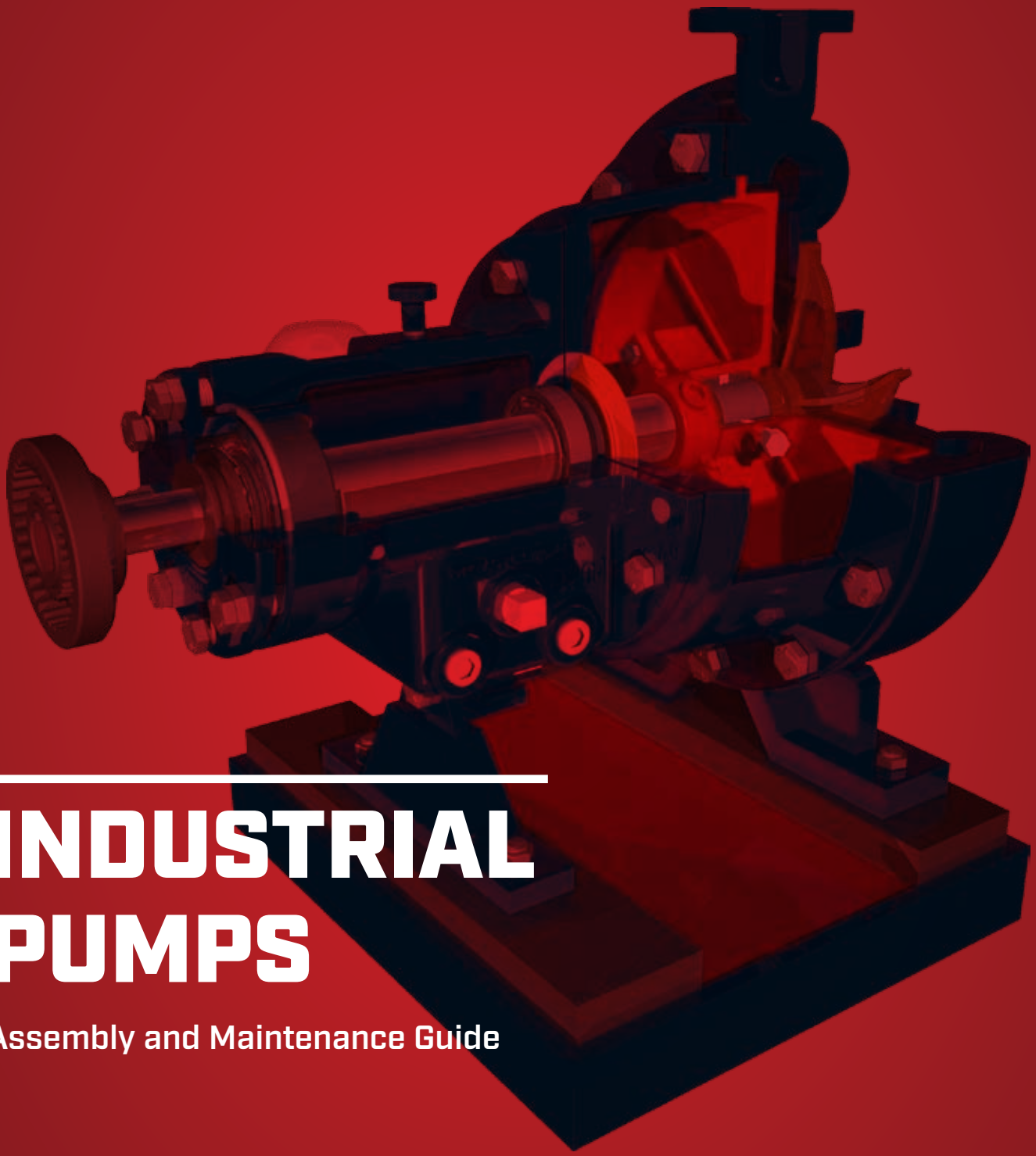
LOCTITE®

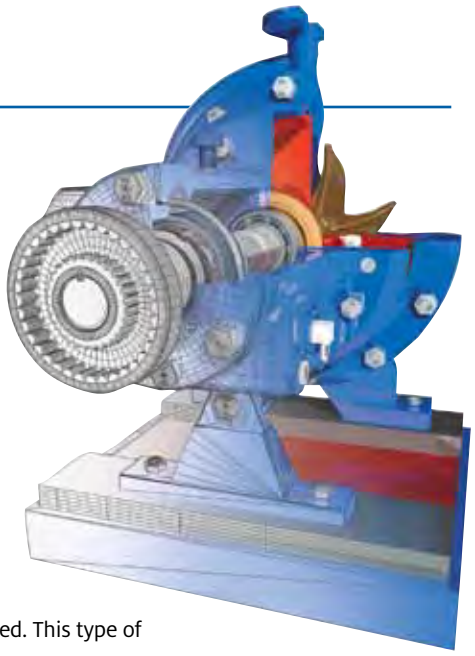


INDUSTRIAL PUMPS

Assembly and Maintenance Guide

Henkel

Preface



This guide has been developed to assist personnel who manufacture and service industrial centrifugal pumps in achieving their goals of pump reliability, longevity and cost reduction.

Most industrial centrifugal pumps carry a significant capital equipment value and it is therefore important to extend their useful lives and ensure that they run efficiently and reliably. Proactive maintenance can reduce the risk of breakdowns and increase pump reliability and longevity. Without proactive maintenance, some pump failures may go unnoticed until there is the inevitable breakdown.

Pump breakdowns can have significant negative impact, such as a stop in production and the cost of a broken piece of capital equipment. Many of these breakdowns are the result of simple, needless failures, such as the loss of clamp load between two assemblies caused by a loose fastener. This loss of clamp load could lead to misalignment and ultimately cause bearing failure. Taking some proactive steps can reduce the risk of this occurrence and can help extend the mean time between failure (MTBF).

LOCTITE® brand products have been helping OEMs around the world prevent common failures and extend end-product life. These same technologies are used by the people who maintain equipment.

Various LOCTITE® brand products can be used in all stages of pump maintenance:

- Assembly
- Installation
- Repair
- On-going maintenance
- Disassembly

The use of LOCTITE® brand products in a proactive maintenance program can:

- Prevent common failures, both major and minor
- Allow for the recycling of parts to avoid scrap and replacement costs
- Assist in disassembly
- Help ensure reliability and a consistent running condition

To highlight the common failures, challenges and LOCTITE® product solutions, a common Goulds 3196 pump was used. This type of pump is very common, has been an industry standard, and is manufactured by one of the leaders in the pump industry.

The environments in which these pumps operate, not necessarily pump construction, can affect pump operation and efficiency and present challenges to end users. We chose the Goulds 3196 to demonstrate the solutions to these common challenges. Similar solutions will apply to other types and brands of centrifugal pumps. **Contact your local Henkel representative for your specific applications.**

PART 1: PUMP ASSEMBLY

During the assembly of a pump there are many simple steps that can be taken to help reduce or eliminate common failures and that will also make future disassembly much easier. The following sections will discuss proven reliability applications and techniques starting with the bearing housing of the common 3196 end-section centrifugal pump all the way through to the final assembly of the pump casing, attaching the coupling and grouting the base.

PART 2: PUMP REPAIR

Repairs are a critical element to pump maintenance. Because of the harsh environments and operating parameters, pump parts are subject to wear, erosion, corrosion, leaks, etc. In addition to preventative measures, LOCTITE® brand products can be used to restore pump parts. Alternative solutions such as scrap and replacement or the use of other repair technologies may be too costly. Using LOCTITE® brand products to restore parts is a very cost-effective solution because users can be assured of the consistent quality, performance, availability and support that is provided and expected from Henkel Corporation.

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Industrial Pump Applications

Prevent fretting and corrosion while securing bearings
LOCTITE® 641™ Retaining Compound

Prevent rust and seizure of power end bolts
LOCTITE® LB 8023 Marine Grade Anti-Seize

Prevent key wallow
LOCTITE® 243™ Medium Strength Threadlocker
Repair key wallow
LOCTITE® 660™ Retaining Compound

Prevent set screws from working loose
LOCTITE® 222™ Threadlocker or
LOCTITE® 243™ Threadlocker
(depending on fastener size)

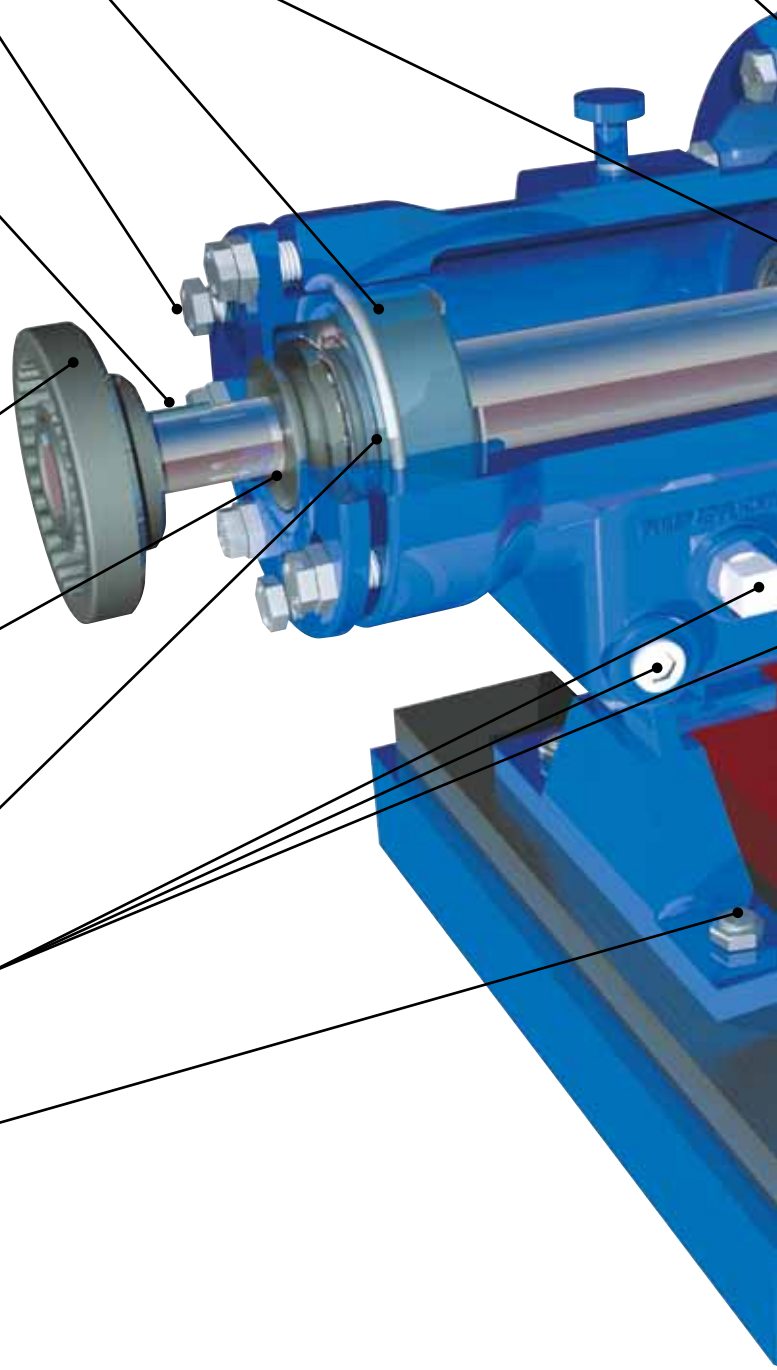
Secure and prevent leakage between oil seals and housing
LOCTITE® 243™ Medium Strength Threadlocker or
LOCTITE® 248™ Medium Strength Threadlocker

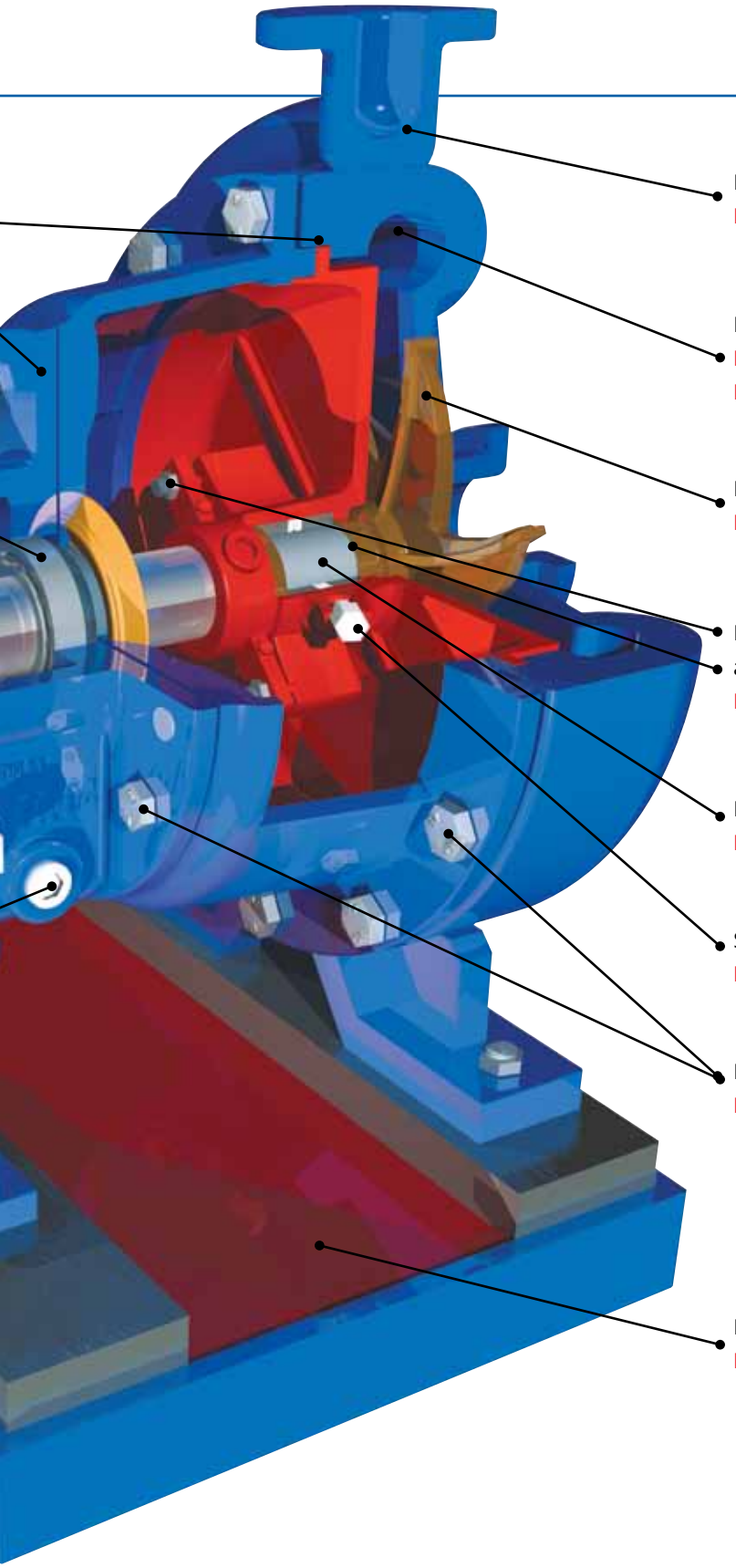
Lubricate and prevent damage to O-rings
LOCTITE® LB 8034 High Performance Synthetic Grease

Seal threaded fittings
LOCTITE® 567™ Thread Sealant with PTFE

Keep mounting bolts tight
LOCTITE® 263™ High Strength Threadlocker

Make any size gasket
LOCTITE® 518™ Flange Sealant





Protect pump against chemical attack and erosion
LOCTITE® PC 7319 Chemical Resistant Coating

Rebuild and protect worn volutes
LOCTITE® PC 7355 Wearing Compound and/or
LOCTITE® PC 7333 Brushable Ceramic

Restore, coat, and protect impeller vanes
LOCTITE® PC 7333 Brushable Ceramic

Prevent corrosion and seizure of gland assembly nuts
and seizure of the impeller to the shaft
LOCTITE® LB 8023 Marine Grade Anti-Seize

Rebuild worn shafts
LOCTITE® PC 3478 Superior Metal

Seal and protect flushing connectors
LOCTITE® 567™ Thread Sealant with PTFE

Prevent corrosion and secure casing bolts and adapter bolts
LOCTITE® 243™ Medium Strength Threadlocker

Provide a solid mounting base
LOCTITE® PC 9626 Deep Pour Grout

PUMP ASSEMBLY

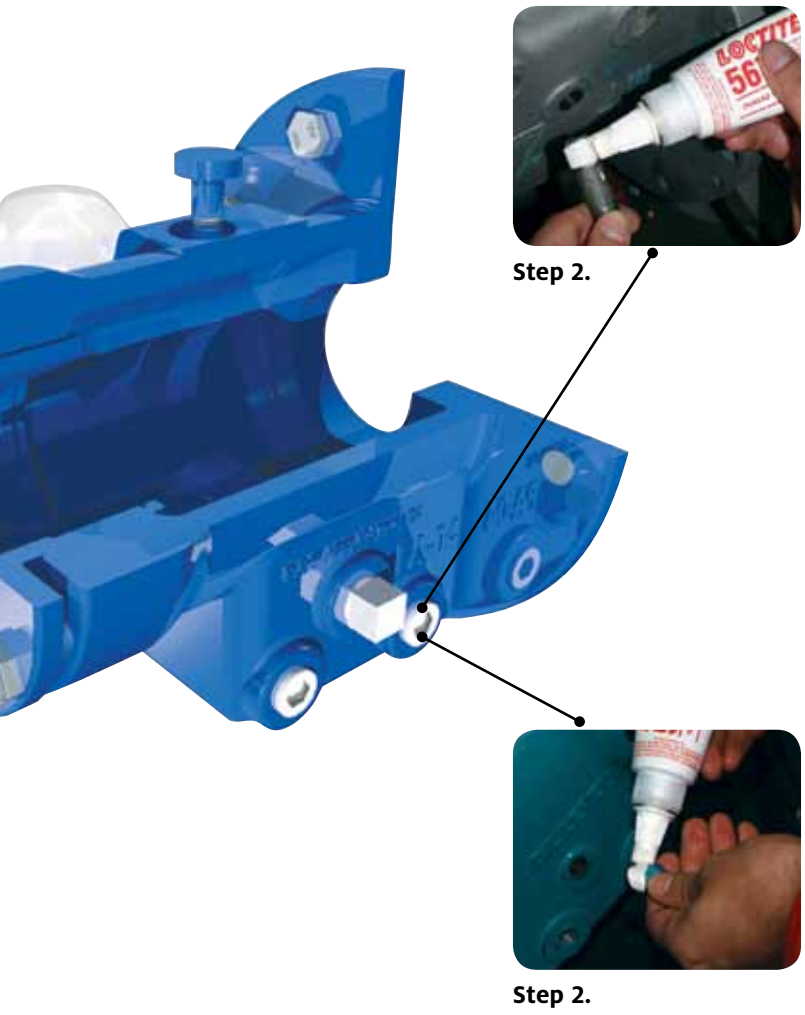
Bearing Frame and Housing

CHALLENGE:

Oil leaks from threaded assemblies

CAUSE:

- Drain plugs, oiler nipples, fittings, etc., all have air space between the threads and can weep oil out from the bearing housing.
- Constant pressure changes within the bearing housing can force these threaded assemblies to leak.



SOLUTION:

- Seal threaded assemblies with LOCTITE® 577™ Thread Sealant.
- LOCTITE® 577™ Thread Sealant is designed to cure only when enclosed in metal, such as in a threaded assembly.
- Once cured, moisture and oil cannot penetrate this barrier as the pressure changes within the bearing housing.
- The thread sealant prevents fittings from loosening, yet allows for easy disassembly with normal hand tools.

STEPS:

1. Clean parts of contamination using LOCTITE® SF 7070 ODC Free Cleaner & Degreaser. If necessary, spray LOCTITE® SF 7649™ Primer N™ onto threaded parts (male and female). Allow to dry.
2. Apply a band of LOCTITE® 577™ Thread Sealant to male threads, starting one to two threads from end of fitting.
3. Assemble parts per OEM specifications.

RESULTS:

- Less oil consumption, thereby reducing the risk of the pump running low on lubricant.
- Elimination of the potential hazards and cleanup associated with oil leaks.
- Elimination of seized fittings because moisture and air have been sealed out.
- Elimination of rust and corrosion within the thread space.
- Contaminants prevented from getting into the oil through the gaps in the threads.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Bearing Frame and Housing

CHALLENGE:

Leaks and seizures between the bearing housing and oil seal

CAUSE:

- As with any press fit, there are small air spaces between the housing and the oil seal. This air space can create a leak path where corrosion can form.

SOLUTION:

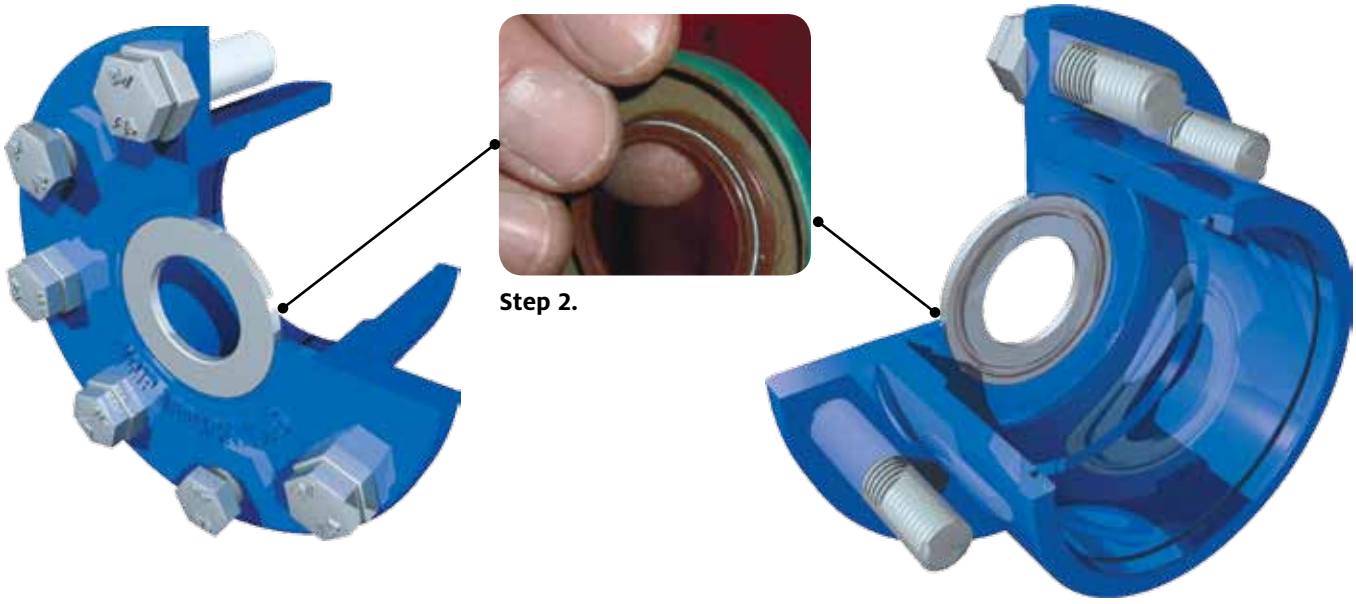
- Fill the air spaces by applying a LOCTITE® 243 Medium Strength Threadlocker to the outside diameter of the oil seal.

STEPS:

1. Clean the outside diameter of the oil seal and the side diameter of the bearing housing with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply LOCTITE® 243™ Medium Strength Threadlocker to the outside diameter of the oil seal.
3. Wipe off any excess and press into housing using normal techniques.

RESULTS:

- A sealed assembly eliminates leaks, contamination and corrosion.
- Elimination of cleanup and hazards associated with oil seal leaks.
- Less oil consumption.
- Reduced risk of running low on lubricant.
- Service of the pump is easier.
- The oil seal can be easily removed with a screwdriver during the next overhaul.



Step 2.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Bearing Frame and Housing

CHALLENGE:

Keeping O-rings pliable to ensure a proper seal

CAUSE:

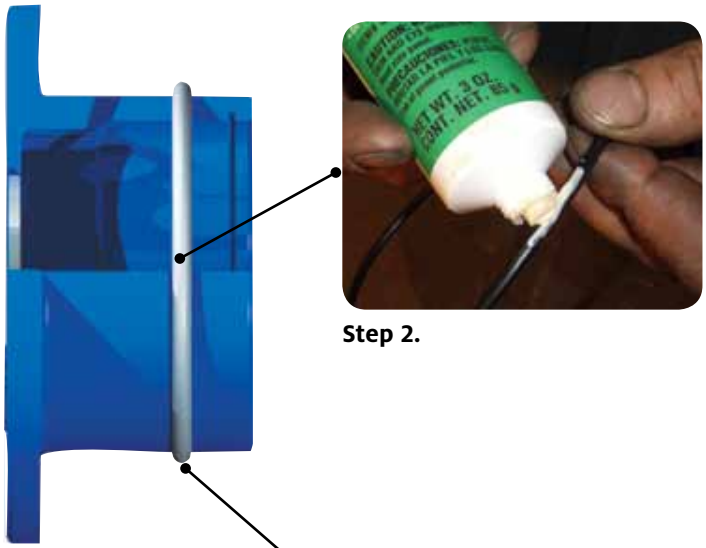
- The typical pump environment is very humid, and water washout can remove lubricants from the O-ring.
- When adjustments are made to the impeller, this creates sliding abrasion and potential damage to the O-ring and ultimately leads to the loss of sealing.
- O-rings cannot be serviced once installed and may begin to dry out.

SOLUTION:

- Lubricate O-rings with LOCTITE® LB 8034 High Performance Synthetic Grease.
- The synthetic formulation of LOCTITE® LB 8034 High Performance Synthetic Grease provides superior lubrication over extended periods of time and has excellent water washout resistance.

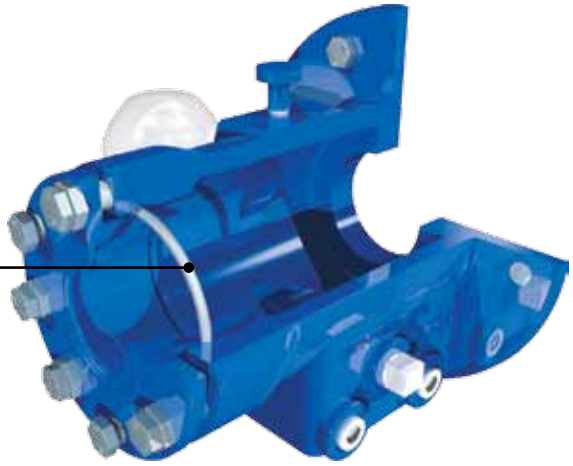
STEPS:

1. Clean O-ring to remove any grit or contaminants.
2. Apply LOCTITE® LB 8034 High Performance Synthetic Grease to the O-ring by smearing it to completely cover the entire surface.
3. Slide O-ring over the bearing housing and into the O-ring groove.



Step 2.

Step 3.



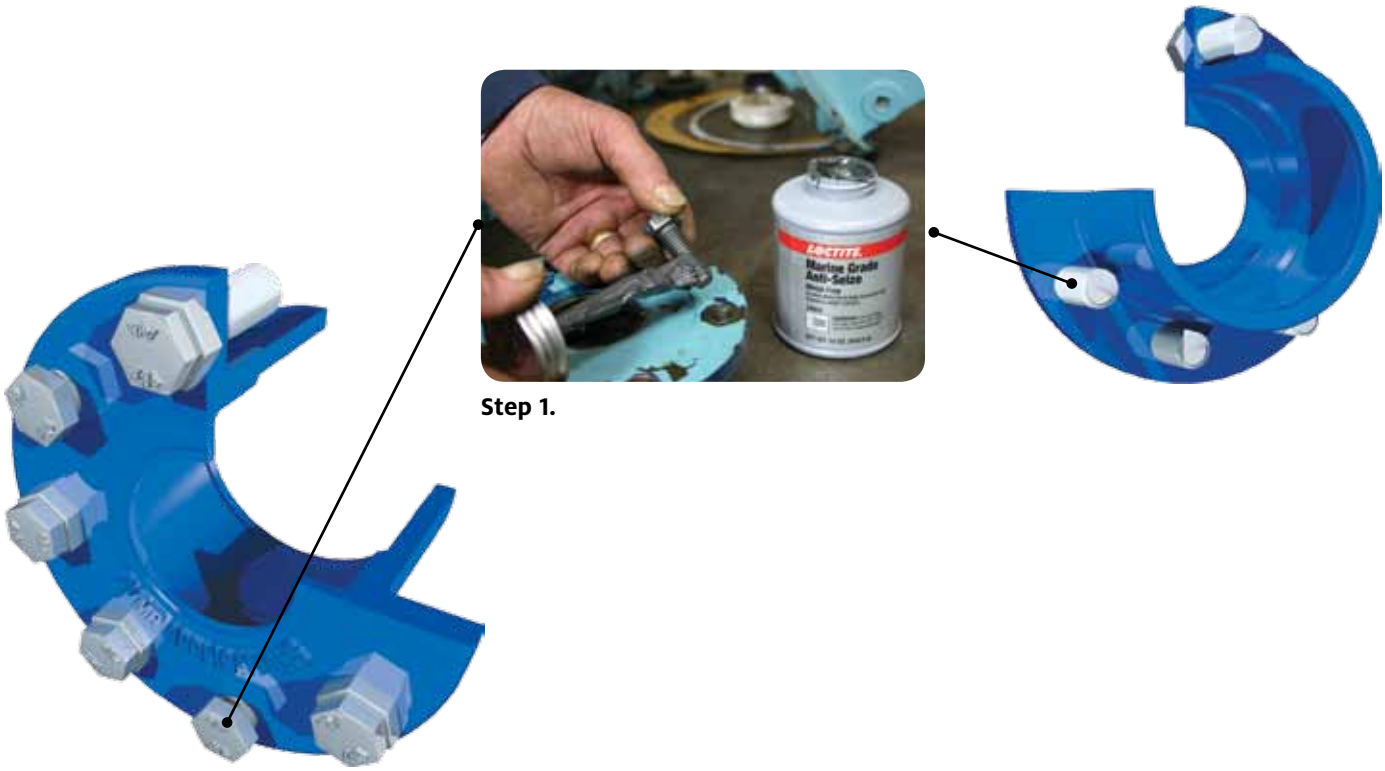
RESULTS:

- Lubricated O-rings remain pliable and capable of sealing oil in and contaminants out.
- O-rings are prevented from adhering to the bearing frame.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Bearing Frame and Housing



Step 1.

CHALLENGE:

Corrosion and seizure of power end jack bolts, jam nuts and clamp bolts

CAUSE:

- Any exposed metal parts on a pump that are not stainless or coated, such as power end nuts and bolts, are subject to rust. When rust forms within the air space between the threads, the bolts will seize in place.

SOLUTION:

- Apply LOCTITE® LB 8023 Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the power end bolts.
- LOCTITE® LB 8023 Anti-Seize and LOCTITE® LB 8009 Heavy Duty Anti-Seize are metal-free and have superior water washout resistance.

STEPS

1. Apply LOCTITE® LB 8023 Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize liberally to the bolt threads.
2. Assemble jam nuts onto the bolts.
3. Thread the bolts into the bearing housing and adjust as required.

RESULTS:

- Easy adjustment of bolts when needed to ensure that the pump runs closest to its best efficiency point (BEP).
- Easy disassembly/removal of bolts.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Bearing Frame and Housing

CHALLENGE:

Bearing spinout, corrosion and component damage

CAUSE:

- Bearings are prone to spinning either on their shafts or within their housings, resulting in damage to these parts regardless of whether or not they have been pressed, shrink or slip fitted in place.
- The air space that exists between a bearing and shaft is an area where rust can form and cause damage to the parts.

SOLUTION #1:

- Outboard Bearing – Apply a coating of LOCTITE® 641™ Retaining Compound to the outside diameter of the outboard bearing.
- LOCTITE® 641™ Retaining Compound is low strength, which allows for easy disassembly during future overhauls.

STEPS:

1. Clean parts with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply a coating of LOCTITE® 641™ Retaining Compound to the outside diameter of the outboard bearing.
3. Assemble using normal techniques.

SOLUTION #2:

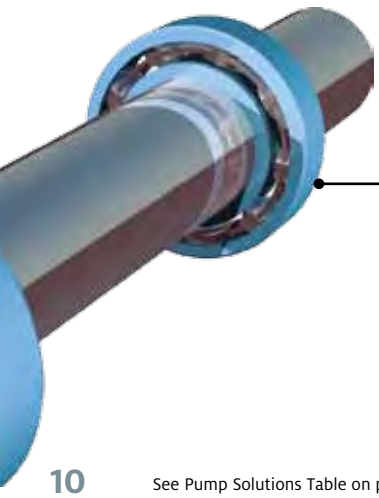
- Inboard Bearing – Apply LOCTITE® 641™ Retaining Compound to the inside diameter of the inboard bearing.

STEPS:

1. Clean parts with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply a bead of LOCTITE® 641™ Retaining Compound to the circumference of the shaft at the leading area of engagement.
3. Press the bearing onto the shaft using normal techniques.
4. Wipe off any excess material.

RESULTS:

- Shaft and/or bearing housing damage is eliminated.
- Bearings are easily removed with standard tools.
- Corrosion (the rust left on a shaft after a bearing has been removed) is eliminated because the air space between the bearing and the shaft or housing is sealed.



Solution #1, Step 2.

Solution #2, Step 2.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Frame Adapter

CHALLENGE:

Oil leaks between the frame adapter and the oil seal

CAUSE:

- The small air spaces between the adapter and the oil seal can allow oil to leak.

SOLUTION:

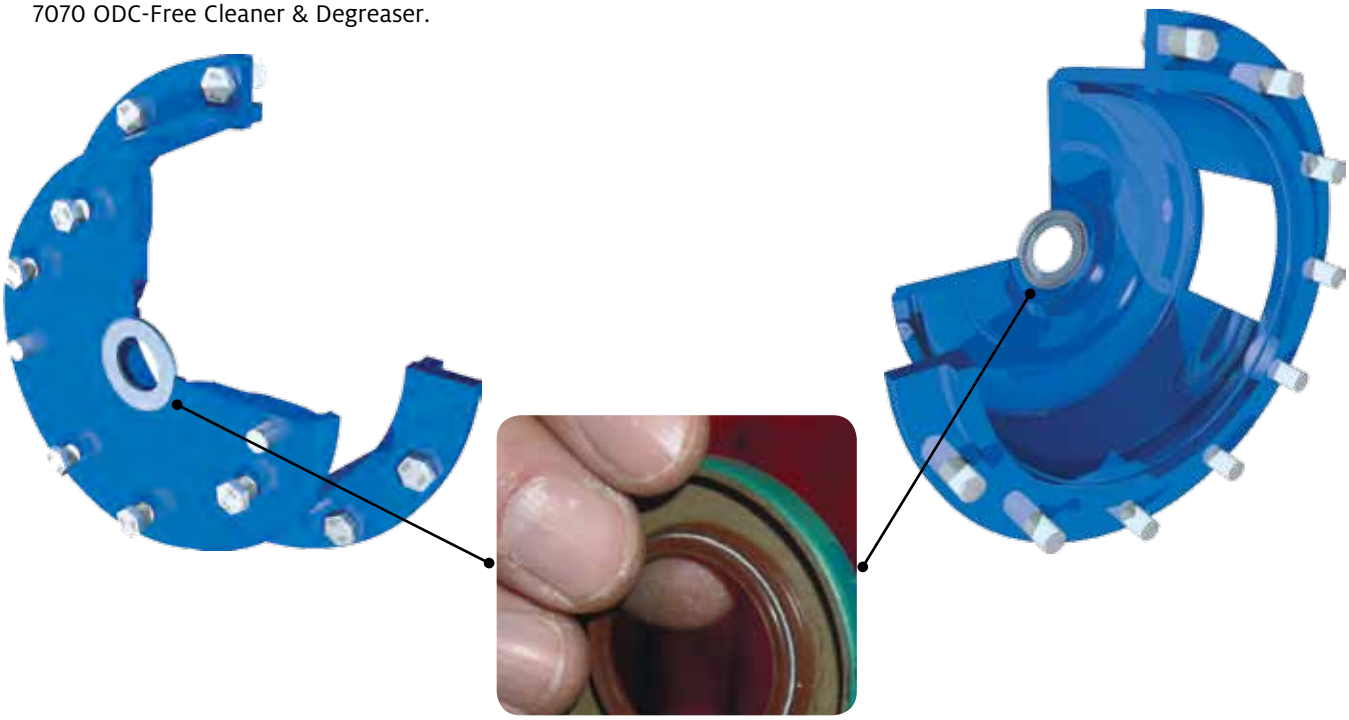
- Fill the air by applying a LOCTITE® 243 Medium Strength Threadlocker to the outside diameter of the oil lip seal.
- LOCTITE® 243™ Medium Strength Threadlocker Stick allows the oil seal to be easily removed with a screwdriver during the next overhaul.

STEPS:

1. Clean the outside diameter of the oil seal and the inside diameter of the frame adapter with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply LOCTITE® 243™ Medium Strength Threadlocker Stick to the outside diameter of the oil seal.
3. Wipe off any excess and press into the adapter using normal techniques and tools.

RESULTS:

- Elimination of leaks along with associated cleanup and hazards.
- Less oil consumption.
- Reduced risk of running low on lubricant.
- Ease of pump service.
- Elimination of leaks, contamination and corrosion due to a unitized assembly.



Step 2.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Frame Adapter

CHALLENGE:

Seizing of dowel pins to the bearing frame and frame adapter

CAUSE:

- The dowel pins are exposed to the exterior pump environment and if not protected can rust and seize themselves to the bearing frame. When these pins seize in the bearing frame, the disassembly becomes very difficult.

SOLUTION:

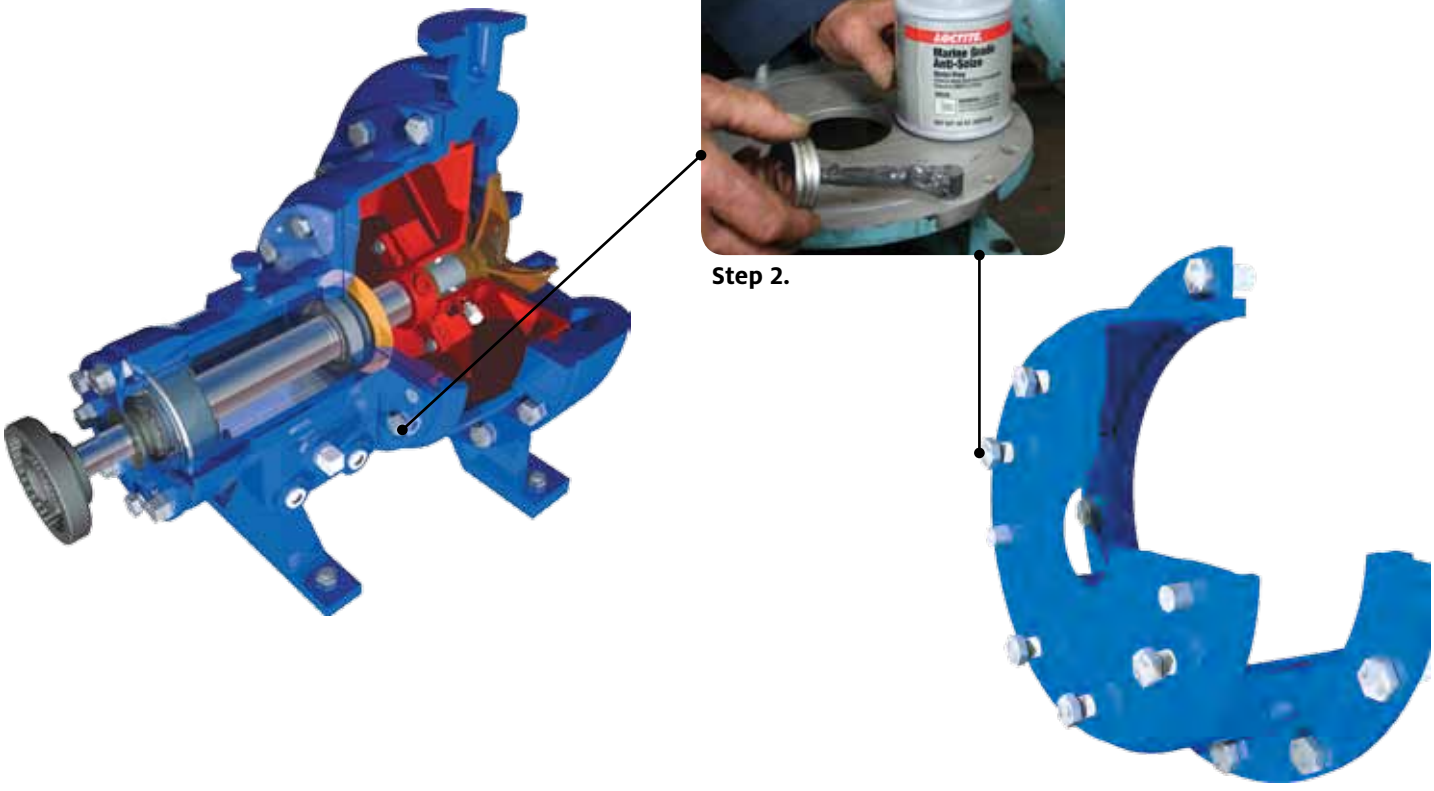
- Before assembly, apply LOCTITE® LB 8023 Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the dowel pins.
- LOCTITE® LB 8023 Anti-Seize Compound or LOCTITE® LB 8009 Heavy Duty Anti-Seize provides a protective coating to parts that are exposed to severe heat and moisture.

STEPS:

1. Clean the parts.
2. Apply LOCTITE® LB 8023 Marine Grade Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the pins.
3. Assemble adapter to the bearing frame.

RESULTS:

- Prevention of rust and seizure of these close-fitting parts.
- The bearing frame and frame adapter will be easier to separate during the next disassembly.



Step 2.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Frame Adapter

CHALLENGE:

Gasket failure between the bearing frame and frame adapter

CAUSE:

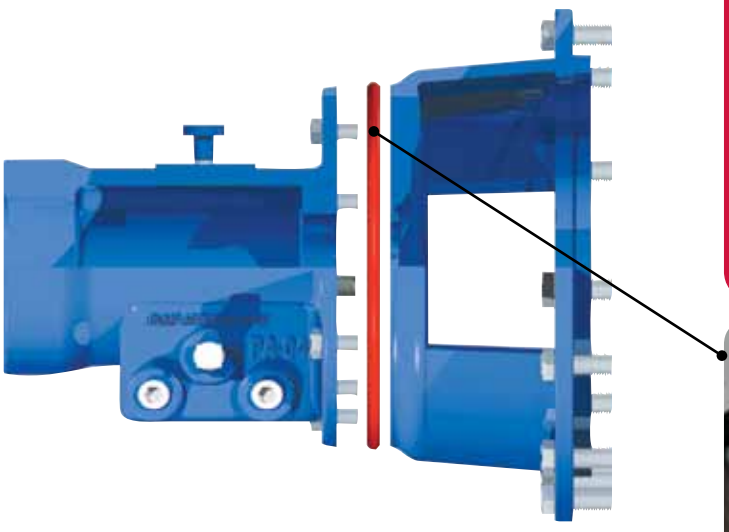
- Leaks occur because a cut gasket can relax over time, resulting in loss of clamp load between the two flanges.
- Cut gaskets can also leak because they are prone to extrusion, misalignment, shrinkage and breaks.
- Flange imperfections can be leak paths that a cut gasket may not be able to seal over time.

SOLUTION:

- Apply LOCTITE® 518™ Flange Sealant to the flange face of the frame adapter.
- The LOCTITE® 518™ Flange Sealant not only eliminates the gasket but also eliminates all the failure modes of cut gaskets and, most important, it seals all of the air space between the two parts.

Note: In some cases the cut gasket is required for spacing. In this case, apply LOCTITE® 518™ Flange Sealant to both sides of the gasket as a shellac.

- LOCTITE® 518™ Flange Sealant can cure through fairly large gaps and surface imperfections.



STEPS:

1. Remove old gasketing material and other heavy contaminants with LOCTITE® SF 790 Chisel® Gasket Remover.
2. Clean both flange surfaces with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
3. Spray LOCTITE® SF 7649™ Primer N™ on only one flange surface and allow to dry.
4. Apply a continuous bead of LOCTITE® 518™ Flange Sealant to the other surface.

Note: Circle bolt holes with sealant if appropriate.

5. Assemble parts and tighten as required.
6. Allow to cure:
   - No pressure – immediate service
   - Low pressure (up to 500 psi) – 30 to 45 minutes
   - High pressure (500 to 2500 psi) – 4 hours
   - Extreme high pressure (2500 to 5000 psi) – 24 hours

RESULTS:

- **Elimination of common cut gasket failures such as compression set, shrinkage, relaxation and breaks.**
- **Constant clamp load is ensured.**
- **Reliable seal.**
- **Elimination of oil leaks between the bearing frame and frame adapter, along with associated cleanup costs and hazards.**
- **Reduced oil consumption.**
- Reduced risk of running low on oil.

Step 4.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Frame Adapter

CHALLENGE:

Fastener loosening and corrosion to frame adapter mounting bolts

CAUSE:

- Bolts can work themselves loose because they are always under strain caused by torque. Also, vibration, thermal expansion and contraction, and shock all contribute to loosening and reduction of clamp load.

SOLUTION:

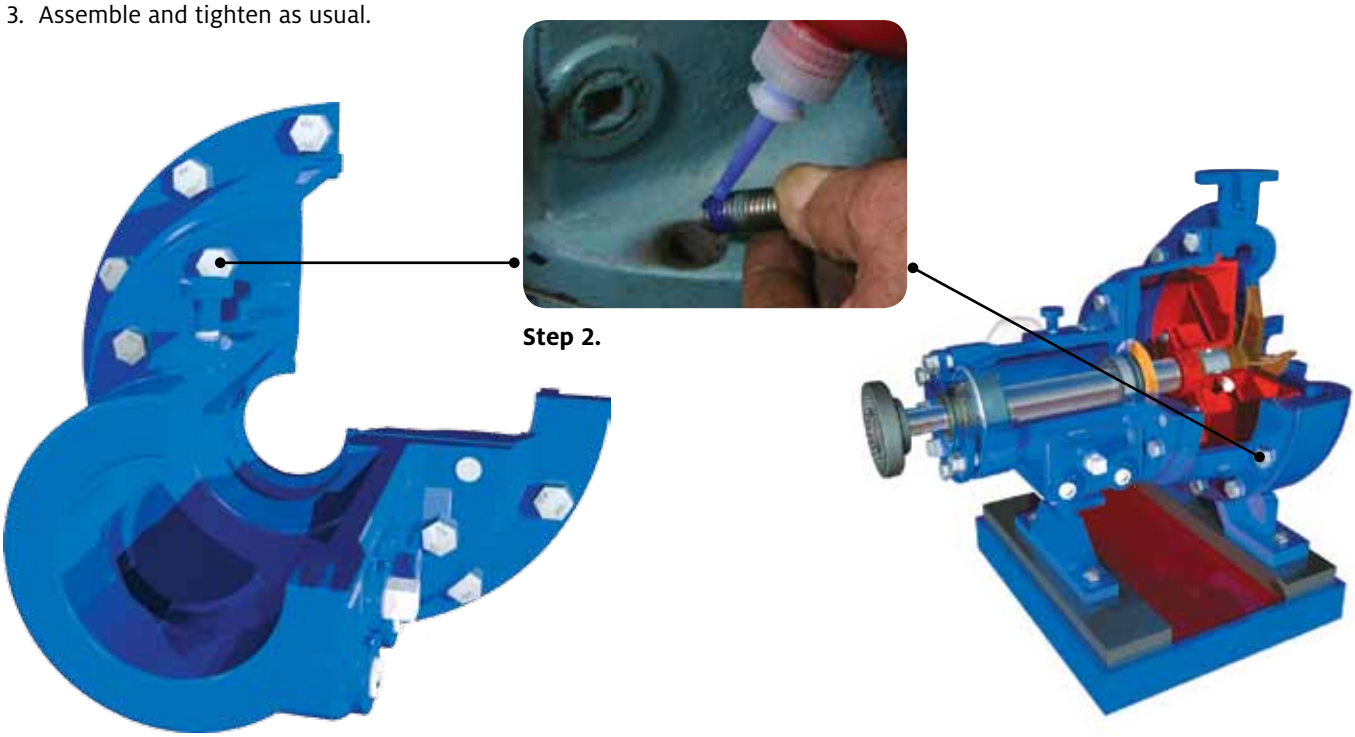
- Apply a LOCTITE® 243 Medium Strength Threadlocker to the frame adapter bolts.

STEPS:

1. Clean threads with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply several drops of LOCTITE® 243™ Medium Strength Threadlocker to the adapter bolts.
3. Assemble and tighten as usual.

RESULTS:

- Prevention of the bolts from rusting and seizing in place because a LOCTITE® brand threadlocker will seal all of the air space within the threads.
- Easy and consistent disassembly.
- Prevention of bolts from loosening.
- Torque and clamp load is maintained.
- Proper clamp load is ensured between flange surfaces, and leaks are eliminated, when LOCTITE® 518™ Flange Sealant is used instead of a cut gasket.



Step 2.

See Pump Solutions Table on page 36 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Gland Assembly

CHALLENGE:

Seizure and loosening of gland studs

CAUSE:

- Just as the gland nuts can rust and seize to the gland studs, so can the gland studs rust and seize to the stuffing box. If the nuts were to seize to the studs, the torque required to remove them could cause the studs to back out.

SOLUTION:

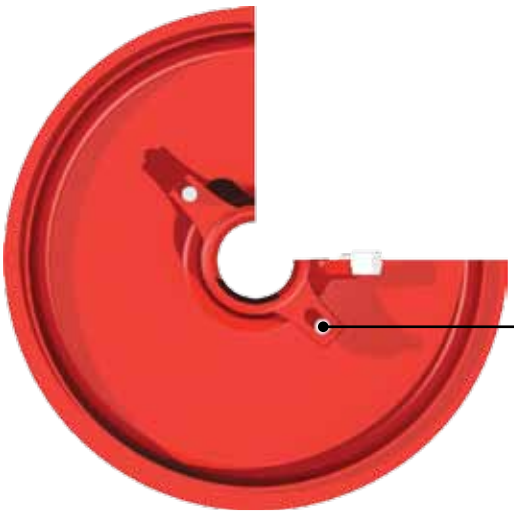
- Apply LOCTITE® 263™ High Strength Threadlocker.

STEPS:

1. Place several drops of LOCTITE® 263™ High Strength Threadlocker down the side of the female threads.
2. Apply several drops of LOCTITE® 263™ Threadlocker onto the stud threads.
3. Install the studs.

RESULTS:

- Eliminated potential for corrosion.
- Eliminated possibility of the studs backing out during gland adjustments.



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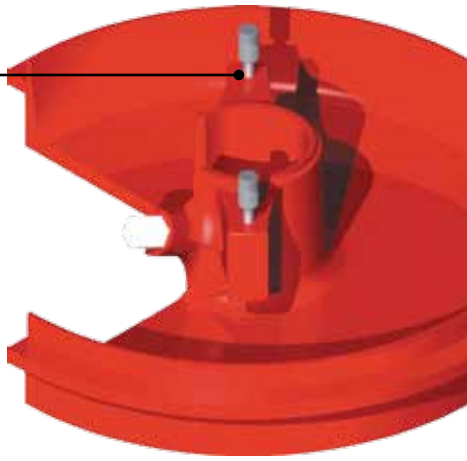
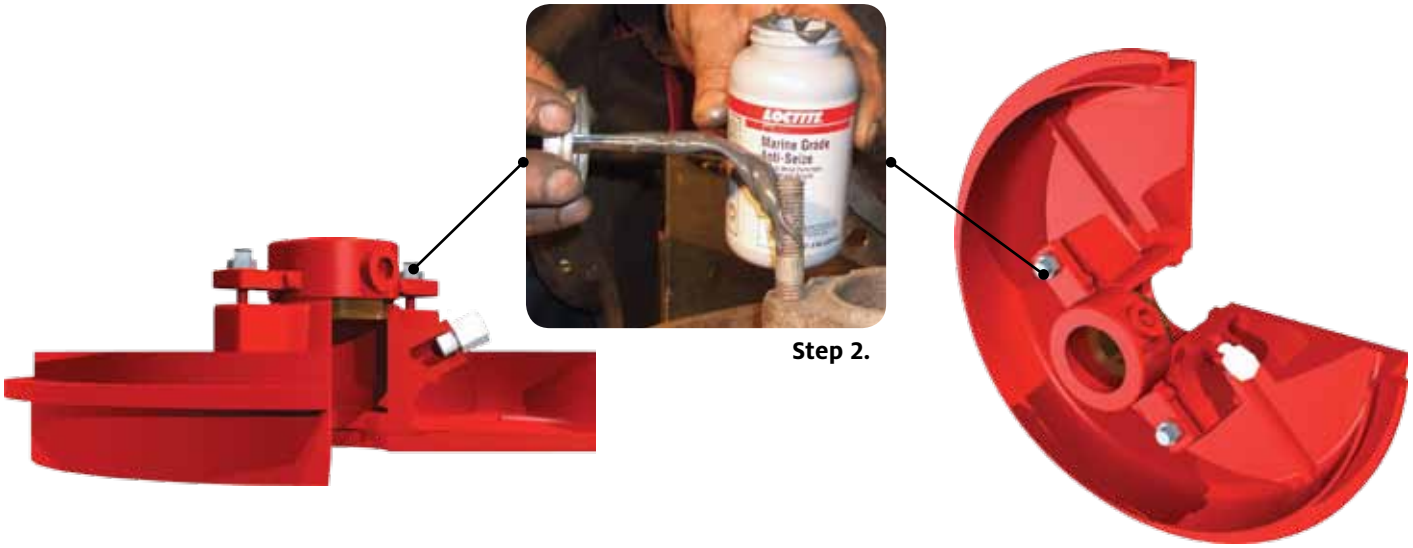


See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Gland Assembly



Step 2.

CHALLENGE:

Corrosion and seizure of packing gland nuts

CAUSE:

- The gland assembly is subject to severe corrosion and seizure because of the continuous flow of water that lubricates and cools the packing. This continuous flow of water also causes the gland studs and nuts to rust and seize.
- If the nuts seize to the studs, it becomes impossible to properly adjust the gland follower and, ultimately, proper lubrication and cooling cannot be maintained. This can lead to the packing running dry, overheating and subsequent wearing and gouging of the shaft. What starts out as a simple failure mode of a corroded threaded assembly can lead to a major failure of one of the main pump components.

SOLUTION:

- Apply LOCTITE® LB 8023 Marine Grade Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the studs.
- LOCTITE® LB 8023 Marine Grade Anti-Seize and LOCTITE® LB 8009 Heavy Duty Anti-Seize are metal-free and are designed to have superior water washout resistance, a key feature in a gland application.

STEPS:

1. Clean the parts.
2. Apply LOCTITE® LB 8023 Marine Grade Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the studs.
3. Assemble gland nuts and adjust gland follower as necessary.

RESULTS:

- Elimination of gland nuts freezing to the studs.
- Proper adjustments can be made to the gland follower.
- Water can properly flow through the packing for lubrication and cooling.
- Excessive shaft wear can be prevented.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Gland Assembly

CHALLENGE:

Corrosion within the gland flushing connector

CAUSE:

- Whether using a mechanical seal or packing, these components are typically cooled and lubricated by either a product flush or an external flush. In either case, the flushing connector is prone to corrosion and seizure. This is especially true for pumps configured with packing. Since packing typically requires 40-60 drops per minute for proper cooling and lubrication, there is plenty of available moisture for rust to attack the gland assembly components.

SOLUTION:

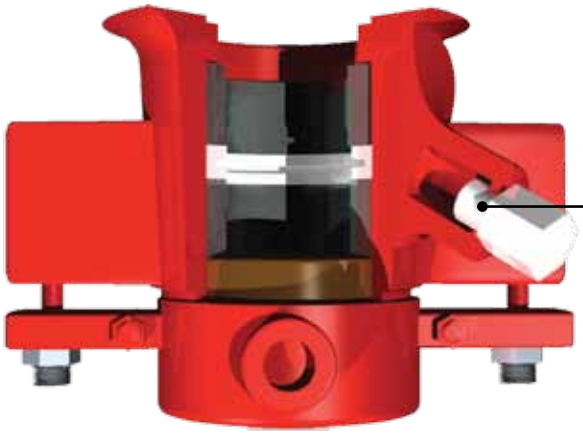
- Apply LOCTITE® 577™ Thread Sealant.
- LOCTITE® 577™ Thread Sealant fills the air space within the threads.
- Allows the flushing connector to be removed with normal hand tools when necessary.

STEPS:

1. Clean the parts with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply a band of LOCTITE® 577™ Thread Sealant to male threads, starting one to two threads from the end of the fitting.
3. Assemble parts snugly. Do not overtighten.

RESULTS:

- Prevention of leaks and corrosion.
- Eliminated seizure.
- Ensured easy maintenance of flushing connectors.



Step 2.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Pump Casing

CHALLENGE:

Seizing of the frame adapter, stuffing box and casing

CAUSE:

- When assembling these components, there are areas where the clearance is very tight. These small clearances are areas where rust and corrosion can work in to seize the components together, making disassembly very difficult.

SOLUTION:

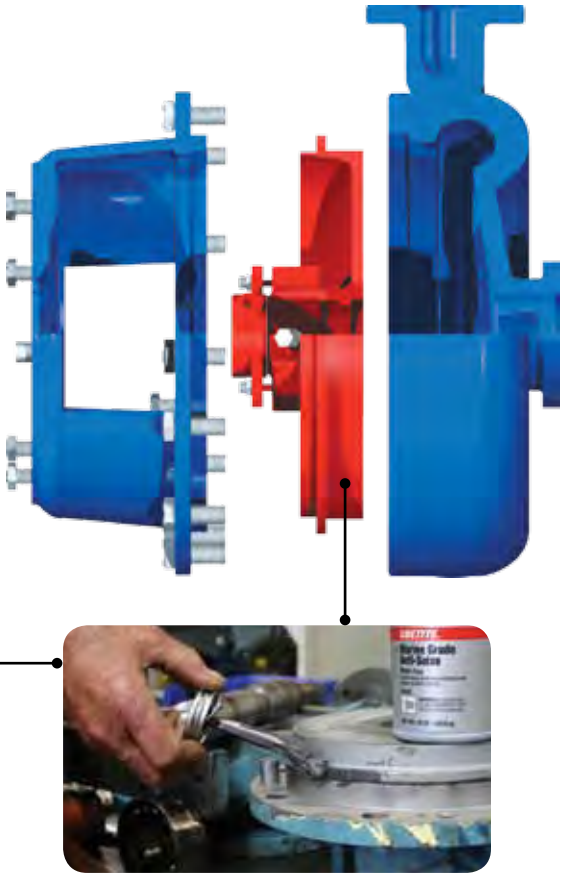
- Apply a LOCTITE® LB 8023 Anti-Seize compound or LOCTITE® LB 8009 Heavy Duty Anti-Seize during assembly. Because LOCTITE® Anti-Seize compounds have superior water washout resistance, they will stay where they are applied.

STEPS:

1. Clean the parts.
2. Apply LOCTITE® LB 8023 Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the outside diameter of the stuffing box at the mating point.
3. Assemble components as usual.

RESULTS:

- Sufficient lubrication provided during assembly.
- Prevention of rust while in service.
- Efficient disassembly.



Step 2.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Pump Casing

CHALLENGE:

Corrosion and seizure of the pump casing bolts

CAUSE:

- The severe pump environments of constant temperature, pressure and humidity changes result in corrosion.
- Casing bolts that are rusted and seized make pump maintenance difficult and create additional labor associated with drilling and tapping the bolt hole.

SOLUTION:

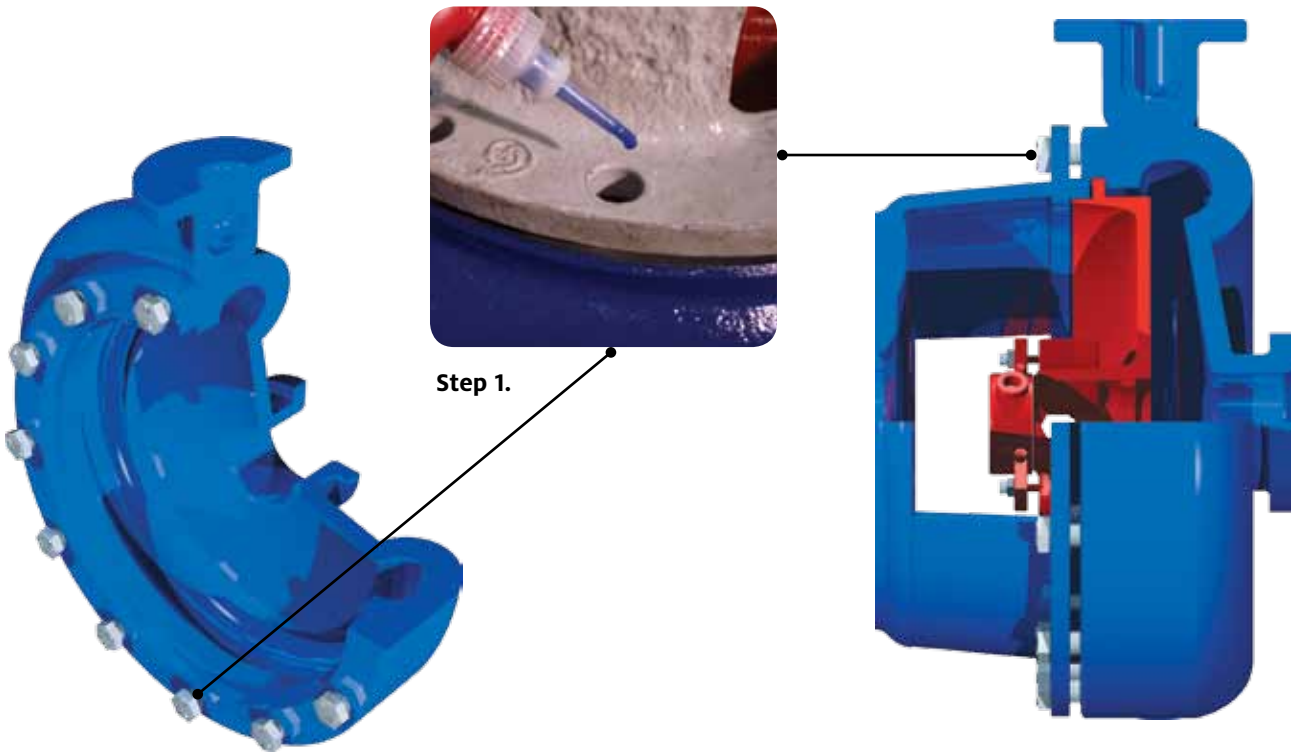
- Apply LOCTITE® 243™ Medium Strength Threadlocker in the bolt holes prior to assembling the casing.
- LOCTITE® 243™ Medium Strength Threadlocker fills all the air space within the threads.

STEPS:

1. Place several drops of LOCTITE® 243™ Medium Strength Threadlocker down the side of the female threads.
2. Apply several drops of LOCTITE® 243™ Medium Strength Threadlocker onto the bolt threads.
3. Install bolts.

RESULTS:

- Proper clamp load is maintained.
- Elimination of rust and seizure.
- Easy disassembly with normal hand tools.



See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Pump Casing

CHALLENGE:

Leaks between the stuffing box and casing

CAUSE:

- The use of cut gaskets suffers from inherent problems, such as gasket relaxation, shrinkage, extrusion and breakage, which can lead to leaks.

SOLUTION #1:

- Replace the cut gasket and apply LOCTITE® 518™ Flange Sealant to the flange surface.
- Direct metal-to-metal contact along with the use of LOCTITE® 518™ Flange Sealant allows for a positive seal.
- Since there is metal-to-metal contact, proper clamp load can be maintained and the two parts become unitized – they act as one.

STEPS:

1. Remove old gasketing material with LOCTITE® SF 790 Chisel® Paint Stripper.
2. Clean both flanges with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
3. Spray LOCTITE® SF 7649™ Primer N™ on only one surface and allow 1-2 minutes to dry.
4. Apply a continuous bead of LOCTITE® 518™ Flange Sealant to the other surface.

Note: Circle all bolt holes, if appropriate.

5. Assemble and tighten as required.
6. Allow to cure.

SOLUTION #2:

- Coat the gasket material with LOCTITE® 518™ Flange Sealant.
- If there is not enough clearance between the impeller and the casing to eliminate the gasket, the cut gasket must be used.
- LOCTITE® 518™ Flange Sealant will fill all the air space that cut gaskets simply cannot fill.
- LOCTITE® 518™ Flange Sealant will withstand expansion and contraction caused by pressure and temperature changes.

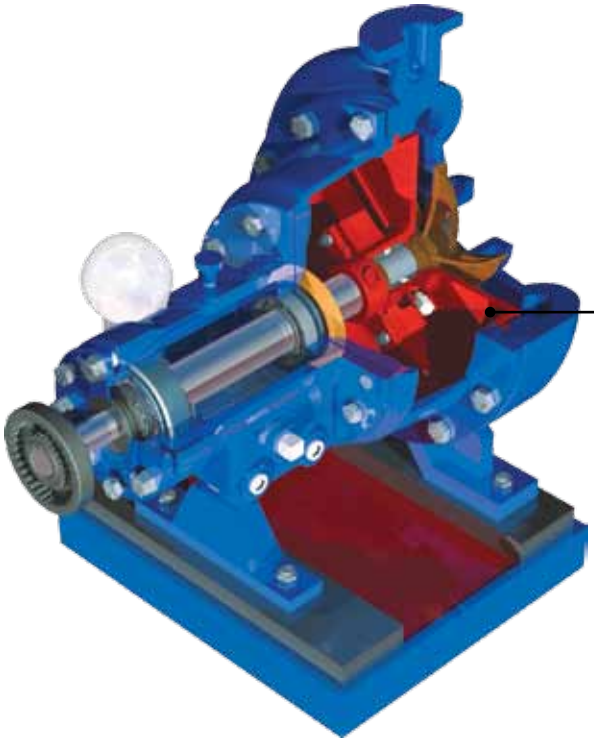
STEPS:

1. Remove old gasketing material with LOCTITE® SF 790 Chisel® Paint Stripper.
2. Clean both flanges with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
3. Spray LOCTITE® SF 7649™ Primer N™ to both flange faces and both sides of the gasket. Allow 1-2 minutes to dry.
4. Smear LOCTITE® 518™ Flange Sealant to both sides of the precut gasket.
5. Assemble and tighten as required.
6. Allow to cure.

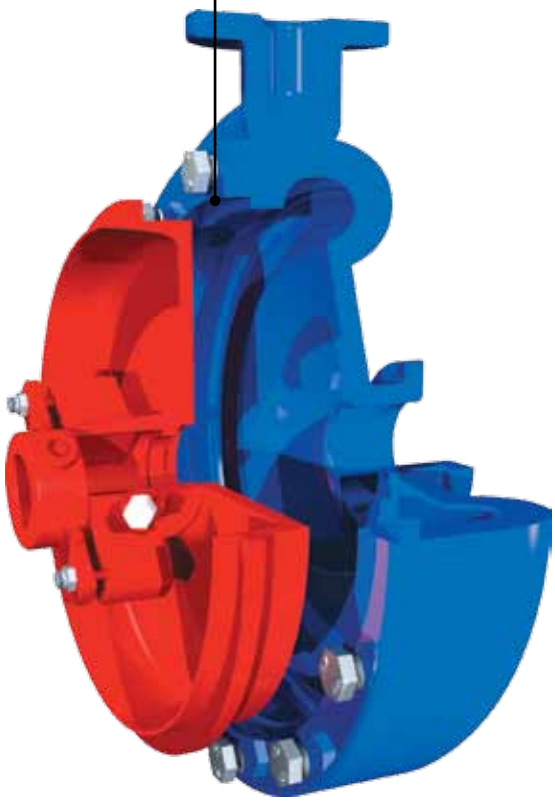
RESULTS:

- Eliminated casing gasket leaks.
- Eliminated corrosion and damage on the flange surface.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.



Solution #2, Step 4.



PUMP ASSEMBLY

Impeller

CHALLENGE:

Seizure of the impeller to the shaft

CAUSE:

- The combination of small air spaces within the threads and high humidity and temperatures allows for rust to develop and seize the impeller to the shaft.

SOLUTION:

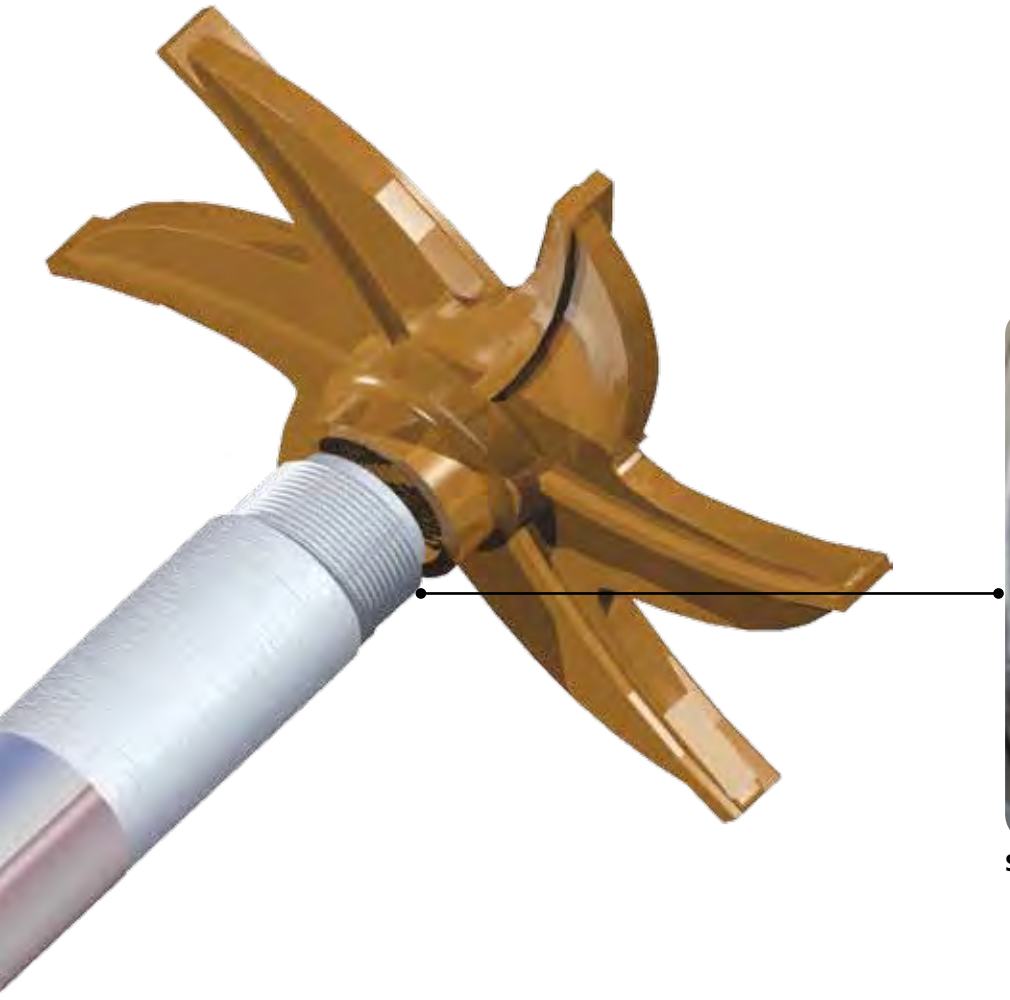
- Apply LOCTITE® LB 8023 Marine Grade Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the shaft threads prior to impeller assembly.

STEPS:

1. Clean the shaft and impeller threads.
2. Apply LOCTITE® LB 8023 Marine Grade Anti-Seize or LOCTITE® LB 8009 Heavy Duty Anti-Seize to the shaft threads.
3. Assemble the impeller using normal techniques.

RESULTS:

- Prevention of seizure.
- Easier disassembly.



Step 2.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Keyways / Key Stock

CHALLENGE:

Keyway wallow between the key stock in the keyway in new components

CAUSE:

- In a new assembly, the fit between the key stock and the keyway are usually fairly tight. Over time the fit between the key stock and the keyway can loosen and lead to damage to the keyway.

SOLUTION:

- Proactively apply a LOCTITE® 243 Medium Strength Threadlocker to the keyway and then insert the key stock.
- The viscosity of a LOCTITE® 243 Medium Strength Threadlocker is appropriate for the gap fill and provides the proper amount of strength, while allowing for easy removal.
- If the key needs to be removed, simply use a hammer to tap a metal chisel or drift against the key stock to pop it out of the keyway.

STEPS:

1. Clean the keyway and key stock with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply several drops of LOCTITE® 243™ Medium Strength Threadlocker directly into the keyway.
3. Insert the key stock into the keyway.

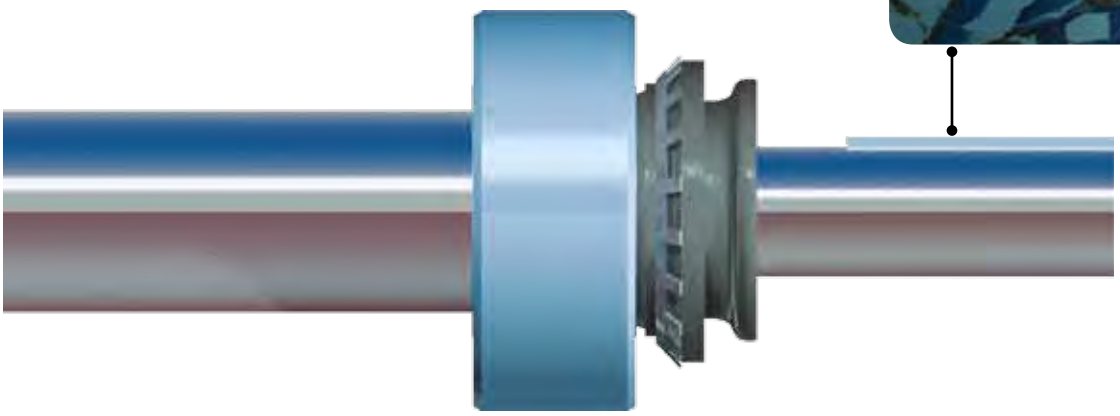
Note: Cover the shaft with a rag to prevent splatter when inserting the key stock.

4. Wipe off any excess threadlocker.

RESULTS:

- Prevention of corrosion.
- Prevention of keyway wallow.
- A unitized assembly.

Step 2.



See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Keyways / Key Stock

CHALLENGE:

Downtime and scrap costs due to keyway wallow in worn components

CAUSE:

- Over time, keyways can wear out if the key stock is not secured in place, which results in keyway wallow. This is a common failure for power transmission components such as couplings, sprockets, sheaves, etc.
- If keyway wallow is allowed to perpetuate, further damage can result, such as a sheared key stock or damage to the coupling. If the key stock shears, the result is a loss of power transmission (i.e., the pump will stop running) and further damage to the shaft will occur.

SOLUTION:

- If the keyway has already been wallowed out, use LOCTITE® 660™ Retaining Compound to stop the wallow and allow the components to return to service.
- LOCTITE® 660™ Retaining Compound is a very thick product, which allows it to fill large gaps.

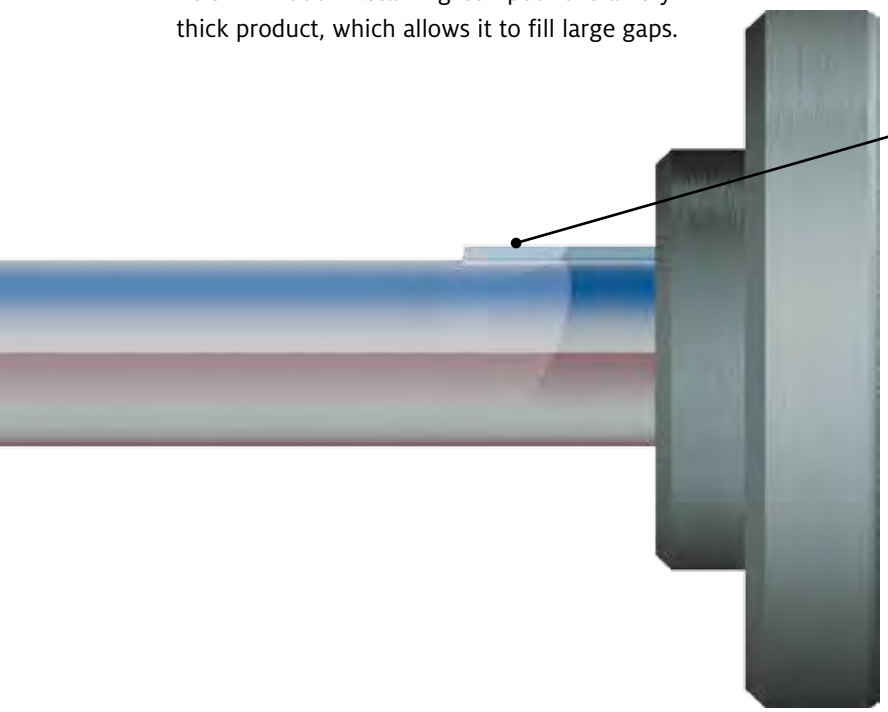
STEPS:

1. Clean the keyway and key stock with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply LOCTITE® 660™ Retaining Compound into the keyway.
3. Assemble parts and wipe off excess.

Note: If keyway wallow is severe, shims can be used on both sides of the keyways in conjunction with the LOCTITE® 660™ Retaining Compound.

RESULTS:

- Assembly is restored, unitized and ready for service without a major overhaul.



Step 2.

See Pump Solutions Table on page 37 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Coupling

CHALLENGE:

Coupling loosening or moving, resulting in disengagement, damage or misalignment

CAUSE:

- Couplings are held in place by a key and a set screw.
- If the set screw was to loosen, the coupling can begin to slide along the shaft and disengage, or it can begin to wallow out the keyway.

SOLUTION:

- LOCTITE® 243 Medium and LOCTITE® 222 Low Strength Threadlockers.

STEPS:

1. Clean set screw with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. If necessary, spray all threads with LOCTITE® SF 7649™ Primer N™ and allow to dry.
3. Apply a couple of drops of a LOCTITE® 222™ Low Strength Threadlocker to the set screw (use a LOCTITE® 243 Medium Strength Threadlocker if the set screw is over 1/4" in diameter).
4. Assemble in the coupling as usual.

Note: Consider applying a LOCTITE® brand retaining compound or threadlocker to the shaft prior to assembling the coupling to completely unitize the coupling to the shaft and prevent any possible corrosion.

RESULTS:

- Assembly is restored, unitized and ready for service without a major overhaul.

Step 3.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP ASSEMBLY

Pump Base Mounting

CHALLENGE:

Pump mounting bolts losing clamp load, leading to misalignment

CAUSE:

- Vibration and possible impact shock can work to loosen the mounting bolts.
- Loose bolts result in a loss of clamp load, which in turn allows the pump to lose its level and aligned configuration.

SOLUTION #1:

- Apply LOCTITE® 263™ High Strength Threadlocker to the mounting bolts.

STEPS:

1. Clean threads with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Apply several drops of LOCTITE® 263™ High Strength Threadlocker to the mounting bolts.
3. Assemble and tighten as usual.

SOLUTION #2:

- Apply LOCTITE® 290™ Wicking Grade Threadlocker to the mounting bolts after the pump has been leveled and aligned.

STEPS:

1. Clean the parts with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
2. Align the pump.
3. Tighten the nuts on the mounting studs.
4. Apply several drops of LOCTITE® 290™ Wicking Grade Threadlocker to the mounting bolts.

RESULTS:

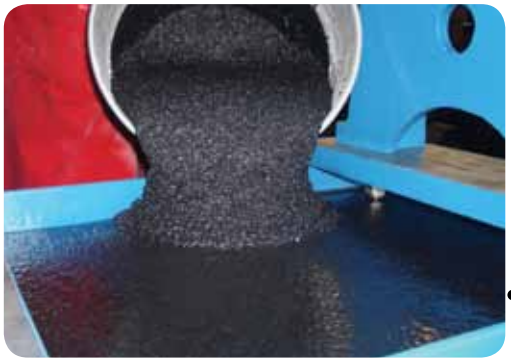
- Mounting bolts are secured in place.
- Proper clamp load is maintained.
- Elimination of bolt corrosion.
- Prevention of misalignment.

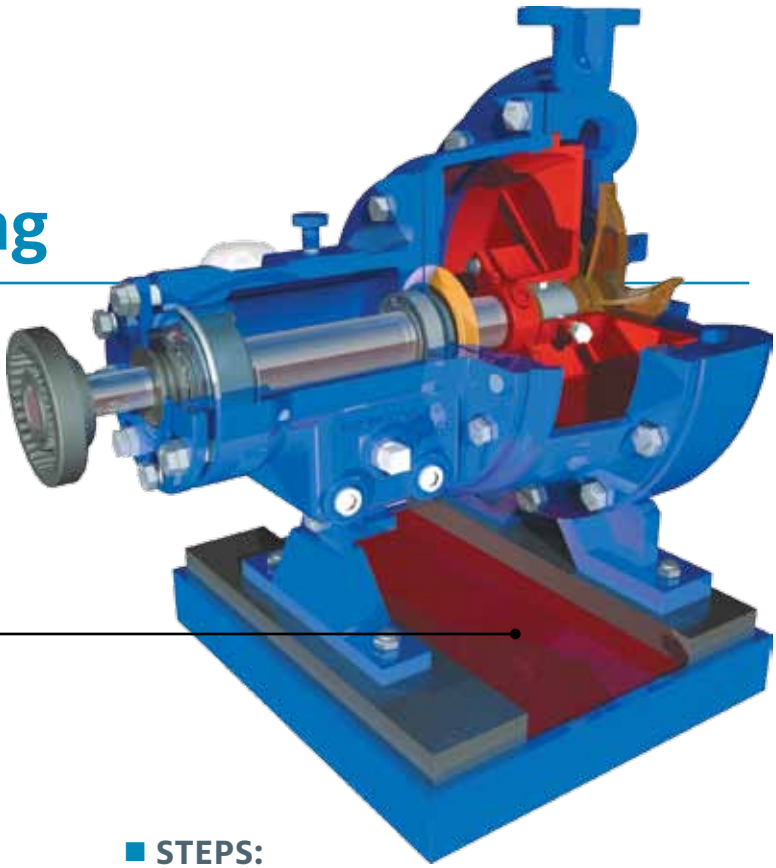
See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

Solution #1, Step 2 and Solution #2, Step 4.

PUMP ASSEMBLY

Pump Base Grouting





Step 6.

CHALLENGE:

Twisting, vibration and corrosion of pump base

CAUSE:

- The pump base is made to not only provide a level mounting surface but is also designed to withstand torque loads and vibration/reverberations. The base by itself is not strong enough to withstand these forces along with the chemical attack and corrosion it is subject to.

SOLUTION:

- Fill the pump base with a LOCTITE® PC 9626 Deep Pour Grout.
- The base needs to be filled with a grout to fill the entire air space thereby preventing corrosion and providing a much more solid unit that can withstand torque loads and vibration. LOCTITE® epoxy grouts are:
  - Non-shrinking
  - Self-leveling
  - Resistant to high impact
  - Able to withstand chemical attack

STEPS:

1. After the base has been leveled with shims or wedges, build a form around the base to contain the grout.
2. Line the forms with either a thick mil plastic sheeting or a high-pressure laminate.
3. Coat the plastic or laminate with a release agent to prevent the epoxy grout from bonding to the forms.
4. A good release agent choice is LOCTITE® LB 8034 High Performance Synthetic Grease in the aerosol packaging.
5. After the forms have been lined and built, seal any gaps in the forms with a LOCTITE® silicone to prevent the grout from leaking.
6. Then simply mix the grout per the label instructions and pour into place.

RESULTS:

- Solid pump base that is resistant to compression, corrosion and chemical attack.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP REPAIR

Oil Seepage

CHALLENGE:

Oil loss from seepage

CAUSE:

- This cast part can have porosities created during the casting. These porosities can lead to the housing weeping oil.

SOLUTION #1:

- Coat interior of bearing frame to seal porosities with LOCTITE® PC 7319 Chemical Resistant Coating.

STEPS:

1. Clean using LOCTITE® SF 7070 ODC Free Cleaner & Degreaser.
2. Blast the interior of the bearing frame to near white metal finish. Remove dust.
3. Apply LOCTITE® PC 7319 Chemical Resistant Coating to the interior of the bearing housing minimum 0.5mm thick, using 2 coats. Apply 2nd coat when gel time of first coat is reached to protect and coat the bearing frame.

SOLUTION #2:

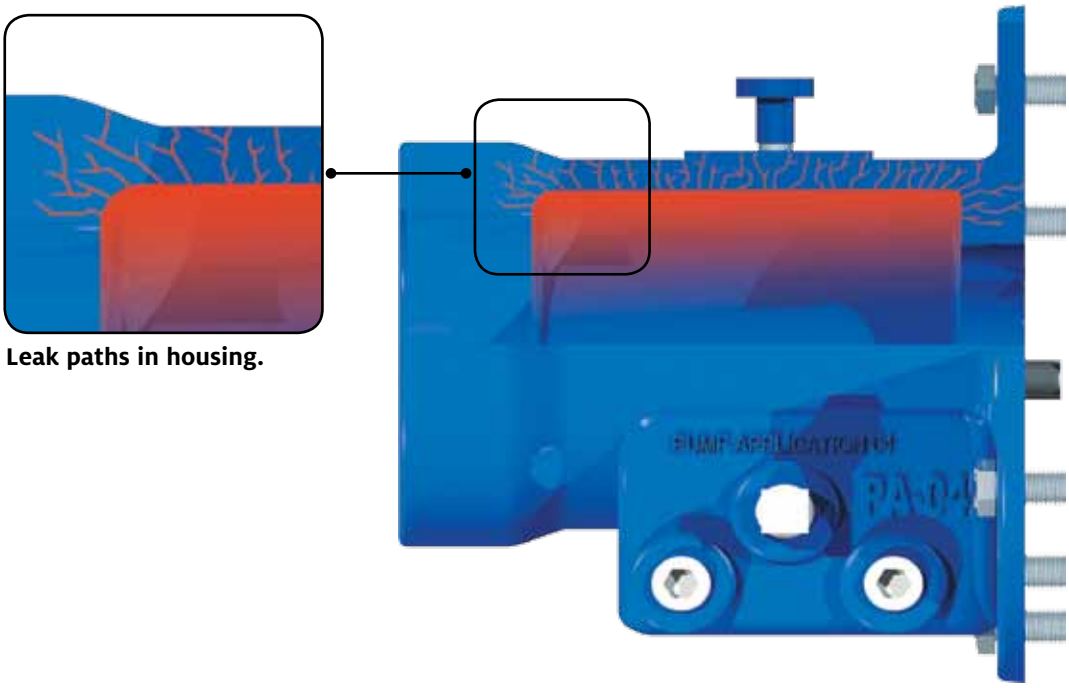
- For a part where the specific leak points are known, brush on LOCTITE® 290™ Wicking Grade Threadlocker.

STEPS:

1. Clean the surface.
2. Bake it dry.
3. Brush on LOCTITE® 290™ Threadlocker.
4. Allow to cure.

RESULTS:

- Elimination of oil loss through seepage.
- Reduced oil consumption.
- Reduced cleanup.

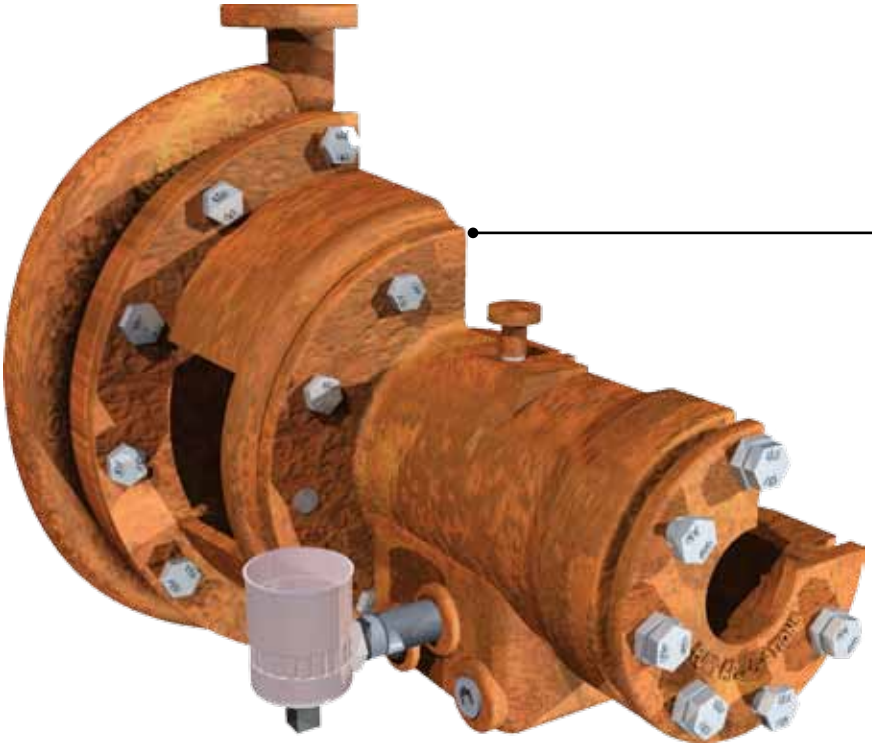


Leak paths in housing.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP REPAIR

Corrosion



Corroded external components.

CHALLENGE:

Corrosion damage to external parts

CAUSE:

- The external components can suffer from rust and chemical attack due to exposure to the elements, extreme temperatures, temperature changes, humidity and chemicals.

SOLUTION:

- LOCTITE® PC 7319 Chemical Resistant Coating.
- Originally developed to protect mining equipment from sulfuric acid.
- Provides an excellent coating to protect pump parts from a variety of severe chemical environments.

STEPS:

1. Clean and abrade the surface to a near white metal finish. Remove contaminants using LOCTITE® SF 7070 ODC Free Cleaner & Degreaser.
2. Mix and apply LOCTITE® PC 7319 Chemical Resistant Coating per the package instructions, minimum 0.5mm thick, using 2 coats. Apply 2nd coat when gel time of first coat is reached

RESULTS:

- Extended equipment life.
- Reduced component consumption.
- Increased pump reliability.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP REPAIR

Casing / Impeller Wear

CHALLENGE:

Wear of pump casing and impellers

CAUSE:

- Pump casings and impellers are subject to wear from abrasive slurries and solids, cavitation and chemical attack. Each of these can wear down internal sections of pump casing.
- Some of the common wear areas include the cutwater, wear ring seats, impeller vane tips and inside the volute.
- Casing and impeller wear typically falls within the following category types:
  - Minor abrasive wear from pumping light slurries
  - Heavy casing wear and erosion from pumping solids and/or cavitation
  - Chemical attack
  - Wear to specific areas of the casing or impeller

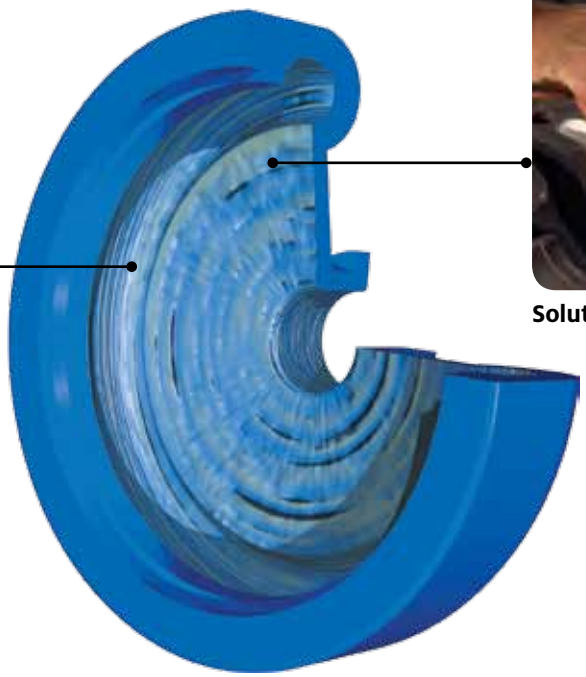
SOLUTION #1:

- Repair & rebuild minor surface wear using LOCTITE® EA 3478 Superior Metal or LOCTITE® PC 7222 Wear Resistant Putty. Coat the surface with LOCTITE® PC 7333 Brushable Ceramic.
- Provides a high gloss, low friction finish to help ensure the pump runs as close to its Best Efficiency Point as possible.

STEPS:

1. Clean and abrade the surface to a near white metal finish. Remove contaminants using LOCTITE® SF 7070 ODC Free Cleaner & Degreaser.
2. Rebuild the damaged surface with LOCTITE® EA 3478 Superior Metal or LOCTITE® PC 7222 Wear Resistant Putty. Mix and apply LOCTITE® PC 7333 Brushable Ceramic per the package instructions.
3. Apply a coat of white LOCTITE® PC 7333 Brushable Ceramic first, and then a second coat of grey LOCTITE® PC 7333 Brushable Ceramic, to allow for easy visual inspection of the coating and wear.
4. Use as many coats as necessary to restore the casing to original dimensions.

Solution #1, Step 2.



Solution #1, Step 3.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP REPAIR

Casing / Impeller Wear

CHALLENGE (continued):

Wear of pump casing and impellers

SOLUTION #2:

- Repair heavy surface wear to the casing. Rebuild the casing with LOCTITE® PC 7355 Nordbak Wearing Compound.
- Ceramic beads provide superior wear resistance.

STEPS:

1. Clean and abrade the surface to a near white metal finish.
2. Mix and apply LOCTITE® PC 7218 Nordbak Wearing Compound per the package instructions.
3. Use isopropyl alcohol to smooth the finish.
4. Apply a topcoat of LOCTITE® PC 7333 Brushable Ceramic to provide a low-friction finish.

SOLUTION #3:

- Repair damage from chemical attack and provide a protective coating. Coat the casing and the impeller with LOCTITE® PC 7319 Chemical Resistant Coating.
- Protects parts in severe chemical environments.

STEPS:

1. Clean and abrade the surface to a near white metal finish.
2. Mix and apply LOCTITE® PC 7319 Chemical Resistant Coating per the package instructions.

SOLUTION #4:

- Rebuild worn areas of the casing and impeller. Apply LOCTITE® PC 3478 Superior Metal or LOCTITE® PC 7222 Wear Resistant Putty to rebuild worn cutwaters, wear ring seats, impeller vane tips or other specific areas of the casing.
- Use LOCTITE® PC 3478 Superior Metal to rebuild heavily worn areas.
- Use LOCTITE® PC 7222 Wear Resistant Putty in areas where there is constant abrasion, such as wear ring seats.

STEPS:

1. Clean and abrade the surface to a near white metal finish.
2. Mix and apply the products per the package instructions.

RESULTS:

- Reduced component consumption by salvaging and extending the life of pump casings.
- Casings protected from wear and chemical attack.
- Pumps helped to run close to their BEP.

See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

Worn impeller prior to repair.

Solution #4, Step 2.

PUMP REPAIR

Shaft Wear

CHALLENGE:

Shaft wear

CAUSE:

- Wear caused by packing and oil seals is typically the result of constant pressure and abrasion against the shaft surface.
- Over time, oil seals can cut a groove in a shaft.
- Neglect and improper water lubrication can cause the packing to heat up and in turn to cause severe wear to the shaft.

SOLUTION:

- Rebuild shafts with LOCTITE® PC 3478 Superior Metal.
- LOCTITE® PC 3478 Superior Metal is an epoxy with high compressive strength that will not rust.

STEPS:

1. To make the repairs, turn the shaft on a lathe and even out the worn areas to at least 0.75 mm, leaving a rough surface finish.
2. Clean the shaft of any cutting fluids or oils with LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser.
3. Mix the product per the package instructions.

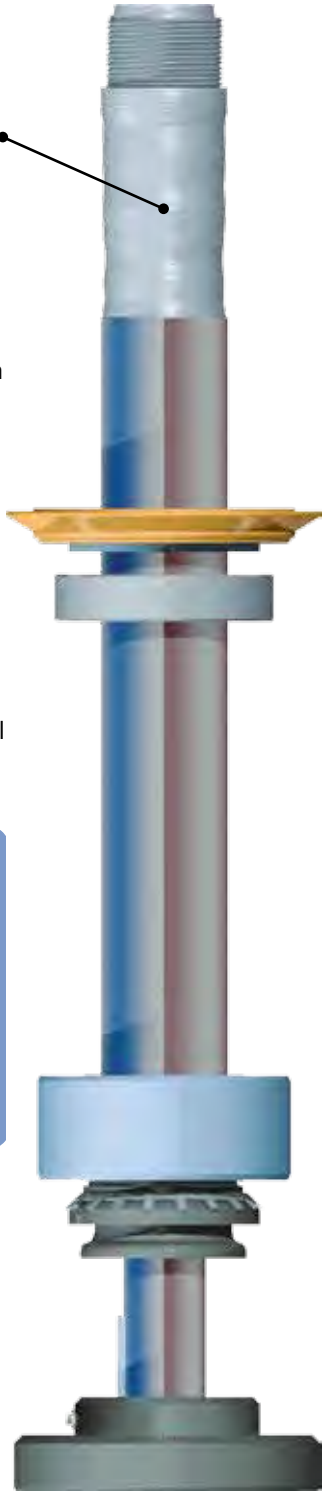
Worn shaft.

4. While the shaft is turning on the lathe, apply LOCTITE® EA 3478 Superior Metal by pressing it into the shaft. Firm pressure is required to squeeze out any potential air pockets.
5. The cured product can be turned on the lathe and brought down to the original shaft diameter.

RESULTS:

- Quick return to service.
- Reduced component consumption.
- Extended shaft life.

Step 4.



See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP REPAIR

Keyway Wallow

CHALLENGE:

Wallowed out keyways

CAUSE:

- Shaft vibration and external forces affect key stability. Over time, this instability leads to keyway wallow.

SOLUTION:

- Apply a bead of LOCTITE® 660™ Retaining Compound directly in the worn keyway.
- LOCTITE® 660™ Retaining Compound is a heavy-bodied product designed to fill large voids, up to 0.25 mm.

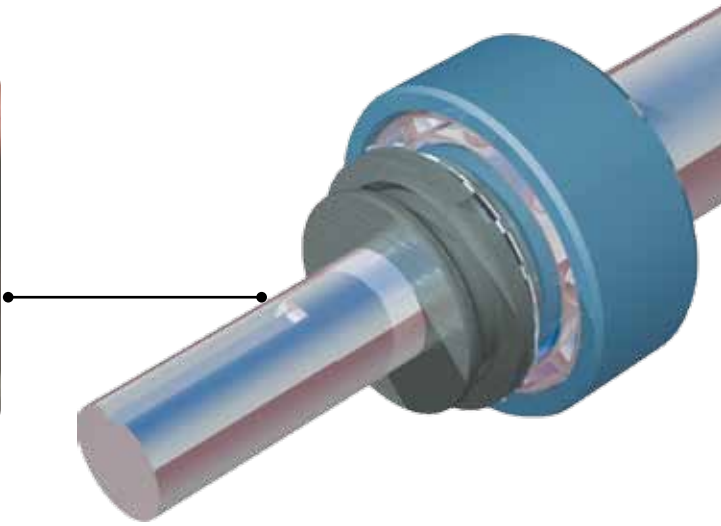
STEPS:

1. If the keyway wallow is severe, you may need to add shims to both sides.
2. Apply LOCTITE® 660™ Retaining Compound directly into the keyway.
3. Press the new key stock into the keyway and the assembly is restored without having to take apart the pump.

RESULTS:

- A secured fit to the keyway.
- Elimination of repeat wallowing.

Step 2.



See Pump Solutions Table on page 38 for a list of alternative LOCTITE® product solutions.

PUMP SOLUTIONS

Product Table

ASSEMBLY SECTIONS			
COMPONENTS	**APPLICATION**	**LOCTITE® SOLUTIONS**	**BENEFITS**
BEARING FRAME AND HOUSING	Threaded fittings	LOCTITE® 565™ Thread Sealant	Controlled strength
	Oil seals	LOCTITE® 248™ Threadlocker	Semisolid, medium strength
		LOCTITE® 242® Threadlocker	Medium strength
		LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
	O-rings	LOCTITE® LB 8034 Synthetic Grease	NLGI 2, GC-LB, NSF H1, Synthetic PAO
		LOCTITE® LB 8014 Food Grade Grease	NLGI 2, NSF H1
	Power end bolts	LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
		LOCTITE® LB 8150 Silver Grade Anti-Sieze	General purpose, up to 1600°F
		LOCTITE® LB 8008 C5-A Copper Anti-Seize Lubricant	General purpose, up to 1800°F
		LOCTITE® LB 8013 High Purity Anti-Seize	Metal-free, power plant safe
		LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
		LOCTITE® LB 8014 Foodgrade Anti-Seize	NSF approved, up to 750°F
	Bearings	LOCTITE® 641™ Retaining Compound	Press & slip fits, low strength
		LOCTITE® 609™ Retaining Compound	Press fit, general purpose
		LOCTITE® 603™ Retaining Compound	Press fit, oil tolerant
		LOCTITE® 620™ Retaining Compound	Slip fit, high temperature
FRAME ADAPTER	Oil seals	LOCTITE® 242® Threadlocker	Medium strength
		LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
	Dowel pins	LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
		LOCTITE® LB 8150 Silver Grade Anti-Sieze	General purpose, up to 1600°F
		LOCTITE® LB 8008 C5-A Copper Anti-Seize Lubricant	General purpose, up to 1800°F
		LOCTITE® LB 8013 High Purity Anti-Seize	Metal-free, power plant safe
		LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
		LOCTITE® LB 8014 Foodgrade Anti-Seize	NSF approved, up to 750°F
	Gasketing	LOCTITE® 518™ Flange Sealant	General purpose, up to 0.050"
		LOCTITE® 515™ Flange Sealant	General purpose, up to 0.050"
		LOCTITE® 574™ Flange Sealant	Fast curing, up to 0.020"
	Adapter bolts	LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
		LOCTITE® 242® Threadlocker	Medium strength
		LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance

PUMP SOLUTIONS

Product Table

ASSEMBLY SECTIONS			
COMPONENTS	**APPLICATION**	**LOCTITE® SOLUTION**	**BENEFITS**
GLAND ASSEMBLY	Packing gland studs	LOCTITE® 271™ Threadlocker	High strength
		LOCTITE® 263™ Threadlocker	High strength, oil resistant, primerless
		LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
		LOCTITE® 242® Threadlocker	Medium strength
		LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
	Packing gland nuts	LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
		LOCTITE® LB 8150 Silver Grade Anti-Sieze	General purpose, up to 1600°F
		LOCTITE® LB 8008 C5-A Copper Anti-Seize Lubricant	General purpose, up to 1800°F
		LOCTITE® LB 8013 High Purity Anti-Seize	Metal-free, power plant safe
		LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
		LOCTITE® LB 8014 Foodgrade Anti-Seize	NSF approved, up to 750°F
	Flushing connectors	LOCTITE® 567™ Thread Sealant with PTFE	High temperature, solvent resistant
		LOCTITE® 565™ Thread Sealant	Controlled strength
PUMP CASING	Stuffing box	LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
		LOCTITE® LB 8150 Silver Grade Anti-Sieze	General purpose, up to 1600°F
		LOCTITE® LB 8008 C5-A Copper Anti-Seize Lubricant	General purpose, up to 1800°F
		LOCTITE® LB 8013 High Purity Anti-Seize	Metal-free, power plant safe
		LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
		LOCTITE® LB 8014 Foodgrade Anti-Seize	NSF approved, up to 750°F
	Gasketing	LOCTITE® 518™ Flange Sealant	General purpose, up to 0.050"
		LOCTITE® 515™ Flange Sealant	General purpose, up to 0.050"
		LOCTITE® 574™ Flange Sealant	Fast curing, up to 0.020"
	Casing bolts	LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
		LOCTITE® 242® Threadlocker	Medium strength
		LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
IMPELLER	Shaft & impeller threads	LOCTITE® LB 8023 Marine Grade Anti-Sieze	Metal-free, water washout resistance
		LOCTITE® LB 8150 Silver Grade Anti-Sieze	General purpose, up to 1600°F
		LOCTITE® LB 8008 C5-A Copper Anti-Seize Lubricant	General purpose, up to 1800°F
		LOCTITE® LB 8013 High Purity Anti-Seize	Metal-free, power plant safe
		LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
		LOCTITE® LB 8014 Foodgrade Anti-Seize	NSF approved, up to 750°F
KEYWAYS / KEY STOCK	Prevent keyway wallow	LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
		LOCTITE® 242® Threadlocker	Medium strength
	Repair keyway wallow	LOCTITE® 660™ Retaining Compound	Press fit repair

PUMP SOLUTIONS

Product Table

ASSEMBLY SECTIONS

COMPONENTS	APPLICATION	LOCTITE® SOLUTIONS	BENEFITS
COUPLING	Coupling	LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
		LOCTITE® 242® Threadlocker	Medium strength
PUMP BASE MOUNTING	Mounting bolts	LOCTITE® 271™ Threadlocker	High strength
		LOCTITE® 263™ Threadlocker	High strength, oil resistant, primerless
		LOCTITE® 290™ Threadlocker	Wicking for post-assembly
PUMP BASE GROUTING	Pump base grouting	LOCTITE® PC 9458 Fast Set Grout	For pours up to 1" deep
		LOCTITE® PC 9626 Deep Pour Grout	For pours up to 6" deep
		LOCTITE® PC 9435 Marine Chocking	ABS approved

REPAIR SECTIONS

COMPONENTS	APPLICATION	LOCTITE® SOLUTIONS	BENEFITS
OIL SEEPAGE	Porosity sealing	LOCTITE® PC 7319 Chemical Resistant Coating	Protective coating
		LOCTITE® 290™ Threadlocker	Wicking for sealing porosities
CORROSION	Corrosion	LOCTITE® PC 7319 Chemical Resistant Coating	Protection against chemical attack
CASING/ IMPELLER WEAR	Wear	LOCTITE® PC 7333 Brushable Ceramic	Smooth, corrosion resistant coating
		LOCTITE® PC 7333 Brushable Ceramic	Smooth, corrosion resistant coating
		LOCTITE® PC 7234 High Temp Brushable Ceramic	Protection up to 550°F
		LOCTITE® PC 7218 Nordbak Wearing Compound	Trowelable, large ceramic beads
		LOCTITE® PC 7319 Chemical Resistant Coating	Protection against chemical attack
		LOCTITE® EA 3478 Superior Metal	Ferro-silicon-filled repair epoxy
		LOCTITE® PC 7222 Wear Resistant Putty	Ceramic fiber-filled epoxy
SHAFT WEAR	Wear	LOCTITE® EA 3478 Superior Metal	Ferro-silicon-filled repair epoxy
		LOCTITE® PC 3471 SS Putty	Stainless steel-filled repair epoxy
		LOCTITE® PC 3471 Steel Putty	Steel-filled repair epoxy
KEYWAY WALLOW	Wallow	LOCTITE® 660™ Retaining Compound	Press fit repair

OTHER PRODUCTS

PRODUCT TYPE	LOCTITE® SOLUTIONS	BENEFITS
PRIMER	LOCTITE® SF 7649™ Primer N™	Anaerobic primer/cleaner
CLEANERS	LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser	General-purpose cleaner
	LOCTITE® SF 790 Chisel® Paint Stripper	Aggressive gasket remover
	LOCTITE® SF 7840 Natural Blue	General purpose, environmentally friendly
ADHESIVES	LOCTITE® 331™ Structural Adhesive	General-purpose, no-mix adhesive
	LOCTITE® Fixmaster® Fast Cure Epoxy	Premeasured epoxy mixer cups
PENETRANTS/ LUBRICANTS	LOCTITE® LB 100 Maintain® Lubricant Penetrant	Moisture displacer, rust preventer
	LOCTITE® LB 8711 Penetrating Oil	Frees rusted parts

PUMP SOLUTIONS

Product Index

PRODUCT INDEX	
LOCTITE® SOLUTIONS	**BENEFITS**
LOCTITE® 222™ Threadlocker	Low strength, small screws
LOCTITE® 242® Threadlocker	Medium strength
LOCTITE® 243™ Threadlocker	Medium strength, oil resistant, primerless
LOCTITE® 263™ Threadlocker	High strength, oil resistant, primerless
LOCTITE® 271™ Threadlocker	High strength
LOCTITE® 290™ Threadlocker	Wicking for post-assembly
LOCTITE® 331™ Structural Adhesive	General-purpose, no mix adhesive
LOCTITE® 515™ Flange Sealant	General purpose, up to 0.050"
LOCTITE® 518™ Flange Sealant	General purpose, up to 0.050"
LOCTITE® 565™ Thread Sealant	Controlled strength
LOCTITE® 567™ Thread Sealant with PTFE	High temperature, solvent resistant
LOCTITE® 574™ Flange Sealant	Fast curing, up to 0.020"
LOCTITE® 603™ Retaining Compound	Press fit, oil tolerant
LOCTITE® 609™ Retaining Compound	Press fit, general purpose
LOCTITE® 620™ Retaining Compound	Slip fit, high temperature
LOCTITE® 641™ Retaining Compound	Press & slip fits, low strength
LOCTITE® 660™ Retaining Compound	Press fit repair
LOCTITE® SF 7649™ Primer N™	Anaerobic primer/cleaner
LOCTITE® C5-A® Copper Based Anti-Seize Lubricant	General purpose, up to 1800°F
LOCTITE® Chisel® Paint Stripper	Aggressive gasket remover
LOCTITE® Dielectric Grease	Protects electrical equipment
LOCTITE® PC 9626 Deep Pour Grout	For pours up to 6" deep
LOCTITE® Fixmaster® Fast Cure Epoxy	Premeasured epoxy mixer cups
LOCTITE® PC 9458 Fast Set Grout	For pours up to 1" deep
LOCTITE® PC 9435 Marine Chocking	ABS approved, orange
LOCTITE® Fixmaster® Poxy Pak™	Fast curing, high strength
LOCTITE® PC 3471 SS Putty	Stainless steel-filled repair epoxy
LOCTITE® PC 3471 Steel Putty	Steel-filled repair epoxy
LOCTITE® Fixmaster® Super Grout	For pours up to 18" deep
LOCTITE® PC 3478 Superior Metal	Ferro-silicon-filled repair epoxy
LOCTITE® PC 7222 Wear Resistant Putty	Ceramic fiber-filled epoxy
LOCTITE® LB 8014 Foodgrade Anti Seize	NSF approved, up to 750°F
LOCTITE® Food Grade Grease	NLGI 2, NSF H1
LOCTITE® LB 8009 Heavy Duty Anti-Seize	Metal-free, high lubricity
LOCTITE® Industrial Hand Wipes	Premoistened hand cleaning wipes
LOCTITE® Instant Gasket	High adhesion, up to 0.250"
Krytox® RFE PFPE Lubricant	Oxygen safe, NLGI 2, chemically inert
LOCTITE® Maintain® Lubricant Penetrant	Moisture displacer, rust preventer
LOCTITE® PC 9435 Marine Chocking	Metal-free, water washout resistance
LOCTITE® LB 8013 High Performance Anti-Seize	Metal-free, power plant safe
LOCTITE® SF 7840 Natural Blue	General purpose, environmentally friendly
LOCTITE® PC 7333 Brushable Ceramic	Smooth, corrosion-resistant coating
LOCTITE® PC 7333 Brushable Ceramic	Smooth, corrosion-resistant coating
LOCTITE® PC 7319 Chemical Resistant Coating	Protection against chemical attack
LOCTITE® PC 7234 High Temp Brushable Ceramic	Protection up to 550°F
LOCTITE® PC 7355 Nordbak Wearing Compound	Trowelable, large ceramic beads
LOCTITE® SF 7070 ODC-Free Cleaner & Degreaser	General-purpose cleaner
LOCTITE® 248™ Threadlocker Stick	Semisolid, medium strength
LOCTITE® 268™ Threadlocker Stick	Semisolid, high strength
LOCTITE® 548™ Flange Sealant Stick	Semisolid
LOCTITE® 561™ Pipe Sealant Stick with PTFE	Semisolid, controlled strength
LOCTITE® 668™ Retaining Compound Stick	Semisolid, slip fit, high temperature
LOCTITE® 5-A® Copper Anti-Seize Stick	Semisolid, general purpose
LOCTITE® Silver Anti-Seize Stick	Semisolid, general purpose
LOCTITE® LB 767 Silver Grade Anti-Sieze	General purpose, up to 1600°F
LOCTITE® LB 8046 Penetrating Oil	Frees rusted parts
LOCTITE® LB 8034	NLGI 2, GC-LB, NSF H1, Synthetic PAO
LOCTITE® White Lithium Grease	General-purpose, lubricating paste

LOCTITE®
BONDERITE®
TECHNOMELT®
TEROSON®
AQUENCE®

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