



7 Quick Reference

Water Pump Failures

Leakage

Location	Symptom	Cause
Weep hole	Foreign material caught in the mechanical seal	<ul style="list-style-type: none"> ● Rusting caused by coolant degradation ● Excess sealant (RTV) entered the water pump cavity
	Rough surface of the mechanical seal	<ul style="list-style-type: none"> ● Rust caused by coolant degradation ● Insufficient cleaning of the radiator
	Burned mechanical seal	<ul style="list-style-type: none"> ● Engine started without coolant
	Fracture	<ul style="list-style-type: none"> ● Excessive pulley tension
Mounting surface	Contamination (dirt/grime)	<ul style="list-style-type: none"> ● Insufficient removal of the sludge on the engine mounted surface
	Installation error	<ul style="list-style-type: none"> ● Damage/deformation of the mounting surface ● Sealant (RTV) applied unevenly ● Bolts tightened unevenly
	Fractured/deformed gasket	<ul style="list-style-type: none"> ● Gasket damaged in shipping ● Bolts tightened unevenly or an impact wrench was used
Body fracture	Cavitation	<ul style="list-style-type: none"> ● Coolant degradation ● Insufficient air bleeding ● Insufficient flushing of the radiator
	Blowhole	<ul style="list-style-type: none"> ● Cast failure
	Mounting screw fracture	<ul style="list-style-type: none"> ● Bolts were tightened excessively

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Abnormal noise

Location	Symptom	Cause
Bearing	Noise: Rumbling Locked bearing	<ul style="list-style-type: none"> ● Bearing fracture caused by excess belt tension ● Bearing fracture caused by excess vibration of the fan coupling pulley
Mechanical seal	Noise: Whining	<ul style="list-style-type: none"> ● Dry turning of the pulley caused carbon residue to form on the ceramic block ● Engine started without coolant
Pulley	Noise: Squeak	<ul style="list-style-type: none"> ● Slipping belt (insufficient belt tension)

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Others

Location	Symptom	Cause
Impeller crimp	Damaged crimp	<ul style="list-style-type: none"> ● Corrosion caused by coolant degradation ● Insufficient flushing of the radiator
Impeller corrosion	Impeller wear/corrosion	<ul style="list-style-type: none"> ● Corrosion caused by coolant degradation ● Insufficient flushing of the radiator
Run-out of the pulley bearing	Pressure Leak	<ul style="list-style-type: none"> ● Excessive runout of the fan coupling pulley ● Contamination (dirt/grime) on the mounting surface ● Sealant (RTV) applied unevenly