ALLYAXLE

Service Manual

Table Of Contents

UNDERSTANDING THIS DOCUMENT

This manual outline approved procedures for maintaining, diagnosing, disassembling, and reassembling MTH Manufacturing axles. Follow all instructions closely to ensure proper axle maintenance.

Safety Notices

Throughout this document there are various safety notices and procedures to ensure that the process is done as safely as possible. These notices are to help prevent potential injuries and/or product damage from occurring.

If the safety instructions and the maintenance instructions are not followed, injury or damage to the axle/vehicle may occur and may affect or void the manufacturer warranty.

The following safety warnings will be seen throughout this manual:

⚠ DANGER

Danger: Signifies a potentially dangerous situation that if not taken into consideration may lead to a serious injury or death

⚠ CAUTION

Caution: Signifies a potential situation which may lead to minor injury or product damage

Contact Information

If Your axle is currently under warranty through MTH Manufacturing before proceeding with any of the procedures outlined within the manual contact the engineering department.

Before contacting us prepare any of the applicable/available information about the axle:

(See axle identification section for instructions on how to find this information)

- Axle Serial Number
- AX number
- Production code

For customers looking for help identifying parts or service advice, contact us with the information listed above on hand.

(Contact info here)

General service notes

Safety Requirements Before Commencing Work

Before commencing any maintenance, service, installation, or diagnostic activity, personnel must read, understand, and comply with the following:

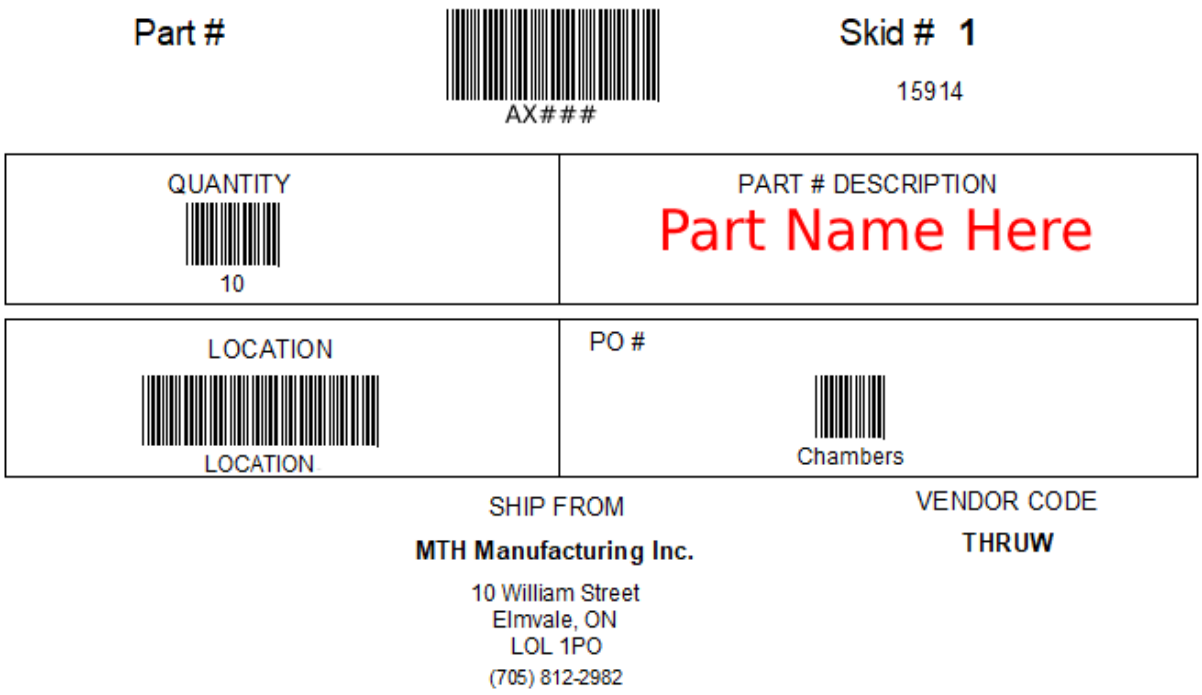
- All applicable instructions, procedures, and work practices.
- All safety notices, including **DANGER** and **CAUTION** statements, to prevent personal injury, equipment damage, or property damage.
- Company-approved maintenance, service, installation, and diagnostic procedures.
- Wear appropriate personal protective equipment (PPE), including safety glasses, gloves, safety footwear, and hearing protection where required
- Ensure the axle assembly is properly supported before performing any work.
- Applicable local, provincial, or other occupational health and safety (OH&S) regulations.

Service and Maintenance Requirements

- All work shall be performed by trained and qualified personnel only.
- Exercise caution when working with components containing stored energy. The sudden release of tension from springs or pressurized components (including brake chamber spring brakes, brake return springs, and air springs) may result in serious injury.
- Use only approved and recommended tools, equipment, and service methods.
- Upon completion of service or maintenance activities, perform all required operational inspections and functional tests to verify that all systems and components are operating correctly and that the axle is safe to return to service.

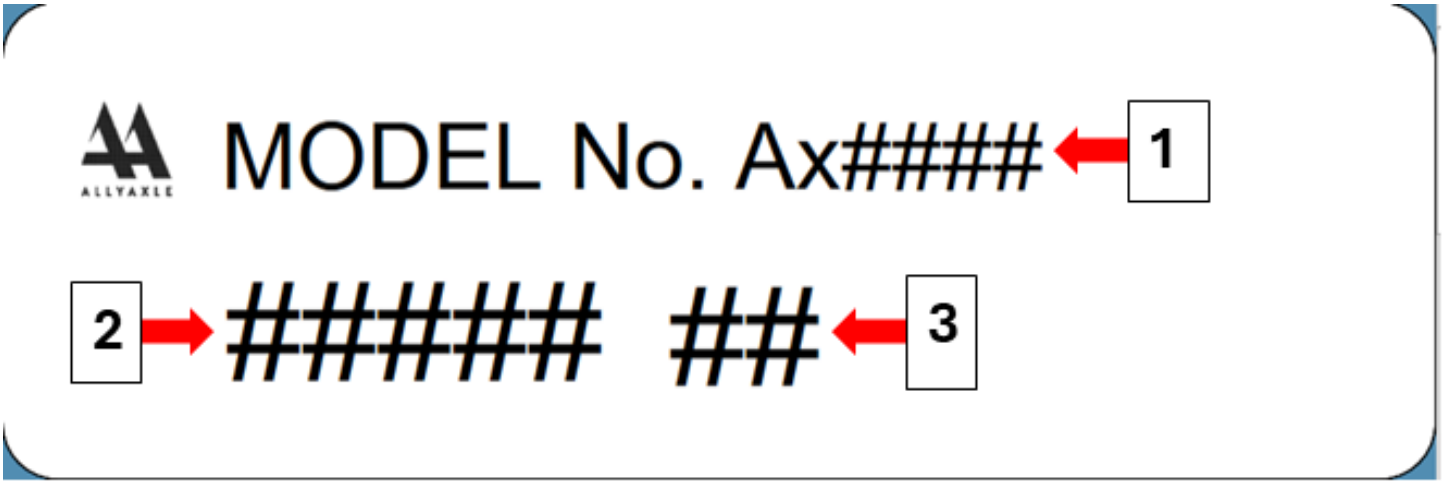
Axle Identification

Identifying the axle can be done in multiple ways. The first method of axle identification is the shipping paperwork/tag that should be attached to the axle upon arrival and included within the shipping paperwork itself.



The AX# is located below the top barcode, with the part number to the left and the part name below. Have this information ready when contacting MTH Manufacturing. Provide a photo of the tag if possible.

If this tag is missing or unavailable, use the hub cap sticker shown on the next page as the secondary identification method.

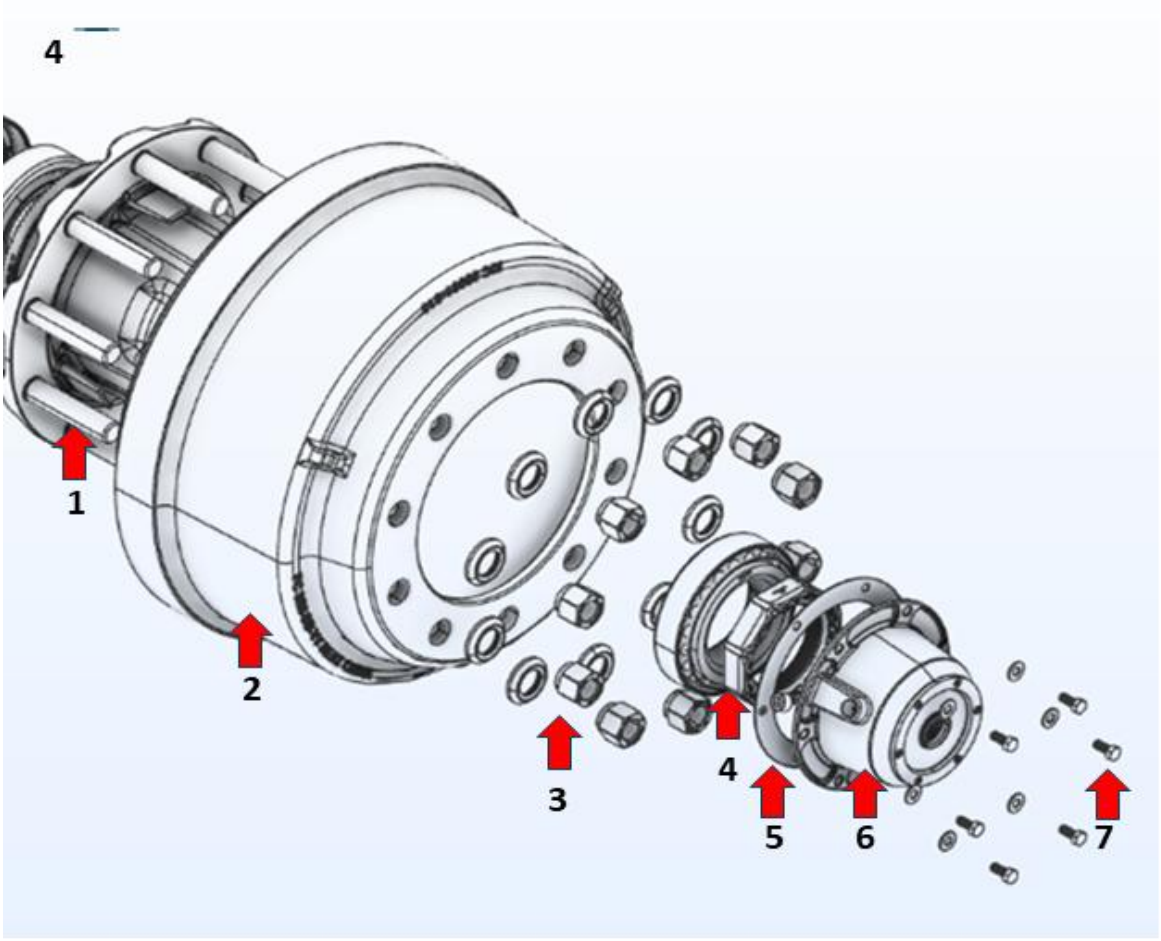


Section 1: The AX Number used for identifying what kind of axle it is

Section 2: The Production order code used for tracking a customer's direct order

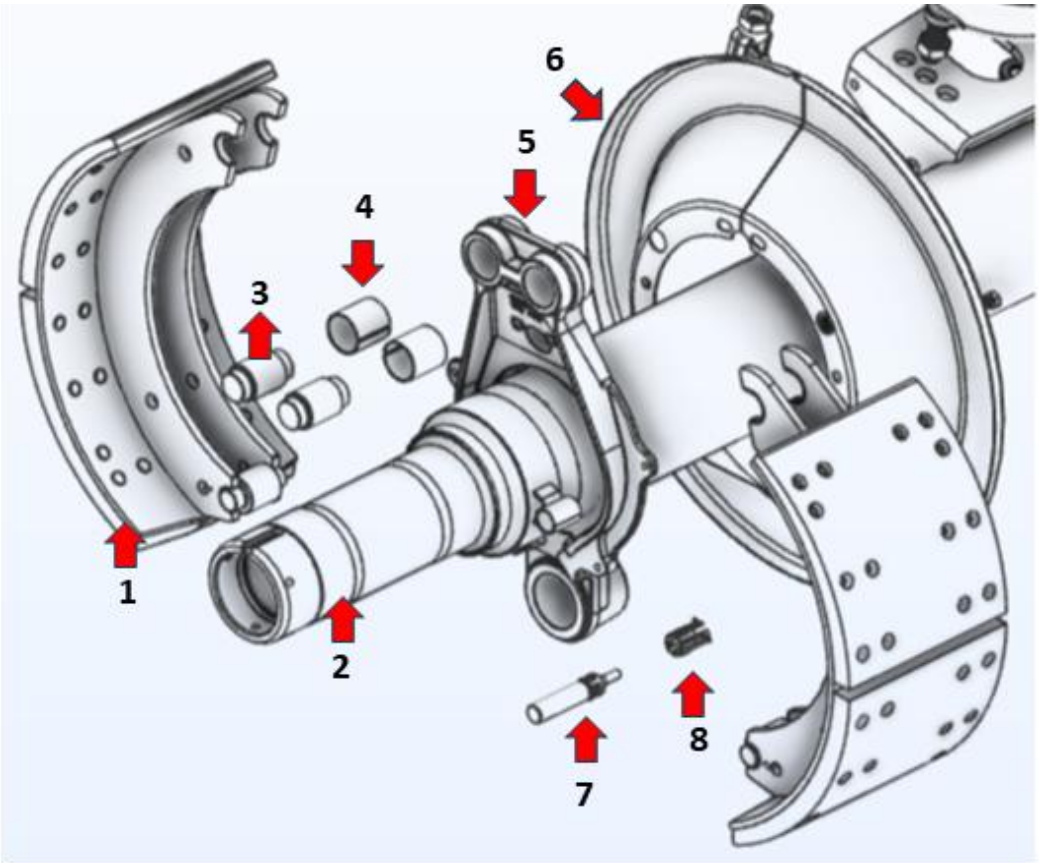
Section 3: The beam number

Part identification is listed in the Bill of Materials for the axle order. If the Bill of Materials is unavailable, contact MTH Manufacturing with the required identification information.



CAD drawing of Hub and drum system

1	Hub
2	Drum
3	Flange nuts for the hub and drum
4	Nut system I.E: 4-piece, Castle nut
5	Hub cap gasket
6	Hub cap. Either oil or grease
7	Washers and bolts for the hub cap



CAD drawing of brake system

1	Brake shoe
2	Spindle of the axle
3	Anchor pins
4	Anchor Bushings
5	Spider
6	Dust Shield
7	ABS sensor
8	ABS sensor clip

NOTICE

The following section of this manual is dedicated to the disassembly and reassembly of an MTH Axle. If your axle is currently under warranty, it is important that you contact us first before performing any work. If the axle is not under warranty the following procedures will be completed at your own risk and expense. MTH is not responsible for any damage or injuries for work completed within the scope of this manual. It is recommended that only qualified professionals carry out the following procedures.

Throughout The Process

The following steps should be taken in between each step of disassembling and reassembling the axle:

- Inspect all components for any visible damage or wear.
- Always take all the proper safety precaution such as wearing PPE.
- Handle the parts carefully to avoid damage.
- Inspect both ends of the axle.
- Use the correct tools as indicated.

Axle Disassembly and Reassembly

On page 19 there is a flow chart that will explain the order the different processes should be completed in. It is important to always double check that these processes are being done correctly as the manufacturer specifies.

Before disassembling, review the troubleshooting guide on page 18.

Preventative Maintenance

Brake Adjustments

Brake use increases pushrod stroke length over time. A licensed professional should adjust the brakes after the first 200 miles (320 km), then every 300 miles (480 km) where manual slack adjusters are used. Where automatic slack adjusters are used, the slack adjusters should be reset after burnishing and then pushrod stroke should be monitored as a part of regular pre-trip inspection.

Re-lubricating bearings

The lubrication (either grease or oil) of the bearing prevents corrosion and rust. It also reduces the friction caused by the metal-on-metal contact. The bearings should be re-lubricated annually or 12000 miles (19000 km) whichever comes first.

Re Lubricating Cams

Re lubricate the cams with grease every 3000-5000 miles (4830-8050 km).

Visual Inspections

Perform a visual inspection before each trip to identify axle issues early, including any visible damage.

BRAKE SYSTEM SCHEDULE MATRIX

Disclaimer: The Brake System Schedule Matrix is a general maintenance guide. MTH is not responsible for maintenance performed contrary to component manufacturer recommendations, industry standards, or regulatory requirements.

BRAKE SYSTEM SCHEDULE MATRIX					
System	**Component**	**Pre-Trip**	**Monthly (15,000 km)**	**3 Months (45,000 km)**	**Annual (180,000 km)**
General	Axle Beam Condition	👁	👁	✓	✓
	Welded Attachments	👁	👁	✓	✓
Axle End	Hub Oil / Grease Level	👁	👁	✓	✓
	Oil Leaks	👁	👁	✓	✓
	Bearing End Play			✓	✓
	Axle Fasteners	👁	🔧	🔧	✓
	Wheel Seals			✓	✓
Drum Brake	Brake Adjuster / Pushrod Stroke	🔧	🔧	🔧	✓
	Brake Shoe Lining		👁	✓	✓
	Brake Drums			✓	✓
	S-Cam Lubrication		🛢	🛢	✓
	S-Cam Bushings & Tube			✓	✓
	S-Cam Radial / End Play			✓	✓
	Brake Springs & Rollers			✓	✓

Disc Brake	Brake Pads		👁	✓	✓
	Rotor Condition			✓	✓
	Caliper Function		👁	✓	✓
Air System	Air Chamber	👁	👁	✓	✓
	Air Lines & Fittings	👁	👁	✓	✓
	Air Leaks	👁	👁	✓	✓
	ABS Sensor & Wiring	👁	👁	✓	✓

Note: The symbols in this matrix identify the required maintenance activity for each interval. Refer to this manual and the component manufacturer's service documentation for detailed procedures.

👁- Visual Inspection

🔧- Physical Check / Adjustment / Torque Verification

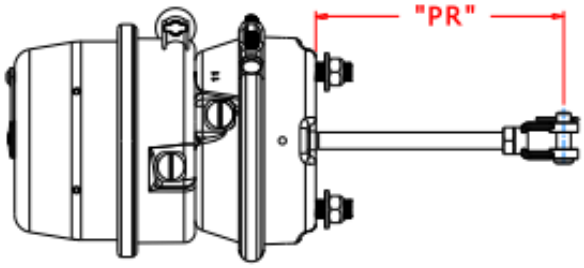
✓- Detailed Inspection / Measurement

🛢- Lubrication

Pre-Disassembly diagnostics

Before beginning the disassembly of the axle, the following pre-diagnostic steps should be taken:

1. Note any wear/damage by visual inspection.
2. Rotate the hub to make sure there is no unexpected interferences.
3. Not the air chamber pushrod length. For the Pushrod measurement measure from the chamber mounting face to the center of the clevis pin as pictured below (Figure 1).



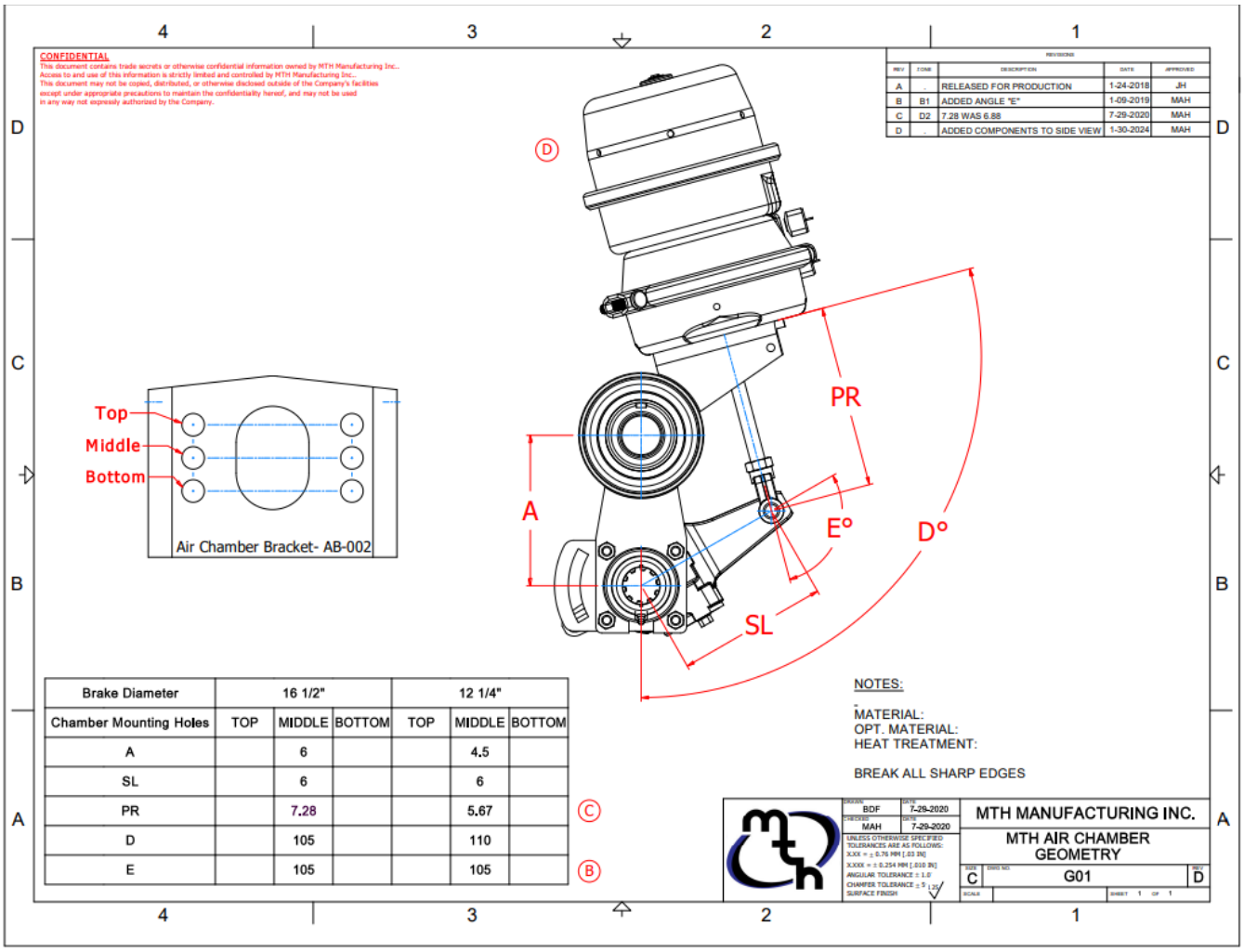
(Figure 1)

See Figure 2 for a chart containing the proper pushrod lengths. AC-3030-1 and AC3030-2 are for 16-1/2 brake applications and AC3030-3 and AC3030-4 are for 12-1/4 brake applications.

See figure 3 for a drawing of the proper dimensions of a chamber and slack system.

MTH PART No.	STROKE	"PR" LENGTH
AC-3030-1	3.0 "	7.28 "
AC-3030-2	2.5 "	7.28 "
AC-3030-3	2.5 "	5.67 "
AC-3030-4	3.0 "	5.67 "

(Figure 2)



Brake Diameter	16 1/2"			12 1/4"		
Chamber Mounting Holes	TOP	MIDDLE	BOTTOM	TOP	MIDDLE	BOTTOM
A		6			4.5	
SL		6			6	
PR		7.28			5.67	
D		105			110	
E		105			105	

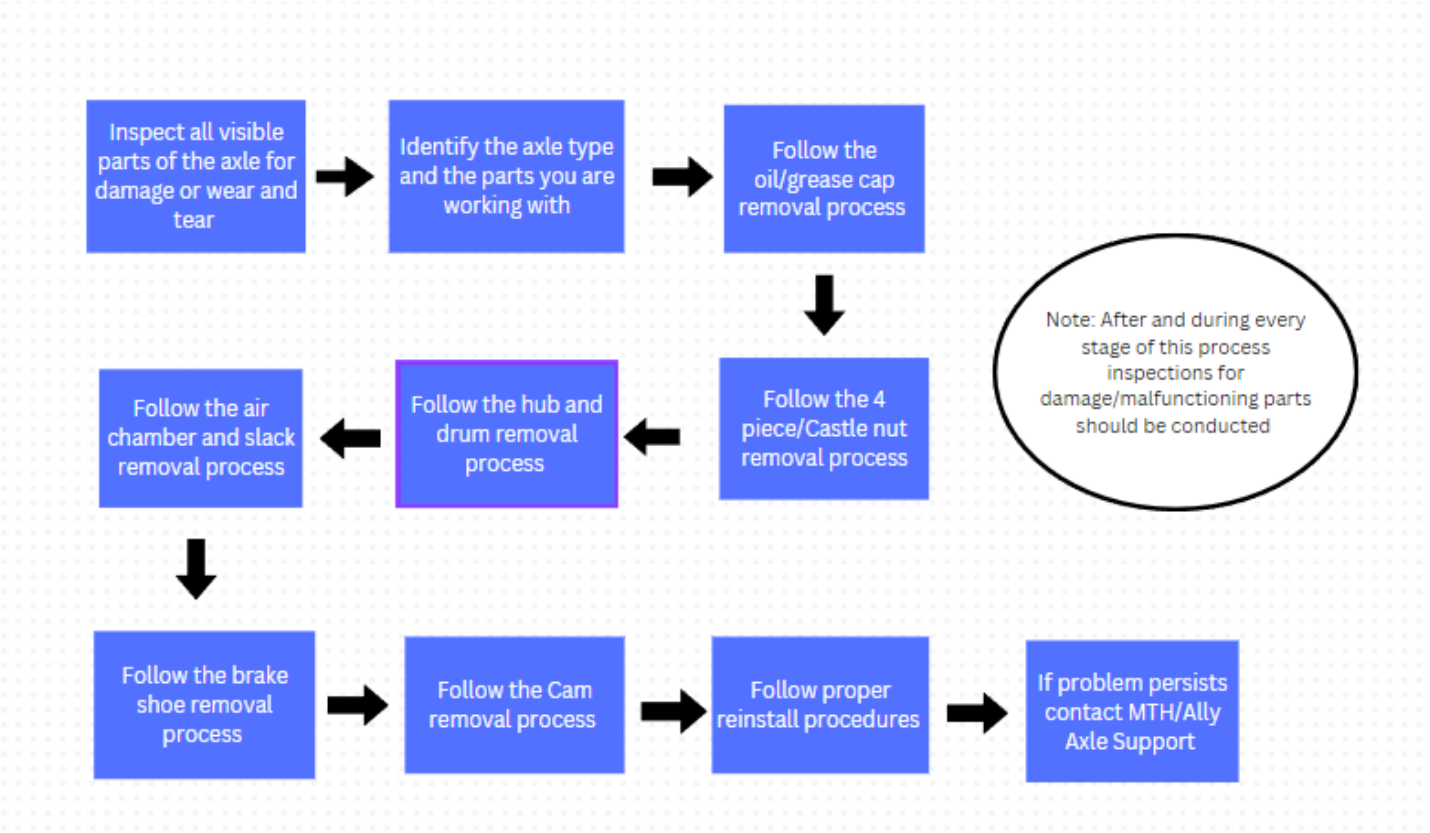
(Figure 3)

Troubleshooting Guide

Perform these checks before disassembly to help diagnose issues. Repeat the checks after reassembly to confirm all steps were completed correctly:

1. Any damage or wear throughout the entire axle.
2. Check all snap rings are present and seated.
3. Check washers are present.
4. Check Cam bracket and air chamber mounting bolts are tightened. Refer to torque specs figure/table (page 45).
5. Lock nuts/washer are installed on cam bracket.
6. Hub fill plug is secure.
7. Oil/grease levels are correct.
8. Inspect all welds for signs of fatigue.

FLOWCHART OF AXLE DIS-ASSEMBLY



Hub Caps

Disassembling the hub cap (Oil/Grease)

1. Remove the bottom four bolts of the hub cap. (see figure A1)
2. Open the bottom of the cap slowly while letting the oil/grease drain into a bucket positioned below the hub cap.
3. Remove the rest of the bolts and take off the hubcap as well as the gasket. (Ref- figure A2)

Figure A1

Figure A2

Reference: Wheel end lubrication recommendations in the procedure are based on TMC RP 631B. Use the lubricant type, viscosity grade as originally supplied.

Assembling the hub cap (Oil/Grease)

1. Align the holes on the gasket and hub cap with the holes of the hub.
2. Install the mounting bolts and hand tighten.
3. Set your torque gun to 15 ft-lbs. of torque.
4. Tighten all the mounting bolts to 15 ft-lbs in a star sequence. (Ref Figure B1 for order)

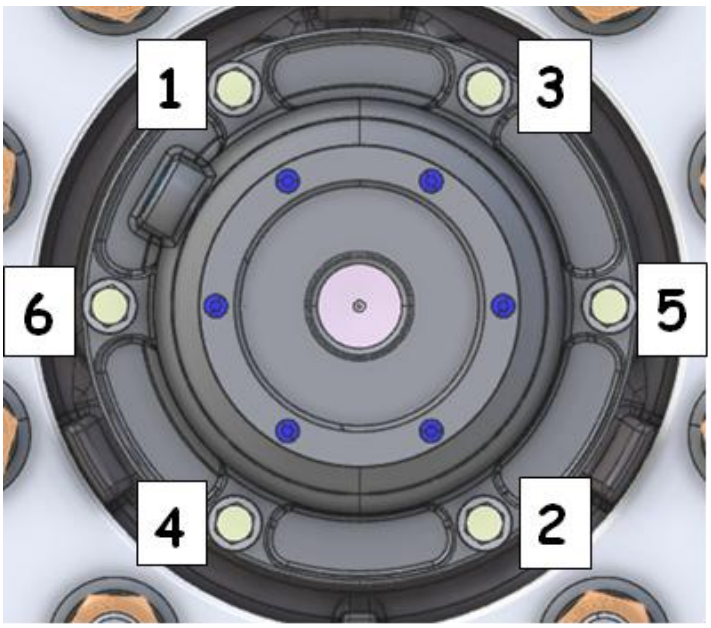


Figure B1

Nut Systems

Four-piece nut removal process

1. Using a pair of pliers bend the tang from the middle washer piece from the front nut so it is straight again. (See figure C1 and C2)
2. Use a breaker bar to remove the first nut from the spindle. (See figure C3)

⚠ CAUTION

Use proper breaker bar technique. Sudden tool slippage may cause hand injuries.

3. Remove the inner two washers by hand from the spindle.
4. Using the breaker bar again remove the inner larger nut from the spindle. (See figure C4)

Reference: Spindle Nut Systems (Four-Piece Nut System and Castle Nut System), Wheel Bearing Adjustment, and End Play Verification – TMC RP 618B Wheel Bearing Adjustment.

This reference provides industry-recognized practices for spindle nut installation and removal, locking device engagement, wheel bearing adjustment, and verification of bearing end play within 0.001”–0.005” (0.025–0.127 mm).

Castle nut removal process

1.) Use a breaker bar to remove the castle nut from the axle

2.) Slide the washer that was behind the castle nut off the spindle

Figure C1

Figure C2

Figure C3

Figure C4

TRU- TORQ Spindle Nut removal process

1. Secure the axle and hub assembly to prevent movement during disassembly.
2. Straighten the locking tang on the lock washer and disengage it from the spindle nut slot.
3. Remove the spindle nut by rotating it counterclockwise.
4. Remove the lock washer from the spindle.
5. Carefully withdraw the outer bearing cone from the hub assembly.

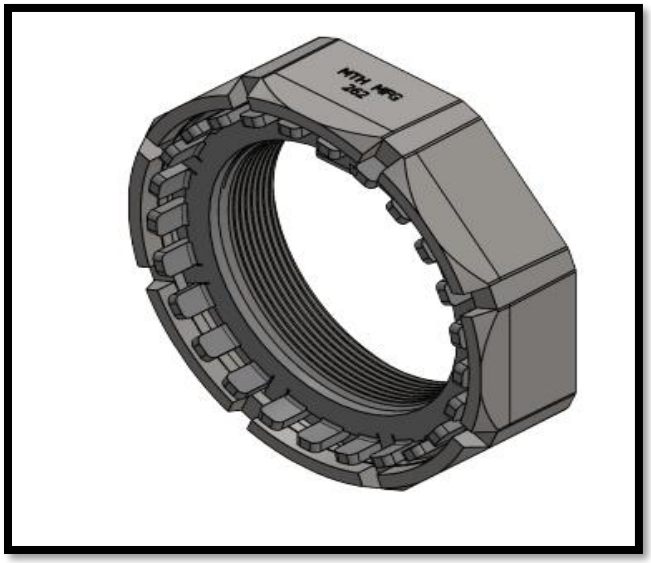


Figure C5

Four-piece nut system (Installation)

1. Ensure threads are clean and free of debris using brush.
2. Install and tighten the inner adjusting nut to 200 lb-ft. using the appropriate torque wrench, while rotating the wheel.
3. Back off the adjusting nut by one full turn (360 degrees) using the breaker bar.
4. Re-torque the adjusting nut to 50 lb-ft using the appropriate torque wrench, while rotating the wheel.
5. Back off the adjusting nut by 1/4 turn (90 degrees) using the breaker bar.
6. Install inner washer. (Ref- fig D1)
7. Install tang washer. (Ref- fig D2)
8. Install Jam nut and tighten to 300-400 lb-ft. (Ref- fig D3 & D4)

For the next steps, verify the end play measurement mentioned under,

End play check/adjustment

This process should only take place after the removal of the hub cap has been completed.

1. Position a dial indicator so that its contact point is aligned with the hub face or hub cap mounting surface. Secure the indicator to prevent movement during measurement. (Ref- fig D5)
2. Verify that the hub is secure. Rotate the hub several times while moving it laterally and axially to ensure the bearings are properly seated.

3. Push the hub inward and then pull it outward while observing the dial indicator. Repeat this movement until a consistent reading is obtained.
4. Record the measured spindle end play.
    - Acceptable end play specification: 0.001”–0.005” (0.025–0.127 mm).
    - If the measured end play is within specification, no adjustment is required.
    - If the measured end play is outside specification, perform the adjustment procedure below.
5. Remove the outer jam nut, tang washer (or tang nut), and lock nut to gain access to the inner adjusting nut.
6. If the measured end play is less than 0.001” (0.025 mm):
    - Loosen the inner adjusting nut by one locking position (hole).
    - Reassemble the locking components as required and recheck end play.
    - Repeat until the measured end play falls within the specified range.
7. If the measured end play is greater than 0.005” (0.127 mm):
    - Tighten the inner adjusting nut by one locking position (hole) for each approximately 0.001” of excess end play.
    - Recheck end play after each adjustment.
    - Continue until the measured end play falls within the specified range.
8. Once the final adjustment is complete, verify that the spindle end play is within specification.

Figure D1

Figure D2

Figure D3

Figure D4

Figure D5

Castle nut (Installation)

1. Slide the inner washer of the nut from the castle nut package to the bearing.
2. Spin the castle nut piece onto the threads of the spindle until it is tight against the inner washer.
3. Torque the castle nut to 250 lbs/ft.
4. Using the breaker bar break the castle nut back by one whole rotation.
5. Retorque to 50 lbs/ft.
6. Using the breaker bar re break the castle nut back by a quarter turn.
7. After the end play check measurement (mentioned below) put the cotter pin that comes with the castle nut through the whole at the front end of the spindle starting from the inside and exiting through the outside
8. Bend the tabs of the cotter pin over the castle nut until it is secure using a pair of pliers.

End play check/adjustment

1. Follow step 1-4 of the four-piece nut endplay check procedure.
2. If the reading is below .001” then loosen the castle nut by one slot using either the breaker bar or by hand.
3. If the reading is above .005” tighten the castle nut by one slot using either the breaker bar or by hand. Repeat this until you have a reading below .005” and above .001”

TRU TORQ- Nut System (Installation)

1. Install the spindle nut onto the spindle and tighten it by hand until snug against the bearing assembly.
2. Using a calibrated torque wrench, tighten the nut to 200 lb-ft (271 N·m). Rotate the hub a minimum of one full revolution.
3. Repeat Step 2 two additional times, tightening the nut to 200 lb-ft (271 N·m) and rotating the hub at least one full revolution after each tightening.
4. Loosen the nut by one full rotation using a breaker bar.
5. Using a calibrated torque wrench, tighten the nut to 100 lb-ft (136 N·m). Rotate the hub a minimum of one full revolution.
6. Repeat Step 5 two additional times, tightening the nut to 100 lb-ft (136 N·m) and rotating the hub at least one full revolution after each tightening.

7. Back off the nut by one-quarter (¼) turn.
8. Measure bearing end play using a dial indicator. The recommended end play range is 0.001”- 0.005” (0.025 mm to 0.127 mm).
9. Bend the locking tang on the lock washer into the corresponding slot on the spindle nut to secure the adjustment.

NOTE: Failure to properly engage the tang could cause the wheel to come off. Always inspect the washer as it may need to be replaced due to fatigue if it has been reused.

Hub And Drum Maintenance Inspection

Inspect the hub regularly for seal leaks, smooth rotation, brake damage, excessive wear, and brake shoe contact with the hub.

Outer Hub Bearing Removal

1. Attach magnet to Head of the hub. (Ref- fig E3)
2. Attempt to remove the outer bearing by hand by pulling outwards.
3. If step 2 does not work, use a pair of pliers to slowly remove the outer bearing. (Ref- Fig E1 and E2)

⚠ CAUTION

Bearings may drop unexpectedly during removal. Support bearing to prevent damage or injury.

Figure E1

Figure E2

Hub and Drum Removal

1. Attach a suitable lifting device to the hub as shown in Figure E3.
2. Apply sufficient lifting force to support the weight of the hub and drum assembly before removal from the spindle.

DANGER

Use an approved lifting device. Failure to properly support the assembly may result in serious injuries.

3. Carefully slide the hub and drum assembly off the spindle. If necessary, apply controlled force to the rear of the assembly to assist removal.
4. Verify that the lifting device is fully supporting the assembly before completely removing it from the spindle.
5. Lower the hub and drum assembly onto a clean, stable surface. Avoid impact or sudden loading that could damage the bearings, seals, or brake components.

Figure E3

Figure E4

Figure E5

Hub and Drum Installation

1. Verify that the hub seal and inner bearing cone are correctly installed in the hub assembly. (Ref- fig F1)
2. Position the hub assembly on its side to prepare for installation. (Ref- fig F2)
3. Attach a suitable lifting device to a wheel stud using an approved lifting eye. Secure the lifting eye with a wheel nut before lifting the assembly. (Ref- fig F3)
4. Raise and position the hub assembly so that the hub bore is aligned with the axle spindle centerline. (Ref- fig F4)
5. Carefully slide the hub assembly onto the spindle until the inner bearing cone engages the inner bearing journal. (Ref- fig F5)
6. Install the outer bearing onto the spindle and continue sliding the hub assembly inward until the inner bearing cone is fully seated on the bearing journal. (Ref- fig F6)

Figure F1

Figure F2

Figure F3

Figure F4

Figure F5

Figure F6

Air chambers Removal

1. Remove the clevis cotter pin with pliers. (Ref- fig G1)
2. Slide the clevis pin out of the clevis.
3. Remove the air chamber mounting nuts and washers. (Ref- fig G3 & G4)

Figure G1

Figure G2

Figure G3

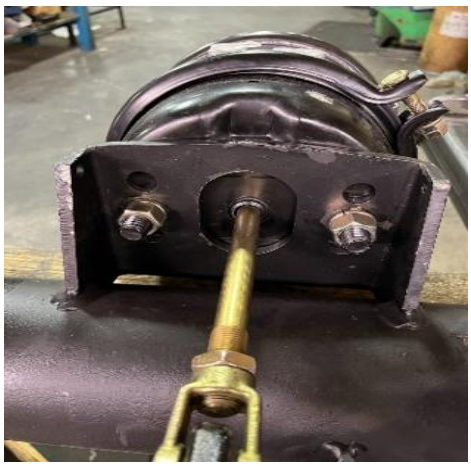


Figure G4

Slack Removal

1. Remove the adjusting lock nut on the bottom of the slack by undoing the nut attaching the adjusting lock nut and the bracket. (Ref- fig H1 & H2)
2. Remove the snap ring and the washers behind it from the edge of the cam using snap ring pliers. (Ref- fig H3 & H4)

   ⚠ CAUTION Snap rings may eject during removal. Wear safety glasses.

3. Slide the slack to the edge of the cam tube then remove it from the cam.

Figure H1

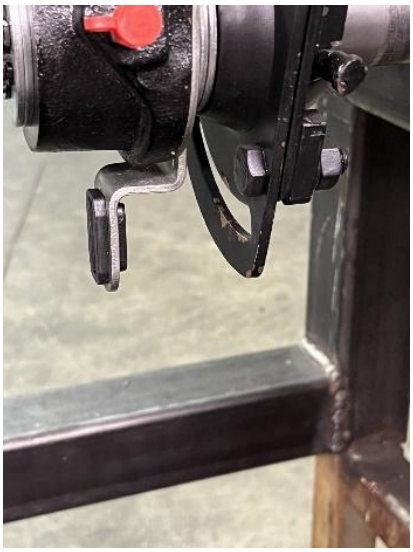


Figure H2

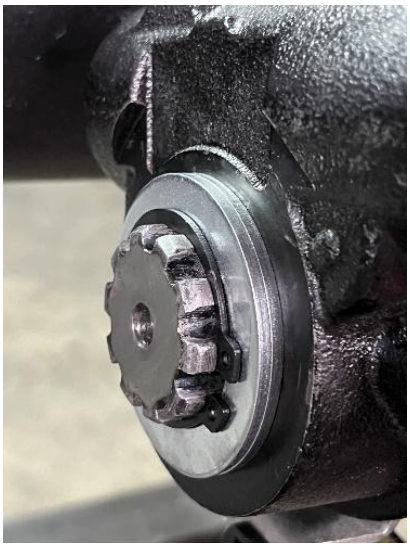


Figure H3

Figure H4

Figure H5

Figure H6

Air chamber installation

1. Verify that the air chamber part number matches the specified application requirements.
2. Remove the hex nut, flat washer, lock washer, clevis pin, and cotter pin from the air chamber before installation. (Ref- fig I1)
3. Position the pushrod gauge flush against the air chamber mounting face. Adjust the clevis on the pushrod until the clevis pin hole is aligned with the corresponding hole in the gauge. (Ref- fig I2)
4. Install the air chamber into the mounting bracket. Install the washers and mounting nuts, then tighten the hardware to 130–150 lb-ft (176–203 Nm.) (Ref- fig I3)
5. Rotate the slack adjuster using a torque wrench on the adjusting nut until the slack adjuster clevis hole aligns with the pushrod clevis hole. Adjust the clevis position as required to achieve proper alignment. Ensure the pushrod length remains within the specified 0–3/16 in. (0–4.8 mm) tolerance. (Ref- Fig I4)
6. Align the slack adjuster and pushrod clevis holes. Insert the clevis pin through both components and secure it with a cotter pin. Bend the cotter pin legs to prevent accidental removal. (Ref- fig I5, I6 & I7)
7. Install the slack adjuster control arm by inserting the adjusting lock into the control arm bushing and positioning the stud in the cam bracket slot. Install and tighten the locknut to secure the assembly. (Ref- fig I8)

8. Tighten the jam nut against the rear face of the clevis while holding the clevis stationary. Ensure the jam nut is tightened to lock the adjustment and prevent pushrod rotation. (Ref- fig I9)
9. Lubricate the slack adjuster and spider bracket grease fittings with the specified grease until lubricant is observed purging from the bearing surfaces. (Ref- fig I10 & I11)

NOTE: When replacing an air chamber, install the same stroke type as originally equipped (long-stroke to long-stroke or standard-stroke to standard-stroke). After adjustment, ensure the distance between the pushrod clevis and slack adjuster clevis does not exceed 3/16 in. (4.8 mm)

⚠ CAUTION

Keep fingers clear when aligning clevis and slack adjuster to avoid pinch injuries.

Figure I1

Figure I2

Figure I3

Figure I4

Figure I5

Figure I6

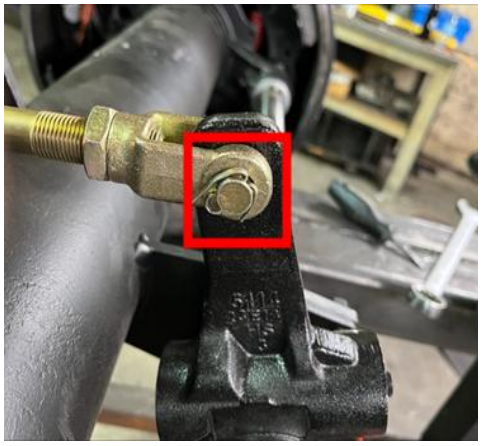


Figure I7

Figure I8

Figure I9

Figure I10

Figure I11

Brake Shoe Removal Procedure

1. Remove the pair of brake springs connecting the two brake shoes. (Ref- Fig J2 & J3)

   ⚠DANGER

   Brake springs have enough compression to spring off while removing or putting on. Always wear safety glasses.

2. Remove the brake shoes. (Ref- fig J4 & J5)

   ⚠DANGER

   Brake shoes are heavy and should be handled with care. Make sure to always wear safety shoes.

3. Remove anchor pins.

4. Place the assembly in a safe location.

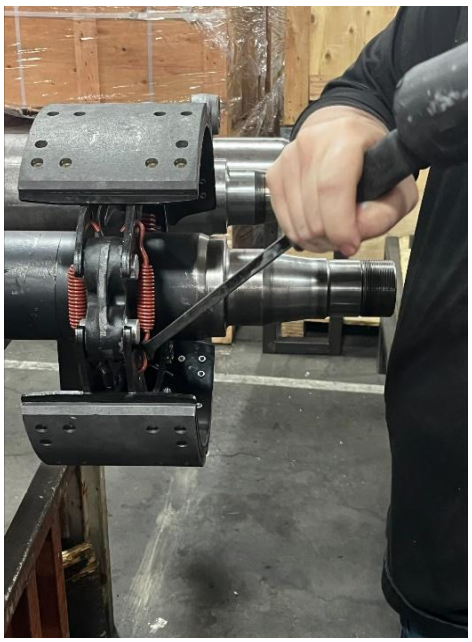


Figure J1

Figure J2

Figure J3

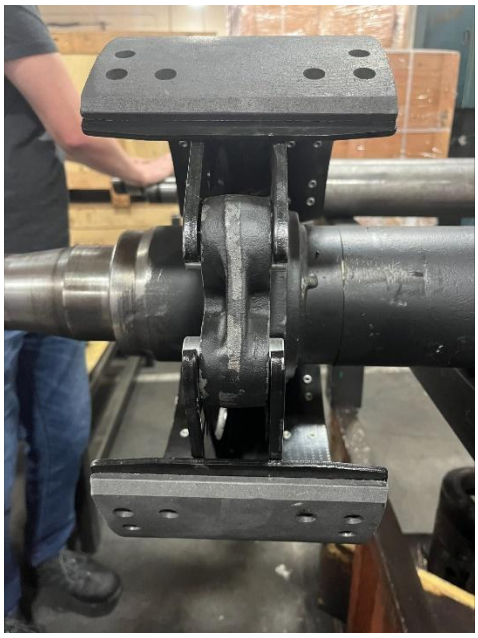


Figure J4

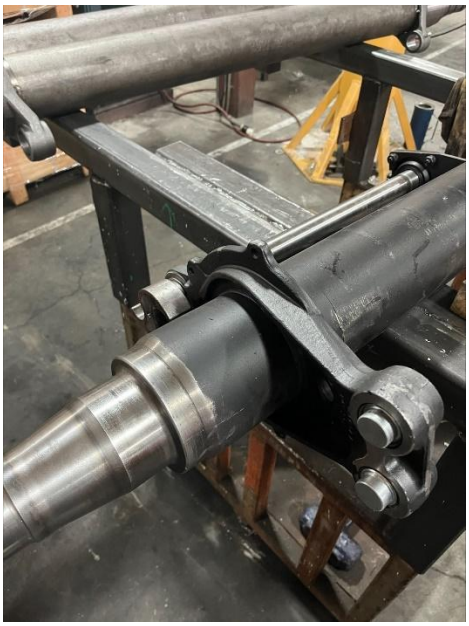


Figure J5

Brake Shoe Installation

1. Apply a light coating of specific anti-seize compound to both anchor pin bores in the brake spider. (Ref- fig K1)
2. Install an anchor pin into each anchor pin bore of the brake spider. Ensure both anchor pins are fully seated. (Ref- fig K2)
3. Install the spring retention pin into the brake shoe retention hole. (Ref- fig K3)
4. Install the roller retainer into the designated retainer pocket. (Ref- fig K4)
5. Connect the two brake shoes using the specified brake return spring Ensure the correct spring is installed for the brake size. (Ref- fig K5)

6. Position one brake shoe so that the cam roller is seated in the S-cam. Lower the opposite end of the brake shoe onto the anchor pin. (Ref- fig K6)
7. Position the second brake shoe by seating the cam roller in the opposite side of the S-cam and placing the shoe onto the remaining anchor pin. (Ref- fig K7)
8. Hook the two small brake return springs into the brake shoe holes and, using the spring extension tool, insert the hook into the opposing holes on both sides. (Ref- fig K8)

NOTE: MTH recommends replacing brake return springs, retainer springs, and related brake shoe retention hardware whenever brake shoes are replaced. Reuse of worn or fatigued springs may result in reduced brake performance, uneven lining wear, or improper brake shoe retention

Figure K1

Figure K2

Figure K3

Figure K4

Figure K5

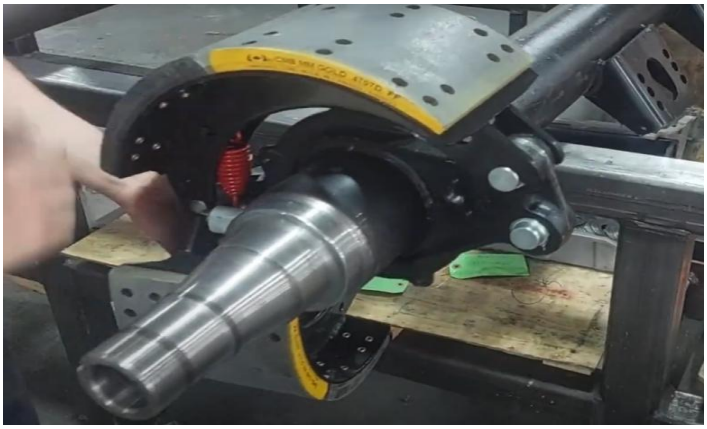


Figure K6

Figure K7

Figure K8

Cam Removal process

For Cam Tube:

1.) Use the snap ring pliers to remove the outer snap ring off the cam.
2.) Remove the outer washers from the cam.
3.) Remove the cam from the cam tube.

For Brackets

1.) Use the snap ring pliers to remove the outer snap ring.
2.) Remove the outer washers.
3.) Remove the inner snap ring while pulling the cam out of the axle.

Cam Installation

1. Install the correct cam side (right-hand side or left-hand side) on the side of the axle. (Ref-fig L1)
2. Confirm the S-cam head size corresponds to the brake size.
    - 12-1/4” brakes- small S-cam head
    - 16-1/2” brakes- large S-cam head
3. Install the appropriate washer onto the S-camshaft.
    - 12-1/4” brakes- D-washer
    - 16-1/2” brakes- thick (.100”) washer

    Slide the washer against the cam.

4. Insert the S-camshaft through the spider cam bore. Before the spline end reaches the cam bracket, install the inboard thin (0.060”) washer and snap ring. Continue sliding the camshaft through the cam bracket bushing and seat the snap ring in its groove at the spider end of the camshaft. (Ref-fig L3 & L4)
5. Apply a light coating of specified anti-seize compound to the camshaft splines (Ref- fig L5)
6. Install three thick washers onto the spline end of the camshaft & if slack adjuster is used, install into camshaft splines.
7. For 10- spline camshafts, install two additional cam washers onto the spline end & for 28- spline camshafts, install three additional cam washers into the spline end.
8. Install the outboard snap ring and ensure it is fully seated in the snap ring groove.

NOTE: Check the slack adjuster is centered with air chamber clevis. Adjust washer configuration as required to achieve proper alignment and ensure the pushrod and slack adjuster properly operate.

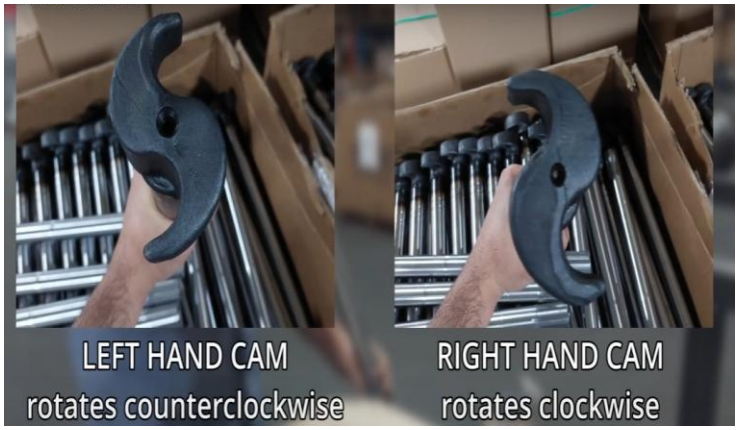


Figure L1

Figure L2

Figure L3

Figure L4

Figure L5

DISC BRAKE

Air Disc Hub & rotor

Removal process of Air disc Hub & Rotor

1. Secure the axle assembly to prevent movement.
2. Remove the hub cap, by removing hubcap bolts using impact driver (reverse direction).
3. Remove the outer bearing from the spindle.
4. Attach the lifting eye to a wheel stud and secure it with a wheel nut.
5. Support the hub-rotor assembly using a balancer & carefully slide the hub assembly off the spindle.

   ⚠DANGER

   Use an approved lifting device. Failure to properly support the assembly may result in serious injuries
6. Remove the inner bearing and seal if inspection or replacement is required.

Installation procedure for Air disc Hub & Rotor

1. Secure the axle to prevent movement during installation.
2. Verify the hub-rotor assembly part number matches the vehicle specification.
3. Inspect the hub assembly and confirm.
    - Hub seal is properly installed.
    - Inner bearing cone is installed and seated correctly.
4. Position the hub assembly for installation.
5. Attach a lifting eye to a wheel stud and secure it with a wheel nut.
6. Using a suitable lifting device, raise the hub assembly and align the hub bore with the axle spindle centerline. (Refer- Figure M2)
7. Carefully slide the hub assembly onto the spindle until the inner bearing cone fully engages the spindle bearing journal.
8. Install the outer bearing onto the spindle.

Figure M1

Figure M2

PAN 17 & PAN 22 Brake caliper

Removal of PAN 17 & PAN 22 brake caliper

1. Chock wheels & secure vehicle against movement.
2. Release Air chamber by removing the air chamber mounting nuts.
3. Loose and remove the six caliper mounting bolts using a cross-sequence pattern.
4. Carefully lift the caliper away from the rotor.

⚠ DANGER

Caliper assemblies are heavy. Support the caliper during removal to prevent serious injuries

Assembly process of PAN 17 & PAN 22 Brake caliper

1. Verify the caliper part number matches with vehicle specification.
2. Confirm the rotor and 4-piece nut system are correctly installed.
3. Position the caliper over the rotor with larger side of the caliper facing inward toward the axle. (Ref- fig N1)
4. Align the caliper mounting holes with mounting bracket.
5. Install six caliper mounting bolts using battery torque wrench (Ref- Torque specs in Table) (Ref- Fig N2)
6. Tighten the mounting bolts using an alternating cross pattern sequence

⚠ CAUTION

Verify all mounting bolts are torqued to specification. Improper torque may result in brake failure

7. Install the air chamber with air port facing upward unless otherwise specified. (Ref- Fig N3)
8. Tighten the air chamber mounting nuts to 130-150 ft-lb & verify free movement & proper alignment of the caliper assembly.

Figure N1

Figure N2

Figure N3

TORQUE SPECIFICATIONS

The following torque specifications are for all the required

MTH MANUFACTURING TORQUE SPECIFIFCATION TABLE						
Part Name	Part code	Initial Torque (lbs/ft)	First break	Second Torque (lbs/ft	Second Break	Final Torque (lbs/ft)
Cam bracket nuts	WH 8.8	40	N/A	N/A	N/A	N/A
Zip- Torq nut	4530123	200-250	Rotate hub 360°	200-250	Rotate hub 360°	200-250
Hub Cap Bolts	M16X40	16	N/A	N/A	N/A	N/A
Caliper Bolts PAN17	M14X1.5-45MM	160	N/A	N/A	N/A	N/A
Caliper Bolts PAN22	M20X55 HEX HEAD	500	N/A	N/A	N/A	N/A
Air Chamber Nuts	AC3030-X	130-150	N/A	N/A	N/A	N/A
Hub Cap Fill Plug	HCA-O	10	N/A	N/A	N/A	N/A
Hub Cap Fill Plug	HCA-G	10	N/A	N/A	N/A	N/A
Hub Fill Plug	HCA-O	20	N/A	N/A	N/A	N/A
Hub Fill Plug	HCA-G	20	N/A	N/A	N/A	N/A
Inner Adjusting Nut	SPN262-4I	200	Full Turn 360°	50	1/4 Turn 90°	N/A
Jam Nut	SPN262-4A	300-400	N/A	N/A	N/A	N/A
Tru Torq Nut	SPN262-A	200	Full Turn 360°	100	1/4 Turn 90°	N/A
Castle Nut	SPN348-CK	250	Full Turn 360°	50	1/4 Turn 90°	N/A

NOTE: Torque specifications contained in this manual apply only to MTH-recommended assemblies and procedures. When servicing proprietary components (e.g., brakes, hubs, wheel ends, slack adjusters, air chambers, ABS components), refer to the component manufacturer's latest service documentation for approved torque requirements.