



# **Centrifugal Pump Warranty Guide**

The purpose of this guide is to help identify pump problems, their cause, and suggest ways to prevent recurrence. Ace Pump Corporation is an ISO 9001:2000 certified company which strives to maintain the highest level of product quality and reliability. All pump assemblies are tested prior to shipment.



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## MECHANICAL SHAFT SEALS

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A mechanical shaft seal is made up of a stationary face and a rotating face. The two seal faces mate together to form a barrier between the liquid inside the pump and the air outside. A thin layer of the pumped liquid is always between the two faces to lubricate and cool the seal. A seal with defects in the face or other components will typically leak at startup. A seal leak that develops after some period of use is normally caused by an application related factor.

### Pump Leaks at Startup

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Liquid leaking from the pump castings or seal area may be caused by one of the following:

- casting porosity or defect
- seal or o-ring damaged during assembly
- part not machined properly

**Warranty:**    ✓Yes                      No

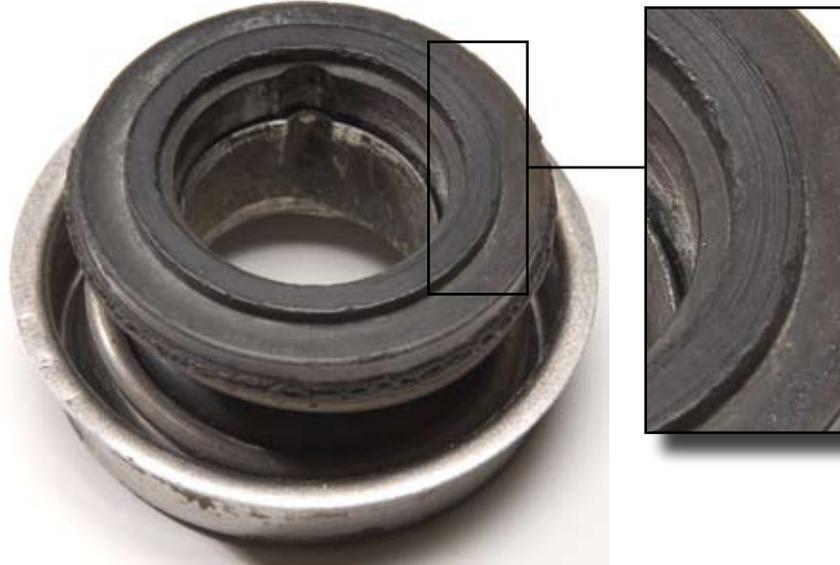
### Abrasive Shaft Seal Failure

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Abrasive wear is the most common cause of seal leaks. It is caused by small particles in the solution passing between the seal faces and scratching the surface.

**Look For:**

Abrasive wear is evident by grooving or scratching of the seal faces (most commonly the black carbon face). The seal surface must have a polished reflective surface to seal properly.



**Prevention:** Abrasive wear can be avoided by flushing the pump with clean water after each use. An optional silicon carbide shaft seal is also available for most pump models. The silicon carbide seal faces are much harder than the carbon and resist scratching. Granular chemical formulations should be added slowly so they will mix and dissolve before passing through the pump.

**Warranty:**                      Yes                      ✓No

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## MECHANICAL SHAFT SEALS (Continued)

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### Run Dry Seal Failure

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This occurs when the pump is operated without enough liquid to lubricate and cool the seal faces.

**Look For:**

In the standard seal, the ceramic face experiences thermal shock when cool liquid contacts the hot face causing cracks.



The silicon carbide material is harder and generates heat more quickly. It is resistant to thermal shock. Instead, the Viton<sup>®</sup> cup around the seal face melts resulting in leakage.



**Prevention:** These failures can be avoided by mounting the pump low on equipment to ensure a flooded suction, venting trapped air from the pump, and not emptying the spray tanks completely.

**Warranty:**            Yes                    ✓ No

### VENT LINE INSTALLATION

A 1/4" line is recommended to help vent air from the pump casing each time the tank is filled. The vent line should run from the highest pipe plug on the volute face back to the top of the tank. The line must slope consistently up going back to the tank. Any droops in the line may cause air lock and prevent proper function. The vent line also serves to cool the pump in restricted flow situations.

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## HYDRAULIC MOTORS

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### Oil Leak at Startup

Oil leaking from the motor housing or seal area may be caused by one of the following:

- casting defect
- seal or o-ring damaged during assembly
- part not machined properly

**Warranty:**    ✓Yes                      No

### Shaft Seal Leak

Hydraulic fluid leaking from the shaft seal after some period of use is normally caused by an application related factor. The most common causes are 1) high back pressure in the return line and 2) pressure spikes.

#### 1) High Back Pressure in the Return Line

This is the most common cause of shortened motor seal life. The hydraulic motor seal is rated for 250 psi of back pressure. However, a continuous return pressure of 100 psi or less is recommended for efficient operation and optimum seal life. The high return pressure is caused by restrictions in hoses, fittings, and tractor plumbing.

**Look For:**

Seal lips pressed tight against the outer seal housing and shaft. There may also be grooves in the shaft where the seal lips touch.



**Prevention:** The best way to minimize return pressure is to return oil directly back to the tractor reservoir. Most tractor manufacturers now offer a Low Pressure Return Port option for this purpose. Contact your dealer for the specific options available for your tractor model. Proper hydraulic hose sizing is also important to minimize restriction. An open hose coupling may also be used to reduce restrictions in the return line. Ace recommends 1/2" hose for 200 Series motors and 3/4" hose for 300 series motors. The hoses should be sized larger if individual lengths exceed 15 feet.

See these Application Updates for setup instructions and low pressure return kits for specific tractor models:

Update 4 - Case-IH Magnum & Maxxum

Update 6 - John Deere 6000 & 7000 Series

Update 8 - Ford Genesis and Ford Versatile

Update 9 - John Deere 8000 & 9000 Series

**Warranty:**    Yes                      ✓No

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## HYDRAULIC MOTORS (Continued)

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### 2) Pressure Spike

System pressure spikes may also damage the shaft seal and cause leakage. Spikes in the 3000-5000 psi range may result from improperly synchronized hydraulic valves or quick couplers coming unplugged during operation.

**Look For:**

The seal lips are pressed tight against the outer seal housing and form a right angle between the seal housing and the shaft. In severe cases, the seal lip material may be extruded between the front seal casing and the shaft.



**Prevention:** Using a Low Pressure Return Port prevents spikes by keeping the return line open back to the reservoir at all times. If not using a low pressure return, the pump should always be turned off by moving the lever to the Float position. When moved to Float, the oil supply valve is shut but the return valve stays open.

**Warranty:** Yes            ✓ No

### Excess Hydraulic Flow

Ace hydraulic motors are high efficiency gear type motors designed to operate in a specific range of oil flows. Failure will result if the rated flow of a motor is exceeded during operation. The damage may vary depending on the length of operation and amount of oil flow. Damage can range from reduced performance and efficiency to motor seizure.

**Look For:**

Scoring on the end and drive plates in the gear path indicates the gears have expanded due to excessive heat. Heat discoloration of the motor shaft in the seal area also indicates the motor has been running at higher rpm than rated.



**Prevention:** Determining the tractor's hydraulic system type and following the proper setup procedures is the best way to avoid this failure. Consult our [Tractor Hydraulic System Selection Guide \(HSG\)](#) printed or online at [www.AcePumps.com](http://www.AcePumps.com) for specific tractor information and setup procedures.

The Flow Limiter is recommended for use with pumps mounted on tractors with Load Sensing Hydraulic Systems. The flow limiter stops the flow of oil to the hydraulic motor if the motors rated flow is exceeded. This valve reminds the operator that the flow must be adjusted each time the sprayer is connected. Please consult Ace Form [FLOW LIMITER](#) for available sizes and installation instructions.

**Warranty:** Yes            ✓ No

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## PTOC PUMPS

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### Belt Comes Off

The belt coming off is typically an indication that the pulley alignment has shifted or the idler arm movement is restricted. The alignment of new pumps may be affected by rough handling in shipment.

**Look For:**

Rotate the large pulley back and forth while watching the belt tracking on the idler roller. If the belt shifts on the roller when you change directions, the pulleys need alignment. See alignment procedure in box below. Check the idler arm for rust or restricted movement.



**Prevention:** Check alignment periodically as detailed above. Grease the idler arm once a week during spraying season and prior to winter storage.

**Warranty:** Yes      ✓ No

### Pulley Misalignment

If the pulleys are slightly misaligned, the belt will track to one side of the pulleys causing belt damage. This is a less severe version of the issue above.

**Look For:**

A worn or frayed belt on one edge.



**Prevention:** Check alignment periodically as detailed above. Grease the idler arm once a week during spraying season and prior to winter storage.

**Warranty:** Yes      ✓ No

#### PTOC PULLEY ALIGNMENT:

- ① Rotate the large pulley back and forth by hand while watching belt tracking on the idler roller - if the tracking shifts when belt travel direction is reversed the pulleys are out of alignment
- ② Loosen the two set screws on the BAC-29 pump pulley
- ③ Reposition the BAC-29 pulley on the pump shaft until no shift is visible when the direction is reversed
- ④ Tighten the set screws

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## MISCELLANEOUS

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### Casting Erosion

This occurs when the pumped chemical attacks the cast iron housing. The cast material is removed from the inside surfaces of the pump resulting in thin spots and leaks. The first external sign is typically a leak at one of the pipe plugs.



**Look For:**

A dull gray color on the inside of the pump casing with wear particularly inside the volute face and water channel.



**Prevention:** If the failure occurs in a short period of time, there is a chemical compatibility issue with cast iron. Other pump materials such as e-coated cast iron or stainless steel should be considered. Call for availability and additional information.

**Warranty:**    Yes                    ✓ No

## STANDARD WARRANTY

Ace pumps and valves are guaranteed against defects in material and workmanship for a period of one year from date of installation. Products or parts found to be defective upon inspection at the factory will be repaired or replaced at our discretion.

Ace Pump Corporation shall not be held liable for damages caused by abuse or misuse of the product or parts. No claim for labor in repairing or replacing such products will be allowed nor will loss of time or inconvenience be considered warranty obligations.

**IMPORTANT:** Pumps or valves returned for warranty consideration which are tested and found to perform within specifications are subject to an inspection charge.

### PLEASE NOTE EXCEPTIONS

1. All seals are covered against defects in materials or workmanship. Seal failures resulting from application related conditions are not covered. Most seal failures are due to application conditions such as: (1) abrasive solution scratching the polished seal faces; (2) chemical attack on elastomers or glue; (3) thermal shock from running pump dry or improper priming; (4) failure to flush chemical from pump after use.
2. Gasoline engines are covered by the engine manufacturer's warranty. Engines submitted for warranty consideration should be returned to the nearest authorized engine repair station. **DO NOT RETURN ENGINE TO ACE PUMP CORPORATION.** If unable to locate nearest engine repair station, consult Ace for referral.
3. On Ace belt driven centrifugal pumps, belt alignment is not to be considered as covered by warranty. Misalignment can occur in transit and is easily corrected at point of installation.
4. Repair requests under the above categories will not be considered warranty, and current repair and transportation charges will apply.

### PROCEDURE

To return pump, valve, or part for warranty consideration, please call Ace Pump at 901-948-8514 and request a Returned Goods Authorization (RGA) number. Please request one RGA number for each pump or valve. Provide the part number of the item being returned along with the reason for return. Be specific when describing the nature of the defect. Include this information in the box along with a customer contact name, phone number, and return address. Ship pump prepaid freight. Package pump in original packaging or similar to prevent damage in shipment. Warranty determinations will be made after the product has been received and inspected.

This warranty is in lieu of all other warranties, express or implied, and Ace Pump Corp. does not authorize any other person to assume for it any obligation or liability in connection with the sale of said pumps, valves, or any parts thereof.

**WARNING:** Pumps returned to Ace must be free of chemical hazard. Chemicals must be neutralized and thoroughly rinsed. Pumps with indications of active chemical will not be considered for repair or warranty.