

SUBJECT: Installation and Service Procedures

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## **IMPORTANT SAFETY NOTICES**

Hendrickson literature number <u>**T12007** Technical</u> <u>Procedure General Safety Precautions and Information</u>, available at www.Hendrickson-intl.com, includes important preparation, precautionary and safety information pertaining to the procedures included in this document.

To help prevent personal injury and equipment damage; warnings, cautions and other relative statements included in Hendrickson literature number <u>T12007</u> are to be read carefully and applied during the performance of the procedures included in this document.

Improper maintenance, service or repair can cause damage to the vehicle and other property, personal injury, unsafe operating conditions and potentially void the manufacturer's warranty.

# CONVENTIONS APPLIED IN THIS DOCUMENT

This section explains the techniques used in this document to convey important information, safety issues and how to contact Hendrickson.

## **EXPLANATION OF SIGNAL WORDS**

Hazard signal words (such as **DANGER, WARNING** or **CAUTION**) appear in various locations throughout this publication. Information accented by one of these signal words must be observed at all times. Additional notes are utilized to emphasize areas of procedural importance and provide suggestions for ease of repair. The following definitions comply with ANSI Z535.6 and indicate the use of safety signal words as they appear throughout the publication.

- ADANGER Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
- **AWARNING** Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

**ACAUTION** Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

**NOTICE** Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

**IMPORTANT:** An operating procedure, practice or condition that is essential to emphasize.

▲ or ▲ Safety Alert Symbol used to indicate a condition exists that, if not avoided, may result in personal injury or harm to individuals. It must be applied to DANGER, WARNING and CAUTION statements, which emphasize severity.

#### **HYPERLINKS**

Hyperlinks are identified by a dark grey line under the linked text. Internal links allow the reader to jump to a heading, step or page in this document. External links open the website or document referenced. While viewing electronically, activate the hyperlink by clicking on the underlined text.

#### **CONTACTING HENDRICKSON**

Hendrickson Trailer Technical Services must be contacted before performing any warranty related service.

**NOTE: DO NOT** service a suspension or any component that is under warranty without first contacting Hendrickson Technical Services.

Prior to contacting Technical Services, it is best to have the following information about the vehicle and Hendrickson suspension available (all that apply):

- Hendrickson suspension information, (refer to L977 Suspension and Axle Identification)
  - Suspension model number
  - Approximate number of suspension miles
- Trailer information (located on VIN plate)
  - Type (van, reefer, flatbed, etc.)
  - Manufacturer
  - VIN (Vehicle Identification Number)
  - In-service date1
  - Fleet/Owner name
  - Unit #
- Failure information
  - Description of the system problem, the part number and / or the part description of the reported non-functioning part.
  - Date of failure.
  - Where applicable, location of problem on suspension / trailer (e.g., roadside, front axle, rear axle, curbside rear, etc.)
- Digital photos of suspension and damaged areas
- Special application approval documentation (if applicable)

If the in-service date is unknown or not available, the vehicle date of manufacture will be substituted

#### PHONE

Contact Hendrickson Trailer Technical Services directly in the United States and Canada at **866-RIDEAIR** (743-3247). From the menu, select:

- Technical Services/Warranty for technical information.
- Other selections include:
  - Aftermarket Sales for replacement parts information and ordering.
  - Original Equipment Sales for parts inquiries and ordering for trailer manufacturers.

#### EMAIL: HTTS@Hendrickson-intl.com

Contact Hendrickson for additional details regarding specifications, applications, capacities, operation, service and maintenance instructions.

All applications must comply with applicable Hendrickson specifications and must be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration.

#### **RELATIVE LITERATURE**

If you suspect your version of this or any other Hendrickson manual is not "Up-to-Date", the most current version is free online at:

www.hendrickson-intl.com/literature

Available Hendrickson documentation can be viewed or downloaded from this site. All Hendrickson online documentation are PDF files that require Adobe Acrobat Reader to open. This is a free application downloadable from Adobe's home page (<u>http://get.adobe.com/</u> <u>reader/</u>).

Other related literature may include:

NAME	DESCRIPTION
<u>L583</u>	Comprehensive Warranty Statement (US and Canada)
<u>L878</u>	TIREMAAX® Parts List
<u>T50014</u>	TIREMAAX Indicator Lamp Status Decal
<u>T50018</u>	TIREMAAX Manual Tire Check Decal
<u>T50019</u>	TIREMAAX PRO-LB Controller Lid Decal
T50022	TIREMAAX PRO-LB Tire Pressure Control Decal
T50023	TIREMAAX PRO-LB Audible Discharge Decal
T52003	Toolbox Tip: TIREMAAX Hubcap Clocking
<u>T53003</u>	TIREMAAX PRO-LB – Field Adjustment Tool Instructions

Table 1: Related literature

Additional information and videos are available at: www.hendrickson-intl.com/TIREMAAX

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Consult the Hendrickson website (www.Hendrickson-intl.com) for the latest version of this manual.

# PREPARING TRAILER FOR MAINTENANCE SERVICE

For information on trailer preparation, safety and precautionary statements, refer to Hendrickson literature number <u>T12007</u>, available at www.Hendrickson-intl.com

AWARNING DO

**DO NOT** work under a trailer supported only by jacks. Jacks can slip or fall over, resulting in serious personal injury. Always use safety stands to support a raised trailer.

## **SYSTEM OVERVIEW & FEATURES**

Specifications listed apply to TIREMAAX® PRO-LB.

TIREMAAX PRO-LB is only compatible with Hendrickson air ride suspensions. It is not available on Hendrickson loose trailer axles.

SPECIFICATION	US	METRIC
PRO-LB tire pressure setting	Dual: 85 to 120 psi	Dual: 586 to 827 kPa
range	SS: 100 to 120 psi	SS: 690 kPa to 827 kPa
PRO-LB tire pressure	Dual: 75 psi	Dual: 517 kPa
minimum threshold	SS: 90 psi	SS: 620 kPa
Pressure check interval	Contir	nuous
Minimum operating voltage	9 v	olts
Indicator lamp current range	50 mA	to 1 A
Maximum number of axles supported per control	Тwo	

Table 2: TIREMAAX® PRO-LB specifications

#### Main power harness (J560 interface)

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balancing beads or liquids, tire sealants or tire coolants) are not recommended with TIREMAAX PRO-LB. These products can damage seal and valve components within the hubcap and controller, and may result in improper function of the TIREMAAX PRO-LB system and

NOTICE

Use of products inside the tire (e.g.

contamination of the wheel-end.



See Figure 5 on page 8 for additional details

Figure 1: TIREMAAX PRO-LB controller



Figure 2: Typical placement of Indicator Lamp

#### **INDICATOR LAMP**

The indicator lamp is controlled by the flow switch module in the controller assembly.

- Provides a means for the driver to check system status.
- Used during testing and calibration to indicate air flow through the system.
- Under some circumstances can be used to identify a leak in the system.
- Illuminates when air is being added to tires.



Figure 3: TIREMAAX PRO-LB Hubcap (grease version shown)

#### HUBCAP

The TIREMAAX<sup>®</sup> PRO-LB system can be identified by the hubcap window. Each hubcap assembly is configured at the factory to match the specific requirements of your application (spindle type and lube).

- Seals and protects wheel-end components from contaminants.
- Connects air system from stationary axle to rotating hub and wheels.
- Includes a specially engineered rotary union that connects rotating hubcap to stationary axle hose.
- Includes built-in check valves that close when the tire hoses are disconnected.
- Includes wheel valves that isolate tires when parking brake is applied.



Figure 4: TIREMAAX PRO-LB tire hoses and axle components





Figure 5: TIREMAAX PRO-LB controller

NOTICE	While the trailer emergency brake is engaged, delivery air pressure exhausts to zero psi in the delivery air lines only. Hubcap wheel valves close to isolate wheels from the system.
<b>A</b> WARNING	While servicing the TIREMAAX® PRO-LB system, it may be necessary to disengage the trailer emergency brake to allow the controller to function. Trailer wheels must be chocked during these procedures.
NOTICE	Field disassembly of hubcap integrated components will void warranty.

#### **OPERATION**

TIREMAAX PRO-LB operates differently than a typical tire inflation system. The delivery pressure to the tires is controlled by air spring pressure. When air spring pressure increases to accommodate more load, this same pressure acts on the controller regulator and causes it to increase the delivery pressure to the tires a corresponding amount. Also, when air spring pressure drops to respond to less load, the lower air spring pressure acts on the regulator and lowers the delivery pressure in the tires. In this manner, the controller, which includes the regulator, raises and lowers tire pressure automatically in response to changes in vehicle load.

**NOTE:** The minimum tire pressure threshold for duals is 75 psi and for super singles is 90 psi.

The indicator lamp will activate when the system is applying air. The indicator lamp is located on the front of the trailer (Figure 1 on page 6 and Figure 2 on page 7) or in a location within view of the driver from the cab.

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## TIRE INFLATION

The TIREMAAX<sup>®</sup> PRO-LB system is set to a specified inflation pressure for a specific air spring pressure. This specific air spring pressure is selected to match the suspension model. Air spring pressures above and below the setting value will increase and decrease the inflation pressure respectively. As long as the pressure in the trailer air tank is above the desired inflation pressure, the controller will continuously supply and maintain tire pressure at the proper load-based value.

**NOTE:** For the TIREMAAX PRO-LB controller to function properly, trailer air must be clean, dry and tank pressure must be greater than the tire inflation pressure. The controller cannot supply pressure above the available air tank pressure.

When functioning normally, the trailer air tank will supply air pressure to the TIREMAAX PRO-LB controller. The controller will deliver regulated air to pressurize air lines and tires to the proper load-based value. For TIREMAAX PRO-LB, all check valves are held open. This allows air to flow in both directions with the same pressure throughout the system.

If tires are low, air from the trailer air tank will continue to inflate tires to the proper load-based value. Delivery (regulated) air flowing from the controller to air lines and tires may cause the indicator lamp to remain lit until the proper load-based value is reached. The controller delivers pressure to lines and tires to maintain a proper load-based value.

**NOTICE** When the trailer has changed states from an empty condition to a loaded condition, the system will increase tire pressure to accommodate the added load. When this occurs the driver should ensure indicator lamp is off before operating the vehicle.

If there is a tire leak or leak in the lines, the indicator lamp may or may not remain on. The operator should stop and check the tires to determine if it is safe to continue to operate the vehicle and should seek service at the next opportunity.

- While operating, if the indicator lamp turns on and stays on for more than 10 minutes, one or more tires may be low, or the system requires service.
- If the indicator lamp continues to turn on and off, there is likely a slow leak in plumbing or tires.

For tire leaks, the remaining tires are protected from pressure loss by integral valves located in each hubcap.

## TIRE DEFLATION

A common cause of pressure variance in tires is temperature. Tire pressure can rise when:

- Traveling from cold to warm or hot weather.
- Inflating while cold, then tires heat up during operation of the trailer.
- Tire temperature increases with speed.
- Travelling to a higher elevation.

If tire pressure becomes excessive, increased tire wear may result. The regulator in the TIREMAAX PRO-LB controller will relieve pressure if it exceeds a set value above the cold inflation target pressure. TIREMAAX PRO-LB is designed to relieve pressure based on load as well, down to a minimum threshold based on wheel style.

Cooling tires may result in tire pressure dropping below the proper load-based value while parked. This may illuminate the indicator lamp at start-up, while the system applies air.

## INSTALLATION

Installation of the TIREMAAX<sup>®</sup> PRO-LB system can be done on new or existing Hendrickson air ride suspensions. For application and installation questions, contact Hendrickson – see <u>page 4</u> and <u>page 5</u> for contact information.

#### **MATERIALS AND SUPPLIES**

In addition to the hardware provided, the installer shall provide the following:

- 1. Controller assembly mounting bolts (Figure 29 on page 21).
- 2. PPV, Pressure Protection Valve.
- 3. Indicator lamp and wire, if not configured as part of the TIREMAAX PRO-LB kit (Figure 38 on page 26).
- Spindle plug driver and handle (Figure 9 on page 13), unless the spindle plugs are already installed in the axle from the factory.
- 5. Air lines and fittings as defined in Figures 35 on page 24 and 36 on page 25.

## INSTALLATION INTRODUCTION

Installation procedures are divided into sections relative to installation requirements of both suspension and trailer. Refer to Table 3, to determine the best starting point for your application.

IF	START AT
New system with nothing installed	AXLE PREPARATION
Axles are pre-drilled but no TIREMAAX PRO-LB hardware has been installed	AXLE COMPONENT INSTALLATION on page 12
Axle hose and spindle plugs are already installed, but undressed	HUBCAP INSTALLATION on page 17
System hardware is already installed on a dressed axle	TIRE HOSE INSTALLATION on page 19

Table 3: Installation starting points

## AXLE PREPARATION

The first stage of TIREMAAX PRO-LB installation is axle preparation. Starting with Figure 6, this section defines procedures for drilling holes and other steps required to prep a Hendrickson axle to receive hoses and fittings.

- **NOTE:** The TIREMAAX PRO-LB system is compatible with most spindle nut systems. To avoid interference when using a castle (cotter pin-locked) spindle nut system, the use of an extended hubcap is required. The cotter pin cannot be longer than one inch.
- AWARNING Chock all wheels before beginning this installation procedure. Never work under a vehicle supported ONLY by a jack. Refer to Hendrickson literature number T12007 for details.

![](_page_9_Figure_18.jpeg)

Figure 6: Axle spindle identification

- 1. Chock wheels to keep trailer from moving.
- 2. If the wheel-end is oil lubricated, **drain** oil from the hubcap and discard oil.
- 3. Remove hubcap bolts and hubcap.
- 4. **Remove** spindle plug from the spindle.
- 5. **Remove** in-axle filter.
- 6. **Inspect** spindle plug bore and remove any burrs or sealant.
- 7. For all TIREMAAX prepped INTRAAX®, VANTRAAX® and ULTRAA-K® suspensions:
  - A. Locate the three ¼ inch pipe plugs in the axle wrap windows.
  - B. **Remove** the plugs and proceed to <u>AXLE</u> <u>COMPONENT INSTALLATION on page 12</u>.

- **NOTE:** If the axle does not have pre-drilled holes in the axle wrap windows, proceed to Step 8 for hole drilling details.
- 8. **Drill and tap** axle for axle components per ANSI B1.20.3 using the information in Figure 7.
  - **NOTE:** In most cases, it will be necessary to remove the slack adjuster and camshaft to gain access to the approved drilling area. Refer to Hendrickson publication <u>L974 Drum Brake</u> <u>Maintenance Procedures</u> for complete slack adjuster and camshaft removal instructions.
- Remove the debris generated by the drilling and tapping operations from inside the axle before proceeding with <u>AXLE COMPONENT INSTALLATION</u> on page 12.

Drill three  $\frac{7}{16}$  inch (0.438") holes through one side and tap  $\frac{1}{4}$ -18 NPTF-1 thread per ANSI B1.20.3

![](_page_10_Figure_6.jpeg)

Figure 7: INTRAAX® / VANTRAAX® / ULTRAA-K® suspension axle drilling details

**IMPORTANT:** As shown above, the edge of any hole must be a minimum of ½ inch (12 mm) away from the edge of the fillet weld that surrounds the wrap window. Allow 1.75 inches between hole centers to ensure adequate fitting clearance.

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#### **AXLE COMPONENT INSTALLATION**

Refer to the following assembly procedures to complete the installation of the TIREMAAX® PRO-LB tire pressure control system. Component installation procedures include:

- AXLE HOSE INSTALLATION
- SPINDLE PLUG INSTALLATION
- DELIVERY LINE ROUTING on page 14
- AXLE VENT INSTALLATION on page 16
- HUBCAP INSTALLATION on page 17
- TIRE HOSE INSTALLATION on page 19

#### **AXLE HOSE INSTALLATION**

Follow this procedure to install the axle hose in the predrilled hole, through the axle and to the rotary union in the hubcap.

- On the end of the axle tube with two ¼ inch holes in the wrap window, route the small end of the axle hose into the hole closest to the spindle end (Figure 8).
- 2. Making sure hose heads toward the spindle end, **continue feeding** axle hose into the axle tube until small end of the hose exits spindle end.
- 3. **Thread** the large adapter end of axle hose assembly into axle.
- 4. **Tighten** fitting to 20 ft. lbs. (27 Nm) of torque (Figure 9 on page 13).
- 5. Feed axle hose through slit in filter.
- 6. **Push** axle filter into spindle cavity (Figure 9 on page 13).
- **IMPORTANT:** Enough air space must be present between spindle plug and filter to allow sufficient axle ventilation.
- 7. **Remove** protective covering from end of axle hose assembly and blow air through hose assembly to remove any debris.
- 8. **Repeat** Step 1 through Step 7 on each axle and wheel-end.

![](_page_11_Picture_20.jpeg)

Figure 8: Routing axle hose

**NOTE:** Tapered (HN) spindle shown, but procedure is the same for parallel (HP) spindle.

#### SPINDLE PLUG INSTALLATION

Follow this procedure to install a spindle plug at the end of each spindle.

- 1. **Orient** spindle plug as shown in Figure 9 on page <u>13</u> and **install** grommet pointing into spindle.
- 2. Push the axle hose fitting through the grommet.
- 3. With spindle plug breather hole oriented toward the pivot bushing (Figure 9 on page 13), place plug assembly against the spindle end.
- 4. With axle hose fitting centered in the plug driver, **press** plug into spindle end until driver bottoms on end of spindle.
- 5. Repeat Step 1 through Step 4 for each wheel-end.
  - **NOTE:** The recommended plug driver (refer to the table in Figure 9 on page 13) regulates the correct installation depth as shown in Figure 10 on page 13. If using the tool, be sure to select the correct tool size for your application.

Hendrickson recognizes that the tool may not always be available. For this reason, <u>Figure 10 on page 13</u> provides the recommended depth dimensions.

![](_page_12_Figure_1.jpeg)

Plug Driver and Handle Assembly Ordering Information

NAME	SPINDLE TYPE	°A″ DIMENSION	PART NUMBER
	HN	1.75 inches	S-28146-1
I Plug Driver	HP	2.75 inches	S-28146-3
Plug Driver Handle	N/A	N/A	S-27399
	NAME Plug Driver Plug Driver Handle	NAMESPINDLE TYPEPlug DriverHNPlug Driver HandleN/A	NAMESPINDLE TYPE"A" DIMENSIONPlug DriverHN1.75 inchesPlug Driver HandleN/AN/A

Figure 9: Spindle plug installation

![](_page_12_Figure_5.jpeg)

![](_page_12_Figure_6.jpeg)

![](_page_12_Figure_7.jpeg)

HN spindle

Figure 10: Recommended spindle plug depth (if not using plug tool shown in Figure 9)

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#### 90° SUPPLY FITTING INSTALLATION

- 1. **Thread** 90° supply fitting into each axle hose as shown in Figure 12.
- 2. Tighten fitting to 10 ft. lbs. (13 Nm) of torque.
- 3. **Clock** fitting, in tightening direction only, for applicable suspension. See Figure 11 to Figure 15.
- 4. If applicable, **cover** fitting with vinyl cover to keep out paint and contaminants.

#### **DELIVERY LINE ROUTING**

For systems with one or two axles, observe the installation requirements as shown in the following diagrams. Extend the main  $3/_8$  inch tubing as necessary.

**Π** 

\* It is the OEMs responsibility to route air lines and orient axle connector fittings to eliminate interference between slack adjusters and air lines. Lines should be protected against chaffing when passing through or by metal edges.

![](_page_13_Figure_9.jpeg)

Figure 11: Suggested delivery line details for AAT, HKAT

![](_page_13_Figure_11.jpeg)

Figure 12: Suggested delivery line details for AANT, HKANT, UTKNT

![](_page_14_Figure_1.jpeg)

Route delivery line through hole in suspension beam\*

Figure 13: Suggested delivery line installation details for AAL

![](_page_14_Figure_4.jpeg)

Route delivery line through hole in suspension beam\*

![](_page_14_Figure_6.jpeg)

![](_page_14_Figure_7.jpeg)

Figure 15: Suggested delivery line installation details for AANL

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<sup>\*</sup> It is the OEMs/intsallers responsibility to route air lines and orient axle connector fittings so as to eliminate interference between slack adjusters and air lines. Lines should be protected against chaffing when passing through or by metal edges.

#### **AXLE VENT INSTALLATION**

The high flow axle vent (Figure 16) is installed in the previously drilled hole as shown in Figure 17. Refer to <u>AXLE PREPARATION on page 10</u> for drilling details.

![](_page_15_Figure_3.jpeg)

Figure 16: INTRAAX<sup>®</sup>/VANTRAAX<sup>®</sup>/ULTRAA-K<sup>®</sup> axle vent assembly

- **NOTICE** To prevent contamination of the axle, ensure high flow axle vent is securely fastened and vent tube points down.
- Failure to properly install axle vent may result in wheel-end pressurization or water ingestion. This could cause wheelend failure resulting in severe personal injury or death.

- Install axle vent into hole provided in axle (Figure 17) and hand-tighten.
- Use a 1-inch crows' foot to tighten the vent body to 10 ft. lbs. (13 Nm) of torque. Continue to tighten the vent body until the tube fitting points downward.
- 3. If present, **remove and discard** paint plug (Figure 16).
  - **NOTICE** Air pressure can build up inside the axle if the paint plug is not removed.

90° supply fitting High flow axle vent V inch diameter clear plastic tube oriented downward

Figure 17: Typical axle vent installation

#### **HUBCAP INSTALLATION**

IMPORTANT: Once installed, DO NOT remove hubcap. To protect warranty on Hendrickson dressed axles, skip to <u>TIRE HOSE</u> INSTALLATION on page 19.

> CONTACT HENDRICKSON Technical Services on page 4 and page 5 before removing any Hendrickson assembled wheel-end components.

Three basic hubcap types are available. See table below. Hubcap installation is the same for each.

SPINDLE TYPE	HUBCAP
HN	HN
HP	HP
HP with castle nut system	HP extended

![](_page_16_Figure_6.jpeg)

Table 4: Basic hubcap types

Figure 18: Hubcap to axle hose connection

To install the hubcap:

- 1. **Draw** just enough axle hose out from center of spindle to attach axle hose fitting to the rotary union inside the hubcap (Figure 18).
- 2. **Place** hubcap gasket over axle hose for later positioning.
  - **NOTE:** Shaft has pre-applied dry thread locker. Loctite<sup>®</sup> or other thread locking compound is not required.
- 3. Hand thread rotary union onto axle hose fitting. DO NOT rotate axle hose fitting.
- Using a <sup>3</sup>/<sub>8</sub>-inch wrench to prevent rotation of the axle hose fitting, (Figure 18) tighten the rotary union shaft to 50±5 in. lbs. (5.7±0.6 Nm) of torque.
- 5. **Place** two opposing bolts in hubcap and **align** gasket to bolts.
- Orient hubcap for proper tire hose routing. Aligning the tire hose ports so they are BETWEEN two wheel mounting studs will generally provide the best tire hose routing, Figure 20 on page 18.
  - A. **Ensure** hubcap is clocked to aim tire hose ports between wheel studs.
  - B. **Clock** wheels to align valve stem with hubcap tire hose port(s). If duals, align inner wheel (straight hose) first.

- 7. Install all hubcap bolts and hand-tighten.
- 8. **Tighten** hubcap bolts in the order shown in Figure 19 to 15±3 ft. lbs. (20±4 Nm) of torque.

![](_page_17_Picture_3.jpeg)

Figure 19: Hubcap torque pattern

- 9. Repeat procedure for each wheel-end.
  - **NOTE:** If oil lubricated wheel-end, oil can be added after hubcap is installed. For details on wheelend lubrication, refer to applicable wheel-end or OEM documentation.

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![](_page_17_Figure_7.jpeg)

Figure 20: Properly clocking hubcap and wheels to prevent tire hose damage during operation

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## **INSTALLATION AND SERVICE PROCEDURES**

#### TIRE HOSE INSTALLATION

Tire hoses connect the hubcap port to the valve stem on the tire.

![](_page_18_Figure_4.jpeg)

Figure 21: Improper tire hose installation (super single shown)

This procedure applies to both dual and super single installations and assumes the wheel is off during the TIREMAAX<sup>®</sup> PRO-LB installation. If wheel is on and properly clocked, go to Step 2.

- 1. Using two lug nuts, **mount** wheel on hub with the rotation clocked for best tire hose placement (Figure 20 on page 18).
  - **NOTICE** The wheel must be properly "clocked" to the hubcap to prevent the hoses from rubbing on the wheel and extending beyond hubcap and wheel.
- Remove nylon port plugs from hubcap tire hose ports using a Torx T45 driver and discard. For single tire applications remove one plug. For dual tire applications, remove both plugs.
- 3. Attach the tire hose(s) directly to the tire valve stem(s). DO NOT use valve stem extenders.
- 4. **Tighten** the tire hose / valve stem connection finger tight (Figure 22).

 Using a <sup>7</sup>/<sub>16</sub> inch wrench, tighten the tire hose / valve stem connection an additional one-half turn (Figure 22). DO NOT overtighten this connection.

![](_page_18_Figure_13.jpeg)

Figure 22: Attaching tire hoses to tire valve stem

- **NOTE:** If using a torque wrench, **tighten** to 28±2 in. Ibs. (3±0 Nm) of torque.
- 6. **Ensure** hose connections are tight enough that, when moving the hose back and forth, it does not cause the connection to move.
- **IMPORTANT:** When starting nut, hold tire hose with free hand to prevent side loading and avoid cross threading. The knurled nut should easily turn 3 to 4 rotations by hand. Any drag before 3 turns suggests cross threading.

![](_page_18_Picture_18.jpeg)

Figure 23: Dual tire hose to hubcap connection(s)

![](_page_18_Picture_20.jpeg)

Figure 24: Super-single tire hose to hupcap connection

 Loosely connect other end of tire hose(s) (<u>Figure</u> <u>23 and 24 on page 19</u>) to the outlet port of the hubcap and check to ensure hose(s) do not rub on the wheel or extend beyond the hubcap and wheel.

If not:

- A. **Disconnect** tire hose(s) at hubcap only.
- B. Remove lug nuts and wheel.
- C. Adjust clocking of wheel, then repeat <u>Step 1</u> <u>through Step 5 on page 19</u> as needed.
- 8. Once properly clocked, **install** remaining lug nuts and **tighten** all to manufacturer's specifications.
- 9. Hand-tighten hubcap connection(s) from Step 7. Using pliers, carefully and gently verify the hose connection is tight.
  - **NOTICE DO NOT** overtighten the knurled tire hose nut or damage knurled finish. Doing so will make tire hose removal extremely difficult for service requirements.
- 10. Repeat procedure for remaining wheel-ends

#### Tire Hose Installation Tips

- 1. Route tire hoses inside rim area.
- 2. To further restrain tire hoses within rim area and take up slack, "clock" wheel rotation relative to hubcap position.
- 3. Properly **orient** valve stem to ensure tire hoses do not contact wheel during operation.
- 4. For **dual wheel** configurations, proper clocking is particularly important since the two wheels (inner and outer) must be properly oriented, with valve stems on opposite sides, for proper installation.
- 5. **Super single** wheels require only one tire hose. Positioning the hubcap port 90° from the valve stem provides optimum fit. The unused port will remain plugged.

#### **CONTROLLER INSTALLATION**

The following **criteria is recommended** when locating and mounting the controller assembly:

- 1. Protect the controller and air lines from flying debris.
- 2. Provide a secure and stable mounting surface.
- 3. Allow access for maintenance.
- 4. **Provide** easy access to a reservoir, emergency air supply line and delivery lines.
- 5. **Mount** with the hinge at top, with room to open upward.
- 6. If drilling is required, use the hole pattern shown in Figure 25.

**DO NOT** weld to slider box. Holes are provided for fastening brackets and other components as needed. Holes can be drilled as defined in the following methods.

- 7. Attach box using at least four of the mounting holes.
- Recommended fasteners are <sup>5</sup>/<sub>16</sub>-18 bolts and nuts, with flat washers on both sides. Recommended torque for <sup>5</sup>/<sub>16</sub>-18 fasteners is 12±1 ft. lbs (16±1 Nm).
  - **NOTICE** Failure to follow mounting recommendations can result in damage to controller box.
  - NOTICE Over torquin in distortion

Over torquing fasteners may result in distortion, cracking and eventual breaking of the controller box flange.

![](_page_19_Figure_30.jpeg)

DIMENSION.	INCH	mm
A	3	76.2
В	8.12	206.2
С	6 x 0.32 DIA	6 x 8.1 DIA

Figure 25: Controller box hole pattern

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## INSTALLATION AND SERVICE PROCEDURES

The method for mounting is determined by the type of suspension and trailer. Refer to the applicable method A, B or C as follows:

A. Hendrickson ULTRAA-K® (Figure 26 and 27)

![](_page_20_Figure_4.jpeg)

Figure 26: Mounting to ULTRAA-K rear crossmember (recommended)

**NOTE:** Four holes are provided for mounting controller to rear crossmember.

![](_page_20_Figure_7.jpeg)

Figure 27: Mounting to ULTRAA-K front crossmember

B. Hendrickson **VANTRAAX®** (Figure 28). Four holes are pre-drilled in the crossmember for this purpose.

![](_page_20_Figure_10.jpeg)

![](_page_20_Figure_11.jpeg)

Controller mounted below stop bar

![](_page_20_Figure_13.jpeg)

Figure 28: Mounting to VANTRAAX front crossmember

C. Flush mount to trailer crossmember or subframe (Figure 29).

![](_page_20_Figure_16.jpeg)

Figure 29: Controller mounted to trailer frame

#### MANIFOLD INSTALLATION

The optional manifold offers the following advantages:

- Simpler installation
- Improved air distribution and flow to tires; fewer fittings
- Easier troubleshooting for locating leaks

The manifold can be located on the trailer frame, slider box or on an OEM bracket as shown in Figure 31.

![](_page_21_Figure_7.jpeg)

Tandem (four port) manifold Figure 30: Manifold mounting dimensions (inch)

![](_page_21_Picture_9.jpeg)

Mounted to slider rear crossmember

![](_page_21_Picture_11.jpeg)

Mounted to back of OEM controller bracket Figure 31: Manifold mount locations

#### DAMPING AIR TANK INSTALLATION

The following criteria is recommended when locating and mounting the damping air tank assembly.

- 1. **Protect** the tank and air lines from flying debris.
- 2. Provide a secure and stable mounting surface.
- 3. Allow access for maintenance.
- 4. Attach the tank's integral mounting bracket to a structural member using the hardware provided by Hendrickson. Bracket must be located on horizontal plane. See mounting recommendations below.
  - A. **Hendrickson ULTRAA-K**<sup>®</sup> (Figure 32). **Attach** to bottom flange of slider crossmember using holes provided; five possible mounting locations available.

![](_page_21_Picture_20.jpeg)

Figure 32: Tank mounting options on ULTRAA-K

B. Hendrickson VANTRAAX<sup>®</sup> (Figure 33). Attach to bottom flange of slider crossmember using holes provided; three possible mounting locations available.

![](_page_21_Figure_23.jpeg)

Figure 33: Tank mounting options on VANTRAAX

C. **Trailer subframe.** Attach to bottom flange of trailer crossmember or similar structural component. Match drill <sup>3</sup>/<sub>8</sub>-inch diameter holes if necessary.

![](_page_22_Picture_2.jpeg)

Figure 34: Tank mounting to trailer subframe

#### SYSTEM PLUMBING

Airline installation criteria varies with suspension type and axle type.

Plumbing diagrams show airline tubing sizes and associated fittings required to complete the system installation. Airline routing recommendations are also included.

The following plumbing criteria must be followed during TIREMAAX PRO-LB® installation:

- Use a wrench to hold supply valve, delivery port and emergency/air supply port fittings when installing airline fittings.
- Proper TIREMAAX PRO-LB operation requires correct air line diameters. Installation sizes must be as shown in diagram.
- To maintain adequate air flow:
  - All air lines coming into and going out of the controller assembly must be <sup>3</sup>/<sub>8</sub> inch.
  - When combining <sup>1</sup>/<sub>4</sub> inch lines from wheel-ends, line size must increase to <sup>3</sup>/<sub>8</sub> inch to controller.

![](_page_22_Picture_13.jpeg)

- Only use straight or Tee fitting at delivery port.
- **IMPORTANT:** Installing a 90° (elbow) fitting at the delivery port will restrict air flow and slow air-up time and closing of hubcap wheel valves.
- Moisture and other contaminants collect at the bottom of the air tank. **DO NOT** install fittings on the bottom of the trailer air tank.

![](_page_23_Figure_1.jpeg)

	ltem	l	Description
	Α	Air line	<sup>1</sup> /4 inch OD nylon air brake tubing
lih €	В	Axle connector	90-degree elbow, 1/8 inch NPT male to 1/4 inch NTA (Nylon Tubing Adapter)
v b∉ IAA)	С	Axle hose fitting	<sup>1</sup> /8 inch NPT female
	D	Axle vent fitting	High flow axle vent (includes check valve)
Sup	Е	Air line coupling	<sup>1</sup> / <sub>4</sub> inch PTC coupling
	F	Damping air tank assembly	Tank with 3/8 inch PTC elbow (IN) and 1/4 inch PTC elbow (OUT)
	G	Air spring fitting	<sup>1</sup> /4 inch NPT male to <sup>3</sup> /8 inch OD tubing 90-degree elbow
ler	Н	Air line	3/8 inch OD nylon air brake tubing
stal	Ι	Controller IN fitting	¹/₄ inch NPT male to ¾ inch NTA
ž i	J	Controller OUT fitting	Straight adapter, 1/4 inch NPT male, 3/8 inch NTA
d be	Κ	Junction manifold $\frac{1}{2}$	3/8 inch NTA inlet, 1/4 inch NTA outlets
vide	L	Pressure protection valve (PPV)	Required; 70 PSI minimum closing pressure; existing suspension valve can be used
Pro	М	PPV OUT fitting	Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA
	Ν	Emergency Supply IN fitting	<sup>1</sup> /4 inch NPT male to <sup>3</sup> /8 inch NTA
	י Th	ese parts are available from Hendrickso	n. Refer to <u>RELATED LITERATURE on page 5</u> to get part numbers.

Figure 35: Typical TIREMAAX® PRO-LB plumbing schematic - two axle with 3/8 and 1/4 inch lines and junction manifold

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![](_page_24_Figure_2.jpeg)

	ltem	ı	Description
	Α	Air line	<sup>1</sup> /4 inch OD nylon air brake tubing
(îth €	В	Axle connector	90-degree elbow, 1/8 inch NPT male to 1/4 inch NTA (Nylon Tubing Adapter)
₩ A A A	С	Axle hose fitting	<sup>1</sup> /s inch NPT female
	D	Axle vent fitting	High flow axle vent (includes check valve)
Sup	Е	Air line coupling	<sup>1</sup> / <sub>4</sub> inch PTC coupling
	F	Damping air tank assembly	Tank with 3/8 inch PTC elbow (IN) and 1/4 inch PTC elbow (OUT)
	G	Air spring fitting	1/4 inch NPT male to 3/8 inch OD tubing 90-degree elbow
ler	Н	Air line	3/8 inch OD nylon air brake tubing
stal	Ι	Controller IN fitting	¹/₄ inch NPT male to ¾ inch NTA
v in	J	Controller OUT fitting	Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA
d be	Κ	Tee Assembly	Union tee; 1/4 inch NTA, 1/4 inch NTA, 3/8 inch NTA
vide	L	Pressure protection valve (PPV)	Required; 70 PSI minimum closing pressure; existing suspension valve can be used
Pro	М	PPV OUT fitting	Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA
	Ν	Emergency Supply IN fitting	¹/₄ inch NPT male to ¾ inch NTA

Figure 36: Typical TIREMAAX® PRO-LB plumbing schematic - two axle with 3/8 and 1/4 inch lines

## **ELECTRICAL COMPONENT INSTALLATION**

Once the controller is located and mounted to the trailer or slider, the electrical wiring can be completed. Multiple wiring options are available during the TIREMAAX<sup>®</sup> PRO-LB configuration. These options are addressed in the following installation procedures for electrical components.

Electrical components include:

- Wire harnesses
- Controller connectors
- Trailer-mounted indicator lamp
   (may not be included with TIREMAAX PRO-LB kit)

AWARNING Improper wiring or operation of TIREMAAX systems can lead to situations where the driver is not aware of damage to tire inflation system or wheel-end components.

#### WIRE HARNESS OPTIONS AND DETAILS

This section includes basic instructions for routing and installation of optional wire harnesses available from Hendrickson. Detailed information and criteria are also provided:

- Figure 37 shows a typical wiring schematic.
- Figure 38 shows various connections based on the options selected for the installation.

![](_page_25_Figure_12.jpeg)

Figure 37: Wiring schematic for standard wiring adaptor plug

![](_page_25_Figure_14.jpeg)

![](_page_26_Figure_1.jpeg)

![](_page_26_Figure_2.jpeg)

#### STANDARD WIRE HARNESS INSTALLATION

Refer to Figure 37 on page 26 schematic before continuing.

- 1. **Connect** the blue wire (terminal C) to vehicle uninterrupted power.
- 2. **Route** indicator lamp power wire (16 AWG minimum) and connect to the red wire on standard harness.
  - **NOTICE** Termination of all wires for the standard harness is the responsibility of the installer.
- **NOTE:** For indicator lamp mounting instructions, refer to <u>TRAILER-MOUNTED INDICATOR LAMP</u> INSTALLATION on page 28.
- 3. **Connect** other end of indicator lamp power wire and ground connection.
- 4. **Plug** male harness connector into female connector of controller assembly.
- 5. Secure and restrain all wires as needed.

#### **ABS JUNCTION WIRE HARNESS INSTALLATION**

Refer to information provided in <u>Figure 38 on page 26</u> before continuing.

- 1. Unplug 5-pin Delphi ABS power connector.
- 2. **Plug** 5-pin male Delphi connector of Hendrickson TIREMAAX<sup>®</sup> ABS junction wire harness into the mating connector coming from the J560 interface.
- 3. **Plug** other end of harness into ABS female connector to complete the ABS circuit.
- 4. **Connect** 3-pin Delphi weather pack male connector into the controller assembly.

- 5. Weatherproof all terminals and connectors as needed. Corrosion prevention compound must be used on all connectors. Refer to TMC RP 113, 114, 120 and 154 for recommended wiring practices.
- 6. Secure harness and wires as needed (Figure 39).
  - A. Route harness under trailer as required.
  - B. Secure harness every 12 to 18 inches using nylon ties or other wire management hardware such as conduit or wire trays.
  - C. **Support** harness near connectors so the weight of the cable is not supported by the connectors. Make sure connections are secure and not able move around during vehicle operation.
  - D. Bundle excess cable.
- **IMPORTANT:** The cable bend radius should not be less than 1 inch.

**DO NOT** make bends in the cable near the connectors. This places stress on the connectors and may result in loss of connection or harness failure.

**DO NOT** place the harness and connectors in tension. Make sure when the slider is positioned at the most extreme positions the harness is not pulled.

**DO NOT** allow the cable to rub against a sharp edge of a hole or straight edge of a structural member. Use grommets or loom to protect the cable from sharp edges. Unless configured with lamp option, a trailer-mounted indicator lamp is **NOT provided** with TIREMAAX<sup>®</sup> PRO-LB systems.

Mount indicator lamp to trailer as follows:

- 1. **Determine** best location on the front corner or side of the trailer within view of the driver side mirror.
- **NOTE:** On truck applications with large wind fairings, locating the indicator lamp near the left rear wheels (near the ABS warning lamp) may be preferable.
- Mount indicator lamp at determined location (fasteners not provided). Recommended assembly torque is 17.5±2.5 in. lbs. (2.0±2 Nm) with #10 machine screws.
- 3. **Connect** indicator lamp wires according to information provided in <u>Figure 38</u> and <u>WIRE</u> <u>HARNESS INSTALLATION on page 27</u> section.

## SYSTEM INTEGRITY CHECK

**NOTE:** The TIREMAAX PRO-LB controller lowers tire pressure when the vehicle air spring pressure drops. It is not unusual for the controller to start exhausting tire pressure when the emergency brakes are released if it determines that the tires are above the load-based target pressure.

After the installation is complete, but before the trailer is put into service, all air system connections must be tested. To accomplish this:

- Complete the procedure <u>CHECKING FOR AIR LEAKS</u> on page 31.
- Perform the INDICATOR LAMP TEST on page 32.

The TIREMAAX PRO-LB controller will de-energize and isolate all tires when the trailer emergency brakes are set. The procedure to validate proper operation of this function is as follows:

- 1. Set the trailer emergency brake or remove the emergency/supply gladhand from the trailer.
  - **NOTE:** Upon setting the emergency brake, a brief audible exhaust will be present at the controller. The maximum allowable time limit for the audible exhaust to be present is 10 seconds.
- 2. Once the audible exhaust has dissipated, a small airflow can continue to be detected at the exhaust port of the controller. **Use** leak detection solution and **observe** bubble formation.
  - **NOTE:** The maximum allowable time limit for bubble formation to be present is 5 minutes. If the system conforms to the allowable limits for audible exhaust and leak detection criteria above, the controller is considered to be within allowable factory specifications.

## SYSTEM SETUP

The TIREMAAX PRO-LB controller is pre-set from the factory. Therefore, no additional setup is required. To set a pressure other than the factory setting, follow the procedure <u>SETTING TIREMAAX PRO-LB INFLATION</u> <u>PRESSURE on page 34</u>.

## **DECAL LOCATION**

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Various decals are provided with TIREMAAX<sup>®</sup> PRO-LB systems. These decals include important information related to TIREMAAX PRO-LB operation and function.

They must not be removed after installation. If included with the literature packet and not already installed on the trailer, place decals using Table 5 and Figure 40.

DECAL #	DESCRIPTION	LOCATION
T50018	Manual tire check decal	Two per system: Depending upon trailer type, locate on the trailer sides near the controller box
<u>150022</u>	Tire pressure control decal	Three per system: Affix one near VIN plate and one next to each T50018 on the trailer sides near the controller box
T50023	Audible discharge decal	Two per system: Affix next to each T50018 on the trailer sides near controller box
T50014	Indicator lamp status decal	Locate near the indicator lamp
T50019	Controller lid decal	Outside surface of the controller lid

Table 5: Decal locations

![](_page_28_Figure_6.jpeg)

![](_page_28_Figure_7.jpeg)

Figure 40: Decal examples

## SERVICE PROCEDURES

This section includes service information and requirements relative to TIREMAAX<sup>®</sup> PRO-LB.

**NOTICE** Air additives or antifreeze containing alcohol will degrade the performance of rubber components (TMC RP 730).

#### **TOOLS REQUIRED**

TOOL	WHERE USED
PRO-LB service tool VS-41241-1	SETTING TIREMAAX PRO-LB INFLATION PRESSURE on page 34
Tire pressure gauge	Checking tire pressures
<sup>1</sup> /8 inch Allen wrench	Turn regulator adjustment screw to set minimum threshold pressure
<sup>3</sup> / <sub>32</sub> inch Allen wrench	Regulator body set screw
<sup>1</sup> / <sub>2</sub> inch wrench	Turn regulator adjustment nut to set target pressure
<sup>3</sup> / <sub>8</sub> inch wrench	HUBCAP INSTALLATION on page 17
7/16 inch open-end torque wrench	
<sup>7</sup> /16 inch wrench	Tighten tire hose/valve stem connection

Table 6: List of required tools

#### INSPECTIONS AND INSPECTION INTERVALS

Hendrickson recommends:

- Tires be inspected for wear and damage at regular intervals.
- Check tire pressure at regular intervals using the method described in <u>MANUALLY CHECK TIRE</u> <u>PRESSURE on page 33</u>. Reference tire manufacturers' guidelines for acceptable inspection intervals.
- At regular intervals, check TIREMAAX components for air leaks and indicator lamp operation.

#### **EVERY THREE MONTHS**

To test system integrity, perform the following:

- 1. Check indicator lamp, see INDICATOR LAMP TEST on page 32.
- 2. Manually check all tires for a low pressure condition. Refer to <u>MANUALLY CHECK TIRE</u> <u>PRESSURE on page 33</u>.
- 3. Inspect all tire hoses to ensure that they are secure.

#### EVERY 12 MONTHS

In addition to the above three month check, perform the following:

- Inspect all system connections for leaks. Apply soapy water to all air fitting connections, including the axle vent. Bubbles in the soapy water will provide a visual indication of an air leak. All connections must be air tight.
- 2. Verify regulator cold target and minimum threshold pressures:

In addition to the periodic intervals listed above:

- All inspections should be completed any time a tire is removed from the trailer or if any tire is suspected to be at a low pressure condition.
- Always maintain current shop preventive
   maintenance and pre-trip inspection practices.
- Any preventive maintenance practices followed for general trailer air system inspections should also be applied to the TIREMAAX PRO-LB system components.

## IN THE EVENT OF A LEAK

Should a leak occur in the system:

- A small leak in one or more tires will result in continuous air flow in the lines.
  - If the flow rate is below the flow switch monitored rate (located in the controller), the light will remain off and not affect system performance.
  - If the flow rate is above the monitored rate of the indicator lamp flow switch, the light will remain on as long as the inflation pressure is below the inflation pressure setting.
- If a system leak is large enough to cause the controller inflation pressure to fall below the shut-off threshold of the hubcap wheel valve:
  - The wheel valves will close.
  - With the wheel valves closed, tires are isolated from the controller, delivery air line plumbing and each other.
- If the leak is too large to maintain tire pressure, the system can be temporarily disabled until the system can be repaired. Refer to <u>DISABLE TIREMAAX PRO-LB</u> on page 33.

#### **CHECKING FOR AIR LEAKS**

If a leak is suspected and not obvious, perform this procedure to locate leaks on air hoses, fittings and components. Also perform this procedure as a system integrity check after installation.

- AWARNING Chock all wheels before beginning this procedure. Refer to <u>T12007 General</u> Safety Precautions for details.
- **NOTE:** Make sure the controller is not simply adjusting tire pressure before assuming a leak exists in the controller.
- **NOTE:** The TIREMAAX<sup>®</sup> PRO-LB system can be pressurized without applying electrical power (indicator lamp is disabled).

Pressurize and check the TIREMAAX PRO-LB system as follows:

- 1. Fill trailer air system to at least 90 psi. If conducting an integrity check after installation, the system must be filled a minimum of 5 psi above the desired inflation pressure.
- 2. **Chock** wheels and **release** trailer emergency brake while checking for leaks.
- 3. **Ensure** TIREMAAX PRO-LB supply valve (if equipped) is in open position (Figure 41).

![](_page_30_Figure_10.jpeg)

Figure 41: Supply valve operation

4. **Inspect** hoses and components for damage and listen for audible indications of a leak. Repair as required.

- 5. **Apply** soapy water to all air-fitting connections. Bubbles in the soapy water will provide a visual indication of an air leak.
- **NOTE:** Simply spraying the connections to look for leaks is acceptable. Using a commercially available leak detector solution or soapy water to verify airtight connections is best and recommended.
- 6. At axle vent, **listen** for air flow through the vent tube and **apply** leak detection fluid to find any leaks internal to the axle and hubcaps.
- **NOTE:** Temporarily removing and capping delivery hose to road or curb side axle hose will further isolate a suspected leak.
- 7. **Check** tire hose connections at valve stems. Verify tire hose/valve stem connection did not loosen during the tire hose connection process.
- 8. Fix any leaky connections to ensure they are air tight.
- 9. After fixes are complete, **repeat** procedure until no leaks are detected.

#### **INDICATOR LAMP TEST**

This procedure tests both the indicator lamp and flow switch in the controller.

- **NOTE:** The indicator lamp may flash momentarily when the trailer emergency brakes are released. If this occurs, the following steps are **NOT** required.
- 1. **Verify** 12 VDC power is available to trailer. Refer to Figure 37 and 38 on page 26 for wiring diagrams.
- 2. **Enable** air flow through controller using the test port vent tool shown in the following steps.

![](_page_31_Figure_6.jpeg)

Figure 42: TIREMAAX® PRO-LB controller with test port vent

- 3. The PRO-LB controller includes a test port vent tool that threads into the test port (Figure 42) in the STORE position. To perform a lamp test:
  - A. **Open** controller.
  - B. Unthread the test port vent from the test port.
  - C. **Reverse** the test port vent and reinstall in the TEST position. In this position, the inner pin allows air to pass out the port.

- 4. Observe indicator lamp:
  - A. If illuminated, both indicator lamp and controller internal flow switch are working properly.
  - B. If indicator lamp is not illuminated:
    - i. **Check** continuity at controller connector. If the flow switch is working, the circuit should be closed. If circuit is open, replace controller.
    - ii. Apply 12 VDC power directly to the lamp. If indicator lamp is not on, replace lamp.
    - iii. If indicator lamp is still not on, **check** wiring.
- 5. Test complete:
  - A. **Unthread** test port vent and reinstall in the STORE position.
  - B. Close the controller lid.

#### MANUALLY CHECK TIRE PRESSURE

# AWARNING To prevent injury, always wear eye protection when maintaining or servicing the vehicle.

**NOTE:** Check valves in the tire hoses help prevent tire pressure loss when a tire hose is removed. You may experience a slight burst of air when the hose is disconnected.

![](_page_32_Figure_4.jpeg)

Figure 43: Manually checking tire pressure

To manually check tire pressure (Figure 43):

- 1. Turn vehicle off.
- 2. Disconnect tire hose from hubcap.
- 3. Use a conventional gauge to measure tire pressure at hose end.
- 4. **Inspect** tire hose O-rings for nicks or cuts. Replace as needed.
- Reattach and firmly hand-tighten tire hose. Using pliers, carefully and gently verify the hose connection is tight. Refer to <u>TIRE HOSE</u> INSTALLATION on page 19 for details.
  - **NOTICE DO NOT** overtighten the tire hose at the tire valve stem or the internal tire hose seal may be damaged. Ensure tire hoses are not stretched or rubbing on the wheel.

**NOTE:** If a hose is removed, the system will:

- Isolate disconnected tire.
- Continuously maintain inflation pressure for all connected tires.
- **IMPORTANT:** While tire hoses are removed at the hubcap, a check valve (spring type valve core 2 to 3 psi) in the tire hose prevents air leaking from tire.

#### **DISABLE TIREMAAX® PRO-LB**

This procedure may be required in case of a system leak or failure.

- 1. Set trailer emergency brake.
- Located on the TIREMAAX controller, turn the supply valve (if equipped) to the closed position refer to Figure 41 on page 31.
- 3. At each tire:
  - A. Detach tire hose at the hubcap.
  - B. **Completely remove** tire hose(s) from tire and store.
  - C. **Check** tire for correct inflate pressure. Adjust accordingly, if necessary.

**IMPORTANT: DO NOT discard tire hoses**. They will need to be reinstalled during service.

4. Seek service when possible.

## SETTING TIREMAAX® PRO-LB INFLATION PRESSURE

The TIREMAAX PRO-LB controller is pre-programmed from the factory, therefore this procedure is normally not required. If a change is desired, proceed as follows.

## **TOOLS NEEDED**

- 1/2 inch Open End Wrench
- 1/8 inch Allen Wrench
- 3/32 inch Allen Wrench
- PRO-LB Field Adjustment Tool

![](_page_33_Picture_8.jpeg)

Figure 44: TIREMAAX PRO-LB field adjustment tool

Tire pressure gauge (BLUE). Used when verifying and or adjusting cold tire inflation pressure and minimum tire pressure.

Air spring gauge (RED). Marked to correspond to the suspension category. Used when verifying and/or adjusting cold tire inflation pressure and minimum tire pressure.

## **SETUP / PREPARATION**

- 1. **Fully charge** trailer air tank.
- 2. Set trailer parking brake.

**IMPORTANT:** Failure to set trailer parking brake will result in inaccurate inflation pressure readings.

- 3. Chock wheels or otherwise immobilize trailer.
- 4. Locate TIREMAAX PRO-LB controller on the trailer.
- 5. Note the following information on the controller lid decal (Figure 45)
  - a. Suspension Category (A, B C)
  - b. Cold Tire Inflation Pressure at 17,000 lbs.
  - c. Minimum Tire Pressure

![](_page_33_Figure_22.jpeg)

Figure 45: Controller lid decal

- 6. **Refer** to Figure 46 on page 35 for remaining steps.
- 7. Ensure controller supply valve is open.
- 8. **Open** controller lid.
- 9. Remove test port vent.
- 10. Hang tool on controller.
- 11. Attach field adjustment tool to shop air.
- 12. **Connect** field adjustment tool hoses (blue hose to Test Port and red hose to Test Tee).
  - A. It does not matter which hose line is connected first.
  - B. Tool may exhaust air while being connected. It will stop once fully connected.
- 13. Adjust AIR SPRING pressure to 0 psi by turning regulator knob on field adjustment tool counterclockwise.
- 14. **Proceed** to VERIFYING COLD TIRE INFLATION PRESSURE on page 36.

![](_page_34_Figure_1.jpeg)

Figure 46: Field adjustment tool connected to TIREMAAX® PRO-LB Controller

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**IMPORTANT:** Complete <u>SET-UP/PREPARATION on page</u> <u>34</u> before proceeding.

#### **VERIFYING COLD TIRE INFLATION PRESSURE**

- 1. Using regulator knob on field adjustment tool, adjust AIR SPRING pressure gauge until the needle is at your *Suspension Category (A, B or C)*.
- 2. Press and release relief button.
- 3. On TIRE gauge, **verify** "TARGET PRESSURE AT 17K" matches cold tire inflation pressure at 17,000 lb listed on controller lid decal.
  - A. If it does, proceed to VERIFYING MINIMUM TIRE PRESSURE.
  - B. If it does NOT, proceed to ADJUSTING COLD TIRE INFLATION PRESSURE.

# ADJUSTING COLD TIRE INFLATION PRESSURE

1. **Loosen** controller regulator body set screw using  $\frac{3}{32}$  inch allen wrench.

**IMPORTANT: DO NOT** remove set screw.

- **NOTE:** If TIRE gauge needle does not respond to rotation of the adjustment nut, press and release the relief button.
  - A. If TARGET PRESSURE AT 17K is LOW:
    - i. Using ½ inch open end wrench, turn adjustment nut clockwise to increase pressure until it equals "TARGET TIRE PRESSURE AT 17K" on TIRE gauge.
    - ii. Press and release relief button. Repeat step A as needed.
  - B. If TARGET PRESSURE AT 17K is HIGH:
    - i. Using ½ inch open end wrench, turn adjustment nut counterclockwise until needle is approximately 10 psi lower than your target tire pressure.
    - Then, slowly turn adjustment nut clockwise to increase pressure until at your target.
    - iii. Press and release relief button to verify tire pressure. Repeat Step B as needed.
- 2. **Retighten** controller regulator body set screw to lock adjustment nut in place.
- 3. Proceed to VERIFYING MINIMUM TIRE PRESSURE.

#### **VERIFYING MINIMUM TIRE PRESSURE**

- 1. Turning regulator knob on field adjustment tool, adjust AIR SPRING pressure down to 0 psi.
- 2. Then adjust back up to within "EMPTY CONDITION" range.
- 3. Press and release relief button.
- 4. **Confirm** TIRE pressure gauge is at the minimum tire pressure noted on controller lid decal.
  - A. If it is, proceed to DISCONNECTING FIELD ADJUSTMENT TOOL.
  - B. If it is NOT, proceed to ADJUSTING MINIMUM TIRE PRESSURE.

#### **ADJUSTING MINIMUM TIRE PRESSURE**

- Adjust minimum tire pressure by inserting <sup>1</sup>/<sub>8</sub> inch allen wrench into adjustment screw (through split grommet on right side of enclosure).
  - **NOTE:** If TIRE gauge needle does not respond to rotation of the adjustment screw, press and release the relief button.
    - A. If minimum tire pressure is LOW:
      - i. Slowly turn adjustment screw clockwise to increase pressure until the minimum tire pressure noted on controller lid decal is indicated on tire pressure gauge.
    - B. If minumum tire pressure is HIGH:
      - i. Turn adjustment screw counterclockwise until needle is approximately 10 psi lower than your target tire pressure.
      - ii. Then, slowly turn adjustment screw clockwise to increase pressure until the minimum tire pressure noted on controller lid decal is indicated on tire pressure gauge.
- 2. Press and release relief button. Repeat steps 1 and 2 as needed.

#### **VERIFYING ALL SETTINGS**

- 1. **Repeat** VERIFYING COLD TIRE INFLATION PRESSURE and VERIFYING MINIMUM TIRE PRESSURE.
- 2. **Repeat** adjustments until pressures remain at desired levels.
- 3. **Proceed** to DISCONNECTING FIELD ADJUSTMENT TOOL.

## DISCONNECTING FIELD ADJUSTMENT TOOL

- 1. Disconnect shop air supply at field adjustment tool.
- 2. **Disconnect** field adjustment tool from controller test ports.
  - A. Tool may exhaust air while being disconnected. That will stop once fully disconnected.
- 3. **Reinstall** test port vent in STORE position (Figure 46 on page 35) and close controller lid.

## WIRING HARNESS REPLACEMENT

**NOTICE** To avoid arcing and other electrical damage, remove power to trailer. Observe electrical safety considerations when disconnecting and connecting wires and electrical connections.

## **REPLACING STANDARD WIRING HARNESS**

With the standard wiring harness, replacement is simply a matter of disconnecting the existing harness and connecting the new one.

- On the standard harness, the red wire is the indicator lamp power lead and the blue wire is 12 VDC vehicle power.
- The termination of these wires is the responsibility of the harness installer.
- Terminals and connectors must be weatherproof and corrosion prevention compound must be used on all connectors.
- Refer to TMC RP 113, 114 and 120 for recommended wiring practices.

## **REPLACING PREMIUM ABS JUNCTION HARNESS**

This procedure applies to Hendrickson components as listed in Figure 38 on page 26.

#### REMOVAL

- 1. Turn off all power to trailer.
- 2. **Disconnect** the following:
  - Five-pin ABS connector
  - Five-pin power supply connector
  - Indicator lamp connection
  - Controller assembly connector

#### INSTALLATION

For installation details and criteria, refer to <u>ABS</u> JUNCTION WIRE HARNESS INSTALLATION on page 27.

## CONTROLLER ASSEMBLY REPLACEMENT

This procedure replaces the controller assembly as one complete unit.

#### REMOVAL

- 1. Set trailer parking brakes.
- 2. Exhaust air from trailer air tank.
- 3. Disconnect controller electrical connector.
- 4. **Disconnect** air supply line. Label the line "SUPPLY" to avoid confusion when installing the new controller assembly.
- 5. **Disconnect** emergency air supply line. Label the line "EMERG" to avoid confusion when installing the new controller assembly.
- 6. **Disconnect** delivery air line. Label the line "DELIVERY" to avoid confusion when installing the new controller assembly.
- 7. **Disconnect** air spring line. Label the line "AIR SPRING" to avoid confusion when installing the new controller assembly.
- 8. If reusing air fittings, remove air fittings from the ports on the controller assembly.
- 9. **Remove** mounting bolts and controller assembly enclosure from subframe.

## INSTALLATION

- 1. **Mount** controller assembly enclosure to subframe using screws removed in removal procedure. Replace fasteners as needed. Refer to <u>CONTROLLER</u> <u>INSTALLATION, Step 8 on page 20</u>, for torque values.
- 2. If necessary, apply thread sealant to air fittings.
- 3. **Install** air line fittings on supply and delivery ports. Use the two-wrench method to avoid overtightening the fittings.
- 4. Repeat Step 3 for emergency air supply port.
- 5. **Connect** air lines, labeled from removal procedure, to the appropriate ports:
  - SUPPLY
  - DELIVERY
  - EMERGENCY
  - AIR SPRING
- 6. Connect controller assembly wire connector.
- 7. Recharge trailer air system.
  - **NOTE:** The TIREMAAX PRO-LB controller will relieve pressure from tires if the tire pressure is too high for the corresponding air spring pressure. Allow system to settle before checking for leaks.
- 8. Test for air leaks by listening or using soapy water. Refer to <u>CHECKING FOR AIR LEAKS on page 31</u>.
- 9. **Perform MANUALLY CHECK TIRE PRESSURE on page** <u>33</u> for at least two tires.

## **REPLACING HUBCAP WINDOW**

Replacement hubcap window kits are available (Hendrickson <u>L878 TIREMAAX® Parts List</u>) for various TIREMAAX PRO-LB hubcap windows.

![](_page_37_Picture_3.jpeg)

Figure 47: Hubcap window assembly

When replacing the window, assemble in the order shown in Figure 47. Tighten Tri-Lobe screws to  $35\pm2$  in. lbs. (4 Nm) of torque in the sequence shown.

## WHEEL REMOVAL AND INSTALLATION

Set trailer emergency brake and disable the system before wheel removal.

- 1. **Close** supply valve on the controller to shut off pressure to the system.
- 2. **Turn vehicle off and disconnect** tire hose(s) at both ends.
- 3. **Observe and record** wheel orientation (Figure 20 on page 18).
- 4. **Remove** wheel(s) as needed.

NOTICE

Take care not to damage the hubcap port and threads.

5. **Install** new or repaired wheel(s) as needed, making sure the wheel is properly oriented as recorded in Step 3.

![](_page_37_Picture_15.jpeg)

Figure 48: Reattaching tire hoses to tire valve stem

- 6. Reattach tire hose to tire valve stem(s) and tighten finger tight.
- **NOTE:** Tire hoses must be connected directly to the tire valve stems and hubcap port. DO NOT use valve stem extenders.
- Using a <sup>7</sup>/<sub>16</sub> inch wrench, tighten tire hose/valve stem connection an additional one-half turn (Figure 48).
- 8. **DO NOT** overtighten this connection. **Ensure** hose connections are tight enough that, when moving the hose back and forth, it does not cause the connection to move.
- **IMPORTANT:** When starting nut, hold tire hose with free hand to prevent side loading and avoid cross threading. The knurled nut should easily turn 3 to 4 rotations by hand. Any drag before 3 turns suggests cross threading.
- 9. **Reattach** tire hose(s) to hubcap, hand-tighten. Using pliers, carefully and gently verify the hose connection is tight.

NOTES:

Actual product performance may vary depending upon vehicle configuration, operation, service and other factors.

Call Hendrickson at 866.RIDEAIR (743.3247) for additional information.

![](_page_39_Picture_2.jpeg)

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