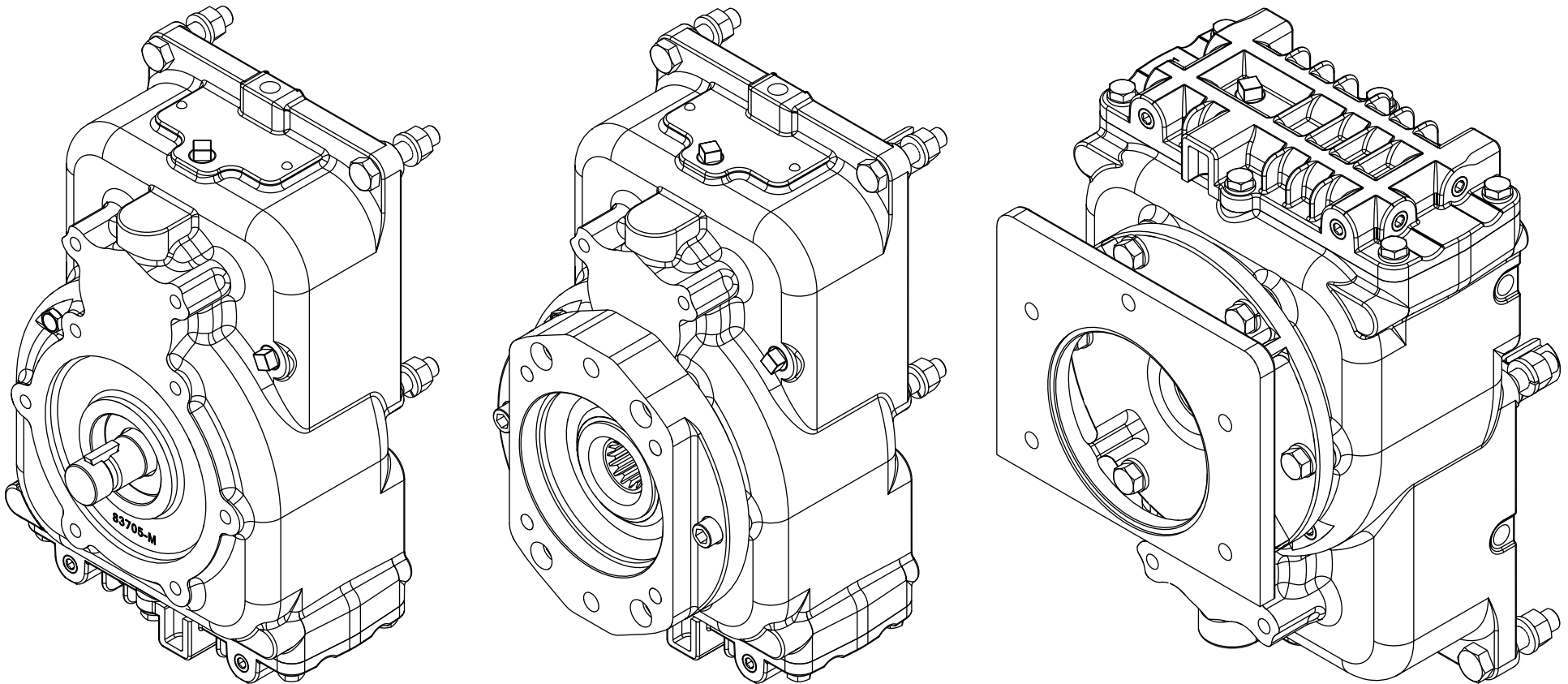


## Overhaul Instructions Medium-Duty Model K-Transmissions





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## Safety Precautions

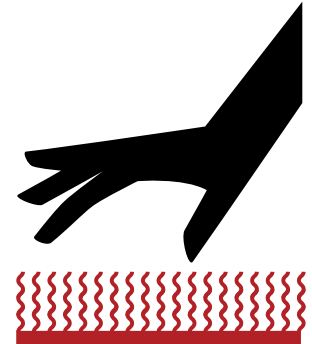
- Read and understand this document before you begin the overhaul.
- Read and understand all the notices and safety precautions.
- Be aware that these instructions are only guidelines and are not meant to be definitive. Contact Waterous when you have questions.
- Do not overhaul this equipment if you are not familiar with the tools and skills needed to safely perform required procedures.
- Do not modify the equipment.
- Waterous reserves the right to make modifications to the instructions without notice.



## WARNING

### Hot Surface

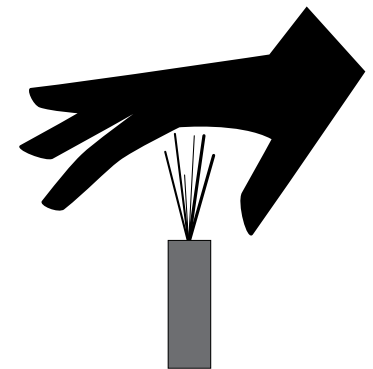
- Hot surface can burn you.
- Do not touch the surface during operation—allow it to cool after operating.



## WARNING

### High Pressure

- Liquid ejected at high pressure can cause serious injury.
- Drain the pump after use and before servicing.



Use this document to overhaul your Waterous equipment. Please understand the following conditions:

- Be aware that these instructions are only guidelines and are not meant to be definitive. Contact Waterous when you have questions.
- Understand that your configuration may require additional steps, that are not described in the illustrations or instruction, to perform the overhaul.
- The equipment described in this document is intended to be overhauled by a person or persons with the necessary skills and knowledge to perform the overhaul.

This document is divided into the following sections:

#### SAFETY

This section describes general precautions and alert symbols that are in this document.

#### INTRODUCTION

This section is an overview of the document.

#### DISASSEMBLY

This section describes disassembly procedures.

#### ASSEMBLY

This section describes assembly procedures.

## Using this Document

Use the guidelines below when viewing this document.

### Viewing the Document Electronically

- View this document in landscape orientation.
- Use the table of contents to navigate directly to that section.
- Text **with this appearance** is linked to a reference.

### Printing the Document

- The document is viewed the best when printed in color.
- The *print on both sides* and *flip on long edge* features can provide the best results.
- Use a 3-ring binder to store the document.

## Symbols

Symbols are used to illustrate additional tools or operations that are required to complete the instruction.



Arbor press—This symbol tells you to use an arbor press to complete this step.



Sealant—This symbol tells you to apply a appropriate sealant to the part.



Section reference—This symbol tells you to refer to the section reference for additional information.



Torque to specification—This symbol tells you to torque the hardware to the specified value.



Discard—This symbol tells you to discard or recycle the part in accordance with local regulations.

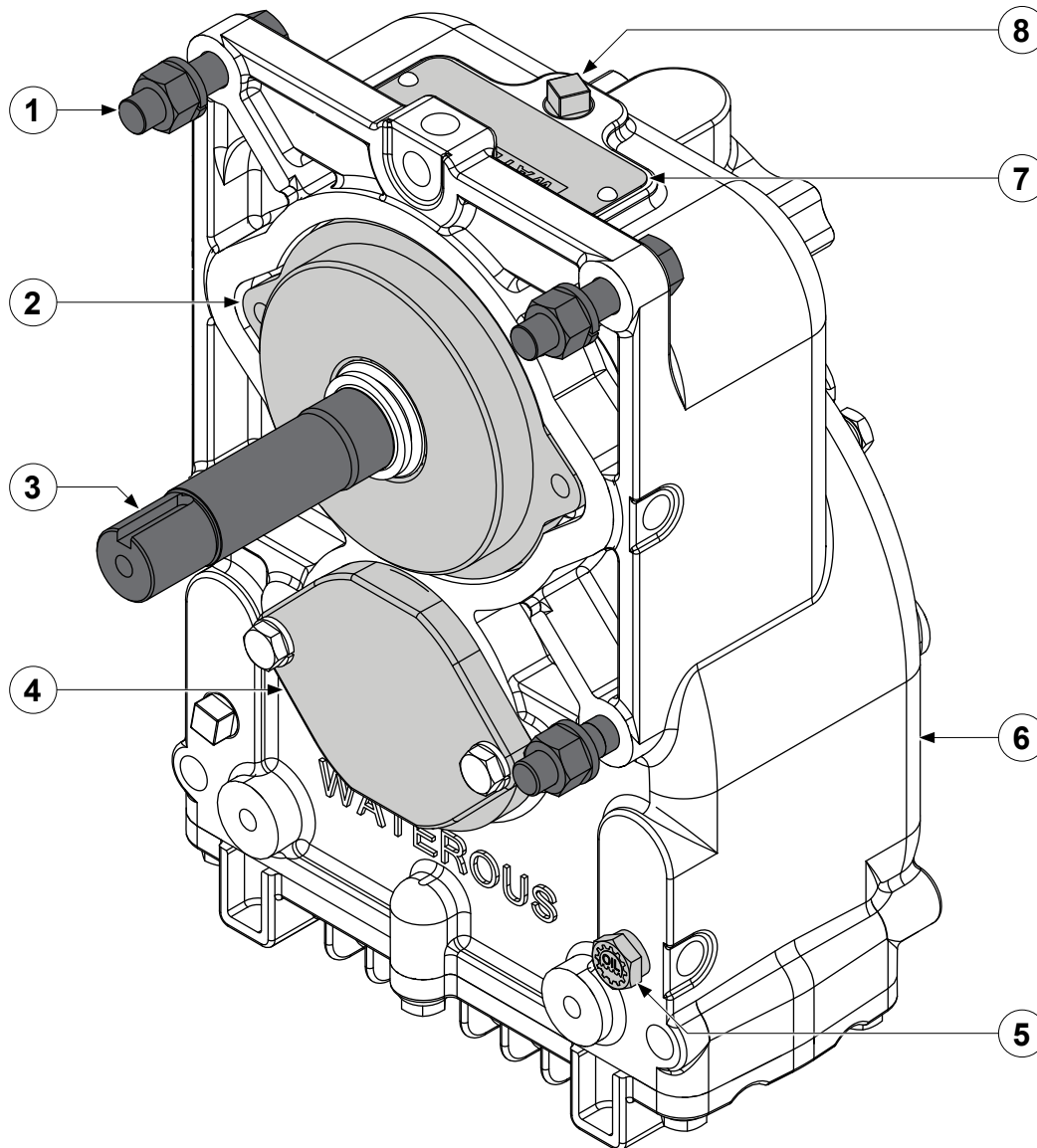


Finger tight, then quarter turn—This symbol tells you to secure the hardware to finger tight and then use a wrench to turn the hardware an additional quarter turn.



High-pressure grease—This symbol tells you to apply high-pressure grease to the surfaces that you are pressing together.

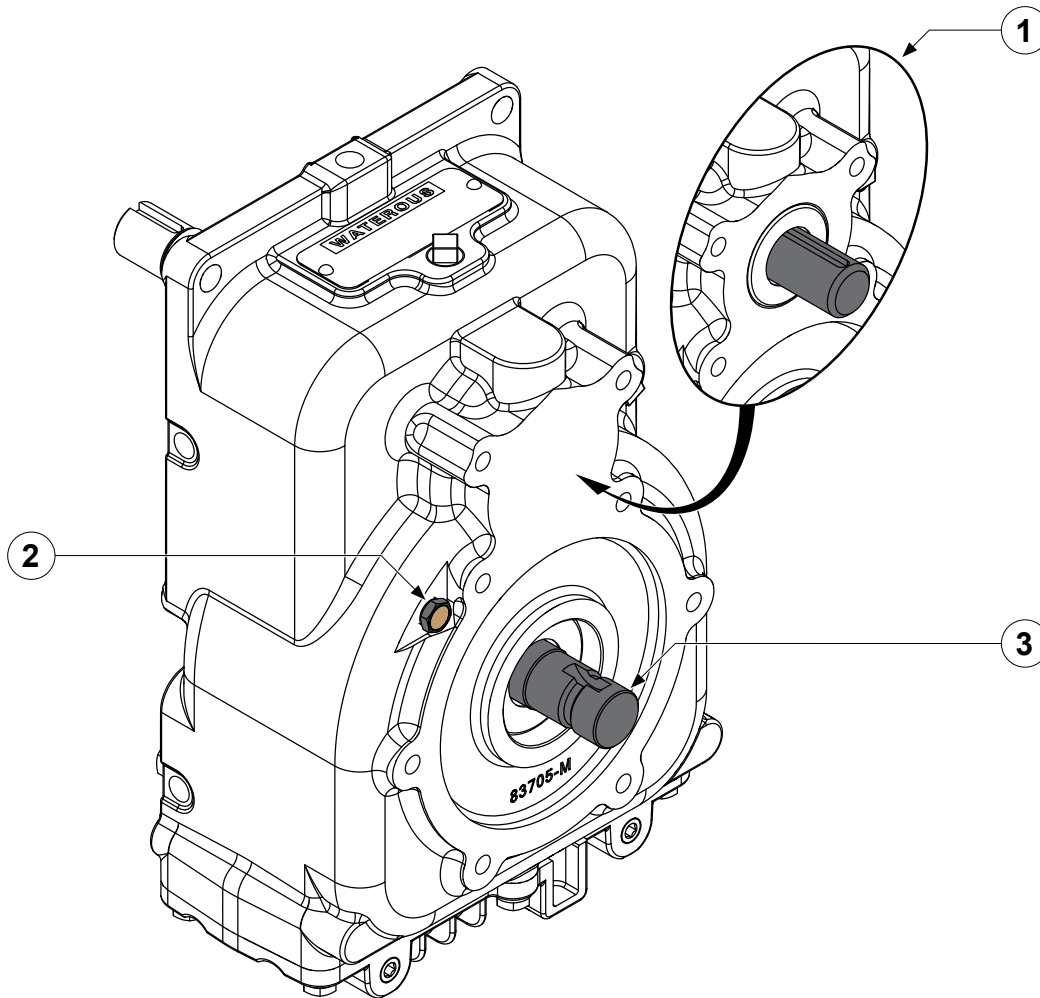
## Identifying Exterior Components—Pump Side



Use the illustration to identify various components on the transmission.

- |   |   |
|---|---|
| 1 | Mounting hardware                             |
| 2 | Bearing cover                                 |
| 3 | Impeller shaft—one-piece shaft shown          |
| 4 | Drive shaft bearing cover                     |
| 5 | Oil-level plug—location varies by application |
| 6 | Case  |
| 7 | Serial number plate—application dependent     |
| 8 | Oil-fill plug—location varies by application  |

## Identifying Exterior Components—Input Side



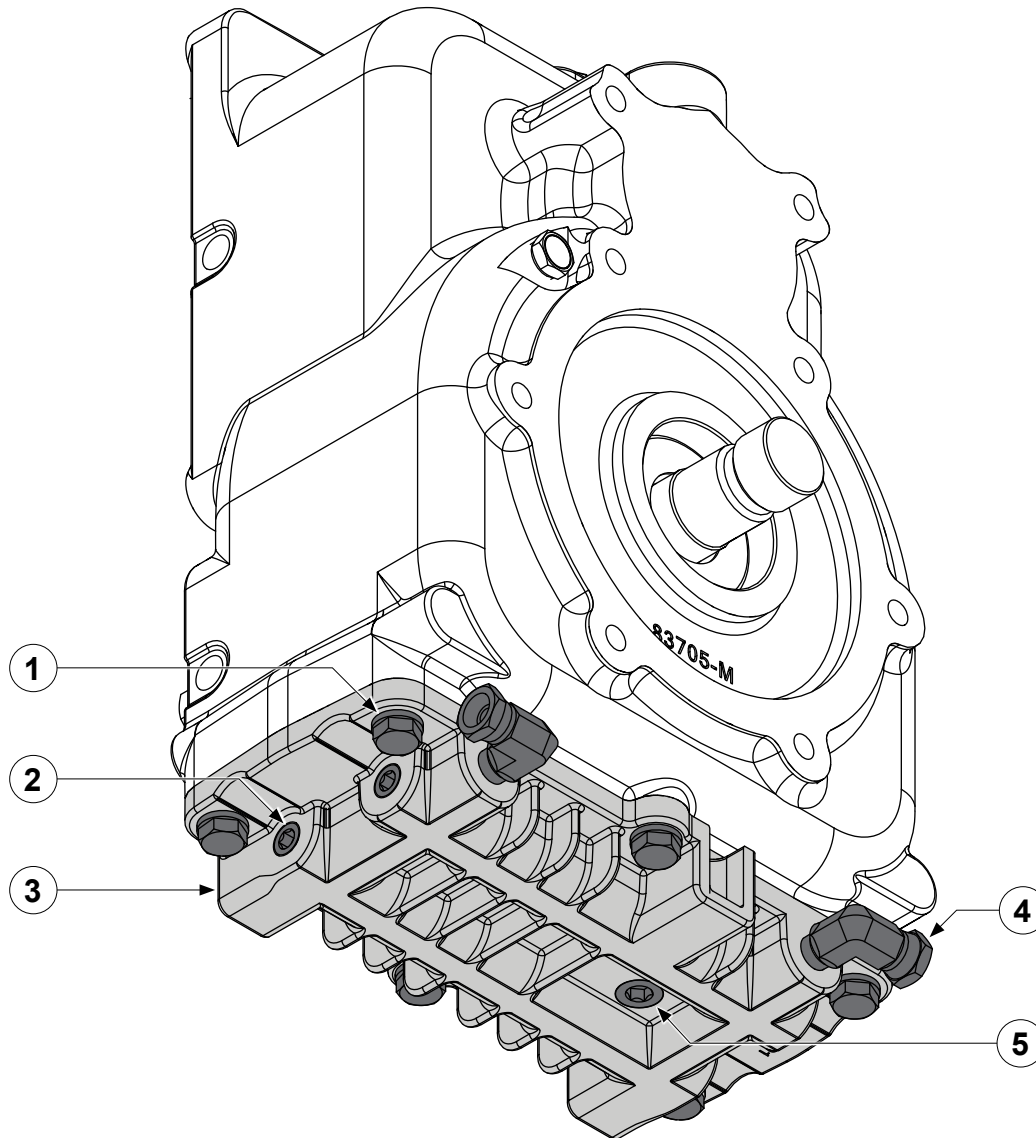
Use the illustration to identify various components on the transmission.

- 1 Extended impeller shaft output

**Note:** The extended impeller shaft is present in applications with a CAFS option.

- 2 Breather—location varies by application
- 3 Drive-shaft input

## Identifying Exterior Components—Bottom Cover



Use the illustration to identify various components on the transmission.

- |   |   |
|---|---|
| 1 | Oil cooler-mounting hardware                  |
| 2 | Oil-cooler drain                              |
| 3 | Oil-cooler pan                                |
| 4 | Oil-cooler fitting—optional                   |
| 5 | Gear-oil drain—location varies by application |

## Preparing to Disassemble the Transmission

- Read and understand the instructions before disassembling the equipment.
- Prepare a workspace suitable to accommodate and support the transmission.
- Gather the necessary tools, cleaning cloths, brushes, and penetrating fluids.
- Understand that your configuration may require additional steps that are not described in the illustrations or instruction to perform the disassembly.
- This equipment is intended to be disassembled by a person or persons with the basic knowledge of servicing similar equipment. Contact Waterous with questions.

## Tools Required

- Typical automotive mechanics hand tools.
- Suitable arbor press.
- Suitable support and lifting equipment.

## Preparing the Apparatus

- Park the apparatus on a level surface, in a well-lit area.
- Engage the parking brake.
- Shut off the engine and remove the key from the ignition switch.
- Allow the apparatus to cool before servicing.

## Best Practices

- Remove any dirt, sand, grease, or oil from the enclosure before you disassemble the transmission. Surface debris can transfer into the pump interior and prematurely wear internal parts.
- Only use a clean lint-free cloth, a debris free work surface, and properly maintained tools to perform the disassembly.
- Replace any gaskets and o-ring seals during the overhaul.
- Do not reuse the self-locking nuts.
- Apply penetrating oil to screws and nuts before disassembly.

## Removing the Transmission

Removing the transmission for overhaul varies by application. Your application may require components such as cooling lines, support brackets, plumbing connections, and other accessories be removed or disconnected before removing the transmission.

Furthermore, some applications require you to remove the transmission and pump together, before you can separate the transmission from the pump. Other applications allow you to separate the transmission without removing the pump from the apparatus. Refer to the pump instructions before proceeding.

Record the process used to remove the equipment from the apparatus. Use this information to install the equipment into the apparatus after the overhaul.

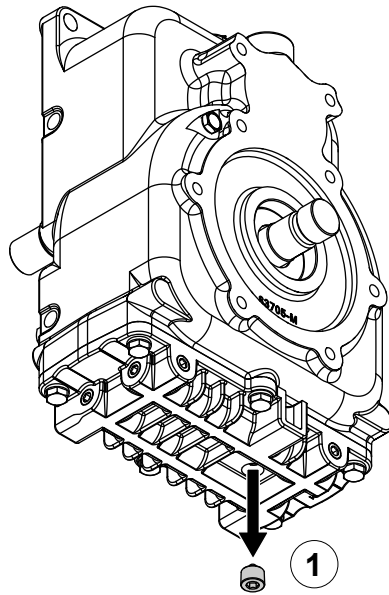
## Disassembling the Transmission Components

- Refer to the service parts list (SPL) for part identification and disassemble order.
- The SPL specific to your application is determined by the following:
  - The pump connected to the transmission.
  - The transmission drive method.
  - Whether the transmission drives a CAFS compressor.

**Note:** Documents specific to your application are available through the MyWaterous login at [Waterousco.com](http://Waterousco.com) by entering the serial number for your system. Depending on the application, the serial number for your equipment is located on the operator panel, or the pump, or the transmission, or some combination of the three.

- Use established industry practices to disassemble the transmission.
- Record or mark components as you remove them to make sure that you install them in the same orientation.
- Discard or recycle drained fluids collected during the overhaul in accordance with your local regulations.

## Draining the Gear Oil



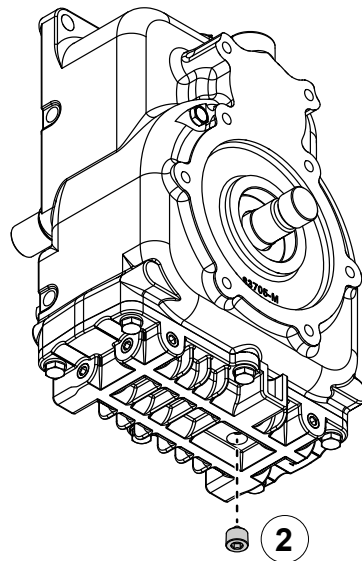
Use the illustrations and instructions to drain the oil from the transmission. The illustrations may not represent your specific transmission orientation. Refer to the SPL for your application to locate the oil-drain plug for your orientation.

**Note:** Locate the oil-fill plug to approximate the amount of oil in the transmission. Use this information to determine a suitable container to collect the drained oil.

- 1 Perform the following to drain the oil:
  - Place a container under the transmission to collect the drained oil.
  - Locate, remove, and set aside the drain plug.
  - Allow the oil to drain.

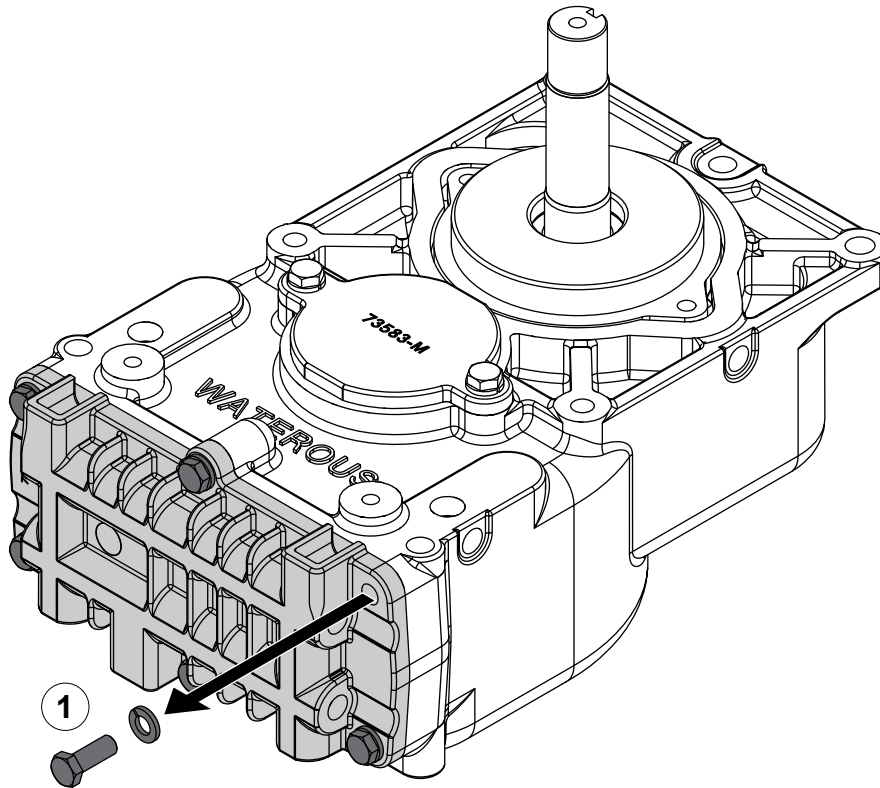
- 2 Install the drain plug.

**Note:** Make sure that you do not over-tighten the plug.



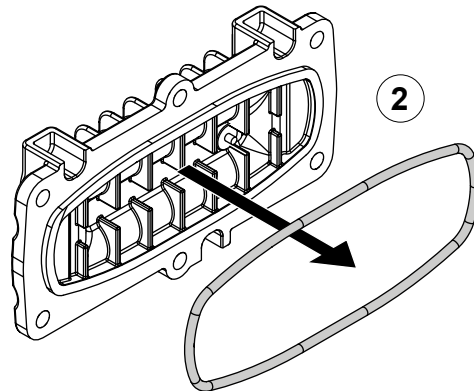


## Removing the Bottom Cover

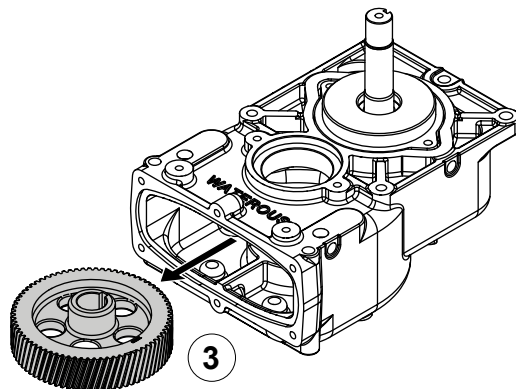
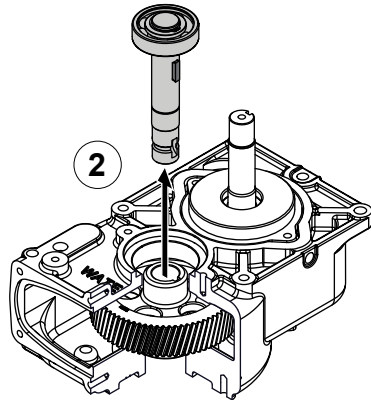
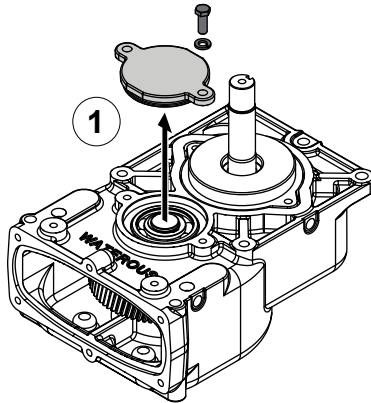


Use the illustrations and instructions to remove the bottom cover.

- 1 Remove and set aside the hardware securing the bottom cover to the case.
- 2 Remove and discard the bottom cover O-ring.



## Removing the Drive Components

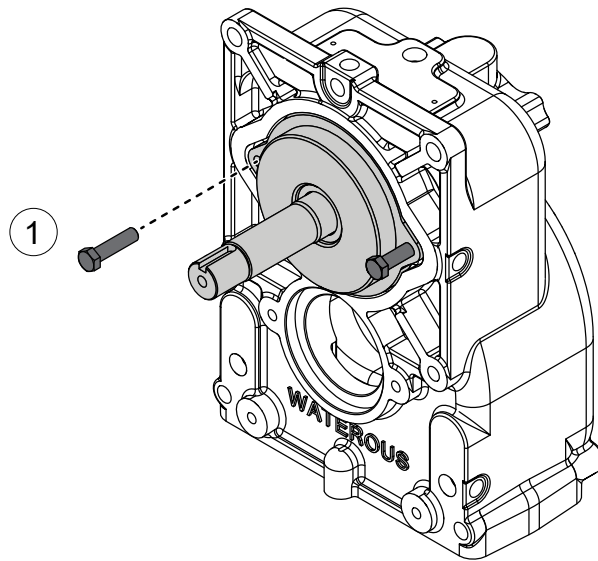


Use the illustrations and instructions to remove the drive components.

**Note:** The illustrations may not represent your application. Refer to the SPL for your application to identify the drive components and the order of removal.

- 1 Remove and set aside the hardware securing the bearing cover. Remove and discard the associated O-ring or gasket.
- 2 Remove the drive shaft and associated components.
- 3 Remove the drive gear and remaining components.

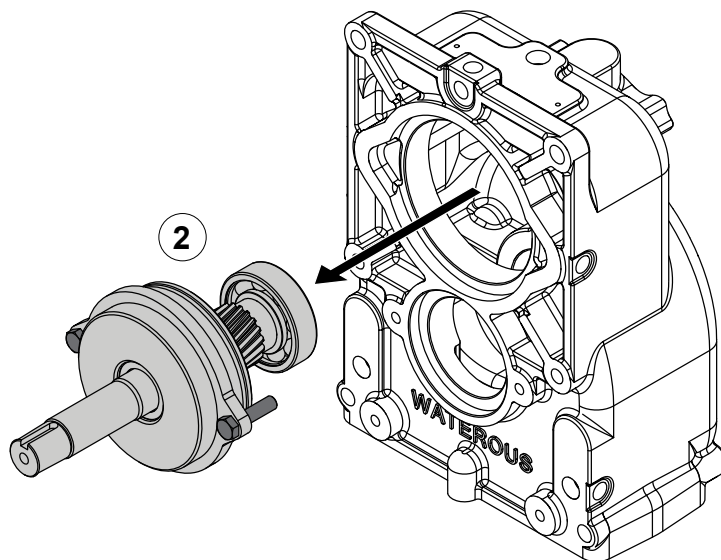
## Removing the Bearing Housing



Use the illustrations and instructions to remove the impeller-shaft assembly.

**Note:** The illustrations may not represent your specific configuration.

- 1 Perform the following to remove the impeller-shaft assembly and the associated components:
  - Locally sourced 2, 3/8-24 x 1-1/2 inches.
  - Install the screws into the jacking-holes.
  - Apply a quarter turn alternatively to each jacking-screw until the bearing housing is free from the case.
- 2 Once you remove the impeller-shaft assembly and the associated components from the case, perform the following:
  - Remove and discard the O-ring, oil seal, and locknut.
  - Use an arbor press to separate the remaining components.



## Preparing to Assemble the Transmission

- Read and understand the instructions before assembling the transmission.
- Prepare a workspace suitable to accommodate and support the transmission.
- Gather the necessary tools and assembly aides.
- Gather the overhaul components such as, lubricant, bearings, seals, O-rings—only use equivalent components.
- Understand that your configuration may require additional steps that are not described in the illustrations or instruction to perform the assembly.
- This equipment is intended to be assembled by a person or persons with the basic knowledge of servicing similar equipment. Contact Waterous for more information.

## Tools Required

- Typical automotive mechanics hand tools.
- Suitable arbor press.
- Torque wrench capable of 450 ft-lb (610 N·m).
- Suitable support and lifting equipment.

## Best Practices

- Remove any dirt, sand, grease, or oil from the enclosure before you begin the overhaul. Surface debris can transfer into the pump interior and prematurely wear internal parts.
- Replace any gaskets and O-ring seals during the assembly.
- Do not reuse the self-locking nuts.
- Apply anti-seize to the self-locking nut threads before installation.

## Assembling the Transmission Components

- Refer to the service parts list (SPL) for part identification.
- The SPL specific to your application is determined by the following:
  - The transmission drive method.
  - Whether the transmission drives a CAFS compressor.

**Note:** Documents specific to your application are available through the MyWaterous login at [Waterousco.com](https://www.waterousco.com) by entering the serial number for your system. Depending on the application, the serial number for your equipment is located on the operator panel, or the pump, or the transmission, or some combination of the three.

- Use established industry practices to assemble the transmission.
- Tighten hardware to industry standard torque specification—unless otherwise noted.
- Make sure that you do not over-tighten plugs.
- Install retaining rings with the flat face towards the component you are retaining.
- Replace items such as O-rings, bearings, gaskets, oil seals, lubricants, and locknuts with their equivalent.

## Installing the Transmission

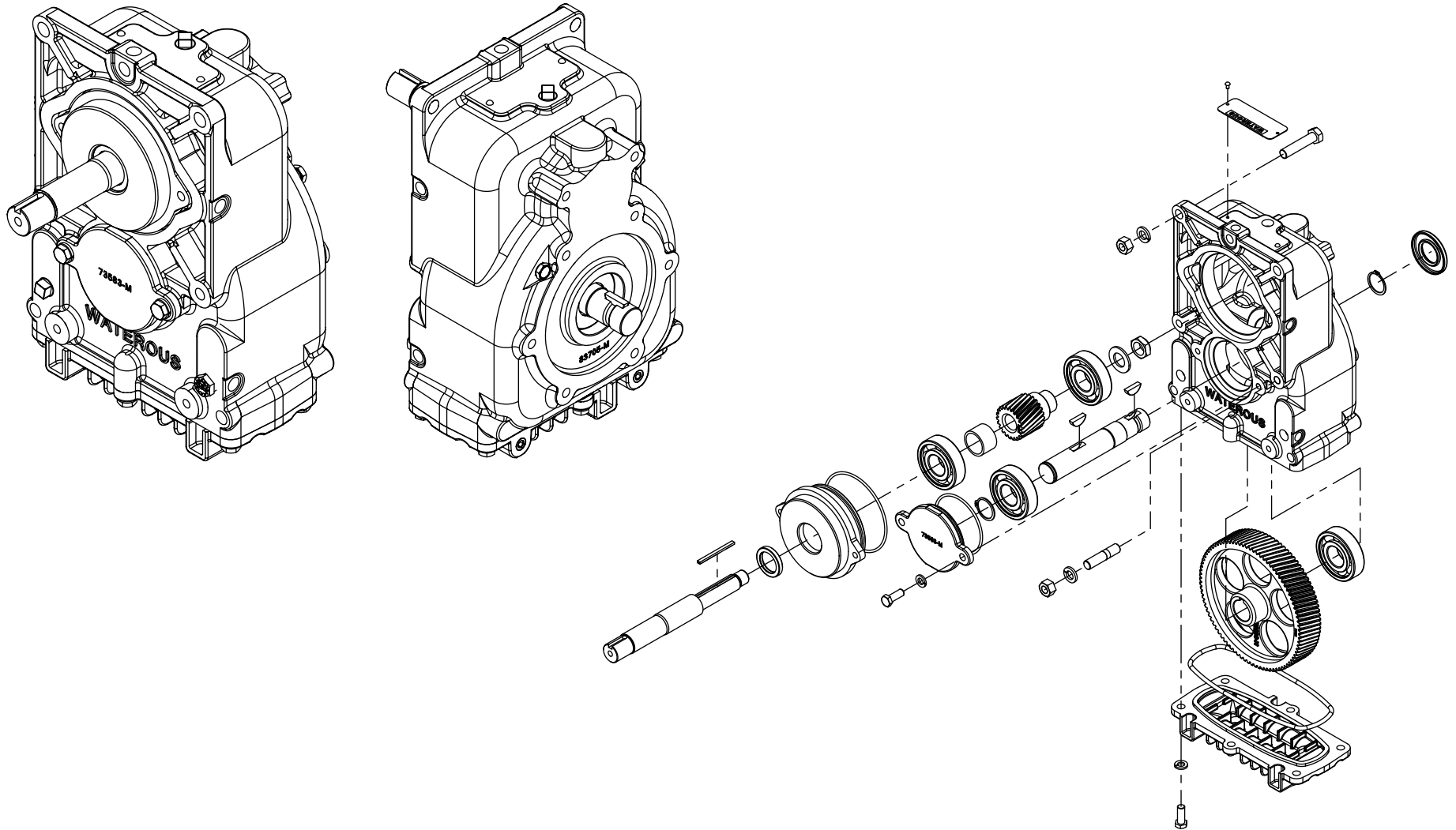
Use the information that you recorded when you removed the equipment to install it into the apparatus.

## Understanding the Illustrations

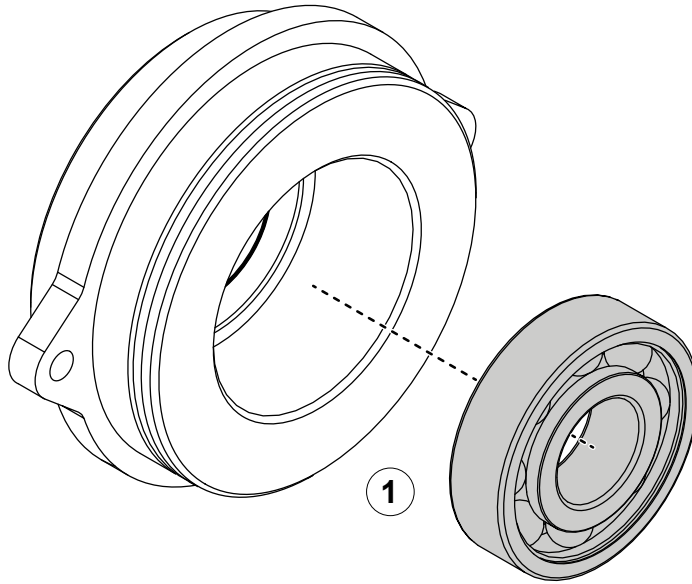
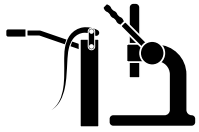
The assembly illustrations depict a typical application. Plugs, breathers, cooling hoses and fittings are not illustrated—as they may be in a different location in your application. Refer to the SPL for your application to identify the various plug locations.

## This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across the entire width of the page, typical of notebook or legal stationery. The background is a solid off-white color. There are no margins, text, or other markings present.

## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



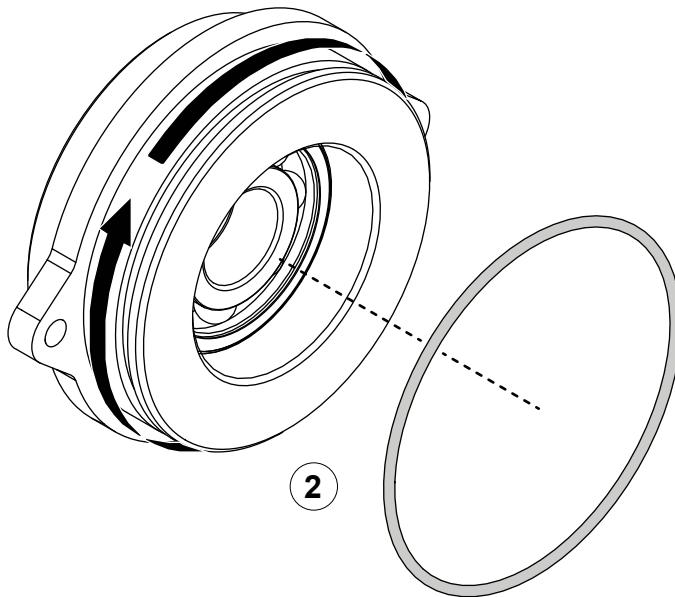
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



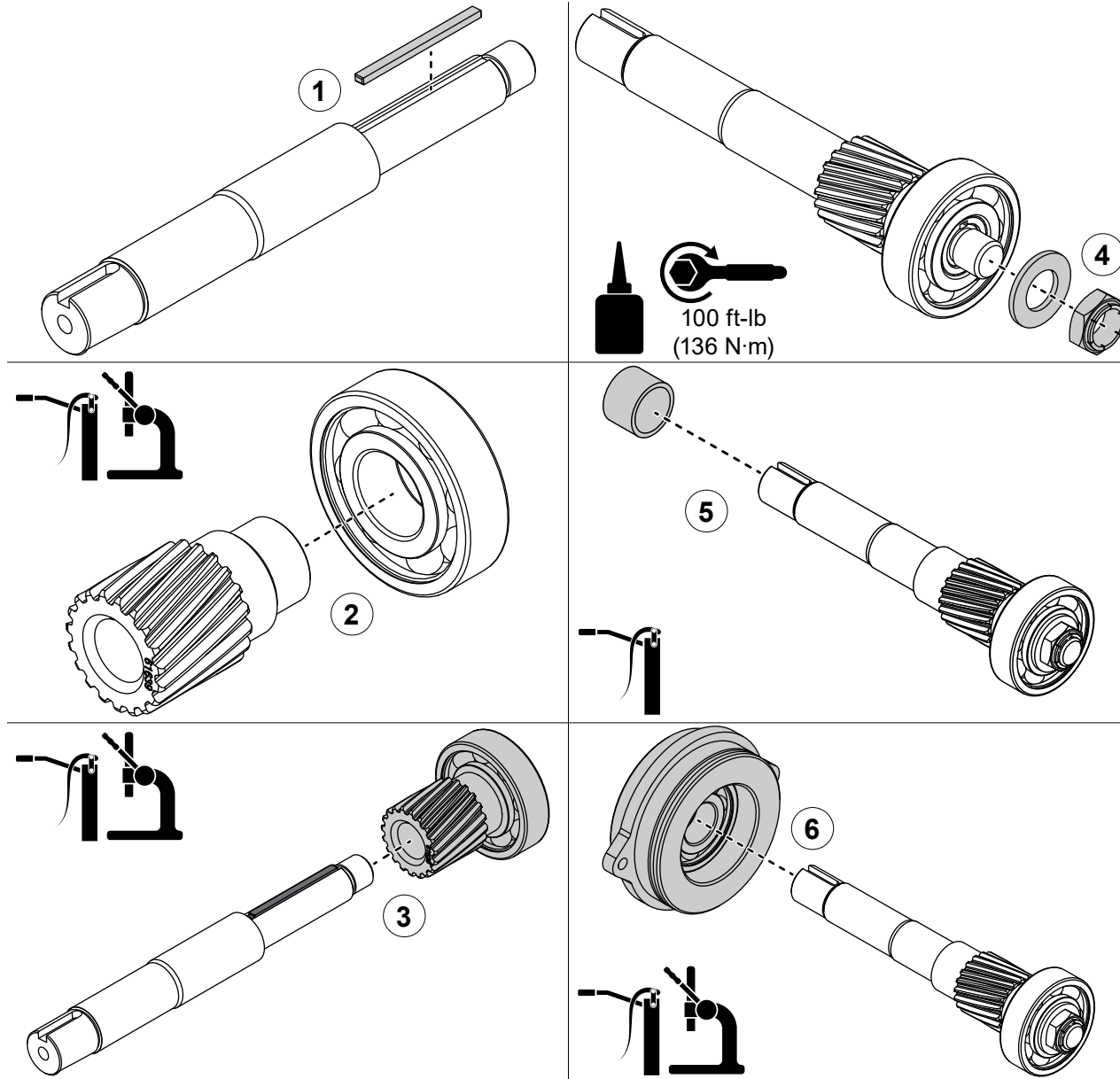
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install O-ring around the bearing housing.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



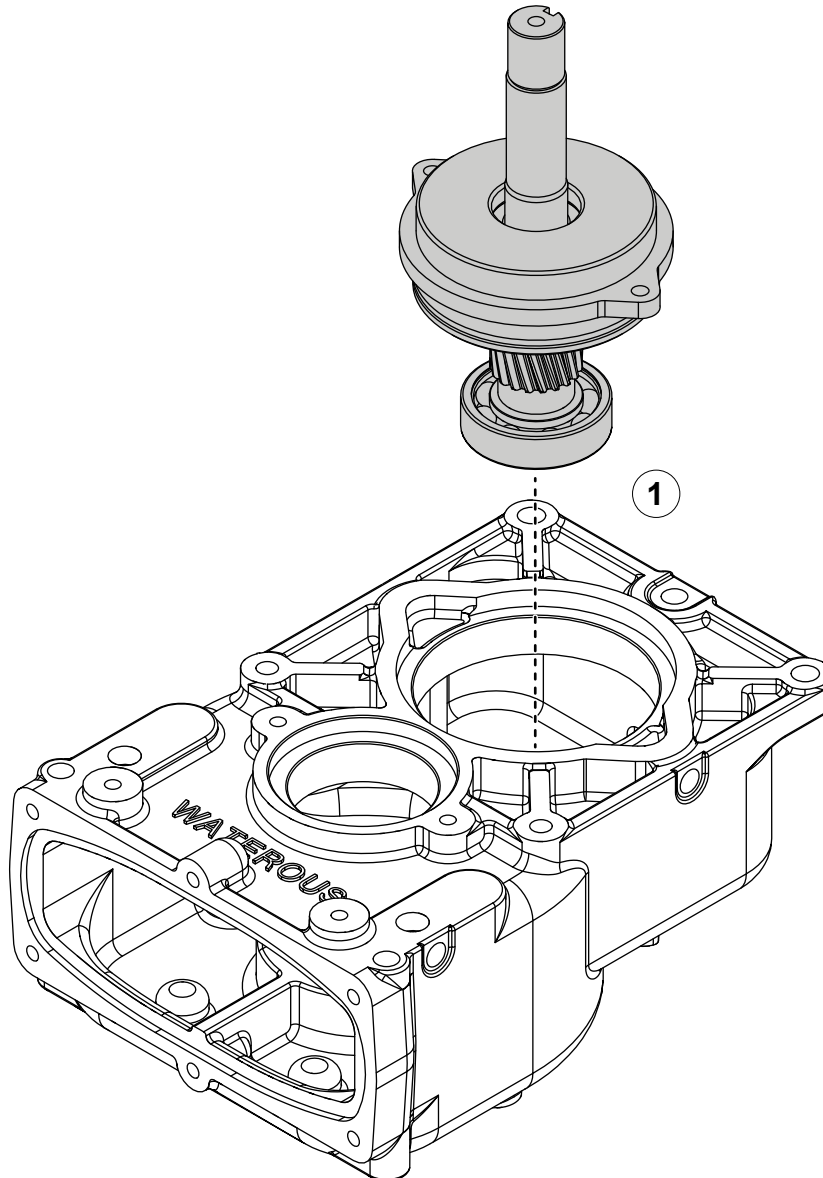
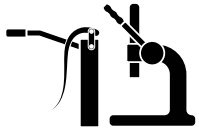
### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Install the key into the keyway.
- 2 Apply grease to the inner-bearing race and press the driven gear and bearing together.
- 3 Apply grease to the shaft and align the driven gear to the key on the shaft. Press the components together.
- 4 Install the washer. Apply medium-duty thread lock on the threads and install the locknut. Torque the locknut to 100 ft-lb (136 N·m).
- 5 Apply grease to the shaft and install the spacer.
- 6 Apply grease to the inner-bearing race and press the shaft assembly into the bearing house assembly.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input

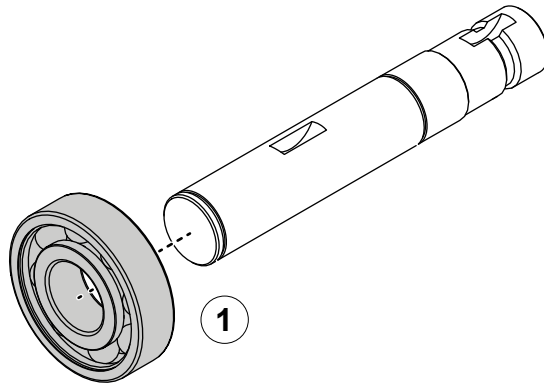
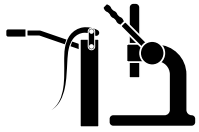


### Installing the Impeller-Shaft Assembly

Use the illustration and instruction to install the impeller-shaft assembly.

- 1 Apply grease to the outer-bearing race and press the impeller-shaft assembly into the case.

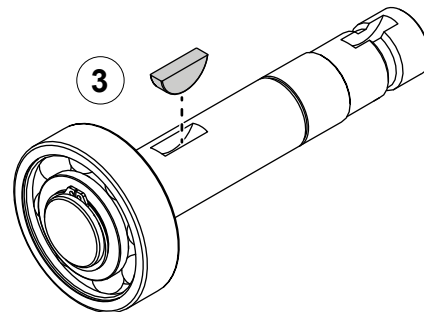
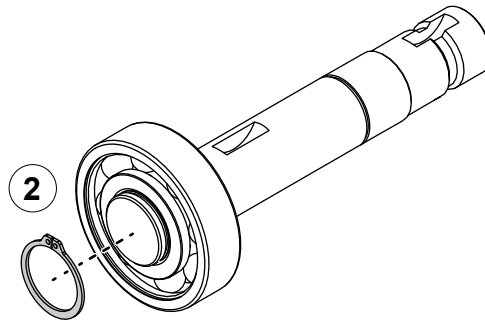
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



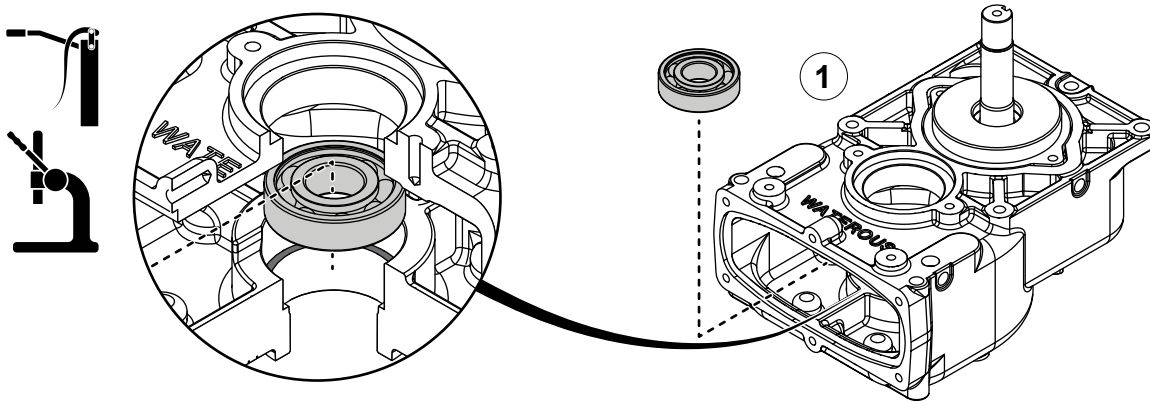
### Assembling the Drive Shaft

Use the illustrations and instructions to assemble the drive-shaft assembly.

- 1 Apply grease to the inner-bearing race and press the drive shaft and bearing together.  
**Note:** Press the bearing onto the shaft until it is flush with the retaining-ring groove.
- 2 Install the retaining ring.
- 3 Install the key into the keyway.



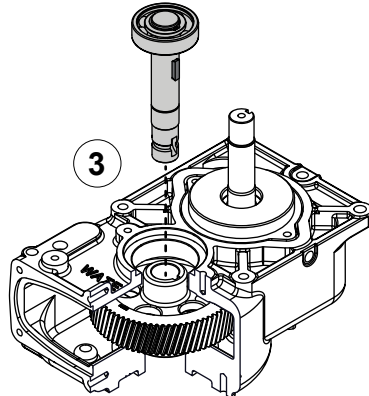
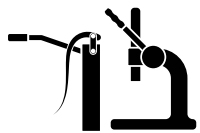
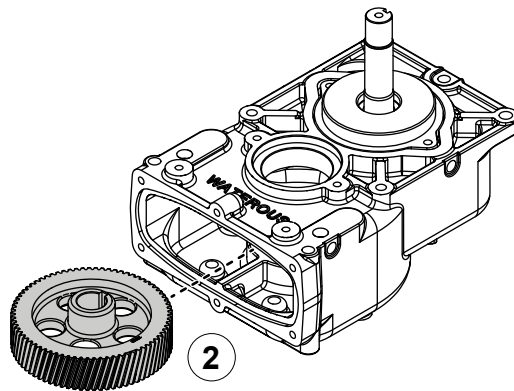
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



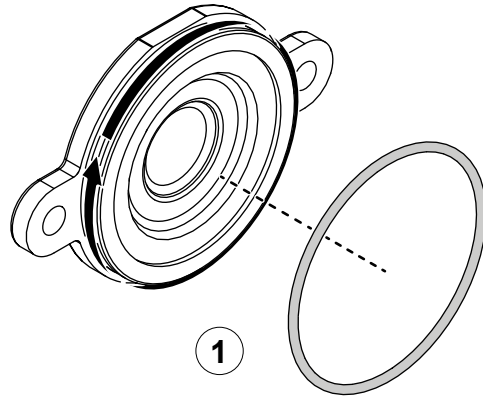
### Installing the Drive-Gear Components

Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer-bearing race and press it into bearing pocket inside the case.
- 2 Align the drive gear over the bearing.
- 3 Apply grease to the drive shaft. Align the key on the drive shaft to the keyway on the drive gear and press the assembly together.



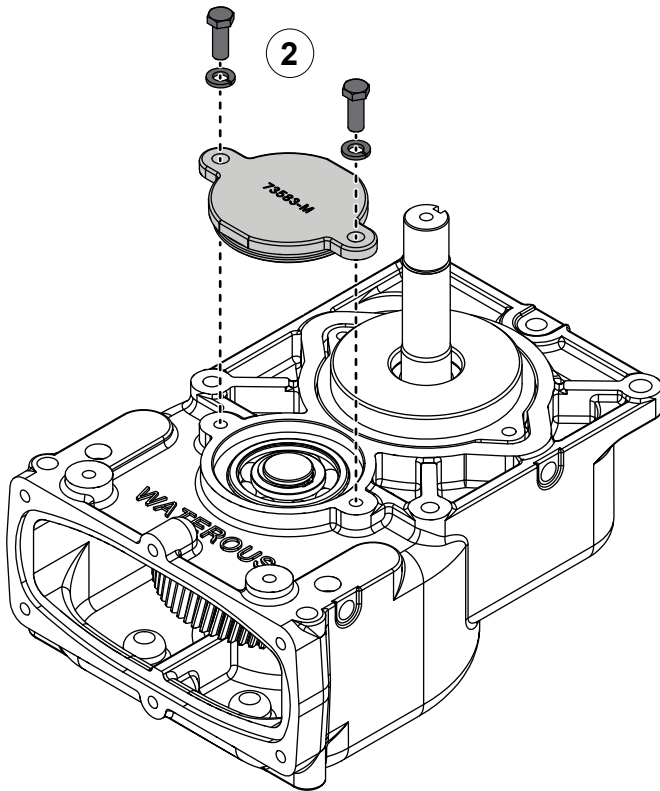
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



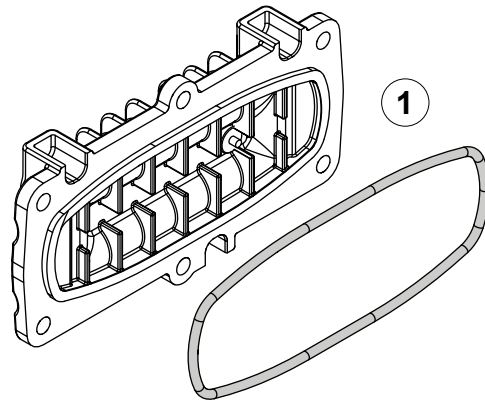
### Installing the Bearing Cover

Use the illustrations and instructions to install the bearing cover.

- 1 Apply sealant to the O-ring groove and install the O-ring around the bearing cover.
- 2 Use the hardware that you removed earlier to securely install the bearing cover.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input

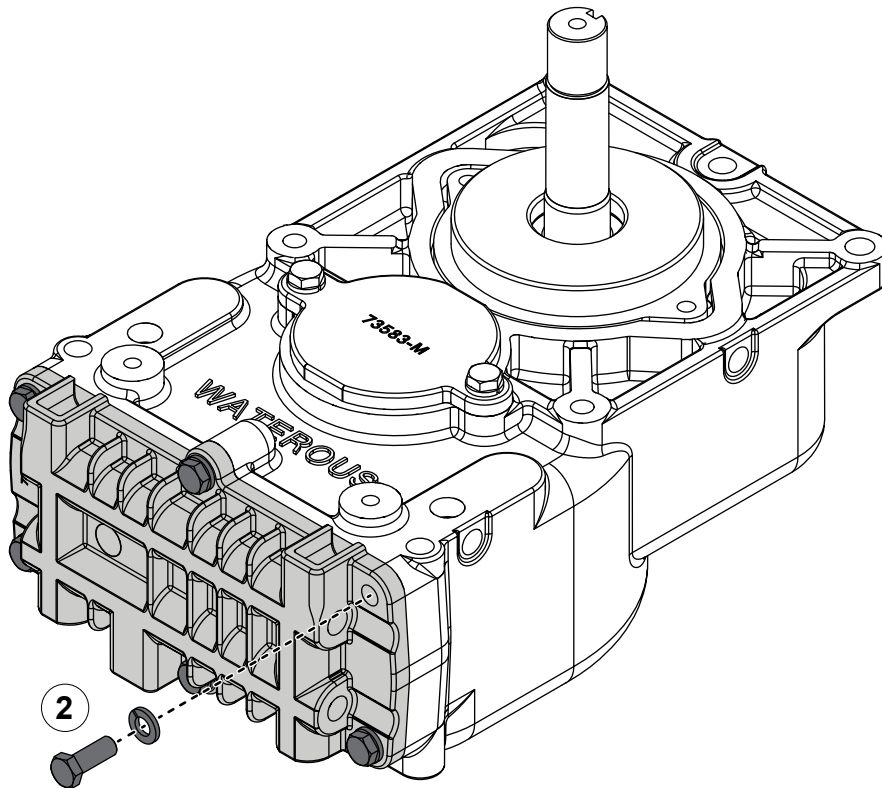


### Installing the Bottom Cover

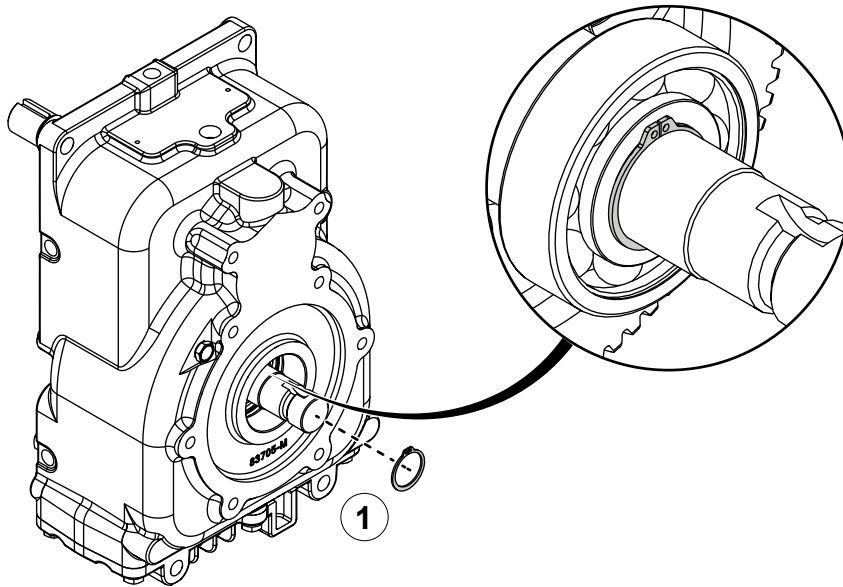
Use the illustrations and instructions to install the bottom cover.

**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install the O-ring on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.



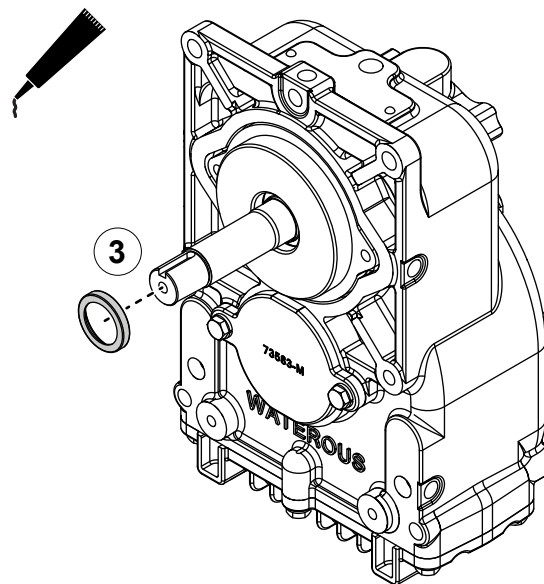
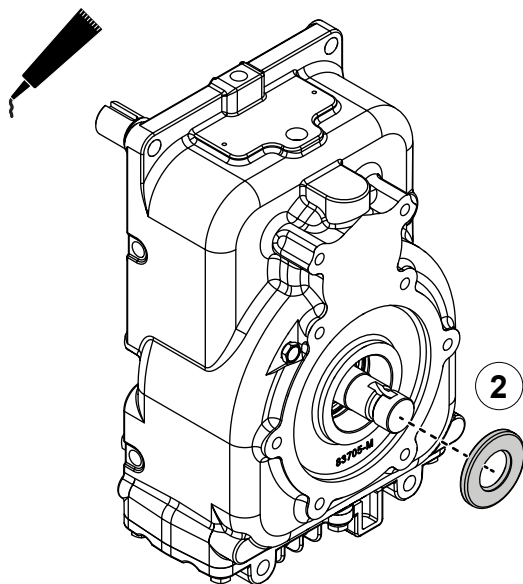
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and 1-1/8 Inch Keyed Input



### Installing the Shaft Components

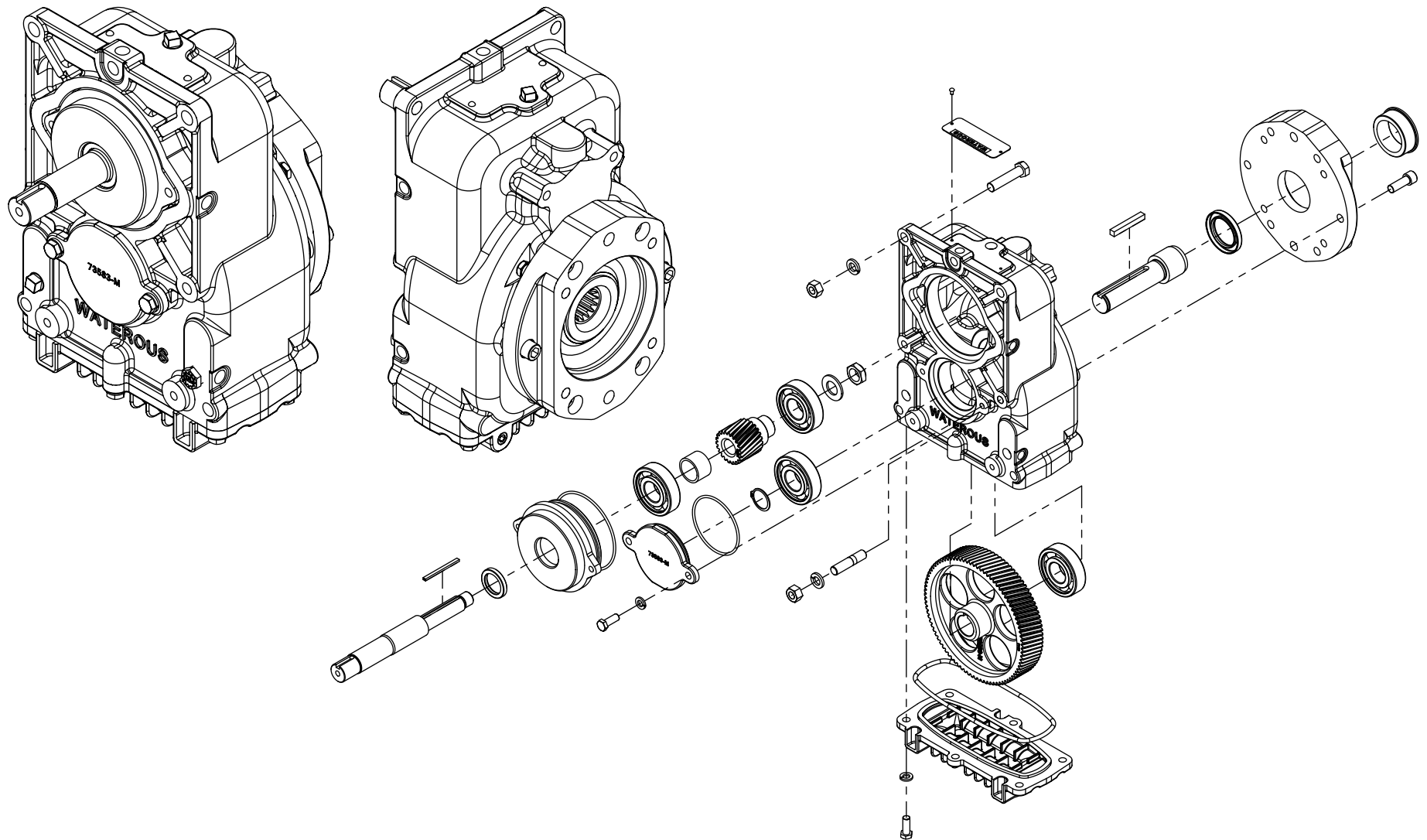
Use the illustrations and instructions to install the shaft components.

- 1 Install the retaining ring around the drive shaft.
- 2 Apply sealant to the seal and install it over the drive shaft.
- 3 Apply sealant to the seal and install it over the impeller shaft.



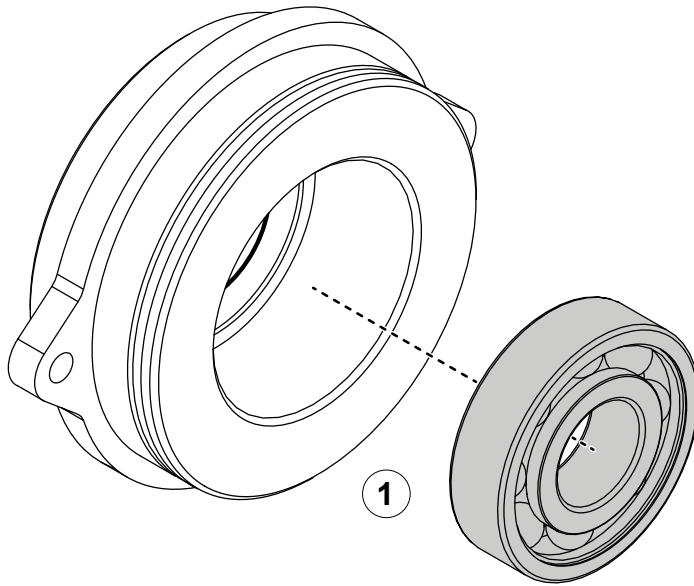
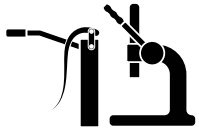
[illegible]

## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter





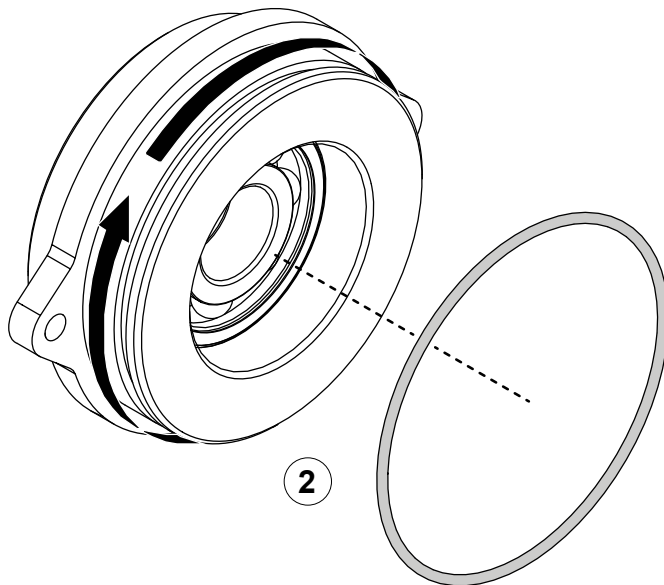
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter



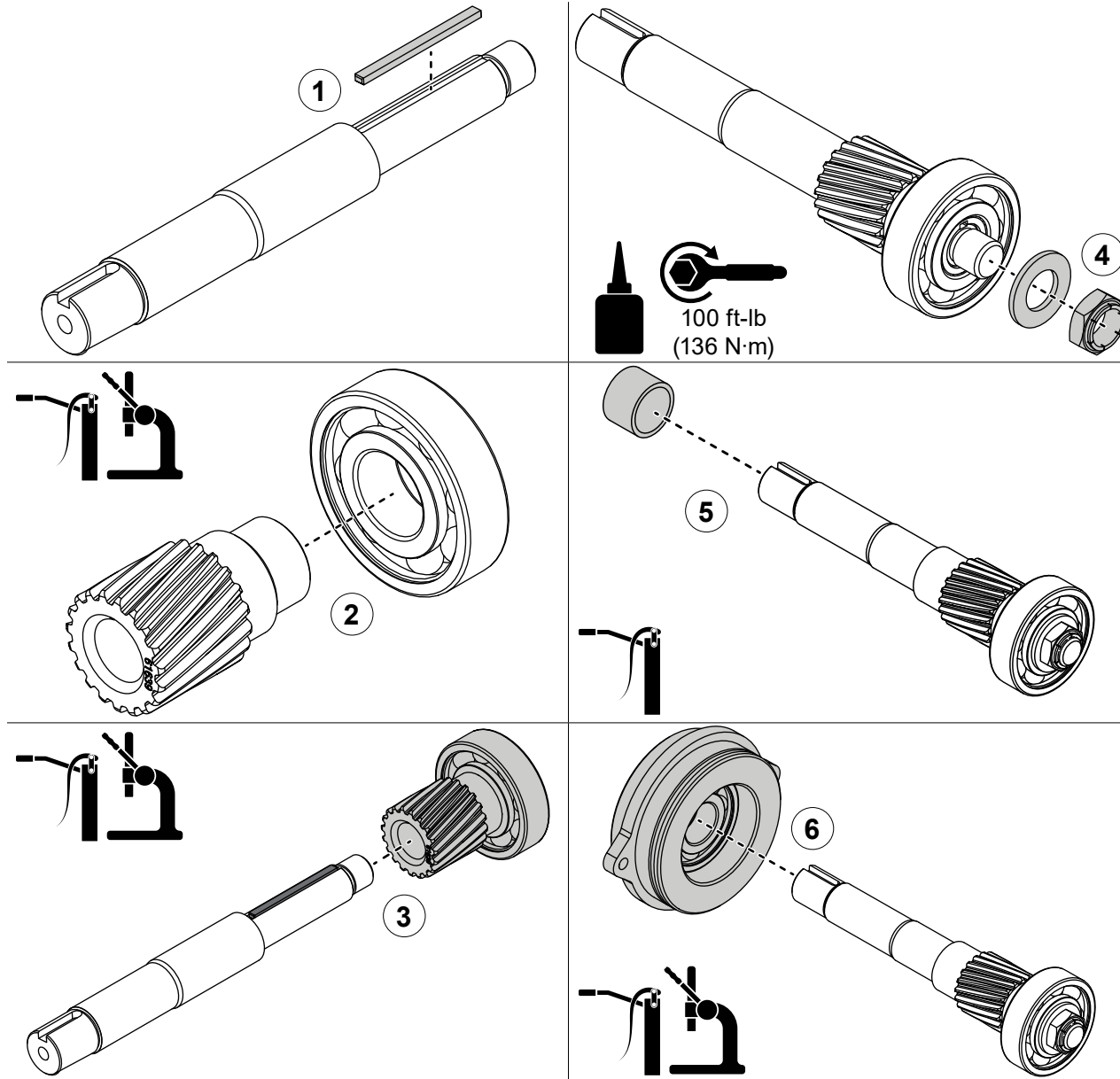
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install the O-ring around the bearing housing.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter

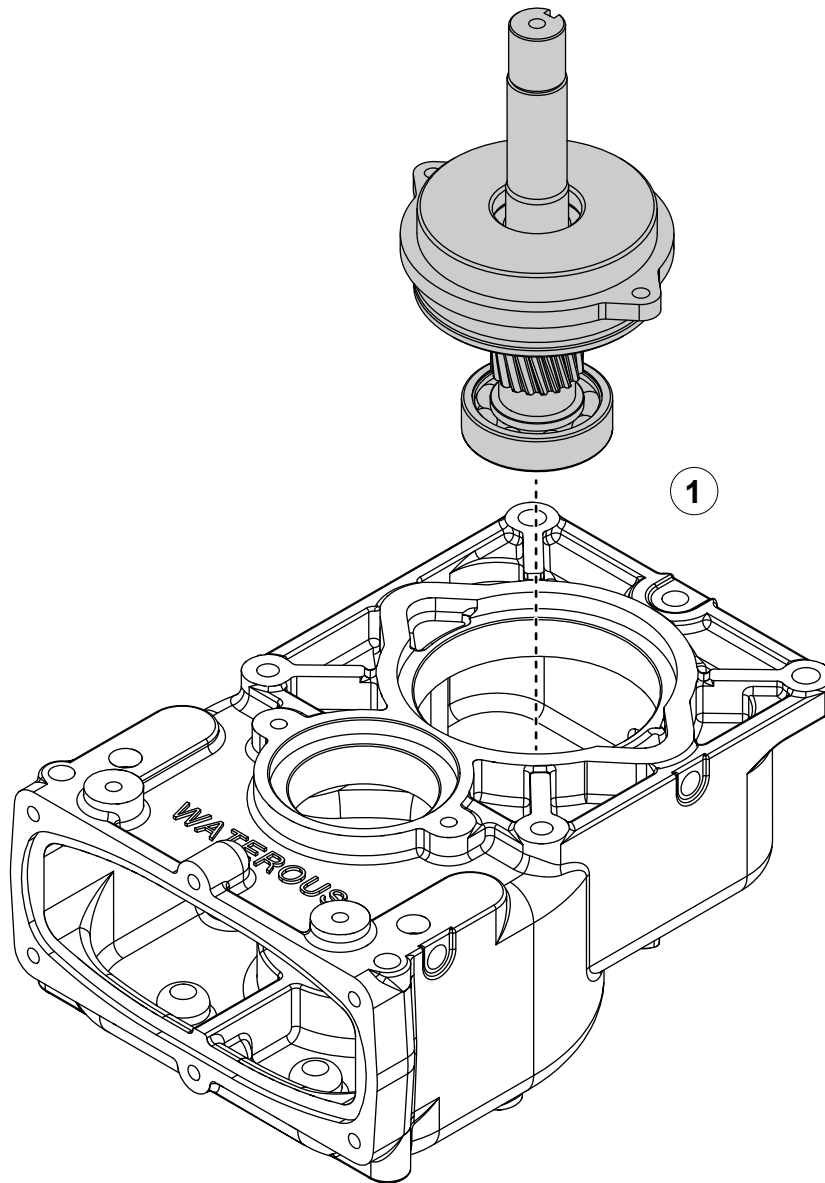
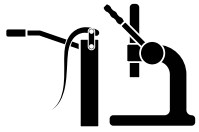


### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Install the key into the keyway.
- 2 Apply grease to the inner-bearing race and press the driven gear and bearing together.
- 3 Apply grease to the shaft and align the driven gear to the key on the shaft. Press the components together.
- 4 Install the washer. Apply medium-duty thread lock on the threads and install the locknut. Torque the locknut to 100 ft-lb (136 N·m).
- 5 Apply grease to the shaft and install the spacer.
- 6 Apply grease to the inner-bearing race and press the shaft assembly into the bearing house assembly.

## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter

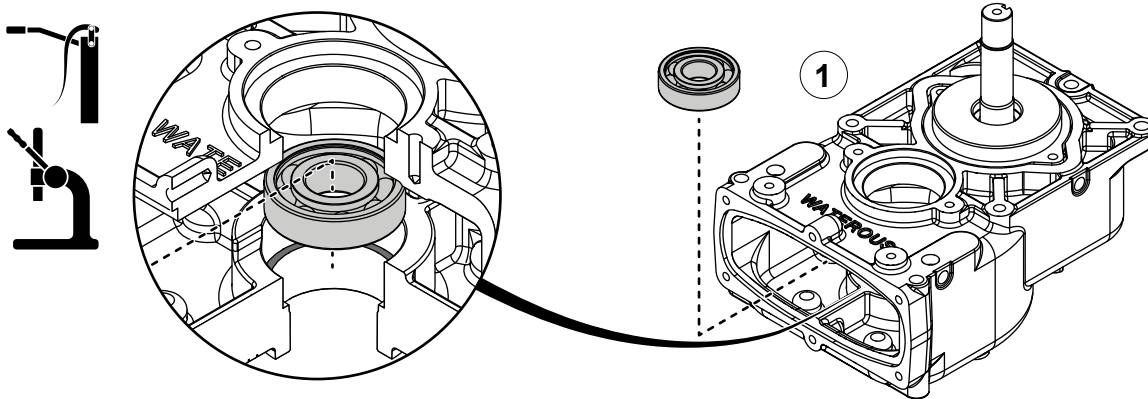


### Installing the Driven-Gear Assembly

Use the illustration and instruction to install the impeller-shaft assembly into the case.

- 1 Apply grease to the outer-bearing race and press the impeller-shaft assembly into the case.

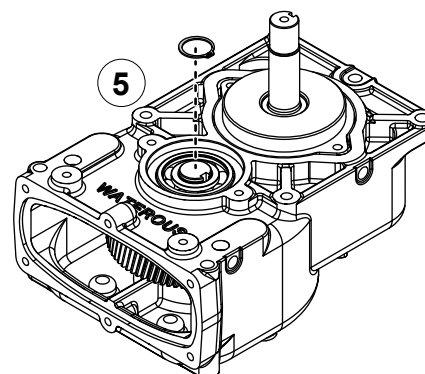
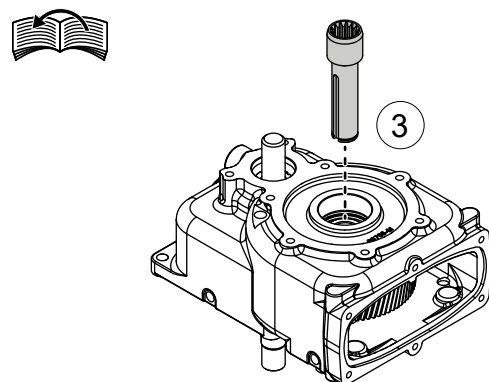
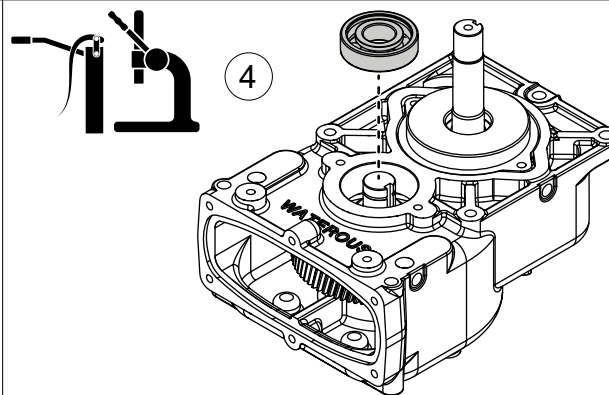
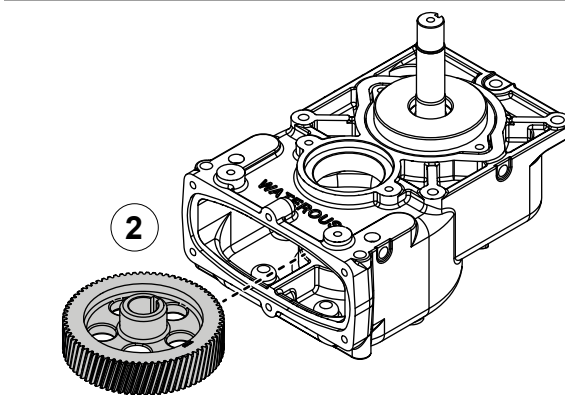
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter



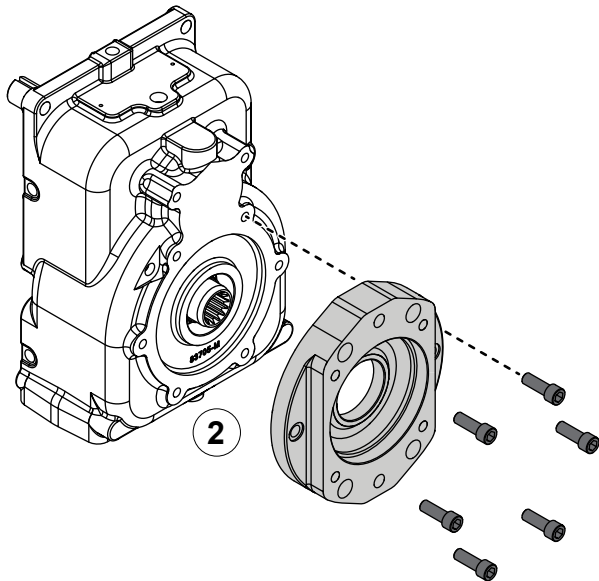
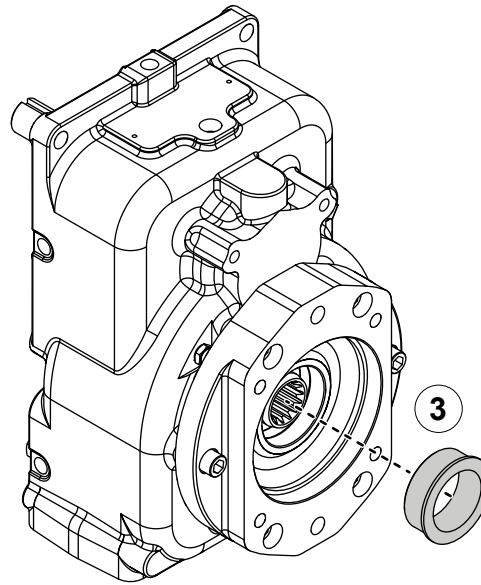
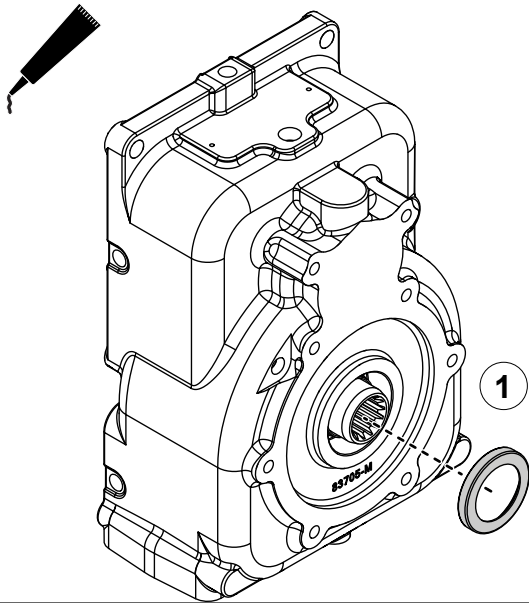
### Installing the Drive-Gear Components

Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer-bearing race and press it into bearing pocket inside the case.
- 2 Align the drive gear over the bearing.
- 3 Refer to: **"Installing the Drive-Shaft Key" on page 78** to install the drive shaft.
- 4 Apply grease to the inner- and outer-bearing race and press it into the case while pressing it onto the shaft.
- 5 Install the retaining ring.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter

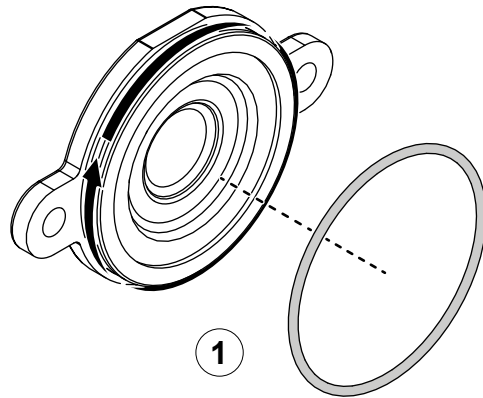


### Completing the Drive Shaft Install

Use the illustrations and instructions to complete the assembly.

- 1 Apply sealant to the seal and install it over the shaft.
- 2 Use the hardware that you removed earlier and loosely install the flange adapter.
- 3 Use the bushing to align the loosely-installed adapter to the case. Once you install the bushing, securely tighten the adapter screws.

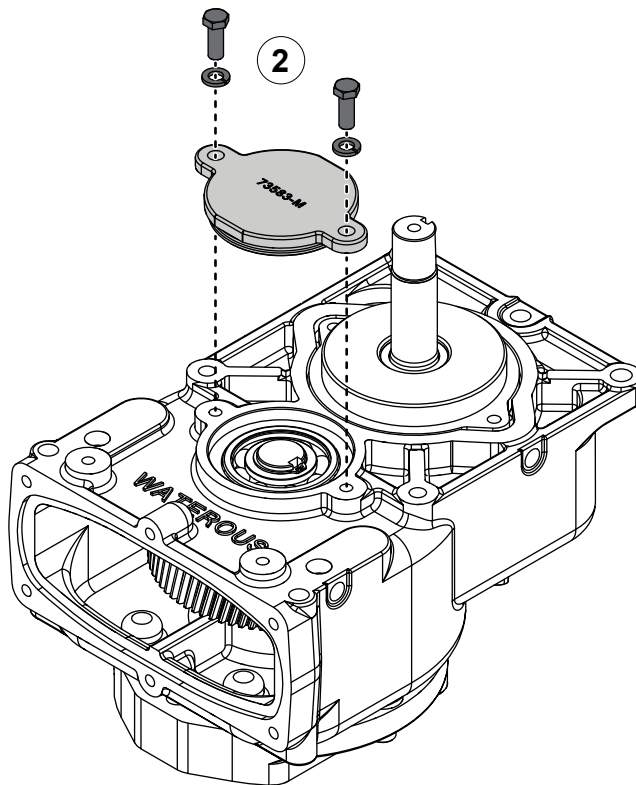
## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter



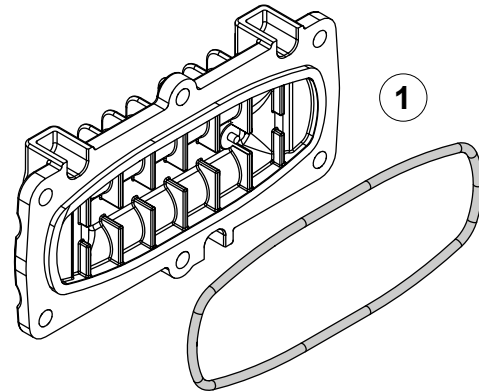
### Installing the Bearing Cover

Use the illustrations and instructions to install the bearing cover.

- 1 Apply sealant to the O-ring groove and install O-ring around the bearing cover.
- 2 Use the hardware that you removed earlier to securely install the bearing cover.



## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter

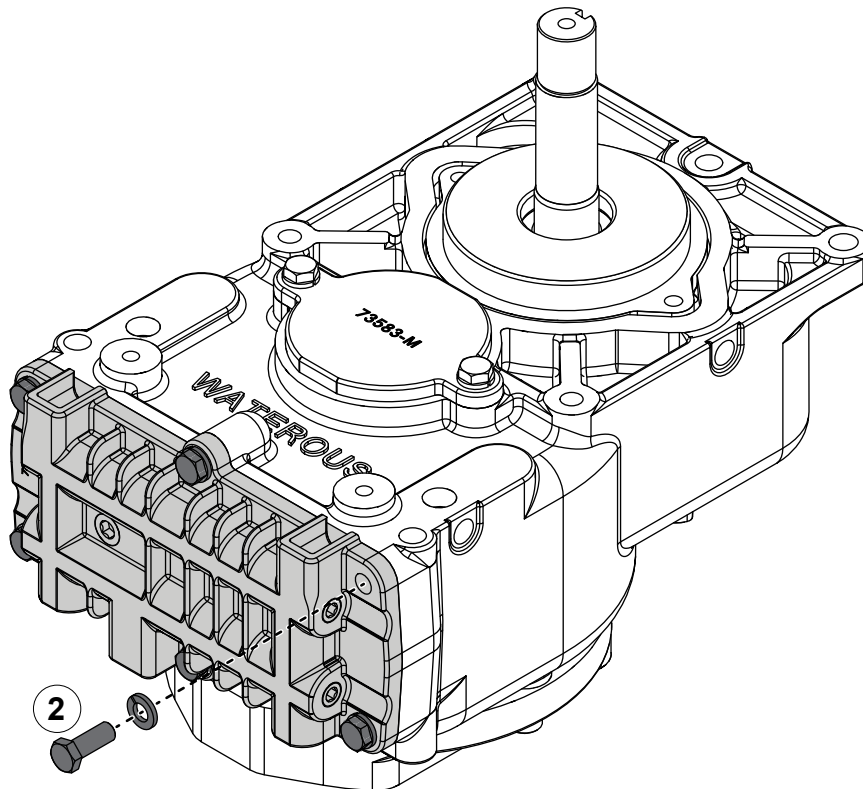


### Installing the Bottom Cover

Use the illustrations and instructions to install the bottom cover.

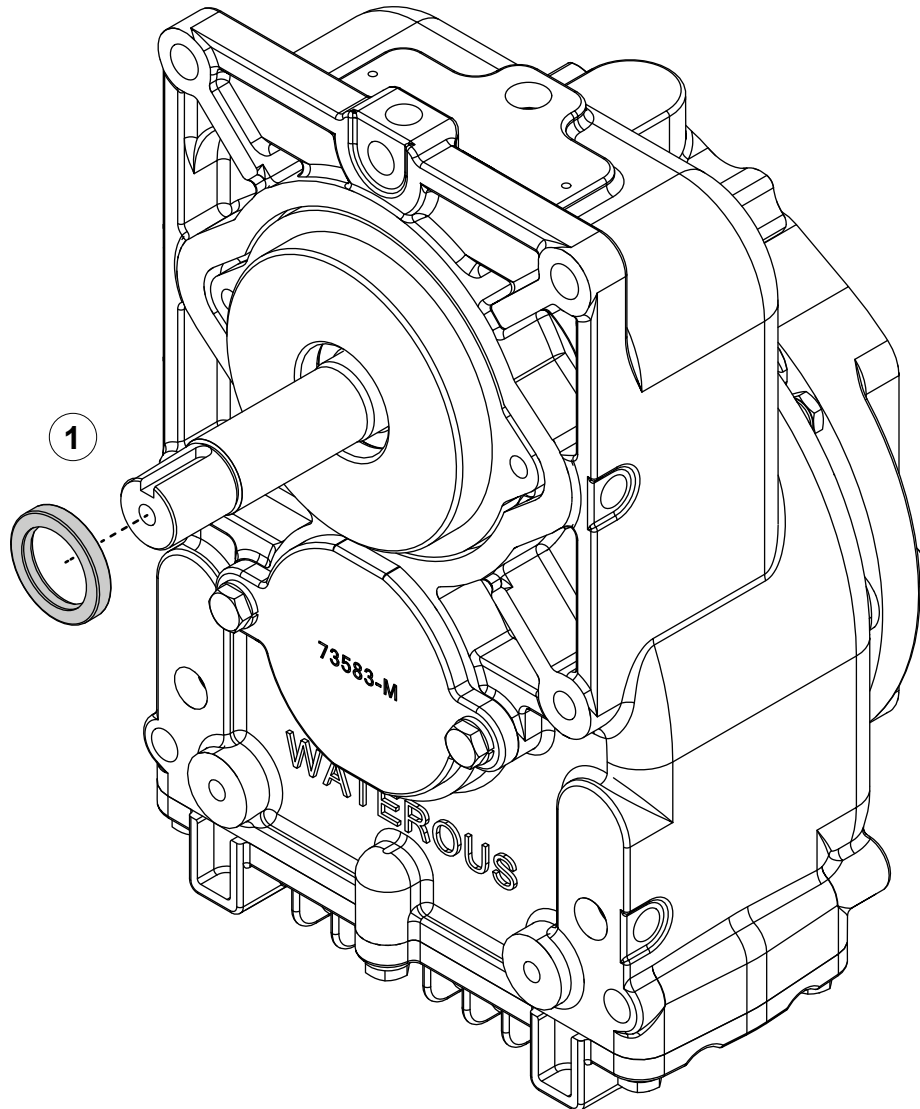
**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install the O-ring on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.





## CP-2, CP-4, CLR, CLV, and CLS Pumps without Extension and SAE Class-C Hydraulic Adapter



### Installing the Seal

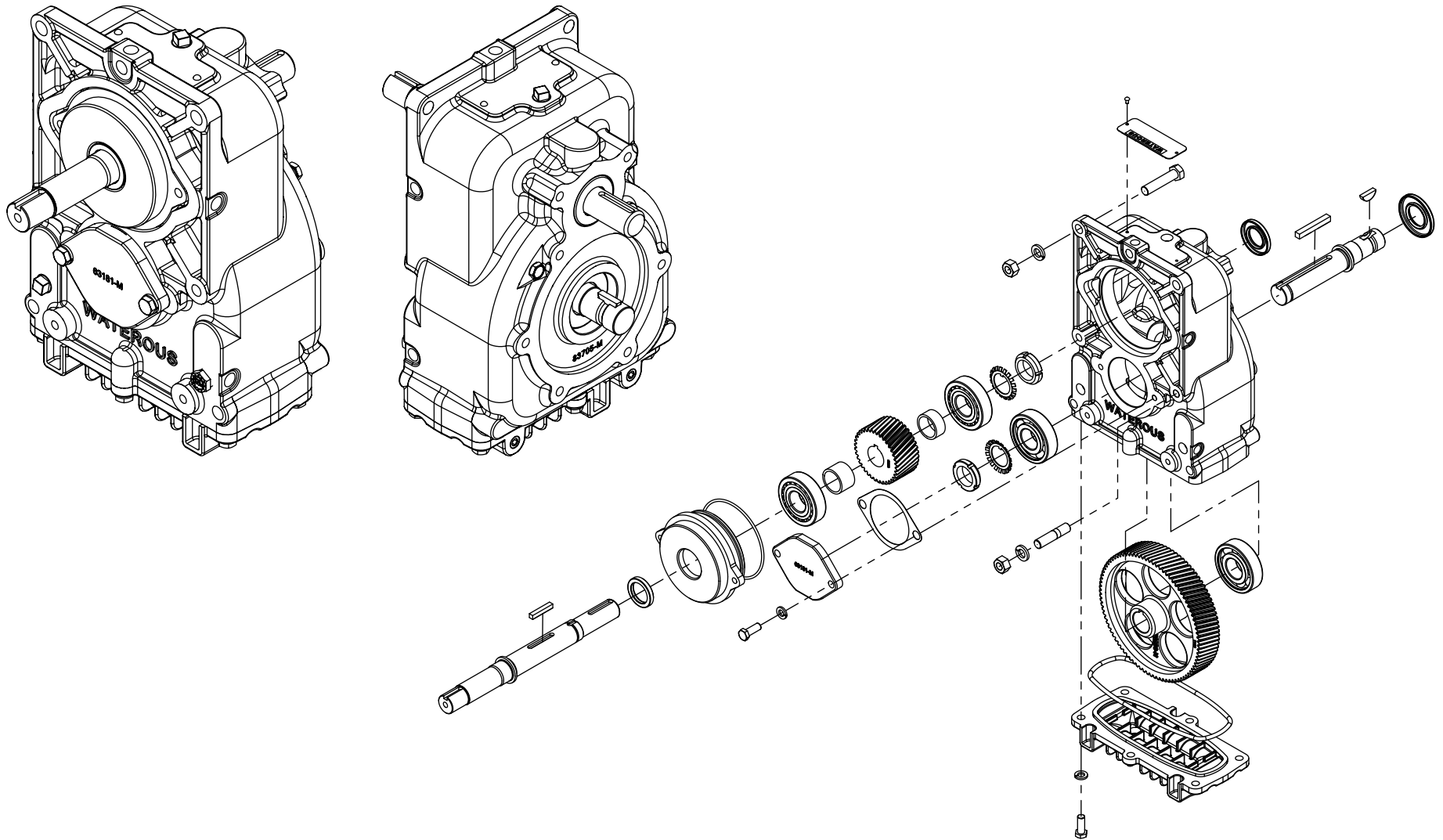
Use the illustration and instruction to install the seals.

- 1 Apply sealant to the seal and install it into the bearing housing.

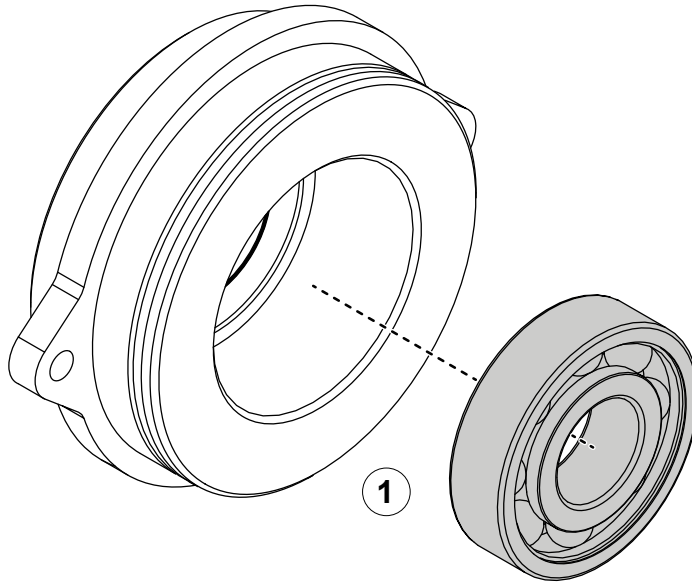
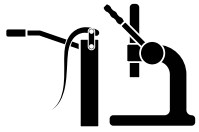


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## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



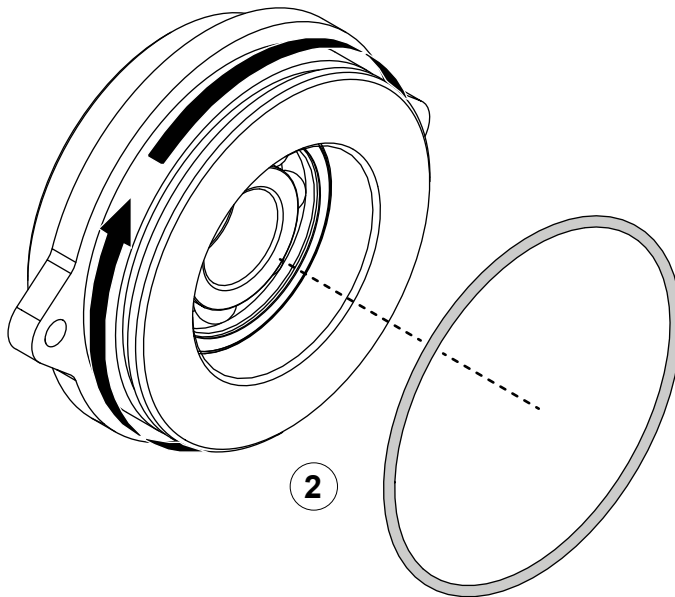
## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



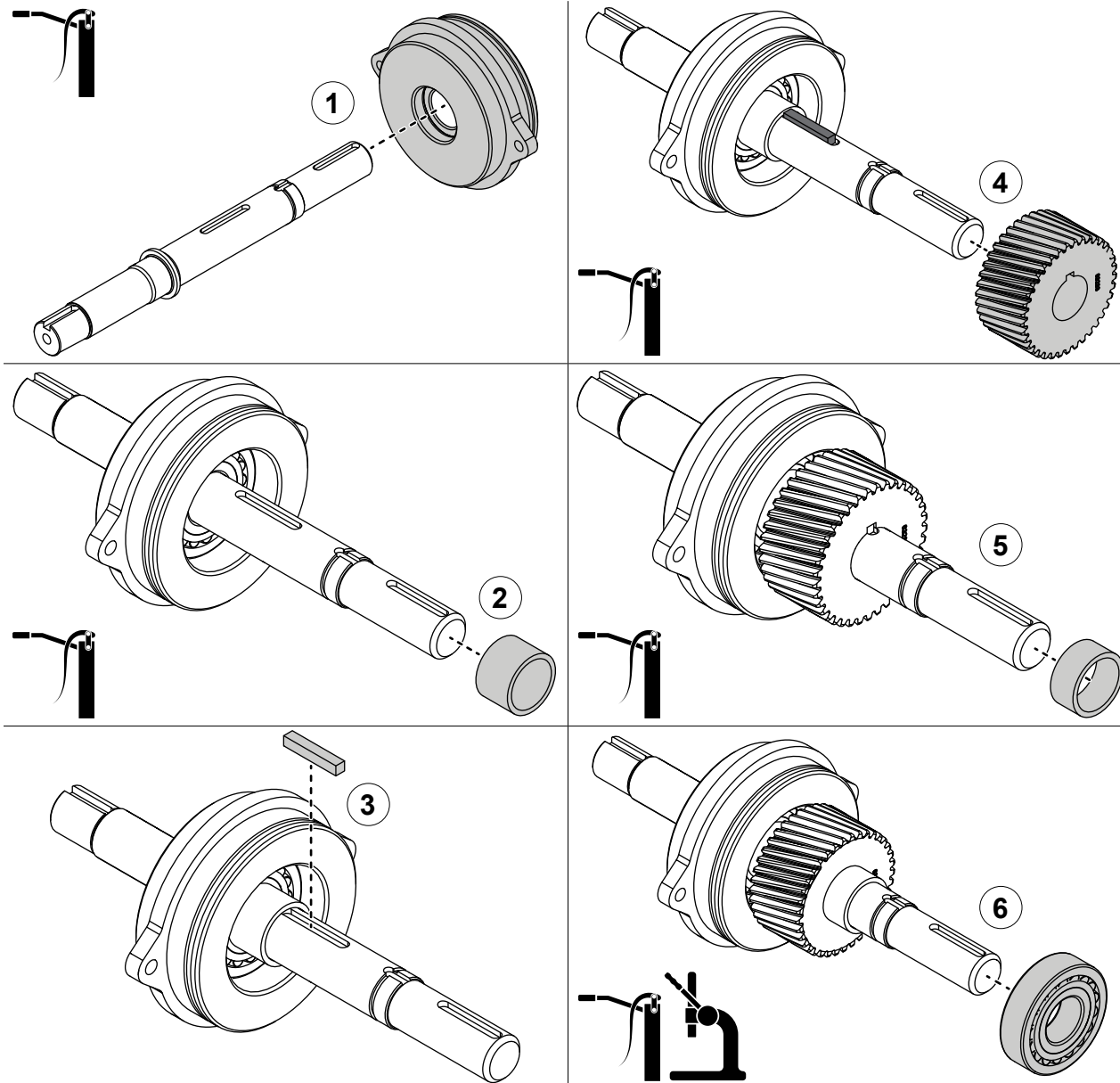
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install the O-ring around the bearing housing.



## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input

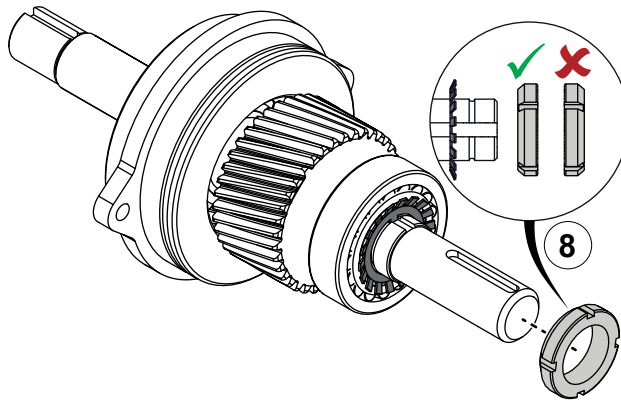
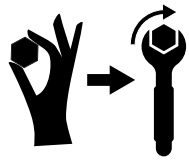
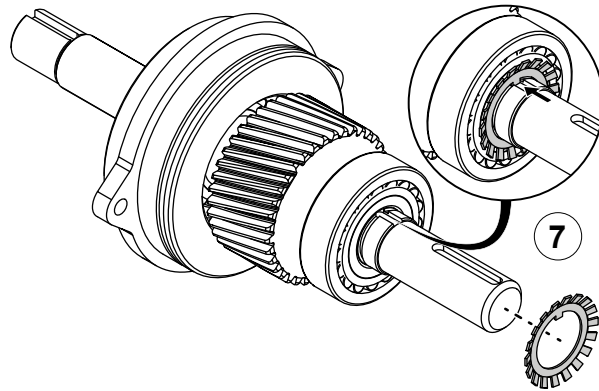


### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Apply grease to the inner-bearing race and press the shaft into the bearing-housing assembly.
- 2 Apply grease to the shaft and install the spacer.
- 3 Install the key into the keyway.
- 4 Apply grease to the shaft and align the driven-gear keyway to the key on the shaft. Press the components together.
- 5 Apply grease to the shaft and install the spacer.
- 6 Apply grease to the inner-bearing race and press the bearing to the driven-shaft assembly.

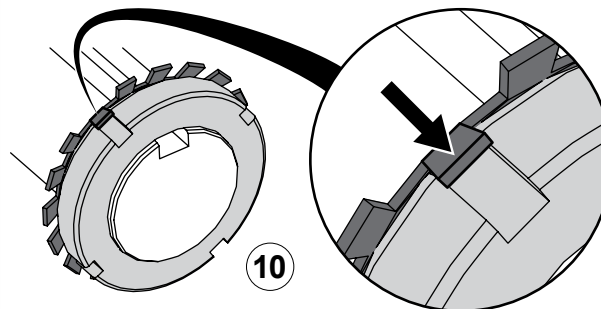
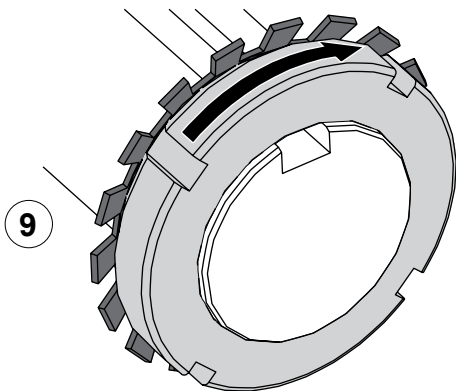
## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



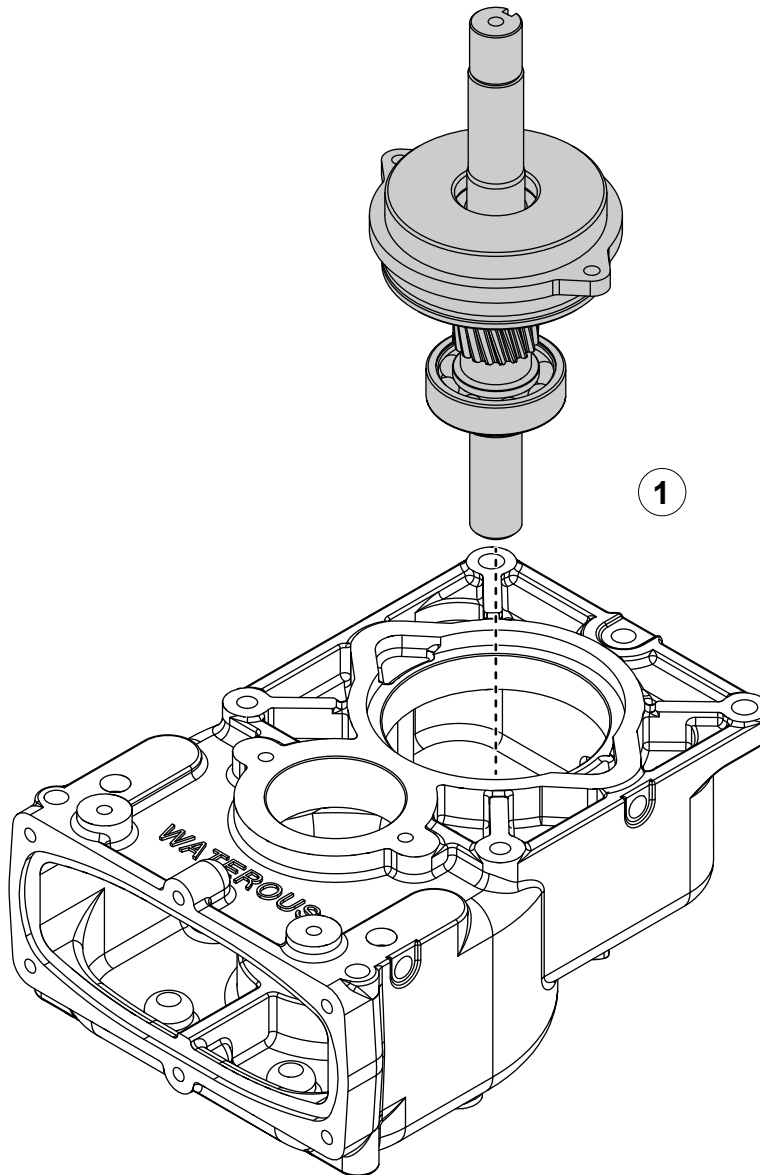
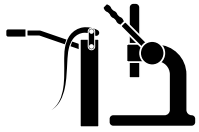
### Assembling the Impeller Shaft

Use the illustrations and instructions to complete the assembly.

- 7 Install the bearing-lock washer inner tab in to the keyway on the shaft.
- 8 Install the bearing-lock nut to the shaft—finger tight and then an additional 1/4 turn.
- 9 Thread the bearing locknut onto the impeller shaft until it contacts the bearing-lock washer. Apply a minimum of a quarter turn. Then continue turning until a tab on the bearing-lock washer aligns with a notch on the bearing-lock nut.
- 10 Fold the tab into the notch to lock the bearing locknut into place.



## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input

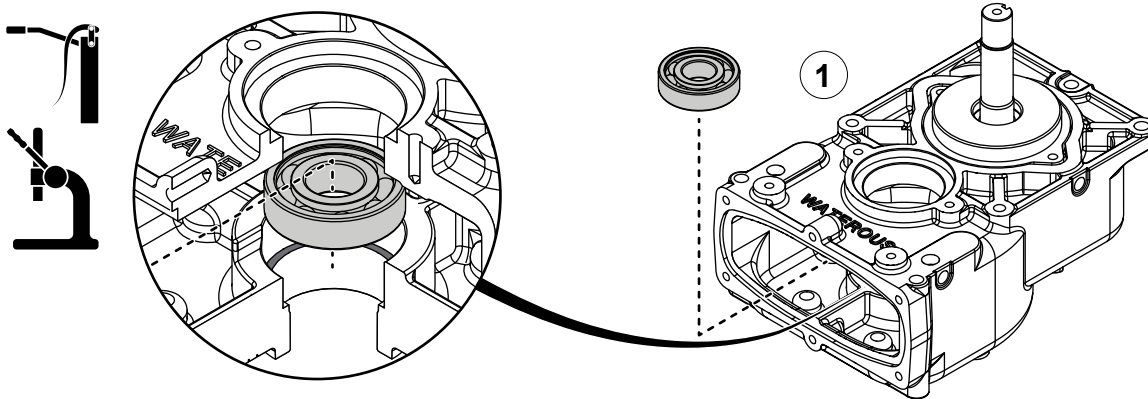


### Installing the Driven-Gear Assembly

Use the illustration and instruction to install the impeller-shaft assembly into the case.

- 1 Apply grease to the outer-bearing race and press the impeller-shaft assembly into the case.

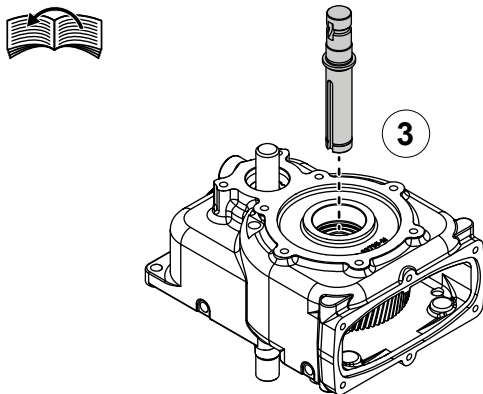
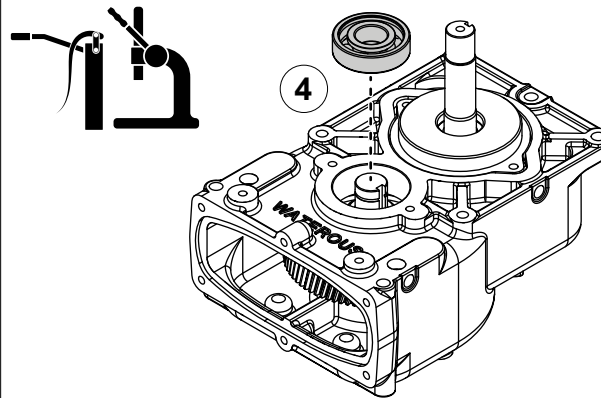
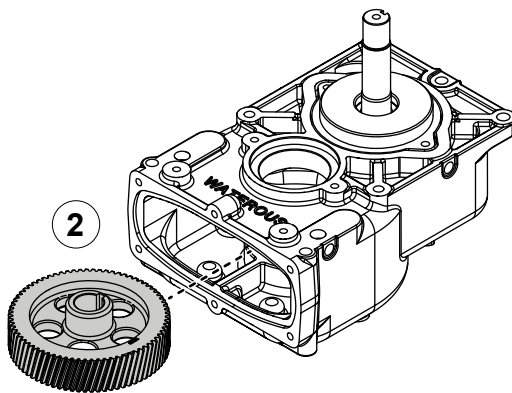
## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



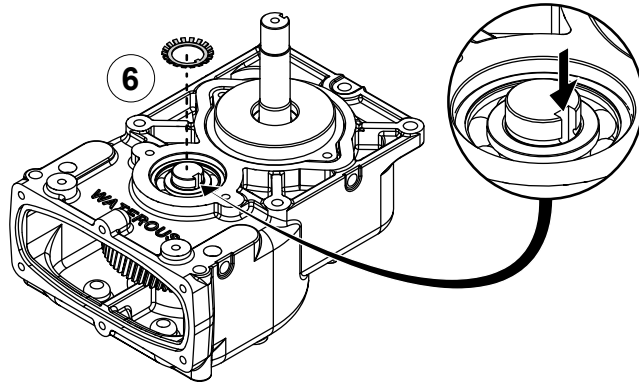
### Installing the Drive-Gear Components

Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer-bearing race and press it into bearing pocket inside the case.
- 2 Align the drive gear over the bearing.
- 3 Refer to: **"Installing the Drive-Shaft Key"** on page 78 to install the drive shaft.
- 4 Apply grease to the inner- and outer-bearing race and press it into the case while pressing it onto the shaft.



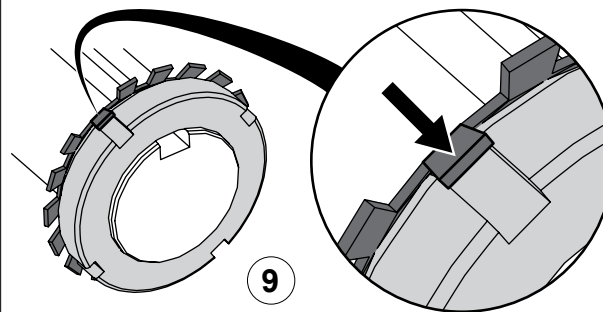
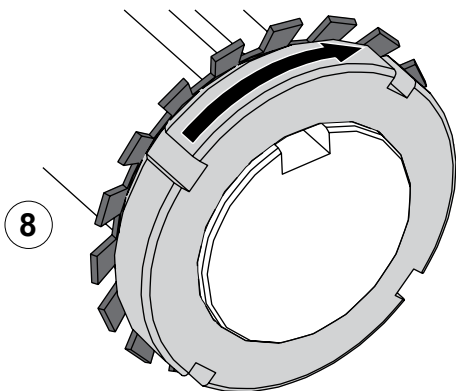
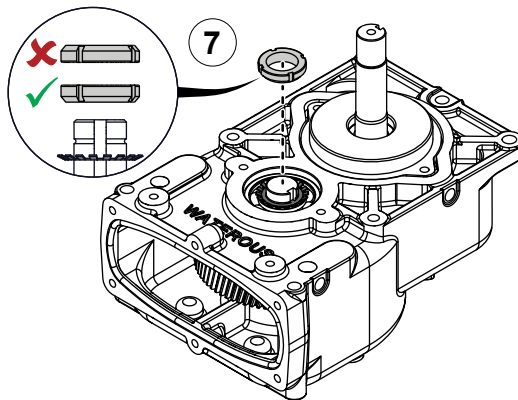
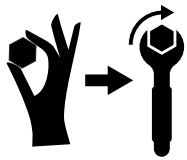
## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



### Installing the Drive-Gear Components

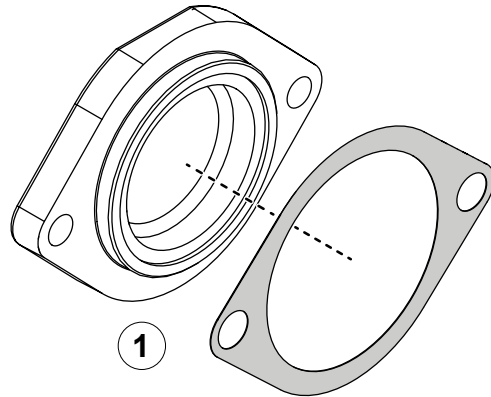
Use the illustrations and instructions to install the bearing-lock hardware.

- 6 Install the bearing-lock washer inner tab in to the keyway on the shaft.
- 7 Install the bearing-lock nut to the shaft—finger tight and then an additional 1/4 turn.
- 8 Thread the bearing locknut onto the impeller shaft until it contacts the bearing-lock washer. Apply a minimum of a quarter turn. Then continue turning until a tab on the bearing-lock washer aligns with a notch on the bearing-lock nut.
- 9 Fold the tab into the notch to lock the bearing locknut into place.





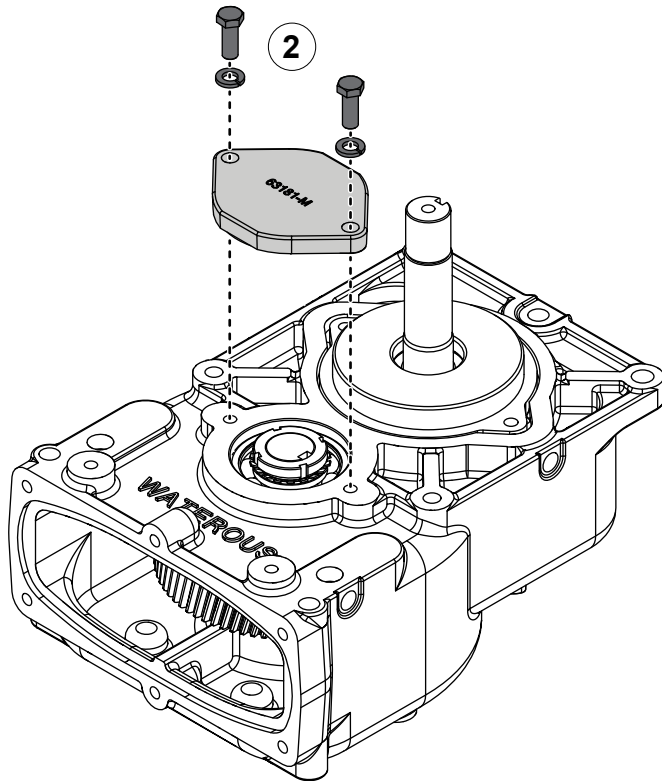
## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input



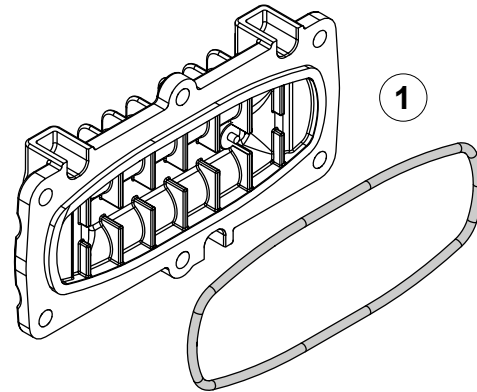
### Installing the Bearing Cover

Use the illustrations and instructions to install the bearing cover.

- 1 Align the gasket to the bearing cover.
- 2 Use the hardware that you removed earlier to securely install the bearing cover.



## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input

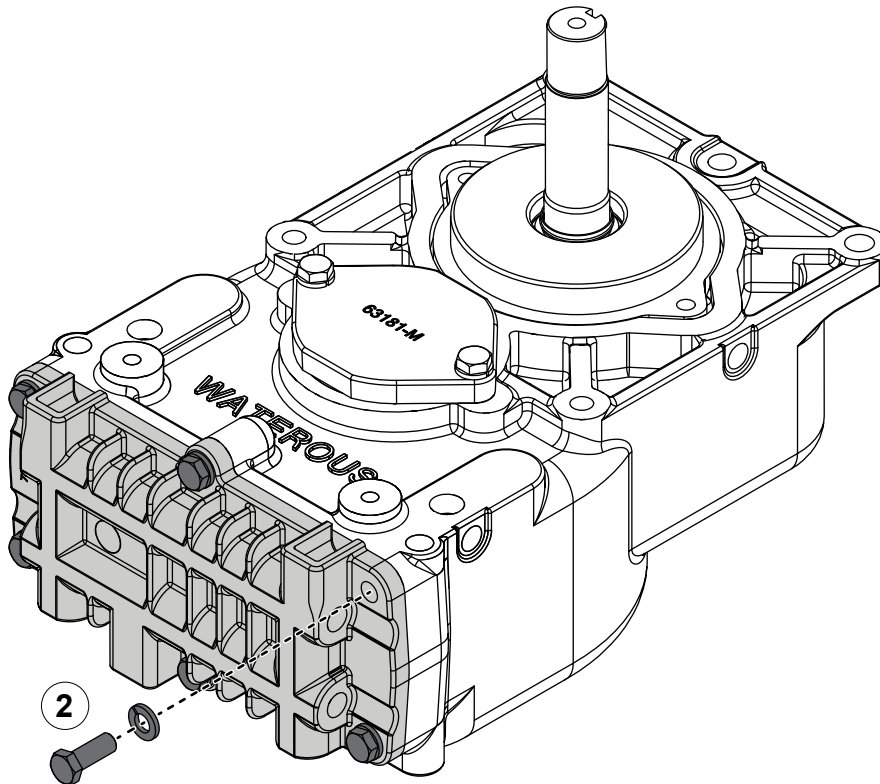


### Installing the Bottom Cover

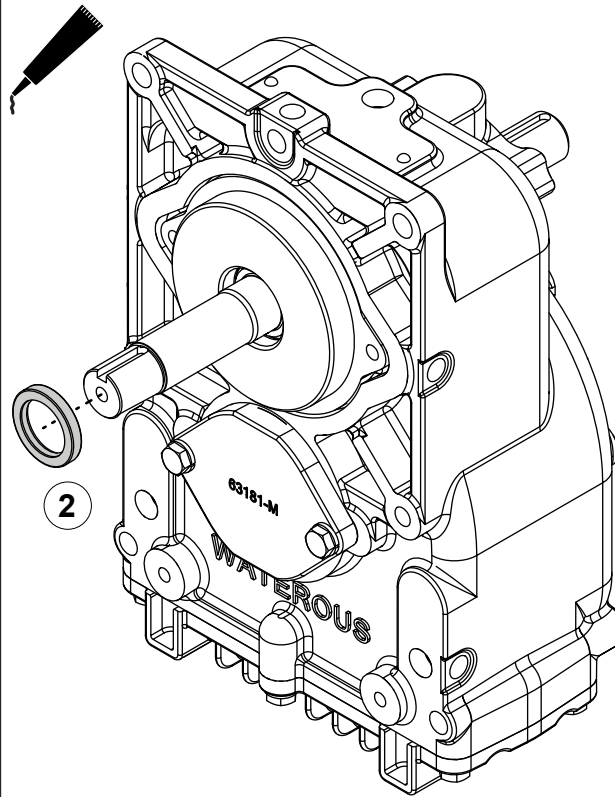
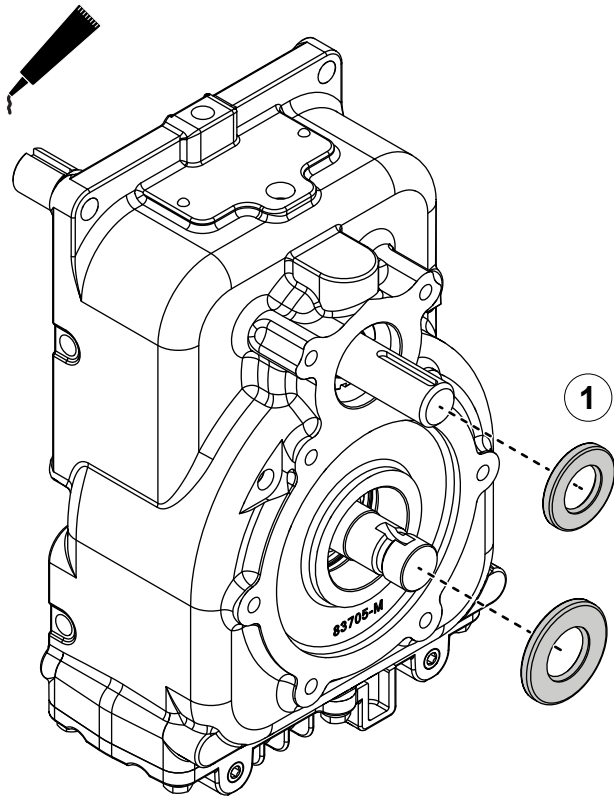
Use the illustrations and instructions to install the bottom cover.

**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install it on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.



## CP-2, CLR, and CLV Pumps with Extension and 1-1/8 Inch Keyed Input

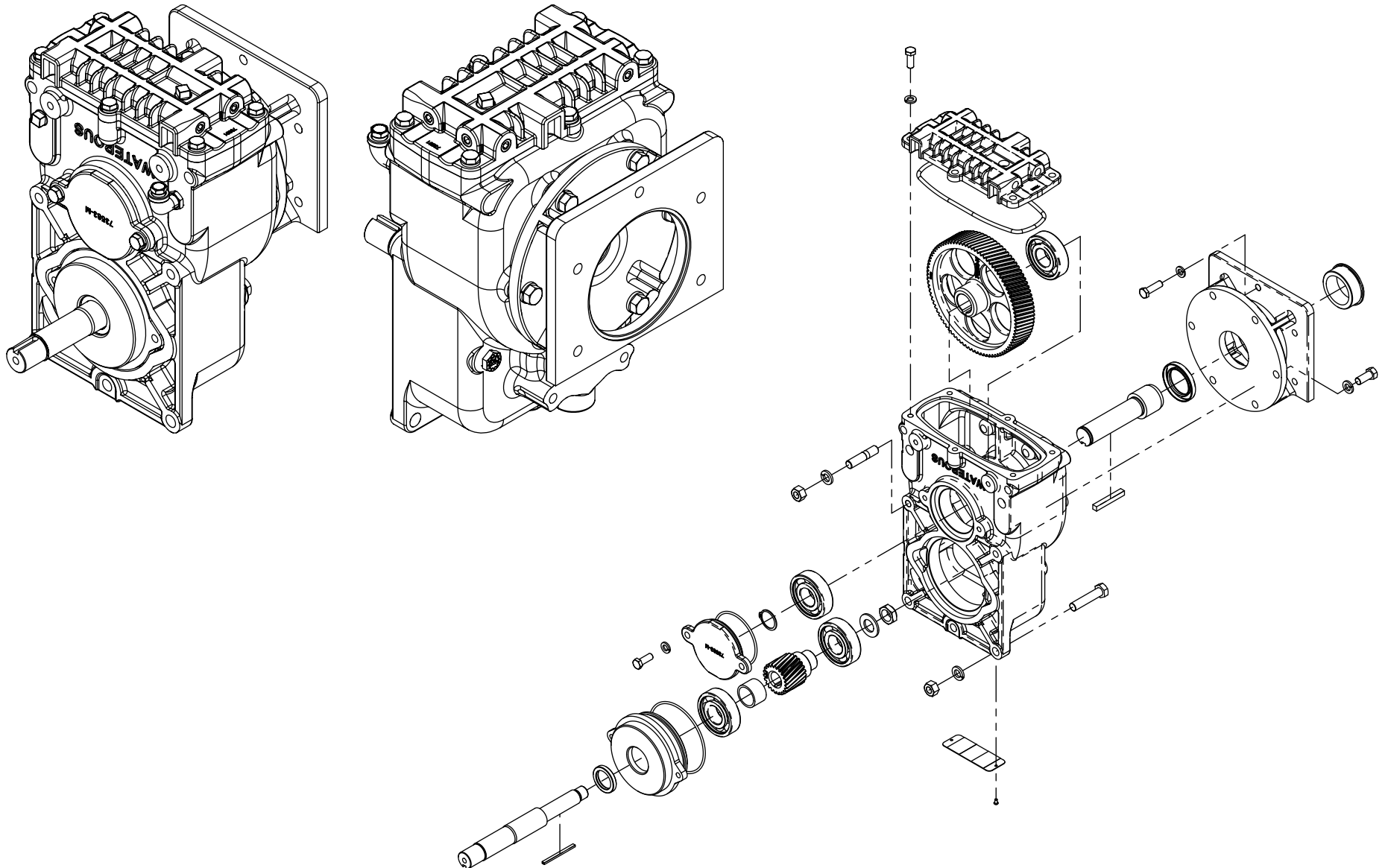


### Installing the Seals

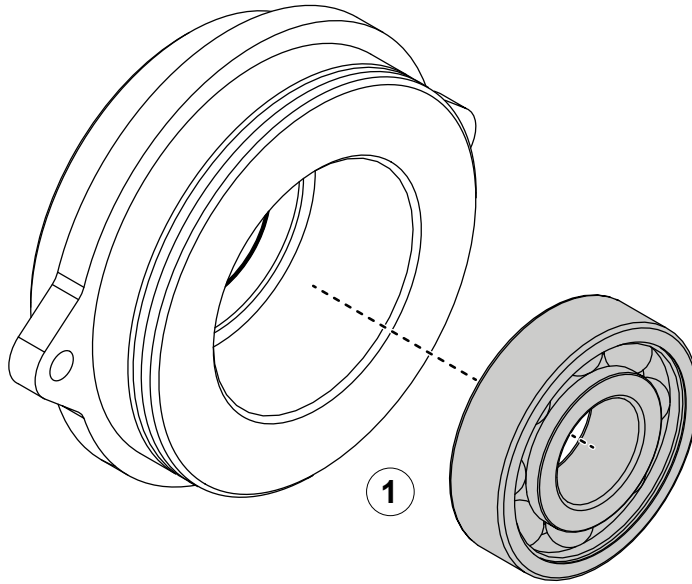
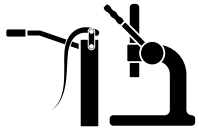
Use the illustrations and instructions to install the seals.

- 1 Apply sealant to the seals and install them over the shafts.
- 2 Apply sealant to the seal and install it into the bearing housing.

## CP-2 Pump with SAE Class-C Spline and Adapter



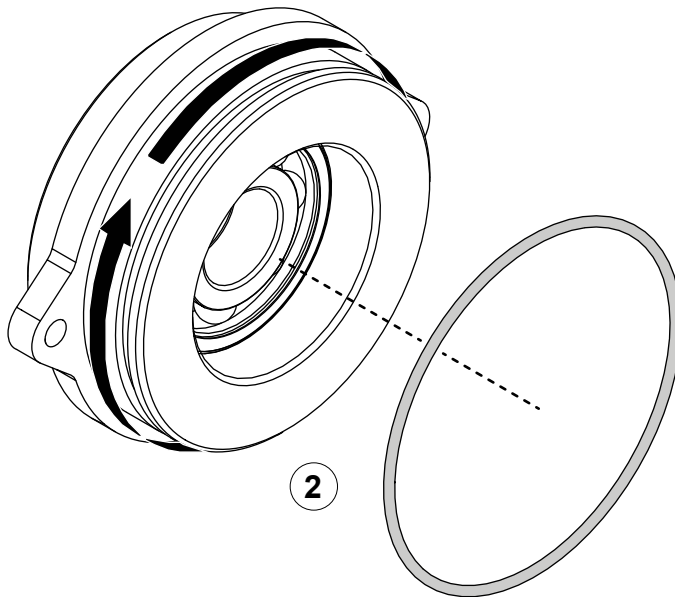
## CP-2 Pump with SAE Class-C Spline and Adapter



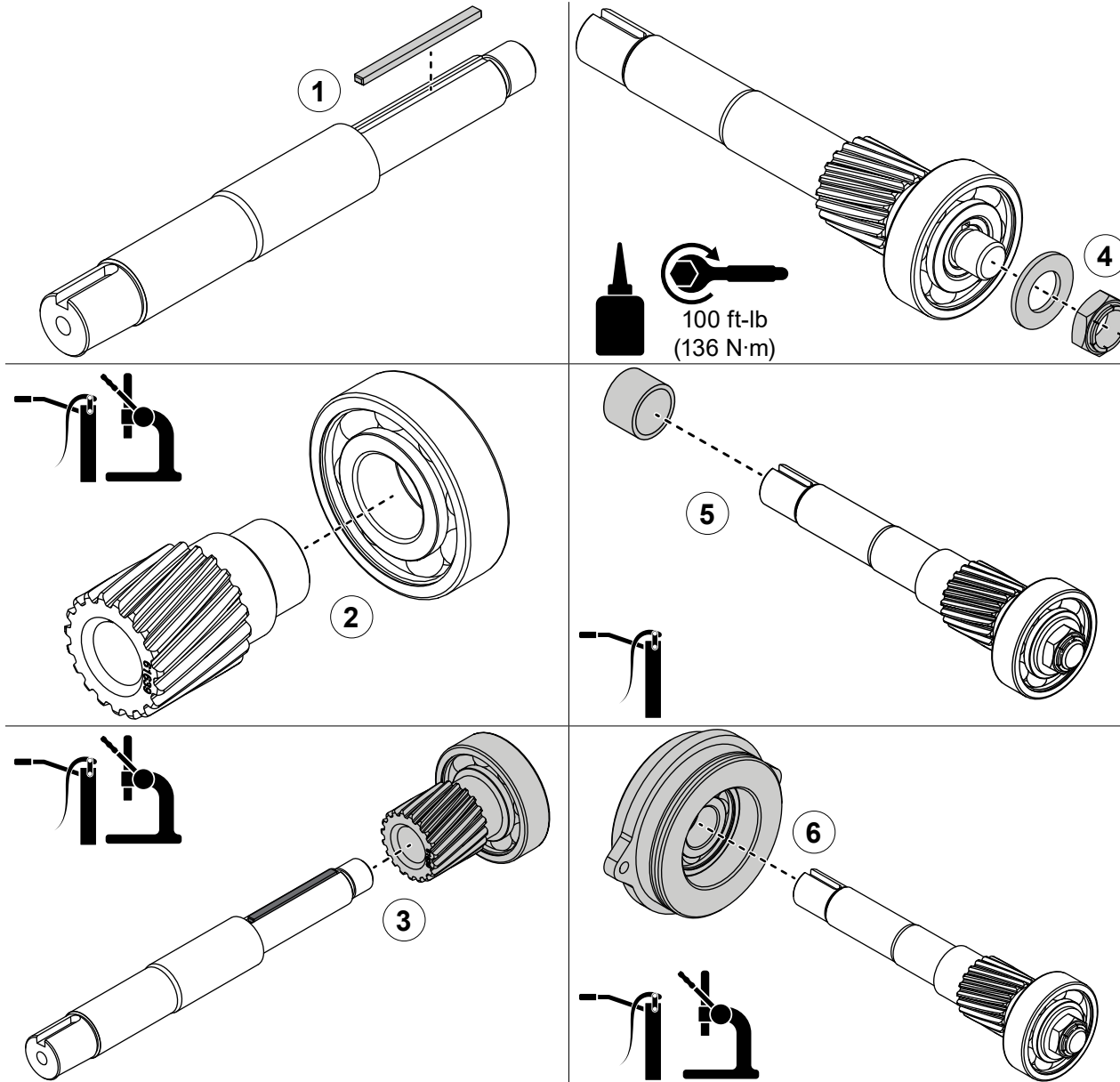
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install O-ring around the bearing housing.



## CP-2 Pump with SAE Class-C Spline and Adapter

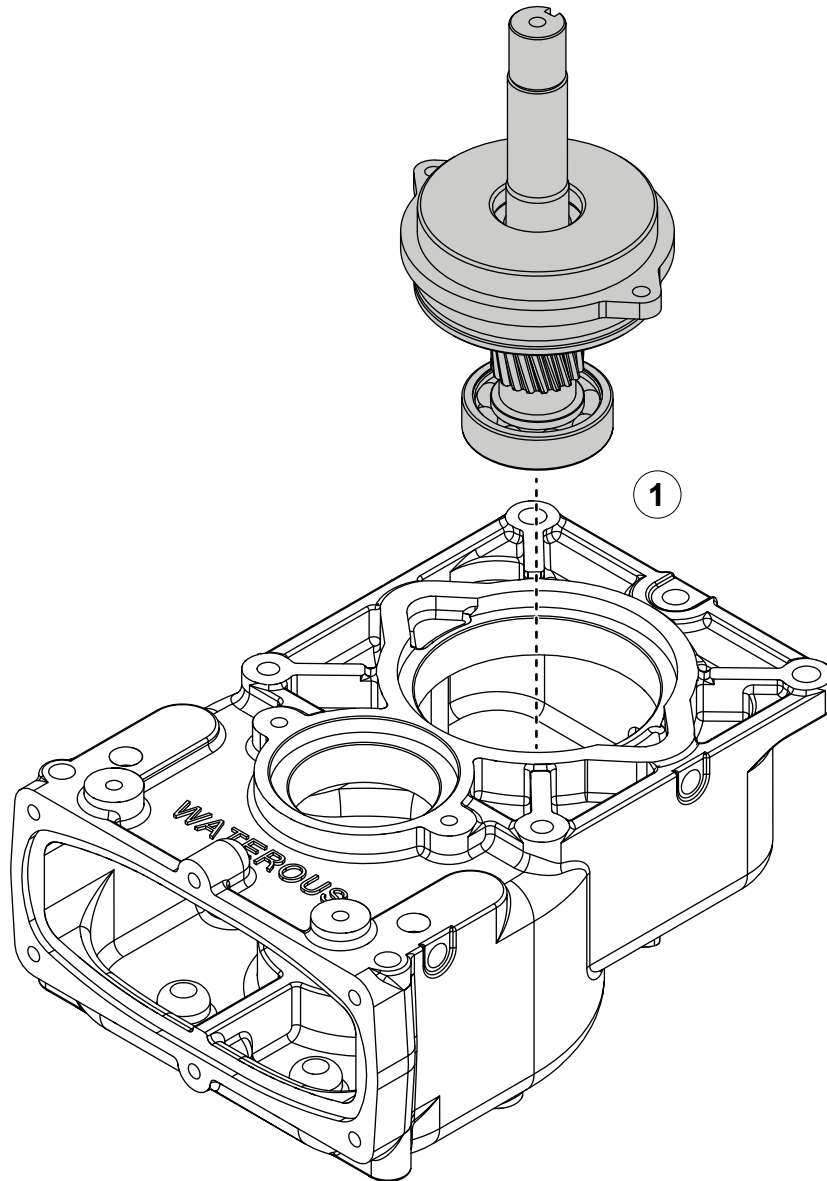
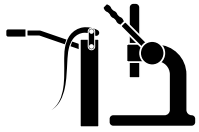


### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Install the key into the keyway.
- 2 Apply grease to the inner-bearing race and press the driven gear and bearing together.
- 3 Apply grease to the shaft and align the driven gear to the key on the shaft. Press the components together.
- 4 Install the washer. Apply medium-duty thread lock on the threads and install the locknut. Torque the locknut to 100 ft-lb (136 N·m).
- 5 Apply grease to the shaft and install the spacer.
- 6 Apply grease to the inner-bearing race and press the shaft assembly into the bearing-house assembly.

## CP-2 Pump with SAE Class-C Spline and Adapter



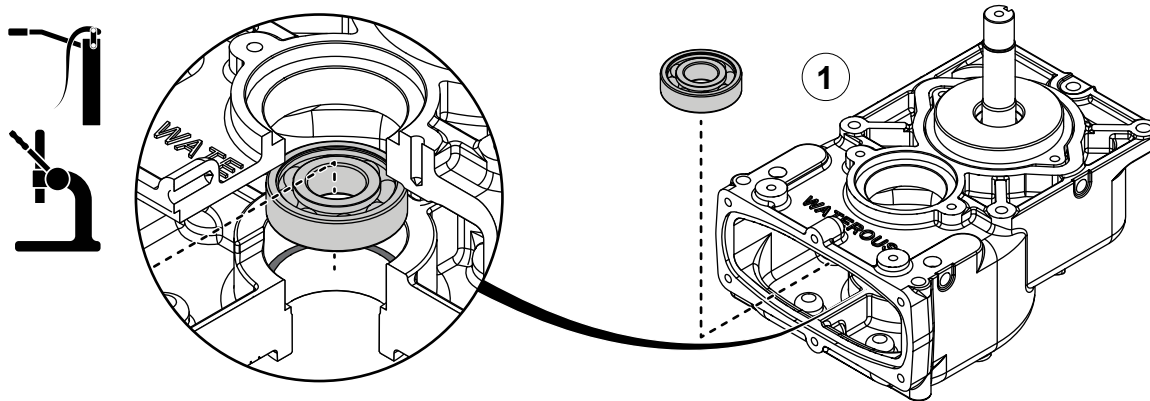
### Installing the Driven-Gear Assembly

Use the illustration and instruction to install the impeller-shaft assembly.

- 1 Apply grease to the outer-bearing race and press the impeller-shaft assembly into the case.



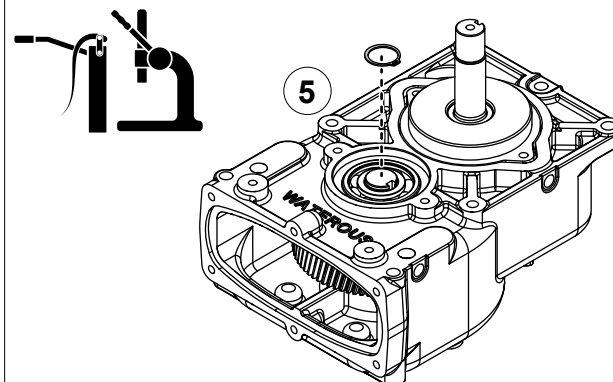
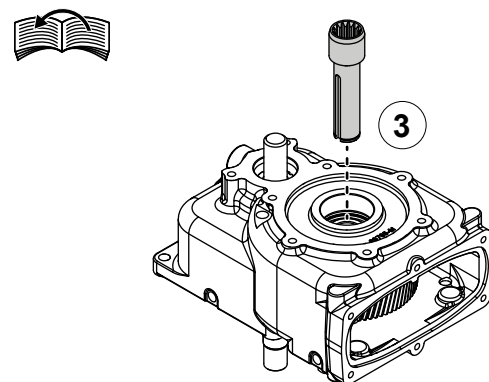
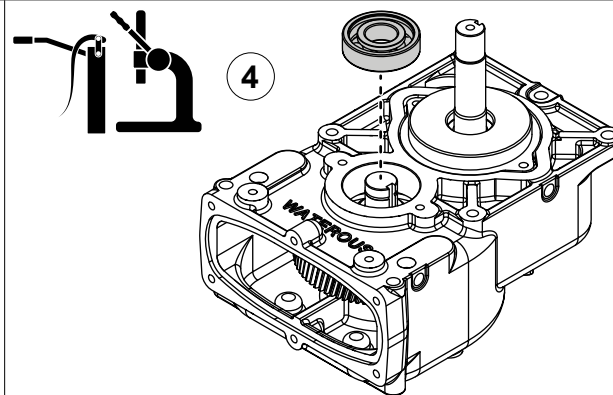
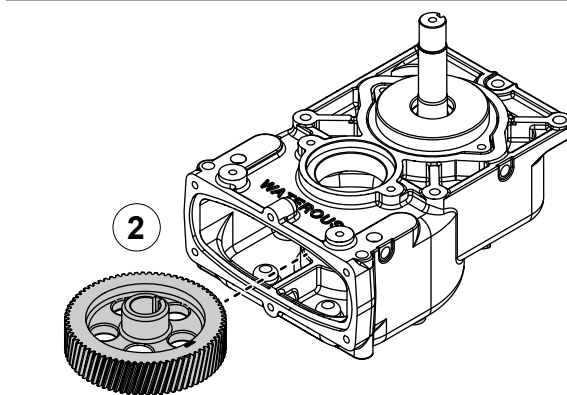
## CP-2 Pump with SAE Class-C Spline and Adapter



### Installing the Drive-Gear Components

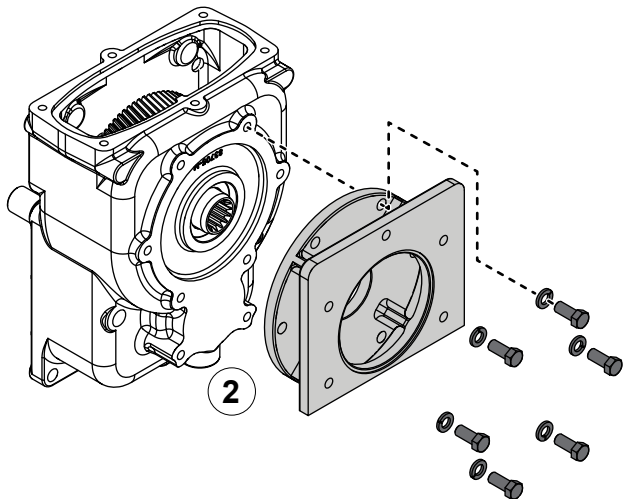
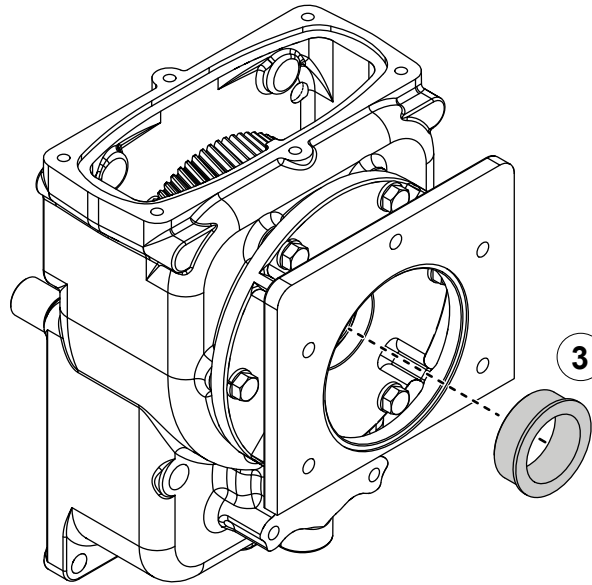
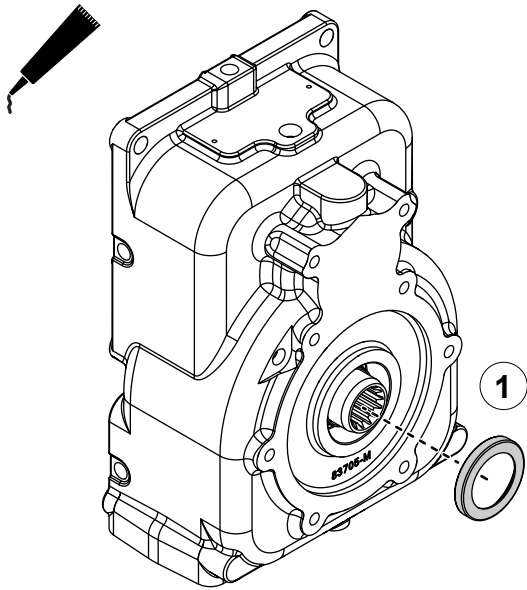
Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer bearing race and press it into bearing pocket on the inside the case.
- 2 Align the drive gear over the bearing.
- 3 Refer to: **"Installing the Drive-Shaft Key" on page 78** to install the drive shaft.
- 4 Apply grease to the inner- and outer-bearing race and press it into the case while pressing it onto the shaft.
- 5 Install the retaining ring.





## CP-2 Pump with SAE Class-C Spline and Adapter

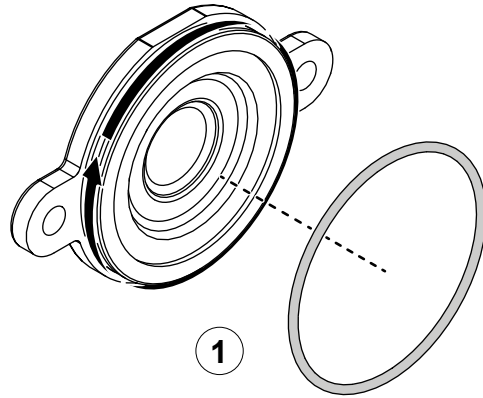


### Completing the Drive Shaft Install

Use the illustrations and instructions to complete the assembly.

- 1 Apply sealant to the seal and install them over the shaft.
- 2 Use the hardware that you removed earlier and loosely install the flange adapter.
- 3 Use the bushing to align the loosely-installed adapter to the case. Once you install the bushing, securely tighten the adapter screws.

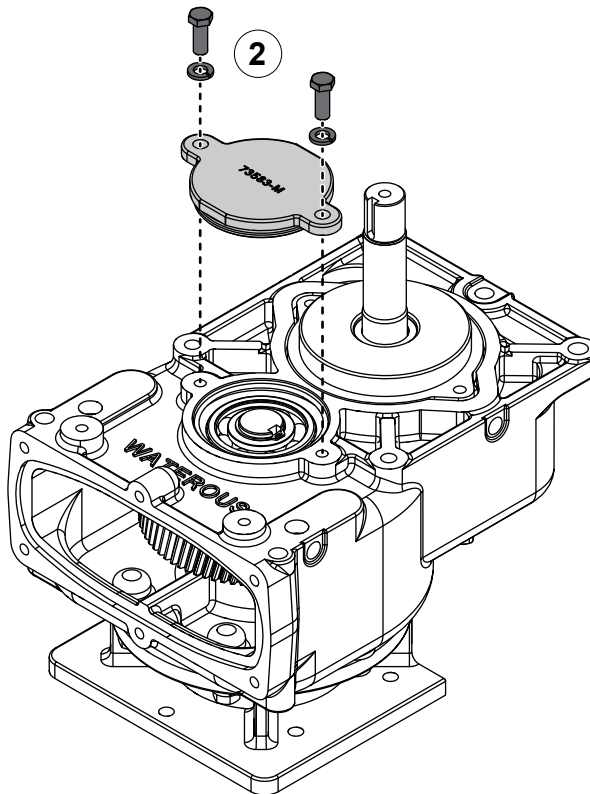
## CP-2 Pump with SAE Class-C Spline and Adapter



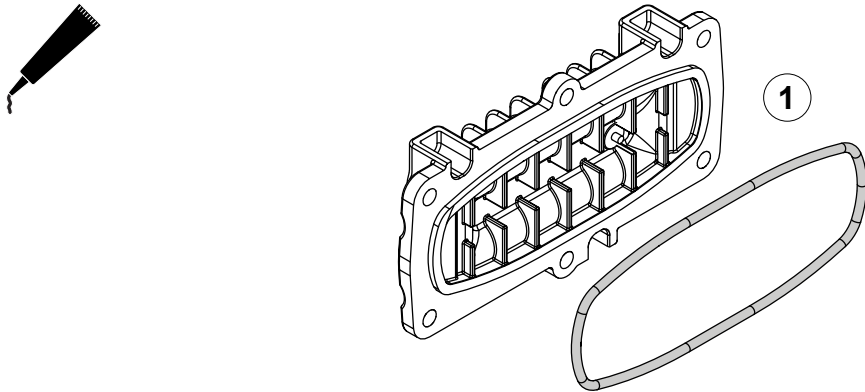
### Installing the Bearing Cover

Use the illustrations and instructions to install the bearing cover.

- 1 Apply sealant to the O-ring groove and install O-ring around the bearing cover.
- 2 Use the hardware that you removed earlier to securely install the bearing cover.



## CP-2 Pump with SAE Class-C Spline and Adapter

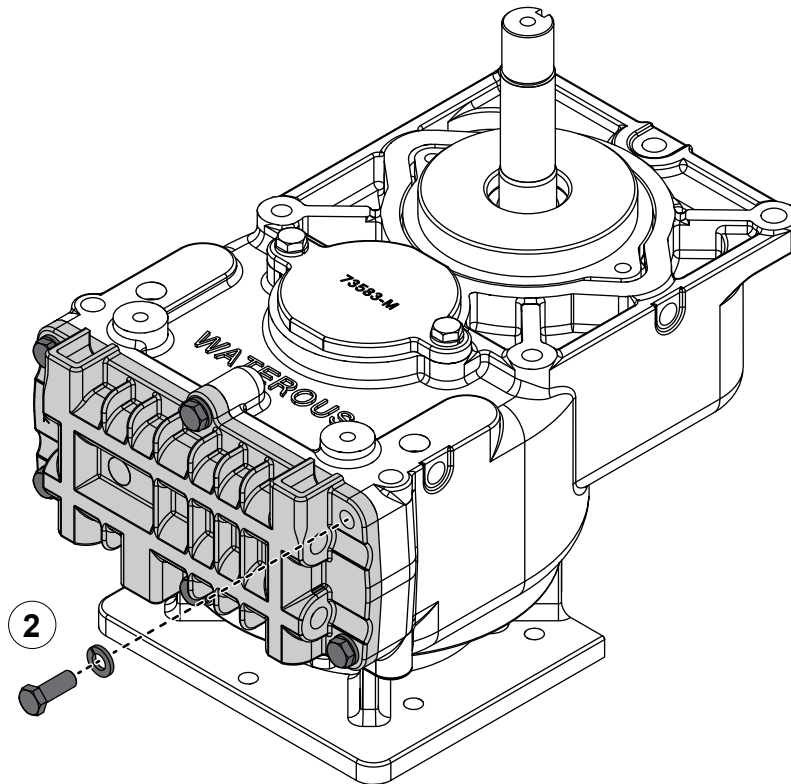


### Installing the Bottom Cover

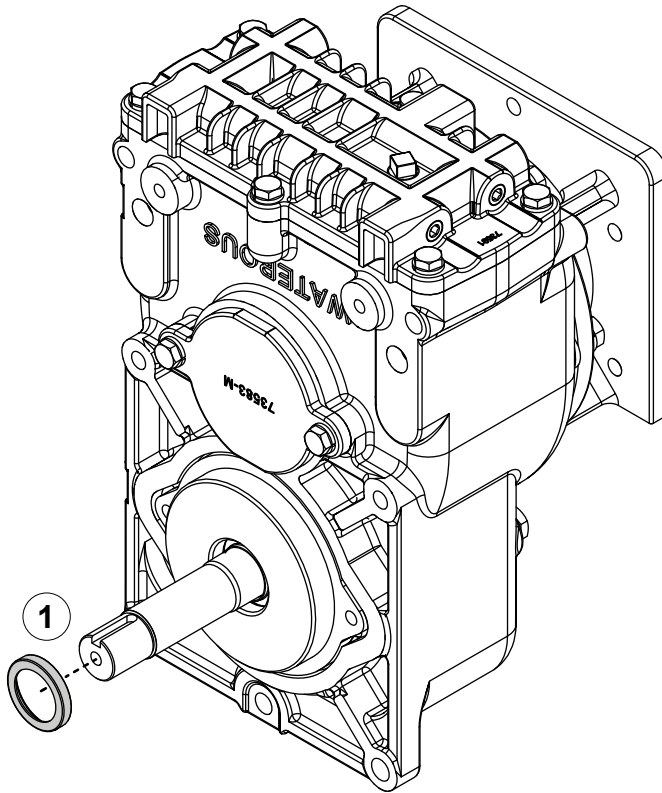
Use the illustrations and instructions to install the bottom cover.

**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install it on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.



## CP-2 Pump with SAE Class-C Spline and Adapter



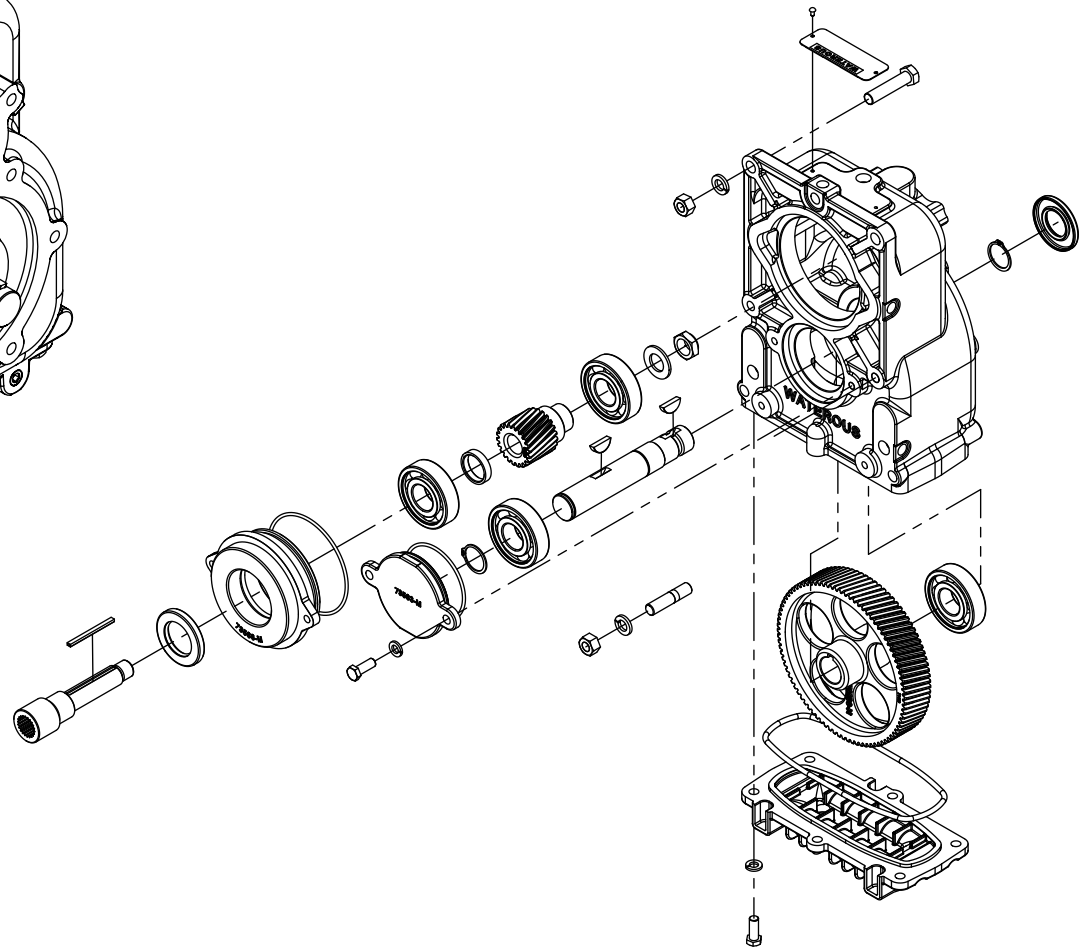
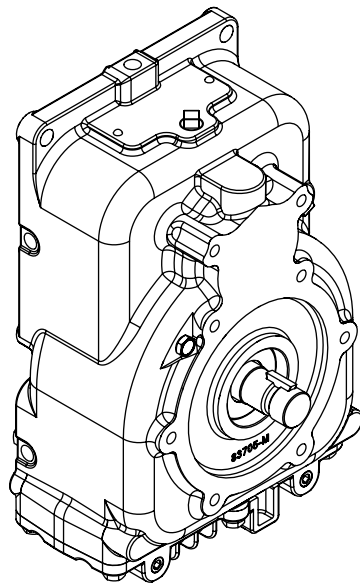
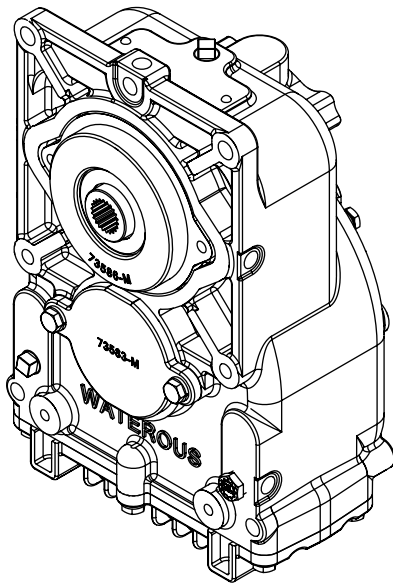
### Installing the Seal

Use the illustration and instruction to install the seals.

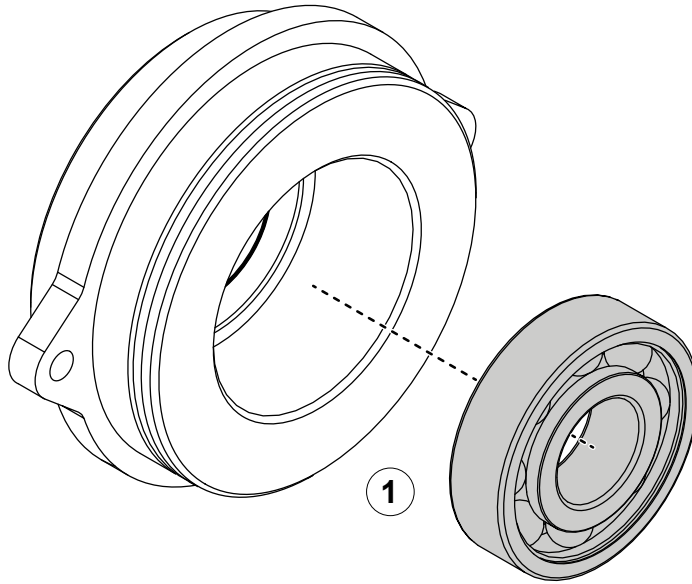
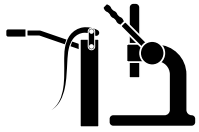
- 1 Apply sealant to the seal and install it into the bearing housing.

[illegible]

## CP-3 Pump with 1-1/8 Inch Keyed Input



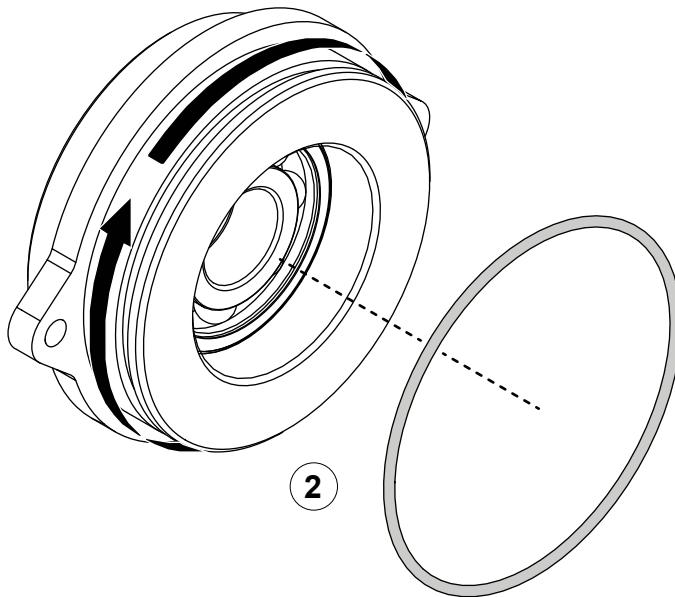
## CP-3 Pump with 1-1/8 Inch Keyed Input



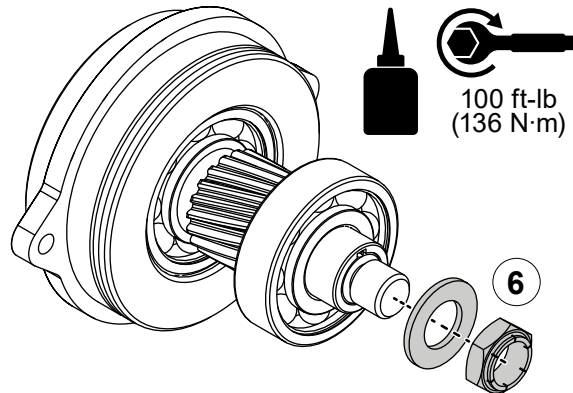
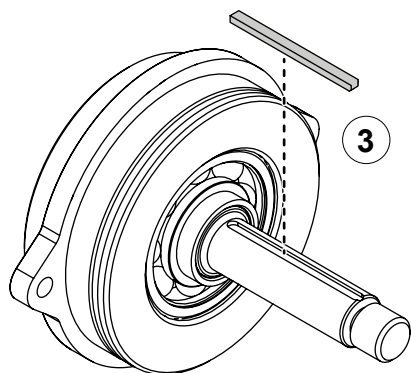
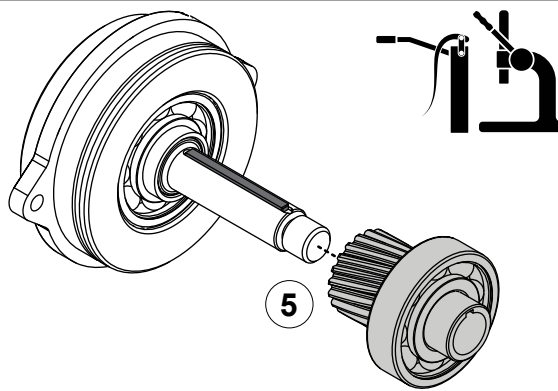
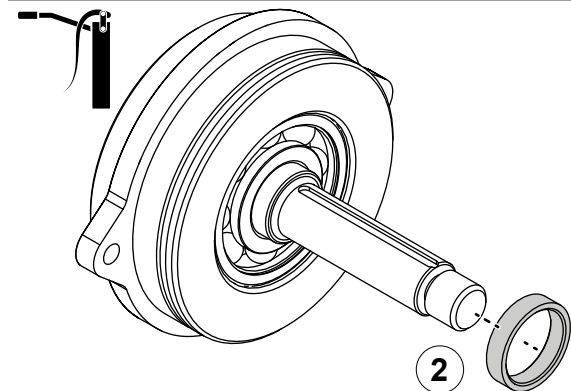
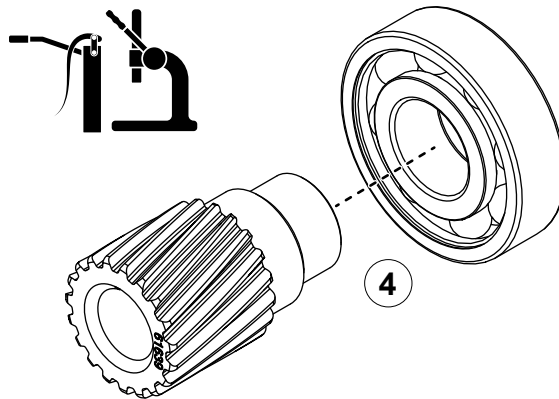
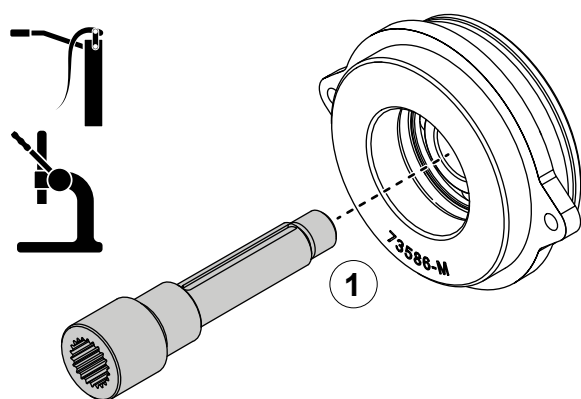
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install O-ring around the bearing housing.



## CP-3 Pump with 1-1/8 Inch Keyed Input



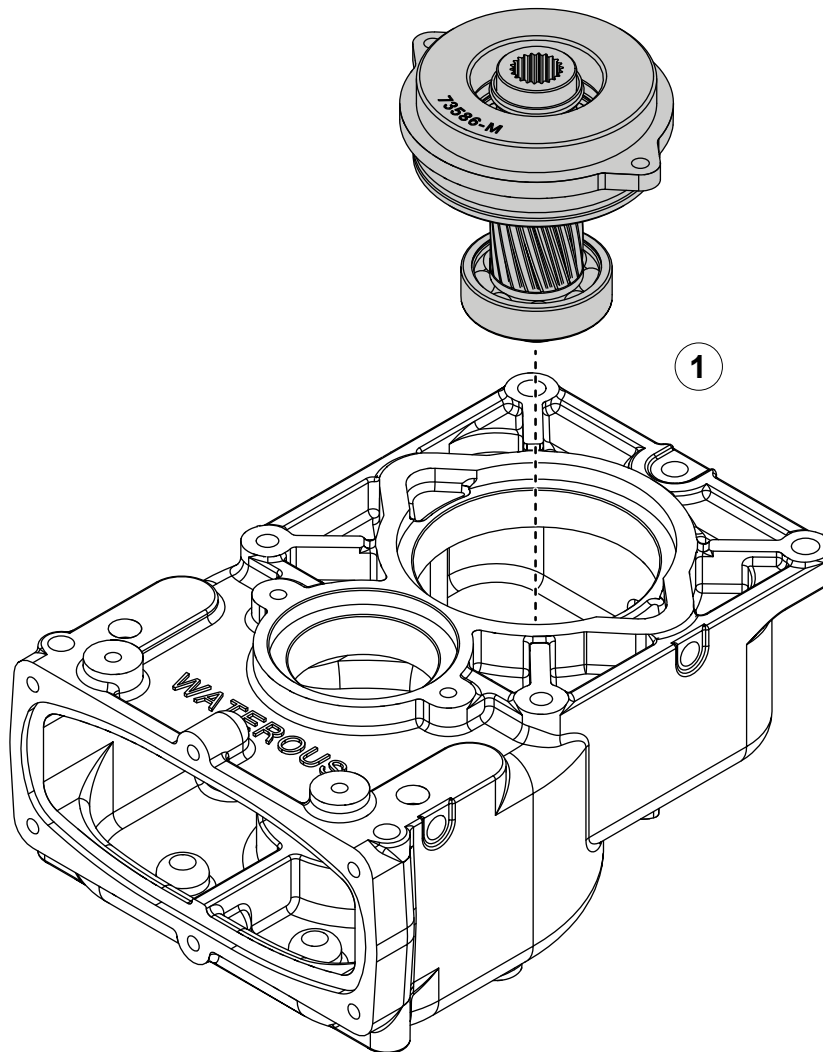
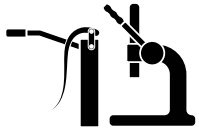
### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Apply grease to the inner bearing race and press the shaft assembly into the bearing housing assembly.
- 2 Apply grease to the shaft and install the spacer.
- 3 Install the key into the keyway.
- 4 Apply grease to the inner bearing race and press the driven gear and bearing together.
- 5 Apply grease to the shaft and align the driven gear to the key on the shaft. Press the components together.
- 6 Install the washer. Apply medium-duty thread lock on the threads and install the locknut. Torque the locknut to 100 ft-lb (136 N·m).



## CP-3 Pump with 1-1/8 Inch Keyed Input

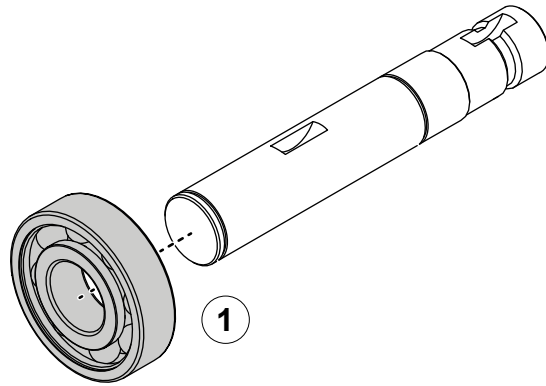
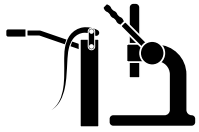


### Installing the Impeller-Shaft Assembly

Use the illustrations and instructions to install the impeller-shaft assembly.

- 1 Apply grease to the outer bearing race and press the impeller-shaft assembly into the case.

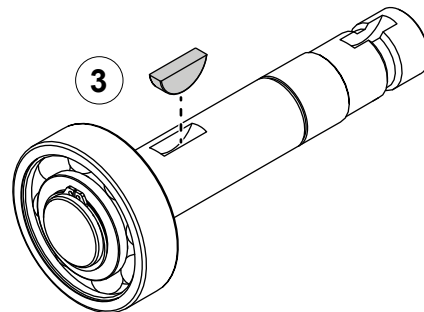
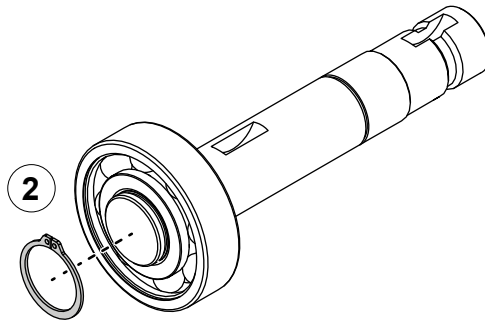
## CP-3 Pump with 1-1/8 Inch Keyed Input



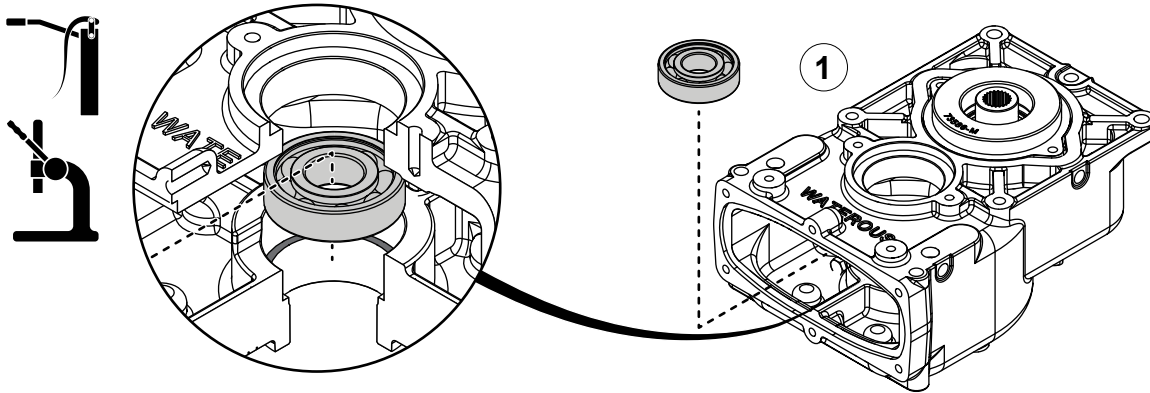
### Assembling the Drive Shaft

Use the illustrations and instructions to install the drive-shaft assembly.

- 1 Apply grease to the inner bearing race and press the drive shaft and bearing together.  
**Note:** Press the bearing onto the shaft until it is flush with the retaining-ring groove.
- 2 Install the retaining ring.
- 3 Install the key into the keyway.



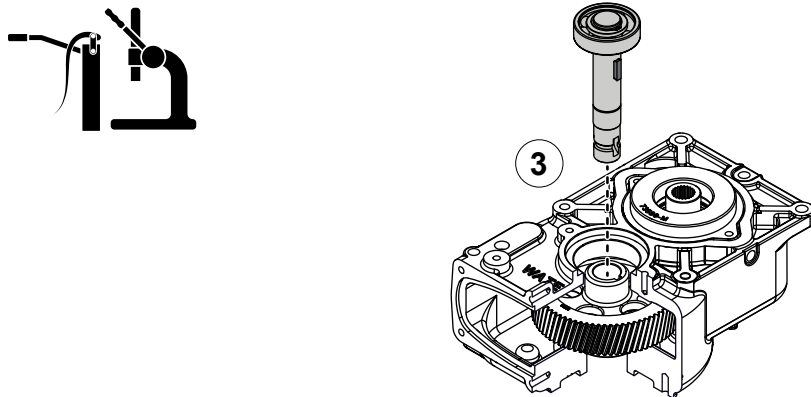
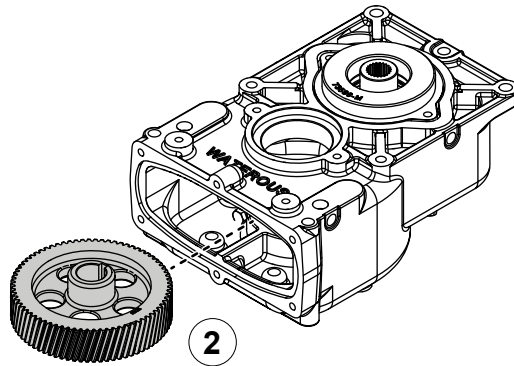
## CP-3 Pump with 1-1/8 Inch Keyed Input



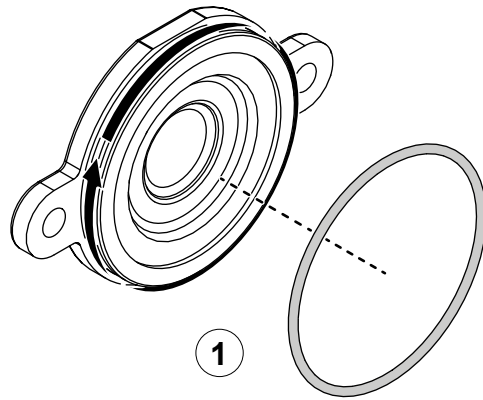
### Installing the Drive-Gear Components

Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer bearing race and press it into bearing pocket on the inside the case.
- 2 Align the drive gear over the bearing.
- 3 Apply grease to the drive shaft. Align the key on the drive shaft to the keyway on the drive gear, and press the assembly together.



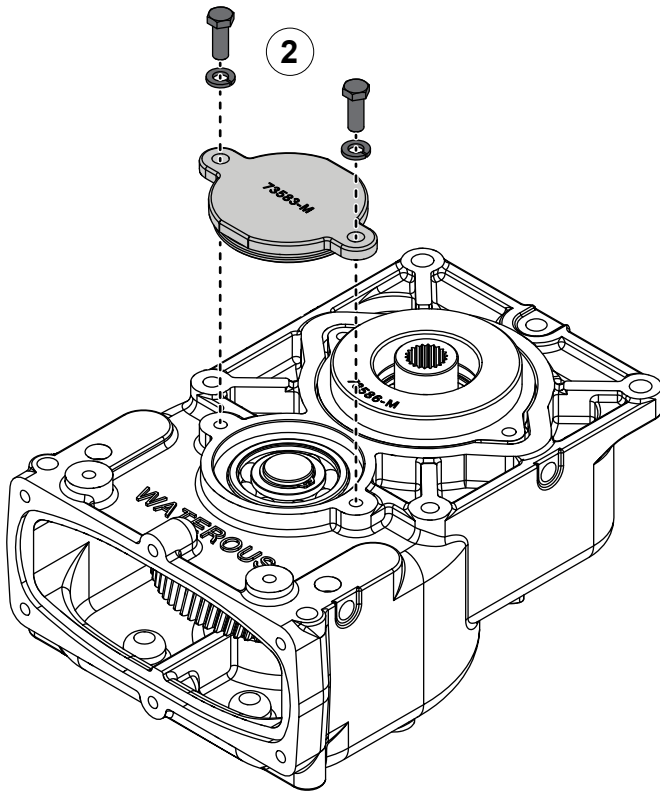
## CP-3 Pump with 1-1/8 Inch Keyed Input



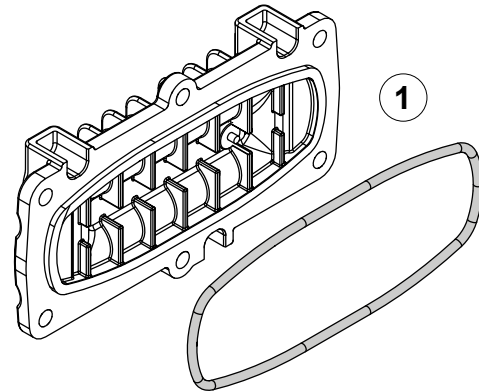
### Installing the Bearing Cover

Use the illustrations and instructions to install the bearing cover.

- 1 Apply sealant to the O-ring groove and install O-ring around the bearing cover.
- 2 Use the hardware that you removed earlier to securely install the bearing cover.



## CP-3 Pump with 1-1/8 Inch Keyed Input

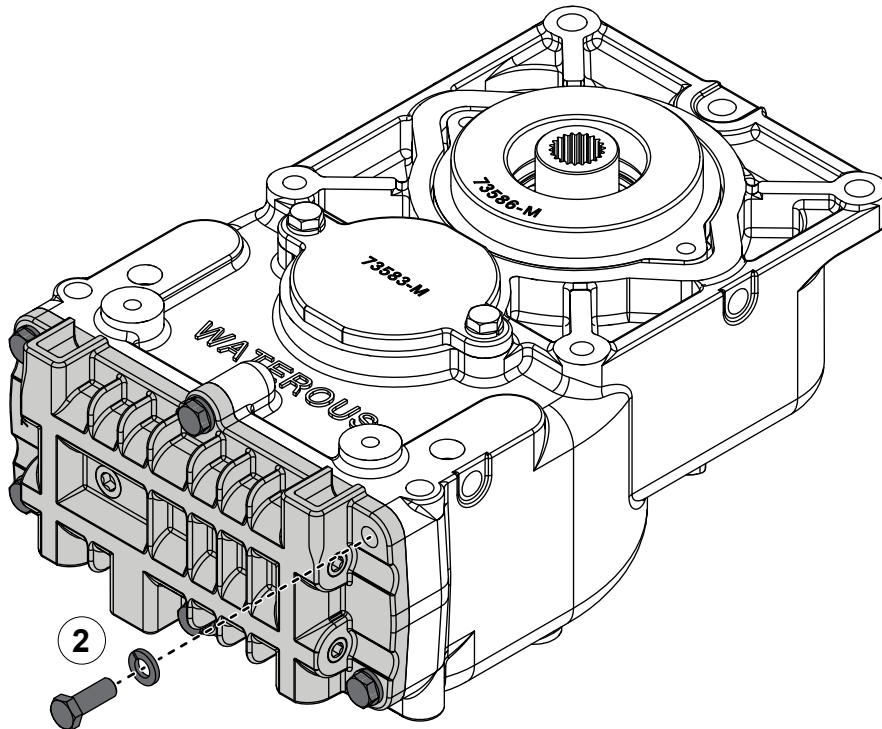


### Installing the Bottom Cover

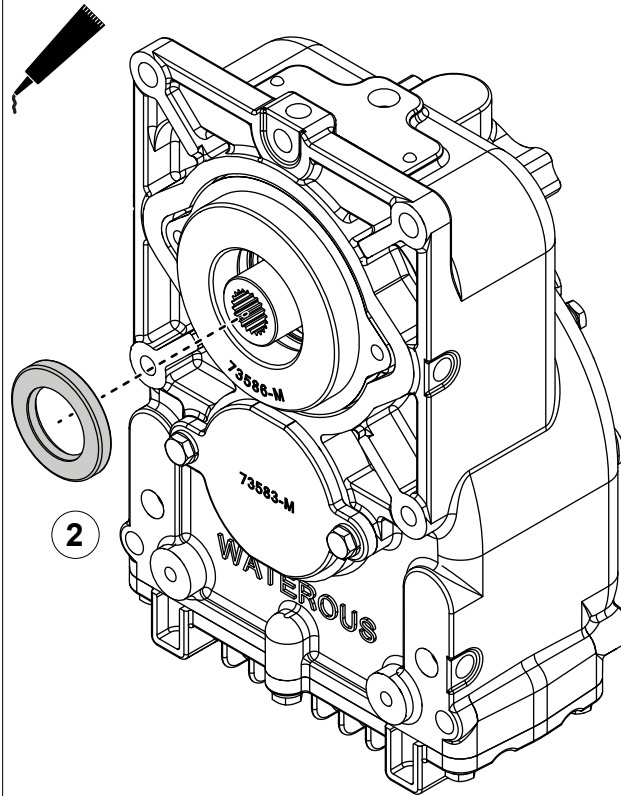
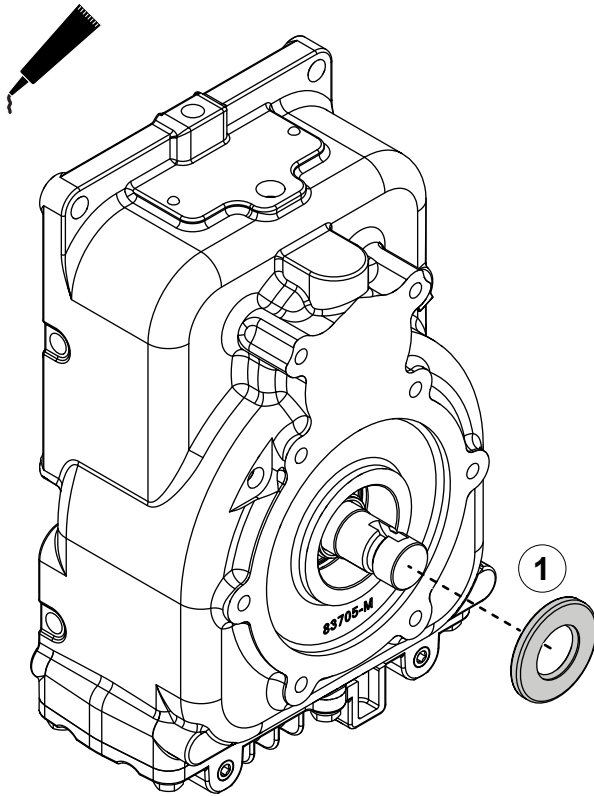
Use the illustrations and instructions to install the bottom cover.

**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install it on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.



## CP-3 Pump with 1-1/8 Inch Keyed Input



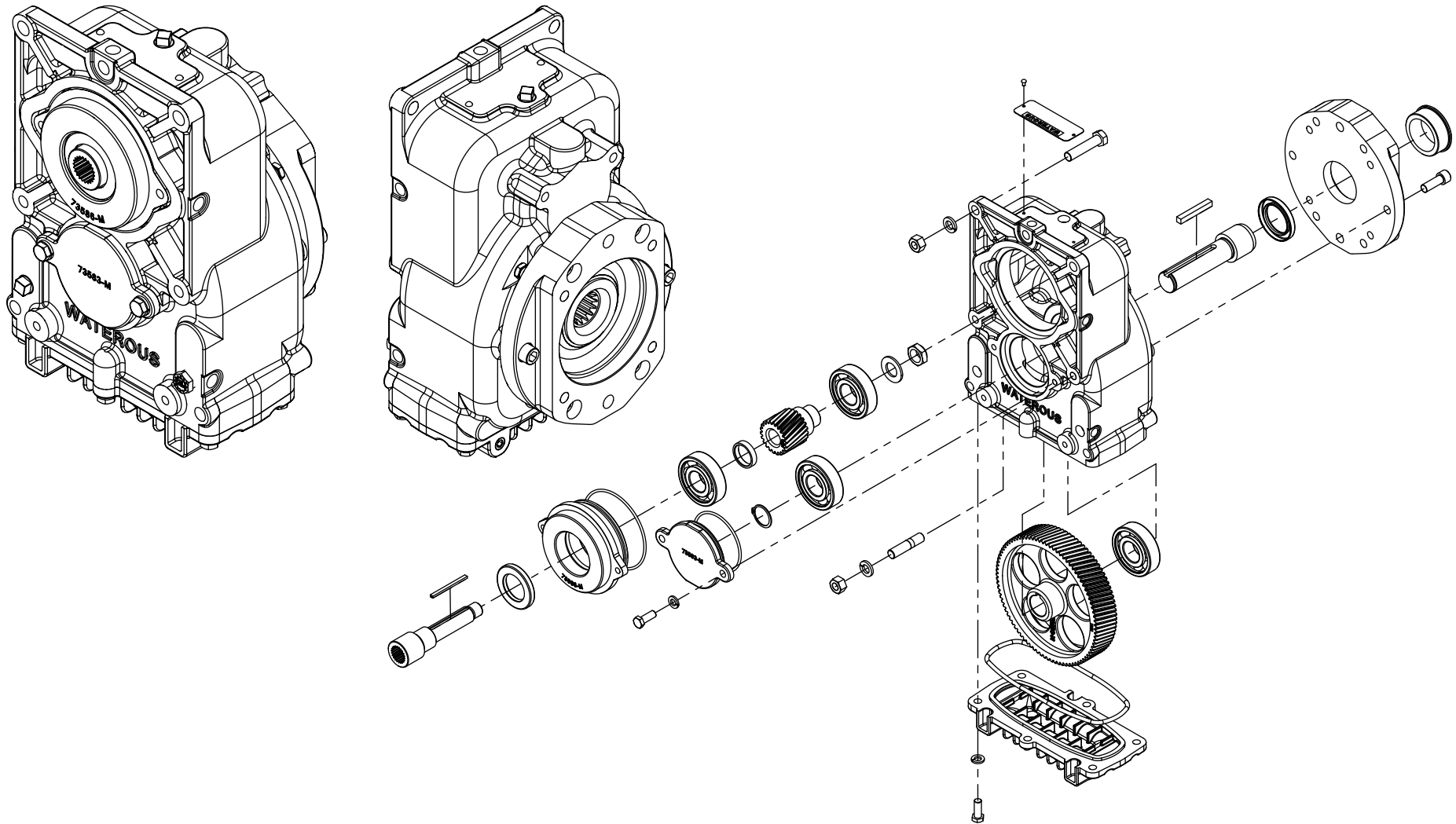
### Installing the Seals

Use the illustrations and instructions to install the seals.

- 1 Apply sealant to the seal and install it over the shaft.
- 2 Apply sealant to the seal and install it into the bearing housing.

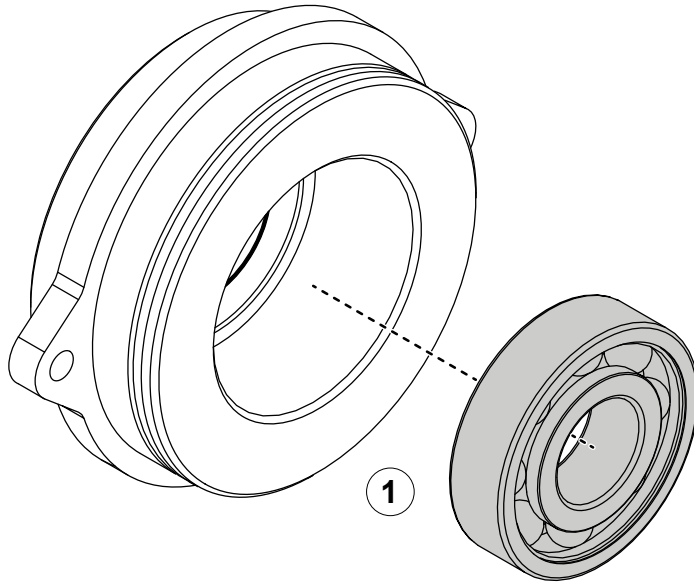
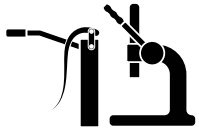
[illegible]

### **CP-3 Pump with 1-1/8 inch SAE Class-C Hydraulic Adapter**





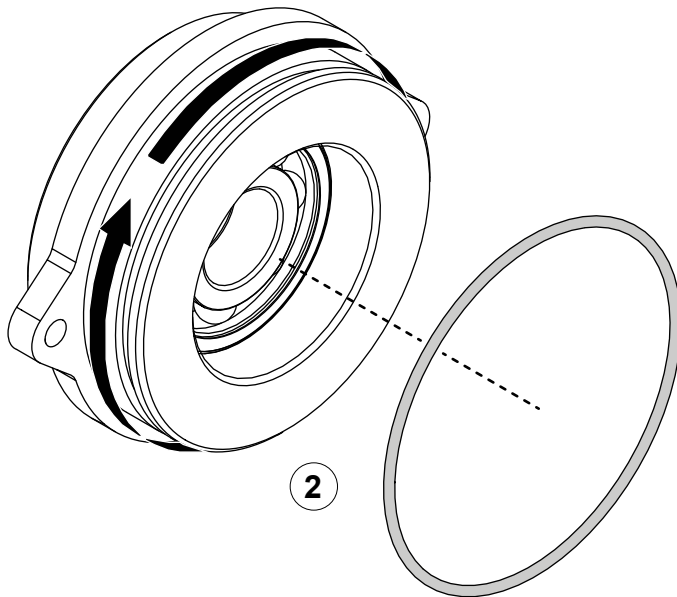
## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter



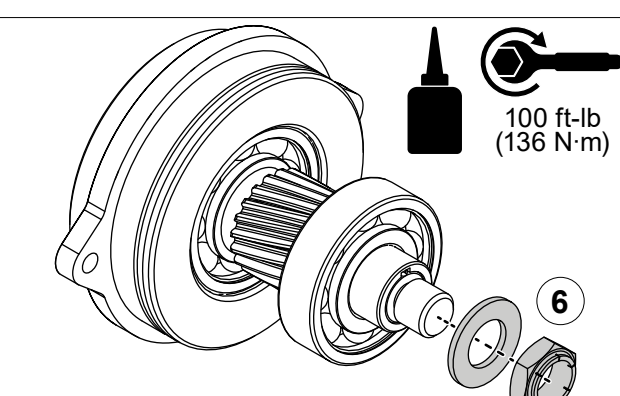
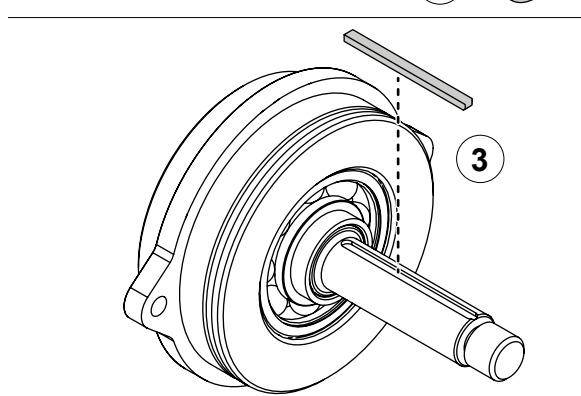
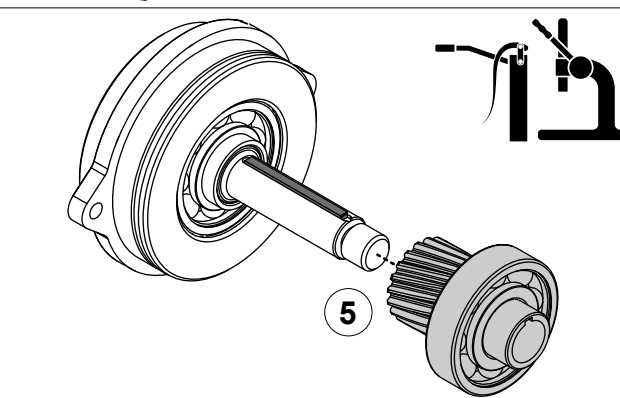
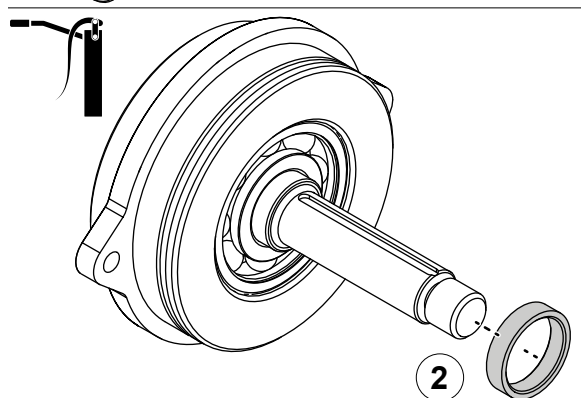
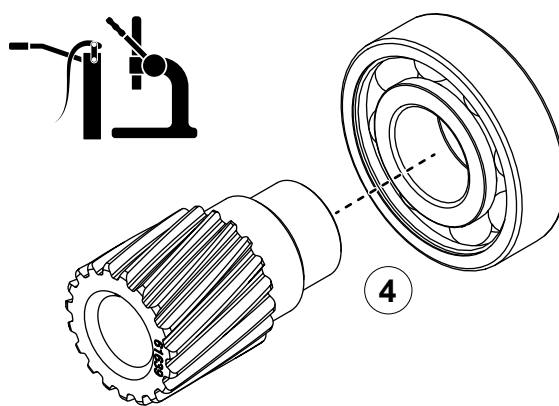
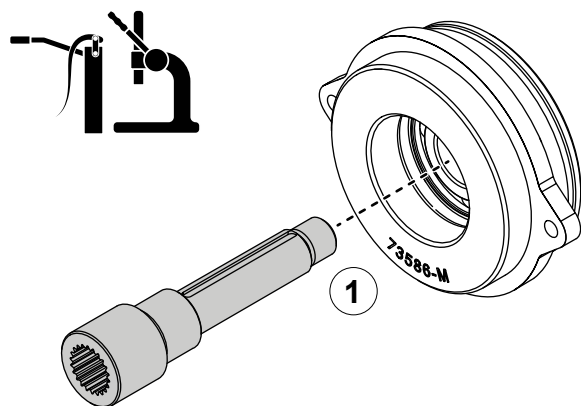
### Assembling the Bearing Housing

Use the illustrations and instructions to assemble the bearing housing.

- 1 Apply grease to the outer-bearing race and press it into the bearing housing.
- 2 Apply sealant to the O-ring groove and install O-ring around the bearing housing.



## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter

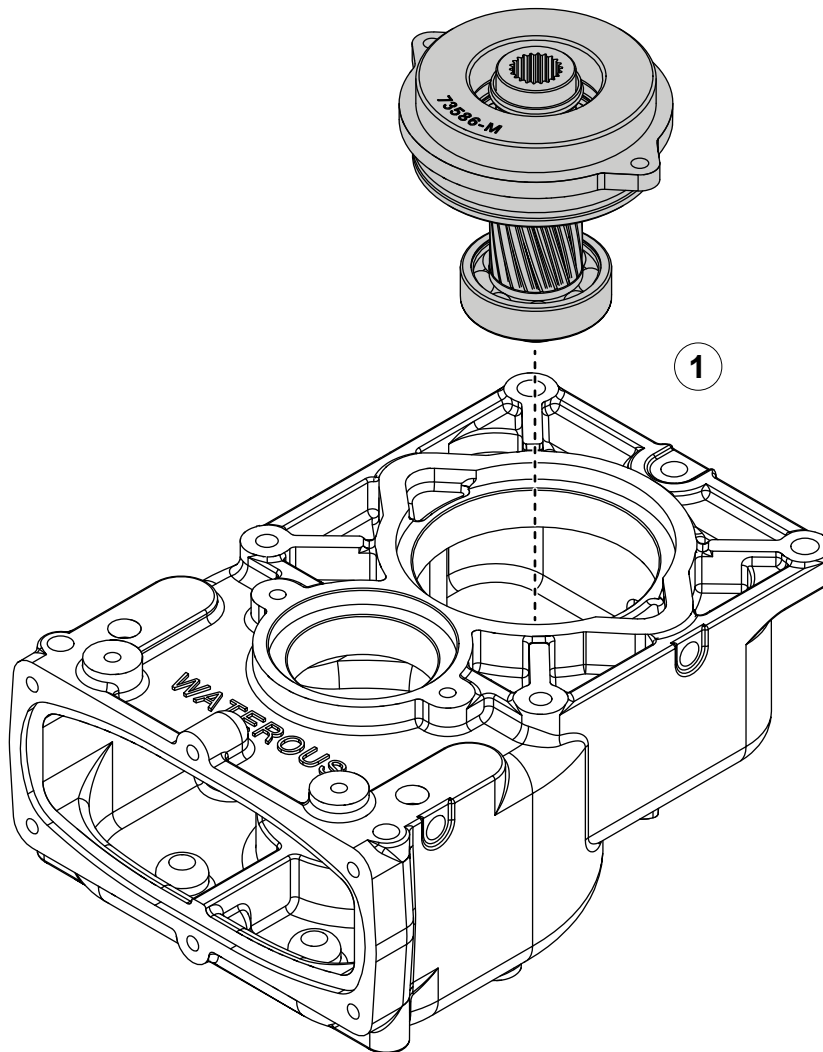
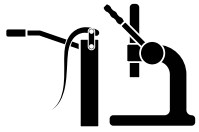


### Assembling the Impeller Shaft

Use the illustrations and instructions to assemble the impeller shaft.

- 1 Apply grease to the inner bearing race and press the shaft assembly into the bearing house assembly.
- 2 Apply grease to the shaft and install the spacer.
- 3 Install the key into the keyway.
- 4 Apply grease to the inner bearing race and press the driven gear and bearing together.
- 5 Apply grease to the shaft and align the driven gear to the key on the shaft. Press the components together.
- 6 Install the washer. Apply medium-duty thread lock on the threads and install the locknut. Torque the locknut to 100 ft-lb (136 N·m).

## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter

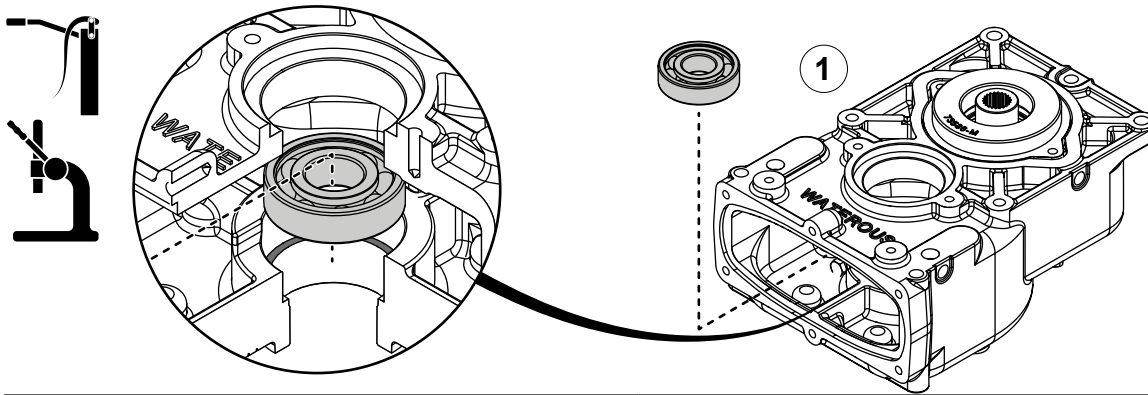


### Installing the Impeller-Shaft Assembly

Use the illustrations and instructions to install the impeller-shaft assembly.

- 1 Apply grease to the outer bearing race and press the impeller-shaft assembly into the case.

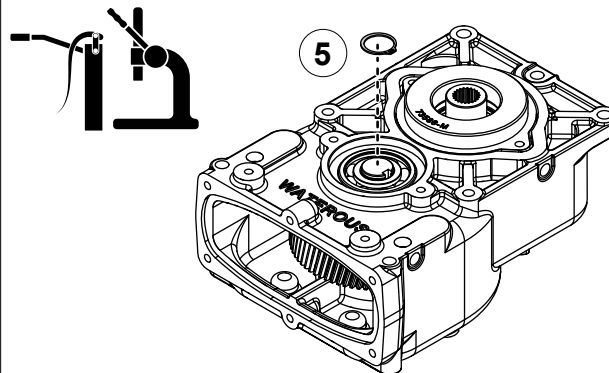
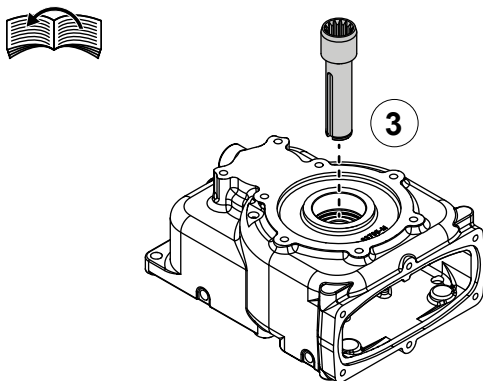
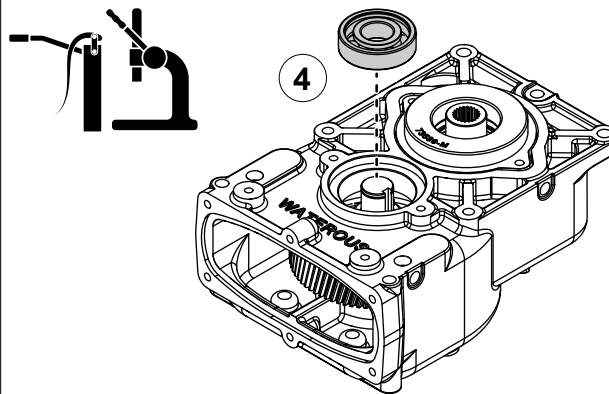
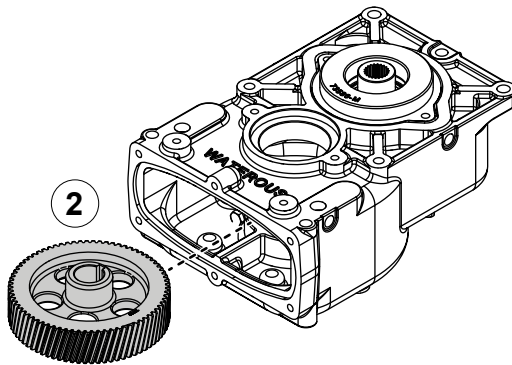
## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter



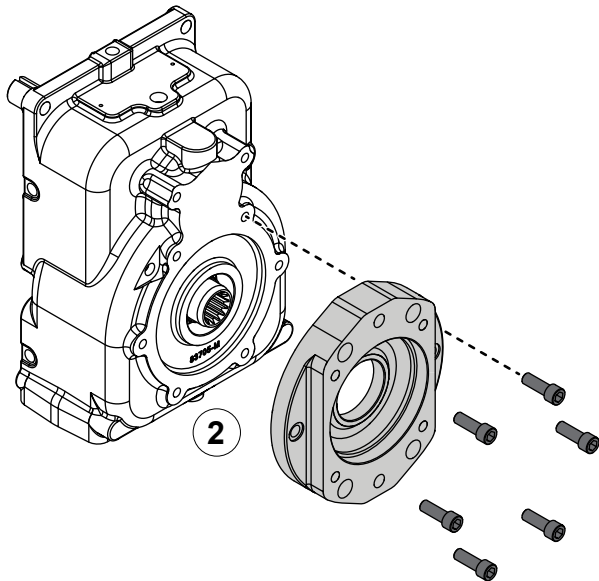
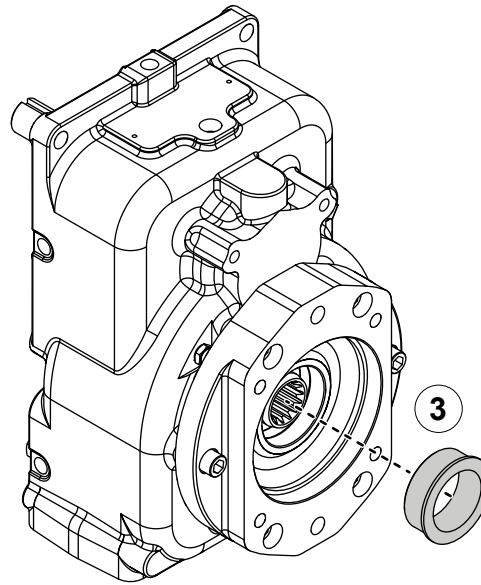
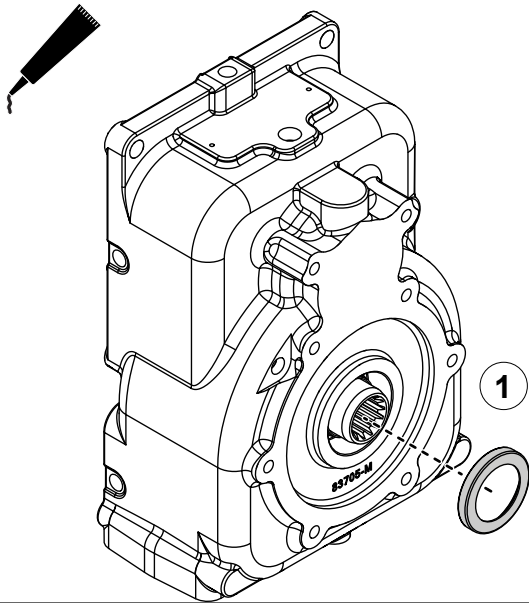
### Installing the Drive-Gear Components

Use the illustrations and instructions to complete the assembly.

- 1 Apply grease to the outer-bearing race and press it into bearing pocket inside the case.
- 2 Align the drive gear over the bearing.
- 3 Refer to: **"Installing the Drive-Shaft Key" on page 78** to install the drive shaft.
- 4 Apply grease to the inner and outer bearing race and press it into the case while pressing it onto the shaft.
- 5 Install the retaining ring.



## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter

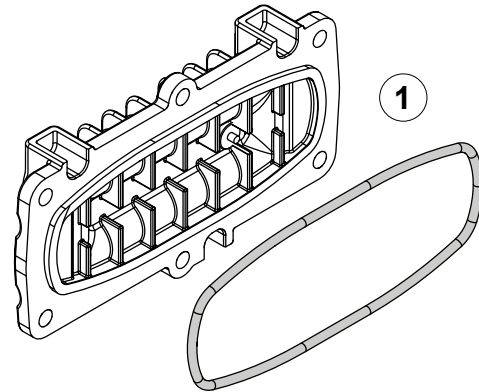


### Completing the Drive Shaft Install

Use the illustrations and instructions to complete the assembly.

- 1 Apply sealant to the seal and install it over the shaft.
- 2 Use the hardware that you removed earlier and loosely install the flange adapter.
- 3 Use the bushing to align the loosely-installed adapter to the case. Once you install the bushing, securely tighten the adapter screws.

## CP-3 Pump with 1-1/18 inch SAE Class-C Hydraulic Adapter

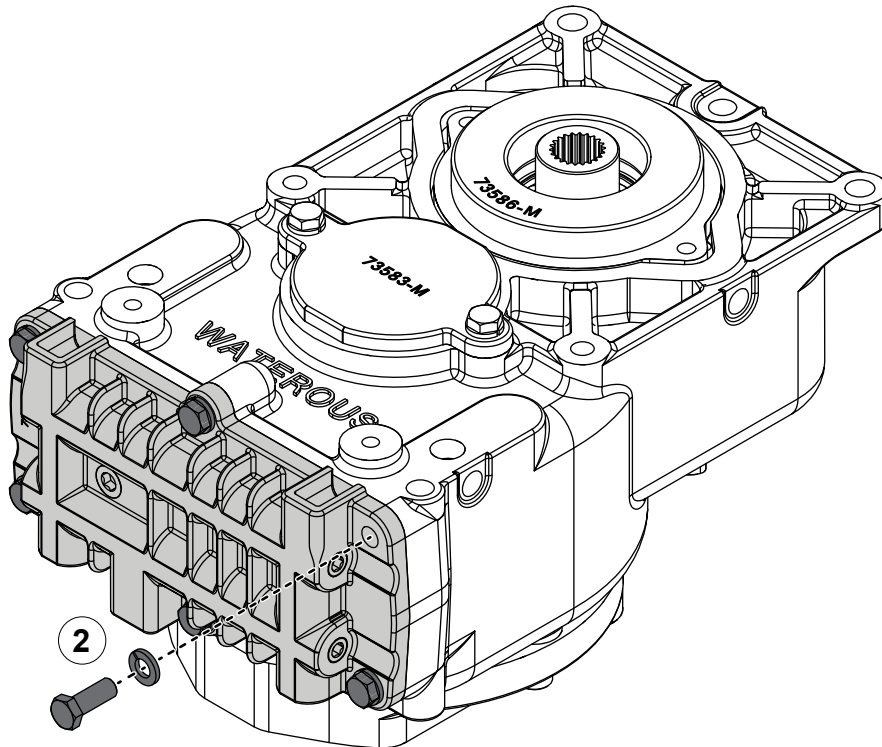


### Installing the Bottom Cover

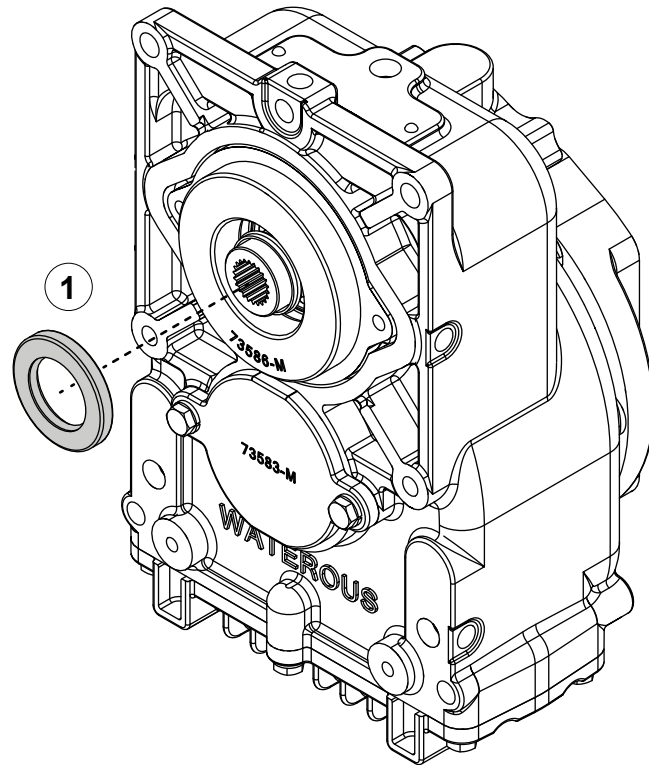
Use the illustrations and instructions to install the bottom cover.

**Note:** Refer to the SPL for your application to determine the bottom cover orientation.

- 1 Apply sealant around the O-ring and install it on the bottom cover.
- 2 Use the hardware that you removed earlier to securely install the bottom cover.



## CP-3 Pump with 1-1/8 inch SAE Class-C Hydraulic Adapter

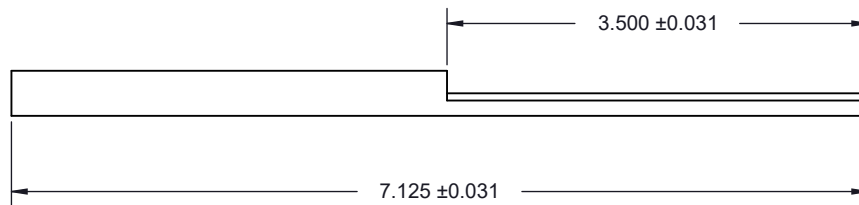
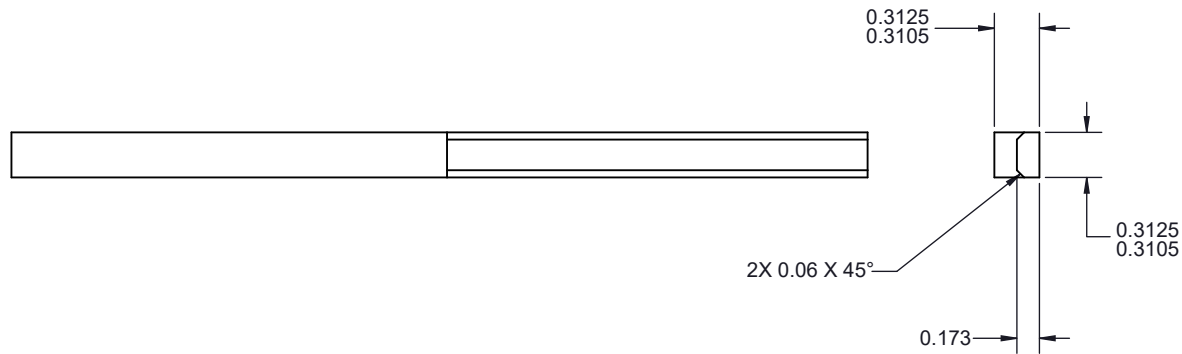


### Installing the Seal

Use the illustrations and instructions to install the seal.

- 1 Apply sealant to the seal and install it into the bearing housing.

## Keyway Alignment Tool—Keyway Tool



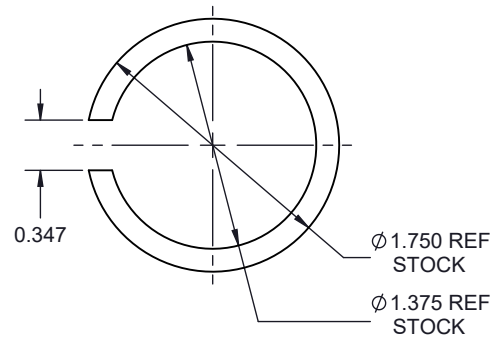
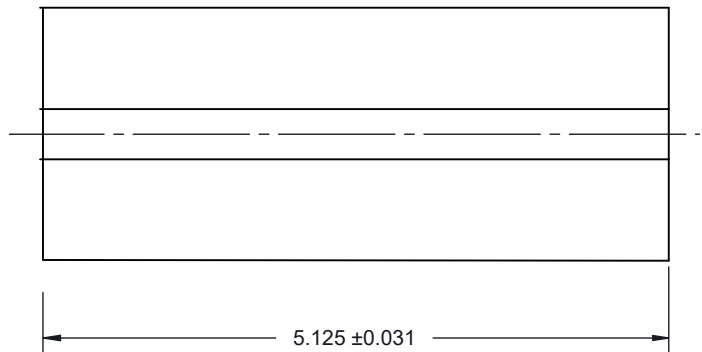
The keyway alignment tools are used to install the drive shaft in certain applications. If required by your application, order Waterous part number K1256 for a complete set of alignment tools, or use the illustration to make the keyway tool.

Part Number: 63869

Material: Steel Key Stock



## Keyway Alignment Tool—Spacer Tool

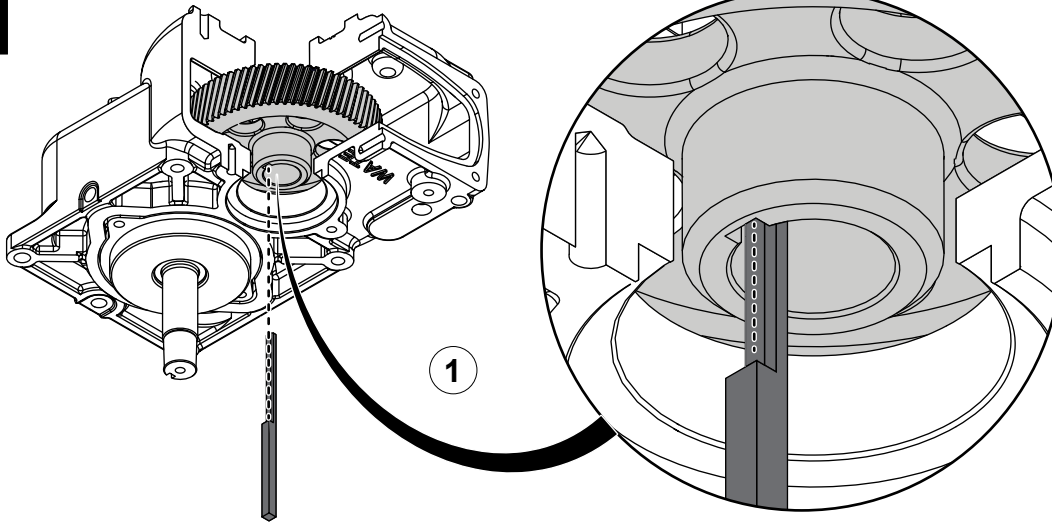


The keyway alignment tools are used to install the drive shaft in certain applications. If required by your application, order Waterous part number K1256 for a complete set of alignment tools, or use the illustration to make the spacer tool.

Part Number: 63870

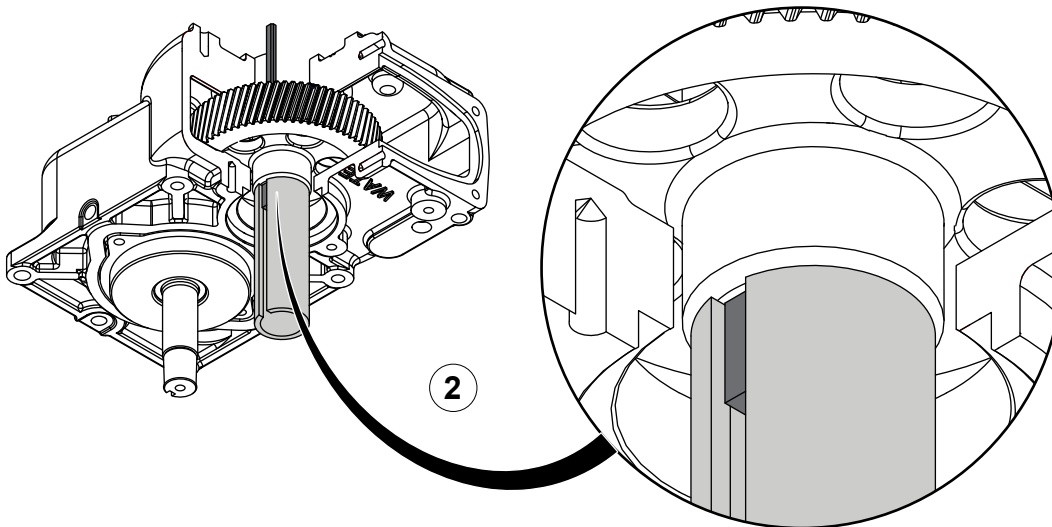
Material: Steel Tube Stock

## Installing the Drive-Shaft Key

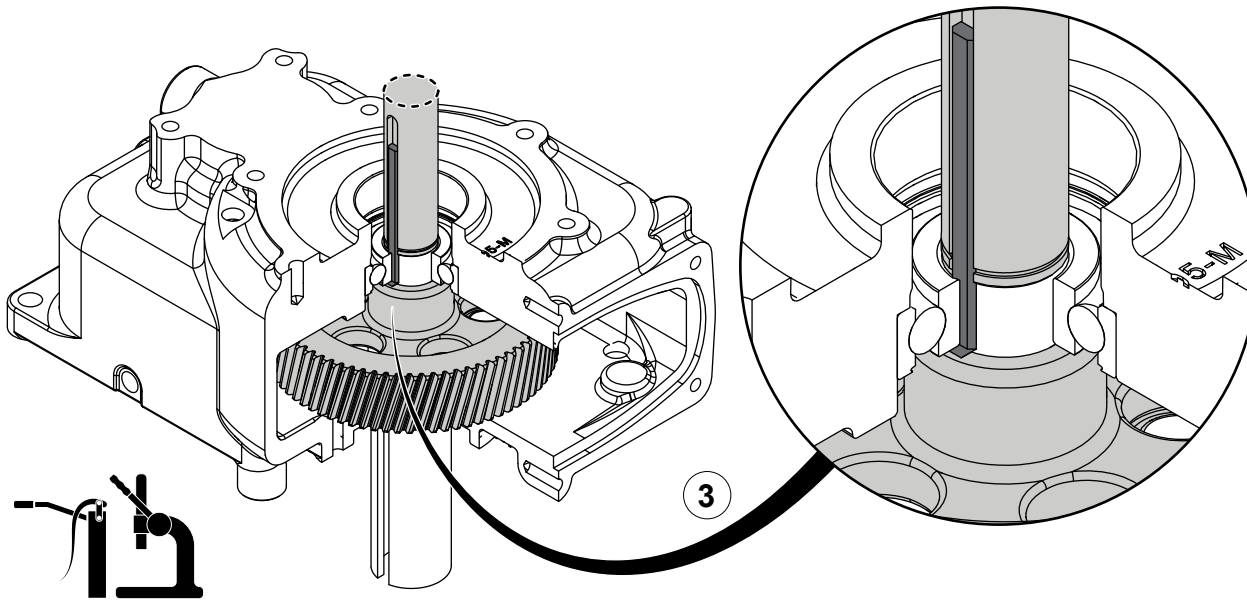


Use the illustrations and instructions to align and install the drive-shaft and key.

- 1 Apply grease to the keyway tool and insert it into the drive-gear keyway until the step in the keyway tool bottoms-out against the bearing.
- 2 Use the spacer tool to guide the shaft as it is pressed into the drive gear.

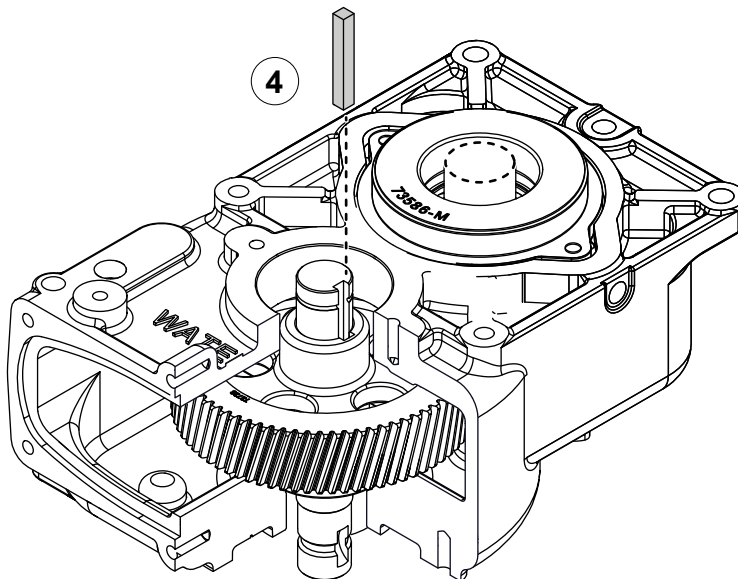


## Installing the Driven Shaft Key

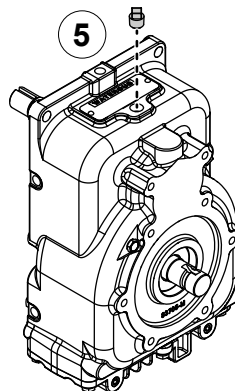
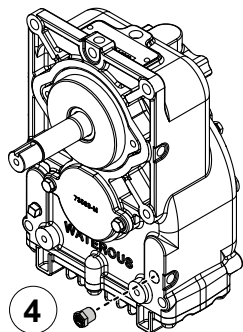
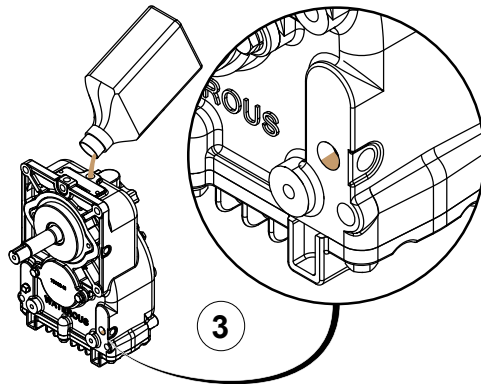
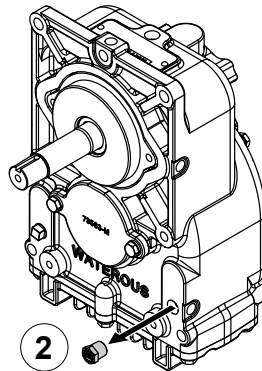
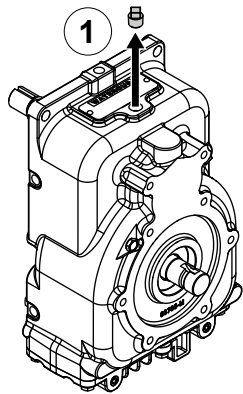


Use the illustrations and instructions to align and install the drive shaft and key.

- 3 Apply grease to the drive shaft and align it to the bearing and keyway tool. Press the drive shaft into the drive gear.
- 4 Remove the alignment tools, apply grease to the key and press it into the keyway.



## Adding Oil to the Transmission



Use the illustrations and instructions to add oil to the transmission. The illustrations may not represent your specific transmission orientation. Refer to the SPL for your application to locate the oil-fill and oil level plug for your orientation. Refer to the documentation provided with your equipment to determine the type of lubricant, and the amount, for your application. Contact Waterous for more information.

- 1 Remove and set aside the oil-fill plug.
- 2 Remove and set aside the oil-level plug.
- 3 Add lubricant to the transmission.  
**Note:** After pouring some oil into the case, allow it to settle before adding more to avoid over filling.
- 4 Securely install the oil-level plug.  
**Note:** Make sure that you do not over-tighten the plug.
- 5 Securely install the oil-fill plug.  
**Note:** Make sure that you do not over-tighten the plug.

# **WATEROUS**

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[www.waterousco.com](http://www.waterousco.com)