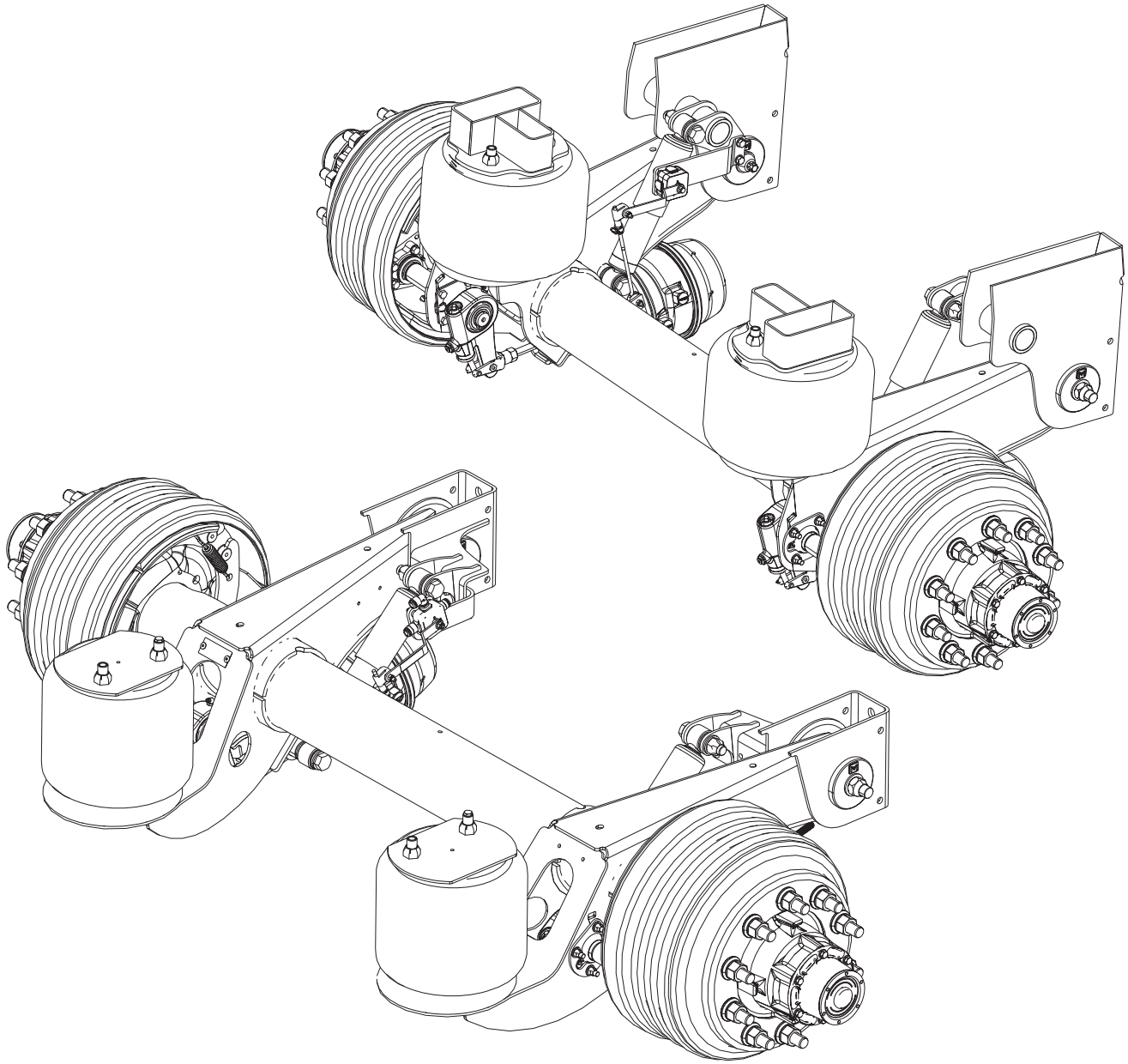
April 2020

MERITOR TRAILER AIR SUSPENSION SYSTEMS MTA-TEC6™ SERIES



(16579)
Printed in USA

About This Manual

This manual provides service and repair procedures for Meritor MTA-Tec6™ series trailer air suspension systems.

Before You Begin

1. Read and understand all instructions and procedures before you begin to service components.
2. Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.
3. Follow your company's maintenance and service, installation, and diagnostics guidelines.
4. Use special tools when required to help avoid serious personal injury and damage to components.

Hazard Alert Messages and Torque Symbols

⚠ WARNING

A Warning alerts you to an instruction or procedure that you must follow exactly to avoid serious personal injury and damage to components.

⚠ CAUTION

A Caution alerts you to an instruction or procedure that you must follow exactly to avoid damage to components.

This symbol alerts you to tighten fasteners to a specified torque value.

How to Obtain Additional Maintenance, Service and Product Information

Visit Literature on Demand at www.meritor.com/lod to access and order additional information.

Contact the Meritor OnTrac™ Customer Call Center at 866-668-7221 (United States and Canada); 001-800-889-1834 (Mexico); or email OnTrac@meritor.com.

If Tools and Supplies are Specified in This Manual

Contact Meritor's Commercial Vehicle Aftermarket at 888-725-9355.

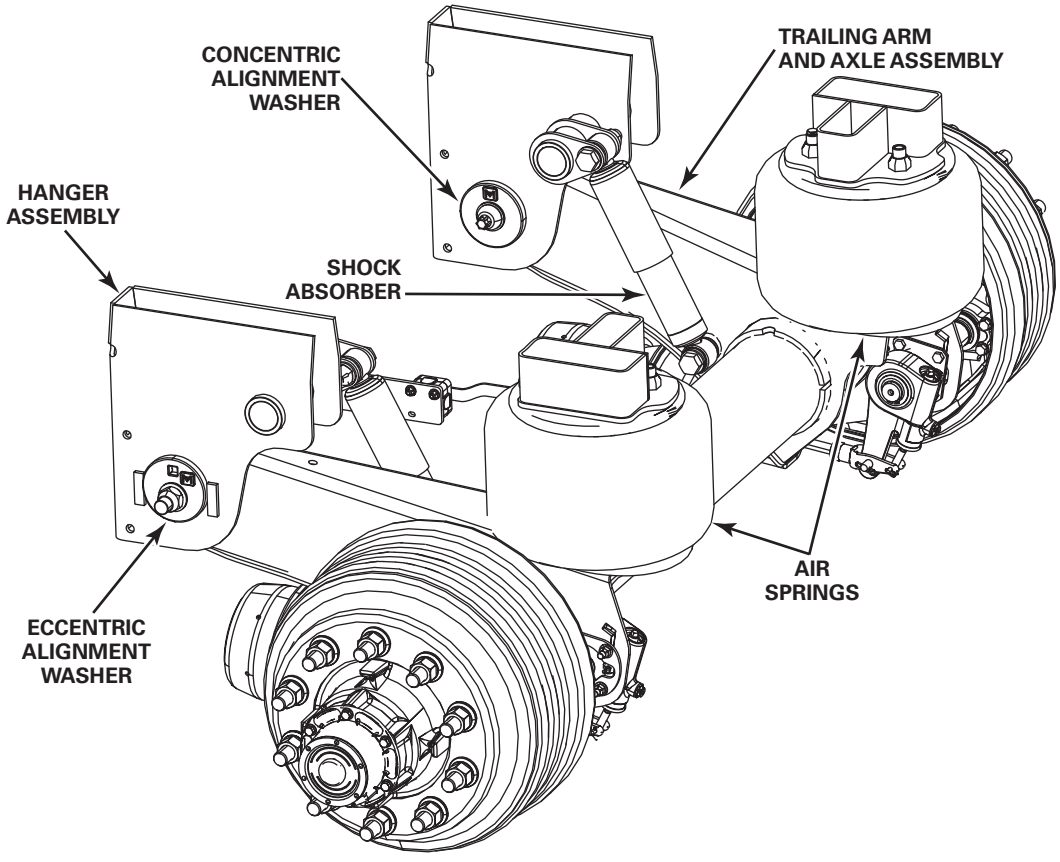
Contents

Description

Meritor MTA-Tec6 Series Trailer Air Suspension Components

The Meritor MTA-Tec6 Series air suspension system is designed with trailing arms mounted onto the axle, parallel to each other and perpendicular to the axle. A pivot bushing, hanger assembly and alignment washers are mounted to the front of each trailing arm. The rear of the trailing arm supports the air spring. Figure 1.1.

MTA-Tec6 series suspensions are available in both top and low mount versions. Top mount models are designated with a “T” and low mount models are designated with an “L” throughout this manual.



The MTA-Tec6 “T” model is shown for illustrative purposes. Similar components are used on the MTA-Tec6 “L” model and the same information applies.

Figure 1.1

Air Control Systems

Meritor air suspensions are available with various types of air control systems. The most common system automatically maintains the designed ride height by controlling the air pressure supplied to the air springs.

When the suspension is used in combination with other types of suspensions, such as mechanical leaf spring, a manually-operated pressure regulator is typically used. The amount of air pressure in the air springs dictates the ride-height setting and the load at the axle. All air control systems operate from the vehicle’s compressed air supply.

A typical air control system using a Meritor air suspension system is shown in Figure 1.2 and Figure 1.3. A single height control valve — regardless of how many primary air suspensions are used — operates the system. The height control valve maintains the required amount of air pressure for all air springs.

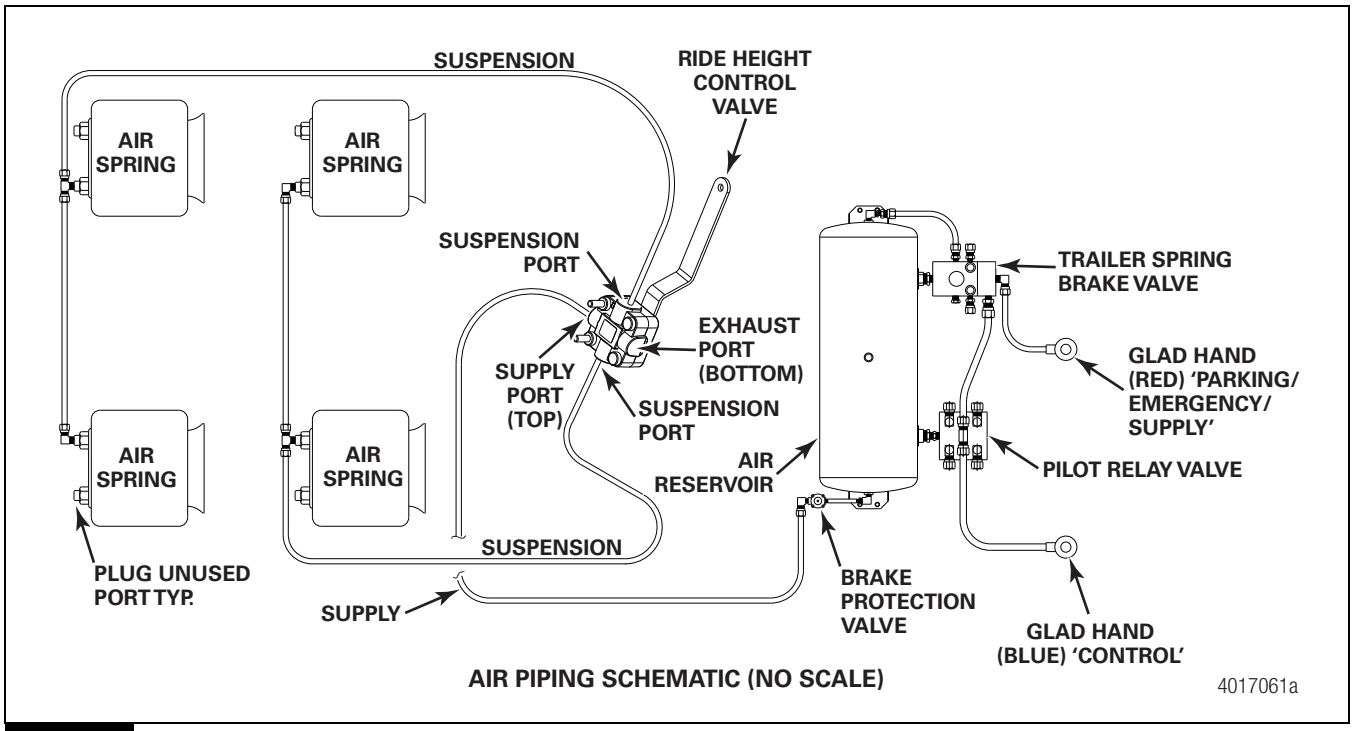


Figure 1.2

Height Control Valve

Meritor air suspensions use a single ride height control valve (RHCV) that automatically controls the amount of air pressure required to maintain the correct ride height. Once the ride height is set, only variations in load affect the adding or exhausting of air.

The suspension is mechanically roll-stable and only requires one RHCV to maintain the correct ride height, including two, three, four or more axles. Meritor recommends that you position the RHCV on the rear axle of a tandem axle, and the center axle of a tri-axle application.

How the HCV Works

- When the actuating arm of the RHCV moves UP, supply air is added to the air springs. When the arm returns to the neutral position, the valve shuts off.
- When the actuating arm moves into the DOWN position, the RHCV exhausts air from the air springs, until the valve reaches the neutral position and shuts off.
- Neutral position maintains the correct ride height.

Air Dump Valves

⚠ WARNING

When loading or unloading a trailer, use the air dump valve to exhaust air pressure from the suspension air springs simultaneously before you set the trailer parking brakes. If you do not correctly exhaust air pressure, variations in trailer deck height or suspension ride height can occur, which will cause the trailer to move forward and backward. Also changes in the load supported by the suspension can cause the trailer to move away from the dock ("dock walk"). Damage to the landing legs can occur, or they can collapse. If the trailer moves too far from the dock, serious personal injury can result.

An air dump valve maintains solid vertical trailer floor height during loading and unloading. The dump valve exhausts air from the air springs and lowers the suspension to the bump stops, which are at full jounce of the suspension.Figure 1.3.

Meritor only approves the installation of an air dump valve when the valve exhausts all suspension air springs simultaneously. Refer to the list below for other Meritor-approved applications.

- A trailer parked for any period of time, loaded or unloaded; as well as sitting on landing legs or coupled to the towing vehicle.
- A trailer being loaded or unloaded when fork lifts are used.
- A dump trailer during the loading or dump mode only.
- A trailer during an immediate off-loading-of cargo condition; for example, coil steel removal.

For any variations to these applications, call the Meritor OnTrac™ Customer Service Center at 866-OnTrac1 (668-7221) to obtain approval in writing.

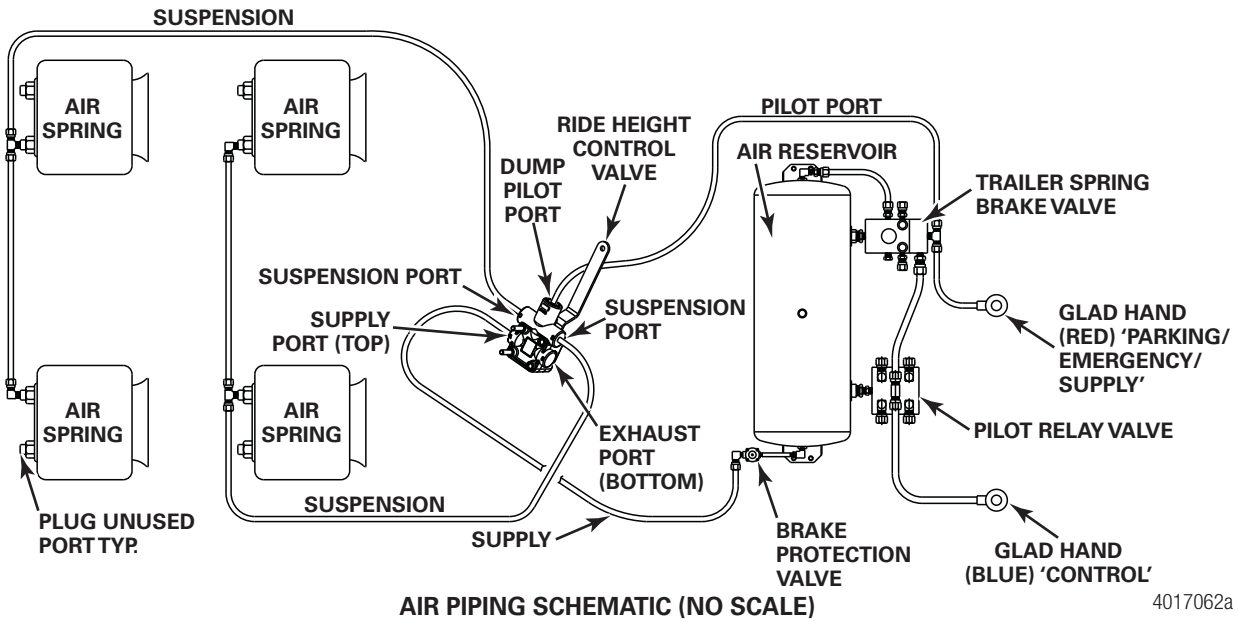


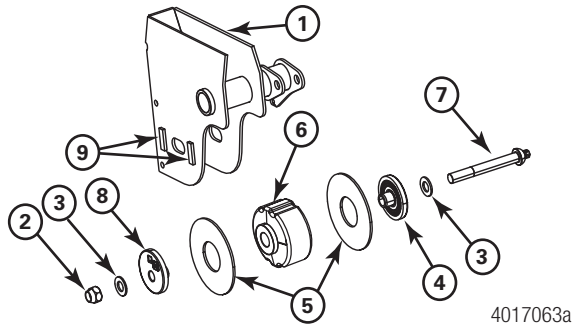
Figure 1.3

Pivot Connection

For MTA-Tec6, the pivot connection uses a new head-shearing type bolt. This is to simplify the bolt tightening process and ensure the optimum pivot joint is consistently achieved for the design. After the bolt has been installed and the axle has been aligned to specifications, tighten the bolt until the Torx head is sheared off (while holding on the nut side). The shear pivot bolt cannot be re-used after the head is sheared off. For installation/removal of the bolt, refer to Section 6. Figure 1.4 and Figure 1.5.

⚠ WARNING

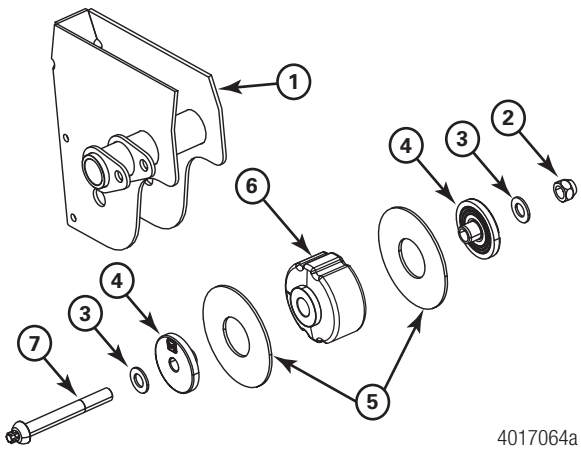
Any application of lubricant or compound to the threads of the pivot fasteners, bolt and nut is prohibited as it can drastically affect clamp load, resulting in an unsafe pivot connection. An incorrect pivot connection can result in loss of vehicle control, serious personal injury and damage to components.



1 ROADSIDE HANGER ASSEMBLY
2 7/8″ GRADE C LOCKNUT
3 7/8″ FLAT WASHER, SMALL
4 CONCENTRIC ALIGNMENT WASHER
5 BUSHING SPACER
6 PIVOT BUSHING
7 SHEAR PIVOT BOLT
8 ECCENTRIC ALIGNMENT WASHER
9 ALIGNMENT BLOCKS

MTA-Tec6 “T” MODEL

Figure 1.4



1 CURBSIDE HANGER ASSEMBLY
2 7/8″ GRADE C LOCKNUT
3 7/8″ FLAT WASHER, SMALL
4 CONCENTRIC ALIGNMENT WASHER
5 BUSHING SPACER
6 PIVOT BUSHING
7 SHEAR PIVOT BOLT

MTA-Tec6 “T” MODEL

Figure 1.5

Model Nomenclature

An identification tag is located on the axle trailing arm. To obtain replacement parts, refer to the Service Notes page at the beginning of this manual and specify the model number on the tag. Figure 1.6.

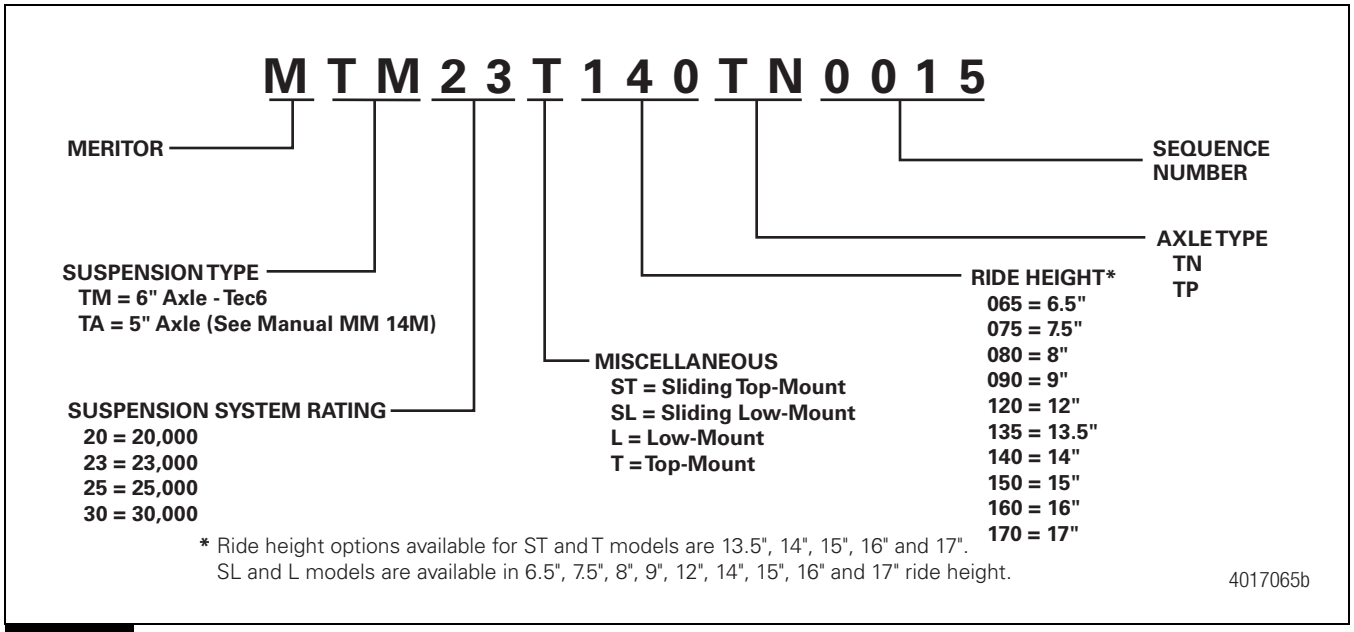
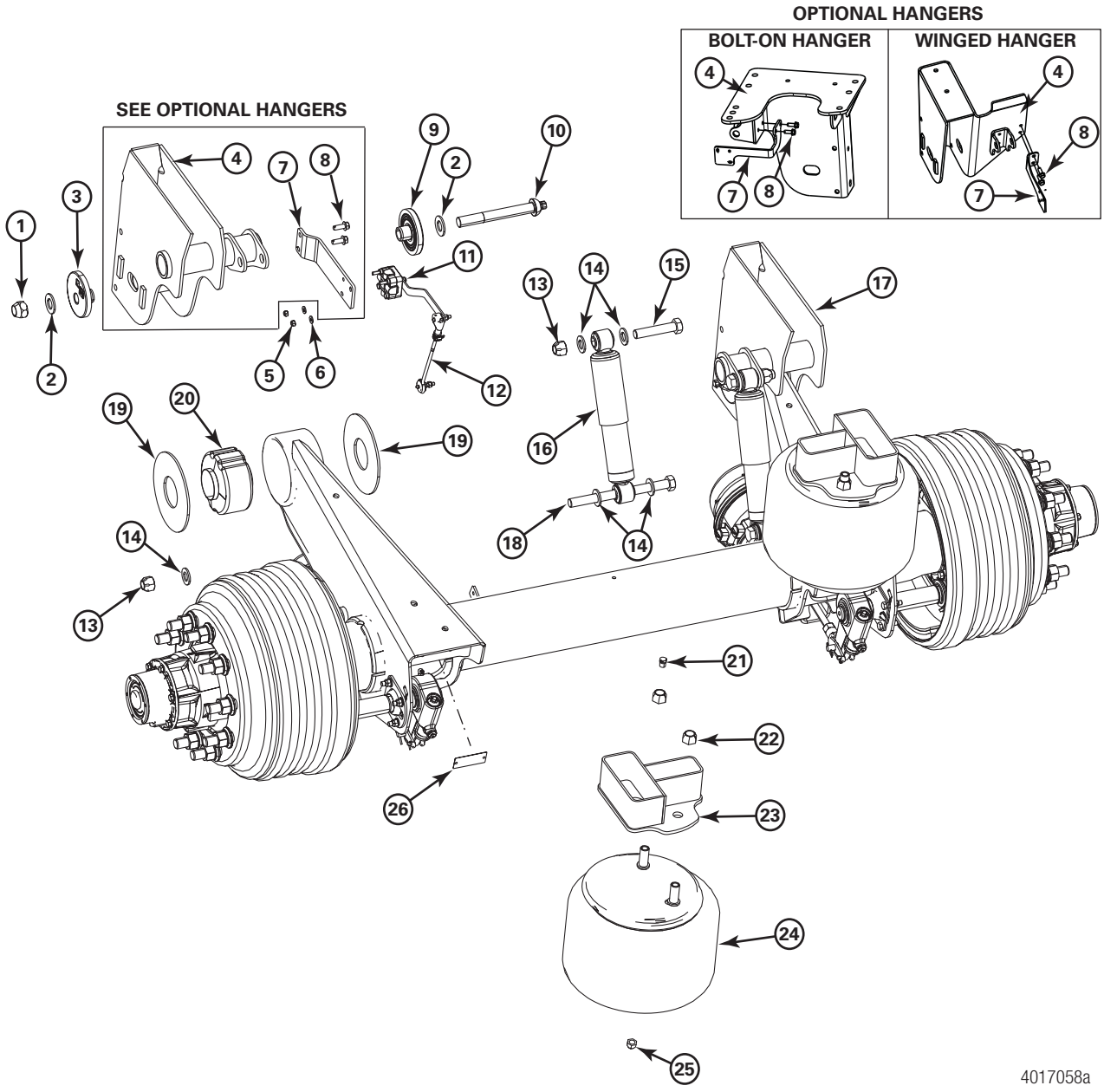

M T M 2 3 T 1 4 0 T N 0 0 1 5
MERITOR
SUSPENSION TYPE
TM = 6" Axle - Tec6
TA = 5" Axle (See Manual MM 14M)
SUSPENSION SYSTEM RATING
20 = 20,000
23 = 23,000
25 = 25,000
30 = 30,000
MISCELLANEOUS
ST = Sliding Top-Mount
SL = Sliding Low-Mount
L = Low-Mount
T = Top-Mount
RIDE HEIGHT*
065 = 6.5"
075 = 7.5"
080 = 8"
090 = 9"
120 = 12"
135 = 13.5"
140 = 14"
150 = 15"
160 = 16"
170 = 17"
AXLE TYPE
TN
TP
SEQUENCE NUMBER
* Ride height options available for ST and T models are 13.5", 14", 15", 16" and 17".
SL and L models are available in 6.5", 7.5", 8", 9", 12", 14", 15", 16" and 17" ride height.
4017065b

Figure 1.6

MTA-Tec6 “T” Model Suspension

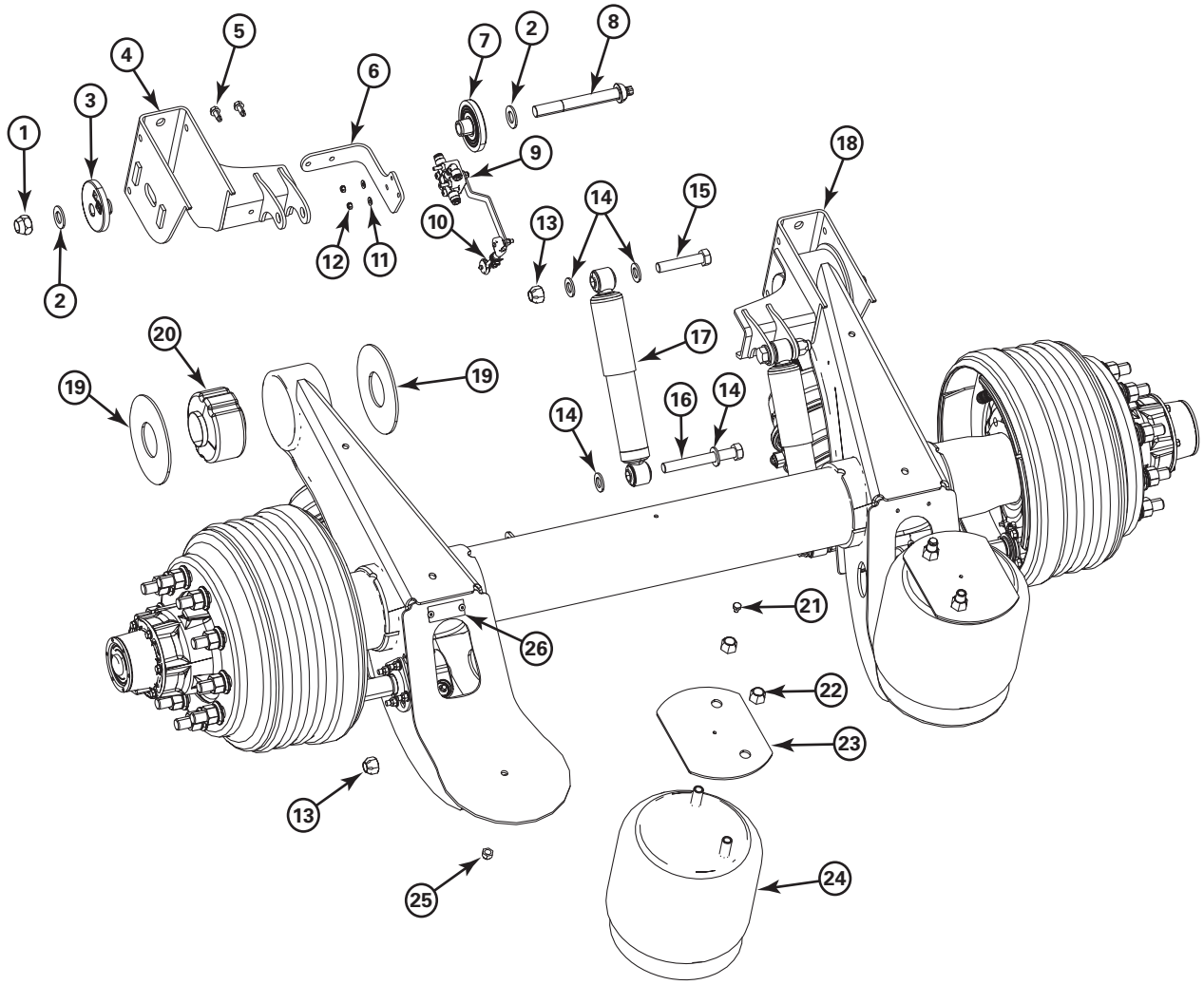


Item	Description	Item	Description
1	Locknut	7	Bracket
2	Washer	8	Self-Tapping Screw
3	Eccentric Washer, Roadside Only	9	Concentric Washer
4	Frame Bracket Assembly, LH (Roadside)	10	Shear Pivot Bolt
5	Locknut	11	Ride Height Control Valve
6	Washer	12	Ride Height Control Adjustable Linkage

Item	Description
13	Locknut
14	Washer
15	Hex Bolt
16	Shock Absorber
17	Frame Bracket Assembly, RH (Curbside)
18	Hex Bolt
19	Bushing Spacer
20	Pivot Bushing
21	Plug
22	Locknut
23	Air Spring Pedestal
24	Air Spring
25	Locknut
26	Identification Tag

2 Exploded Views

MTA-Tec6 “L” Model Suspension



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Item	Description
1	Locknut
2	Washer
3	Eccentric Washer, Roadside Only
4	Frame Bracket Assembly, LH (Roadside)
5	Self-Tapping Screw
6	Bracket
7	Concentric Washer
8	Shear Pivot Bolt

Item	Description
9	Ride Height Control Valve
10	Ride Height Control Adjustable Linkage
11	Washer
12	Locknut
13	Locknut
14	Washer
15	Hex Bolt
16	Hex Bolt

Item	Description
17	Shock Absorber
18	Frame Bracket Assembly, RH (Curbside)
19	Bushing Spacer
20	Pivot Bushing
21	Plug
22	Locknut
23	Air Spring Pedestal
24	Air Spring
25	Locknut
26	Identification Tag

Suspension Ride Height

Suspension ride height is the distance from the centerline of the axle to the underside of the trailer frame. Figure 3.1.

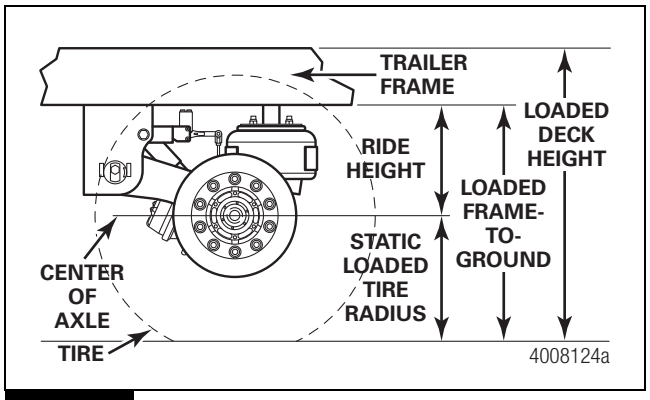


Figure 3.1

All Meritor air suspensions are designed to operate at a specific ride height, which must be maintained during the life of the suspension. Otherwise incorrect loading can occur, which can affect suspension performance, shorten component life and void the Meritor warranty.

Operating a vehicle with ride height higher than specified by the application can cause the trailer to be over the legal height limit, depending on the type of trailer and payload.

To obtain the correct ride-height specification, check the suspension's identification tag located on the rear of the trailing arm. Also refer to Section 1.

How to Determine the Correct Ride Height

Consider the following factors when you determine the correct suspension ride height.

NOTE: If a variation of suspension ride height is required at each location, contact the Meritor OnTrac Customer Service Center at 866-OnTrac1 (668-7221) for assistance.

Frame-to-Ground Distance

You must measure the distance from the bottom of the trailer frame to the ground at each suspension location. Figure 3.2. This measurement determines the required trailer deck height.

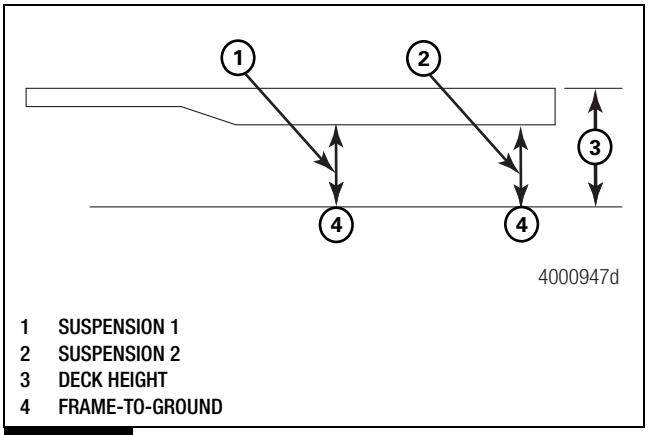


Figure 3.2

Trailer Deck Height

To calculate the required suspension ride height, subtract the tire's static loaded radius from the loaded frame-to-ground dimension. Figure 3.1.

Fifth-Wheel Height

A trailer frame's fifth-wheel height can affect the slope of the trailer frame. For example, a low fifth-wheel height will cause the trailer frame to slope DOWNWARD toward the front. Determine the correct ride height at each suspension. Figure 3.3.

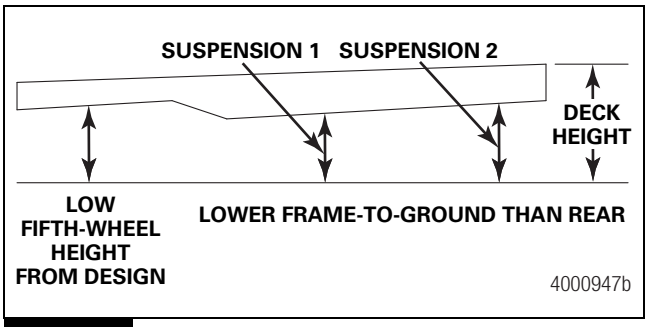


Figure 3.3

Trailer Frame Deflection

When the suspension was installed, ride height was determined without a load on the trailer. Trailer frame deflection can occur when the trailer is loaded and will change ride height. Be sure to allow for frame deflection when you determine the correct ride height at each suspension. Figure 3.4.

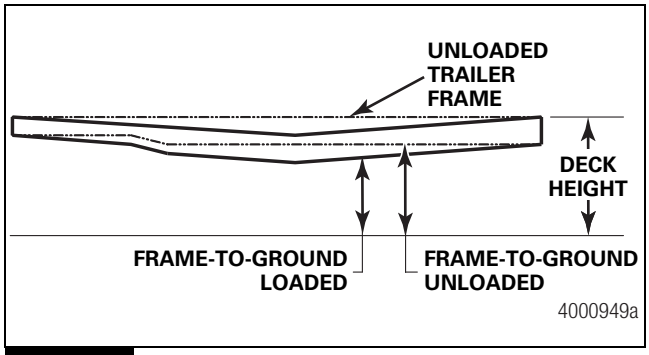


Figure 3.4

Auxiliary Air Suspension Lift Axles (Loaded Frame-to-Ground)

You must determine the loaded frame-to-ground measurement of auxiliary air suspension lift axles at each suspension location. Figure 3.5. A leaf-spring suspension's ride height changes under various loads and the auxiliary lift axles must be spec'd to meet the ride height of the loaded leaf-spring suspension for correct operation.

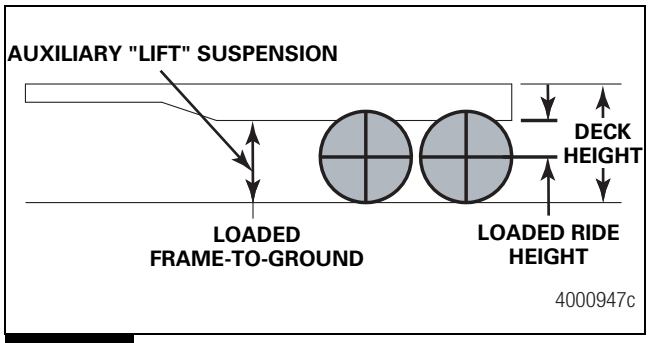


Figure 3.5

Suspension Travel

Jounce and Rebound

Jounce is the amount of upward axle travel from the suspension's designed ride height position. Figure 3.6.

Rebound is the amount of downward axle travel from the suspension's designed ride height position. Figure 3.6.

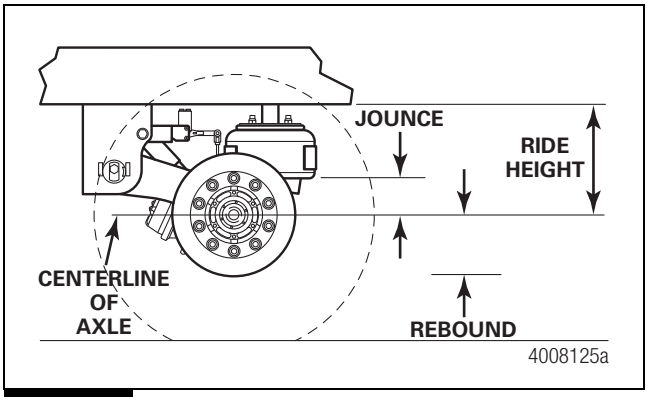


Figure 3.6

Tire Clearance

Meritor air suspensions require a 1.5-inch (38 mm) minimum tire clearance between the top of the tire and the bottom of the trailer frame structure above the tire when the suspension is at full jounce. Figure 3.7.

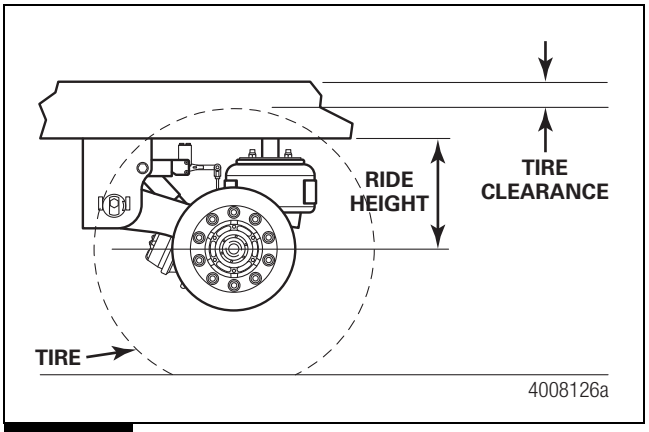


Figure 3.7

How to Determine Tire Clearance

Determine tire clearance by adding the specified tire clearance to the suspension jounce. This sum is the distance required between the top of the tire and the bottom of the trailer frame when the suspension is at its designed ride height.

Example

- Jounce = 3-inches (76 mm)
- Tire Clearance = 1.5-inches (38 mm)

Calculation

3-inches (76 mm) + 1.5-inches (38 mm) = 4.5-inches (114 mm) = Space required above the tire at ride height

A two-inch (51 mm) clearance is required between the inside of the tire and the trailer frame on each side. This clearance allows for both lateral movement of the suspension and tire deflection. Figure 3.8.

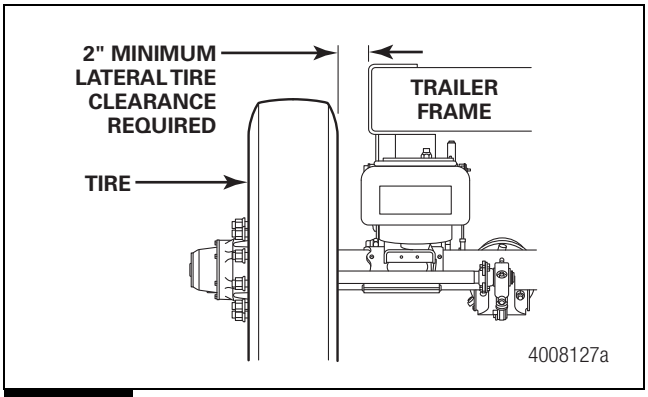


Figure 3.8

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Verify that all personnel are clear of the trailer before you inflate or deflate the air springs. The air suspension system has various pinch points that can cause serious personal injury.

Inspection

1. Wear safe eye protection. Park the trailer on a level surface. Block the wheels to prevent the trailer from moving.
2. Inspect air suspension components, the height control valve and axle at regular intervals during normal operation and each time the trailer is serviced.
3. Before each trip, visually inspect the suspension system and listen for any air leaks.
4. Replace damaged fasteners to maintain correct torque value specifications and comply with warranty requirements.
5. Perform the following inspections after the first 1,000 miles (1600 km) of operation and annually thereafter.

⚠ WARNING

Check fastener torque values, tighten loose fasteners and replace damaged fasteners. Loose, damaged or missing fasteners can cause loss of vehicle control, serious personal injury and damage to components.

A. Check fastener torque values, tighten loose fasteners and replace damaged or missing fasteners.

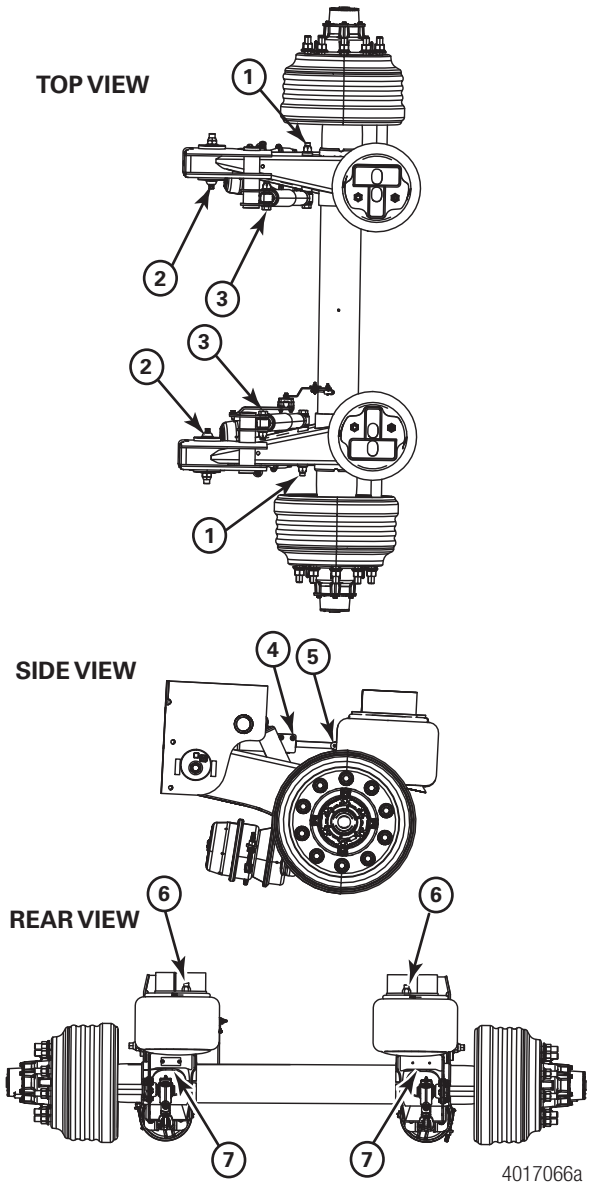
B. Visually inspect all nuts and bolts for looseness and movement. Figure 4.1. Tighten loose fasteners to the correct torque values specified in Section 7. Thereafter, inspect the suspension components each time the trailer is serviced.

C. Check for loose shear pivot bolts.

- **If the bolts are loose:** Grip the head of the shear pivot bolt using channel-locks or a pipe wrench and use an impact gun on the nut to remove the bolt.

  Inspect the pivot bushing, washers and replace them as needed.

  Install a new shear pivot bolt, align the axle and tighten the bolt as shown in Section 5 and Section 6.



1 LOWER SHOCK BOLT
2 SHEAR PIVOT BOLTS
3 UPPER SHOCK BOLT
4 RIDE HEIGHT CONTROL VALVE MOUNTING BOLTS
5 RIDE HEIGHT CONTROL VALVE LINKAGE BOLTS
6 UPPER AIR SPRING NUT(S)
7 LOWER AIR SPRING NUT(S)

The MTA-Tec6 "T" model is shown for illustrative purposes. Similar components are used on the MTA-Tec6 "L" model and the same information applies.

Figure 4.1

Maintenance

1. Inspect for broken and missing fasteners. Repair or replace as needed. Refer to Section 7 for correct torque specifications.

⚠ WARNING

Do not weld or drill on the trailing arms or axle subassemblies. Welding or drilling on trailing arms or axle subassemblies can reduce the fatigue life of the trailing arms or axle subassemblies and will void the Meritor warranty. Serious personal injury and damage to components can result.

2. Inspect welds for cracks at the trailing arm and axle subassembly and hanger assemblies.
3. Inspect the flexmember of the air springs for any cuts and abrasions. Replace the air spring immediately if it is cut or damaged.
4. Check for obstructions and interference at the air springs that may cause scuffing and abrasions. Relocate and secure items such as air hoses that can contact any part of the air spring.
5. Check for leaks in the air lines, at the air spring upper bead plate, piston and mounting studs. Figure 4.2. Replace leaking air lines, fittings or air springs. Refer to Section 5.

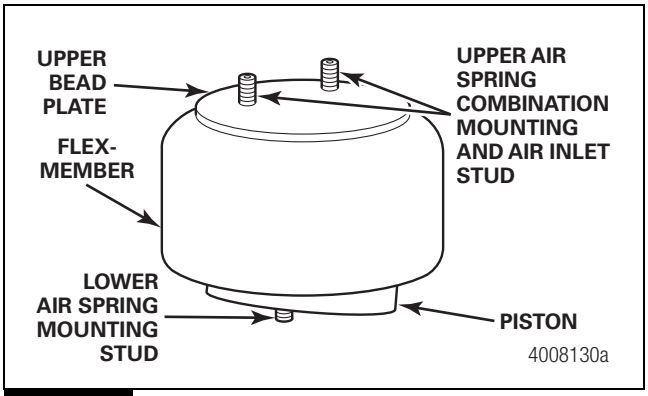
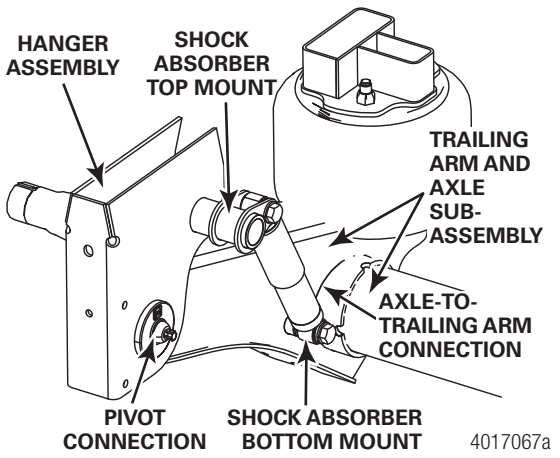


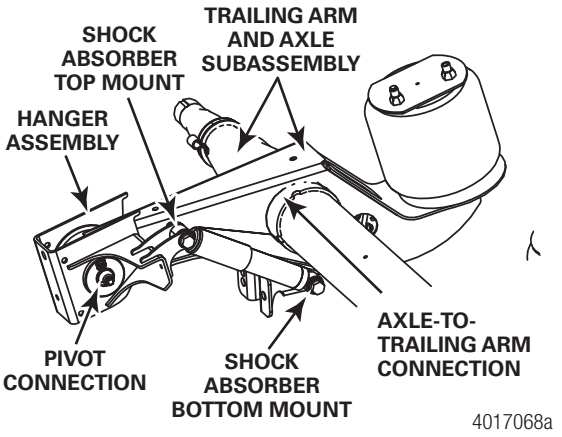
Figure 4.2

6. Check the shock absorber bushings for looseness and wear. Inspect the shock absorbers for oil leaks and dents. Replace worn or damaged shock absorbers. Figure 4.3 and Figure 4.4.



MTA-TEC 6 "T" MODEL

Figure 4.3



MTA-Tec6 "L" MODEL

Figure 4.4

7. Inspect the structure of the following air suspension components. Figure 4.3 and Figure 4.4.
   - Hanger assemblies
   - Trailing arm and axle subassembly
   - Shock mountings
   - Axle-to-trailing arm connection
   - Brake interference, cam or chamber
   - Hanger assembly bracing at interface points
   - Pivot connections

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Verify that all personnel are clear of the trailer before you inflate or deflate the air springs. The air suspension system has various pinch points that can cause serious personal injury.

Removal and Installation

Air Springs

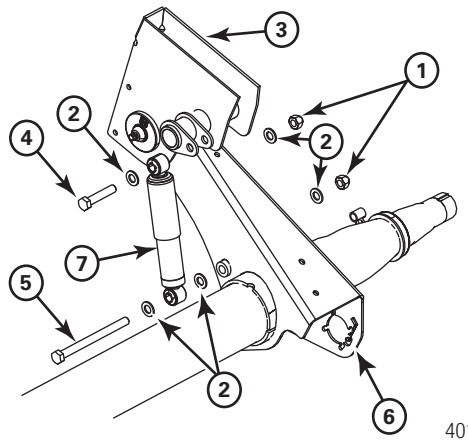
Inspect suspension air springs each time a trailer is serviced and at regular intervals during normal operation. Refer to Section 4 for procedures.

NOTE: When you replace air springs on the MTA-Tec6 Series suspension, you must install Meritor components or components purchased from a Meritor-approved distributor. Use of non-approved components will affect suspension performance and void the Meritor warranty.

1. Wear safe eye protection. Park the trailer on a level surface. Block the wheels to prevent the trailer from moving.
2. Raise the trailer so that the suspension is at or above the designed ride height. Support the rear of the trailer with safety stands.
3. Exhaust all air from the air suspension system by unseating the valve at the bottom of the air tank. This will remove the supply air pressure.
4. Disconnect the supply air lines at the top of the air spring. Remove the nuts from the top and bottom of the air spring.
5. Compress the air spring and remove it from the suspension.
6. Position the new air spring into the suspension. Install the 3/4-inch nuts at the top of the air spring. Extend the air spring and install the 1/2-inch nut at the bottom. Tighten the upper nuts to 45-50 lb-ft (61-68 N•m). Tighten the lower nut or screw to 30-35 lb-ft (40.7-47.5 N•m).
7. Connect the supply air line. Seat the valve at the bottom of the air tank. Pressurize the supply air system. Check for leaks. Replace leaking air lines, fittings or air springs.
8. Raise the trailer and remove the safety stands. Lower the trailer to the ground.
9. Check the suspension ride height and adjust, if necessary. Refer to the procedure in this section.

Shock Absorber

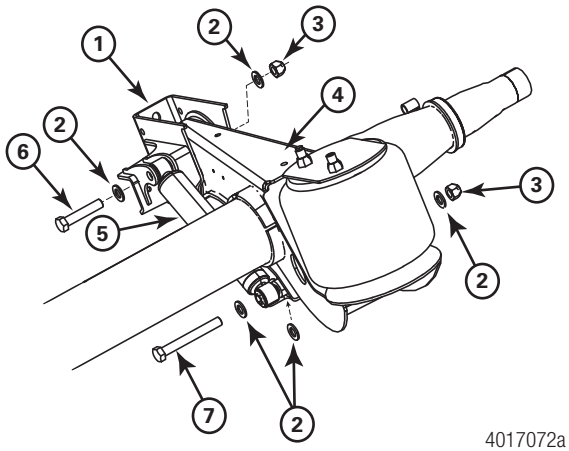
1. Wear safe eye protection. Park the trailer on a level surface. Block the wheels to prevent the trailer from moving.
2. With the trailer correctly supported, remove the 3/4-inch nut and washer from the upper mounting. See Figure 5.1 for top mount and Figure 5.2 for low mount.



1 LOCKNUT
2 WASHERS
3 CURBSIDE HANGER ASSEMBLY
4 SHOCK BOLT, UPPER
5 SHOCK BOLT, LOWER
6 TRAILING ARM
7 SHOCK ABSORBER

MTA-Tec6 "T" MODEL

Figure 5.1



4017072a

1 CURBSIDE HANGER ASSEMBLY
2 WASHERS
3 LOCKNUT
4 TRAILING ARM
5 SHOCK ABSORBER
6 SHOCK BOLT, UPPER
7 SHOCK BOLT, LOWER

MTA-Tec6 "L" MODEL

Figure 5.2

3. Remove the 3/4-inch nut and washer from the lower mounting. Remove the lower bolt and washer from the shock absorber. See Figure 5.1 for top mount and Figure 5.2 for low mount.
4. Remove the shock absorber from the upper bolt.
5. Install the new shock absorber onto the upper bolt. Install the washer and nut. See Figure 5.1 for top mount and Figure 5.2 for low mount.
6. Insert the bolt and washer through the lower shock absorber bushing. Install the washer and nut. See Figure 5.1 for top mount and Figure 5.2 for low mount.
7. When the suspension is at ride height, tighten the upper and lower nuts to 270-300 lb-ft (366-406 N•m).

Ride Height Adjustment

NOTE: When you adjust ride height, block the wheels and release the trailer brakes. The axle must be able to rotate freely to avoid a false reading.

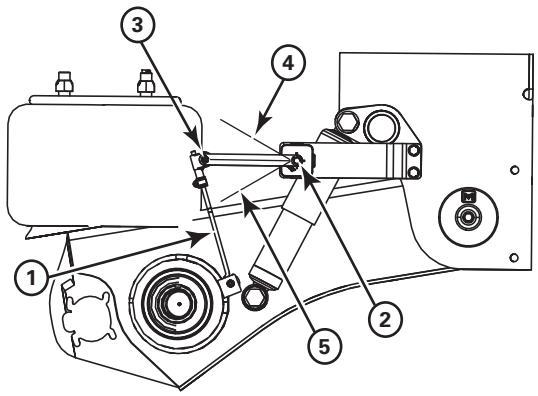
1. Wear safe eye protection. Park the trailer on a level surface. Block the wheels to prevent the trailer from moving. Release the trailer brakes.
2. Unload the vehicle. Support the trailer king pin at the designed operating height.
3. Connect the vehicle to a compressed air supply that duplicates a standard supply system.
4. Verify that the air springs are inflated.
5. Determine the air suspension ride height.
   A. Measure the distance from the bottom side of the trailer structure to the top of the axle.
   B. Add half the diameter of the axle to this measurement (typically 3-inches [76.2 mm]).

   Example

   - Bottom side of the trailer structure to the top of the axle = 12-inches (304.8 mm)
   - Axle radius = 3-inches (76.2 mm)

   Calculation

   12-inches (304.8 mm) + 3-inches (76.2 mm) = 15-inches (381 mm) = Ride height
6. Disconnect the linkage arm at the upper linkage bolt. Replace a bent or damaged linkage. Figure 5.3 and Figure 5.4.



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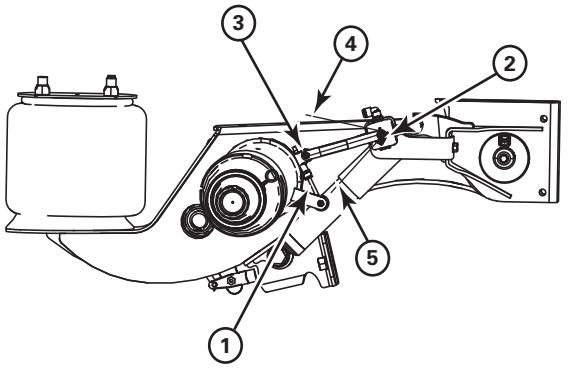
1 LINKAGE ARM
2 ADJUSTING SCREW
3 LEVER ARM
4 INFLATE
5 DEFLATE

MTA-Tec6 "T" MODEL

Figure 5.3



4017074a

1 LINKAGE ARM
2 ADJUSTING SCREW
3 LEVER ARM
4 INFLATE
5 DEFLATE

MTA-Tec6 "L" MODEL

Figure 5.4

7. Verify that all personnel are clear of the air springs. Make sure the system is pressurized. Inflate or deflate the air springs by raising or lowering the ride height control valve (RHCV) lever arm. To inflate, hold the lever arm in the UP position for at least 15 seconds or until the suspension is at the correct ride height. Refer to Section 3. Figure 5.3.
8. When the suspension is at the correct ride height, set the RHCV lever arm in the neutral position. Figure 5.3.
9. Insert a 0.16-inch locating pin or a 0.125-inch (3.175 mm) diameter drill bit at the lever arm of the RHCV.
10. Loosen the valve from the bracket to allow fine adjustment of the lever arm.
11. Align the end of the lever arm with the upper opening of the linkage arm. Install the upper linkage bolt. Tighten the upper linkage bolt to 5-7 lb-ft (7-9 N•m).
12. Remove the locating pin or 0.125-inch (3.175 mm) diameter drill bit that you inserted in Step 9.
13. Test drive the trailer.
14. Measure the ride height to verify that you have made an accurate adjustment.

Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

Axle Alignment

The Meritor MTA-Tec6 Series suspension pivot and alignment connection consists of two washers on each side of the hanger bracket.

Three out of four washers are concentric; the other is eccentric and located on the outboard side of the roadside hanger between two alignment blocks (Figure 6.2). The MTA-Tec6 single eccentric washer system significantly simplifies the axle alignment process. By design, the eccentric washer can only rotate between the blocks while allowing the pivot bolt to move horizontally in a fore-aft direction. The curbside pivot bolt is fixed in a fore-aft direction through two concentric washers, thus, axle adjustment on this side is not required.

Tools Required

- 600 lb-ft (816 N•m) minimum impact wrench or torque wrench
- 1-5/16-inch closed- or open-end wrench
- 1-inch drive, E20 Torx socket
- 1/2-inch drive breaker bar
- Tire changing equipment, as needed
- King pin extender (or pogo stick)
- Wheel-end or spindle extender
- 50 feet (15.25 m) minimum tape measure with 0.0625-inch (1.5875 mm) and 0.125-inch (3.175 mm) increments

Before You Align the Axle

1. Wear safe eye protection. Park the trailer on a level surface. Block the wheels to prevent the trailer from moving.
2. Position the trailer's fifth-wheel upper coupler at its designed height by adjusting the trailer landing legs. Verify that all suspensions are at the designed ride-height setting. Adjust the ride height, if necessary. Refer to Section 5.
3. Inspect each tire set. Tires on each dual-wheel set must be matched within a 0.125-inch (3.175 mm) tire radius or not more than a 0.75-inch (19.05 mm) variation in circumference.
   - **If a tire set is not matched within specification:** Install a correct tire set.

NOTE: You must release the trailer brakes to adjust axle alignment. The wheels must rotate freely when you move the axle forward and backward.

4. Release the trailer brakes. Measure from the trailer king pin to each end of the front axle. Refer to measurements A and B in Figure 6.1. The difference between measurements A and B must not exceed 0.125-inch (3.175 mm).
   - **If the measurement exceeds the specification above:** You must adjust axle alignment. Refer to the procedure in this section.
5. Check the dimension from the centerline of the front axle to the center of any rear axle. Refer to measurements C and D in Figure 6.1. The difference between measurements C and D must not exceed 0.0625-inch (1.5875 mm).
   - **If the measurement exceeds the specification above:** You must adjust axle alignment. Refer to the procedure in this section.

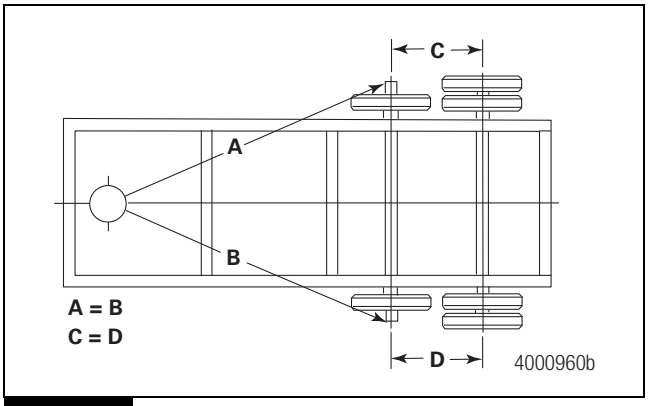


Figure 6.1

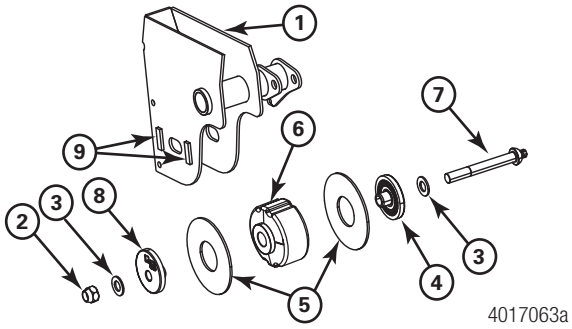
Axle Alignment Procedure

⚠ WARNING

You must correctly assemble and tighten the pivot connection to ensure the required clamp load and correct performance. An incorrect pivot connection can result in loss of vehicle control, serious personal injury and damage to components.

To help ensure correct performance and required clamp load, correctly assemble and tighten the pivot connection. Figure 6.2 and Figure 6.3. Refer to Section 7 for correct torque procedure.

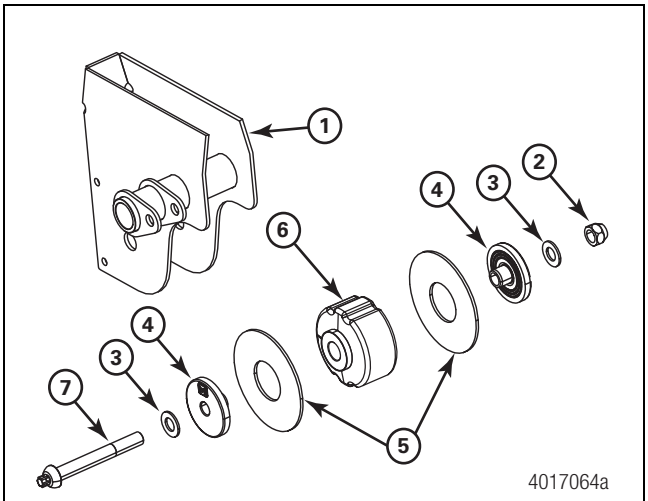
Before performing axle alignment, the pivot bolt on the roadside hanger must be replaced with a new one. If the curbside pivot joint needs service, replace the bolt with a new bolt and tighten it to 200 ± 50 lb-ft. Set the eccentric washer in a vertical position (square hole at 12 o'clock). Using a 1/2-inch breaker bar, turn the washer clockwise to move the axle forward. To move the axle rearward, turn the washer counter-clockwise. Do not tighten the pivot joint until completing axle adjustment and alignment.



1 ROADSIDE HANGER ASSEMBLY
2 7/8″ GRADE C LOCKNUT
3 7/8″ WASHER
4 CONCENTRIC ALIGNMENT WASHER
5 BUSHING SPACER
6 PIVOT BUSHING
7 SHEAR PIVOT BOLT
8 ECCENTRIC ALIGNMENT WASHER
9 ALIGNMENT BLOCKS

MTA-Tec6 "T" MODEL

Figure 6.2



1 CURBSIDE HANGER ASSEMBLY
2 7/8″ GRADE C LOCKNUT
3 7/8″ WASHER
4 CONCENTRIC ALIGNMENT WASHER
5 BUSHING SPACER
6 PIVOT BUSHING
7 SHEAR PIVOT BOLT

MTA-Tec6 "T" MODEL

Figure 6.3

⚠ WARNING

Do not allow lubricants and contaminants to contact the pivot connection fasteners. These substances reduce the friction between the bolt-and-nut threads, and over-tightening and fastener damage can occur. An incorrect pivot connection can result in loss of vehicle control, serious personal injury and damage to components.

⚠ CAUTION

The eccentric and concentric alignment washers must be flat against the hanger assembly during axle alignment to ensure a correct alignment and prevent damage to components.

Refer to Figure 6.4.

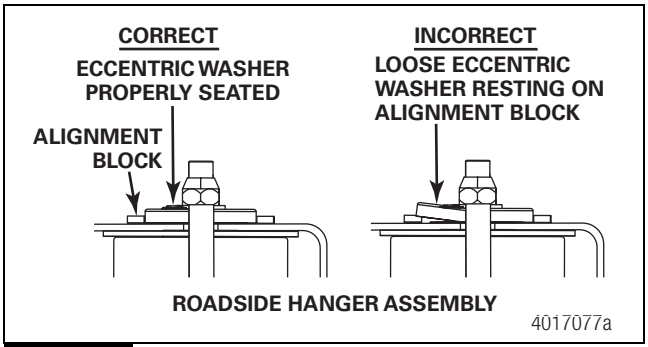


Figure 6.4

NOTE: This procedure is intended for field realignments only. It is required only on the roadside hanger assembly.

NOTE: The pivot bolt nuts should be loose enough to turn freely using a wrench and have minimum side-to-side movement. They should not spin freely.

1. Using a 1-5/16-inch closed- or open-ended wrench, tighten the roadside pivot nut in such a way that it still allows the eccentric washer to turn with the breaker bar. Figure 6.5.

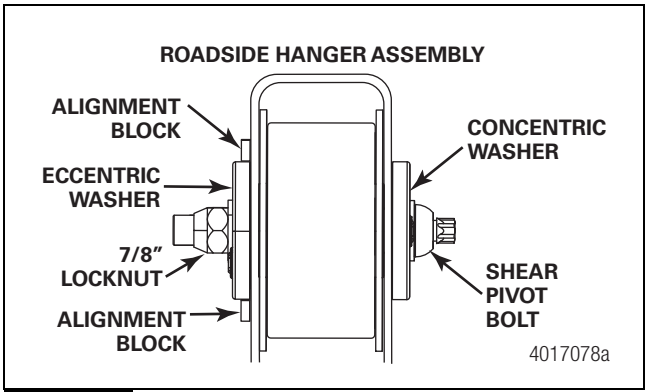


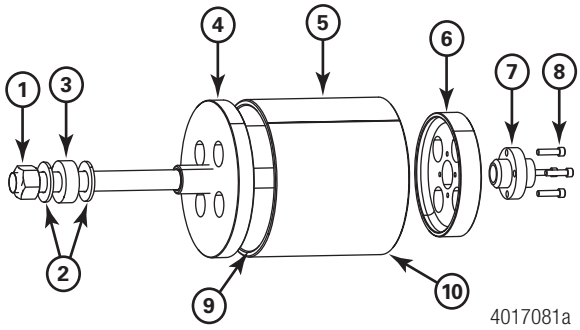
Figure 6.5

2. Use a 1/2-inch breaker bar to rotate the eccentric washer within the alignment blocks to move the axle forward or backward. Check axle alignment while adjusting axle position. The maximum recommended adjustment is 90 degrees per the direction from the vertical position of the eccentric washer. Figure 6.1.
3. When the axle is correctly aligned at ride height, tighten both the roadside and curbside shear pivot bolts using an E20 socket until the shear heads are separated. Full engagement of the E20 socket is required during tightening of the shear pivot bolts.
4. Follow Step 1 through Step 3 to align additional axles to the front axle, until both axle ends are an equal distance from the forward axle. The difference between dimension C and dimension D (Figure 6.1) must not exceed 0.0625-inch (1.5875 mm). If necessary, adjust the rear axle to bring this difference within specification.

Trailing Arm Bushing Removal and Installation

Special Tool Required

The bushing replacement procedure requires a special bushing tool, part number A-3256X1376. The tool was designed specifically for removal and installation of MTA-Tec6 series narrow pivot bushings, but can also be used for other Meritor MTA series bushing applications. Figure 6.6.



1 DRAW BOLT
2 WASHER
3 THRUST BEARING
4 DRAW PLATE
5 COMPRESSION FUNNEL
6 PUNCH PLATE
7 FLANGE NUT
8 HEX BOLT
9 LARGE I.D. END
10 SMALL I.D. END

Figure 6.6

Pivot Bushing Removal

⚠ WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

To avoid serious personal injury and damage to components, take care when using lifting devices during service and maintenance procedures. Inspect a lifting strap to ensure that it is not damaged. Do not subject the lifting straps to shocks or drop-loading.

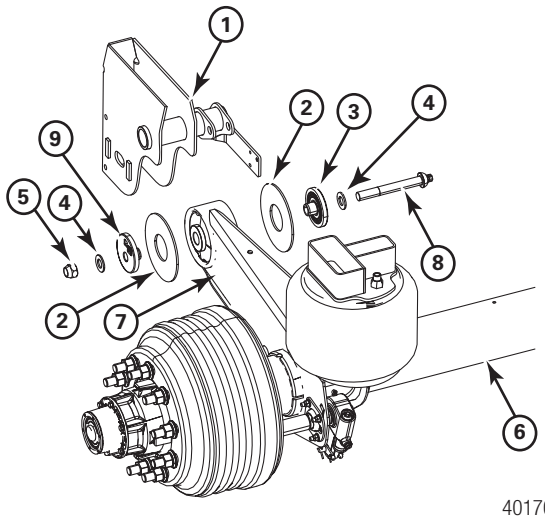
Do not remove the height control valve linkage or shock absorber for this procedure. The shock absorber provides vertical support during the pivot bushing installation.

1. Wear safe eye protection. Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving.
2. Use an appropriate lifting device to raise the trailer frame so that the suspension is above the specified ride height. Refer to the procedure in this manual to determine the correct ride height. Support the rear of the trailer with safety stands.

⚠ WARNING

Verify that all personnel are clear of the trailer before you inflate or deflate the air springs. The air suspension system has various pinch points that can cause serious personal injury.

3. Exhaust all air from the suspension system by disconnecting the linkage arm and holding the level arm down. Refer to items 1 and 3 in Figure 5.3 and Figure 5.4.
4. Support the trailing arm and axle assembly with safety stands.
5. Grip the head of the shear pivot bolt using channel-locks or a pipe wrench and use an impact gun on the nut to remove the bolt. Figure 6.7.



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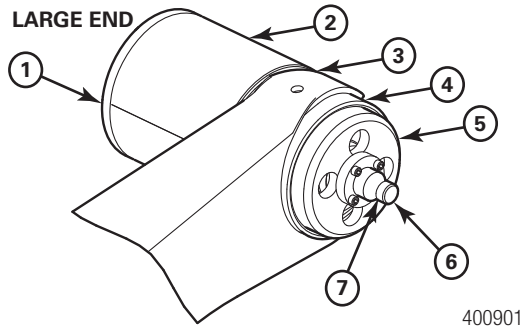
1 HANGER ASSEMBLY
2 BUSHING SPACER
3 CONCENTRIC WASHER
4 WASHER
5 LOCKNUT
6 AXLE ASSEMBLY
7 TRAILING ARM
8 SHEAR PIVOT BOLT
9 ECCENTRIC WASHER

The MTA-Tec6 “T” model is shown for illustrative purposes. Similar components are used on the MTA-Tec6 “L” model and the same steps apply.

Figure 6.7

6. Lower the trailing arm and axle assembly down and out of the hangers. Discard the locknuts, shear pivot bolts and bushing spacers.
7. Apply a small amount of the Meritor lubricant supplied with the bushing kit around the radius of the bushing with the bushing still in the tube.
8. Apply a light coat of the lubricant to the inside diameter of the compression funnel. Place the smaller I.D. end of the compression funnel onto the trailing arm bushing tube. Figure 6.8.



1 DRAW PLATE — SIDE MARKED “MTA-TEC6” FACING TOWARDS PIVOT BUSHING IN THE FUNNEL
2 COMPRESSION FUNNEL
3 SMALL I.D. END
4 TRAILING ARM BUSHING TUBE
5 PUNCH PLATE
6 DRAW BOLT
7 FLANGE NUT

Figure 6.8

9. Place the draw plate onto the large I.D. end of the compression funnel with the side marked for MTA-Tec6 facing in the funnel towards the pivot bushing. (For other MTA series bushings, place the opposite side into the funnel).

10. Align the small I.D. end of the compression funnel against the trailing arm bushing tube, insert the draw bolt, washers and thrust bearing through the draw plate and the pivot bushing sleeve. Figure 6.8 and Figure 6.9.

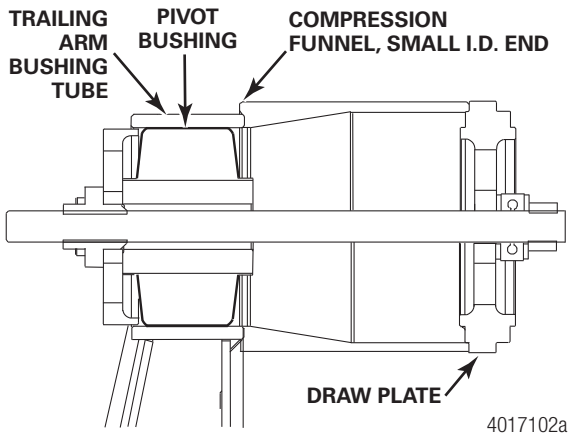
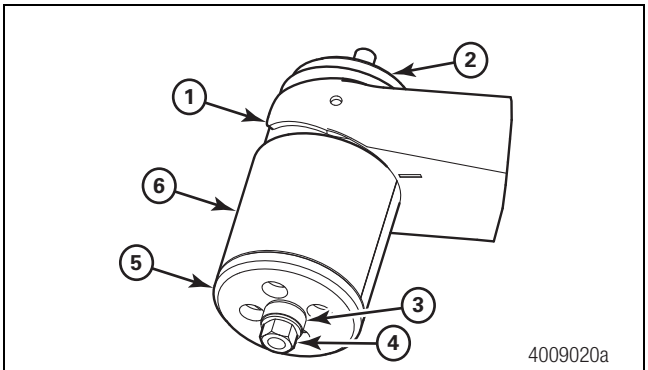


Figure 6.9

11. Thread the punch plate onto the draw bolt until it rests against the bushing to be removed. Figure 6.8.

12. Snug the draw bolt while ensuring that the compression funnel rests securely against the trailing arm bushing tube. Figure 6.10. The thrust bearing must be free to turn at all times. Meritor recommends lubricating the draw bolt threads and between the thrust bearing and washers with bearing grease such as Shell Darina Grease 1 or equivalent, before each bushing replacement.



1 TRAILING ARM BUSHING TUBE
2 PUNCH PLATE THIS END
3 THRUST BEARING
4 DRAW BOLT
5 DRAW PLATE
6 COMPRESSION FUNNEL

Figure 6.10

⚠ CAUTION

Tighten the draw bolt until the bushing contacts the draw plate. Do not overtighten the draw bolt. Overtightening can cause damage to the threads or punch plate.

13. Turn the draw bolt CLOCKWISE using a 1/2-inch impact wrench at a reduced and steady speed. Continue turning the draw bolt until the bushing is pulled into the compression funnel against the draw plate. Figure 6.11.

    - **If the bolt stops turning or extreme resistance is present:** Reverse the impact wrench and loosen the tool assembly. Inspect all components of the tool for damage. Reset the draw plate ensuring that the compression funnel is correctly seated against the trailing arm bushing tube. Try to turn the draw bolt again.

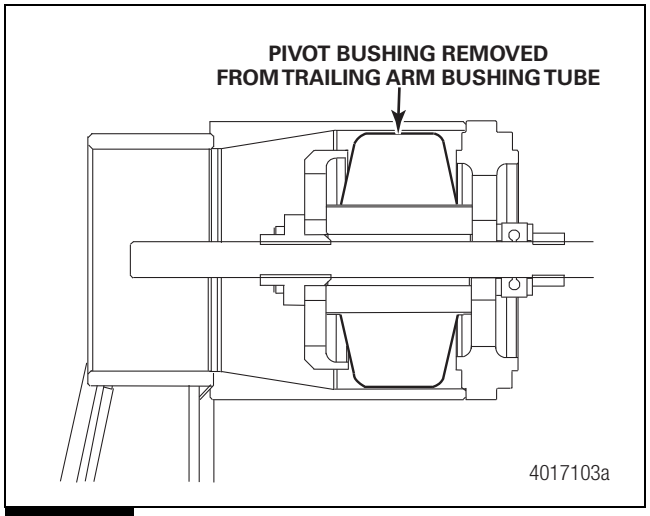


Figure 6.11

14. After the bushing is removed from the trailing arm bushing tube, reverse the impact wrench and disassemble the tool.
15. Remove the bushing from the compression funnel. Do not dent or damage the compression funnel during this process. Damage to the funnel will affect tool operation.

Pivot Bushing Installation

1. Inspect the inside of the trailing arm bushing tube for rust, rubber and any other buildup. Clean the tube before installing a new bushing.
2. Remove all burrs from the bushing tube edges. The bushing tube must be cool before installing a new bushing.
3. Use the Meritor lubricant supplied with the bushing kit to lightly lubricate the inside of the trailing arm bushing tube and compression funnel, and the outside diameter of the new multi-functional bushing.
4. Insert the liner tube into the new bushing I.D. and place it in the large I.D. end of the compression funnel. Verify that the bushing mark is aligned with the compression funnel indicator line. Figure 6.12.

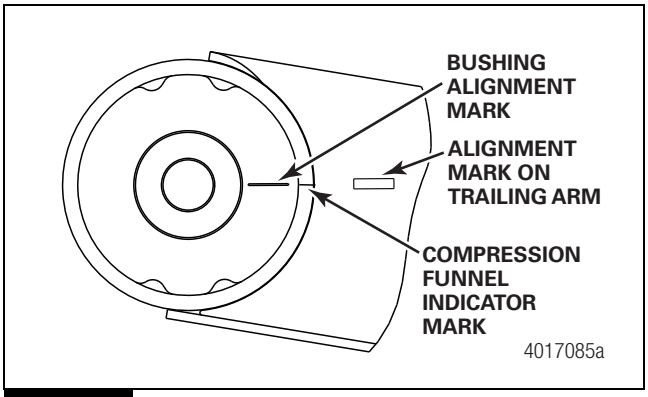


Figure 6.12

5. Place the draw plate onto the inside surface of the trailing arm bushing tube.
6. Insert the draw bolt, washers and thrust bearing through the draw plate and trailing arm bushing tube.
7. Place the small I.D. end of the compression funnel with the bushing over the draw bolt and onto the trailing arm bushing tube. Align the indicator mark on the compression funnel with the existing mark on the trailing arm. Figure 6.13.

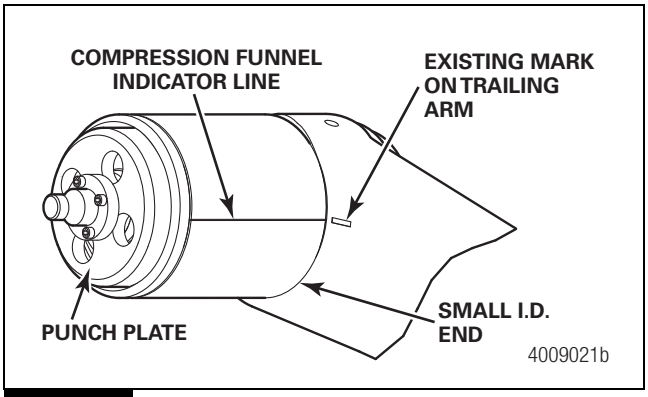


Figure 6.13

8. Thread the punch plate onto the draw bolt until it rests against the bushing inside the compression funnel. Figure 6.14.

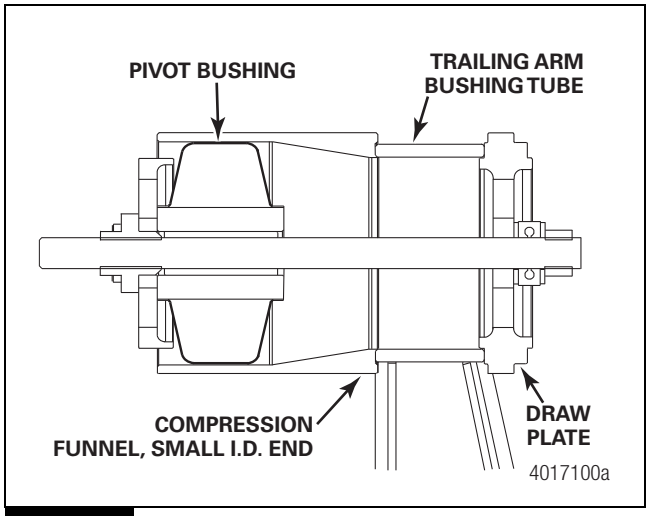


Figure 6.14

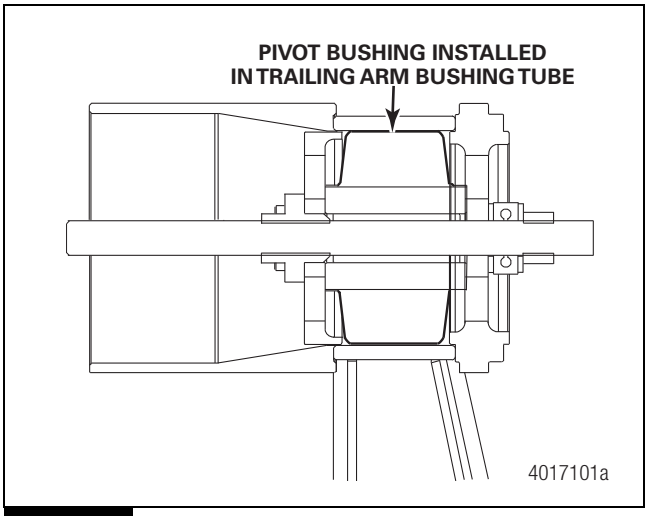


Figure 6.15

9. Verify that the indicator line on the compression funnel lines up with the existing mark on the trailing arm. Figure 6.13.
10. Snug the draw bolt while ensuring that the compression funnel and draw plate rest securely against the trailing arm bushing tube. The thrust bearing must be free to turn at all times.

⚠ WARNING

Support the compression funnel as it disengages from the bushing tube. Do not allow it to fall to the floor to prevent serious personal injury and damage to components.

⚠ CAUTION

Rotate the draw bolt only to the point at which it stops turning. Do not overtighten the bolt. Damage to components can result.

11. Turn the draw bolt CLOCKWISE using a 1/2-inch impact wrench at a reduced and steady speed to draw the bushing into the trailing arm bushing tube. Figure 6.15.
12. Support the compression funnel as it disengages from the bushing tube so it does not fall. The compression funnel will fall away before the bushing is completely seated inside the bushing tube.
13. Continue rotating the draw bolt until the bolt stops turning. Do not overtighten the bolt.
    - **If the bolt stops turning or extreme resistance is present:** Reverse the impact wrench and loosen the tool assembly. Inspect all components of the tool kit for damage. Reset the draw plate ensuring that the compression funnel is correctly seated against the trailing arm bushing tube. Try to tighten the bolt again.
14. Verify that the bushing indicator mark is aligned with the existing mark on the trailing arm. Figure 6.16.

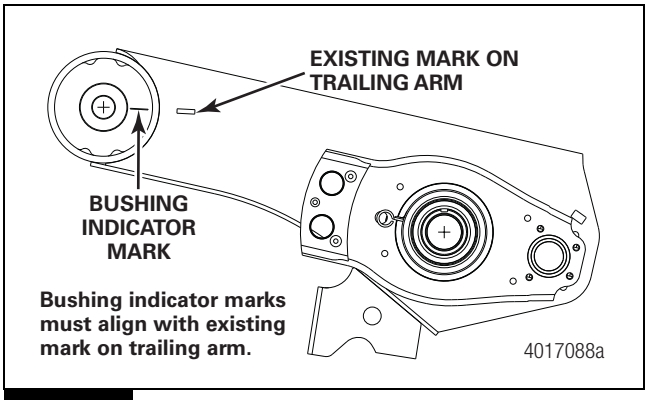


Figure 6.16

15. Verify that the bushing is centered in the trailing arm bushing tube from side-to-side.
    - **If the bushing indicator marks are not aligned with the trailing arm marks, or the bushing is not centered:** Remove the bushing and go back to Step 1.
16. Install the bushing spacers from the pivot bolt kit onto each side of the bushing inner metal. Ensure that the bushing spacers do not get pinched between the ends of the bushing inner metals and the hangers.
17. Raise the trailing arm and axle assembly up and back into the hangers.
18. Install the new pivot bolts and locknuts. Do not tighten the locknuts at this time.
19. Reseat the valve at the bottom of the air tank and apply supply air to the trailer.
20. Remove the safety stands at the rear of the trailer and slowly lower the trailer back down onto the suspension.
21. Verify that the suspension ride height is correct. If adjustment is necessary, refer to the ride height adjustment procedures in this manual.
22. Realign the axle. Refer to the alignment procedures in this manual.
23. When the axle is correctly aligned at ride height, perform the final tightening of the shear pivot bolts using an E20 socket until the shear heads are separated. Full engagement of the E20 socket is required during tightening of the shear pivot bolts.

Torque Specifications

⚠ WARNING

Check fastener torque values, tighten loose fasteners and replace damaged fasteners. Loose, damaged or missing fasteners can cause loss of vehicle control, serious personal injury and damage to components.

Check fastener torque values after 1,000 miles (1600 kilometers) and annually thereafter. Retighten loose fasteners. Replace damaged fasteners to maintain correct torque values and comply with warranty requirements.

For brake and wheel-end torque specifications, refer to Maintenance Manual 14, Trailer Axles. To obtain this publication, refer to the Service Notes page on the front inside cover of this manual.

Table A: Torque Specifications for MTA-Tec6 Series Trailer Air Suspension Systems

Component Description	lb-ft	N•m
Air Spring Lower Nuts or Screws	30-35	41-47
Air Spring Upper Nuts	45-50	61-68
Brake Chamber Mounting Nuts (Drum Brake)	133-155	180-210
Height Control Linkage Nuts	5-7	7-9
Height Control Valve Mounting Nuts	5-7	7-9
Height Control Valve Bracket Screw	25-35	34-47
Pivot Bolt Locknuts	N/A	N/A
Shock Absorber Nuts	270-300	633-406

Tools

Tool List

Table B: Suggested Tools

Tool Description	Part Used On
1-5/16″ Socket Wrench	Pivot Locknut
E20 Torx Socket	Shear Pivot Bolt
1-1/8″ socket Wrench	Shock Mount, Air Spring
15/16″ Socket Wrench	Air Brake Chamber
3/4″ Socket Wrench	Air Spring
9/16″ Socket	RHCV Bracket
7/16″ Socket	RHCV Bracket
Channel Lock/Pipe Wrench	Shear Pivot Bolt
1/2″ Drive Breaker Bar	Eccentric Washer
Torque Wrench	RHCV Bracket, Shock Mount, Air Spring, Air Brake Chamber
Impact Gun	Where Applicable

Tool Drawing

Figure 8.1 shows the two sides of the bushing tool draw plate. The tool may be used to service MTA series and MTA-Tec6 series pivot bushings depending on which side of the draw plate is positioned towards the pivot bushing.

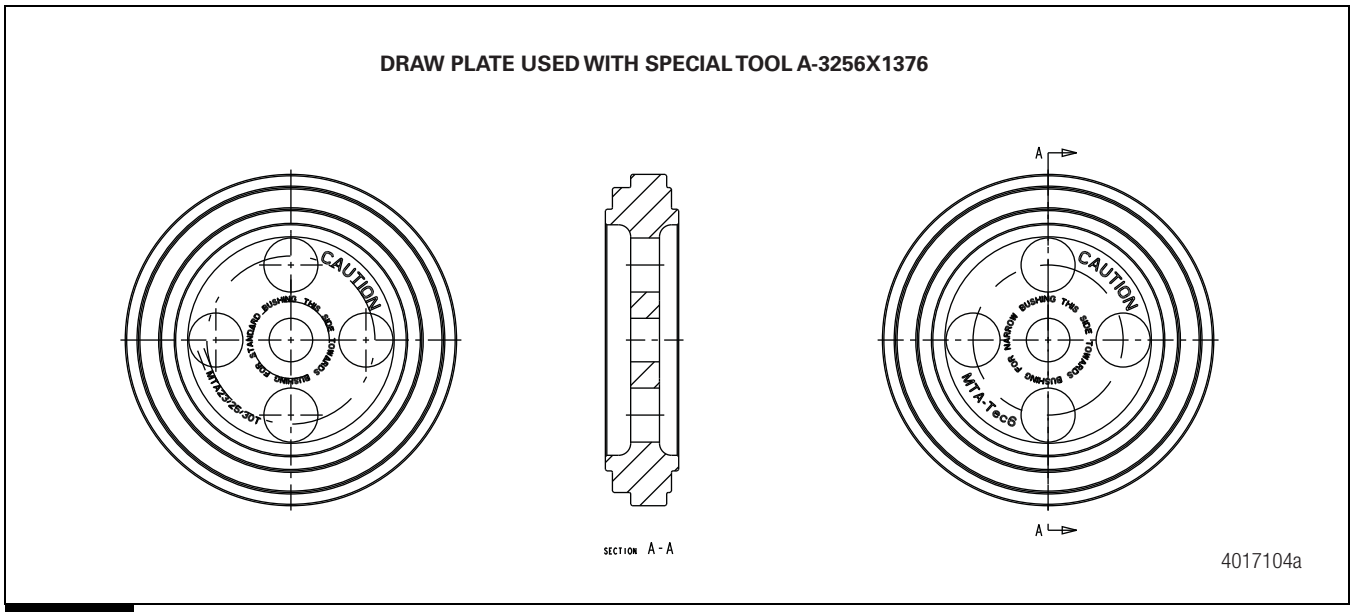


Figure 8.1

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Printed in USA

Issued 04-20
Maintenance Manual MM-2049 (16579)

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