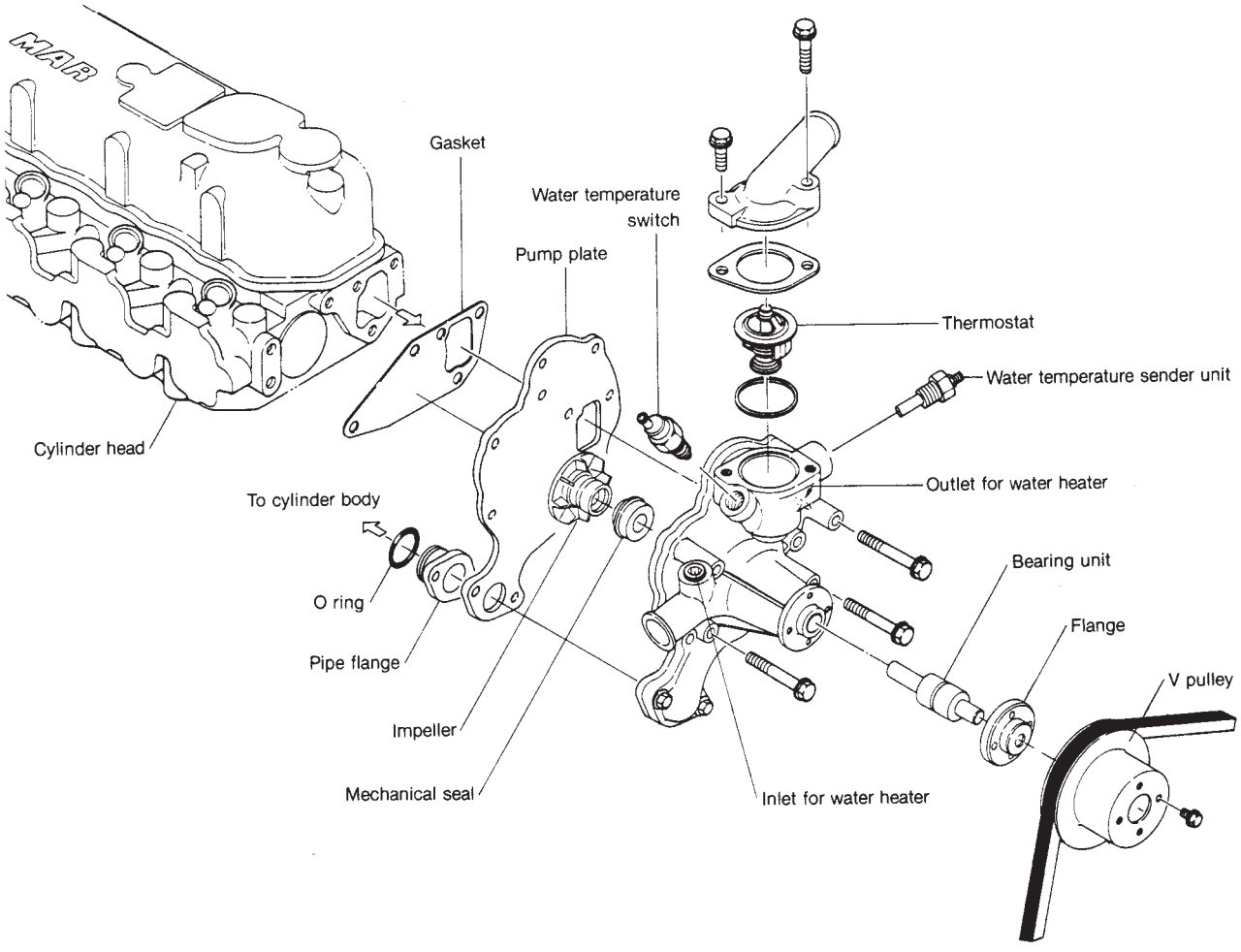
3. Fresh Water Pump

3-1 Fresh water pump construction

The fresh water pump is of the centrifugal (volute) type, and circulates water from the fresh water tank to the cylinders and cylinder head.
The fresh water pump consists of the pump body, impeller, pump shaft, bearing unit and mechanical seal. The V pulley on the end of the pump shaft is driven by a V belt from the crankshaft.
The bearing unit assembled in the pump shaft uses grease lubricated ball bearings and cannot be disassembled.
The totally enclosed mechanical seal spring presses the impeller seal mounted on the impeller side away from the pump body side. This prevents water from leaking along the pump shaft.
As the impeller and pulley flanges are press fit assembled, they cannot be disassembled.



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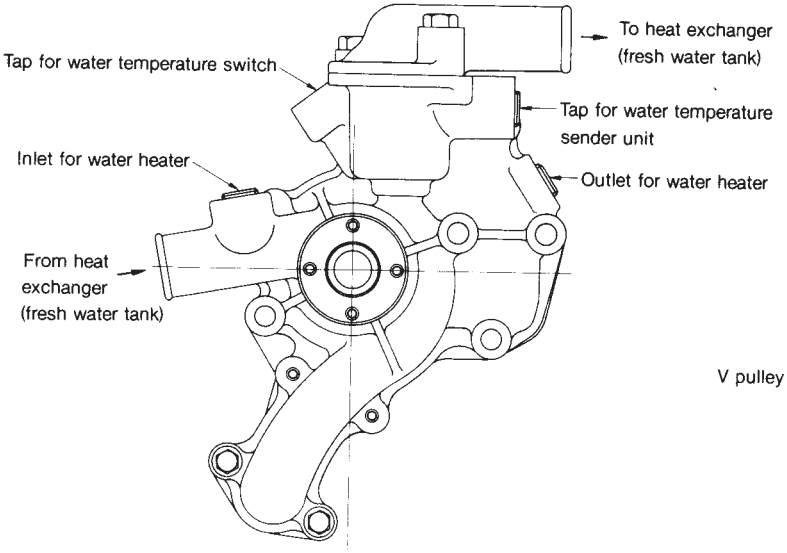

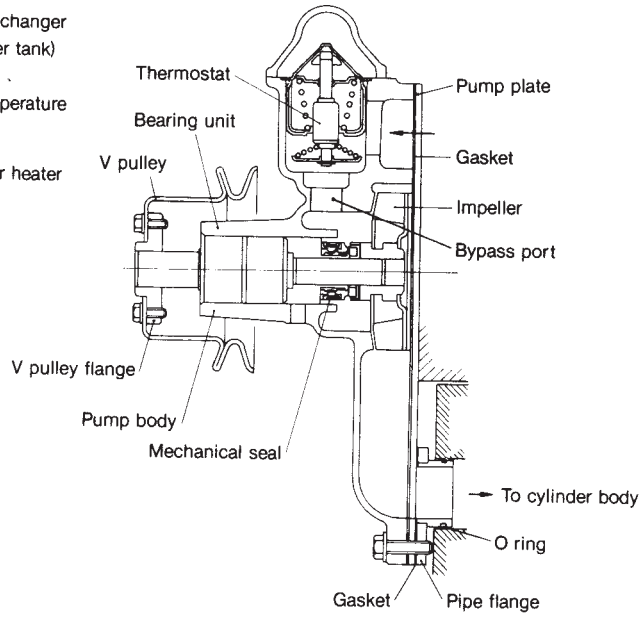

3-2 Specifications of fresh water pump

Crank shaft speed (max.)	3600 rpm
Pulley ratio (crank shaft/pump shaft)	ø134/ø120
Pump shaft speed	4020 rpm
Delivery capacity	86.6 ℓ/min (5284 in.³/min)
Total head	4m (13.12 ft)

3-3 Fresh water pump disassembly

(1) Do not disassemble the fresh water pump. It is difficult to disassemble and, once disassembled, even more difficult to reassemble. Replace the pump as an assembly in the event of trouble.
(2) When removing the fresh water pipe as an assembly from the cylinder and cylinder head, replace the cylinder intake pipe O-ring.
(3) When the fresh water pump body and cylinder intake flange and/or fresh water pump and pump plate are disassembled, retighten to the specified torque.

Tightening torque for pump setting bolts	70 ~ 110 kg-cm (5.06 ~ 7.94 ft-lb)

3-4 Fresh water pump inspection

(1) Bearing unit inspection
Rotate the impeller smoothly. If the rotation is not smooth or abnormal noise is heard due to excessive bearing play or contact with other parts, replace the pump as an assembly.
(2) Impeller inspection
Check the impeller blade, and replace if damaged or corroded, or if the impeller blade is worn due to contact with pump body.
(3) Check the holes in the cooling water and bypass lines, clean out any dirt or other foreign matter and repair as necessary.
(4) Replace the pump as an assembly if there is excessive water leakage due to mechanical seal or impeller seal wear or damage.
(5) Inspect the fresh water pump body and flange, clean off scale and rust, and replace if corroded.
(6) Measure the clearance between the impeller and the pump body, and the impeller and the plate.
Measure the clearance between the impeller and the pump body by pushing the impeller all the way towards the body, and inserting a thickness gauge diagonally between the impeller and the body.
Measure the clearance between the impeller and the plate (pump body bracket) by placing a straight-edge against the end of the pump body and inserting a thickness gauge between the impeller and the straight-edge.

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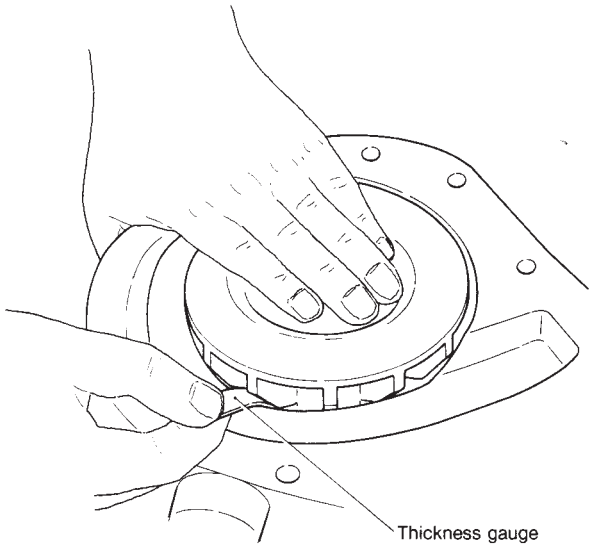
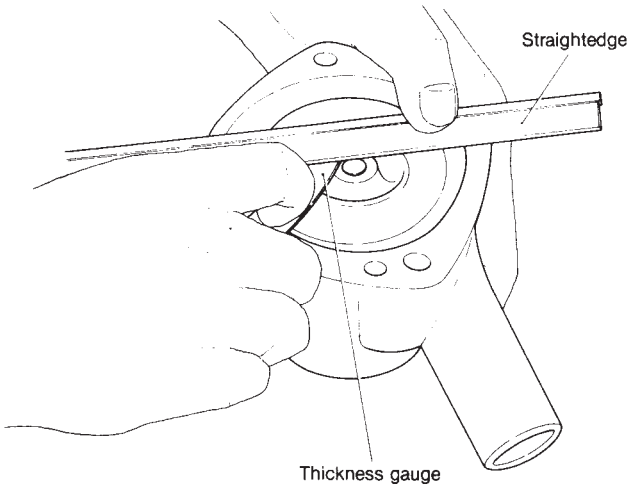
Measuring clearance between impeller and pump body.



Measuring clearance between impeller and pump body bracket.



mm (in.)

	Standard	Wear limit
Clearance between impeller and body	0.3 ~ 1.1 (0.0118 ~ 0.0433)	1.5 (0.0590)
Clearance between impeller and plate	1.5 (0.0590)	—