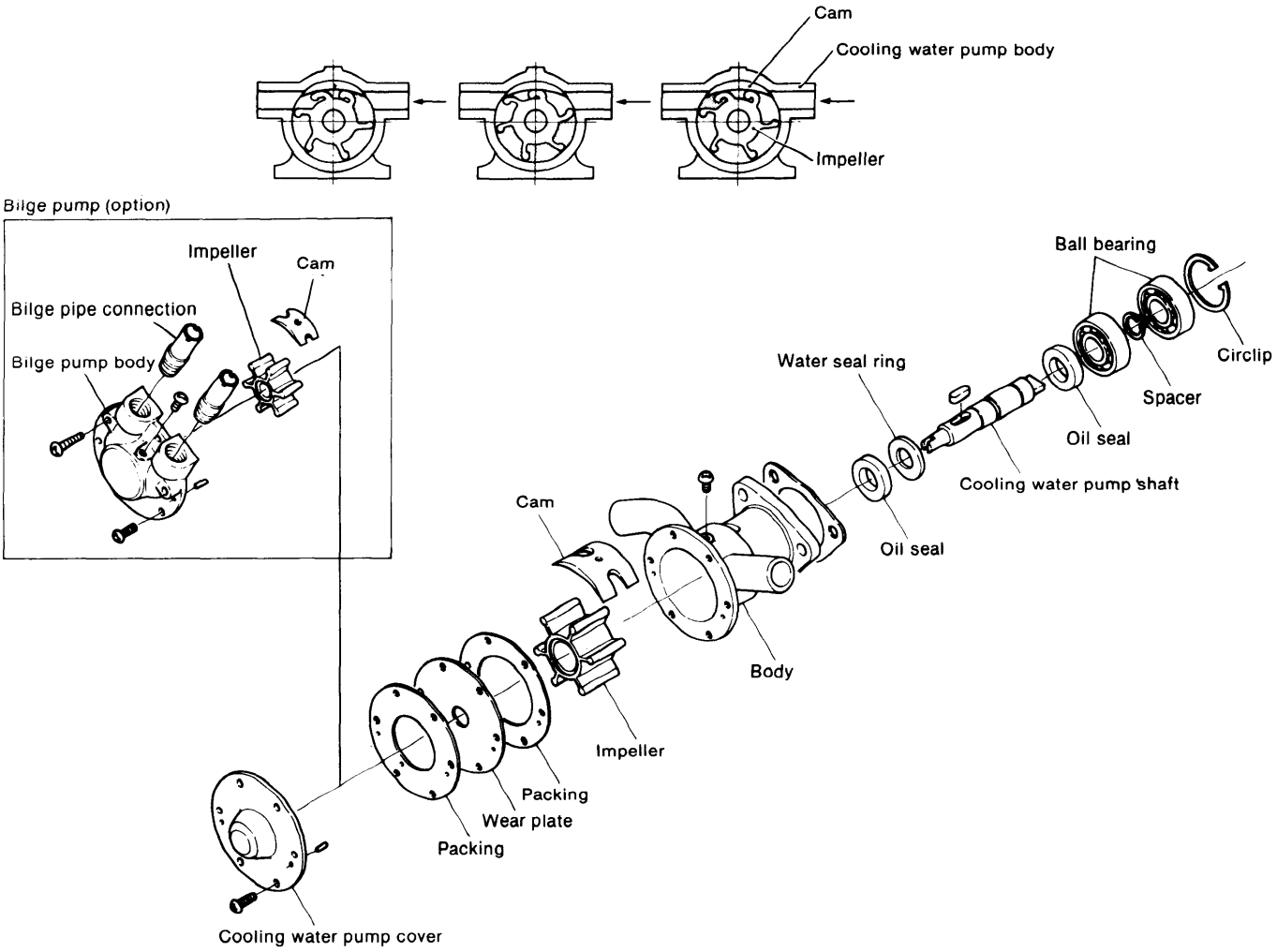
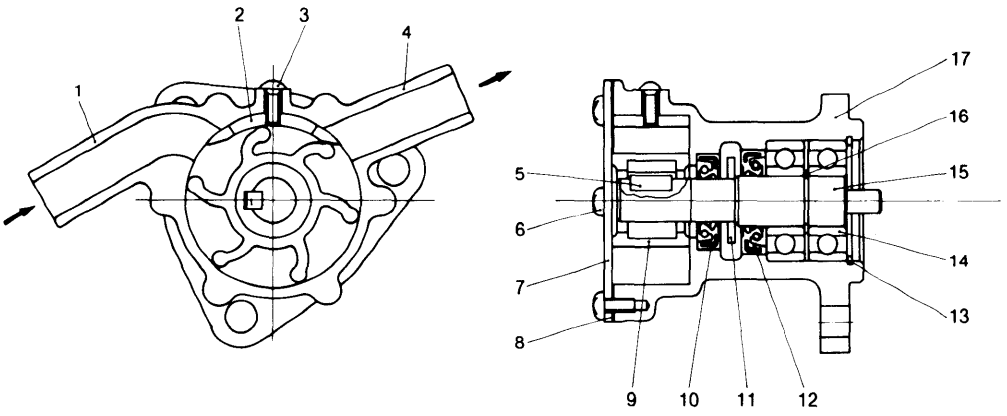
2. Water Pump and Bilge Pump

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.

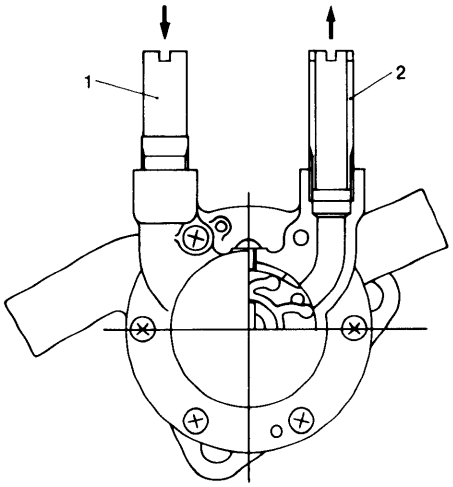


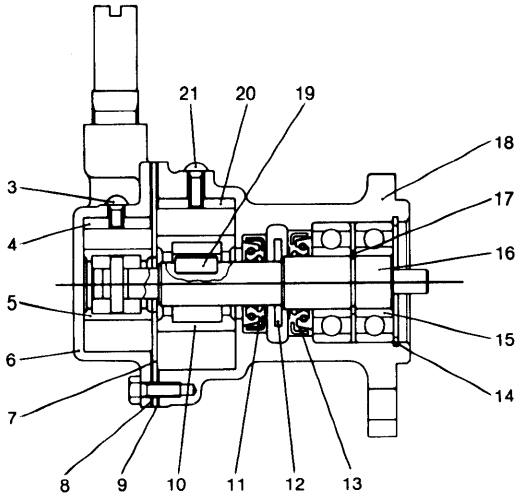
2-1.1 Cooling water pump (without bilge pump)



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

2-1.2 Cooling water pump (with bilge pump)





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

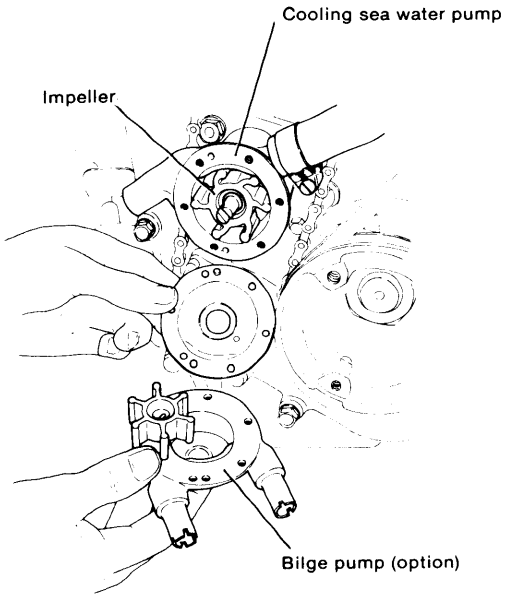
2-1.3 Specifications

mm (in.)

	Water pump	Bilge pump
Rated speed	1400 rpm	
Suction head	1 (39.37)	1 (39.37)
Total head	4 (157.48)	2 (78.74)
Delivery capacity	800 ℓ/hr.	300 ℓ/hr.

2-2 Disassembly

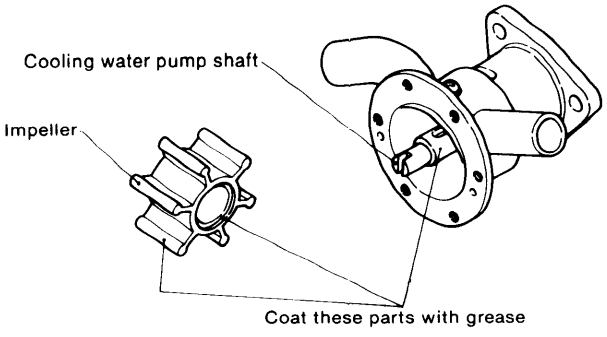
(1) Loosen the set screw and remove the bilge pump ass'y and wear plate. (Remove the pump cover when the engine is not equipped with a bilge pump.)



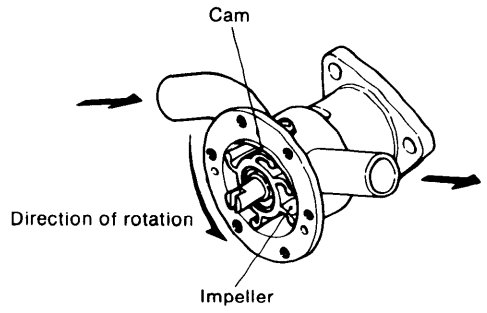
(2) Pull the water pump impeller.
(3) Remove the set screw and remove the offset plate.
(4) Remove the bearing snap ring and remove the impeller shaft and bearing ass'y while tapping the impeller side of the impeller shaft lightly.
(5) Pull the oil seal from the pump body.
(6) Pull the ball bearing and spacer from the impeller shaft.
(7) Remove the impeller and impeller shaft from the bilge pump body as an ass'y. Loosen the set screw and disassemble the shaft and impeller.
(8) Remove the offset plate.
(9) Remove the bushing as far as required.

2-3 Reassembly precautions

(1) Before inserting the rubber impeller into the casing, coat the sliding face, pump shaft and impeller fitting section with grease or Monton X.



(2) Be sure that the direction of curving of the impeller is correct.
The impeller is curved in the direction opposite the direction of rotation.

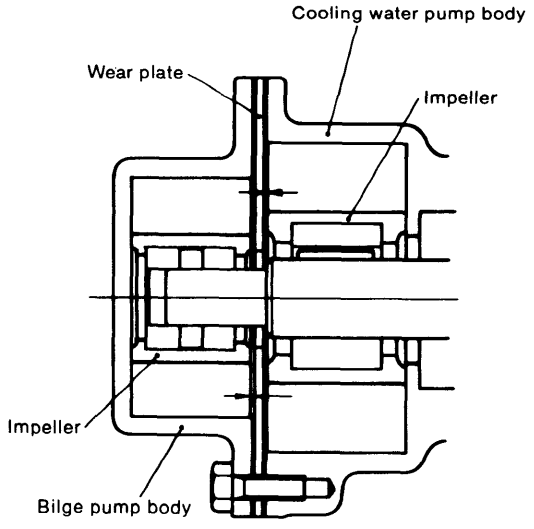


2-4 Handling precautions

(1) Never operate the water pump dry as this will damage the rubber impeller.
(2) Always turn the engine in the correct direction of rotation as turning the engine in the opposite direction will damage the rubber impeller.
(3) Inspect the pump every 1,500 hours of operation and replace if faulty.

2-5 Inspection

(1) Inspect the rubber impeller for fractures, cracks and other damage, and replace if faulty.
(2) Rubber impeller side wear and wear plate clearance.



mm (in.)

		Maintenance standard	Clearance at assembly	Maximum allowable clearance	Wear limit
Water pump	Impeller width	19±0.1 (0.744 ~ 0.752)	0.2 (0.0079)	0.4 (0.0157)	
	Housing width	18.9 (0.7441) (without packing) 19.2 (0.7559) (with packing)			
	Wear plate wear				0.2 (0.0079)
Bilge pump	Impeller width	19 ±0.1 (0.744) ~ 0.752)	0.2 (0.0079)	0.4 (0.0157)	
	Housing width	18.9 (0.7441) (without packing) 19.2 (0.7559) (with packing)			
	Wear plate wear				0.2 (0.0079)

(3) Water pump impeller shaft oil seal section wear.

mm (in.)

	Maintenance standard	Wear limit
Oil seal section shaft diameter	10.0 (0.3937)	9.9 (0.3898)

(4) Inspect the bearing for play and check for seizing at the impeller shaft fitting section. Replace the bearing if there is any play.