

WATEROUS

Form Number: F-2917

Issue Date: Aug 26, 2025

TQ Series Power Take-Offs

Installation

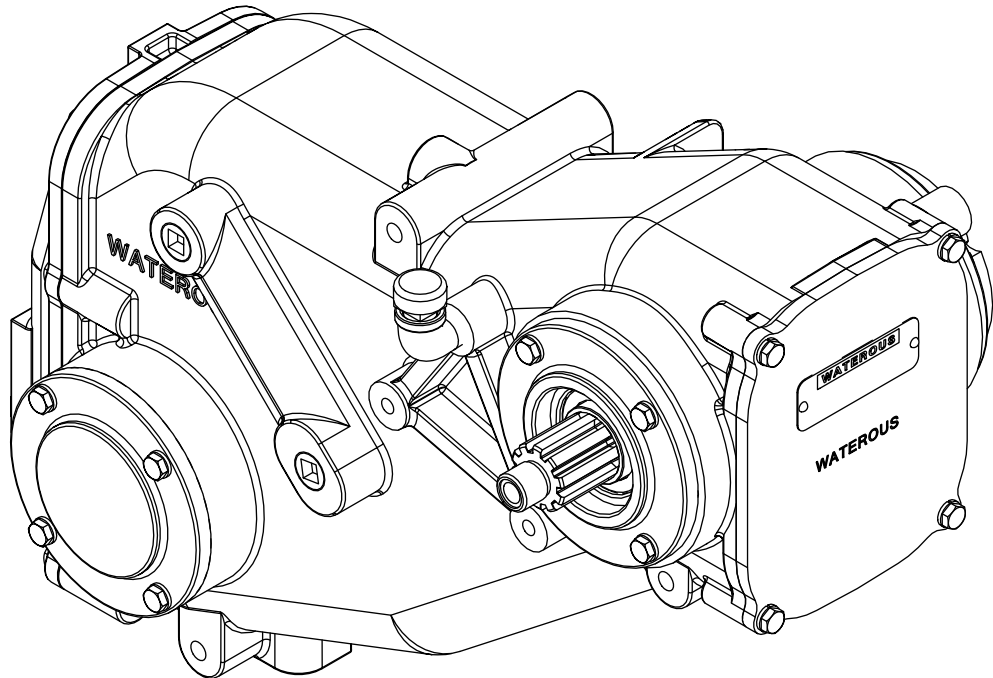
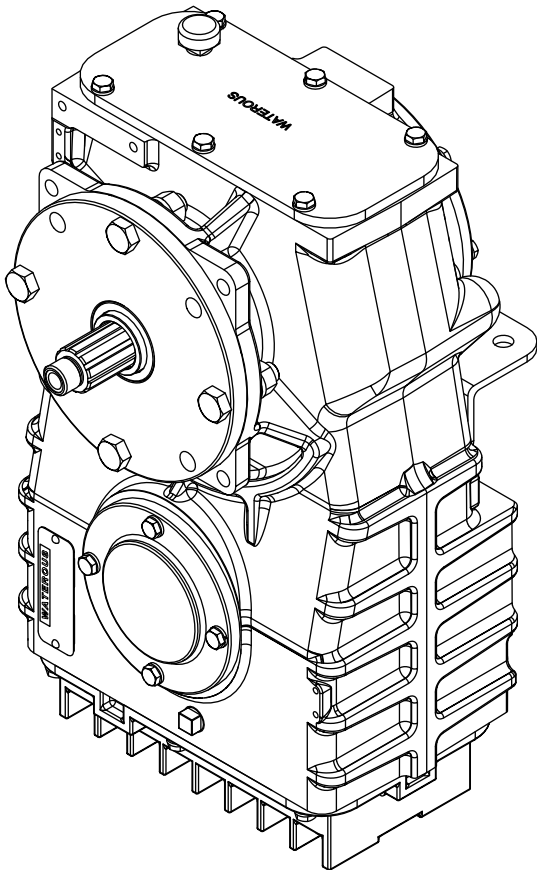
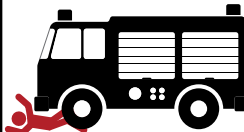


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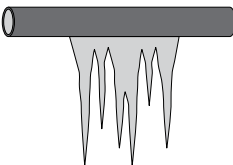
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Safety Precautions


- Read and understand all the associated documentation before you begin installing the product.
- Contact Waterous when you have questions about installing the equipment.
- Read and understand all the notices and safety precautions.
- Do not operate the equipment when safety guards are removed.
- Do not modify the equipment.

 WARNING	
Sudden Unexpected Movement <ul style="list-style-type: none">• Unexpected movement can cause injury or death.• Make sure the shift unit is in the proper mode before operation.	

 WARNING	
Hot Surface <ul style="list-style-type: none">• Hot surfaces can burn you.• Do not touch the surface during operation—allow it to cool after operating.	

NOTICE	
Freeze Damage <ul style="list-style-type: none">• Do not allow fluid in the lines to freeze.• Remove all freezable fluid from the lines before storing the apparatus.	

NOTICE	
Before Operation <ul style="list-style-type: none">• Read and understand all the instructions provided.• Check all fluid levels and replenish if necessary.• Remove all shipping plugs and install the operation plugs or caps.	

 Read and understand all notices following this symbol.

Use this document to install your Waterous equipment. Understand the following conditions before proceeding:

- The instructions may refer to options or equipment that you may not have purchased with your system.
- The illustrations in this document are intended to convey concepts. Do not use the illustrations to determine physical attributes, placement, or proportion.
- Understand that your application may require additional steps that are not described in the illustrations or instructions to perform the installation.
- The equipment described in this document is intended to be installed by a person or persons with the necessary skills and knowledge to perform the installation.
- The equipment described in this document is intended to be operated by a person or persons with the basic knowledge of operating similar equipment.
- The information in this document is subject to change without notice.

This document is divided into the following sections:

SAFETY

This section describes general precautions and alert symbols in the document.

INTRODUCTION

This section is an overview of the document.

OVERVIEW

This section describes the components that make up the system.

INSTALLATION

This section describes installing the equipment.

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 designed to be printed on both sides and in color.
- Use a 3-ring binder to store the document.

Additional Documentation

Additional documentation is available through the MyWaterous login at waterousco.com. Use your serial number to gain access to the service parts list (SPL) associated with your system. Dimensional drawings are available through the Waterous Service department.

Symbols

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



Drill—This symbol tells you to drill holes in the apparatus.



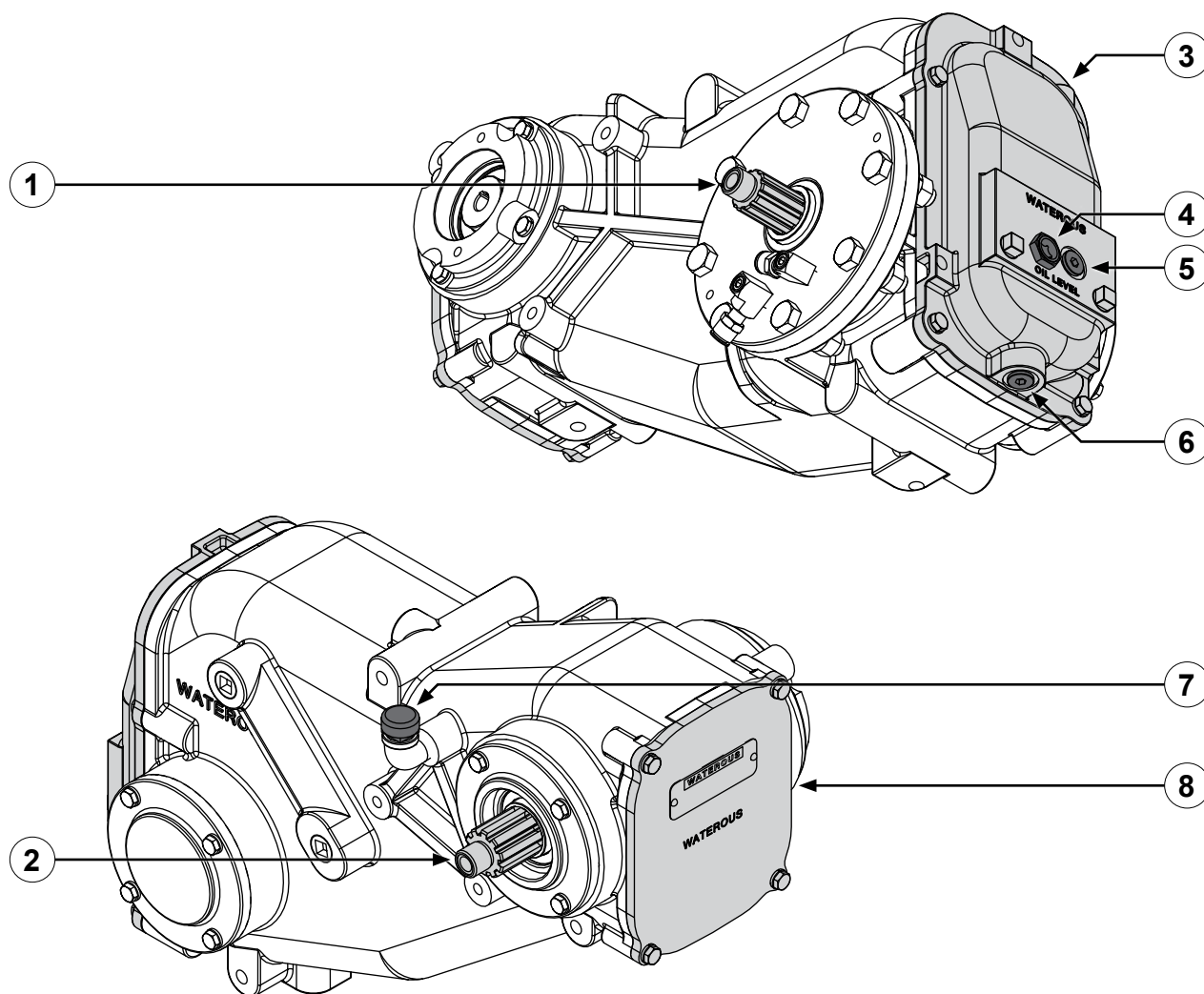
Extreme pressure assembly lubricant—This symbol tells you to apply extreme pressure assembly lubricant to the part.



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

Identifying Exterior Components—TQB

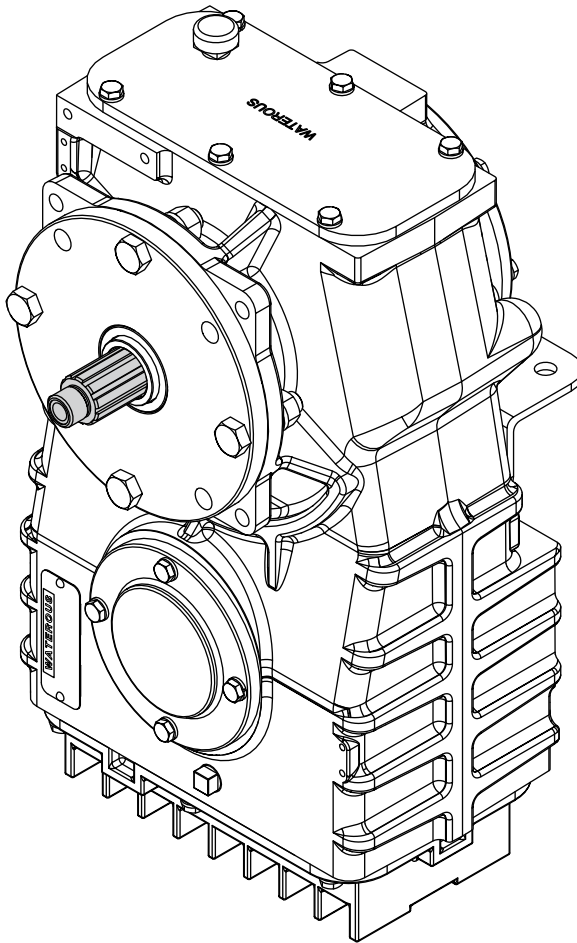
Use the illustration to identify various components on the power take-off (PTO).



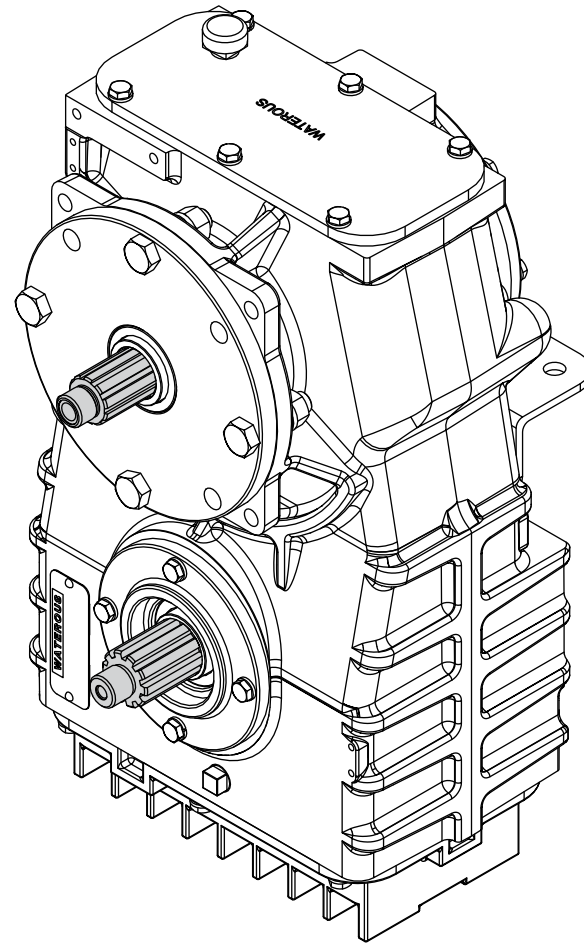
- 1 Output shaft
- 2 Input shaft
- 3 Transmission pan
- 4 Oil level sight plug
- 5 Magnetic plug—oil fill
- 6 Magnetic plug—oil drain
- 7 Breather
- 8 Cover

Output Shaft Options—TQC

TQC PTOs are available with the output shaft on the opposite side or same side as the input shaft. The opposite-side output shaft rotates in the opposite direction of the input shaft and the same-side output shaft rotates in the same direction as the input shaft.

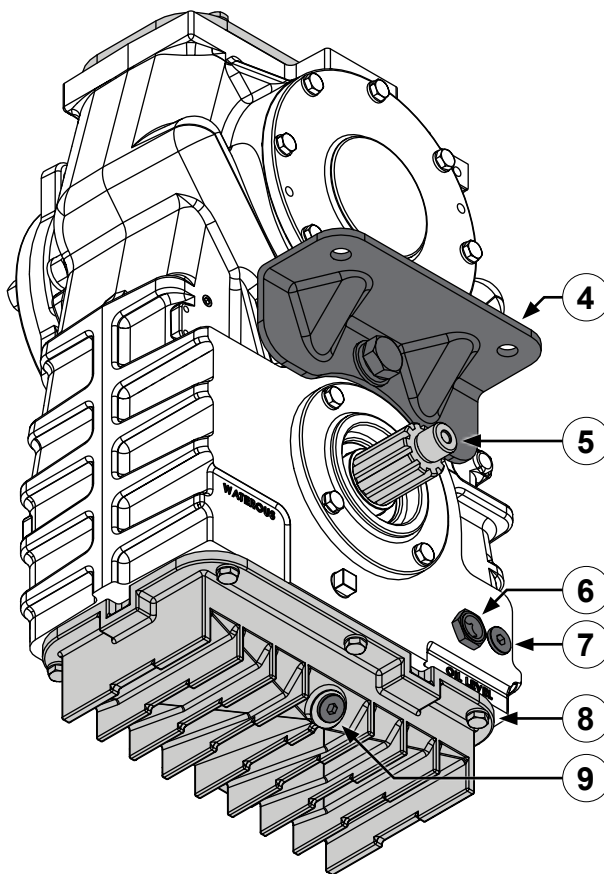
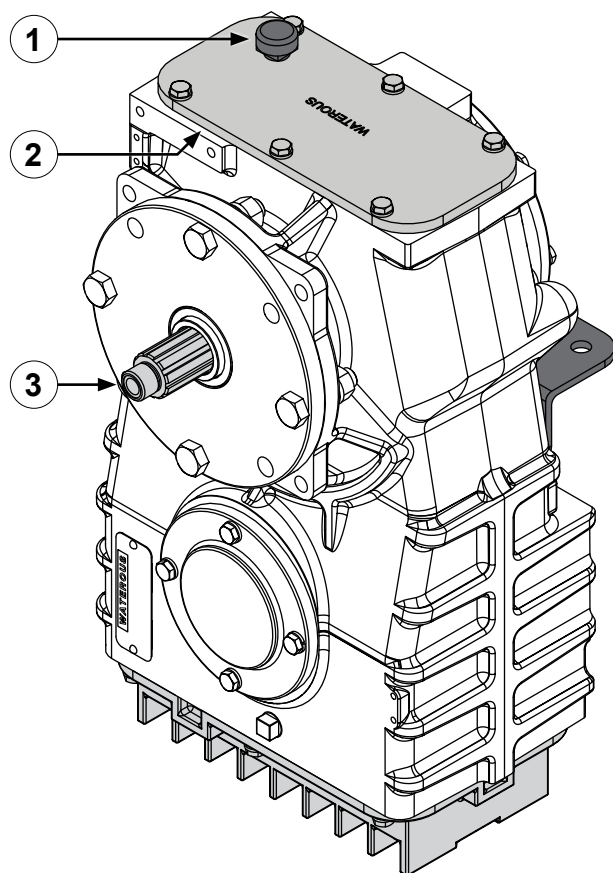


Opposite-Side Output Shaft



Same-Side Output Shaft

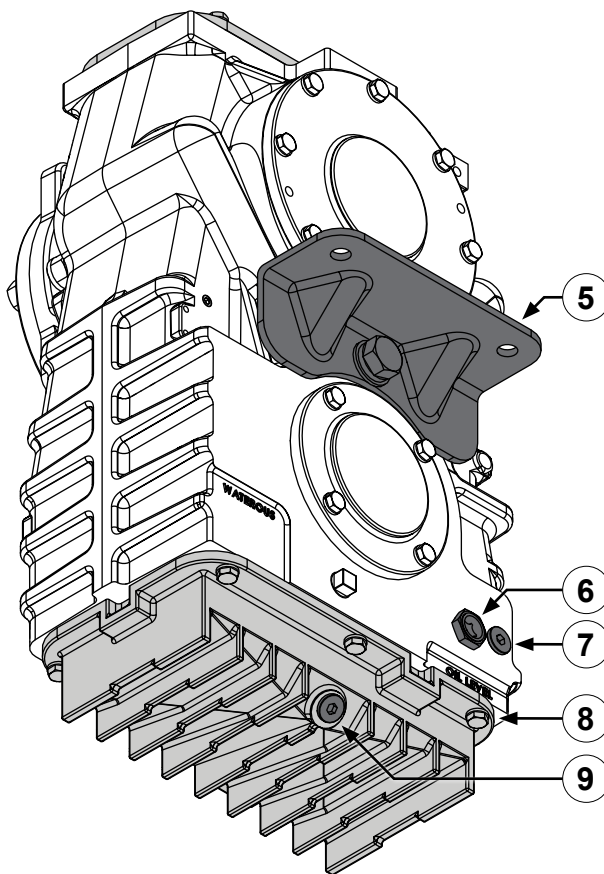
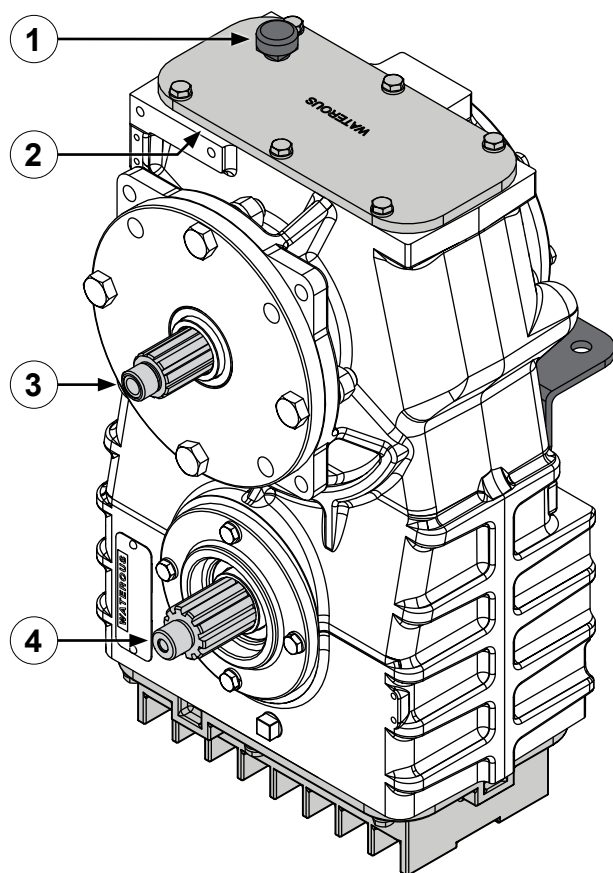
Identifying Exterior Components—TQC with Opposite-Side Output Shaft



Use the illustration to identify various components on the PTO.

- | | |
|---|-------------------------|
| 1 | Breather |
| 2 | Cover |
| 3 | Output shaft |
| 4 | Mounting bracket |
| 5 | Input shaft |
| 6 | Oil level sight plug |
| 7 | Magnetic plug—oil fill |
| 8 | Transmission pan |
| 9 | Magnetic plug—oil drain |

Identifying Exterior Components—TQC with Same-Side Output Shaft



Use the illustration to identify various components on the PTO.

- | | |
|---|-------------------------|
| 1 | Breather |
| 2 | Cover |
| 3 | Output shaft |
| 4 | Input shaft |
| 5 | Mounting bracket |
| 6 | Oil level sight plug |
| 7 | Magnetic plug—oil fill |
| 8 | Transmission pan |
| 9 | Magnetic plug—oil drain |

Notes

Installation Overview

This equipment is intended to be installed by a person or persons with the basic knowledge of installing similar equipment. Contact Waterous with questions about installing the equipment. The installation may require the following tasks and abilities:

- Locating, drilling, and cutting features into the apparatus.
- Installing and securing plumbing.
- Routing and securing the wiring.
- Welding.
- Calibration and final testing.

Preparing for the Installation

- !** **Before Operation:** Read and understand all instructions provided. Check all fluid levels and replenish them if needed. Remove all shipping plugs and install the operation plugs or caps.

Use the following guidelines before, during, and after the installation.

- Read and understand all the installation instructions before installing the equipment.
- Prepare a suitable, well-lit area and gather all the necessary tools before you begin the installation.
- Make sure that you remove any shipping plugs or caps before installing any components.
- Make sure that you mount the equipment with angle compensation to comply with the driveline requirements of your application.
- Make sure that you bring all fluids to operating levels before using the equipment.

Modifying the Equipment

- !** **Modification:** May cause equipment damage and void the warranty. Do not modify the system or any of its components.

This equipment is intended to operate as designed. Do not remove, modify, or change the components in the system. Doing so will void your warranty. Contact Waterous for more information.

Optional Equipment

Be aware that the installation instructions may include optional equipment not included in your application.

Determining Cable and Wire Routing

Use the *Wiring Best Practices* document, available at waterousco.com, as a guide to select and route wiring for your application.

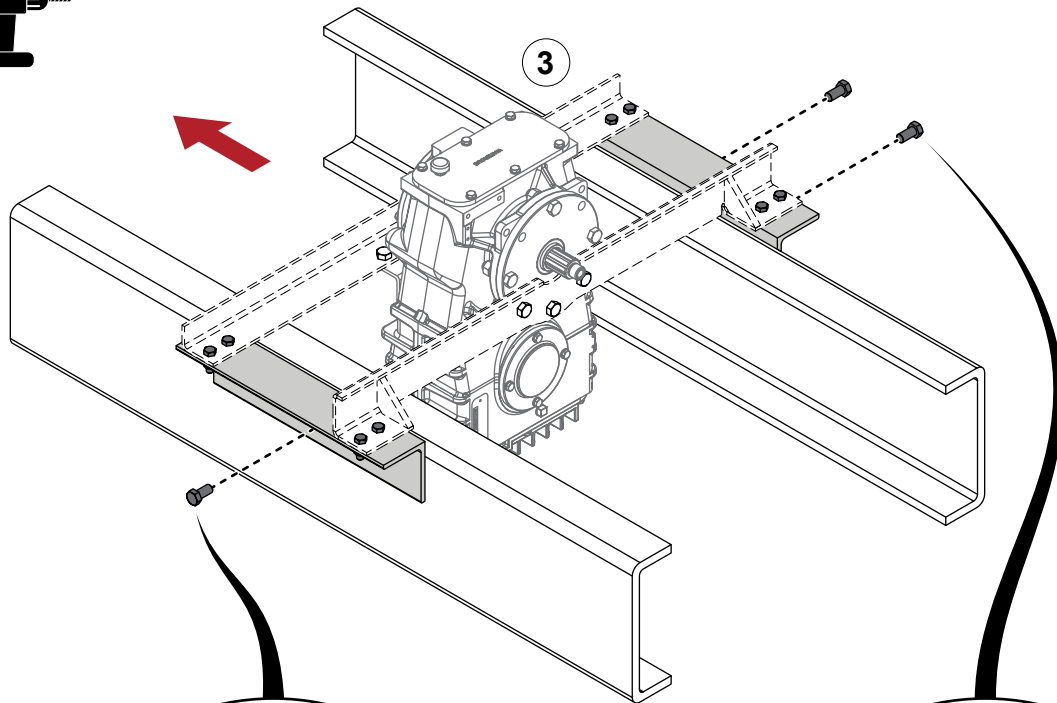
Testing After Installation

Perform standard tests associated with the operation of centrifugal pumps, along with any tests outlined in the transmission instructions or required by the National Fire Protection Association (NFPA). During the tests, listen for unusual noises, check for leaks, and monitor the smoothness of operation.

PTO Temperature Specifications

For all PTOs, the maximum acceptable temperature at external surfaces is 250°F (121°C).

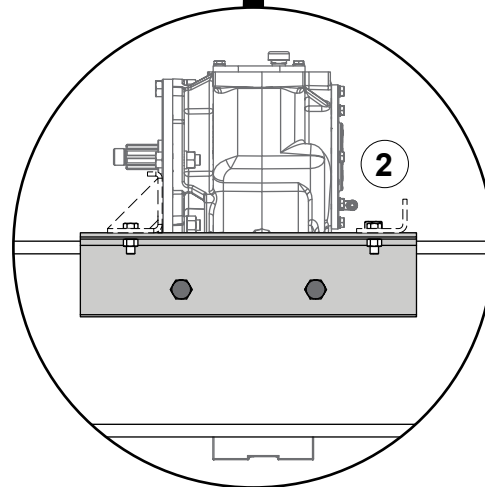
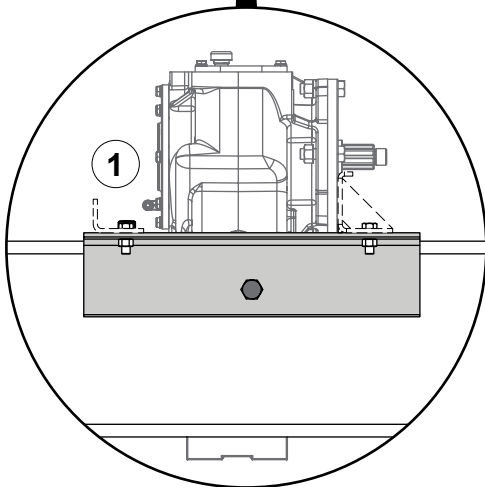
Mounting the PTO



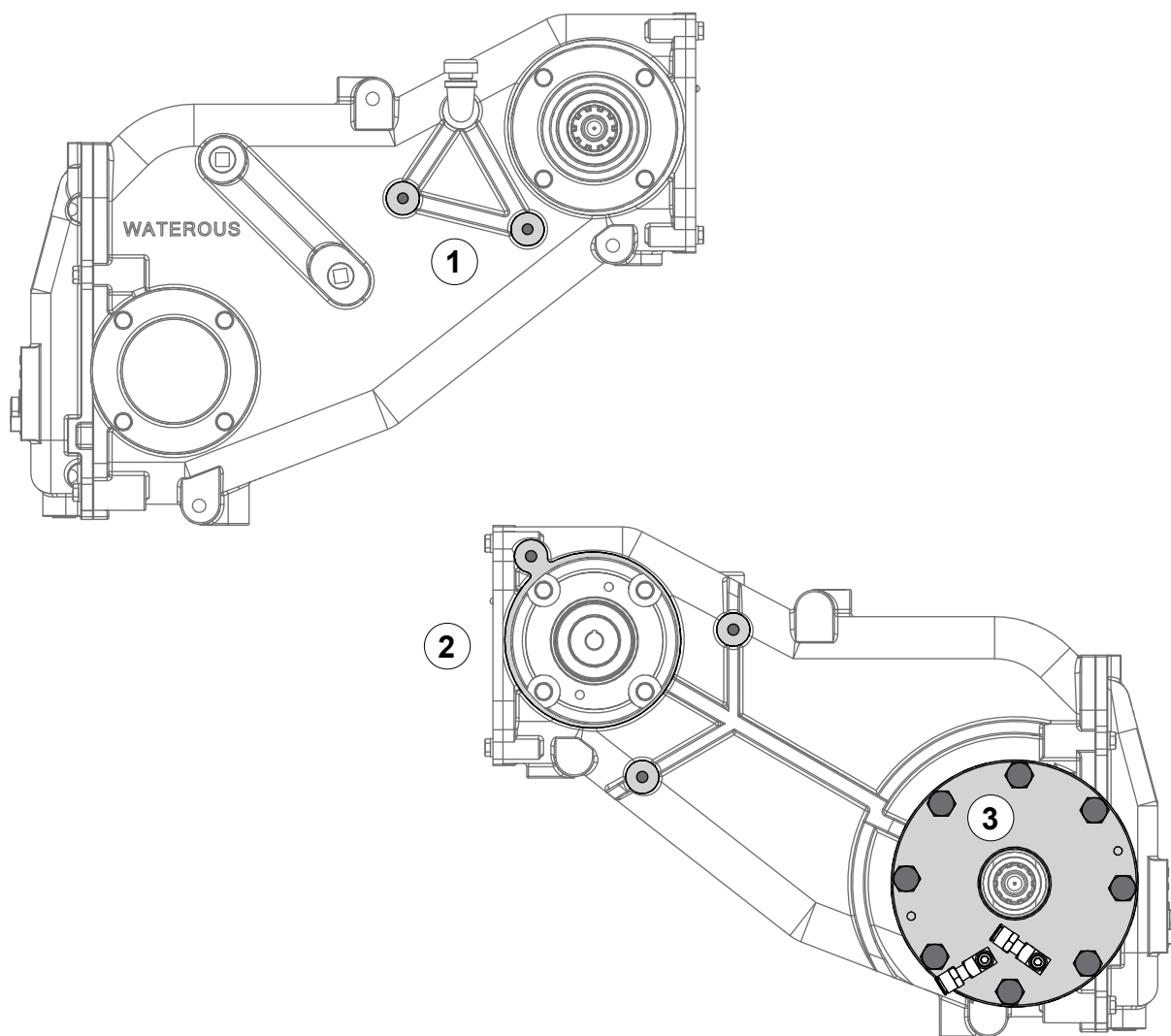
Use the illustration and instructions to create a three-point mounting system for the PTO. A three-point mount allows the frame to flex around the equipment, whereas a rigid mount could damage the equipment and void the warranty. It is the responsibility of the installer to effectively mount the PTO to avoid damage.

Follow the arrow to position the PTO and mounting system within the frame rails.

- 1 Create an angle bracket to mount to the frame rail. Drill one hole into the center of the angle bracket that goes through the frame rail. Use the appropriate hardware to secure the angle bracket to the frame rail.
- 2 Create an angle bracket to mount to the frame rail. Drill two holes into the angle bracket that go through the frame rail. Position one hole near each end of the angle bracket. Use the appropriate hardware to secure the bracket to the frame rail.
- 3 Create custom brackets to support the PTO. Secure the custom brackets to the angle brackets mounted on the frame rails.



TQB



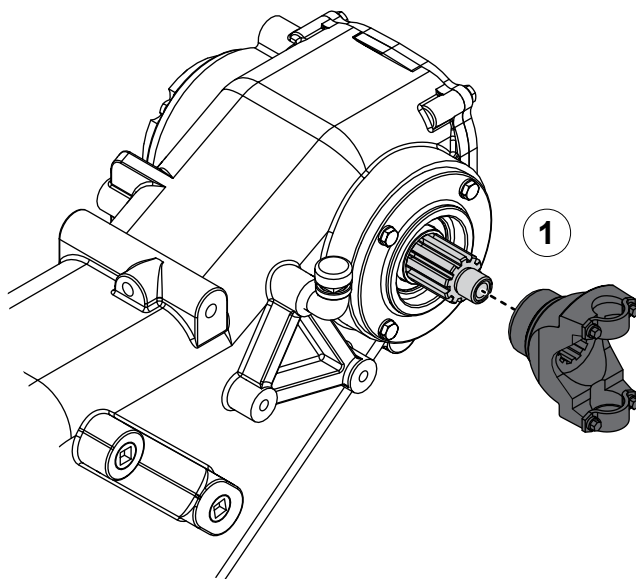
Mounting Points

Use the illustration and instructions to mount the PTO.

Note: Refer to dimensional drawings for mounting hole spacing.

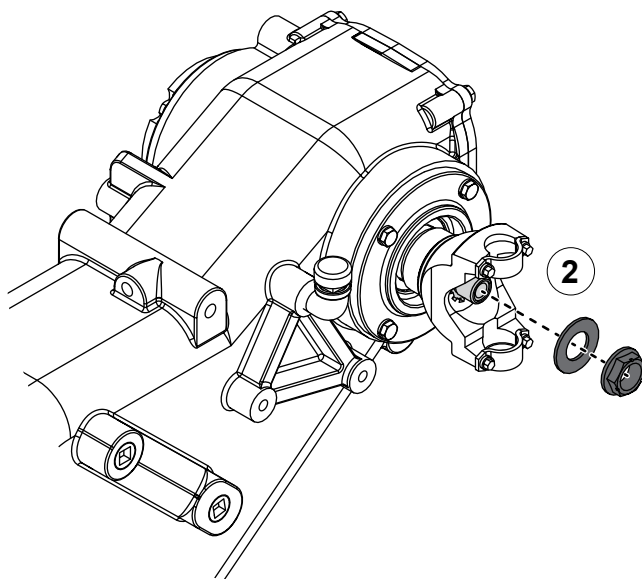
- 1 Use the case mounting holes to secure the PTO to the apparatus.
- 2 Use the case mounting holes to secure the PTO to the apparatus.
- 3 Replace the oil seal housing bolts with hardware that will allow you to secure the PTO to the apparatus.

TQB

**Installing the End Yokes**

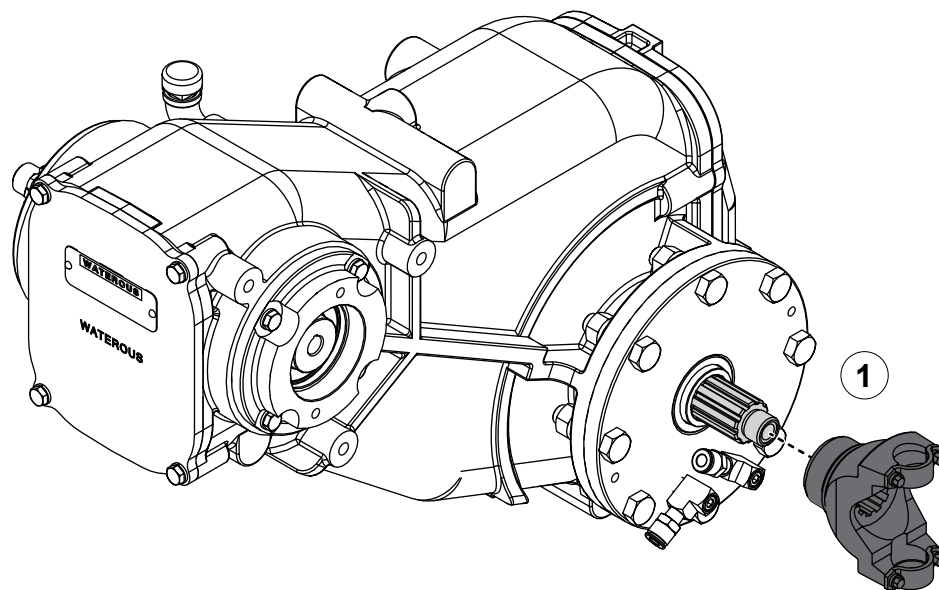
Use the illustrations and instructions to install the end yoke on the input side of the case.

- 1 Apply extreme pressure assembly lubricant to the drive shaft, then install the end yoke onto the shaft.
- 2 Install the washer and lock nut onto the shaft.



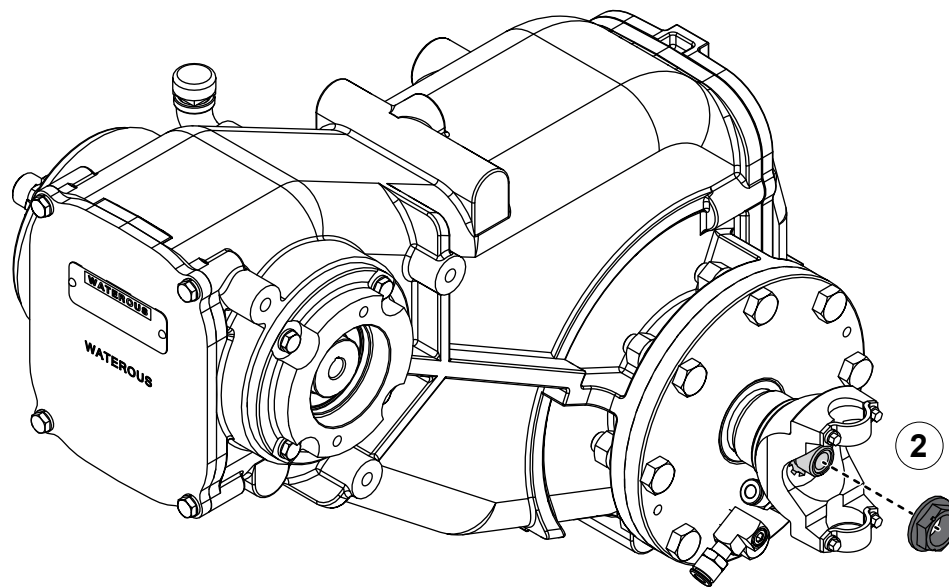
425 ft-lb
576 N·m

TQB

**Installing the End Yokes**

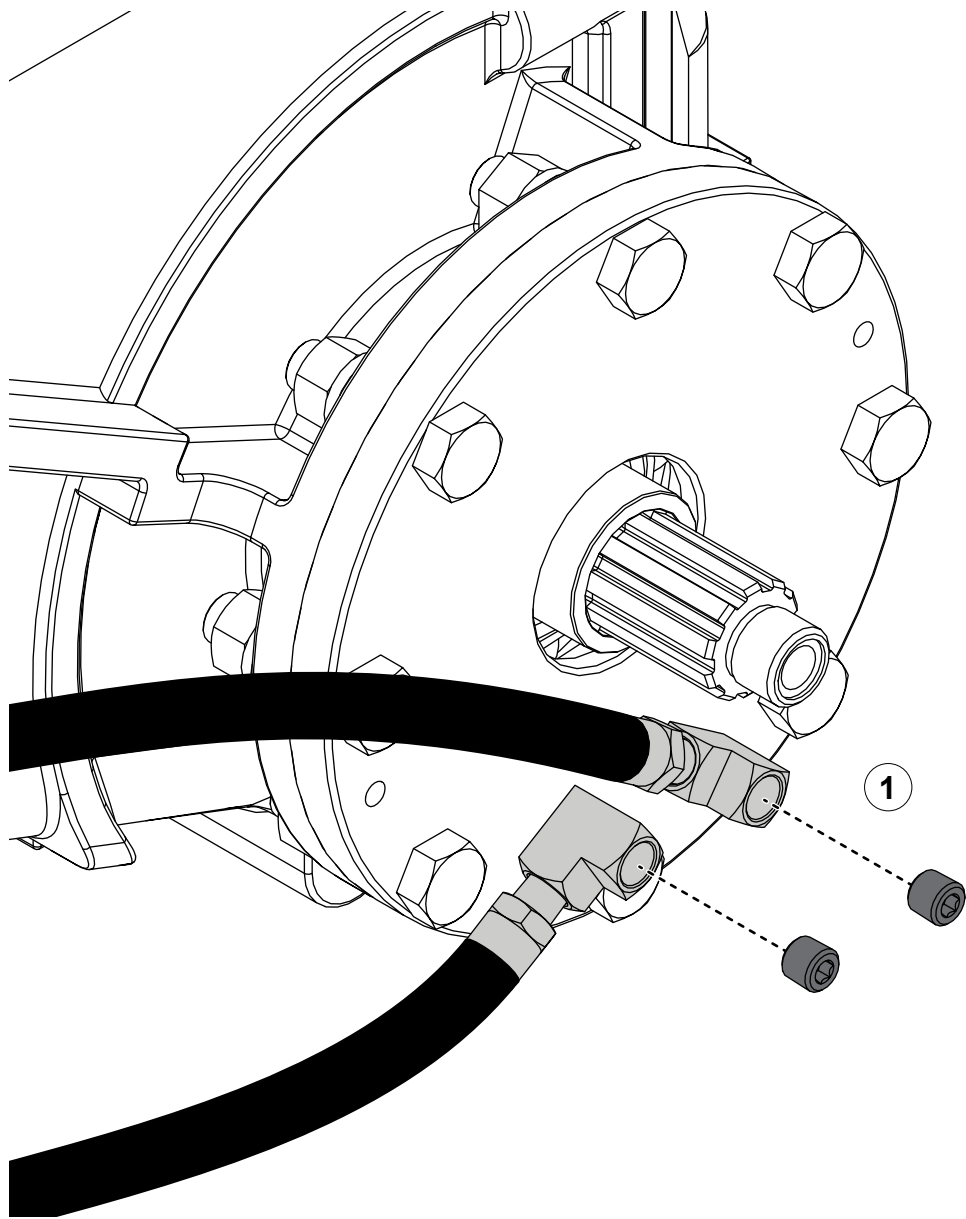
Use the illustrations and instructions to install the end yoke.

- 1 Apply extreme pressure assembly lubricant to the driven shaft, then install the end yoke onto the shaft.
- 2 Install the lock nut onto the shaft.



425 ft-lb
576 N·m

TQB

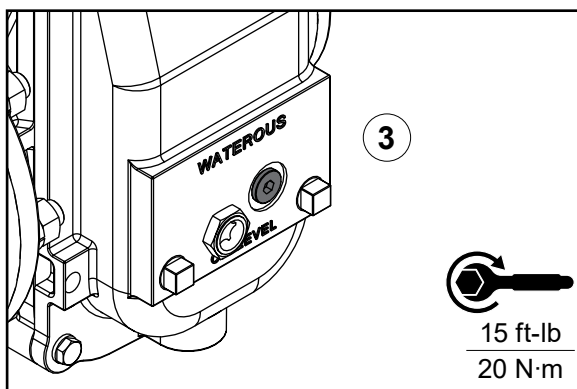
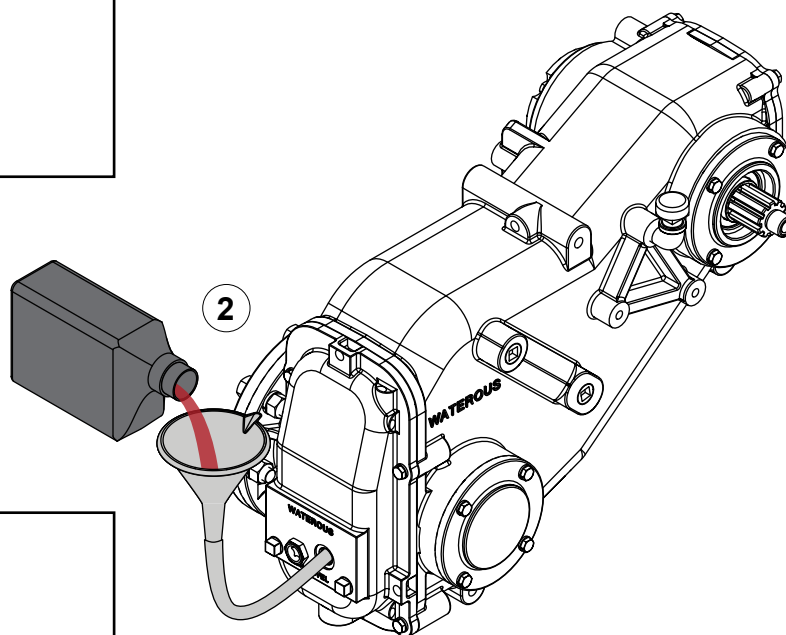
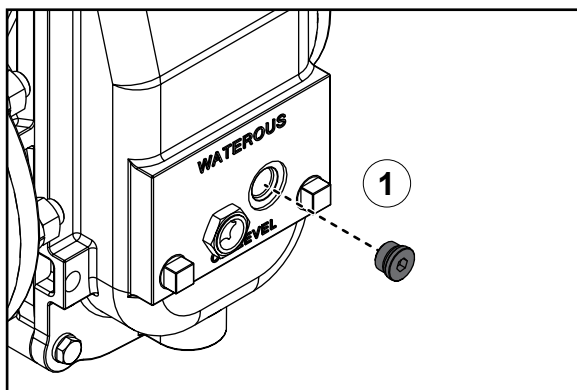
**Installing the Cooler Drain Lines**

Use the illustration and instructions to install the drain lines for the PTO.

! Freeze Damage: Do not allow fluid in the lines to freeze. Drain all fluid from the lines before storing the apparatus.

- 1 If equipped, remove the drain plugs and use locally sourced fittings and hoses to connect the PTO to the apparatus drain system.

TQB



Adding Lubricant to the PTO

Use the illustrations and instructions to add lubricant to the PTO. Use automatic transmission fluid (ATF) that meets the requirements of DEXRON III or MERCON V.

- 1 Remove the oil fill plug.
- 2 Add lubricant until it reaches halfway up the oil level sight plug.

Note: After pouring some lubricant into the case, allow it to settle before adding more to avoid over-filling.

- 3 Securely install the oil fill plug.
- Note:** Make sure that you do not over-tighten the plug.

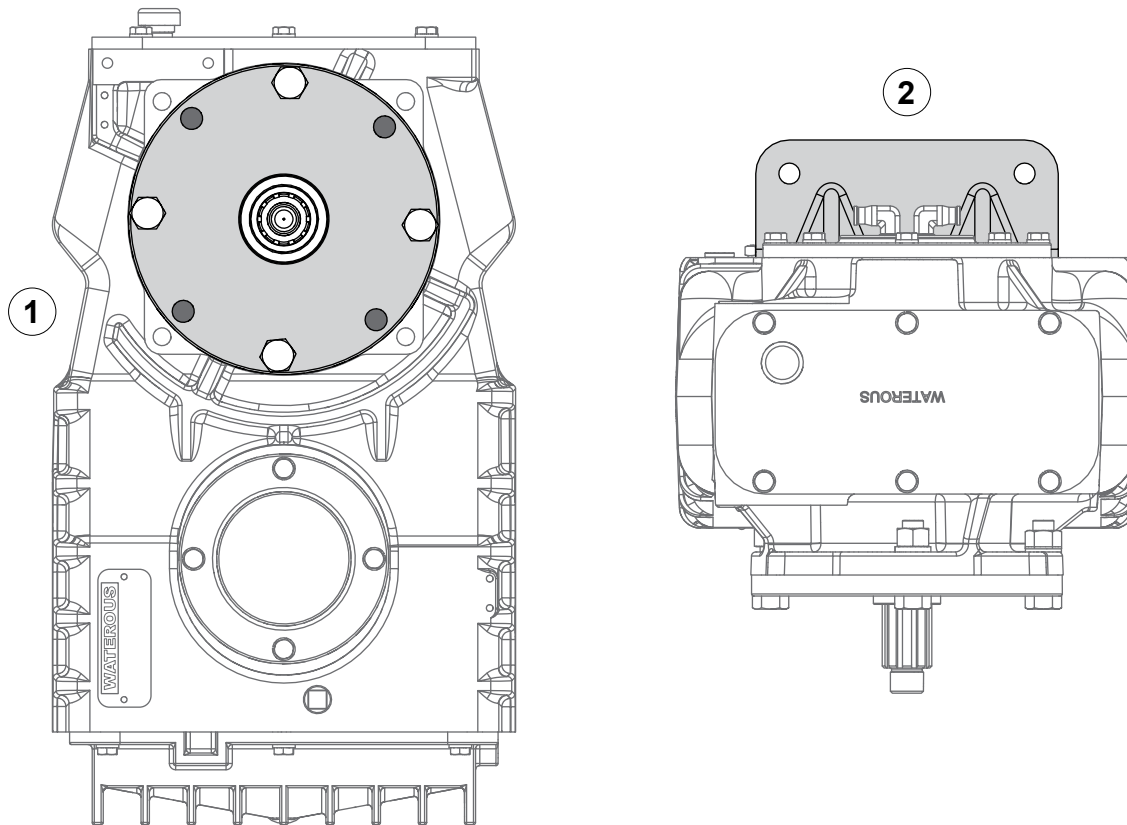
TQC

Mounting Points

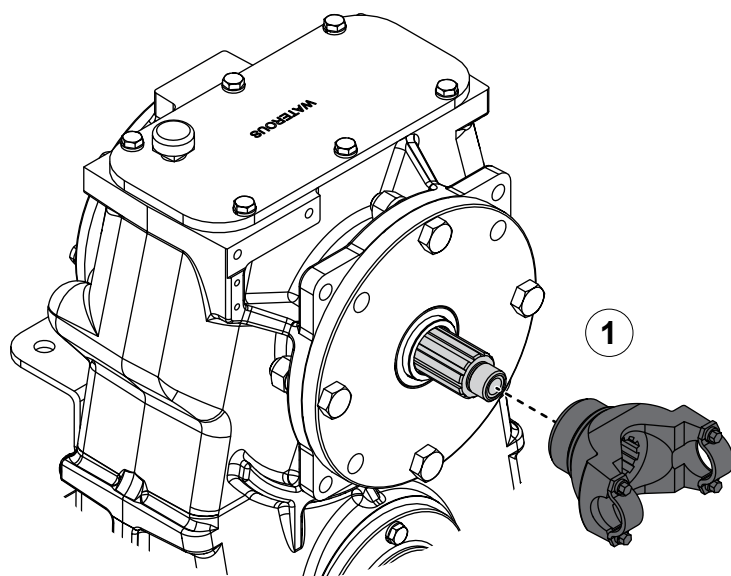
Use the illustration and instructions to mount the PTO.

Note: Refer to dimensional drawings for mounting hole spacing.

- 1 Use the case mounting holes to secure the PTO to the apparatus.
- 2 Use the mounting bracket to secure the PTO to the apparatus.



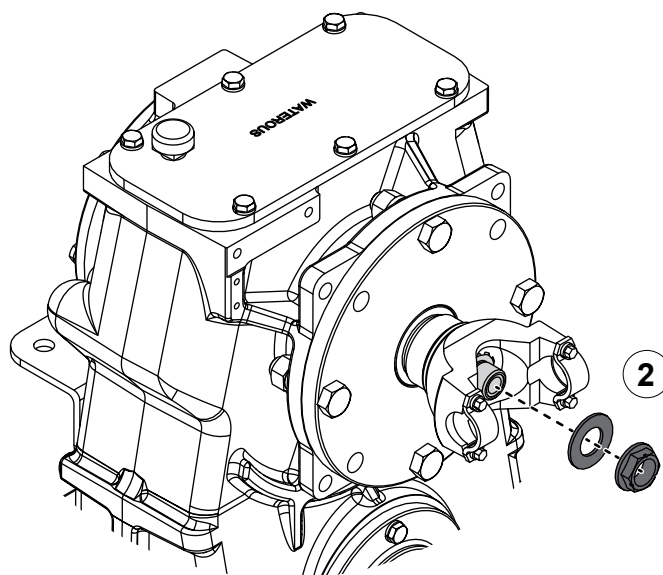
TQC



Installing the End Yoke

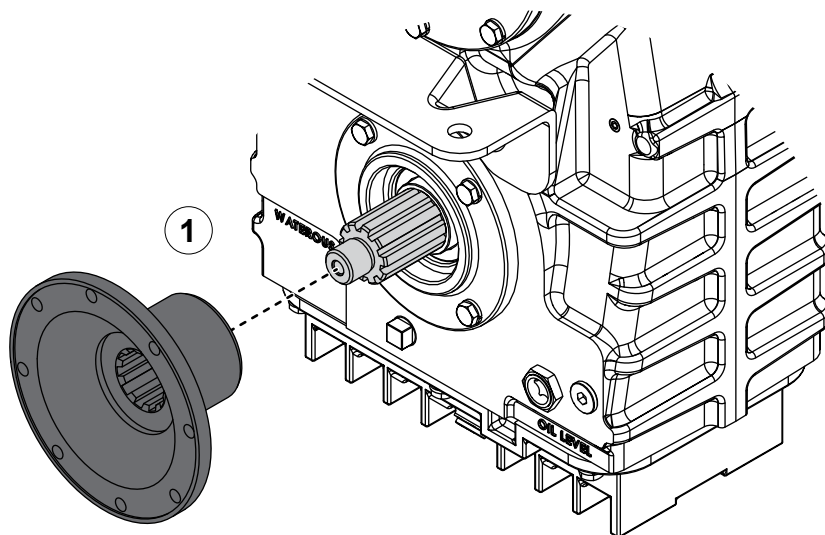
Use the illustrations and instructions to install the optional drive shaft end yoke.

- 1 Apply extreme pressure assembly lubricant to the drive shaft, then install the end yoke onto the shaft.
- 2 Install the washer and lock nut onto the shaft.



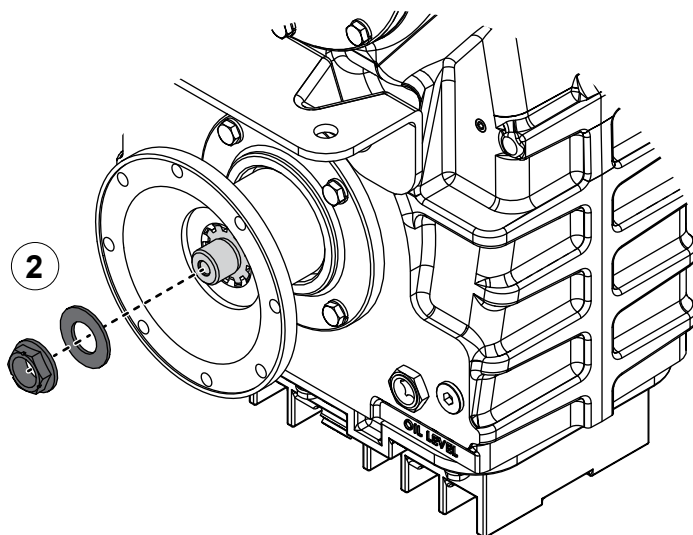
425 ft-lb
576 N·m

TQC

**Installing the Companion Flange**

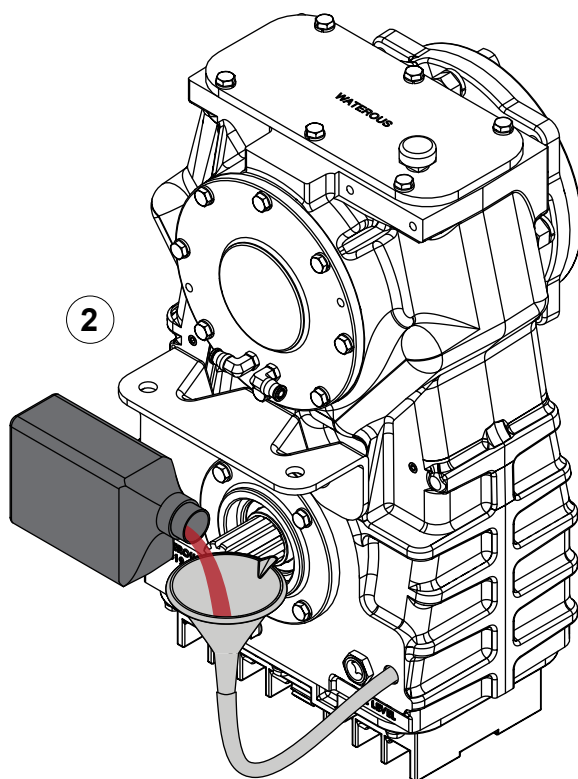
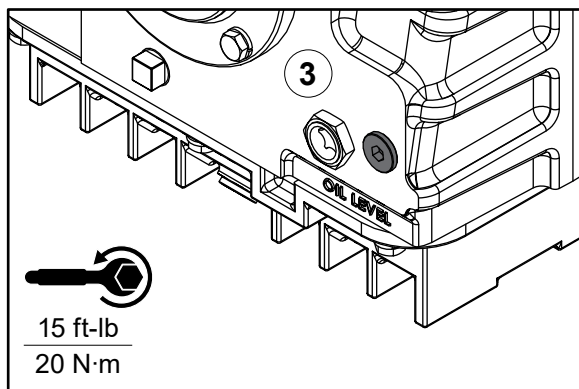
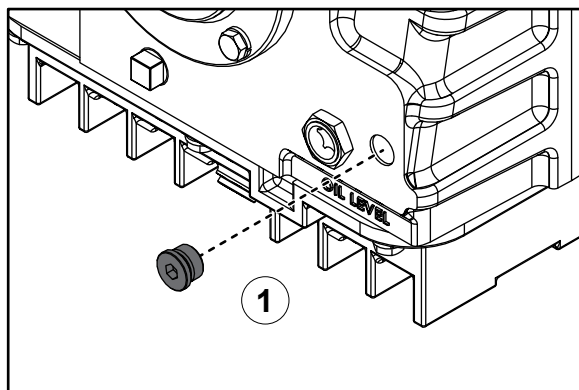
Use the illustrations and instructions to install the optional driven shaft companion flange.

- 1 Apply extreme pressure assembly lubricant to the driven shaft, then install the companion flange onto the shaft.
- 2 Install the washer and lock nut onto the shaft.



425 ft-lb
576 N·m

TQC



Adding Lubricant to the PTO

Use the illustrations and instructions to add lubricant to the PTO. Use ATF that meets the requirements of DEXRON III or MERCON V.

- 1 Remove the oil fill plug.
- 2 Add lubricant to the PTO until it reaches halfway up the oil level sight plug.

Note: After pouring some lubricant into the case, allow it to settle before adding more to avoid over-filling.

- 3 Securely install the oil fill plug.

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

WATEROUS

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