

Tie Rod End Rework Instructions for SAF-HOLLAND® Self Steering Axles with C88 Hubs

JULY 2017

Introduction

These instructions provide the information necessary to properly remove and replace the existing tie rod lug on SAF-HOLLAND C88 self-steering axles.

Read this manual before using or servicing this product and keep it in a safe location for future reference. Updates to this manual, which are published as necessary, are available on the internet at www.safholland.us.

Use only SAF-HOLLAND Original Parts to service the SAF-HOLLAND self steer axle. A list of technical support locations that supply SAF-HOLLAND Original Parts and an Aftermarket Parts Catalog are available on the internet at www.safholland.us or contact Customer Service at 888-396-6501.

Notes, Cautions, and Warnings

Before starting any work on the unit, read and understand all the safety procedures presented in this manual. This manual contains the terms "NOTE", "IMPORTANT", "CAUTION", and "WARNING" followed by important product information. These terms are defined as follows:

NOTE: Includes additional information to enable accurate and easy performance of procedures.

IMPORTANT: Includes additional information that if not followed could lead to hindered product performance.

CAUTION Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, could result in property damage.

CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

General Safety Instructions

- Read and observe all Warning and Caution hazard alert messages. The alerts provide information that can help prevent serious personal injury, damage to components, or both.

WARNING Failure to follow the instructions and safety precautions in this manual could result in improper servicing or operation leading to component failure which, if not avoided, could result in death or serious injury.

- All installation should be performed by a properly trained technician using proper/special tools, and safe procedures.

NOTE: In the United States, workshop safety requirements are defined by federal and/or state Occupational Safety and Health Act (OSHA). Equivalent laws could exist in other countries. This manual is written based on the assumption that OSHA or other applicable employee safety regulations are followed by the location where work is performed.

- Properly support and secure the vehicle and axles from unexpected movement when servicing the unit.

WARNING Failure to properly support the vehicle and axles prior to commencing work could create a crush hazard which, if not avoided, could result in death or serious injury.

- If possible, unload the trailer before performing any service procedures.

2. Welding Standards

2.1 Scope

This Specification applies to all components supplied by SAF-HOLLAND, and its products. The customer assumes full responsibility for weld integrity if the weld material and procedures differ from those listed below.

2.2 Workmanship

All welding on SAF-HOLLAND® products MUST be performed by a welder qualified according to the appropriate AWS standard for the weld being made or an equivalent standard. It is the responsibility of the customer to provide good workmanship when welding on SAF-HOLLAND® products.

2.3 Material

Items to be welded that are made from low carbon or high-strength alloy steel are to be welded with AWS filler metal specification AWS A5.18, filler metal classification ER-70S-3, ER-70S-6 or equivalent unless specified on the installation drawing.

NOTE: Any substitution for filler material from the above standard must comply, as a minimum, with the following mechanical properties:

Tensile Strength - 72k psi (496 MPa)

Yield Strength - 60k psi (414 MPa)

Charpy V Notch - 20 ft.-lbs. (27 N•m) at 0° F (-17.7° C)

% Elongation - 22%

The recommended welding gas for gas metal arc welding (GMAW) is 90% Argon / 10% CO₂. If a different gas is used, welds must comply with penetration requirements illustrated (**Figure 1**). Where the installation drawing specifies different than above, the drawing shall prevail.

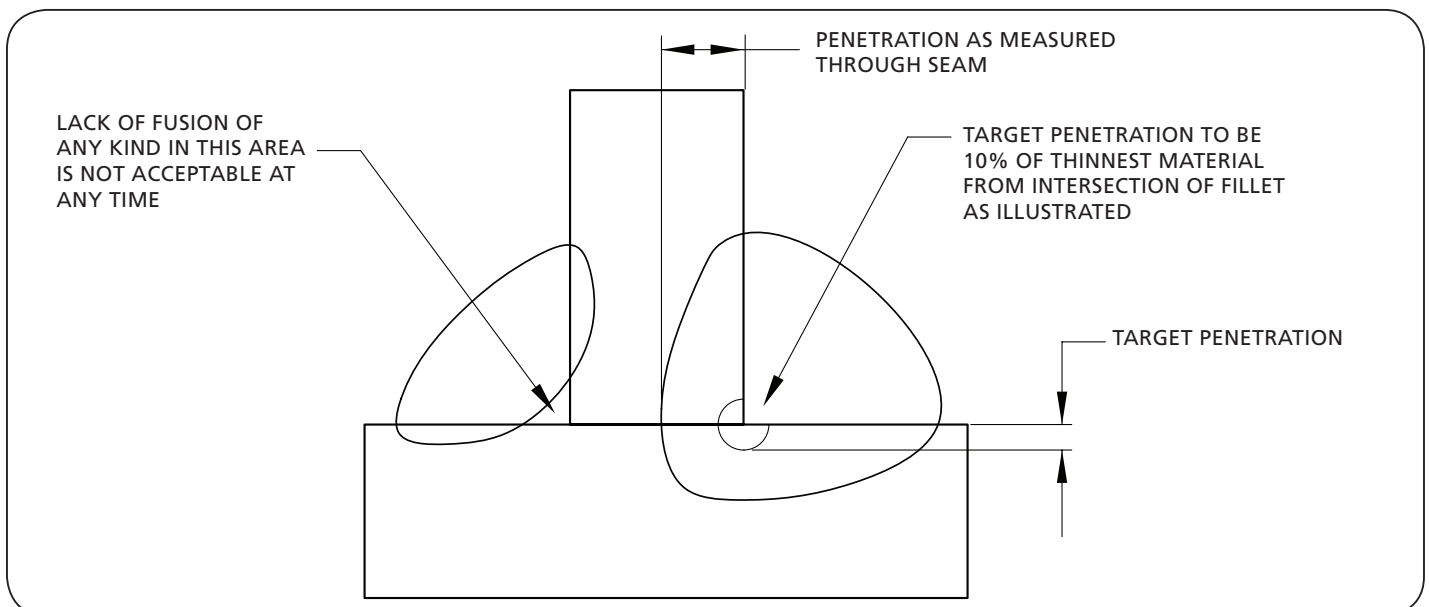
2.4 Procedures

Tack welds used for positioning components are to be located in the center of the final weld, where practical. Tack weld should be completely fused to the finish weld. DO NOT break arc at the end of the weld. Back up all finish welds at least 1/2" (12.7 mm) or a sufficient amount to prevent craters at the end of the weld. Where weld is illustrated to go around corners, it is assumed the corner represents a stress concentration area. DO NOT start or stop weld within 1" (25.4 mm) of the corner. Particular care should be taken to prevent undercutting in this area.

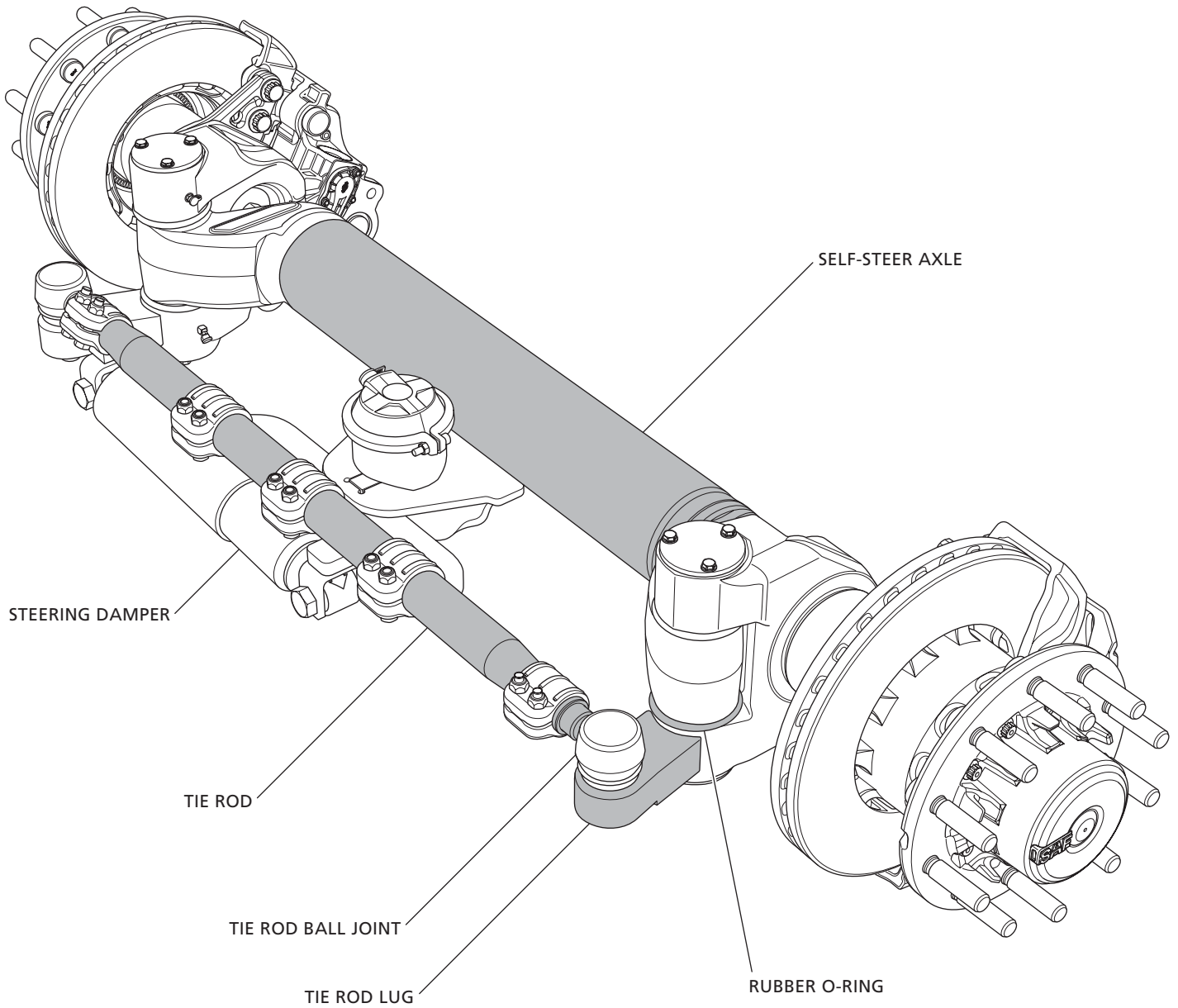
2.5 Weld Size

If weld size is NOT specified, the effective throat of the weld MUST be no smaller than the thinnest material being welded (**Figure 1**).

Figure 1



SAF-HOLLAND Self Steering Axle



3. Tie rod End Rework Instructions

1. Remove the tie rod from the lug. With the tie rod removed, scribe a line around the lug 1-1/2" from the lug step as shown in **Figure 2 and 3**. Ensure the lines are scribed perpendicular to the lug sides.
2. Cut the tie rod lug off at approximately 1-3/8" from the lug step making sure not to cut beyond the 1-1/2" scribed line from Step 1 (**Figure 4**).

CAUTION Failure to follow standard practices when operating cutting equipment could cause a potentially hazardous situation which, if not avoided, could result in minor to moderate injury. ALWAYS consult the owners manual of the tool you are using for recommended operating procedures.

3. With an angle grinder remove the excess material from the lug face back to the 1-1/2" scribed line in Step 1. Ensure the cut face is flat and perpendicular to the sides (**Figure 5**).

IMPORTANT: Be sure to remove material back to the 1-1/2" line previously scribed in step 2. Failure to remove the correct amount of material could result in the self-steer axle failing to track properly.

CAUTION Failure to follow standard practices when operating grinding equipment could cause a potentially hazardous situation which, if not avoided, could result in minor to moderate injury. ALWAYS consult the owners manual of the tool you are using for recommended operating procedures.

Figure 3

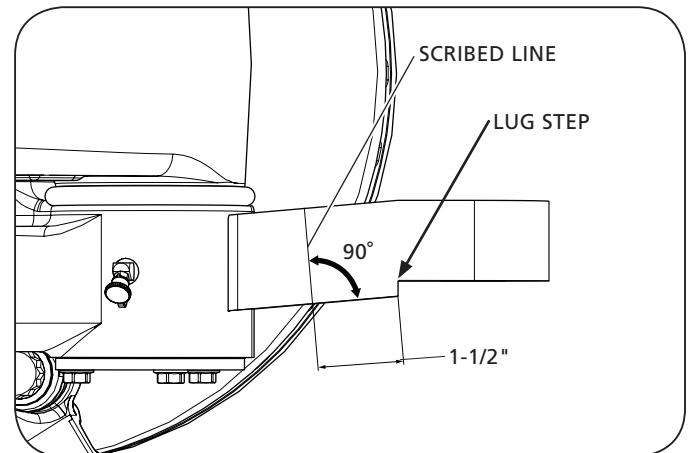


Figure 4

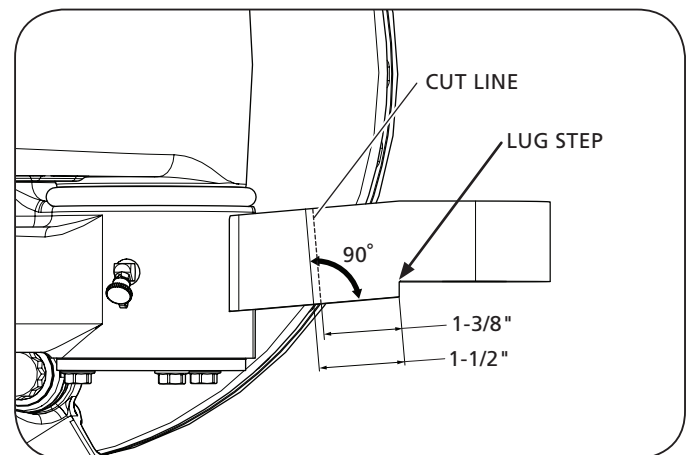


Figure 2

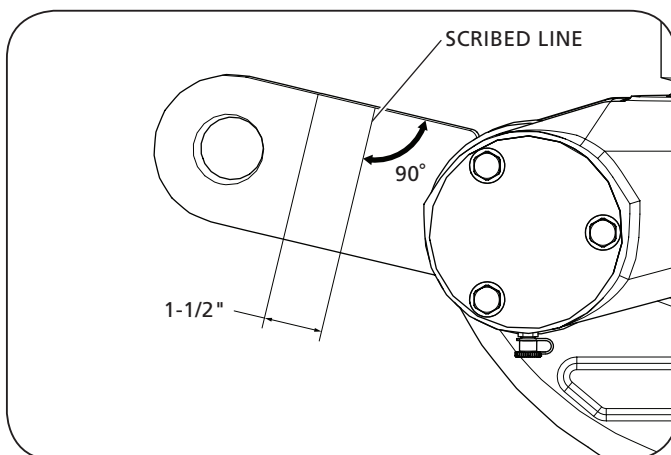
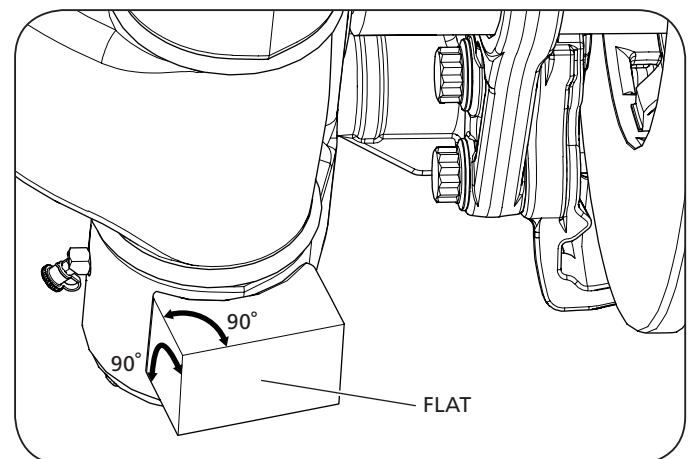


Figure 5



4. Center the replacement lug on the cut face as illustrated with the lug step facing down (**Figure 6**).

5. Before welding be sure that the large rubber O-ring is protected from weld spatter and heat (**Figure 6**).

IMPORTANT: Failure to protect the o-ring from weld spatter could result in a lack of grease retention, which if not avoided, could result in hindered kingpin performance.

6. With the replacement lug in the correct position, tack weld the replacement lug on all four (4) sides as illustrated (**Figure 7**).

IMPORTANT: Before tack welding the replacement lug, ensure that the mating faces are perpendicular and the lug is level. Failure to do so could lead to issues when reinstalling the tie rod and hindered product performance.

7. Once satisfied with the position of the replacement lug, fully weld the replacement lug, four (4) sides as illustrated. Ensure the beveled edge of the replacement lug is completely welded (**Figure 8**).

CAUTION

The welding of the replacement lug must be performed in compliance with the procedures listed above in Section 2. Failure to do so may result in a potentially hazardous situation which, if not avoided, could result in property damage.

8. Reinstall the steering damper and tie rod assembly. Torque the steering damper mounting nut to 440 ft-lbs. (600 N•m). Torque the tie rod ball joint nut to 250 ft-lbs. (340 N•m).

Figure 6

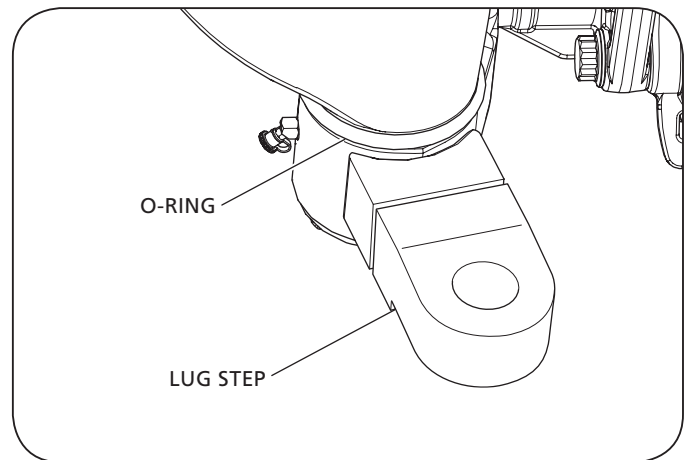


Figure 7

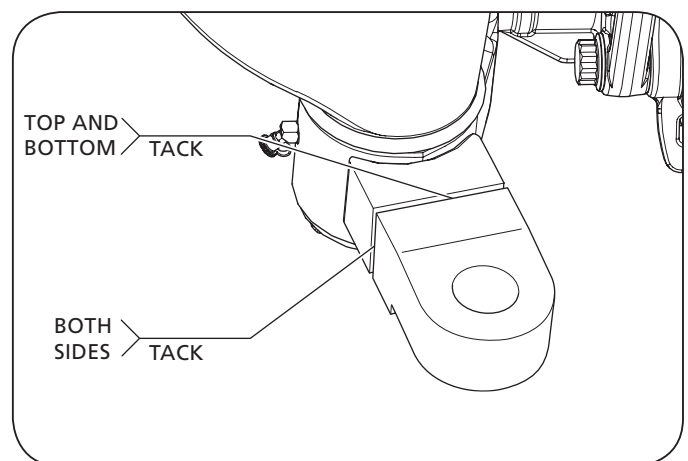
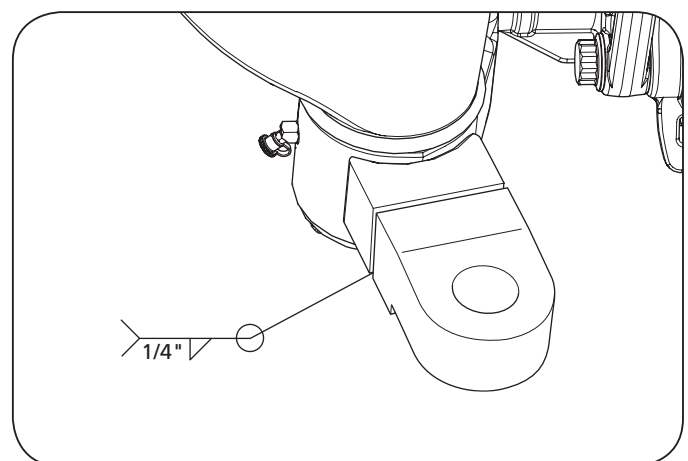


Figure 8





From fifth wheel rebuild kits to suspension bushing repair kits, SAF-HOLLAND Original Parts are the same quality components used in the original component assembly.

SAF-HOLLAND Original Parts are tested and designed to provide maximum performance and durability. Will-fits, look-alikes or, worse yet, counterfeit parts will only limit the performance potential and could possibly void SAF-HOLLAND's warranty. Always be sure to spec SAF-HOLLAND Original Parts when servicing your SAF-HOLLAND product.

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