

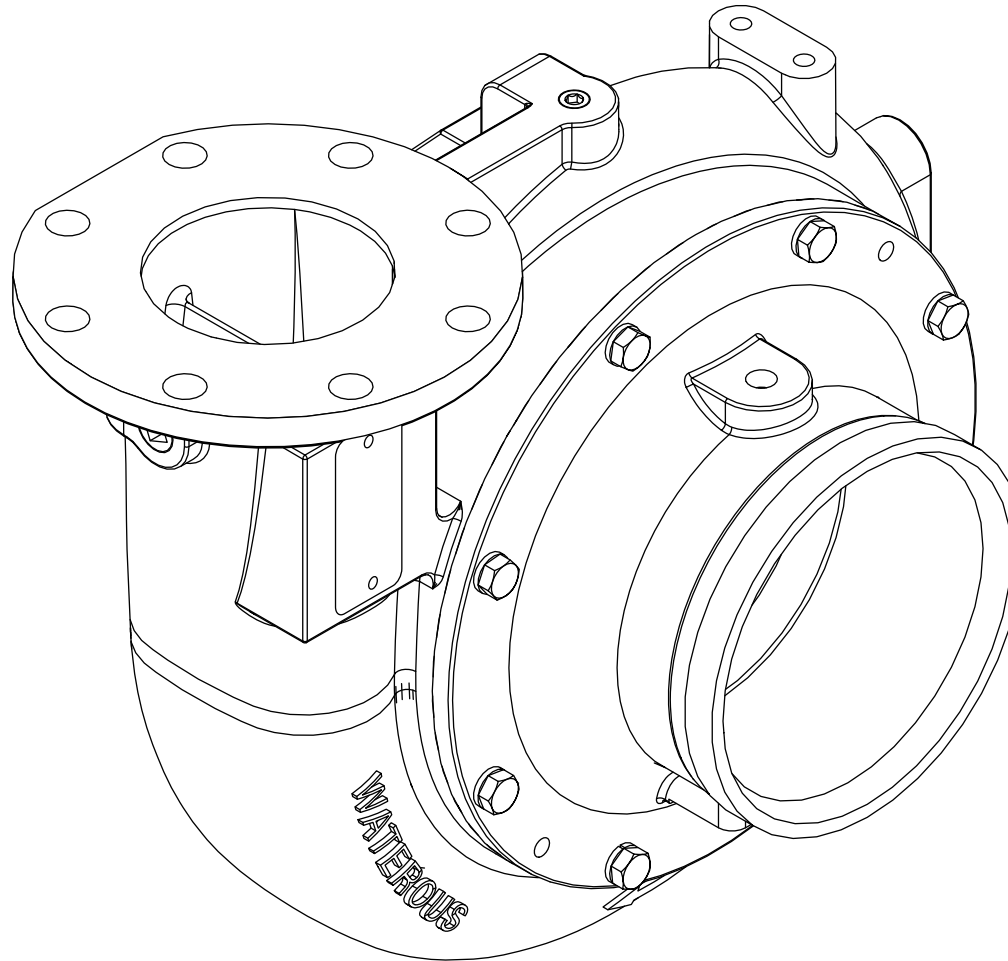
WATEROUS

Form Number: F-3034

Issue Date: Apr 24, 2024

ESU1 Pump

Installation



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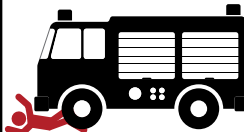
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Safety Precautions

- 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	
<p>Sudden Unexpected Movement</p> <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	
<p>Hot Liquid</p> <ul style="list-style-type: none"> • Hot liquid can scald you. • Do not operate if water temperature exceeds 160°F (71°C). 	

 WARNING	
<p>High Pressure</p> <ul style="list-style-type: none"> • Liquid ejected at high pressure can cause serious injury. • Do not operate beyond recommended pressure. 	

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

 WARNING	
<p>High Pressure</p> <ul style="list-style-type: none"> • Discharge ejected at high pressure can cause serious injury and damage. • Direct discharge away from people and equipment. 	

NOTICE	
<p>Before Operation</p> <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. 	

NOTICE	
<p>Maintenance</p> <ul style="list-style-type: none"> • Not following maintenance procedures can damage your equipment. • Perform all maintenance procedures as required. 	

Use this document to install and operate your Waterous equipment. Understand the following conditions before continuing with the document:

- 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 that are in this document.

INTRODUCTION

This section is an overview of the document.

PRODUCT 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 best viewed when printed in color.
- The *print on both sides* and *flip on long edge* features provide the best results.
- 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 associated with your system. Dimensional drawings are available through the Waterous Service department.

Symbols

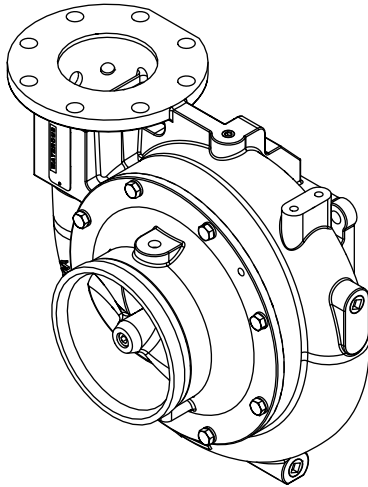
Symbols are used to illustrate additional tools or operations that are required to complete the instruction.



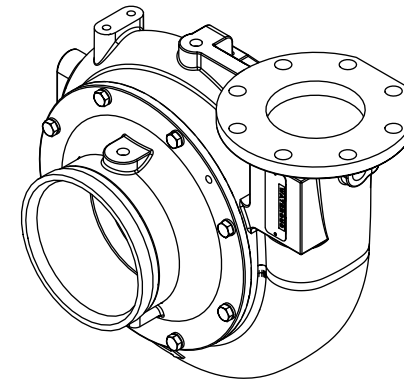
Torque to specification—This symbol tells you to torque the hardware to the specified value.

ESU1 Series Pump Configurations

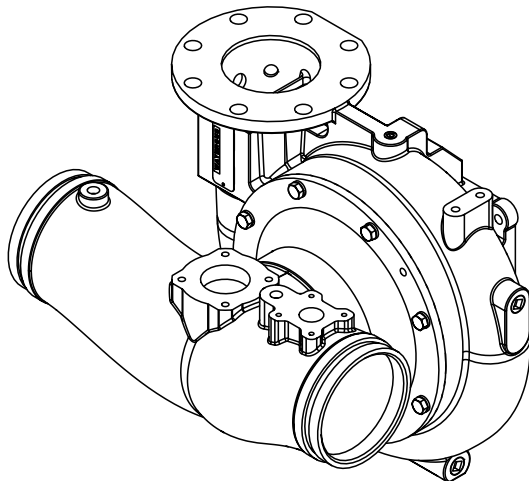
The ESU1 series pump is available in several configurations. Configurations may include clockwise or counterclockwise rotation, a single or dual intake fitting, and with or without an inducer.



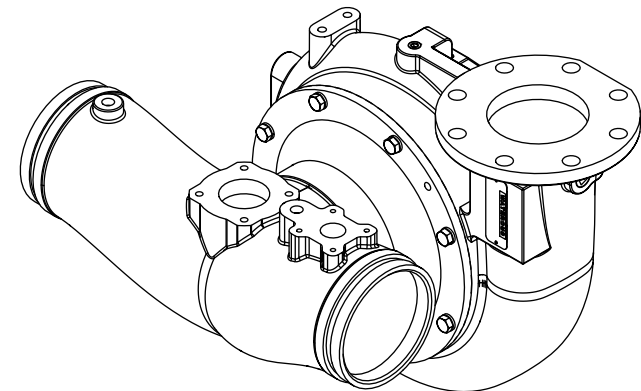
Single Intake with Clockwise Rotation—shown with optional inducer



Single Intake with Counterclockwise Rotation



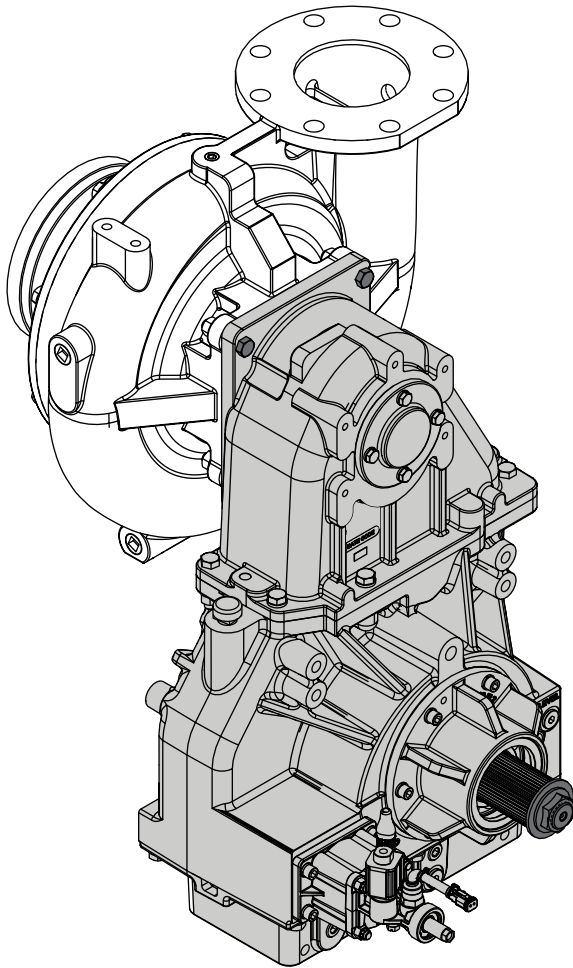
Dual Intake with Clockwise Rotation



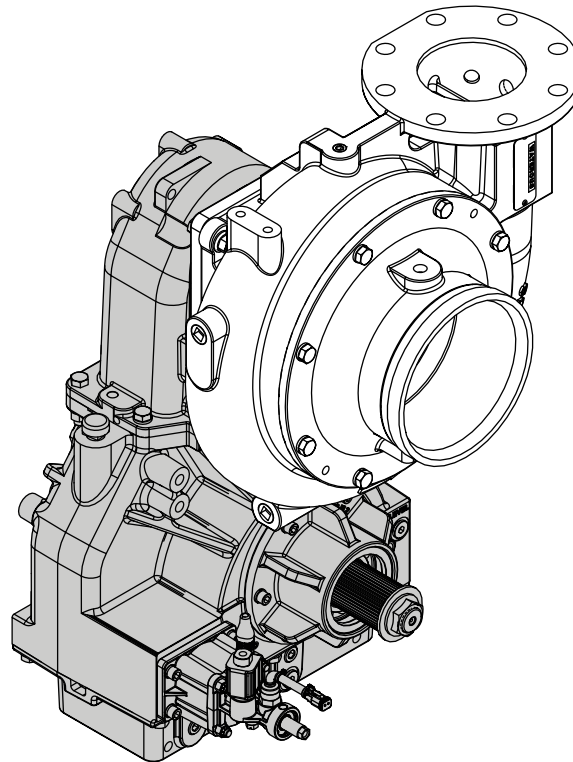
Dual Intake with Counterclockwise Rotation

ESU1 Series Drive Configurations

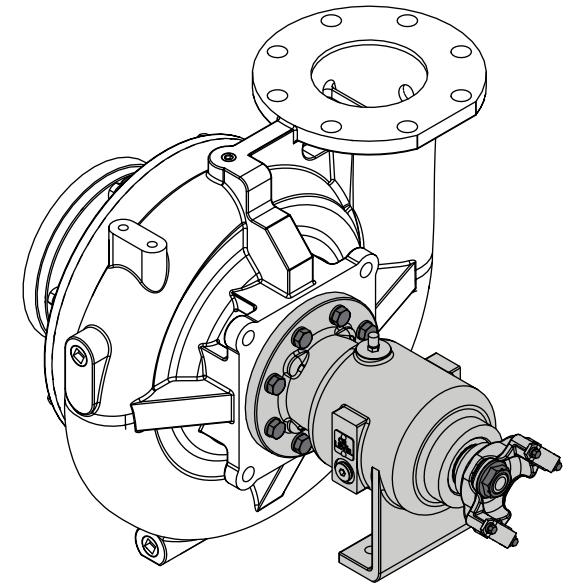
The ESU1 series pump is available with the following drive options.



C22 Transmission—Front-Mount

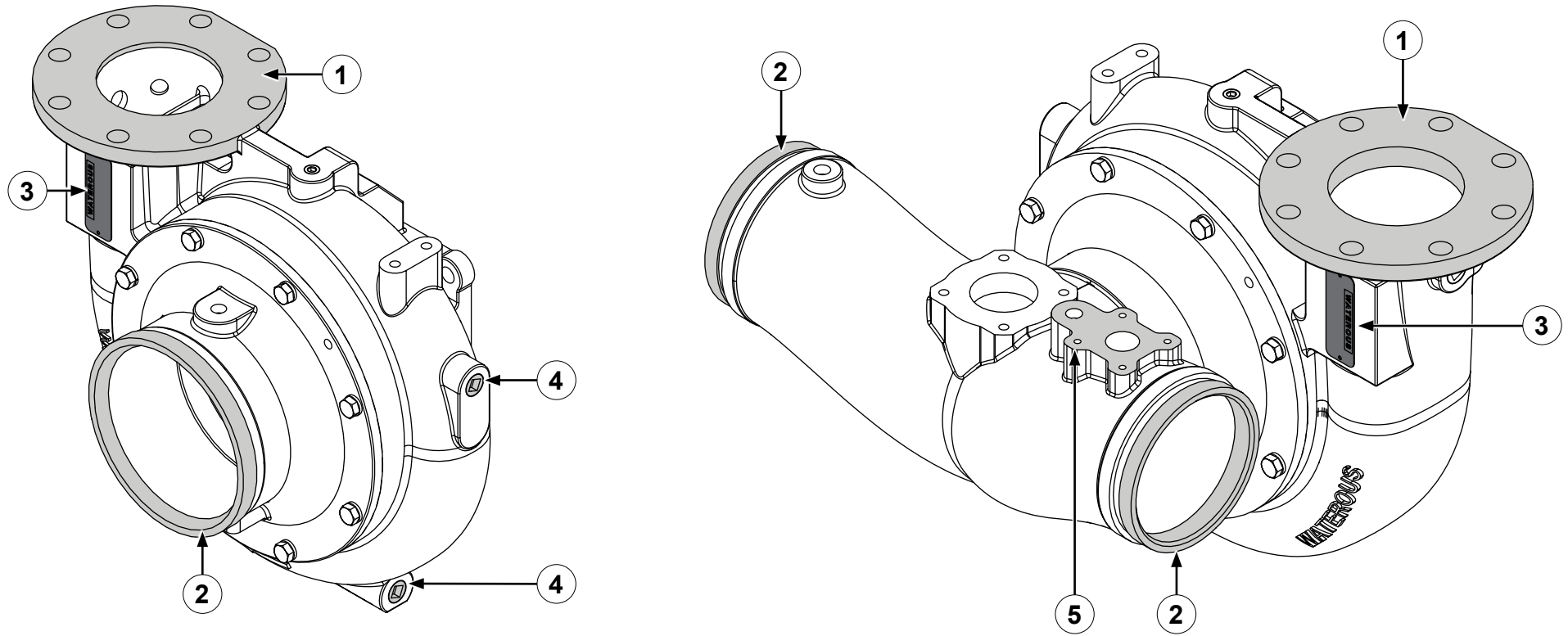


C22 Transmission—Rear-Mount



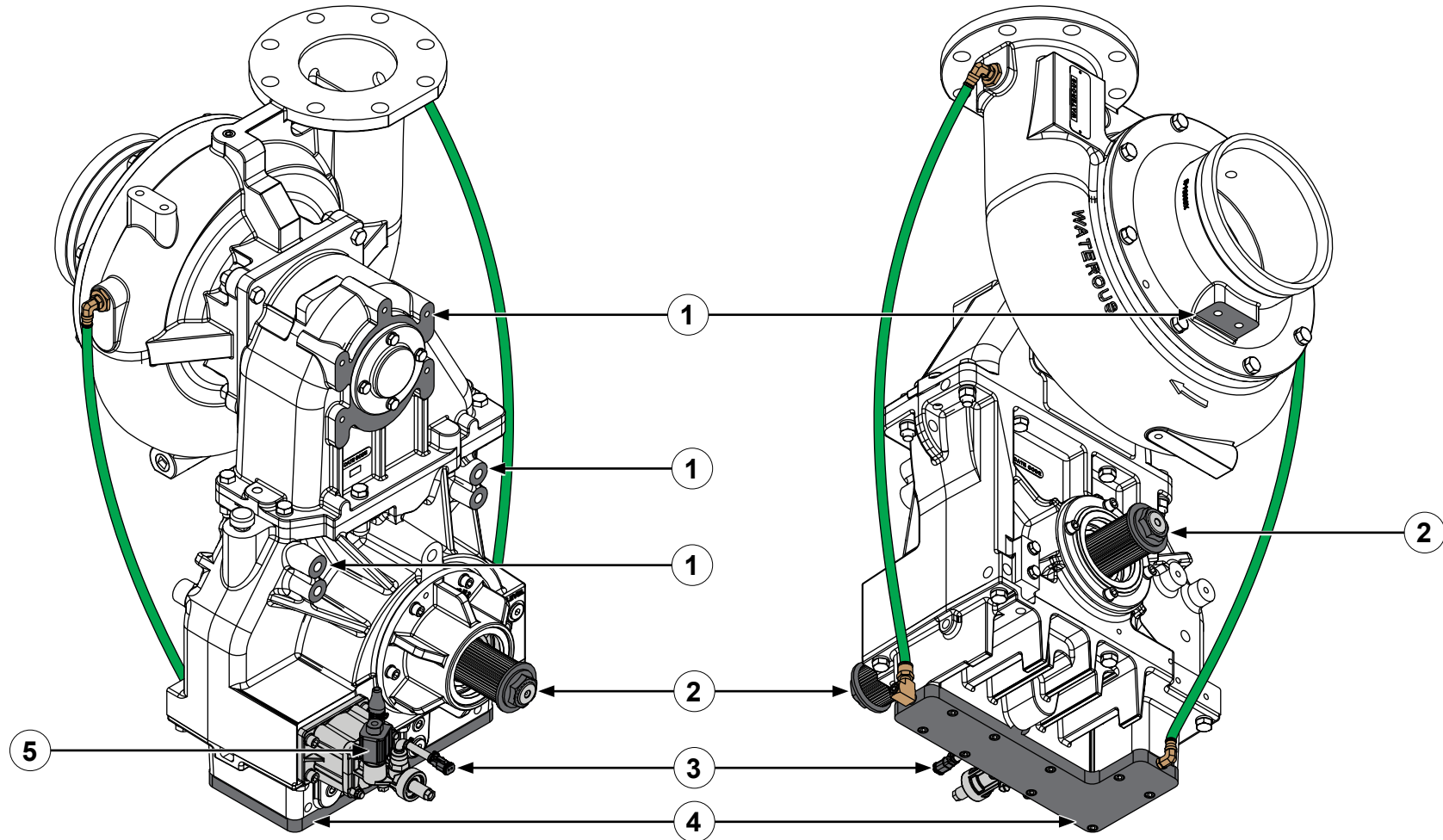
Direct Drive Pedestal

ESU1 Series Pump Overview



Feature	Description
1 Discharge	Water exits the pump through this discharge.
2 Intake	Water enters the pump through this intake.
3 Serial number plate	This displays the pump serial number.
4 Drain port	This port is used to drain the pump.
5 Priming valve mount—optional	This is where the vacuum activated priming valve mounts to the pump.

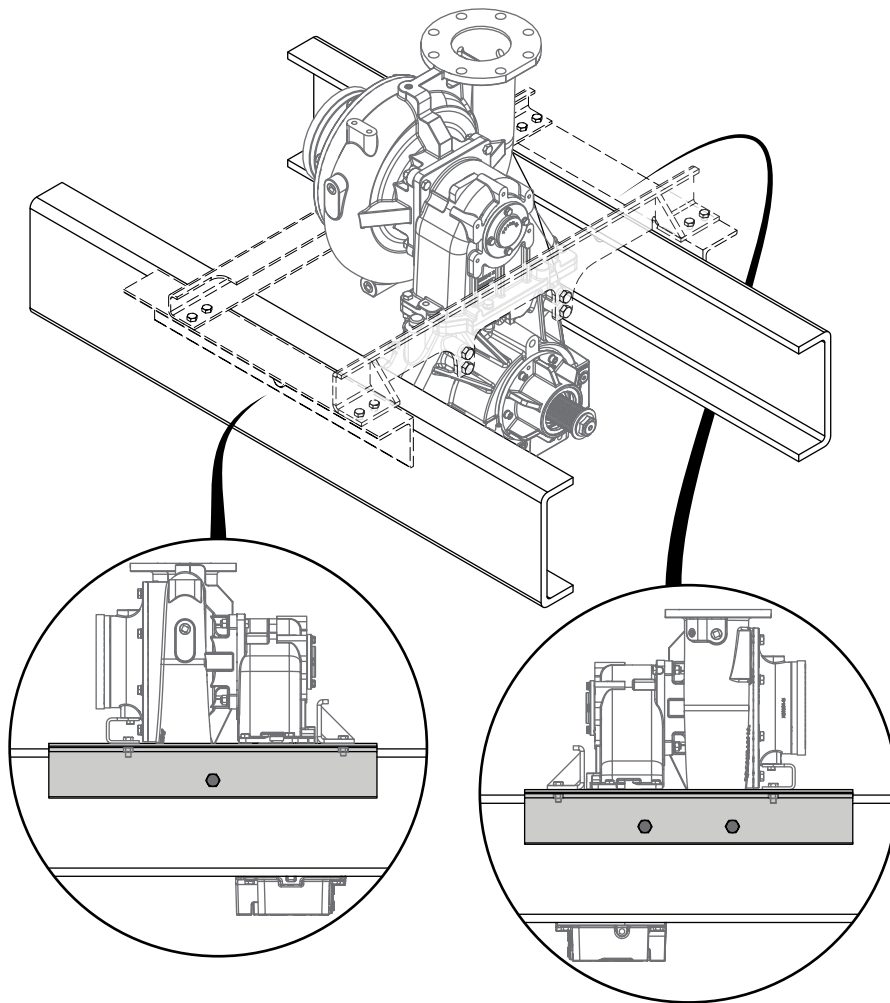
ESU1 Series Transmission Overview



Feature	Description
1 Mounting points	These are used to mount the pump and transmission to the apparatus.
2 Drive and coupling shaft	This connects the pump to the driveline.
3 Shift unit switch connector	This connects to the shift unit controller in the cab—TE Connectivity DT06-2S.
4 Cooler plate—optional	This option provides additional cooling to the transmission.
5 Safety interlock solenoid	This prevents the shift unit from operating when shifting is not permitted.

Three Point Mounting

Use the three-point mounting method when installing a pump with a transmission or direct drive option between the apparatus frame. A three-point mount allows the frame to flex around the equipment, whereas a rigid mounting could damage the equipment and void the warranty. It is the responsibility of the purchaser to effectively mount the pump and drive to the apparatus such that it cannot damage the equipment.



Lubrication

Pumps and transmissions are shipped without lubricant and must be filled before operation. The table below shows the recommended lubricant for each transmission, including the direct drive option without a transmission. For detailed instructions on adding lubricant to the transmission, refer to the documentation for your specific application.

Note: Always fill to the bottom of the oil level plug. Capacities listed vary based on gear ratio, transmission orientation, or both.

Transmission Model	Capacity (qt/L)	Lubricant
C22C, C22D, C22E, C22F	6.0	Automatic transmission fluid that meets the requirements of DEXRON III or MERCON V
D (Direct Drive)	0.5	Non-detergent SAE 30 oil

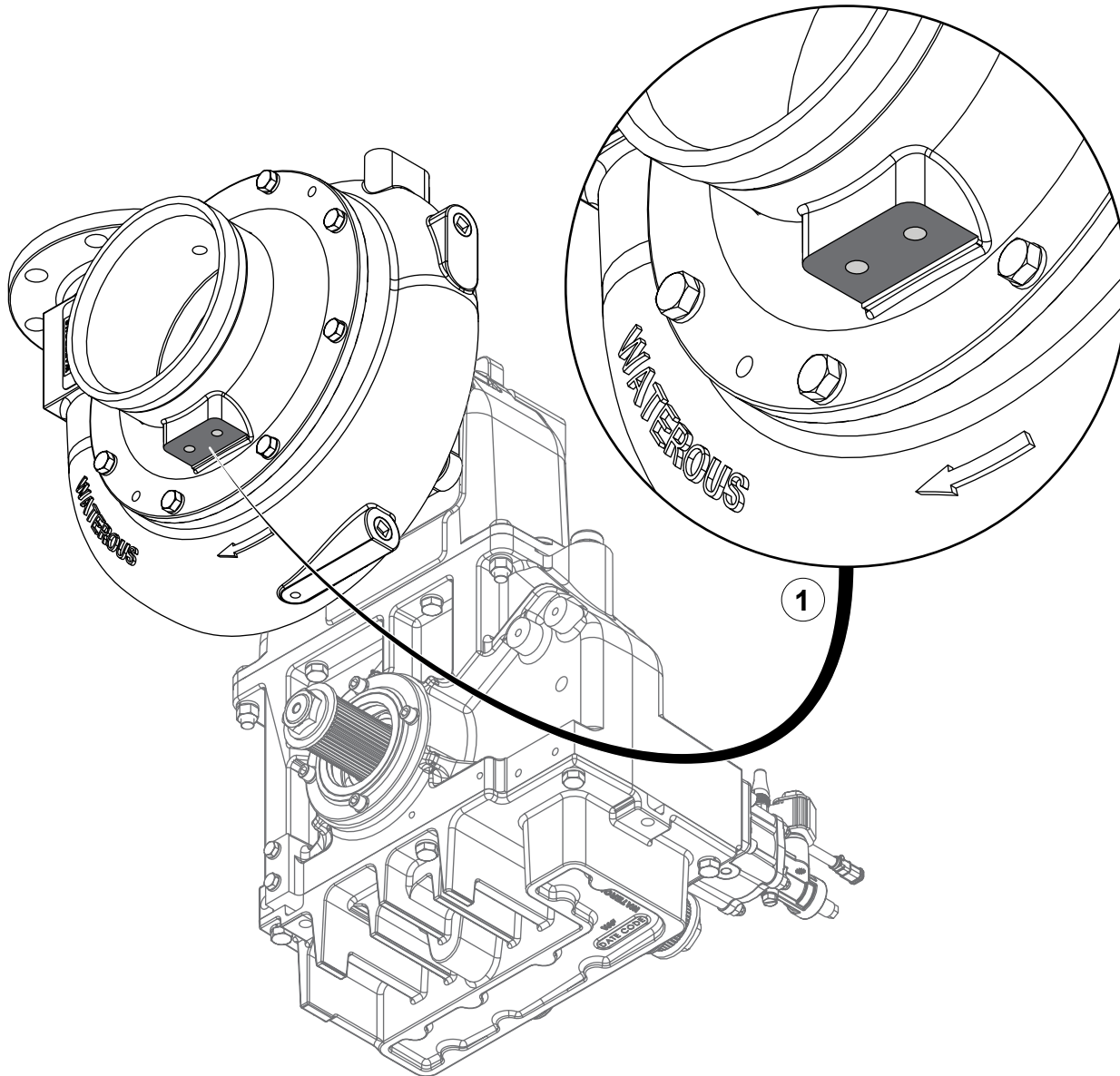
Transmission Temperature Specifications

For all transmissions, including the direct-drive bearing housing, the maximum acceptable temperature at external surfaces is 250°F (121°C).

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.

Installing the Pump—Pump Mounting Points

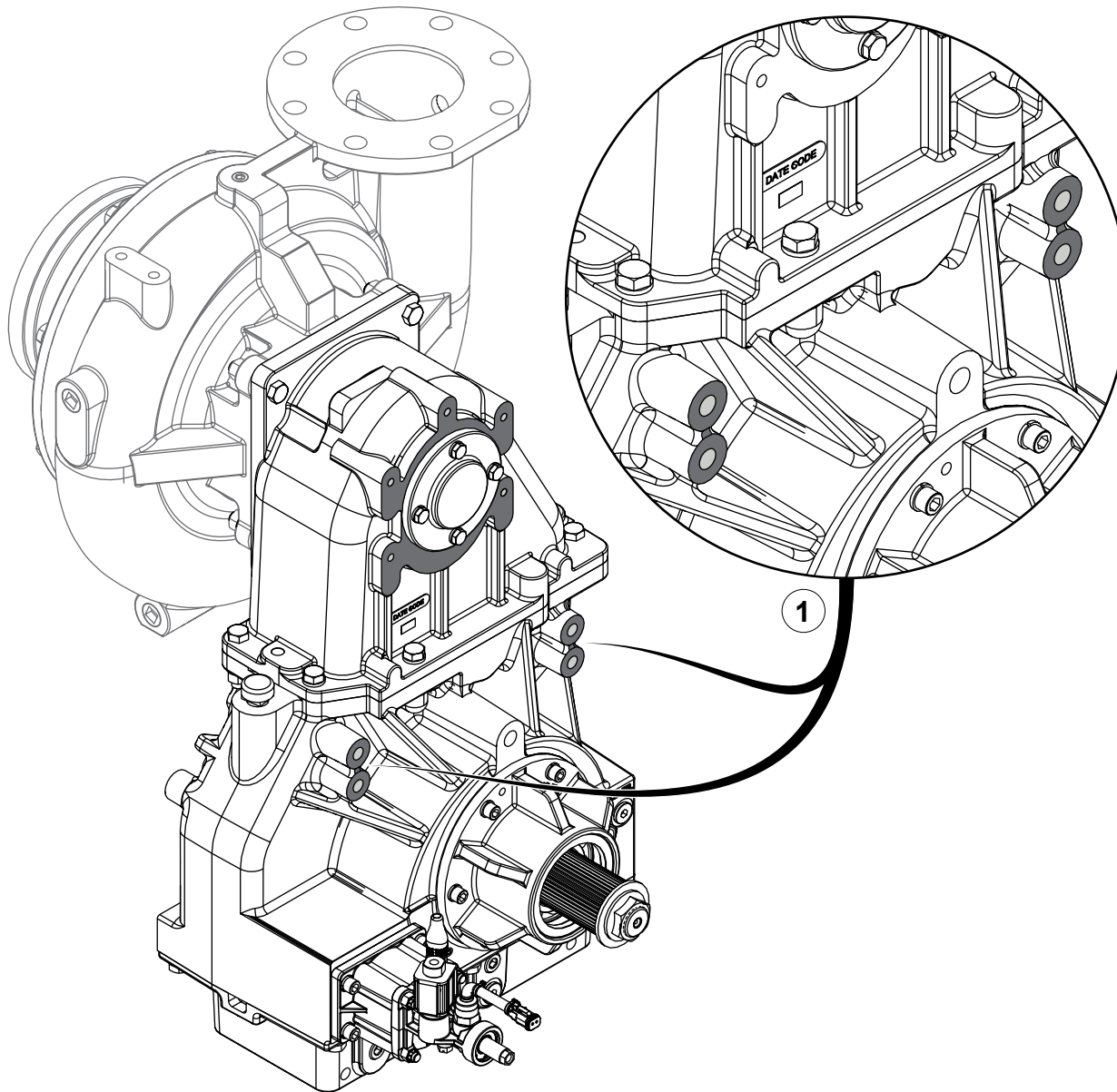


Use the illustration and instructions to mount the pump to the apparatus.

Note: Refer to the dimensional drawing for hole spacing.

- 1 Use the provided mounting point to secure the pump to the apparatus.

Installing the Pump—Transmission Mounting Points

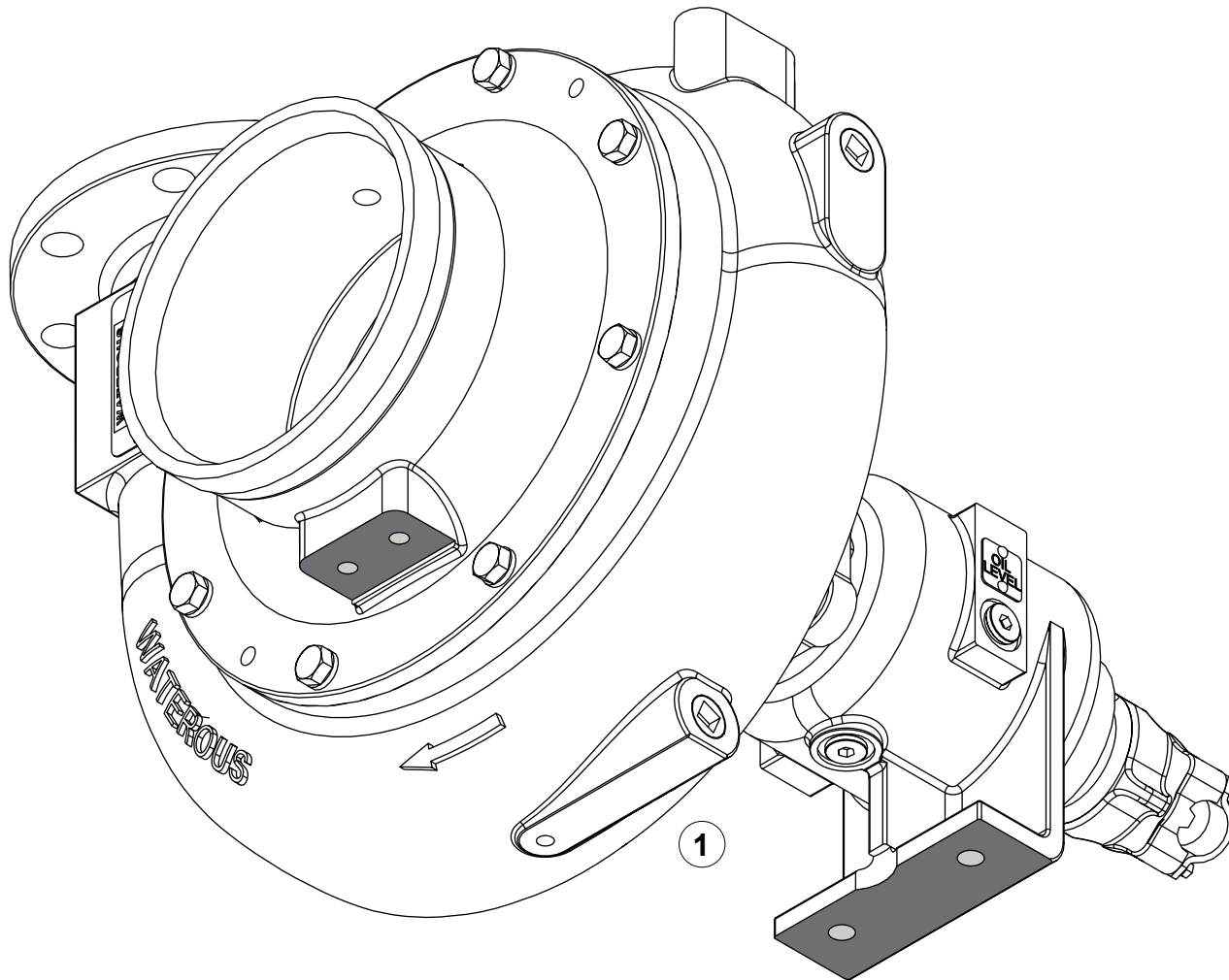


Use the illustration and instructions to mount the transmission to the apparatus.

Note: Refer to the dimensional drawing for hole spacing.

- 1 Use the provided mounting points to secure the transmission to the apparatus.

Installing the Pump—Direct Drive Mounting Points

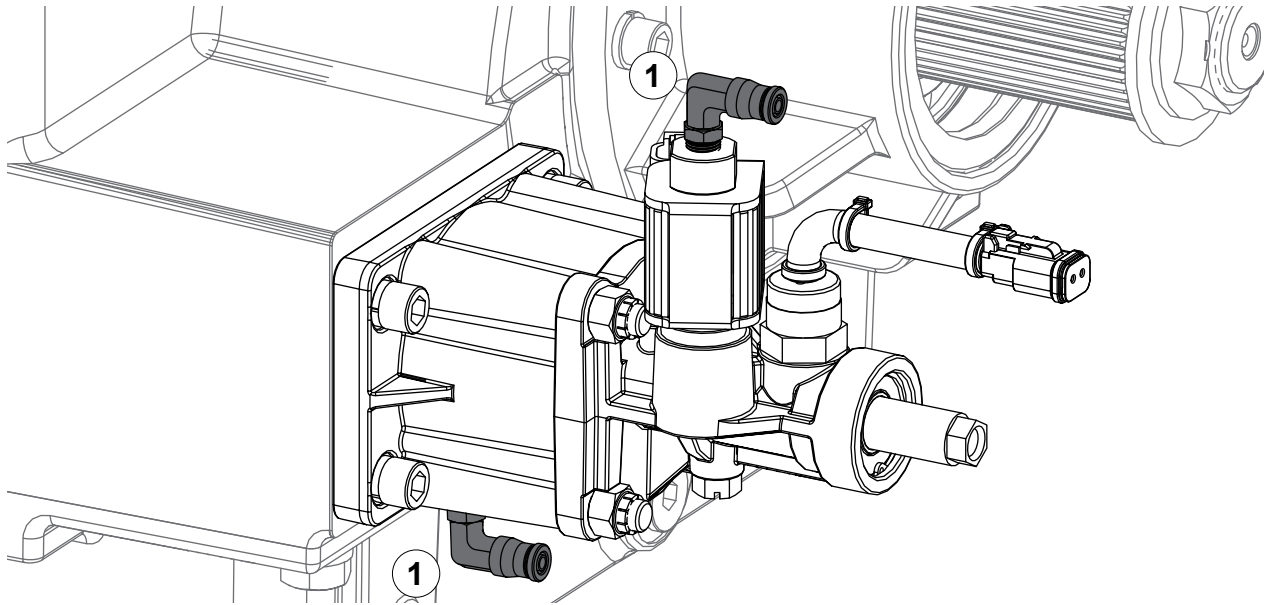


Use the illustration and instructions to mount the pump and direct drive pedestal to the apparatus.

Note: Refer to the dimensional drawing for hole spacing.

- 1 Use the provided mounting points to secure the pump and direct drive pedestal to the apparatus.

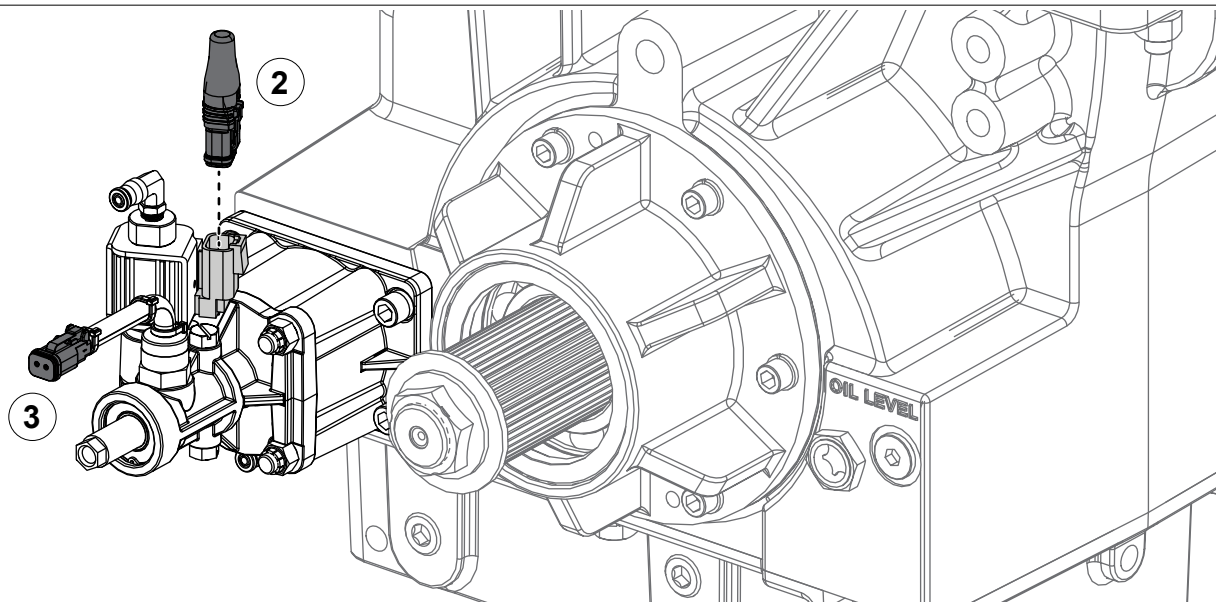
Connecting the Shift Unit



Use the illustrations and instructions to connect the shift unit to the apparatus air supply and shift unit controller.

Note: Refer to the *Pneumatic Shift Unit Installation Instructions* for comprehensive installation instructions.

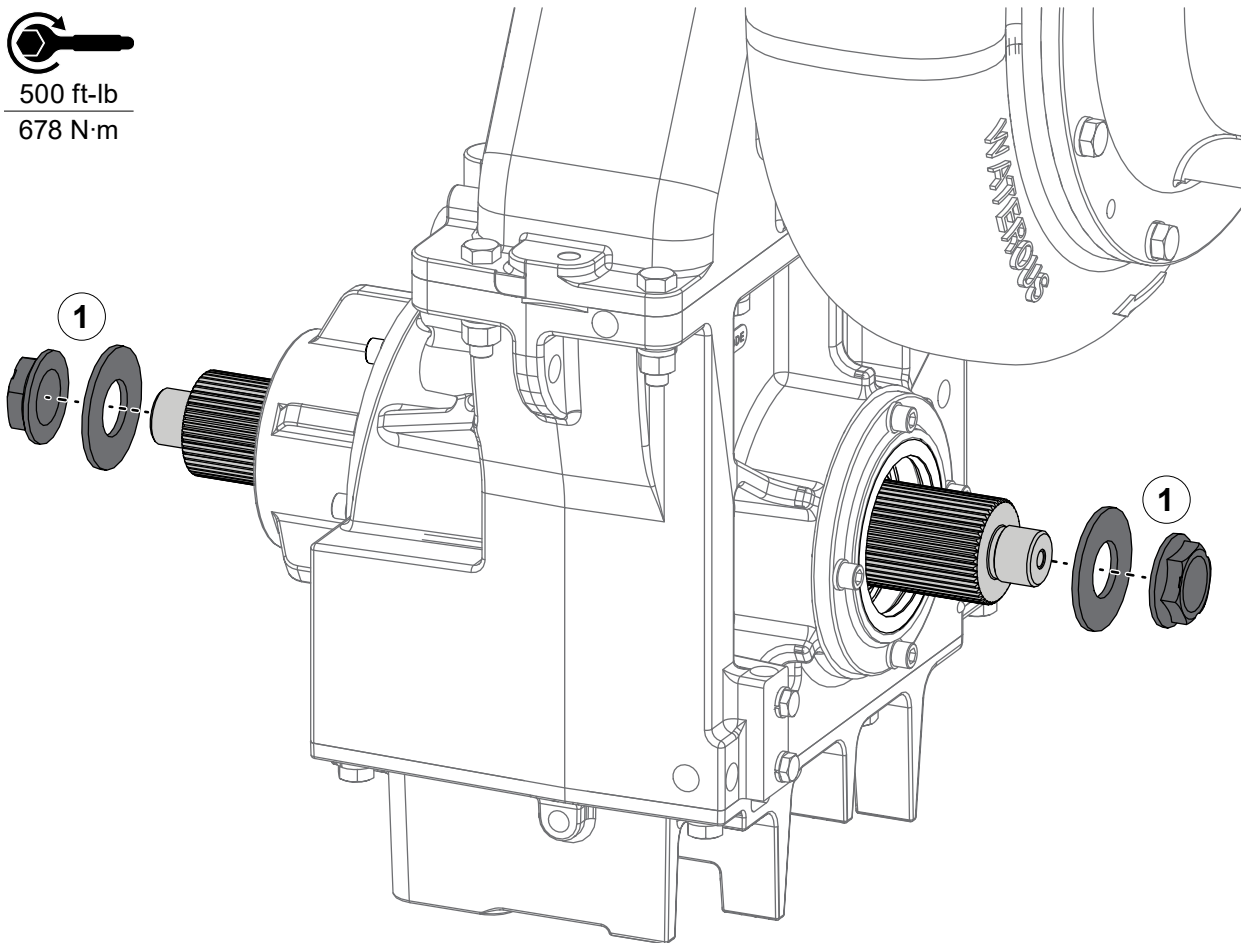
- 1 Connect the air supply tubing from the in-cab pneumatic shift unit to the fittings on the transmission shift unit.
- 2 Connect the safety interlock solenoid to the ECSIS on the apparatus.
- 3 Connect the position switch to the ECSIS on the apparatus.



Installing the Driveline Coupler—Transmission



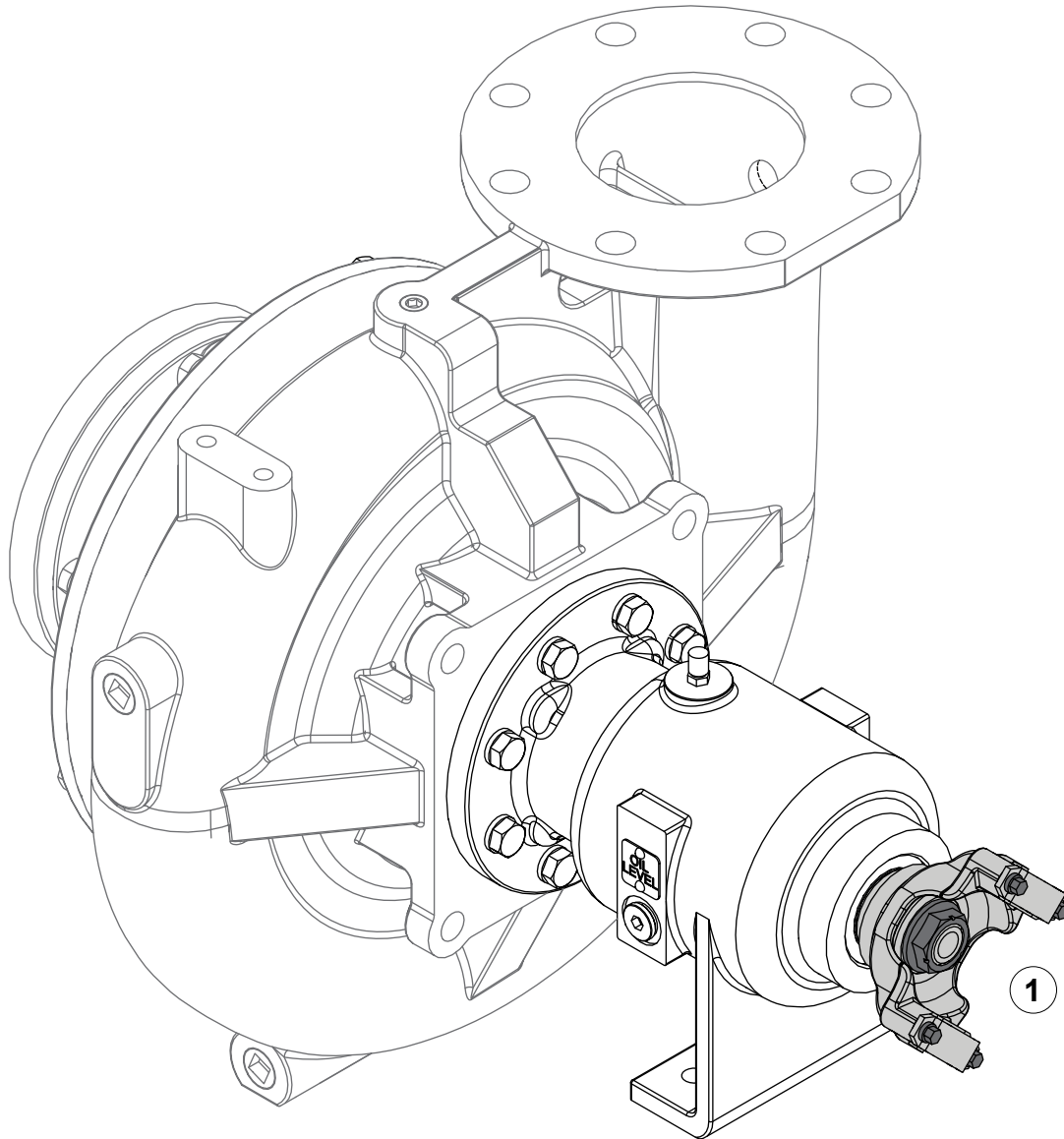
500 ft-lb
678 N·m



Use the illustration and instructions to connect the driveline couplers.

- 1 Install the appropriate driveline coupler to the input and output shaft on the transmission and torque it to 500 ft-lb (678 N·m).

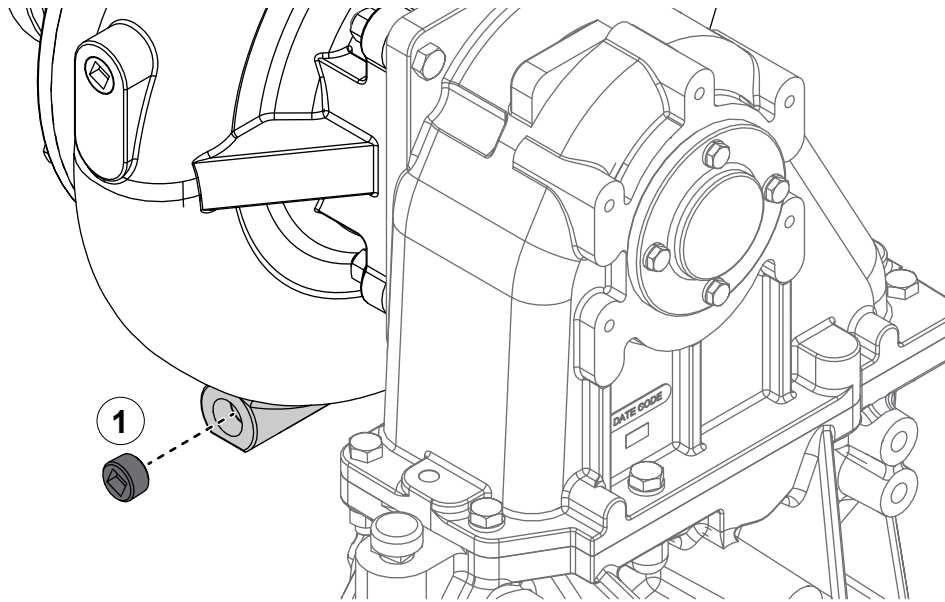
Installing the Driveline Coupler—Direct Drive Pedestal



Use the illustration and instructions to connect the direct drive pedestal.

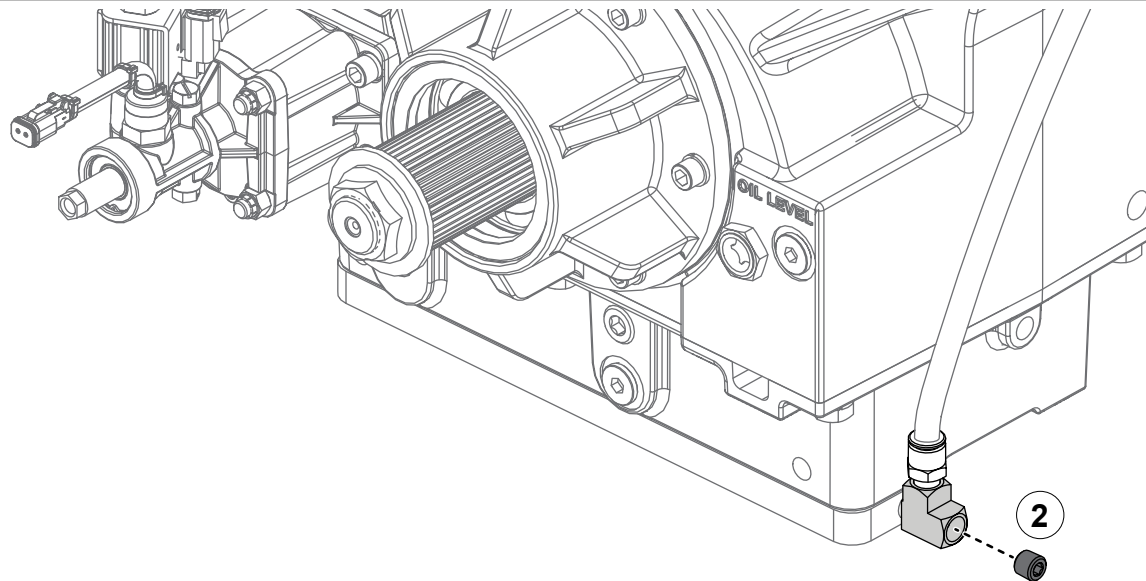
- 1 Locally source the appropriate coupler components to connect to the PTO driveline.

Installing the Drain Line



Use the illustration and instructions to install the pump drain lines. Fluid that is susceptible to freezing must be drained from the pump to prevent damage. Additionally, do not store the pump partially full.

- 1 Remove the drain plug on the pump and use the appropriate locally sourced fittings and hoses to connect to the apparatus drain system.
- 2 If equipped, remove the drain plug on the transmission cooler plate and use the appropriate locally sourced fittings and hoses to connect to the apparatus drain system.



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