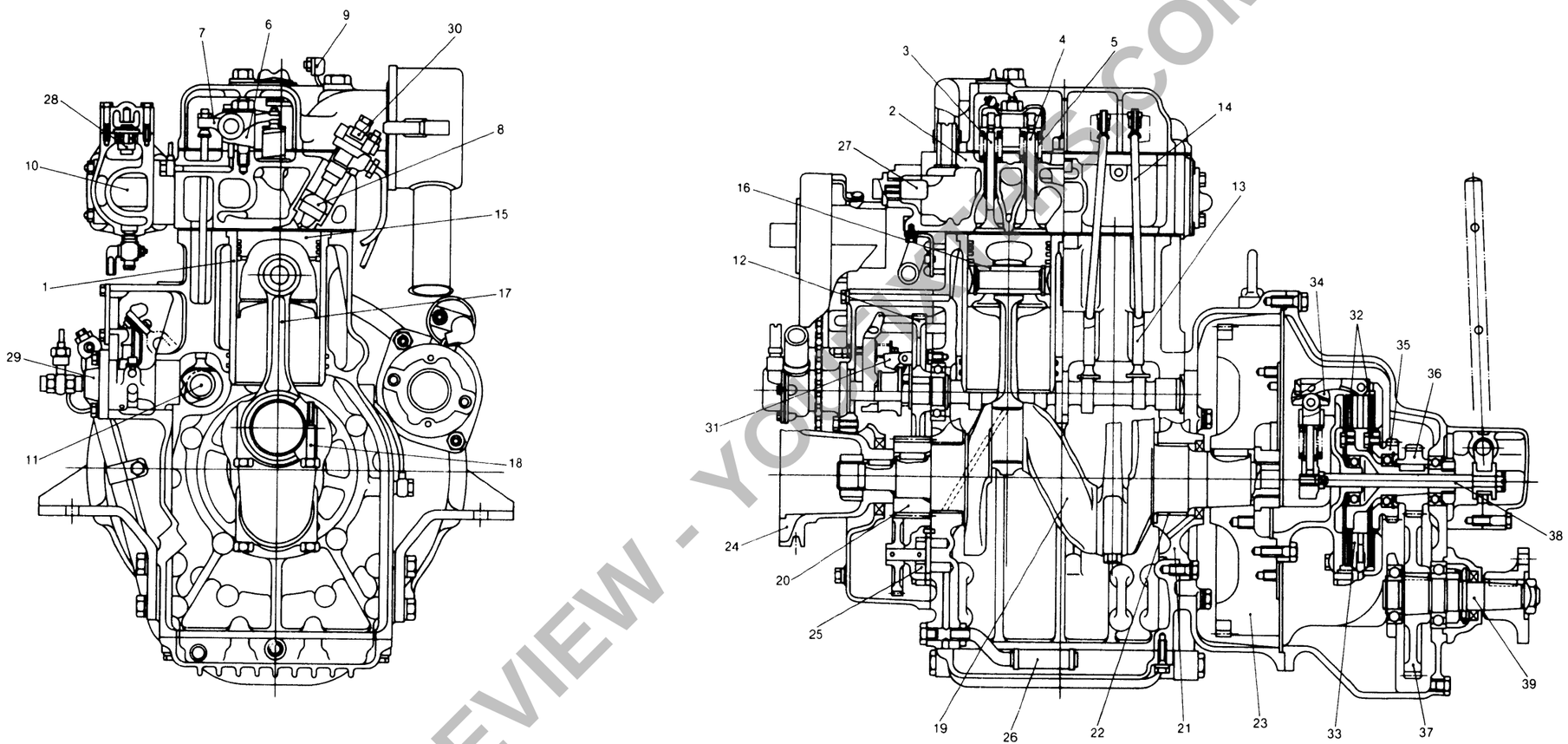
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6. Engine Cross-Section

6-1 2QM20



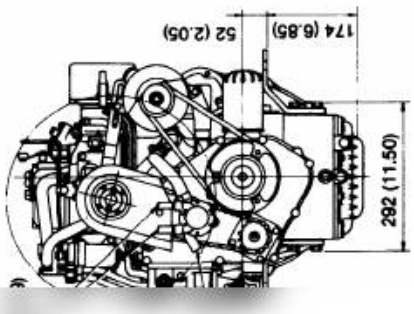
1. Cylinder liner
2. Cylinder head
3. Exhaust valve
4. Intake valve
5. Valve spring
6. Valve rocker arm support
7. Valve rocker arm
8. Precombustion chamber
9. Decompression lever
10. Exhaust manifold
11. Camshaft
12. Camshaft gear
13. Tappet
14. Push rod
15. Piston
16. Piston pin
17. Connecting rod
18. Connecting rod bolt
19. Crankshaft
20. Crankshaft gear
21. Main bearing housing
22. Main bearing
23. Flywheel
24. Crankshaft V-pulley
25. Lubricating oil pump
26. Lubricating oil inlet pipe
27. Anticorrosion zinc
28. Thermostat
29. Fuel injection pump
30. Fuel injection valve
31. Governor weight
32. Friction disc
33. Steel disc plate
34. V-lever
35. Reversing shaft gear
36. Forward small gear
37. Forward large gear
38. Shifting shaft
39. Output shaft

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7-6 3QM30

mm (in.)



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CHAPTER 1

GENERAL

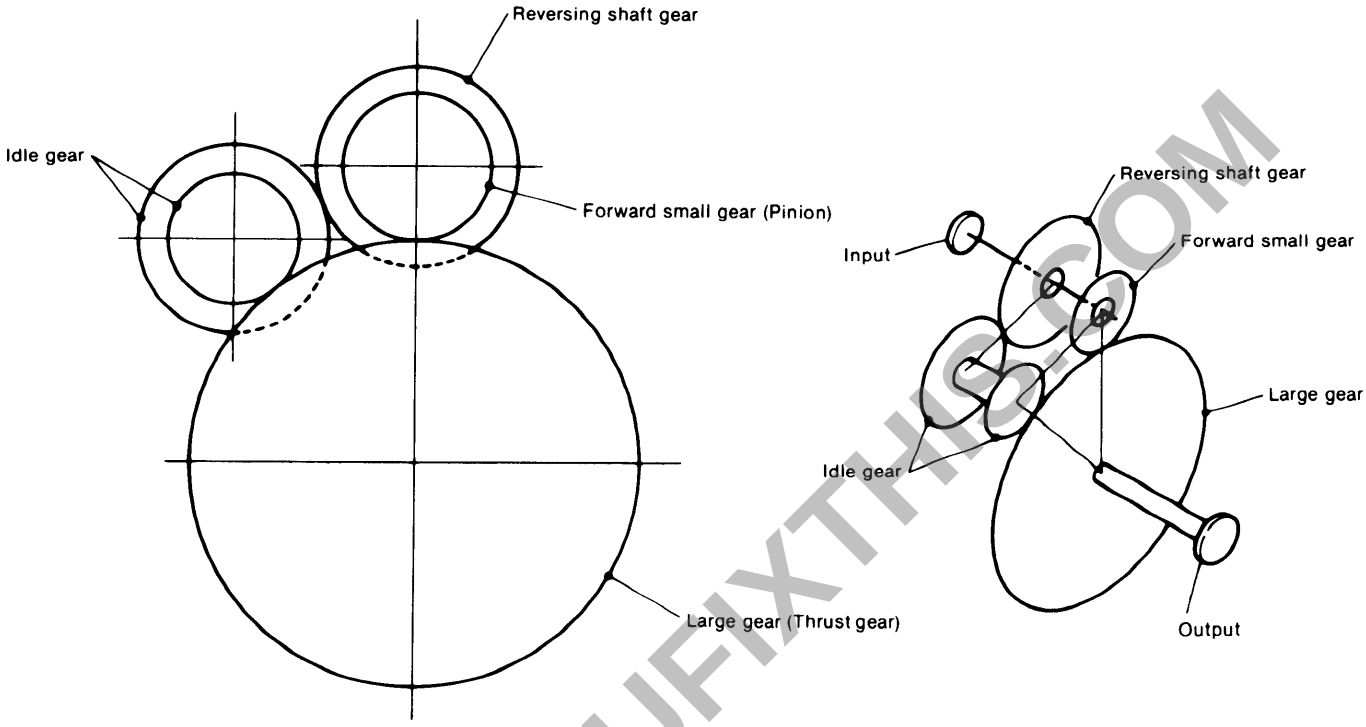
1. Exterior Views 1-1
2. Specifications 1-5
3. Principal Construction 1-7
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7. Dimensions 1-15
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10. Recommended Remote Control Cable 1-39

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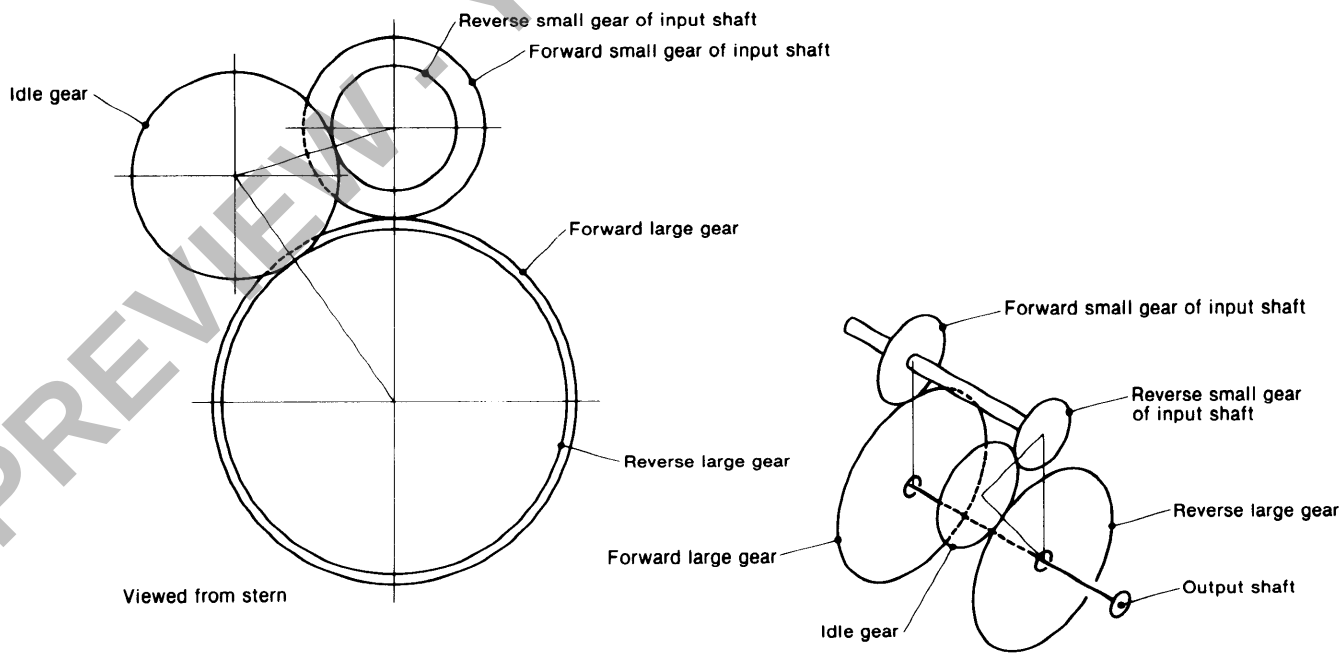
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8-6 Reduction reversing power transmission system

8-6.1 2QM20 (Type of clutch YP-7M)
3QM30 (Type of clutch YP-10M)



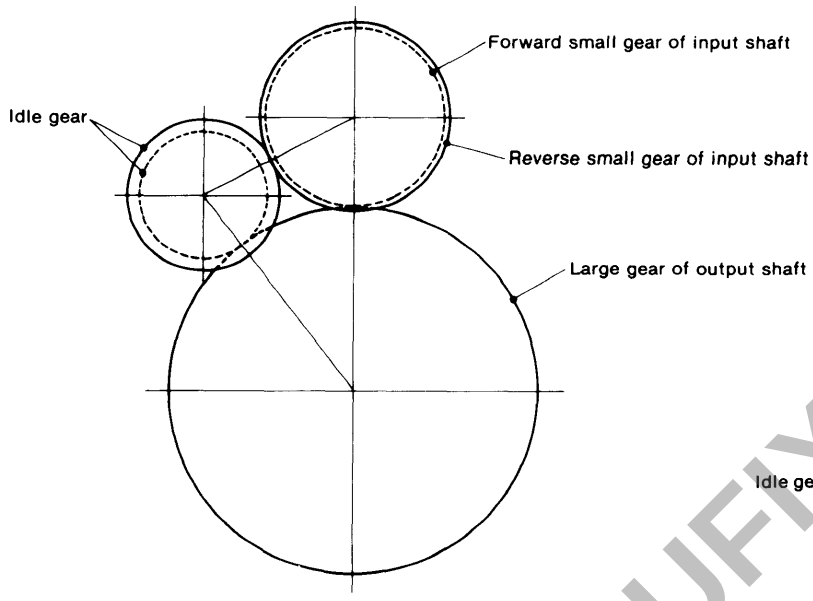
8-6.2 2QM20H (Type of clutch KBW10A)

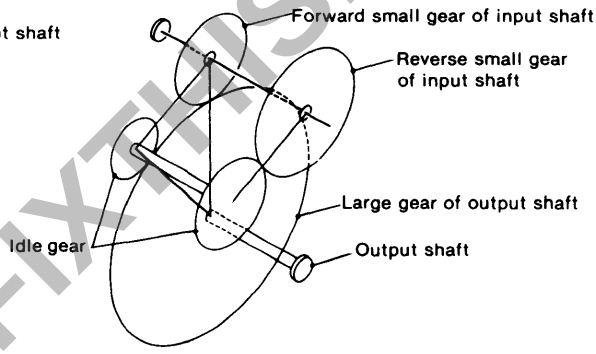


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8-6.3 3QM30H (Type of clutch KH18)

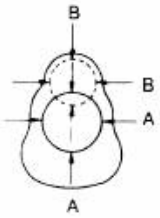




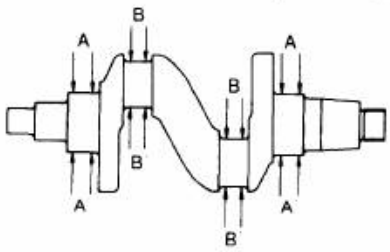
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2QM20(H)



(Flywheel side)



3QM30(H)

2QM20H

Adjust the side gap to the maintenance standard by the thickness of the crankshaft thrust metal and the thickness of the main bearing shell paper packing.
The main bearing shell packing thicknesses are 0.1mm (0.00394in.) and 0.2mm (0.00788in.).

3QM30H

The side gap of the 3QM30(H) is the difference between the width of the main journal bearing and width of the journal.

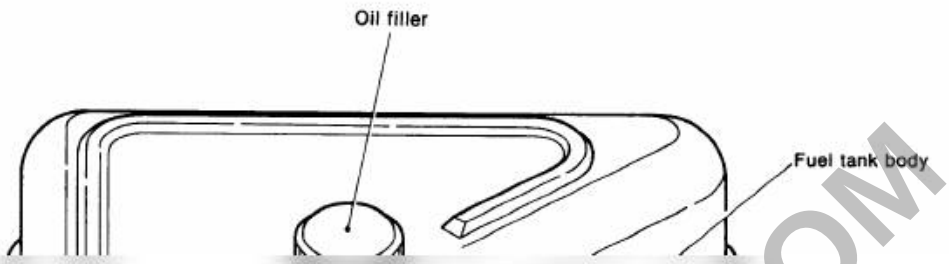
6-3.2 Measuring side gap

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6. Fuel Tank (Option)



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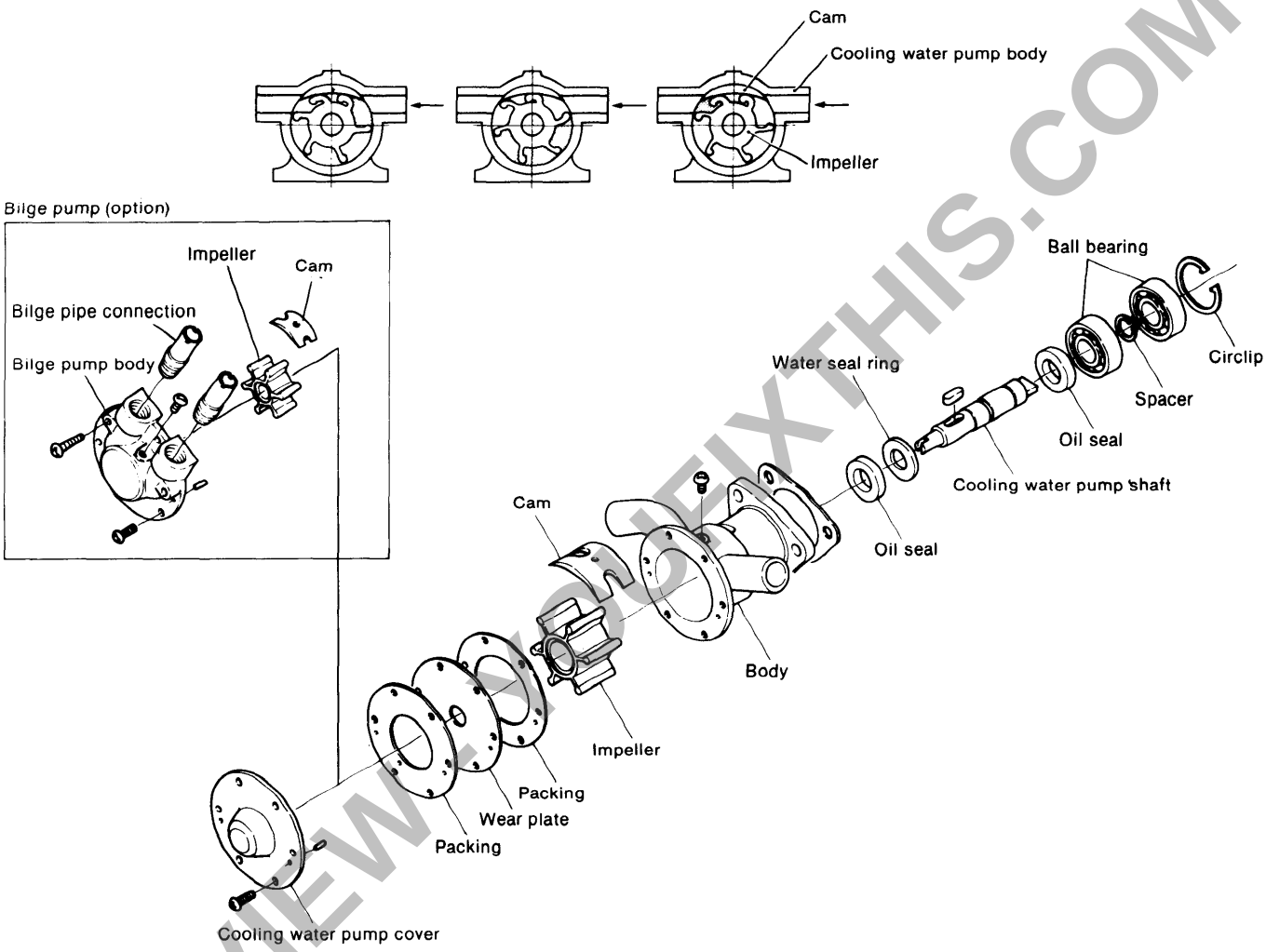
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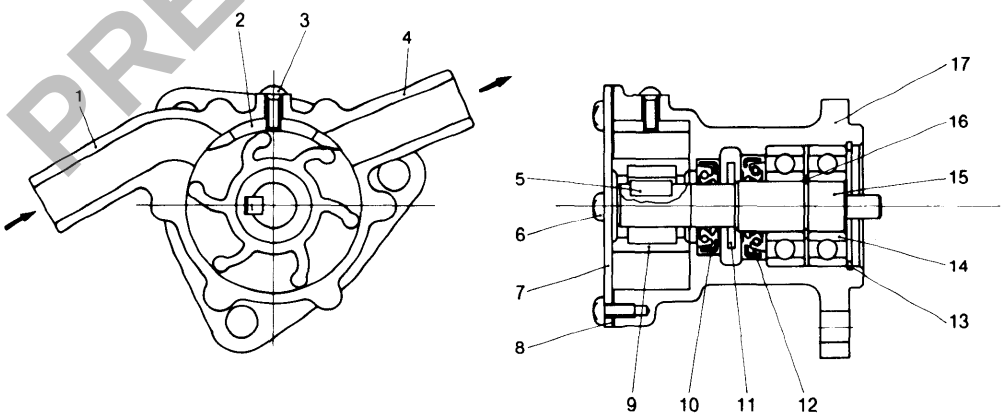
2. Water Pump and Bilge Pump

2-1 Construction and operation

The water pump is a rubber impeller type pump driven by the camshaft slit.
The rubber impeller, which has ample elasticity, is deformed by the offset plate inside the casing, causing the water to be discharged.
This pump is ideal for small, high-speed engines.
A bilge pump is installed in this pump as an optional device.



2-1.1 Cooling water pump (without bilge pump)



1. Inlet pipe connection
2. Cam
3. Set screw
4. Outlet pipe connection
5. Key
6. Screw
7. Cooling water pump cover
8. Packing
9. Impeller
10. Oil seal
11. Water seal ring
12. Oil seal
13. Circrip
14. Ball bearing
15. Cooling water pump shaft
16. Spacer
17. Cooling water pump body

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2. Installation and Operation

2-1 Clutch Case Alignment

When replacing parts of the fly-wheel housing or clutch case, carry out the following procedures for the clutch case alignment, which should also be applied in case of deviations in the alignment at the time of mechanical repair and servicing.

Permissible deviation of alignment for clutch hole against crank shaft:

2-2 Remote control

Both 2QM20 and 3QM30 are designed for remote control using push-pull cables.
With model 2QM20 you can control levers either on the engine or remotely via mechanical linkage.

2-2.1 Action of the lever

(1) 2QM20

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3. Operation and Maintenance

3-1 Lube oil

(1) Oil level

The oil level should be checked each month and must be maintained between the grooves on the dipstick. The upper groove indicates the maximum oil level and the lower groove is the minimum oil level. When checking the oil level with the dipstick, do not screw in the oil filler screw; it should rest on top of the oil filler hole.

use packing or gaskets when installing the upper cover.

—After making sure that the cam lobe and notches are aligned properly, securely tighten all the bolts. After tightening the bolts, move the lever back and forth. Positive contact should be felt and a click should be clearly audible as the gears shift; otherwise, the cam and notch are not properly engaged, and the cover must be loosened and readjusted until proper engagement is achieved.

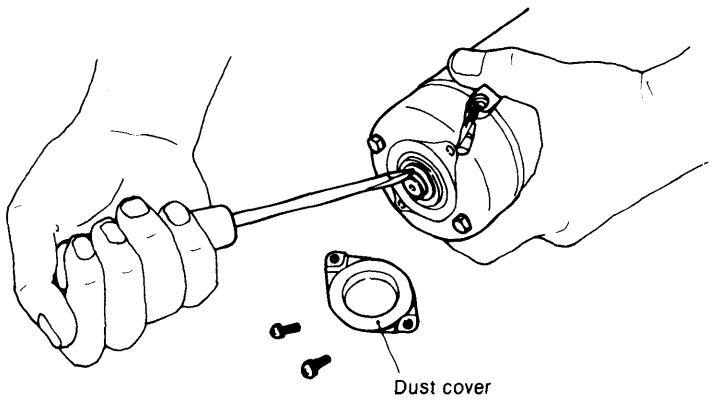
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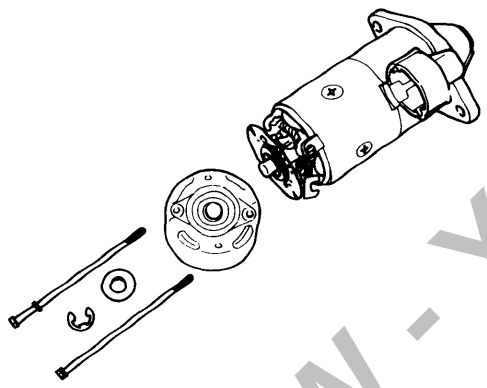
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3-5.2 Rear cover

(1) Remove dust cover.

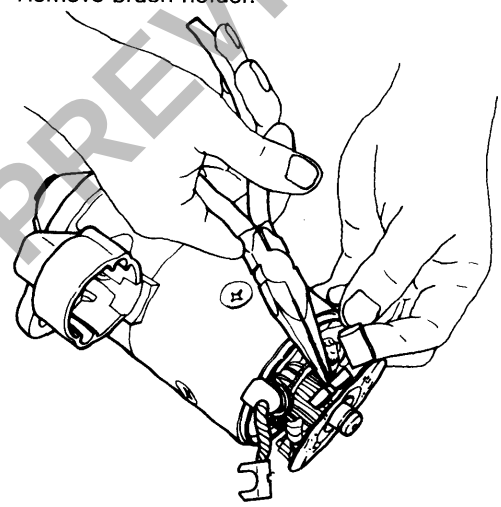


(2) Remove E-ring, and remove thrust washer (be careful not to lose the washer and shim).
(3) Remove the two through bolts holding the rear cover and the two screws holding the brush holder.
(4) Remove rear cover.



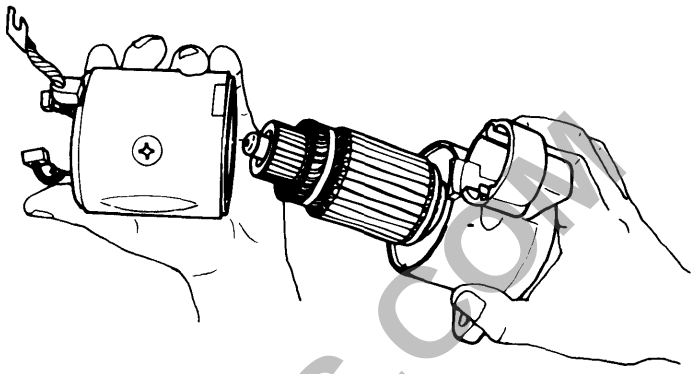
3-5.3 Brush holder

(1) Float (–)brush from the commutator.
(2) Remove (+)brush from the brush holder.
(3) Remove brush holder.



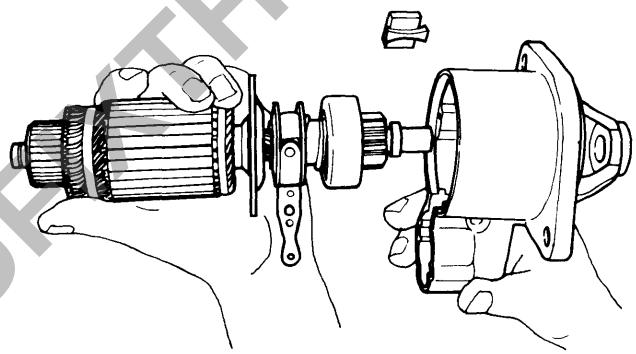
3-5.4 Yoke

(1) Remove yoke. Pull it out slowly so that it does not strike against other parts.



3-5.5 Armature

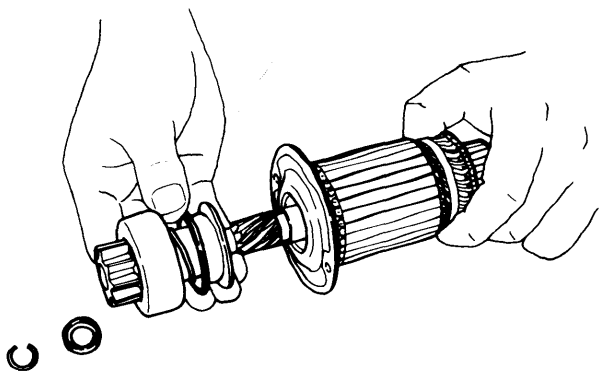
(1) Slide pinion stopper to pinion side.



(2) Remove the pinion stopper clip.

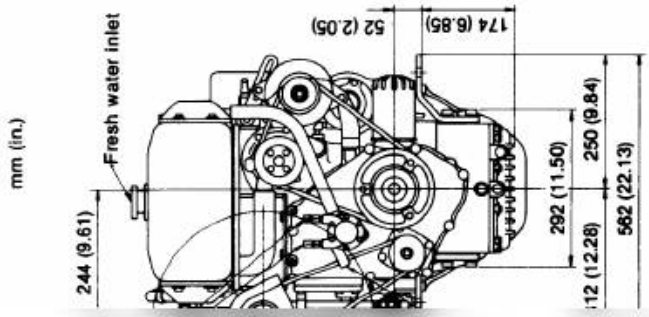
3-5.6 Pinion

(1) Slide the pinion stopper to the pinion side.
(2) Remove the pinion stopper clip.
(3) Remove the pinion from the armature.

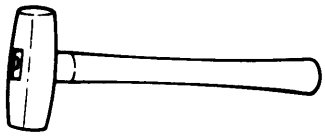
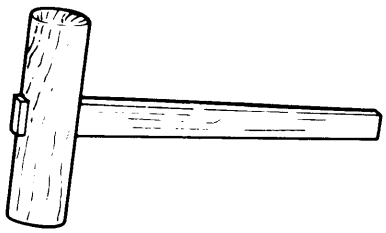
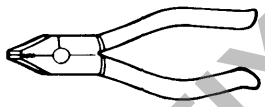
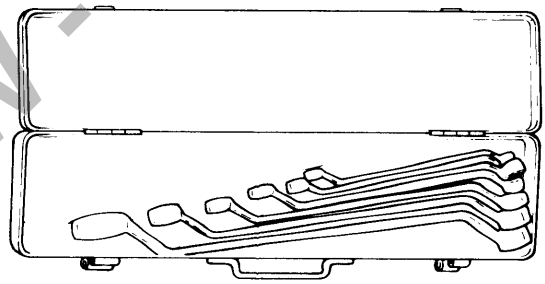
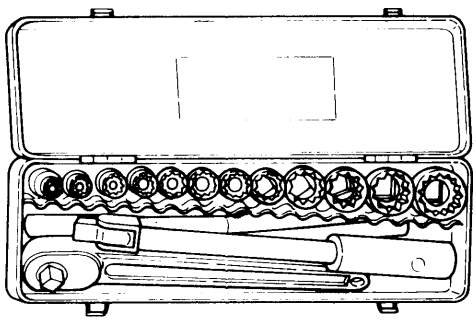


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2-4.9 3QM30F



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Name of tool	Illustration	Remarks
Copper hammer		Local supply
Mallet		Local supply
Nippers		Local supply
Pliers		Local supply
Offset wrench		Local supply 1 set
Box spanner		Local supply 1 set

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