

Water Pump Catalog



The YAMADA brand is a testament to the technology to
"Create" the future Bringing joy to people and the earth
with the "CHIENOWA"

2022

Yamada Manufacturing Co., Ltd.

Contents

- I . Structure and Components
- II . Handling instructions
- III . Failure Cause and Prevention
- IV . Trouble shooting
- V . Water Pump Applications
- VI . Warranty



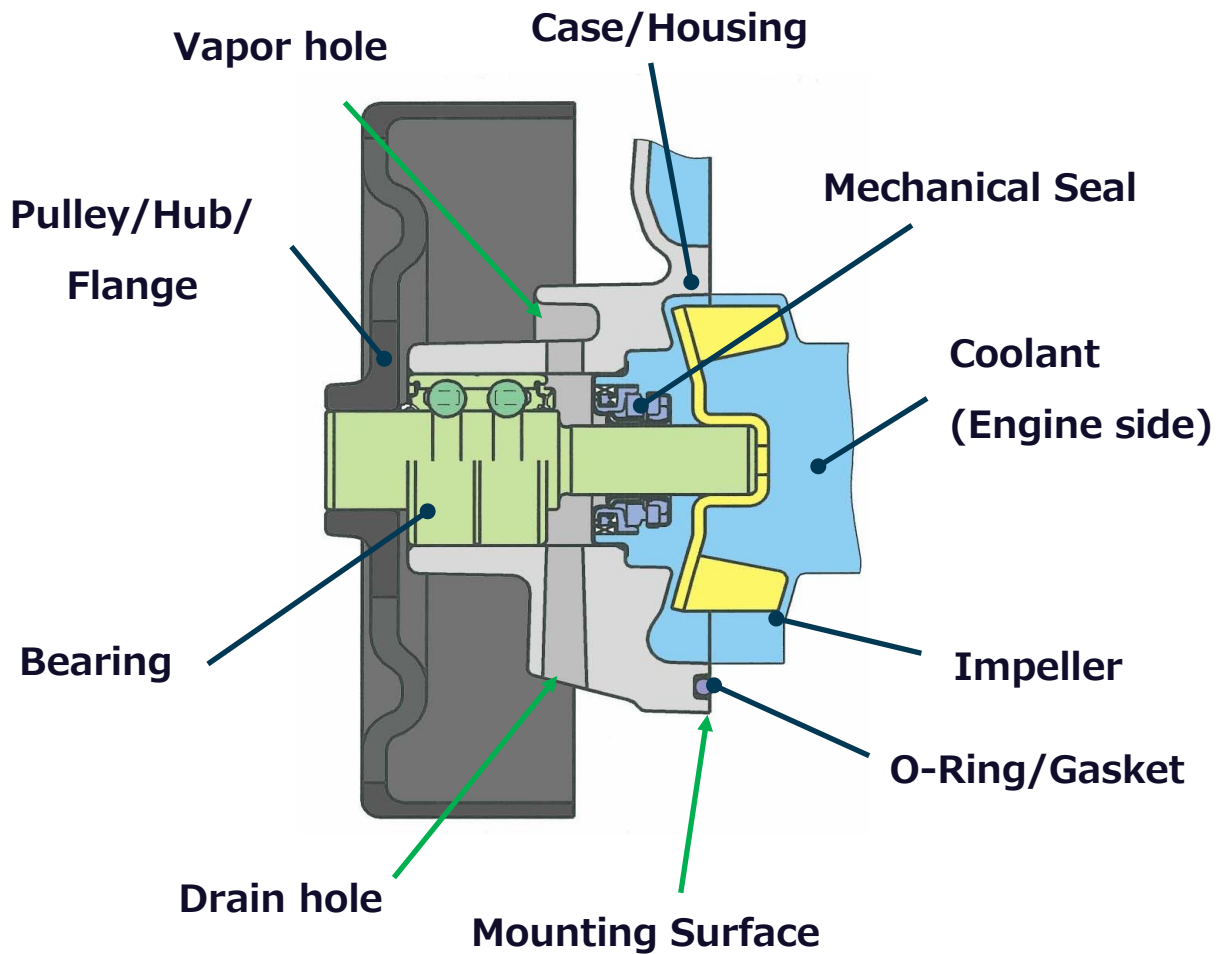
Yamada Manufacturing Co., Ltd.

Since its establishment in 1946 at Japan, YAMADA has continued to untiringly take up challenges in pursuit of world-class products while working with functional parts including mainly oil pumps, water pumps, and various other pumps for cars and motorcycles, steering-related parts, and transmission-related parts. YAMADA water pumps are supplying to automotive manufactures across the world. Entering to the aftermarket sector in the year of 2022, we deliver our own designed and manufactured products with the highest quality to our customers.

<IMPORTANT NOTICE>

Any information described in this brochure is the information coming from the research done by ourselves. However, if there is an error happened to be found in any case, we are not fully accountable this negligence. Please use name(s) of manufacture and part number(s) for genuine products at a placement of purchase order as your reference only.

I . Structure and Components



Water pump is playing a role to maintain an appropriate temperature as to synchronize rotation of an engine and then transmit power to support belt for a circulation of coolant. Mechanical seal is a part that stop preventing coolant leak, and it is well structured as to shut with a minute liquid film developing its components between rotation ring and rigid ring. Drain hole discharges coolant and contamination coming out from a tiny gap on mechanical seal. Steam hole protects bearing by discharging coolant turning out to become high temperature steam. Bearings are designed to endure tension of support belt and to keep maintaining smooth rotations.

II. Handling instructions

WARNING!!

Ensure to fully understand the below instructions prior to handling a water pump properly. Inappropriate use of water pumps will lead into a machine failure of engine to unsatisfy the complete performance of its function.

1. Prohibit dry running

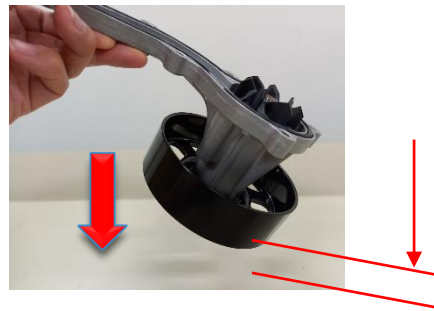
Warning!!



Triger water leak if surface of both rotation ring and rigid ring inside of mechanical seal runnning without having coolant.

2. Do not drop

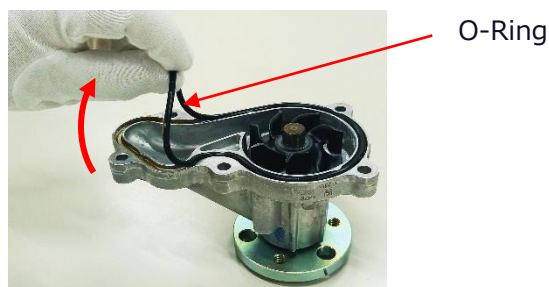
Warning!!



Lead to a damage of bearing dropping from very slight height though.

3. Do not remove O-Ring/Gasket

Warning!!



Do not remove a O-Ring/Gasket being attached on a case and just directly assemble it to an engine. Cause water leak if re-attached.

WARNING!!

◆ Precaution in Replacing Water Pump

Ensure to follow the repair instruction for a replacement of water pump properly. An error to follow wrong sequence in instructions results a potential engine failure and injury. Water pump is classed as a consumable part, so strongly encourages to replace water pump periodically.

- ★ Do not use liquid gasket together with a water pump having O-Ring used because of causing water leak.
- ★ Ensure to meet the required value described in automorive manufacture's repair manufal when tighten up both pulley and water pump.
- ★ Reuse of coolant ends up to cause water leak and cavitation, and therefore, replace to a new one.
- ★ Reuse of both pulley and bolt cause potential pulley's runout and lose strength in bolt comparing to bland new ones, so recommend to replace to new ones.

III. Failure Cause

Failure : Leakage

Location	Symptom	Cause
Drain Hole	Foreign material stuck to mechanical seal	Foreign material mixed in coolant (not enough washing interior engine at a replacement of coolant) Reuse coolant
	Rough sliding surface of mechanical seal	Use non-standard coolant Reuse coolant
	Mechanical seal rubber melting	Overheat caused by non-use of coolant (abnormally heat up)
	Damage mechanical seal	Increase in runout on pulley and bearing caused by overly stretched belt tension
Water Pump Case	Crack	Tighten up with non-standard excessive torque External force led by falling
	Cavity	Die casting defect
	Cavitation erosion	Use not recommended, deteriorated coolant Use under abnormally high rotation (Ex. exceeding red zone) Radiator top break (Inappropriately holding pressure)

Failure : Abnormal Noise

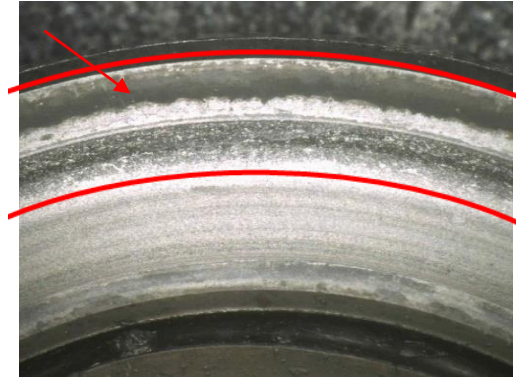
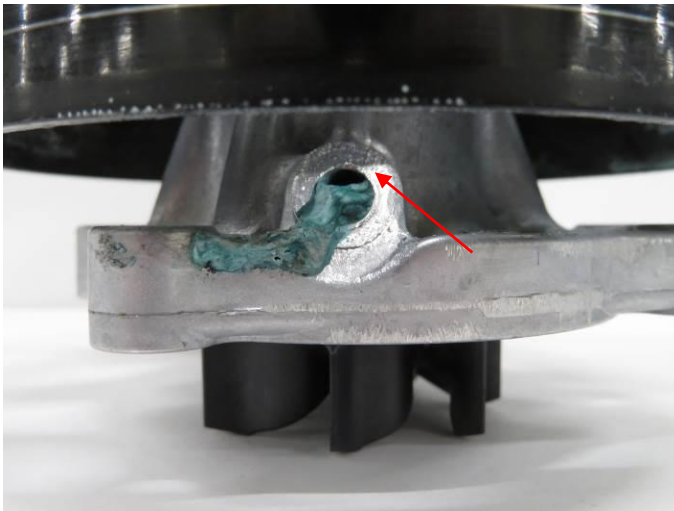
Location	Symptom	Cause
Water Pump	Bearing Noise	Nick, dent on rolling surface caused by falling Non-standard belt tension
	Mechanical Seal Noise	Mirroring of sliding surface from dry running. Mirroring of sliding surface by using low concentrated coolant.
	Belt Noise	Sliding contact and belt surface of pulley caused by worn belt Non-standard belt tension

Failure : Other

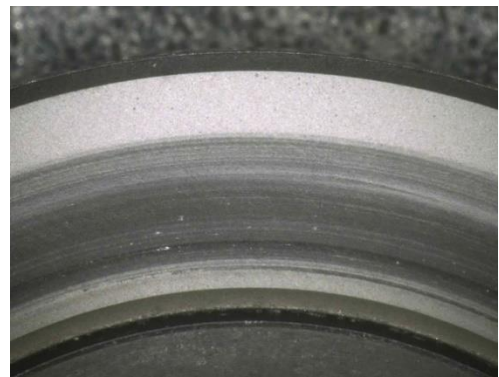
Location	Symptom	Cause
Water Pump	Impeller damage	Clash with foreign material staying in coolant (sand, contamination) (Lack of washing interior engine at a replacement of coolant)
	Impeller cavitation	Use of non-recommended coolant, reuse•deteriorated coolant Use under abnormally high rotation (Ex. exceeding red zone) Radiator top break (Inappropriately holding pressure)
	Pulley damage	Excessive belt tension Reuse deteriorated pulley and bolt

IV. Trouble shooting

Leakage : Mechanical Seal Ring damaged



Abnormal



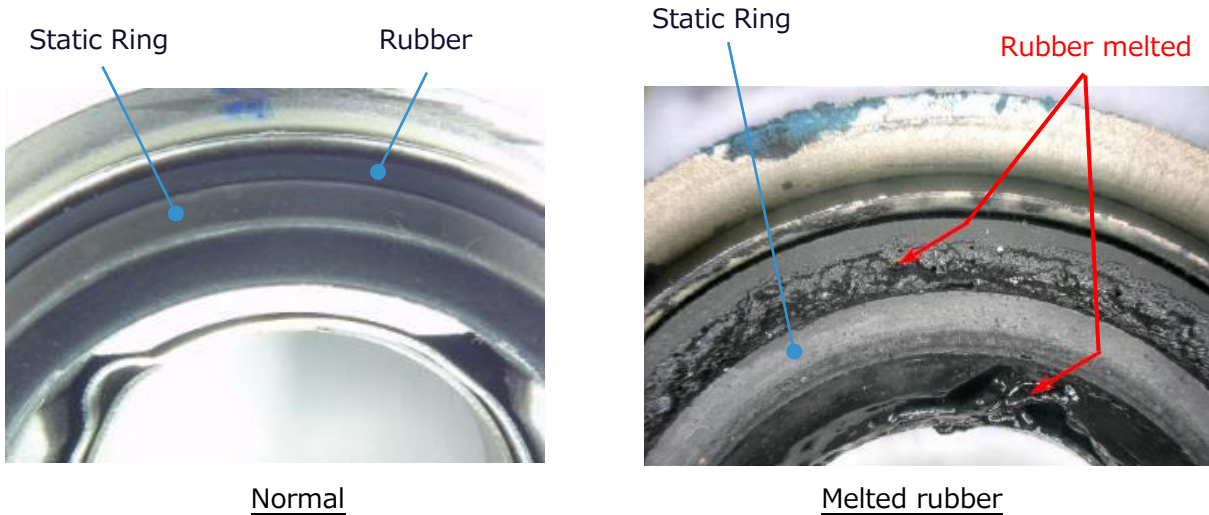
Normal

Damage sliding surface of both rotation ring and rigid ring on mechanical seal caused by use of deteriorated coolant. As a result, lead water leak.

◆ Countermeasure

- ✓ Clean mounting surfaces of interior engine and pump at a replacement of coolant (clean mounting surface without leaving any contamination).
- ✓ Prohibit re-use of coolant
- ✓ Prohibit use of liquid gasket (staying in coolant turns out to become contamination).

Leakage : Mechanical Seal Rubber melted



Abnormal heat happens not enough cooling from long hours of dry running (No or not enough coolant). Lead water leak from melted rubber inside of mechanical seal.

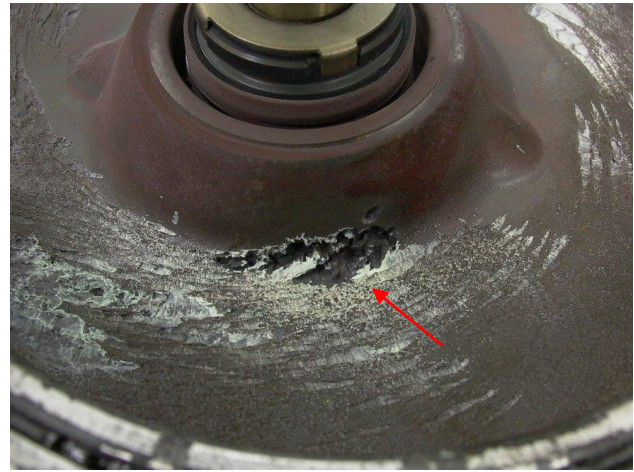
◆ Countermeasure

- ✓ Fulfill cooling water with the specified amount (ensure to perform air bleeding)
- ✓ Prohibit reuse of coolant
- ✓ Prohibit to use low concentration coolant

Cavitation



Impeller : Cavitation



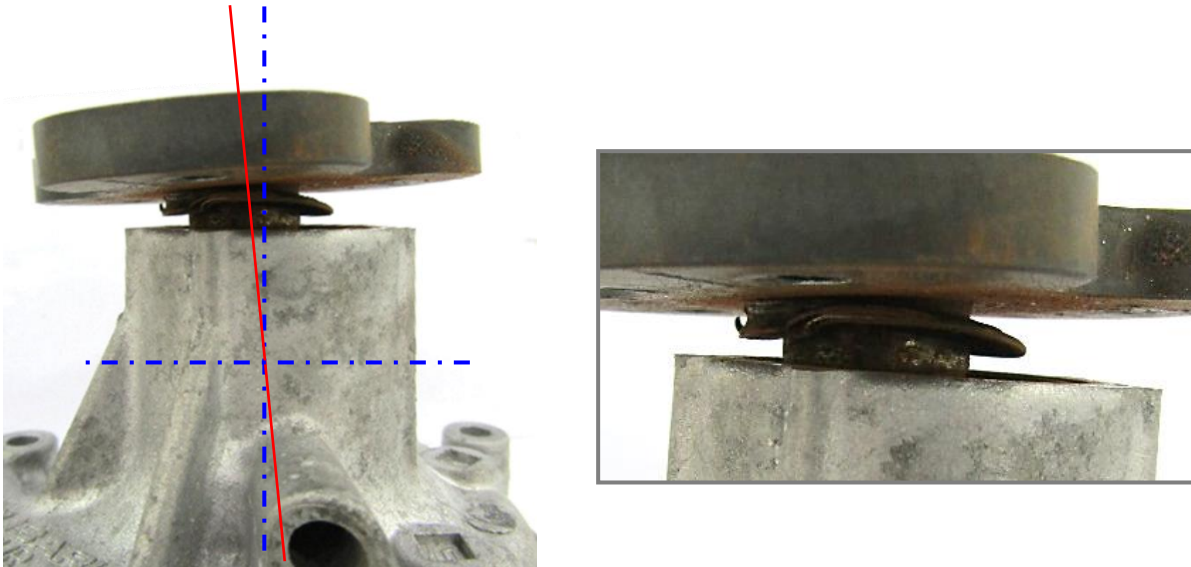
Case/Housing : Cavitation

Generate cavitation using deteriorated coolant. As to progressively accelerate cavitation, unable to circulate coolant due to damage of impeller will lead to overheat. Also as to progress cavitation on CASE, consequently to make holes on CASE and high temperature cooling water running outside to cause a critical condition.

◆ Countermeasure

- ✓ Fulfill cooling water with the specified amount (ensure to perform air bleeding)
- ✓ Prohibit reuse of coolant
- ✓ Prohibit to use low concentration coolant
- ✓ Prohibit any modifications not recommended by automotive makers.

Abnormal : Bearing damaged



Damaged bearing

As the end result of using repeatedly fallen water pump, dent of its bearing getting expanded and bearing gets damaged, happens abnormal noise from large runout, support belt comes off and cannot cool down leading to overheat.

◆ Countermeasure

- ✓ Do not drop water pump
- ✓ Do not hit pulley and flange with hammer etc. to give any shock.

V. Water Pump Applications

◆ SUBARU/TOYOTA

O.E. Parts #	Vehicle	YAMADA Parts #
21110AA770	Ascent 2.4L / 2019~ Crosstrek 2.5L / 2020~ Forester 2.5L / 2019~ Legacy 2.4L / 2020~ Legacy 2.5L / 2020~ Outback 2.4L / 2020~ Outback 2.5L / 2020~ WRX 2.4L / 2022~	FWS010*
21110AA740	Crosstrek 2.0L / 2018~ Impreza 2.0L / 2017~	FWS020*
21110AA710	Forester 2.0L / 2014~2018 WRX 2.0L / 2015~2021	FWS030*
21110AA720	Crosstrek HYBRID 2.0L / 2014~2016	FWS040*
21110AA690	BRZ 2.0L / 2013~2020 Crosstrek 2.0L / 2013~2017 Forester 2.5L / 2011~2018 Impreza 2.0L / 2011~2016 Legacy 2.5L / 2013~2019 Outback 2.5L / 2013~2019	FWS050*
SU003-00401 (TOYOTA)	86 2.0L / 2017~2020 FR-S 2.0L / 2013~2016	

*Includes O-Ring/Gasket.

FWS010*



FWS020*



FWS030*



FWS040*



FWS050*



-

Coming soon for new products

*Includes O-Ring/Gasket.

VI. Warranty

WARRANTY

YAMADA warrants its products to be free from defects in materials or manufacturing in accordance with the following terms.

◆Warranty period

The warranty period is for 12 months or 12,000 miles, from the date the product is delivered.

◆Warranty coverage

Warranty coverage of defects in materials or manufacturing shall be limited to a refund of the purchase price or replacement. YAMADA will not be liable for incidental loss, damages or injury to persons.

Our warranty does not apply in any of the following circumstances.

- When products are not installed and used in strict conformity with specifications
- When products have been altered
- When products are damaged by accident, negligence or misuse

YAMADA reserves the right to examine all parts returned to it for warranty claim to determine whether or not any such part has failed because of a defect in material or manufacturing.

◆Bill to

Any Products for warranty claim must be returned through the distributor from whom they were purchased. Such Products must be accompanied by a warranty card included with the product and an explanation of circumstances and conditions under which they failed. Regardless of whether Products have failed because of a defect in material or manufacturing, transportation charges on the return of such Products must be prepaid by the customer.





Notes.

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つくる。
Creating
*the Desired.*TM



Yamada Manufacturing Co., Ltd.

<https://www.yamada-s.co.jp/english>

Contact