

Service Manual

P89 Disc Brake Axles



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Introduction

This manual is the result of a collaboration between Xtra Lease and SAF-HOLLAND® inc.

This manual provides the necessary information for the maintenance, inspection and safe operation of the SAF® P89 disc brake.

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.

When replacement parts are required, SAF-HOLLAND highly recommends the use of only SAF-HOLLAND Original Parts. 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.

Warranty

Refer to the complete warranty for the country in which the product will be used. A copy of the written warranty is included with the product or available on the internet at www.safholland.com.

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.

1. General Safety Instructions

General and Servicing 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 maintenance 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 may 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.

NOTE: Before beginning any axle/brake service procedures, park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle and axles(s) with safety stands. DO NOT work under a vehicle supported only by jacks. Jacks can slip or fall over. Serious personal injury and damage to components can result.

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

- Several maintenance procedures in this manual may require re-positioning of the ABS system components. Consult the manufacturer's manual for procedures on the proper operation of the ABS system components.
- Service both roadside and curbside of an axle. Worn parts should be replaced in sets. Key components on each axle's braking system, such as friction material and rotors will normally wear over time.

IMPORTANT: Key components on each axle's braking system, including brake pads and brake rotors, are intended to wear over time. Worn parts should be replaced in sets on both the driver and curb side of an axle.

⚠️ WARNING Failure to follow manufacturer's instructions regarding spring pressure or air pressure control could allow uncontrolled release of energy which, if not avoided, could result in death or serious injury.

- The wheel contact surfaces between the wheel and hub MUST NOT receive additional paint.

IMPORTANT: The wheel contact surfaces MUST be clean, smooth and free from grease.

⚠️ WARNING Failure to keep wheel and hub contact surfaces clean and clear of foreign material could allow wheel/hub separations which, if not avoided, could result in death or serious injury.

- Only the wheel and tire sizes approved by the trailer builder can be used.

Operational and Road Safety Instructions

- Before operating vehicle, ensure that the maximum permissible axle load is not exceeded and that the load is distributed equally and uniformly.
- Make sure that the brakes are not overheated from continuous operation.

⚠️ WARNING Failure to minimize the use of brakes during overheating conditions could result in deterioration of brake efficiency which could result in death or serious injury.

- The parking brake MUST NOT be immediately applied when the brakes are overheated. Refer to the rotor wear inspection information in Section 6.2.

⚠️ CAUTION If the parking brake is immediately applied to the brakes when overheated, the brake discs could be damaged by different stress fields during cooling.

- Observe the operating recommendation of the trailer manufacturer for off-road operation of the installed axles.

IMPORTANT: The definition of OFF-ROAD means driving on non-asphalt/non-concrete routes, e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits.

IMPORTANT: Off-road operation of axles beyond the approved application design could result in damage and impair suspension system performance.

- SAF axles require routine service, inspection and maintenance in order to maintain optimum performance, and operational safety as well as an opportunity to recognize natural wear and defects before they become serious. Refer to the Routine Service Schedule in Section 14.

⚠️ WARNING Failure to inspect and maintain the SAF-HOLLAND P89 disc brake axle as outlined in Section 14 can result in brake or wheel bearing failure which, if not avoided, could result in death or serious injury.

IMPORTANT: Use only SAF-HOLLAND Original Parts to service the SAF-HOLLAND P89 disc brake axle.

⚠️ WARNING Failure to maintain the SAF-HOLLAND P89 disc brake with SAF-HOLLAND Original Parts can result in brake or wheel bearing failure which, if not avoided, could result in death or serious injury.

2. General Service and Maintenance Instructions

1. Conduct regular visual checks of the brakes, tires and all chassis components. Refer to Section 14 for more information:
 - Inspect for secure mounting, wear, leaks, corrosion and damage.
 - Check for loose, broken or cracked air hoses, air system leaks, and damaged components.
 - Check that brake hoses and cables are properly secured.
 - For proper brake pad wear, check that there is enough clearance to allow the caliper full movement during normal operation.
2. Check the brake pads at regular service intervals to ensure that the brake pad hold down springs are in the correct position, and that brake pads are not worn beyond the minimum wear limits described in this manual.
3. Inspect the rotors for signs of wear, cracks, grooves, scoring or hot spots.
4. Visually check the brake caliper at regular service intervals as defined by the brake caliper manufacturer's basic inspection program. Refer to Section 5 of this manual for further information.
5. Check the spring brake chambers to make sure the parking springs are NOT caged in the released position. Be sure the dust plugs are properly installed.
6. Make sure that the vent holes in the air brake chamber are not covered with snow, ice, mud, etc.
7. Inspect the wheel bearing unit for grease leaks at every inspection/service.
8. Visually check the brake assembly (e.g. pads, rotor, etc.) for oil or grease contamination.
9. Check that all dust caps and boots are present and in good condition.

10. Regularly conduct general safety checks in accordance with any applicable laws.
11. After every wheel change, the wheel nuts MUST be re-tightened to the specified torque level after the initial operation*, and then at every regular service interval.

*Initial operation is generally referred to as 5 to 100 miles, however Xtra Lease have requested that this be the after the initial in service period and at the next convenient stop.

CAUTION

Failure to re-tighten wheel nuts at specified intervals could result in component failure which, if not avoided, could result in damage to property.

IMPORTANT:

Use only SAF-HOLLAND Original Parts to service the SAF-HOLLAND P89 disc brake axle.

3. Model Identification

The disc brake axle serial tag is located near the center of the axle tube (**Figure 1**).

4. Identification Tag

The sample tag shown will help interpret the information on the SAF-HOLLANDUSA, Inc. serial number tag. The model number, axle body part number and serial number are listed on the tag (**Figure 2**).

Record the tag numbers below for future quick reference.

Axle Body Part Number: _____

Model Number: _____

Serial Number: _____

Figure 1

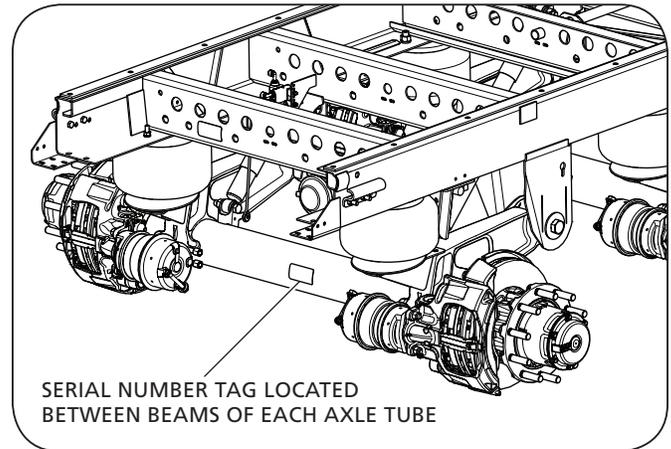
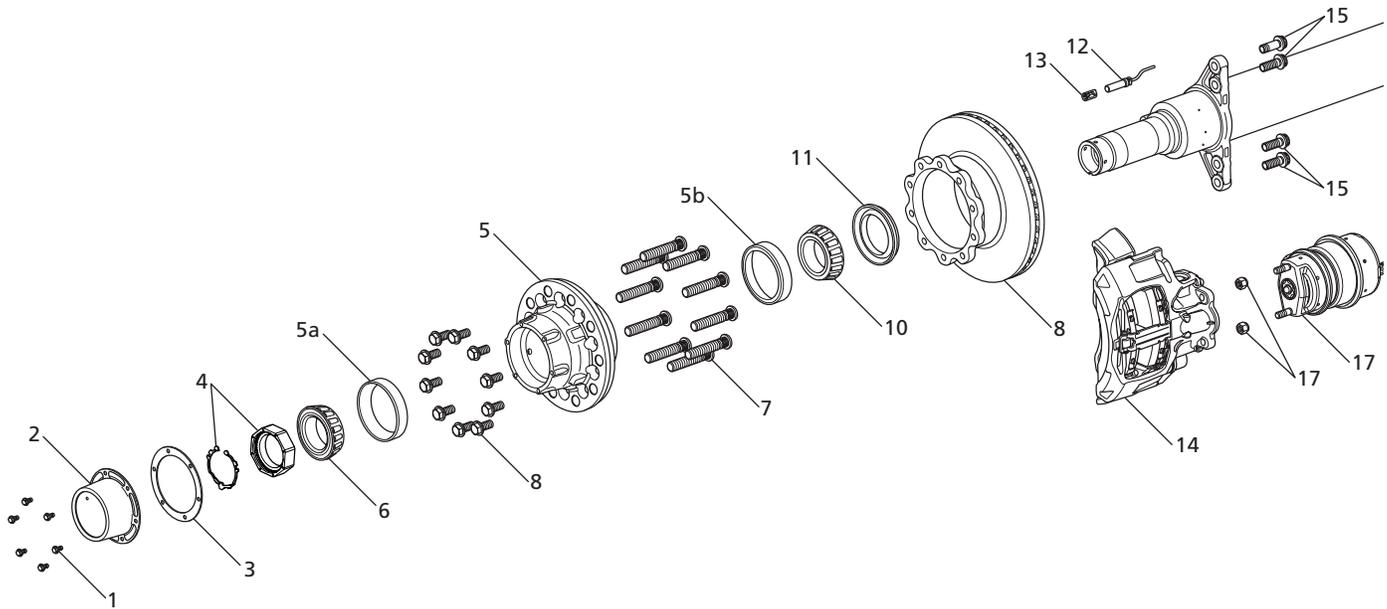


Figure 2





ITEM	PART NUMBER	DESCRIPTION	QTY. / AXLE
1	04343207800Z	Bolt, Hub Cap	12
2	01304011700Z 2047300000380	Hub Cap - Standard Hub Cap - Hubo	2
3	01093002300Z	Gasket, Hub Cap	2
4	01011009400Z	Nut, Axle Pro-Torq®	2
5	2073300000710	Hub with Bearing Cups and ABS Tone Ring	2
5a*	*	Bearing Cup, Outer	2
5b*	*	Bearing Cup, Inner	2
6	04200102300Z	Cone, Bearing, Outer	2
7	2072100000081	Wheel Studs	20
8	51830049	U-Shaped Rotor Kit (Bolts Included)	2

ITEM	PART NUMBER	DESCRIPTION	QTY. / AXLE
10	04200102300Z	Cone, Bearing, Inner	2
11	01092003100Z	Seal, Hub	2
12	04029107500Z**	ABS Sensor (WABCO)	2
13	04029101300Z	Clamping Bushing/Sleeve	2
14	51830052	Brake Caliper Left-Hand - (Includes MTG bolts and pads)	1
	51830053	Brake Caliper Right-Hand - (Includes MTG bolts and pads)	
15	4375100610	M18 x 1.5" Caliper Bolt Kit	6
17	2017200000200	Brake Chamber Kit (Nuts Included)	2

* Included in hub, item number 5, but can be serviced.

** Sensor suits Wabash and Hyundai built units. Utility units may have different (non SAF-HOLLAND) Sensor.

5. Caliper Identification and Inspection

SAF P89 axles are equipped SAF-HOLLANDSBS 2220 K0 disc brake calipers.

5.1 SAF-HOLLANDSBS 2220 K0 Caliper

The SAF-HOLLANDSBS 2220 K0 has a smooth forward face of the caliper and SAF logo on the rear side (**Figure 3**).

The inner and outer brake pads for the SBS 2220 K0 are different in shape. The inner brake pad has two "circle X's" on the back side, while the outer brake pad has a relatively smooth back. There is also a notch on the pads to keep them from being installed in the wrong position (**Figure 4**).

For instructions on SBS 2220 K0 brake caliper inspection and repair, refer to XL-AS20032RM-en-US which can be found at www.safholland.com.

6. Disc Brake Inspection

IMPORTANT: During routine servicing, inspect components for wear and replace worn components.

⚠ WARNING Failure to properly support axle during maintenance could allow axle to fall which, if not avoided, could result in death or serious injury.

NOTE: For further disc brake inspection information, refer to the latest version of the TMC recommended practice RP 652—Service and Inspection of Air Disc Brakes (TMC DVD supplement).

6.1 Pad Wear Inspection

Check the brake pads for proper thickness at regular service intervals based on vehicle usage. Brake pad inspections should be carried out at least every six (6) months or 25,000 miles, whichever comes first, and in accordance with any legal requirements. Refer to Routine Service Schedule in Section 14.

NOTE: Regular service intervals may be required more frequently for severe duty applications. Refer to Section 14.

Figure 3

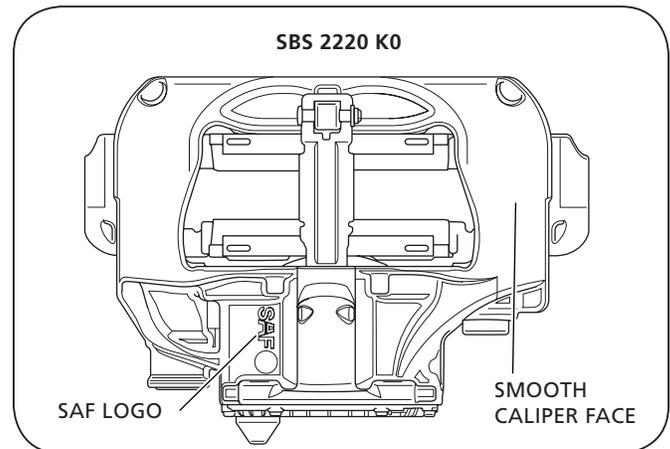
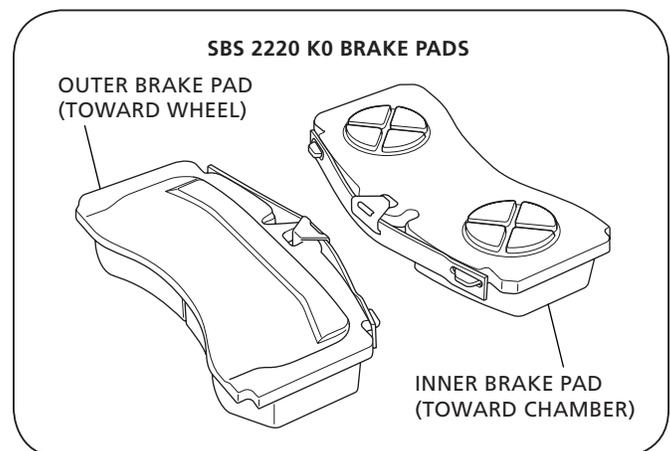


Figure 4



A quick visual inspection of the condition of the brake pads can be performed without removing the wheel:

1. Compare the position of the caliper marking to the carrier marking located on the underside of the caliper unit (**Figure 5 and 6**).
 - a. **Figure 5** - View A shows the positions of the two (2) markings when the brake pads are in good condition.
 - b. **Figure 5 and 6** - View B shows the positions of the two (2) markings when the wheel **MUST** be removed for further inspection of wear to the brake pads and brake rotor.

For further inspection of the brake pads, the wheel and brake pads **MUST** be removed. Refer to Section 5 for caliper and service manual identification.

IMPORTANT: After inspecting the brake pads, check that the brake system is functioning properly.

IMPORTANT: When replacing worn brake pads, **ALL** pads on the axle **MUST** be replaced.

If the friction material of the brake pad is less than 0.08" (2 mm) at its thinnest area, the brake pad **MUST** be replaced. (**Figure 9**).

NOTE: Minor breakouts at the edges are permitted. Major breakouts on the surface of the brake pad are **NOT** permitted (**Figure 6**).

Figure 5

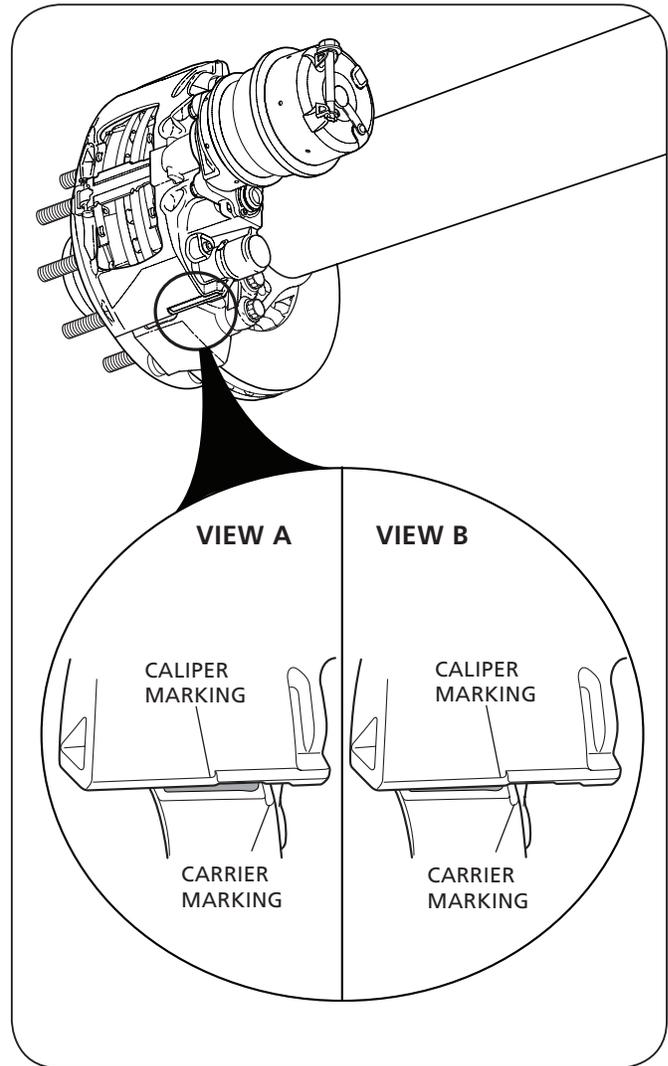


Figure 6

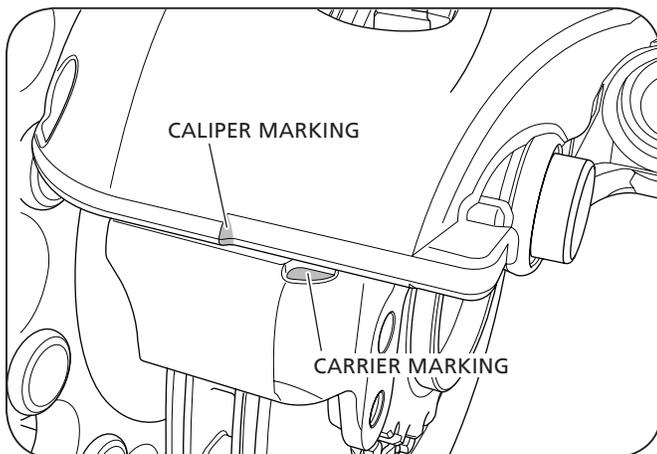
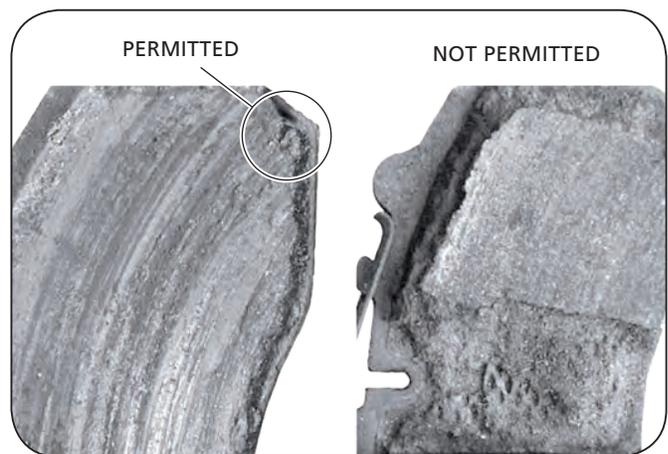


Figure 7



6.2 Rotor Wear Inspection

- Carefully inspect both sides of the brake rotor friction surface (**Figure 8**).
 - Spider web cracking is acceptable (**Area A**).
 - Radial cracks less than 0.06" (1.5 mm) deep or wide with lengths less than 75% of the width of the rotor friction surface (**Area B**) are acceptable.
 - Grooves in the rotor surface are acceptable only if they are less than 0.06" (1.5 mm) deep (**Area C**).
 - Cracks that run completely to either edge of the rotor are NOT acceptable, regardless of depth (**Area D**).
- Measure the brake rotor thickness and re-surface, if necessary. For proper brake function, the minimum thickness for re-surfacing the brake rotor is defined as 1.54" (39 mm).

⚠ WARNING Re-surfacing or using the brake rotor beyond the minimum thickness could cause component failure which, if not avoided, could result in death or serious injury.

IMPORTANT: DO NOT use high-pressure cleaners or liquid cleaners on the brake rotor.

If the overall wear limits for the brake rotor or brake pads are exceeded (**Figure 9**), the rotor and pads MUST be replaced. Refer to rotor replacement instructions as detailed in Document XL-SA20018UM-en-US at www.safholland.us. For brake pad replacement, refer to the caliper instruction manuals identified in Section 5.

For both the inner and outer pads, the maximum brake pad wear difference is 0.2" (5.0 mm).

BRAKE ROTOR			BRAKE PAD	
DIAMETER	"A" NEW	"B" WEAR LIMIT	"C" NEW	"D" WEAR LIMIT
430 mm	45 mm	37 mm	23 mm	2 mm
16.93"	1.77"	1.46"	1.18"	0.08"

⚠ WARNING Failure to replace brake rotor and pads when minimum wear limits are reached could cause component failure which, if not avoided, could result in death or serious injury.

NOTE: When replacing the brake pads or brake rotor, use only Original SAF-HOLLAND rotors and approved brake pads.

IMPORTANT: When replacing worn brake pads, ALL pads on the axle MUST be replaced.

NOTE: During brake repairs, conduct a visual inspection of the seals on the brake caliper.

Figure 8

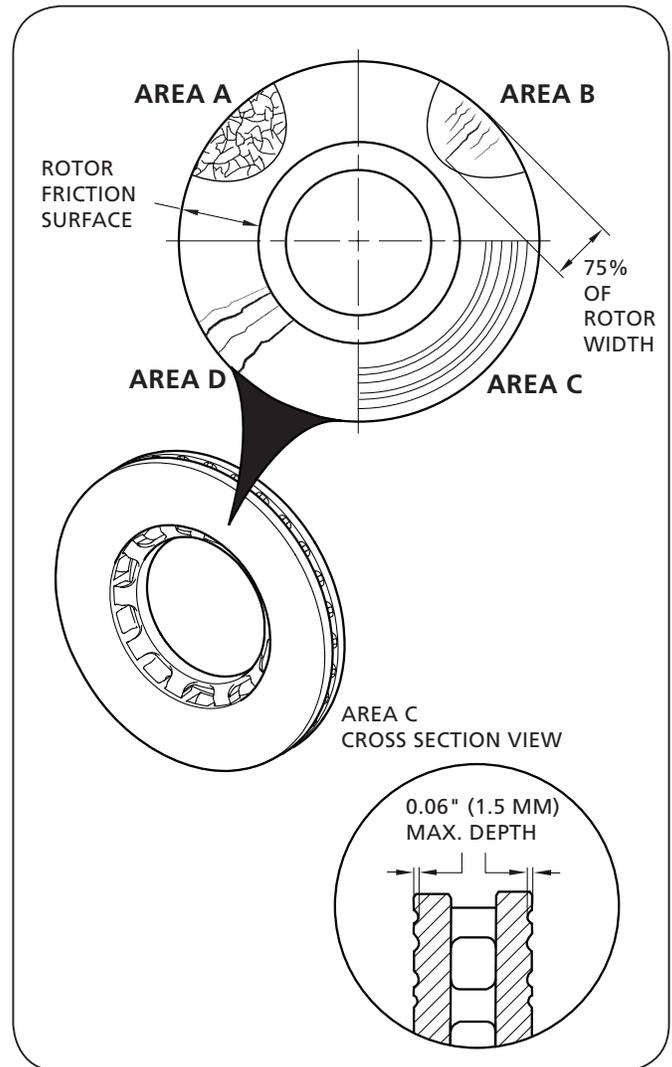
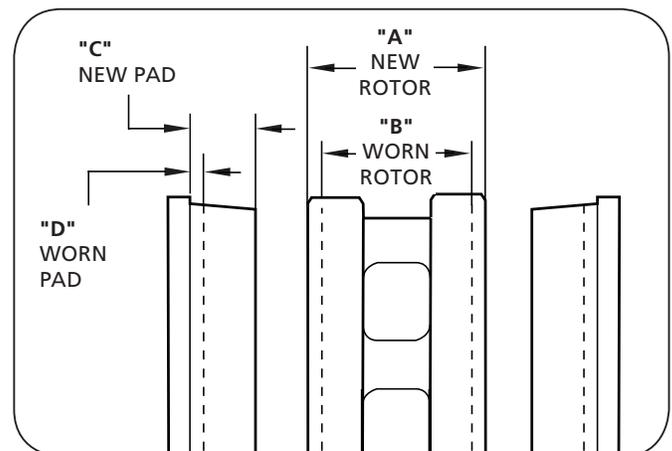


Figure 9



7. Bearing End Play

⚠ 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.

1. Release the trailer brakes, and cage the spring brakes according to the spring brake manufacturer's instructions. Remove the tire and wheel assembly to access hub and rotor.
2. Remove wheels from hub using support device such as a wheel dolly.

⚠ CAUTION Failure to support weight during installation or removal of wheels could create a crush hazard which, if not avoided, could result in minor to moderate injury.

3. With a 1/2" socket, remove the six (6) hub cap bolts and the hub cap (**Figure 10**).

NOTE: Be prepared to collect lubrication fluid when removing hub cap.

4. Check the wheel bearing end play as follows:
 - a. Attach the magnetic base of a dial indicator to the spindle. Touch dial indicator stem to hub cap gasket face (**Figure 11**).
 - b. Reading Number One - Slightly rotate wheel-end in both directions while pushing inward until dial indicator does not change. Set the dial indicator to zero (**Figure 11**).
 - c. Reading Number Two - Slightly rotate hub in both directions while pulling outward until dial indicator does not change (**Figure 11**).
 - d. End play is the difference between reading number one and reading number two.

NOTE: Final adjustment should allow the wheel to rotate freely with 0.001" - 0.003" (0.03 mm - 0.08 mm) end play. If end play is not within specification, re-adjustment of bearing is required.

IMPORTANT: If end play is not within specification, re-adjustment is required.

⚠ WARNING Failure to maintain proper hub bearing adjustment could allow bearing failure and wheel-end separation which, if not avoided, could result in death or serious injury.

Figure 10

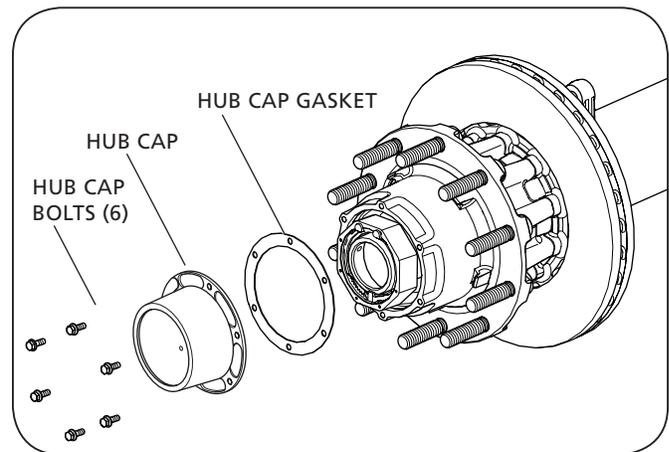
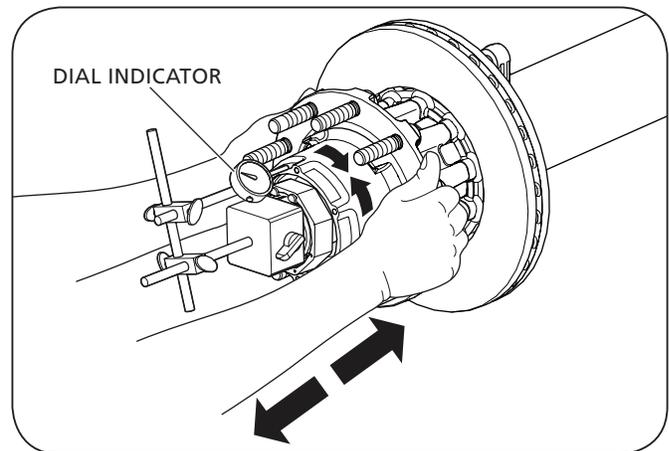


Figure 11



8. Bearing Adjustment

NOTE: All axle nuts on SAF-HOLLANDP89 Disc Brake Axles are right-hand threaded.

1. Pro-Torq® axle nut (**Figure 12**):
 - a. Use a screwdriver to carefully pry the keeper arm from the undercut groove on each side until the keeper is released.
 - b. Seat the bearing. Using a torque wrench, tighten the nut to 200 ft.-lbs. (271 N•m) and spin the wheel at least one (1) full rotation. **PERFORM THIS STEP THREE (3) TIMES (Figure 13).**
 - c. Back the nut off until it is loose.
 - d. Adjust the bearing. Using a torque wrench, tighten the nut to 100 ft.-lbs. (137 N•m). Spin the wheel at least one (1) full rotation. **PERFORM THIS STEP THREE (3) TIMES.**
 - e. Back the nut off one raised face mark (1/8 of a turn).
 - f. Install the keeper with orange side facing out by inserting the keeper tab into the undercut groove of the nut and engage the keyway tang in the axle keyway. Insert keeper tab with bent legs facing out.
 - g. Engage the mating teeth of the keeper with the teeth of the wheel nut.
 - h. Compress and insert the keeper arms, one at a time, into the undercut groove with a screwdriver.
 - i. If the keeper teeth **DO NOT** line up with teeth in nut, loosen the nut slightly until they engage.
 - j. Check for end play. Refer to Section 7.

9. Hub Cap Installation

1. Install the hub cap assembly, making sure the hub cap gasket is in place (**Figure 14**).

IMPORTANT: When installing hub cap, make sure the hub cap gasket is not bent or damaged.

IMPORTANT: DO NOT over torque. This can crush the hub cap gasket.

CAUTION

Failure to avoid damaging the hub cap gasket could allow lubricant to lead which, if not avoided, could result in bearing failure.

2. Install the six (6) bolts to secure the hub cap assembly (**Figure 14**). Tighten bolts to 12-16 ft.-lbs. (16-21 N•m).

Figure 12

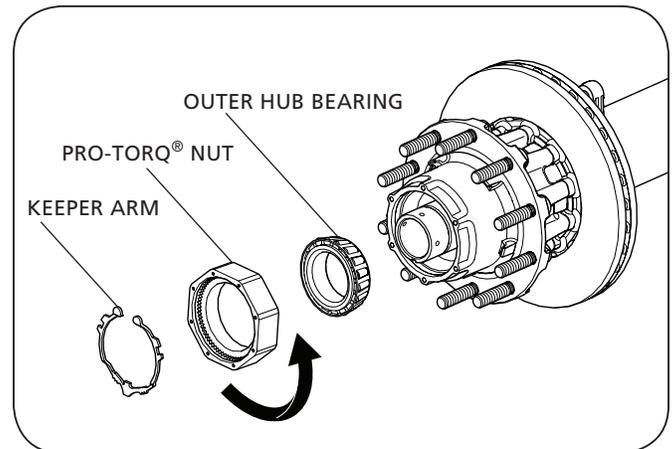


Figure 13

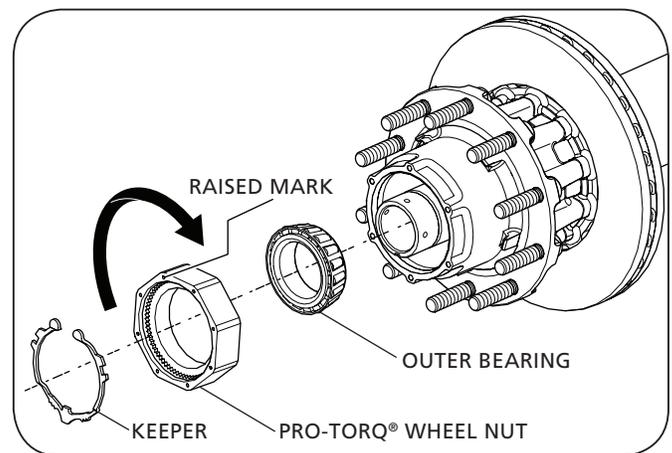
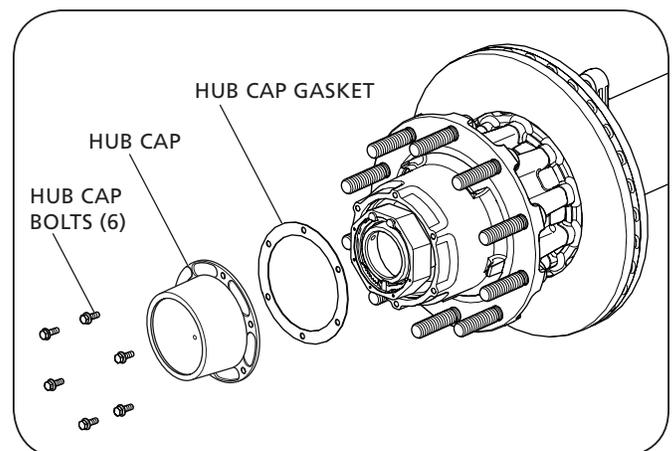


Figure 14



10. Hub Lubrication (Grease)

IMPORTANT: DO NOT mix oil with grease. If the bearing assembly has been lubricated with grease, DO NOT add oil.

WARNING Failure to correctly lubricate bearings could damage bearings which, if not avoided, could result in death or serious injury.

1. Remove pipe plug from side of the hub.
2. Top off grease level as necessary. Grease fill capacity is 55 ounces for parallel bearings and 26 ounces for tapered bearings. The grease fill amount should be checked with the grease fill hole at a 3 o'clock or 9 o'clock level. The hub cavity should then be 50 percent full (**Figure 15**).
3. Re-install pipe plug into hub grease fill hole and torque to 20-25 ft.-lbs. (27-34 N•m).

11. Wheel Installation Procedure

The following information is intended to provide basic wheel installation instructions. Refer to TMC RP222C for complete installation details.

1. Clean all mating surfaces on hub, wheels and nuts.
2. Rotate the hub so a pilot boss is at the top (12 o'clock) position.
3. Mount wheel(s) on hub. One or more of the wheel nuts can be started in order to hold wheel in position.
4. Tighten the top wheel nut first. Apply 50 ft.-lbs. (68 N•m) of torque to draw the wheel up fully against the hub.
5. Install remaining wheel nuts. Using sequence shown in (**Figure 16**), tighten all wheel nuts to 50 ft.-lbs. (68 N•m) of torque.
6. Repeating sequence shown in (**Figure 16**), retighten all wheel nuts to 500 ft. lbs. (678 N•m) of torque.
7. Check seating of wheel at the pilot bosses. Rotate wheel and check for any rotational irregularity.

After every wheel change, the wheel nuts **MUST** be re-tightened to the specified torque level after the initial operation*, and then at every regular service interval.

* Initial operation is generally referred to as 5 to 100 miles, however Xtra lease have requested that this be the after the initial in service period and at the next convenient stop.

Figure 15

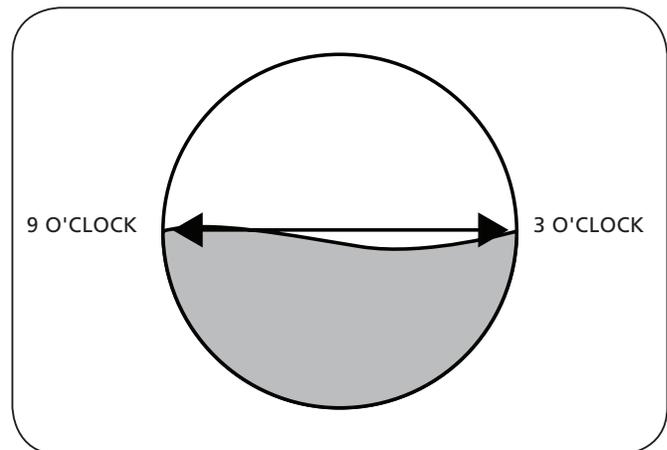
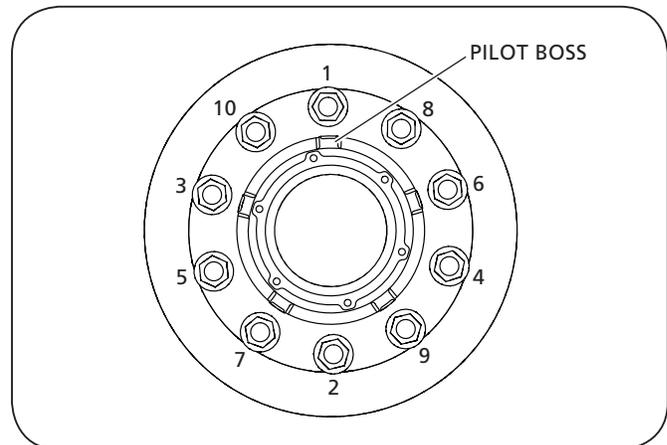


Figure 16



12. Lubrication and Torque Specifications

LUBRICATION SPECIFICATION		
COMPONENT	SURFACE TO BE LUBRICATED	LUBRICANT
Axle	Bearings and Hubs	NLGI 00 Semi-Fluid Grease (Standard)

* Oil lubed bearings and hubs should remain lubricated with oil, grease lubed bearings and hubs should remain lubricated with grease.

NOTE: Intervals are based upon normal operations. Reduce intervals to compensate for abnormal operations or severe conditions.

PART	APPLICATION	TORQUE SPECIFICATIONS
SAF Specific Caliper Bolt M18 x 1.5"	Caliper – Spider	Torque bolts from inner bolts to outer bolts. 1. Pre-torque to 88 ft.-lbs. (120 N•m). 2. Verify the pre-torque of the bolts a second time, and, if necessary re-tighten all bolts to 88 ft.-lbs. (120 N•m). 3. Final torque from inner bolts to outer bolts to 331 ± 22 ft.-lbs. (450 ± 30 N•m).
SAF Specific Brake Chamber Nut 5/8"-11 UNC Nylock or M16 x 1.5"	Brake Chamber	1. Pre-torque both chamber nuts to 60-75 ft.-lbs. (80-100 N•m). 2. For final torque tighten both chamber nuts to 130-155 ft.-lbs. (180-210 N•m)
5/16"-18 Bolt	Hub Cap	12-16 ft.-lbs. (16-22 N•m)
SAF U-Shaped Rotor Bolt	Rotor – Hub	Torque all ten (10) bolts in a criss-cross pattern to 190-210 ft.-lbs. (260-285 N•m)
Pro-Torq Axle Nut	Head Unit – Axle	Refer to Section 8 for Pro-Torq axle nut torque instructions.

13. Troubleshooting Chart (SAF-HOLLAND suspensions equipped with disc brake axles)

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Brakes will not release	Brake hoses restricted	Replace hoses
	Brake control valve restricted/inoperable	Repair/replace control valve
	Brake out of adjustment	Adjust brake/repair or replace caliper as necessary
	Damaged brake chamber	Replace brake chamber
	Damaged brake assembly	Replace or repair brake assembly
	Supply air interrupted	Open glad hand cut-out cock or push brake control valve in
	Supply line improperly coupled	Properly couple supply air line
No brakes or insufficient brake performance	Service air interrupted	Open glad hand cut-out cock
	Service air line improperly coupled	Properly couple service air line
	Brake hoses restricted	Relieve restriction or obstruction or replace hoses
	Brake control valve restricted/inoperable	Repair/replace control valve
	Brake out of adjustment	Adjust brake/repair or replace caliper as necessary
	Damaged brake chamber	Replace brake chamber
	Damaged brake assembly	Replace or repair brake assembly
Dragging Brakes/Slow brake application or release timing	Brake hoses restricted	Relieve restriction or obstruction or replace hoses
	Brake control valve restricted/inoperable	Repair/replace control valve
	Brake out of adjustment	Adjust brake/repair or replace caliper as necessary
	Damaged brake chamber	Replace brake chamber
	Damaged brake assembly	Replace or repair brake assembly
Dog Tracking	Axle not properly aligned	Align axle
	Slider assembly racked or not aligned properly	Repair or replace slider assembly
	Frame bent or not aligned properly	Repair or align frame
	Damaged suspension component	Repair or replace suspension component
	Bent axle	Replace axle
Uneven tire wear	Improper tire inflation	Inflate tire to proper pressure
	Loose wheel stud nuts	Inspect for and repair any resultant wheel end damage and tighten properly
	Improper wheel bearing adjustment	Inspect for and repair any resultant wheel end damage and adjust properly
	Axle not properly aligned	Align axle
	Slider assembly racked or not aligned properly	Repair or replace slider assembly
	Frame bent or not aligned properly	Repair or align frame
	Damaged suspension component	Repair or replace suspension component
	Bent axle	Replace axle
	Mismatched tire sizes	Properly match tire sizes
	Unequal brake balance or timing	Repair brakes as necessary
	Overly aggressive braking	Instruct/train driver in proper brake use
	High speed turns	Instruct/train driver in proper vehicle speeds
	High level of side scrub	Instruct/train driver in proper vehicle maneuvering
Anti-Lock Brake System malfunction	Refer to ABS manufacturer's service literature	

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Grabbing brakes	Contaminants on brake lining	Replace brake pads
	Brake out of adjustment	Adjust brake/repair or replace caliper as necessary
	Warped brake rotor	Machine or replace brake rotor
	Damaged brake chamber	Replace brake chamber
	Damaged brake assembly	Replace or repair brake assembly
	Unequal brake balance or timing	Repair brakes as necessary
	Anti-Lock Brake System malfunction	Refer to ABS manufacturer's service literature
Excessive heat cracks in rotor	Brake out of adjustment	Adjust brake/repair or replace caliper as necessary
	Overly aggressive braking	Instruct/train driver in proper brake use
	Unequal brake balance or timing	Repair brakes as necessary
	Anti-Lock Brake System malfunction	Refer to ABS manufacturer's service literature
	Damaged brake chamber	Replace brake chamber
	Damaged brake assembly	Replace or repair brake assembly

14. Routine Service Schedule

⚠ WARNING Failure to inspect and maintain the SAF-HOLLANDP89 disc brake axle as outlined in this section can result in brake or wheel bearing failure which, if not avoided, could result in death or serious injury.

⚠ WARNING Failure to maintain the SAF-HOLLANDP89 disc brake with SAF-HOLLANDOriginal Parts can result in brake or wheel bearing failure which, if not avoided, could result in death or serious injury.

IMPORTANT: Use only SAF-HOLLANDOriginal Parts to service the SAF-HOLLANDP89 disc brake axle.

NOTE: Service intervals are based upon normal operations. Reduce intervals to compensate for abnormal operations or severe conditions.

WHICHEVER OCCURS FIRST		PERIODIC CHECKS	
MILEAGE INTERVALS	In Service Inspection	Every 25,000 Miles	Every Brake Pad Change
TIME INTERVALS	A.K.A. Pre-Delivery Inspection	Every 6 Months	Every 5 Years
VISUAL AND SAFETY INSPECTION			
Perform general service/maintenance inspection. Refer to Section 2.	■	■	
Perform disc brake/head unit inspection. Refer to Section 2.	■	■	
Head Unit – Check for grease leaks. (Seal, hubcap, Grease fill port)		■	
Bearing noise and rock test.		■	
Check adjuster cap for correct seating. Refer to Section 5 for caliper and caliper service manual identification.		■	
Inspect brake pad thickness regularly. Refer to Section 6.		■	
Inspect brake rotors for cracks. Refer to Section 6.		■	
Inspect the brake caliper guide system. Check for free movement and sliding action. Check rubber dust covers for cracks and damage. Refer to Section 5 for caliper and caliper service manual identification.			■
Check and adjust wheel bearing end play. Refer to Section 7.			■

ATTENTION:

After every wheel change, the wheel nuts **MUST** be re-tightened to the specified torque level after the initial operation*, and then at every regular service interval.

*Initial operation is generally referred to as 5 to 100 miles, however Xtra lease have requested that this be the after the initial in service period and at the next convenient stop.









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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