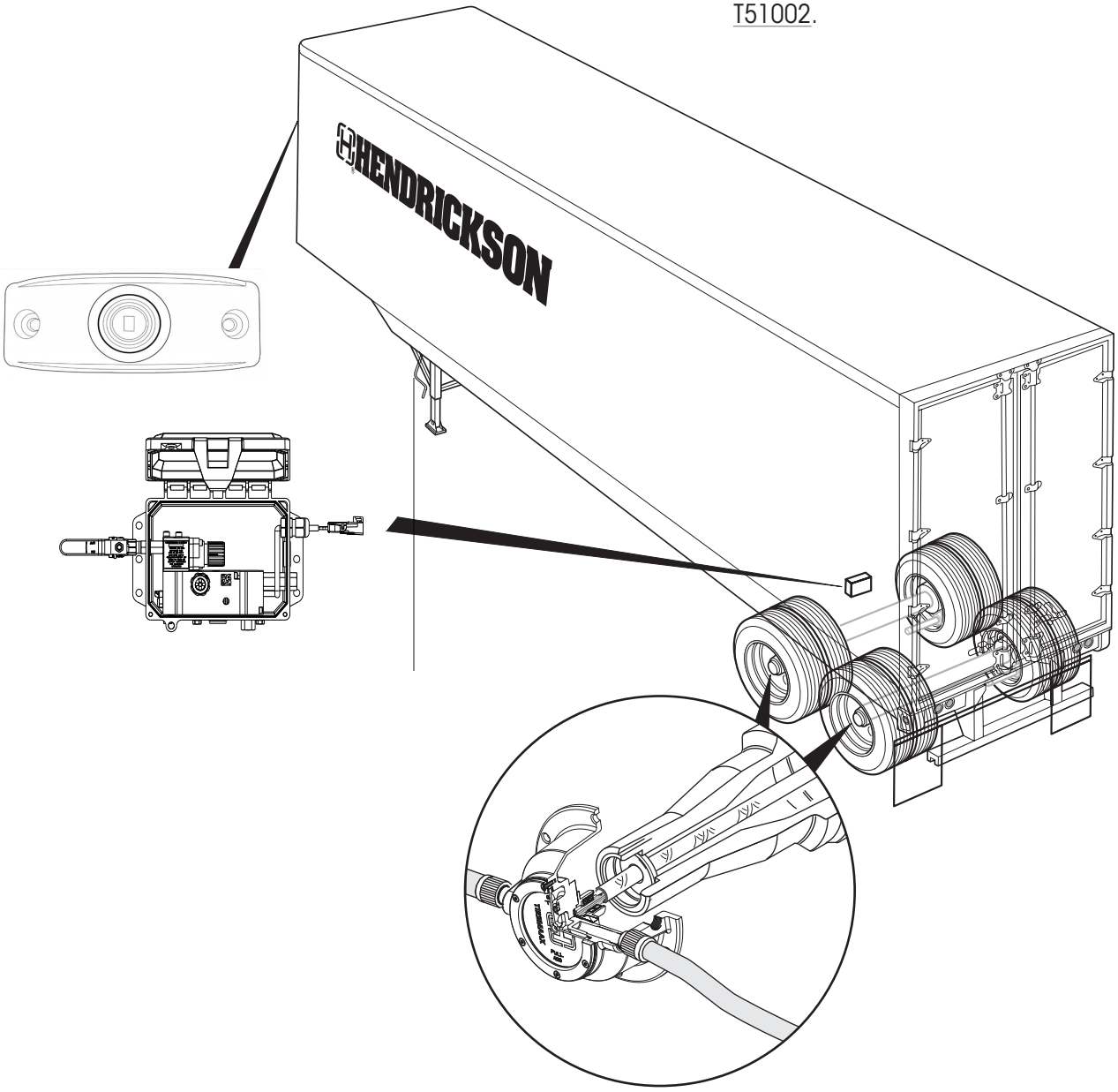
# TECHNICAL PROCEDURE

## TIREMAAX® PRO TIRE INFLATION SYSTEMS

**SUBJECT:** Installation, Service and Troubleshooting Procedures

**LIT NO:** T51009
**DATE:** April 2026

**NOTE:** For information on TIREMAAX® CP and PRO systems prior to MAY 2026 refer to Hendrickson literature number T51002.




HENDRICKSON
*The World Rides On Us®*

## TABLE OF CONTENTS

## IMPORTANT SAFETY NOTICES

Hendrickson literature number **T12007** *Technical Procedure General Safety Precautions and Information*, available at www.Hendrickson-intl.com/TrailerLit, **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 T12007 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, how to contact Hendrickson and how to apply hyperlink.

### 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.

**⚠DANGER** Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

**⚠WARNING** Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

**⚠CAUTION** 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

Links 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.

### CONTACTING HENDRICKSON

Contact Hendrickson Trailer Technical Services for technical assistance as needed. To do so, several options are available. 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
  - Suspension serial number
  - Approximate number of suspension miles
- **Trailer information** (located on VIN plate) -
  - Type (van, reefer, flat bed, etc...)
  - Manufacturer
  - VIN (vehicle identification number)
  - In-service date [1]
  - Fleet/owner name
  - Unit #

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

- **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., road side, front axle, rear axle, curb side rear, etc.).
- **Digital photos** of suspension and damaged areas.
- **Special application** approval documentation (if applicable).

### PHONE

Contact **H**endrickson **T**railer **T**echnical **S**ervices 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 part information and ordering.
  - **Original Equipment Sales** for part 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.

## RELATED 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/TrailerLit

Available Hendrickson documentation can be viewed or downloaded from this site.

All Hendrickson online documentation is in PDF format that requires PDF reader software to open. A free application is downloadable from Adobe at http://get.adobe.com/reader/.

Other related literature may include:

| NAME | DESCRIPTION |
|---|---|
| L583 | *Comprehensive Warranty Statement (US and Canada)* |
| L878 | *TIREMAAX® Parts List* |
| T51002 | *TIREMAAX® PRO Installation, Service and Troubleshooting Procedures (systems prior to May 2026)* |
| T50018 | *TIREMAAX® Manual Tire Check Decal* |
| T51003 | *TIREMAAX® CP & PRO Installation Poster* |
| T52003 | *ToolBox Tip: TIREMAAX® Hubcap Clocking* |
| T52007 | *ToolBox Tip: TIREMAAX® PRO (after May 2026) setting target Pressure* |

*Table 1: Related literature*

Videos are also 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 for the latest version of this manual.

## PREPARING TRAILER FOR MAINTENANCE SERVICE

Information for trailer preparation, safety and precautionary statements, refer to Hendrickson literature number T12007, available at

www.Hendrickson-intl.com/TrailerLit.

**NOTE: DO NOT** service a suspension or any components that is under warranty without first contacting Hendrickson Technical Services. Refer to CONTACTING HENDRICKSON for details.

**⚠WARNING** **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

TIREMAAX PRO automatically inflates under-inflated tires, relieves excess pressure from over-inflated tires, and balances pressure across all wheel positions.

## FEATURES

Features include:

- Indicator Lamp: Lights up when air flow exceeds limits during inflation or if there's a leak (Figure 3 on page 9)
- Automatic Pressure Control: Maintains set tire pressure continuously.
- Axle Protection: Axle tube is not pressurized.
- In-Axle Filter: Prevents hub contamination and vents excess air through to the axle vent.
- Axle Venting: No venting through wheel-end reduces contamination risk.
- Wheel Valves: Tires are isolated from the system when parked.
- Integrated Rotary Union: Built into the hubcap for easier installation and service.
- Manual Tire Pressure Access: Tire hoses at hubcap allow manual pressure checks and fills.
- Leak Detection: System inflates tires and identifies when there are leaks.
- Debris Protection: Air supply valve screen keeps system clean.
- OEM Pressure Settings: Cold tire inflation pressure set to manufacturer specs.
- Pressure Relief: Excess tire pressure above preset limit is automatically relieved.

## SYSTEM SPECIFICATIONS

Unless otherwise specified, specifications listed apply to TIREMAAX PRO.

| SPECIFICATION | US | METRIC |
|---|---|---|
| PRO tire pressure setting range | 85 to 120 psi | 586 to 827 kPa |
| Pressure check interval | Continuous | |
| Minimum operating voltage | 9 volts | |
| Indicator lamp current range | 50 mA to 1 A | |
| Inflate capacity (one tire in approximately two minutes) | 10 psi | 69 kPa |
| Available system voltages | 12V/24V System | |
| Wheel styles supported | SS/Dual | |
| Maximum number of axles supported per control | Four | |

*Table 2: TIREMAAX® PRO general specifications*

**NOTICE** Avoid using internal tire products like balancing beads, sealants, coolants, or liquids with TIREMAAX PRO. These can damage seals and valves in the hubcap and controller, leading to improper function and wheel-end contamination.

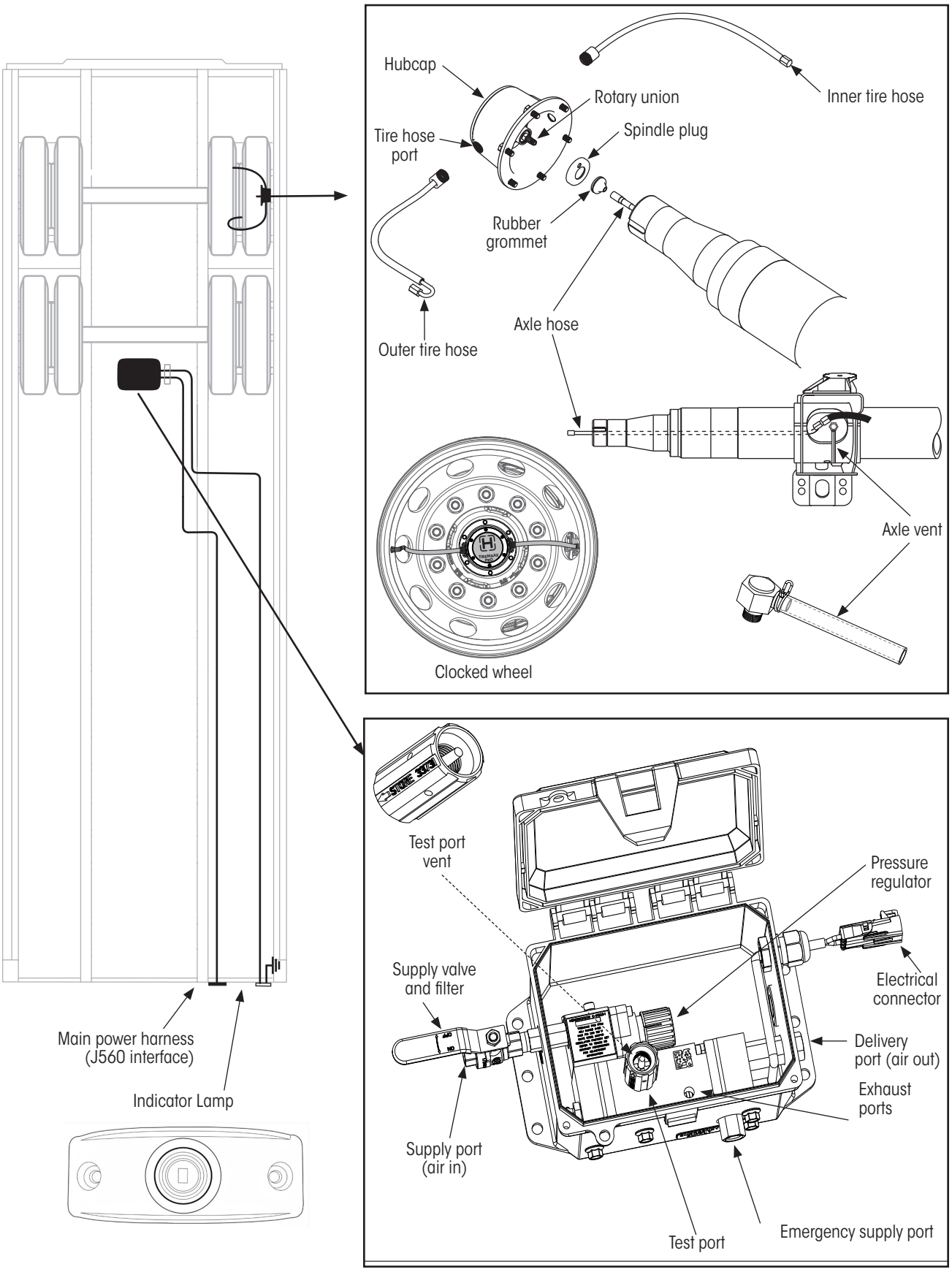



*Figure 1: TIREMAAX® components (PRO controller shown)*

## COMPONENT DESCRIPTION

This section provides a concise overview of TIREMAAX® PRO components. Refer to Figure 1 on previous page.

### TIREMAAX® CONTROLLERS

The controllers in the TIREMAAX systems control Inflation Pressure and provide protection in case of tire or system leaks.

### CONTROLLER DETAILS

– **Mounting:**
  » Externally mounted beneath the trailer (see Figure 26 on page 22).
  » Integrated mounting flanges allow installation on new or existing trailers.
  » Sealed enclosure protects internal components from environmental exposure.

**Internal Components:**

– **Pressure regulator**
  » Controls airflow from the trailer air tank to the tires.
  » Set to match the desired cold tire inflation pressure.
  » Includes built-in pressure relief: excess pressure is vented through the regulator.
  » Connects to Hendrickson TIREMAAX PRO target gauge.
  » Includes a vent used for indicator lamp testing.

**External connections:**

– **Supply port**
  » Receives air from the trailer air tank.
  » Supply valve isolates tank pressure for maintenance.
  » Inlet screen prevents contamination from air supply.
– **Delivery port**
  » Feeds regulated air pressure through air hoses and hubcaps to tires.
– **Test Port**
  » Enables testing of trailer-mounted indicator lamp (see page 43).
– **Emergency Air Supply Port**
  » Functions like a pilot valve to control the exhaust valve.
  » Isolates tire inflation system from tank air when trailer parking brakes are set.
  » Maintains tire pressure during extended trailer idle periods.

***NOTICE*** While the trailer brakes are engaged, delivery air pressure drops to zero psi in the delivery lines only. Hubcap wheel valves close to isolate tires from the system.

**⚠WARNING** While servicing the TIREMAAX PRO 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.

### HUBCAP

TIREMAAX PRO hubcaps are marked with "PRO" on the window and are configured to match specific application requirements (spindle type, grease or oil). Variants are listed in document L878 (TIREMAAX Parts List).

This assembly:

- Seals and protects wheel-end parts.
- Transfers air from the stationary axle to the rotating hub and wheels.
- Maintains tire pressure above run-flat threshold.
- Includes factory-assembled integrated components:

***NOTICE*** Disassembling hubcap integrated components in the field will void the warranty.

– Hubcap wheel valve-
  » Identified by adapter plate inside hubcap.
  » Assumes function of tire hose check valve.
  » Holds the tire hose check valve open while connected, enabling two-way air flow for both inflation and pressure relief.

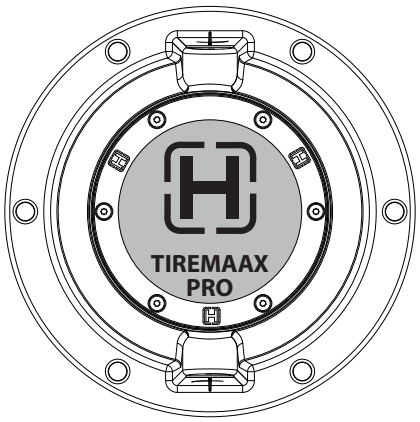



*Figure 2: Hubcap example (PRO hubcap shown)*

### AXLE HOSES AND FITTINGS

- Provide a sealed air passage from the controller through the axle(s) to the hubcap.
- Allows axle to remain non-pressurized.

### SPINDLE PLUG AND GROMMET

- Serve as a pressure vent (breather hole) for the wheel-end during normal operation and pressure fluctuations.
- Secure and position the axle hose within the hubcap and spindle assembly.

### TIRE HOSES

- Connect directly to the tire valve stem.
- Enable manual tire pressure checks and inflation at the hubcap interface. Refer to MANUALLY CHECK TIRE PRESSURE on page 43.

### INDICATOR LAMP

Controlled by the flow switch located in the controller's regulator.

- Illuminates during system testing and setting to confirm air flow.
- Illuminates if system leaks above a certain threshold.

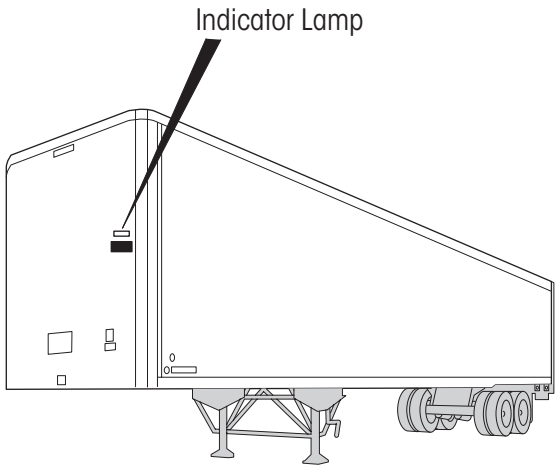



*Figure 3: Indicator lamp typical location*

# OPERATION

TIREMAAX® PRO includes an automatic pressure relief function. No manual input is required from the driver or operator during normal operation. However; the indicator lamp should be routinely monitored to confirm system functionality and integrity. The indicator lamp is typically located on the front of the trailer (see figure 3 on page 9) or positioned for visibility from the cab.

## TIRE INFLATION

The TIREMAAX® system is set to maintain a specified Inflation Pressure for inflation. As long as the trailer air tank pressure exceeds the target Inflation Pressure, the controller will continuously supply and maintain tire pressure.

**NOTE:** For proper controller operation, trailer air must be clean and dry, and tank pressure must be greater than the desired tire Inflation Pressure. The controller cannot supply pressure above the available tank pressure.

**Normal Operation:**

» The controller regulates and delivers air to pressurize the airlines and tire to the specified Inflation Pressure.

» All check valves are held open, allowing uniform two-way air flow throughout the system.

**Low Tire Pressure:**

» If tire pressure drops below the target, the system will continue inflating until the specified Inflation Pressure is reached.

» During inflation, the Indicator Lamp may remain Illuminated until pressure stabilizes.

**Leak Detection:**

» If a leak is present in a tire or airline, the Indicator Lamp may remain on for more than ten minutes or cycle on and off.

» The operator should inspect the tires and determine if it is safe to continue operation. Service should be scheduled at the next opportunity.

**Indicator Lamp Behavior:**

» Constant illumination (10+ minutes), the system may be unable to maintain proper tire pressure.

» Intermittent illumination likely indicates a slow leak in the plumbing or tires.

In the event of a leak, remaining tires are protected from pressure loss by integrated check valves located in the hubcap.

Refer to Troubleshooting on page 33.

**TIRE PRESSURE RELIEF:**

Tire pressue can increase due to temperature changes or elevation gain. Common causes include:

- Transitioning from cold to warm climates.
- Inflation during cold condition followed by tire heating during operation.
- Tire temperature increases with speed.
- Travelling to higher elevations.

**Pressure Relief Function:**

TIREMAAAX PRO includes a Pressure Relief feature preset above the Inflation Pressure. If tire pressure exceeds this threshold, the controller will exhaust excess air to maintain pressure at the relief setting.

**NOTE: Cooling tires while parked may cause pressure to drop below the Inflation Pressure, potentially triggering the Indicator Lamp at startup.**

# INSTALLATION

Installation procedures are organized by suspension and trailer requirements. Refer to Table 3 below to identify the appropriate starting point for your specifc application.

| IF | START AT |
|---|---|
| **New system** with nothing installed | Axle Preparation |
| **Axles are pre-drilled** but no TIREMAAX hardware has been installed | Axle Component Installation on page 14 |
| **Axle hose and spindle plugs** are already **installed**, but undressed | HUBCAP INSTALLATION on page 19 |
| System hardware is already installed on a **dressed axle** | TIRE HOSE INSTALLATION on page 21 |

*Table 3: Installation starting points*

Required installation material and supplies:

In addition to the components provided in the TIREMAAX kit, the installer must supply the following:

- Controller assembly mounting bolts- Refer to Figure 26 on page 22.
- Pressure Protection Valve (PPV)- Required to safeguard the air supply system.
- Indicator Lamp and wiring- If not pre-configured in the kit (see Figures 38 and 39 on pages 28 and 29).
- Spindle Plug Driver and handle- Refer to Figure 18 on page 18. Not required if spindle plugs are factory installed.
- Air Line and Fittings- As specified in Figures 34 through 36.

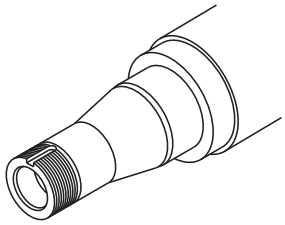
# AXLE PREPARATION

Axle preparation is the first stage of TIREMAAX installation. Beginning with Figure 6, this section outlines the procedures for drilling, cleaning and preparing a Hendrickson axle to accomodate air hoses and fittings.

**NOTE:** TIREMAAX is compatible with most spindle nut systems. For PRO systems using a castle (cotter pin-locked) spindle nut, and extended hubcap is required to prevent interference. Cotter pins must not exceed 1 inch in length.

**⚠WARNING** Always chock all wheels before beginning installation. Never work beneath a vehicle supported ONLY by a jack. **Refer** to Hendrickson literature number T12007 for details.

HN spindle



HP spindle

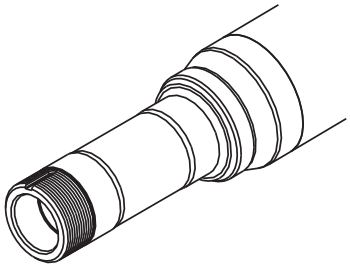


*Figure 4: Axle spindle identification*

1. **Chock** wheels to prevent trailer movement.
2. Drain oil from the hubcap if the wheel-end is oil lubricated. Discard used oil.
3. **Remove** hubcap bolts and detach hubcap.
4. **Remove** spindle plug from the spindle bore.
5. **Remove** in-axle filter from the spindle.
6. **Inspect** spindle plug bore for burs or residual sealant; clean as needed.
7. **Verify** internal spindle passage is clean and clear of debris to ensure a clear path through the axle for airline installation.

8. Select and follow the appropriate procedure based on your axle type:

   A. **INTRAAX® and VANTRAAX® suspensions (TIREMAAX Prepped)**

   – Locate the three ¼ inch pipe plugs in the axle wrap windows

   – Remove the plugs and proceed to AXLE COMPONENT INSTALLATION on page 14.

   – If the axle does not have pre-drilled holes in the axle wrap windows, continue to Step 9.

   B. **TRLAXLE® Trailer Axles**

   – Locate the three ¼ inch pipe plugs in the middle of the axle

   – Remove the plugs and proceed to the AXLE COMPONENT INSTALLATION on page 14.

   – If the axle does not have three pre-drilled holes in the middle of the axle, continue to Step 9.

9. **Drilling and Tapping Holes:** Using Figures 5 or 6 as reference:

   – Drill and tap three ¼-18 NPT holes

   – In the axle wrap windows for INTRAAX and VANTRAAX suspensions.

   – At the midpoint of the axle for TRLAXLE Trailer Axles.

**NOTE:** Accessing the approved drilling area on INTRAAX and VANTRAAX suspension may require removal of the slack adjuster and camshaft. Refer to L496, *Wheel-End Maintenance Procedures* (available at www.Hendrickson-intl.com/TrailerLit), for detailed removal instructions.

10. **Debris Removal:**

– Thoroughly remove all debris generated during drilling and tapping from inside the axle before proceeding to AXLE COMPONENT INSTALLATION on page 14.

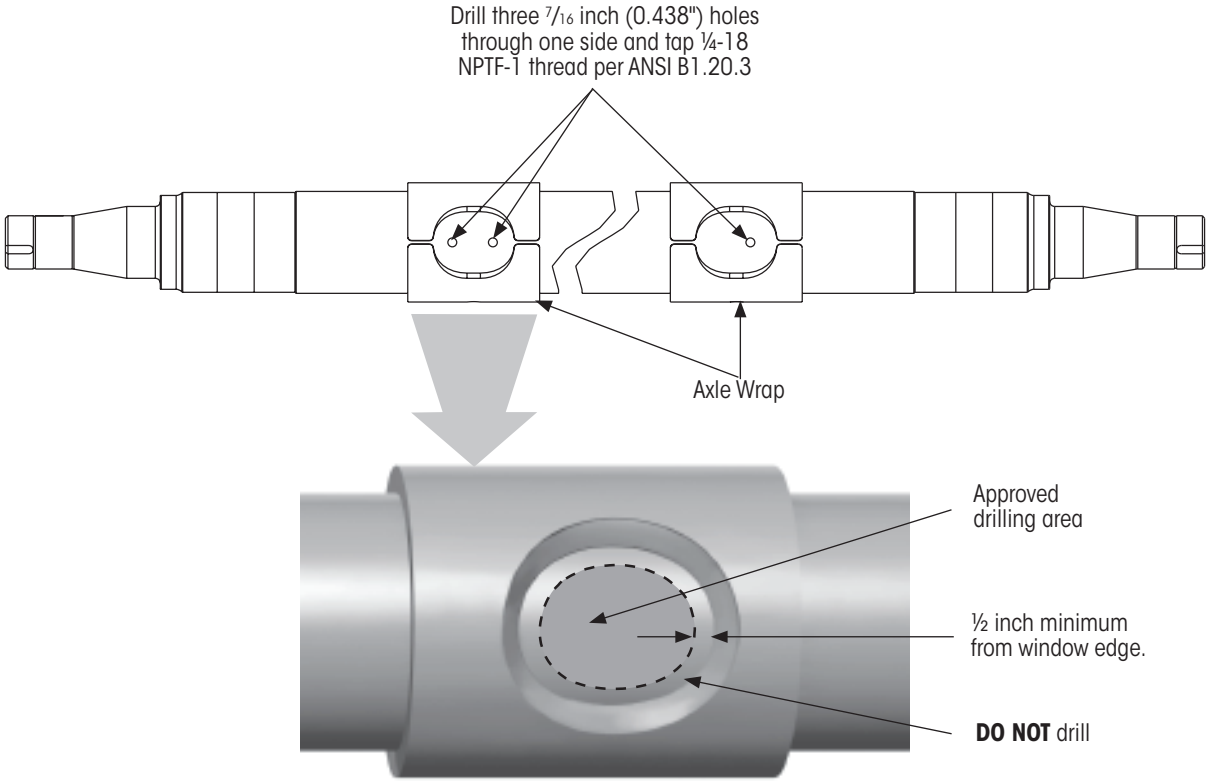



*Figure 5: INTRAAX®/VANTRAAX® suspension axle drilling details*

**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.

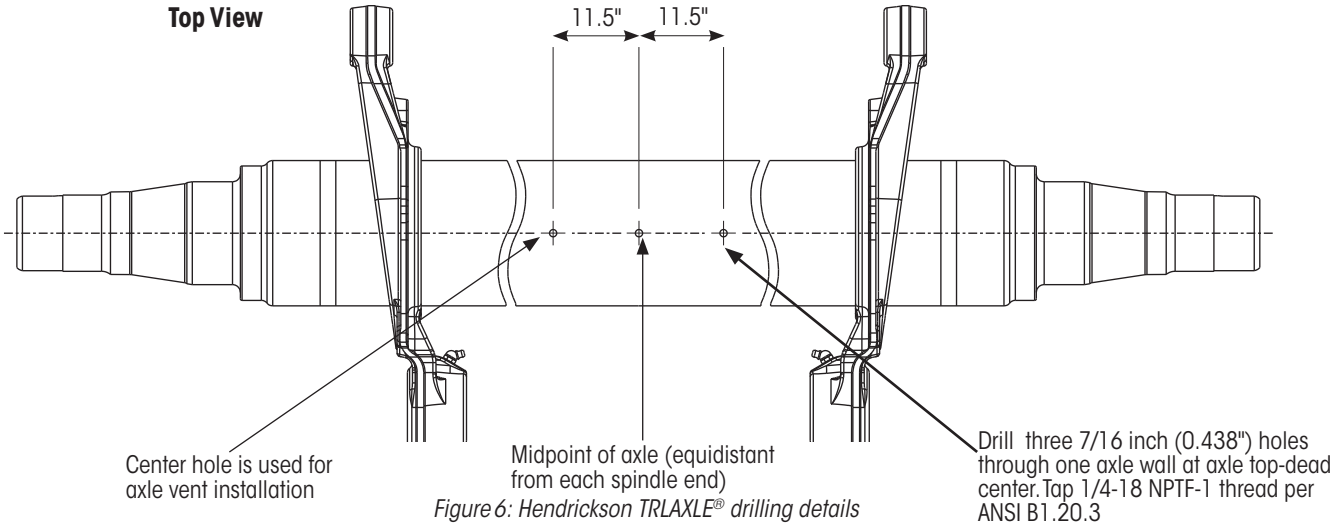



*Figure 6: Hendrickson TRLAXLE® drilling details*

***NOTICE*** Before drilling, make sure holes will not interfere with suspension mounting method. If hole will interfere, refer to CONTACTING HENDRICKSON on page 4.

**NOTE:** Figure 6 drilling details are for Hendrickson TRLAXLE®. If other than TRLAXLE, refer to L980 for drilled axle installation orientation.

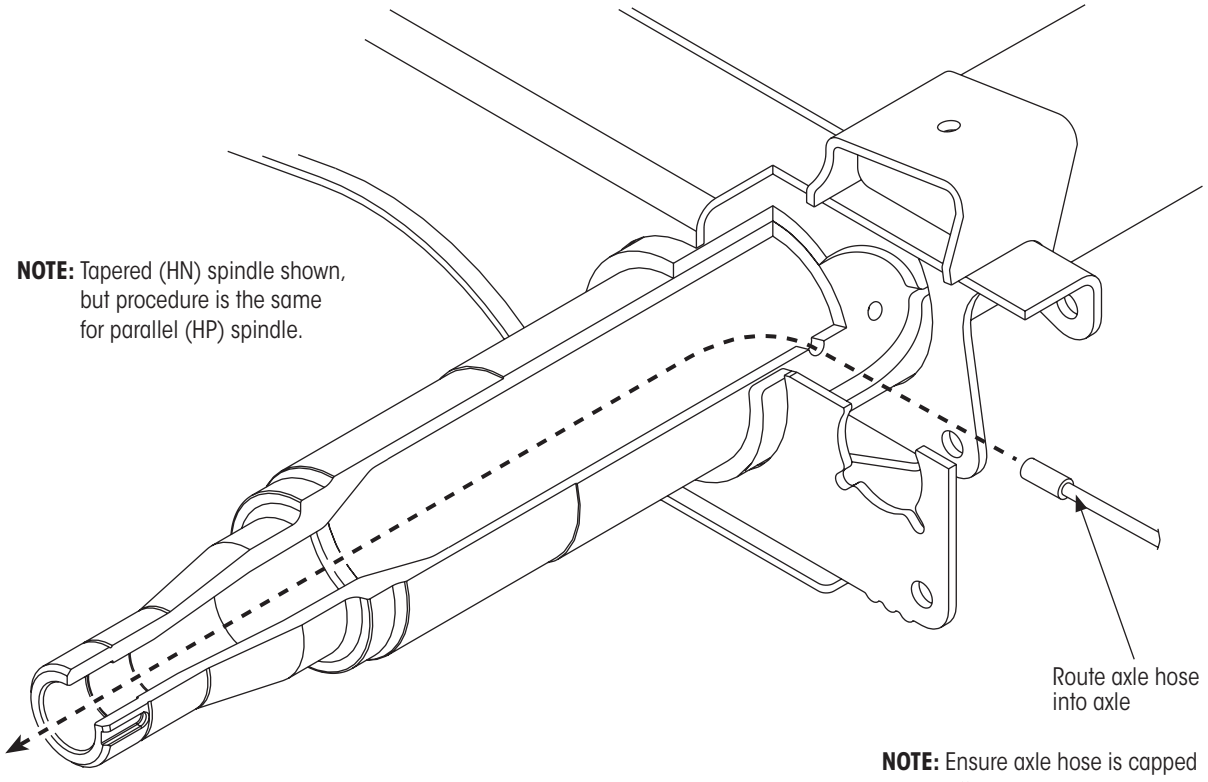



*Figure 7: Routing axle hose*

**NOTE:** Ensure axle hose is capped off to not allow debris into the axle hose during installation.

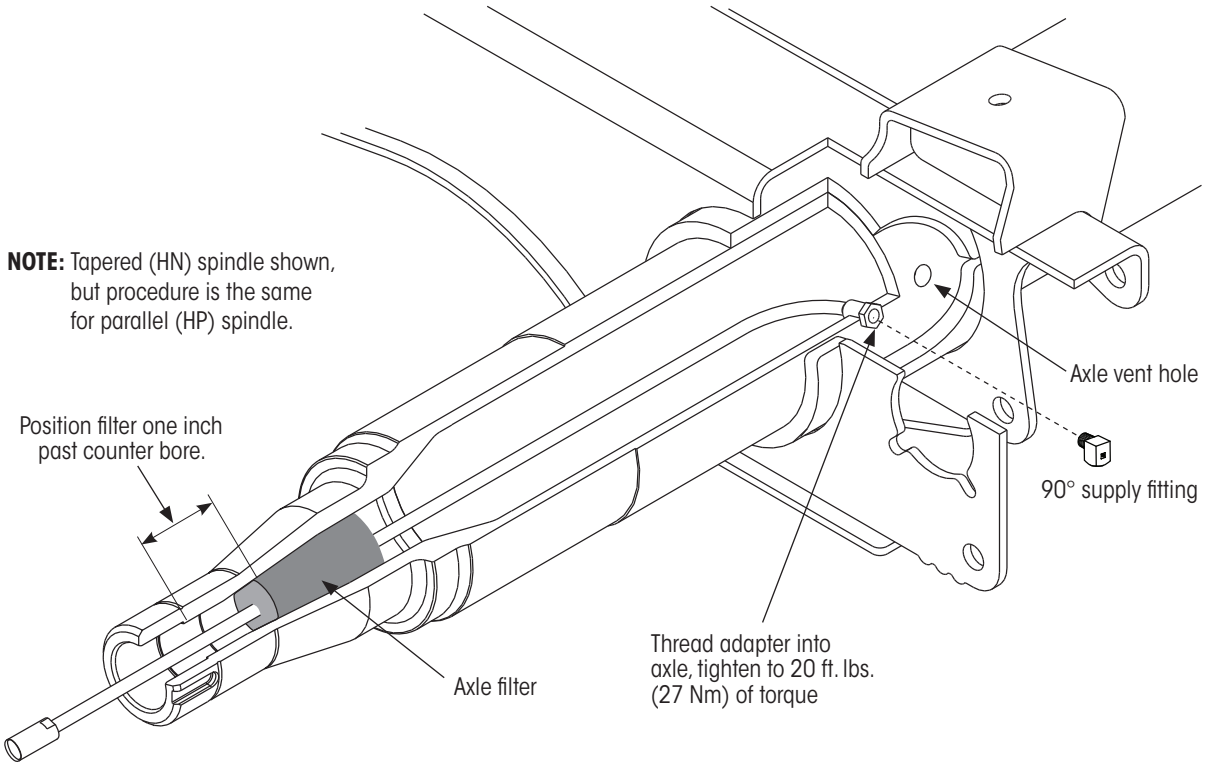



*Figure 8: Installed position of axle hose assembly*

## AXLE HOSE INSTALLATION

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

**IMPORTANT:** TIREMAAX CP systems installed prior to March 2012 used axles hoses with an airflow choke. When retrofitting from CP to PRO, these hoses must be replaced.

**1. Install the Hose:**

» For INTRAAX® and VANTRAAX® suspensions, insert the small end of the metal braided hose into the hole closest to the spindle end (Figure 9).

» For Hendrickson TRLAXLE® non-integrated trailer axles, use the hole closest to the spindle.

» Ensure the hose is directed toward the spindle end. Continue feeding until the small end exits the spindle.

» Thread the large adapter end of the axle hose assembly into the axle.

» Tighten fitting to 20 ft. lbs. (27 Nm) (Figure 10).

**2. Install the Filter:**

» Feed the metal braided hose through the slit in the filter.

» Push the axle filter into the spindle cavity (Figure 8).

**IMPORTANT:** Enough air space must be present between spindle plug and filter to allow sufficient axle ventilation.

**3. Clear the Hose**:

» Remove protective coverings from the hose ends.

» Blow air through the hose to clear any debris.

Perform Step 1- Step 6 on for all axles wheel-ends. For axle vent installation, refer to (Figure 16) AXLE VENT INSTALLATION on page 17.

## 90° SUPPLY FITTING INSTALLATION

1. **Thread the fitting,** install the 90° supply fitting into the axle hose as shown in Figure 9.
2. **Torque the fitting** to 10 ft. lbs. (13 Nm).
3. **Clock the fitting,** rotate the fitting in the tightening direction only to align with the applicable suspension configuration. See Figures 10 to 14 or proper orientation.
4. **Protect the fitting**, recommended to install a vinyl cover over the fitting to prevent paint and debris contamination.

## ADDITIONAL AXLES

For systems with multiple axles (one or more beyond the primary) follow the installation guidelines shown in Figures 10-14. Extend the main 3/8 inch tubing as necessary.

**IMPORTANT:** Long air lines runs may increase system response time to pressure changes. For configurations with five or more axles, a second TIREMAAX® system may be required. Refer to CONTACTING HENDRICKSON for details.

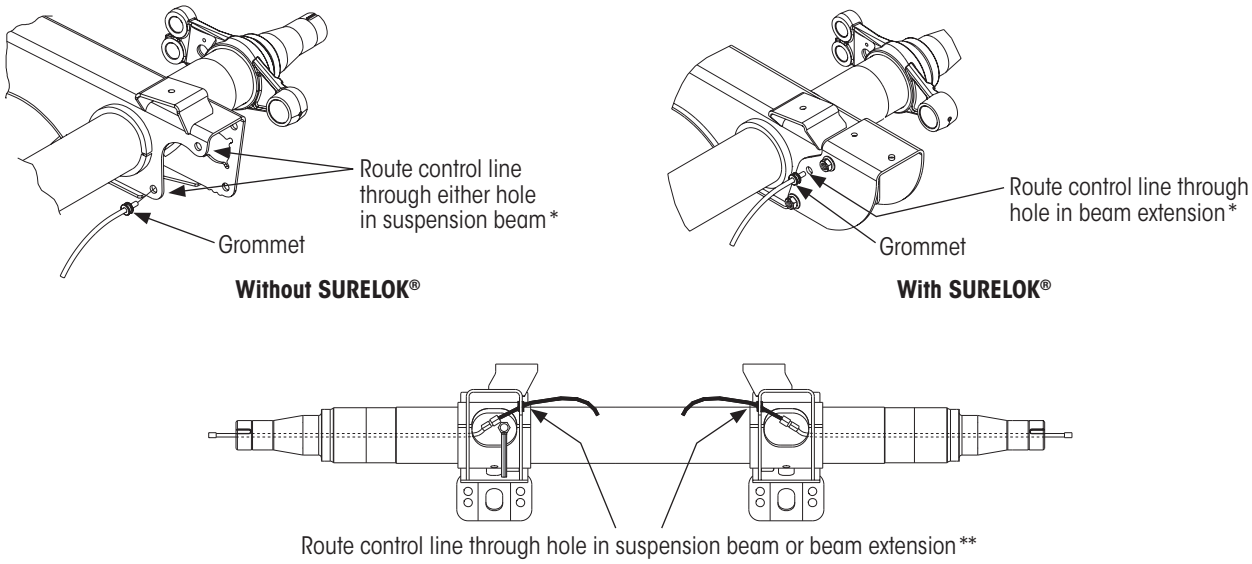



*Figure 9: Suggested control line installation details for Top Mount, Wide Bushing, Standard Duty Models* **AAT, HKAT**

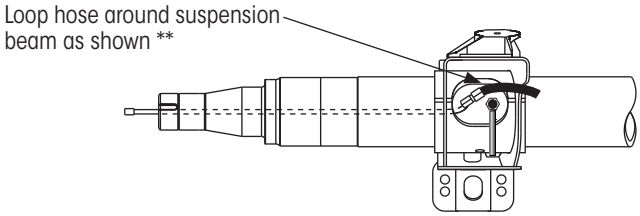



*Figure 10: Suggested control line installation details for Top Mount, Narrow Bushing, Standard Duty Models* **AANT, HKANT, AAZNT**

* On top mount, wide bushing, standard duty models without SURELOK, it is permissible to route the control line through either hole in suspension beam, and orient the axle connector fitting to obtain the best slack adjuster/air line clearance.

** It is the OEMs 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.

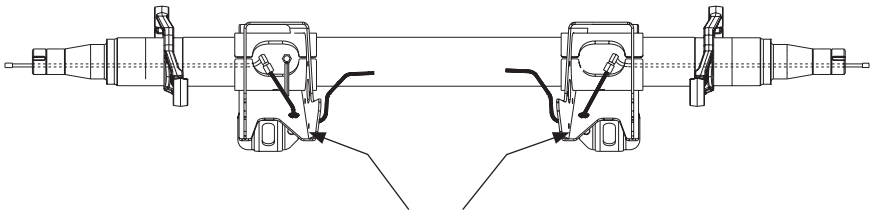



*Figure 11: Suggested control line installation details for Low Ride, Wide Bushing, Standard Duty* **AAL, HKAL, AAZL***; Low Ride, Wide Bushing, Extreme Duty* **AAEDL 30K** *and Top Mount, Wide Bushing, Extreme Duty* **AAEDT 30K** *Models*

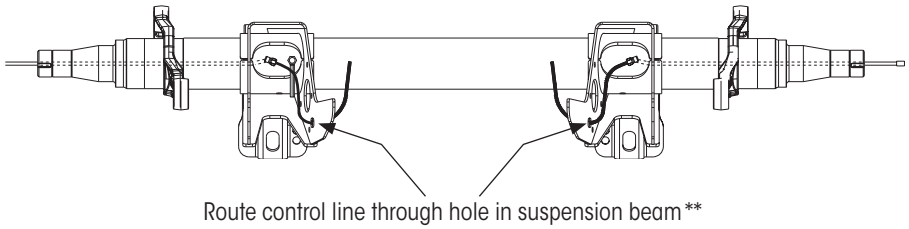



*Figure 12: Suggested control line installation details for Low Ride, Short Beam, Narrow Bushing, Standard Duty Models* **AANLS 20K**

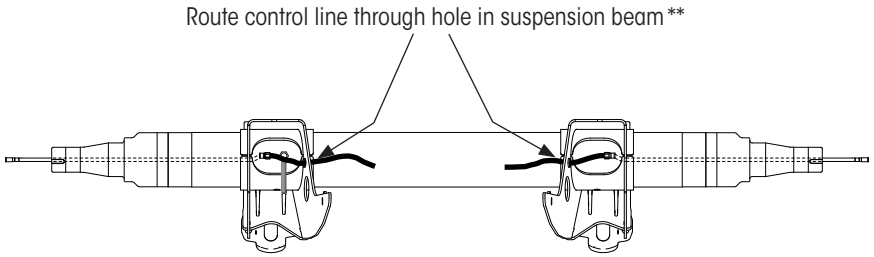



*Figure 13: Suggested control line installation details for Low Ride, Narrow Bushing, Standard Duty Models* **AANL**, **HKANL**

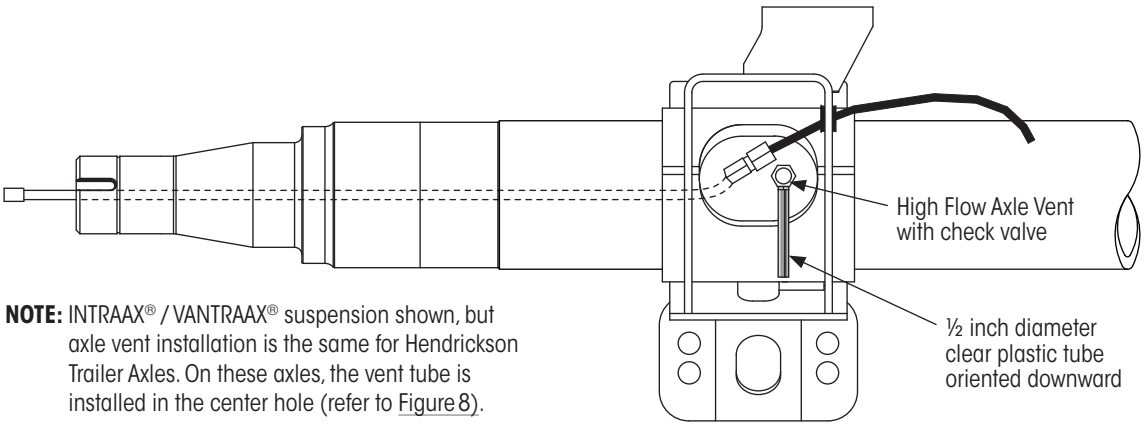



*Figure 14: Typical axle vent installation*

** It is the OEMs 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 is installed into the pre-drilled hole as shown in Figure 16. Refer to Axle Preparation on page 11 for drilling details.

***NOTICE*** To prevent axle contamination, ensure High Flow Axle Vent is securely fastened and vent tube is oriented downward.

**⚠WARNING** Improper installation may result in axle pressurization or water ingress potentially causing wheel-end failure, serious injury or death.

1. **Insert** the axle vent into the designated hole (Figure 16) and **hand-tighten**.

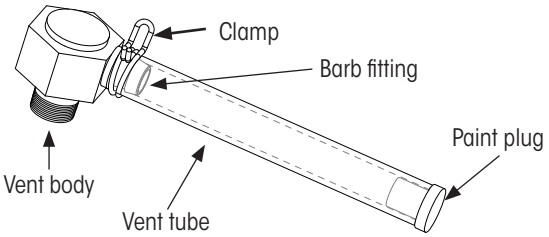



*Figure 15: INTRAAX®/VANTRAAX®/ULTRAA-K® axle vent assembly*

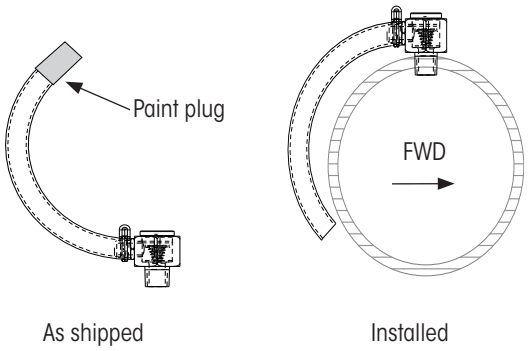



*Figure 16: TRLAXLE axle vent*

**NOTE:** For TRLAXLE® axles, the vent includes a curved tube shipped in the upward position for easier installation (see Figure 18).

2. **Use** a 1-inch socket to **tighten** the vent body to 10 ft. lbs. (13 Nm) of torque. Continue to tighten until vent tube faces downward or rearword. Rotate tube to face downward if lands rearword.

3. If present, **remove and discard** paint plug, Figure 15 and Figure 16.

***NOTICE*** Failure to remove the paint plug may result in air pressue build up inside the axle.

## SPINDLE PLUG INSTALLATION

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

1. **Position** the spindle plug as shown in Figure 17, with the grommet facing into the spindle.

2. **Push** the axle hose fitting through the grommet.

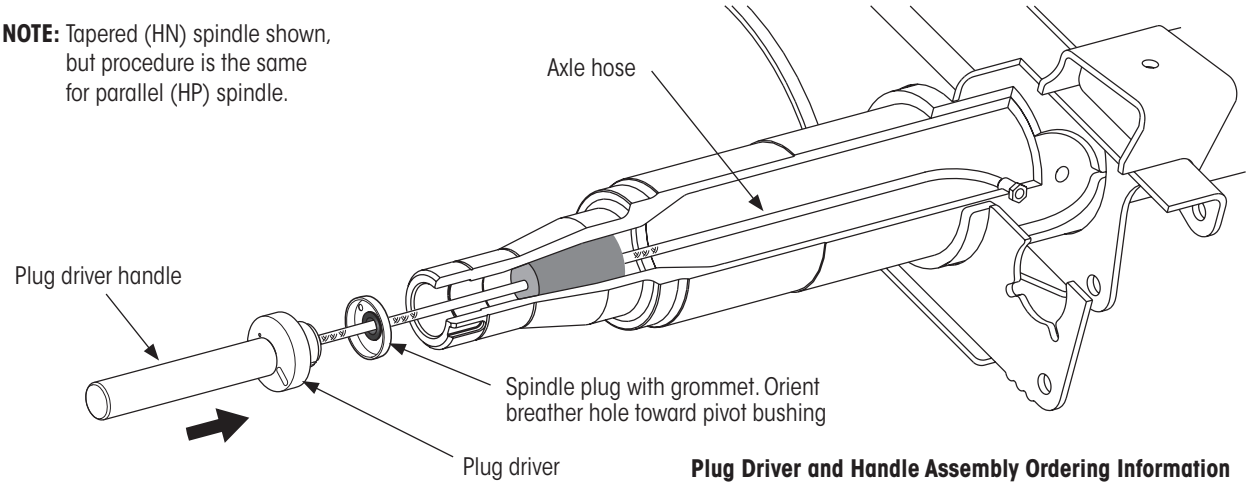
3. With the breather hole facing the pivot bushing (see Figure 17), **place** plug assembly against the spindle end.

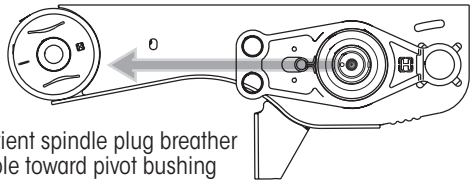
4. Center the axle hose fitting in the plug driver and press the plug into the spindle until the driver bottoms out on the spindle end.

Repeat Step 1 through Step 4 for each wheel-end.

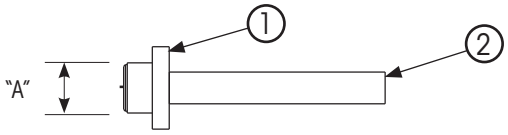
**NOTE:** Use the recommended plug driver (see Figure 17) to ensure proper installation depth (see Figure 18). If the tool is unavailable, refer to the depth dimensions provided in Figure 18 for manual installation.

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



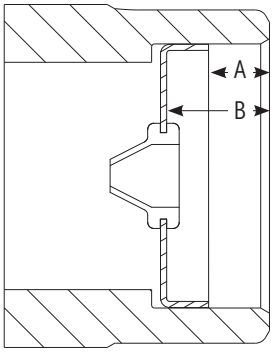

**Plug Driver and Handle Assembly Ordering Information**




| ITEM | NAME | SPINDLE TYPE | "A" DIMENSION | PART NUMBER |
|---|---|---|---|---|
| 1 | Plug Driver | HN | 1.75 inches | S-28146-1 |
| | | HP[1] | 2.75 inches | S-28146-3 |
| 2 | Plug Driver Handle | N/A | N/A | S-27399 |

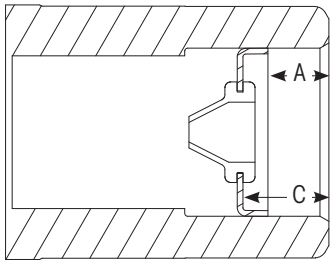
[1] Before March 28, 2003, Hendrickson manufactured HP spindles with both 2.50" and 2.75" inner bore diameters. After this date, the HP spindle bore was standardized at 2.75".

*Figure 17: Spindle plug installation*




HP spindle

A = 0.632" (1.6 cm)
B = 1.072" (2.72 cm)
C = 0.894" (2.27 cm)




HN spindle

*Figure 18: Recommended spindle plug depth (if not using plug tool shown in Figure 17)*

## HUBCAP INSTALLATION

**IMPORTANT:** Once installed, **DO NOT REMOVE.** To protect warranty on Hendrickson dressed axles, skip to TIRE HOSE INSTALLATION on page 21. Refer to CONTACTING HENDRICKSON Technical Services before removing any Hendrickson assembled wheel-end components.

Four basic hubcap types, table below, are available. Hubcap installation is the same for each (refer to HUBCAP on page 8 for more hubcap options).

| SPINDLE TYPE | HUBCAP |
|---|---|
| **HN** | HN |
| **HP** | HP |
| **HP with castle nut system** | HP extended |
| **HX** | HX |

*Table 4: Basic hubcap types*

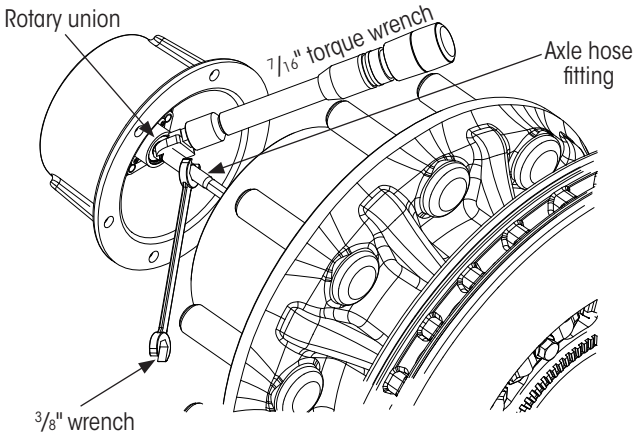



*Figure 19: Hubcap to axle hose connection*

To install the hubcap:

1. Gently pull just enough of the axle hose from the spindle center to connect it to the rotary union inside of the hubcap (Figure 19).
2. **Place** hubcap gasket over the axle hose.

   **NOTE:** Rotary union shaft has pre-applied dry thread locker. Loctite® or other thread locking compound is not required.

3. **Hand thread** rotary union onto axle hose fitting. **DO NOT rotate axle hose fitting**.
4. **Using** a 3/8-inch wrench to prevent rotation of the axle hose fitting, (Figure 19) **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.
6. **Orient** the hubcap so the tire hose ports are aligned between two wheel-mounting studs for optimal hose routing. See Figure 22 on page 20.
7. **Install** all hubcap bolts and **hand-tighten**.

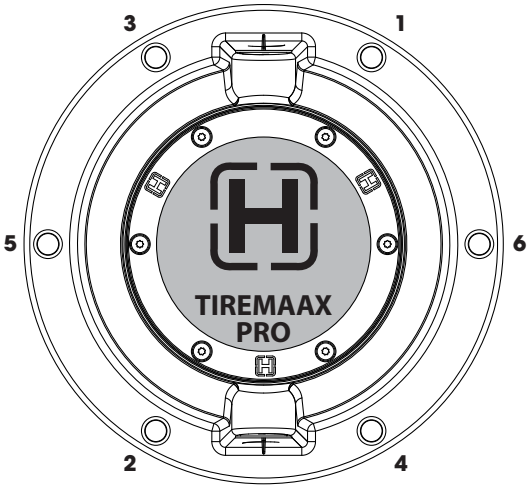



*Figure 20: 6-bolt hubcap torque pattern*

8. **Tighten** hubcap bolts in the order shown in above figure to 15±3 ft. lbs. (20±4 Nm) of torque.
9. **Repeat** procedure for each wheel-end.

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

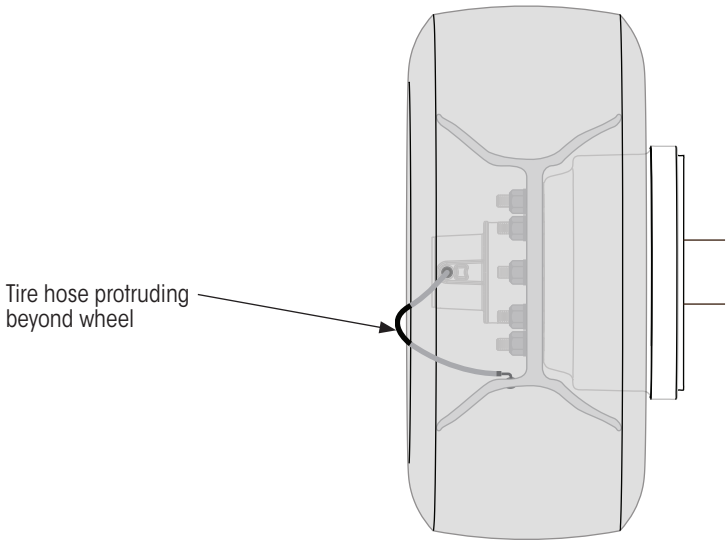



*Figure 21: Improper tire hose installation (super single shown)*

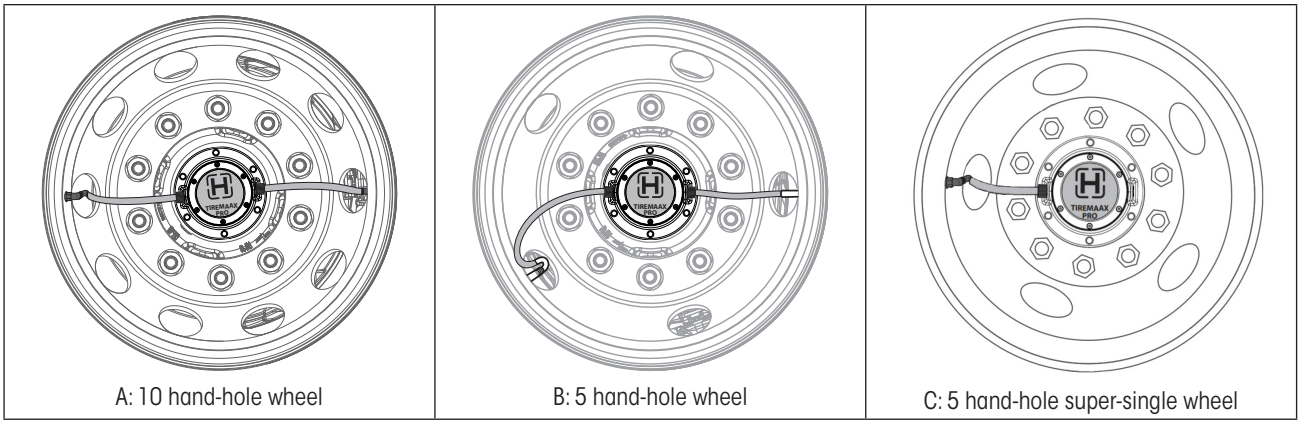



*Figure 22: Follow Hendrickson's wheel clocking recommendation to prevent fitment issues- light contact between the tire hose and wheel may occur but does not affect functionality.*

When clocking hubcaps/wheels:

1. Ensure hubcap is clocked to aim tire hose ports between wheel studs.
2. Clock wheels to align valve stem with hubcap tire hose port(s). If duals, align inner wheel (straight hose) first.

When installing tire hoses, ensure:

- Tire hose is not stretched so tightly a strain is introduced at either end.
- Tire hose is not so loose it extends outward past the wheel.

**TIRE HOSE INSTALLATION**

Tire hoses connect the hubcap port to the valve stems.

***NOTICE*** During installation and operation, **NO PART OF THE TIRE HOSE CAN EXTEND LATERALLY BEYOND THE HUBCAP**.

This procedure applies to both dual and super single installations and assumes the wheel is off during the TIREMAAX® 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 22).

***NOTICE*** Proper wheel "clocking" is essential to prevent rubbing and extension of hoses. (Figure 22)

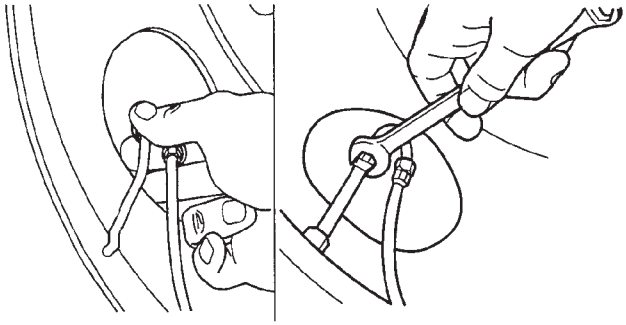


*Figure 23: Attaching tire hoses to tire valve stem*

2. **Remove** nylon port plugs from 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 23).
5. Using a $^{7}/_{16}$ inch wrench, **tighten** the tire hose / valve stem connection an additional one-half turn (Figure 23). **DO NOT overtighten this connection**.

   **NOTE:** If using a torque wrench, **tighten** to 28±2 in. lbs. (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:** 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.

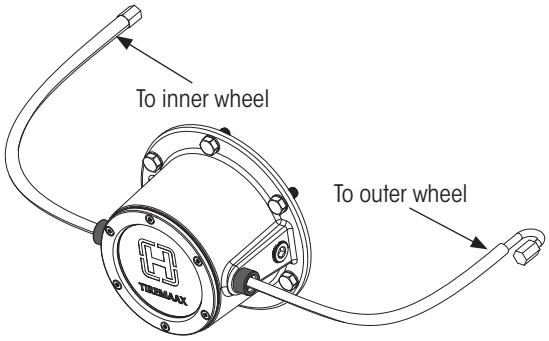



*Figure 24: Dual tire hose to hubcap connection(s)*

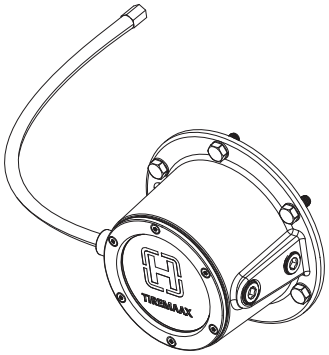


*Figure 25: Super-single tire hose to hubcap connection*

7. **Loosely connect** other end of tire hose(s) (Figure 24 for dual or Figure 25 for super-single) to the outlet port of the hubcap and check to ensure hose(s) meet criteria of Figure 21 and Figure 22.

   **If not**:

   A. **Disconnect** tire hose(s) at hubcap only.

   B. **Remove** lug nuts and wheel.

   C. **Adjust** clocking of wheel, then repeat Step 1 through Step 5 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.

## CONTROLLER INSTALLATION

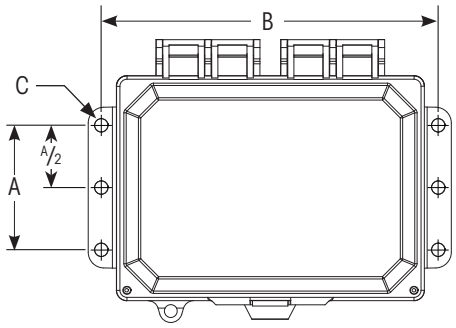
**Mounting Guidlines:**

- Protect from debris and ensure secure, stable mounting.
- Allow access for maintenance and connection to supply, emergency supply and delivery lines.
- Mount with the hinge at top to allow upward lid opening.
- Use hole pattern in Figure 26 if drilling is required.
- Use a minimum of four mounting holes with $^{5}/_{16}$-18 bolts and nuts, with flat washers on both sides. Torque fasteners to 12±1 ft. lbs (16±1 Nm).

***NOTICE*** Failure to follow mounting recommendations can result in damage to controller box.

- **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.

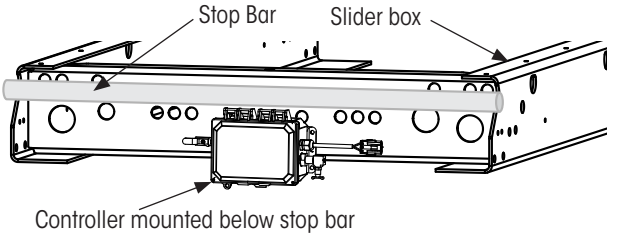
***NOTICE*** Over torquing fasteners may result in distortion, cracking and eventual breaking of the controller enclosure flange.




| DIMENSION. | INCH | mm |
|---|---|---|
| A | 3 | 76.2 |
| B | 8.12 | 206.2 |
| C | 6 x 0.32 DIA | 6 x 8.1 DIA |

*Figure 26: Controller box hole pattern*

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



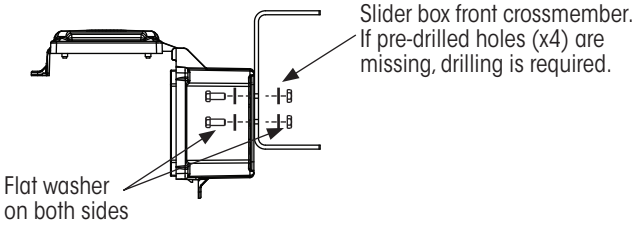




*Figure 27: Controller mounting to slider*

**A.** Hendrickson VANTRAAX® or **K-2® slider box mounting** (Figure 27, mounted low to avoid interference with slider stop bar). Four holes are pre-drilled in the crossmember for this purpose.

***NOTICE*** Failure to properly orient the controller and mounting bracket as shown in Figure 27 may result in slider stop bar interference and controller assembly damage.

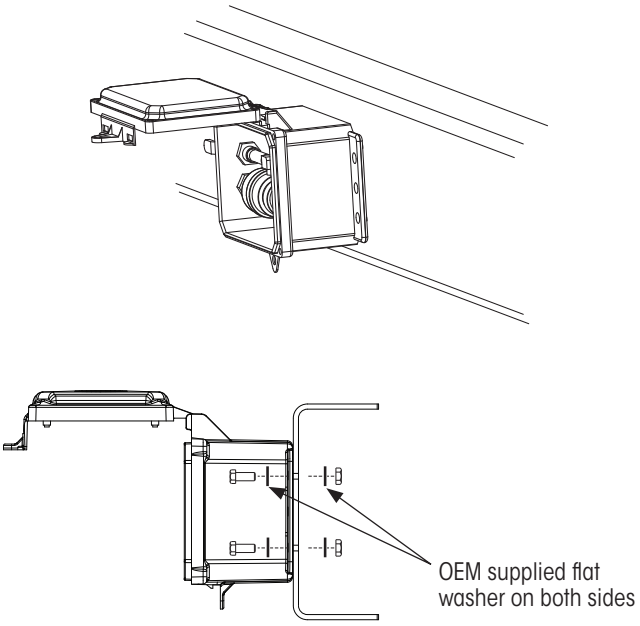
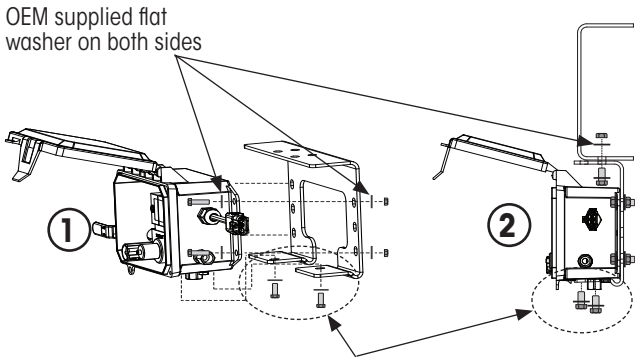



*Figure 28: Controller mounted to trailer frame*

**B. Flush mount** to trailer crossmember or subframe. Mount directly to (select one):

- Trailer frame, Figure 28
- Optional bracket (Figure 29)
- OEM supplied bracket (Figure 31)

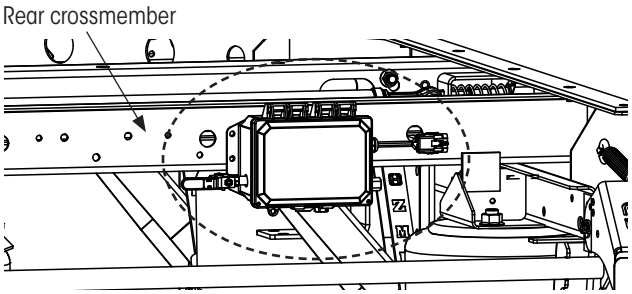



**NOTE:** Use existing fasteners at bottom of controller. Remove, then replace after positioning on bracket. Torque to 60±12 in. lb. (8±2 Nm).

*Figure 29: Controller assembly installation*

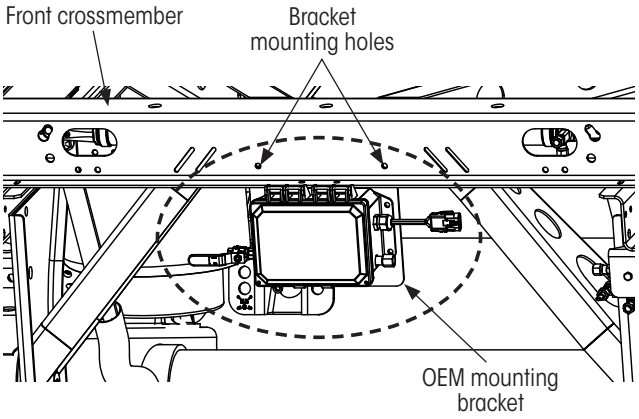
**C. Hendrickson mounting bracket** is required for spring ride suspensions and optional drop-down mounting, Figure 27. Attach the controller to the bracket first, then mount the assembly to the trailer frame, as shown.

**D. Mounting to ULTRAA-K® slider** is different than VANTRAAX® or K-2® slider mounting. The slider includes pre-drilled holes for mounting the TIREMAAX controller directly to crossmembers, Figure 28 and Figure 29. Holes are also provided for various other brackets and options.




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

*Figure 30: Mounting to rear crossmember of ULTRAA-K slider (recommended)*



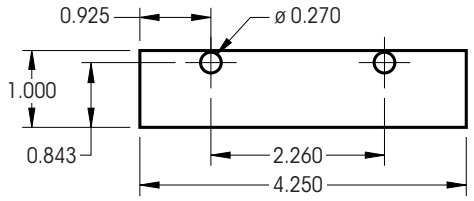

**NOTE:** Holes are also provided for mounting an optional OEM bracket to the front crossmember.

*Figure 31: Mounting to ULTRAA-K front crossmember*

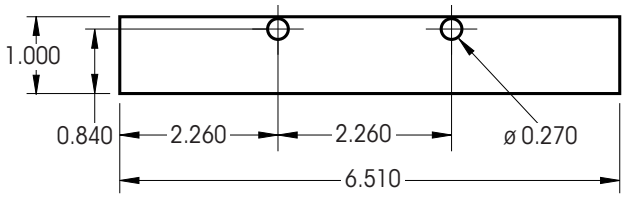
## MANIFOLD INSTALLATION

The optional manifold offers the following advantages:

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



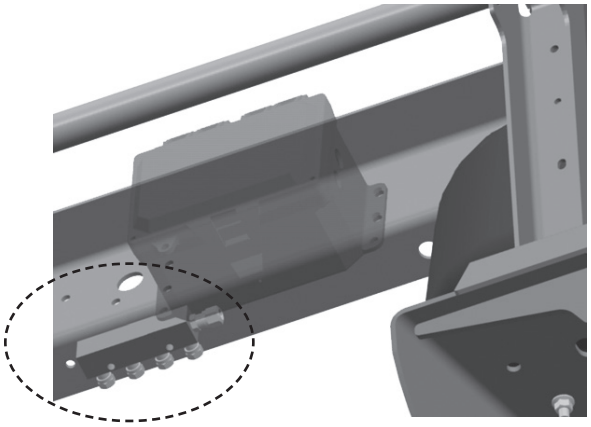

Tandem (four port) manifold



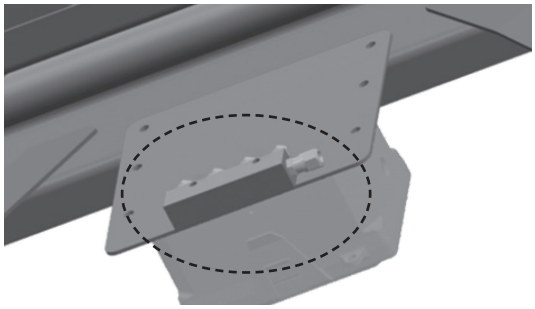

Tridem (six port) manifold

*Figure 32: Manifold mounting dimensions (inch)*

Figure 32 shows size and bolt hole patterns for a tandem and tridem manifold.



*Mounted to slider rear crossmember*



*Mounted to back of OEM controller bracket*

*Figure 33: Manifold mounted on ULTRAA-K® slider*

The manifold can be located on the trailer frame, slider box or on an OEM bracket as shown in Figure 33.

## AIR LINE INSTALLATION

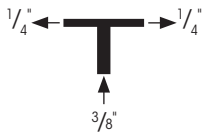
Controller line installation criteria varies with suspension type, axle type.

Plumbing diagrams show air brake tubing sizes and associated fittings required to complete the system installation. Control line routing recommendations are also included. Available diagrams include:

- ADDITIONAL AXLES on page 15, refer to Figure 9 to Figure 13.

The following plumbing criteria must be followed during TIREMAAX installation:

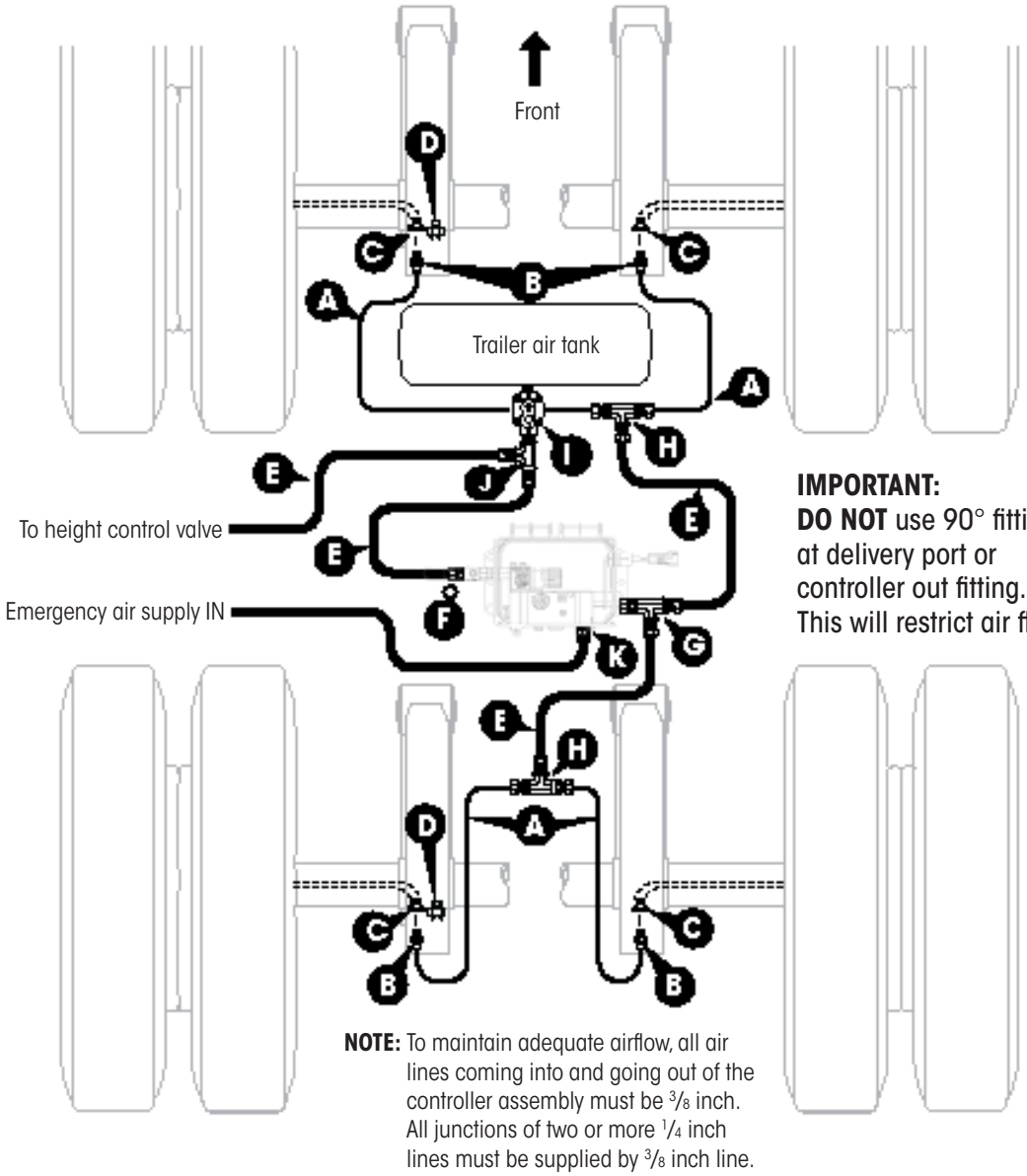
- Use a wrench to hold axle hose fitting to prevent twisting of air line inside the axle.
- Proper TIREMAAX operation requires correct air line diameters. Installation sizes must be as shown in diagram.
- To maintain adequate air flow:
  - All air lines coming into and going out of the controller assembly must be 3/8 inch.
  - 3/8 inch line splits must decrease to two or more 1/4 inch lines to wheel-ends as shown in diagrams.




  - 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.

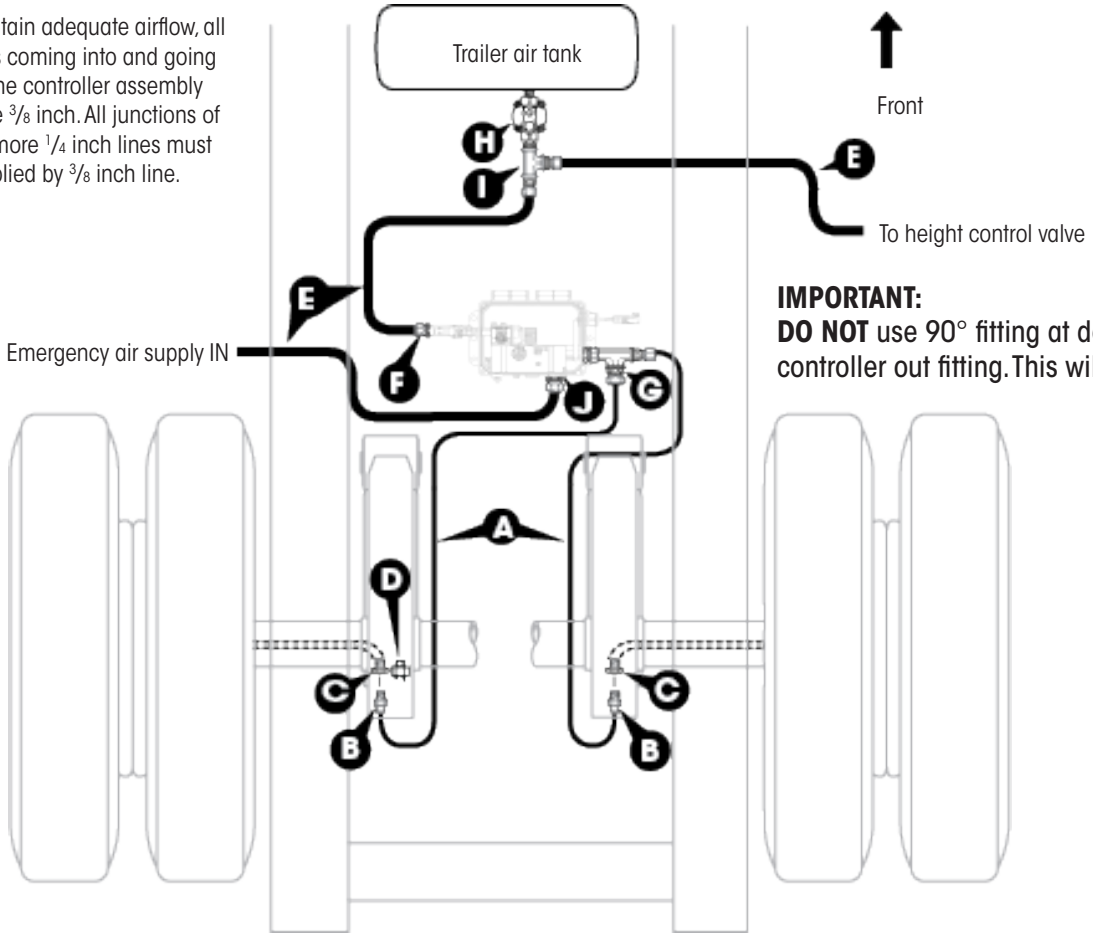
- Moisture and other contaminants collect at the bottom of the air tank. **DO NOT** install fittings on the bottom of the trailer air tank.




| | Item | | Description |
|---|---|---|---|
| Supplied with TIREMAAX® | A | Air line | 1/4 inch OD nylon air brake tubing |
| | B | Axle connector | 90 degree elbow, 1/8 inch NPT male to 1/4 inch NTA (Nylon Tubing Adapter) |
| | C | Axle hose fitting | 1/8 inch NPT female |
| | D | Axle vent fitting | High flow axle vent (includes check valve) |
| Provided by installer | E | Air line | 3/8 inch OD nylon air brake tubing |
| | F | Controller IN fitting | 1/4 inch NPT male to 3/8 inch NTA |
| | G | Controller OUT fitting | Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA |
| | H | Tee assembly | Union tee; 1/4 inch NTA, 1/4 inch NTA, 3/8 inch NTA |
| | I | Pressure protection valve (PPV) | Required; 70 PSI minimum closing pressure; existing suspension valve can be used |
| | J | PPV OUT fitting | Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA |
| | K | Emergency supply IN fitting | 1/4 inch NPT male to 3/8 inch NTA |

*Figure 34: Typical TIREMAAX® PRO plumbing schematic - two axles with 3/8 and 1/4 inch lines.*

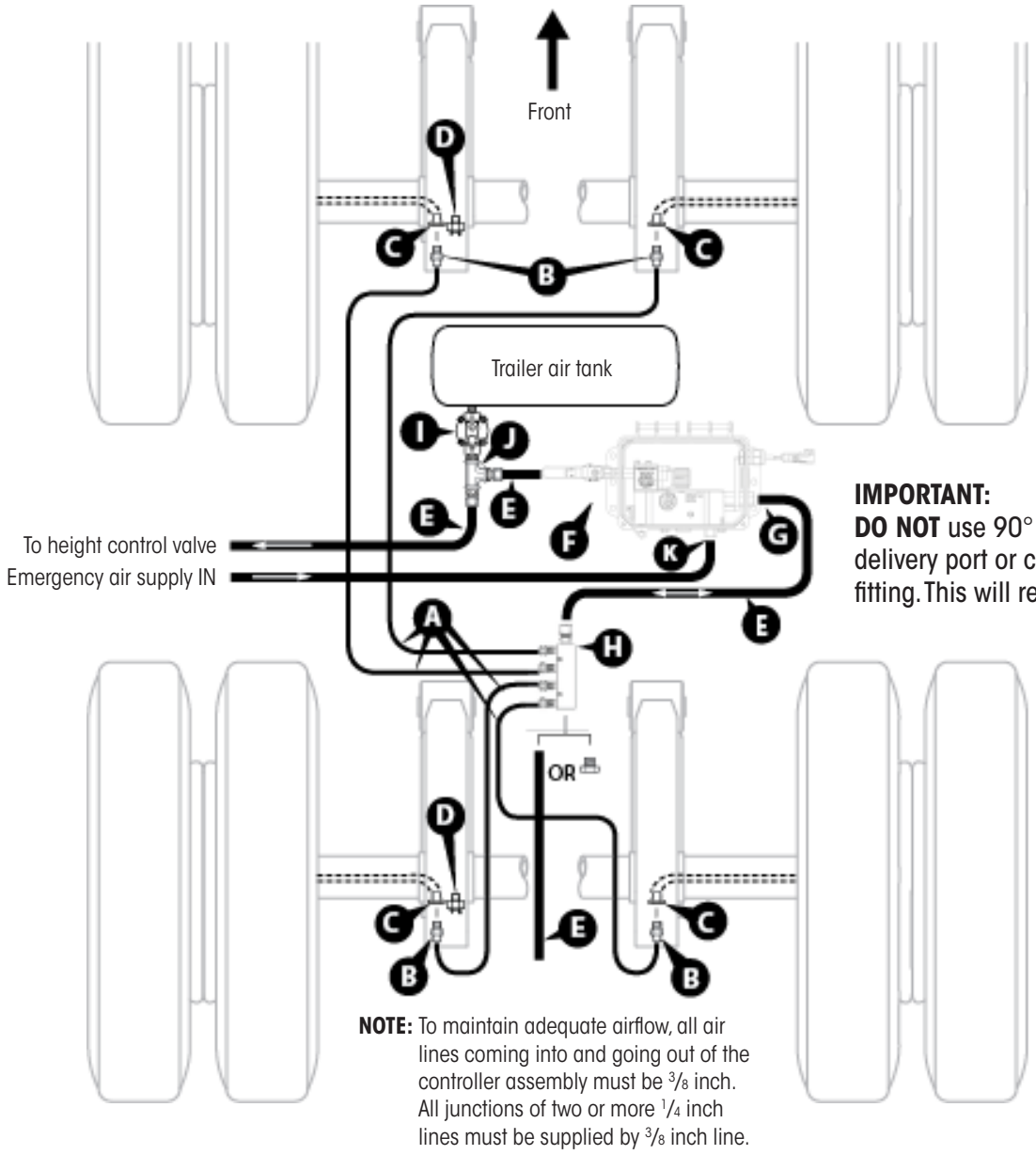
**NOTE:** To maintain adequate airflow, all air lines coming into and going out of the controller assembly must be 3/8 inch. All junctions of two or more 1/4 inch lines must be supplied by 3/8 inch line.




**IMPORTANT:**
**DO NOT** use 90° fitting at delivery port or controller out fitting. This will restrict air flow.

| | Item | | Description |
|---|---|---|---|
| Supplied with TIREMAAX® | A | Air line | 1/4 inch OD nylon air brake tubing |
| | B | Axle connector | 90 degree elbow, 1/8 inch NPT male to 1/4 inch NTA (Nylon Tubing Adapter) |
| | C | Axle hose fitting | 1/8 inch NPT female |
| | D | Axle vent fitting | High flow axle vent (includes check valve) |
| Provided by installer | E | Air line | 3/8 inch OD nylon air brake tubing |
| | F | Controller IN fitting | 1/4 inch NPT male to 3/8 inch NTA |
| | G | Controller OUT fitting | Run tee; 1/4 inch NPT male, 1/4 inch NTA, 1/4 inch NTA |
| | H | Pressure protection valve (PPV) | Required; 70 PSI minimum closing pressure; existing suspension valve can be used |
| | I | PPV OUT fitting | Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA |
| | J | Emergency supply IN fitting | 1/4 inch NPT male to 3/8 inch NTA |

*Figure 35: Typical TIREMAAX® PRO plumbing schematic - single axle with 3/8 and 1/4 inch lines.*




| | Item | | Description |
|---|---|---|---|
| Supplied with TIREMAAX® | A | Air line | 1/4 inch OD nylon air brake tubing |
| | B | Axle connector | 90 degree elbow, 1/8 inch NPT male to 1/4 inch NTA (Nylon Tubing Adapter) |
| | C | Axle hose fitting | 1/8 inch NPT female |
| | D | Axle vent fitting | High flow axle vent (includes check valve) |
| Provided by installer | E | Air line | 3/8 inch OD nylon air brake tubing |
| | F | Controller IN fitting | 1/4 inch NPT male to 3/8 inch NTA |
| | G | Controller OUT fitting | 1/4 inch NPT male to 3/8 inch NTA |
| | H | Junction manifold [1] | 3/8 inch NTA inlet, 1/4 inch NTA outlets |
| | I | Pressure protection valve (PPV) | Required; 70 PSI minimum closing pressure; existing suspension valve can be used |
| | J | PPV OUT fitting | Run tee; 1/4 inch NPT male, 3/8 inch NTA, 3/8 inch NTA |
| | K | Emergency supply IN fitting | 1/4 inch NPT male to 3/8 inch NTA |

[1] These parts are available from Hendrickson. Refer to RELATED LITERATURE on page 5 to get part numbers.

*Figure 36: Typical TIREMAAX® PRO plumbing schematic - two axles with 3/8 and 1/4 inch lines and junction manifold.*

## ELECTRICAL COMPONENT INSTALLATION

Once the controller is mounted to the trailer or slider, complete the electrical wiring. Multiple configuration options are available depending on system setup.

Electrical components include:

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

**⚠WARNING** Improper wiring or operation of TIREMAAX may prevent the driver from being aware of system or wheel-end issues.

### 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 for the TIREMAAX systems.
- Figure 38 shows various connections based on the options selected for the installation.

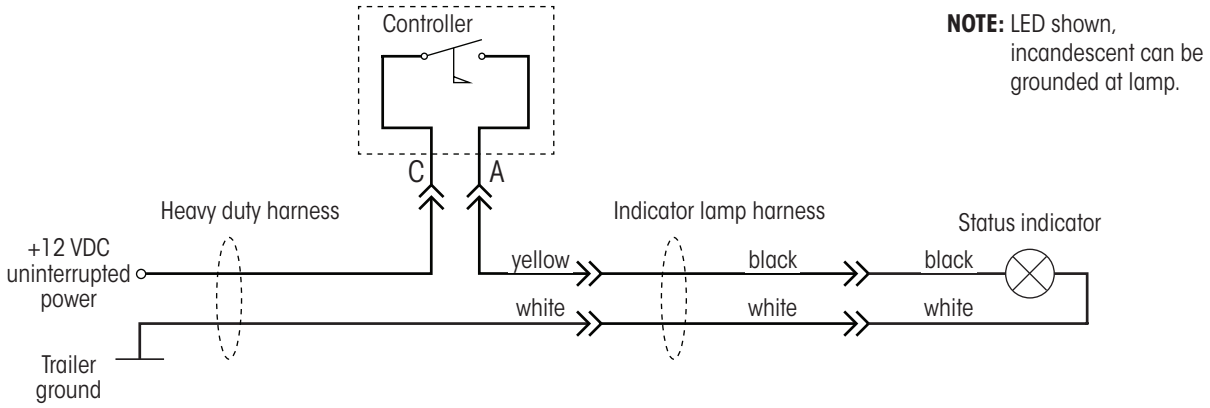



*Figure 37: Typical wiring schematic for indicator lamp*

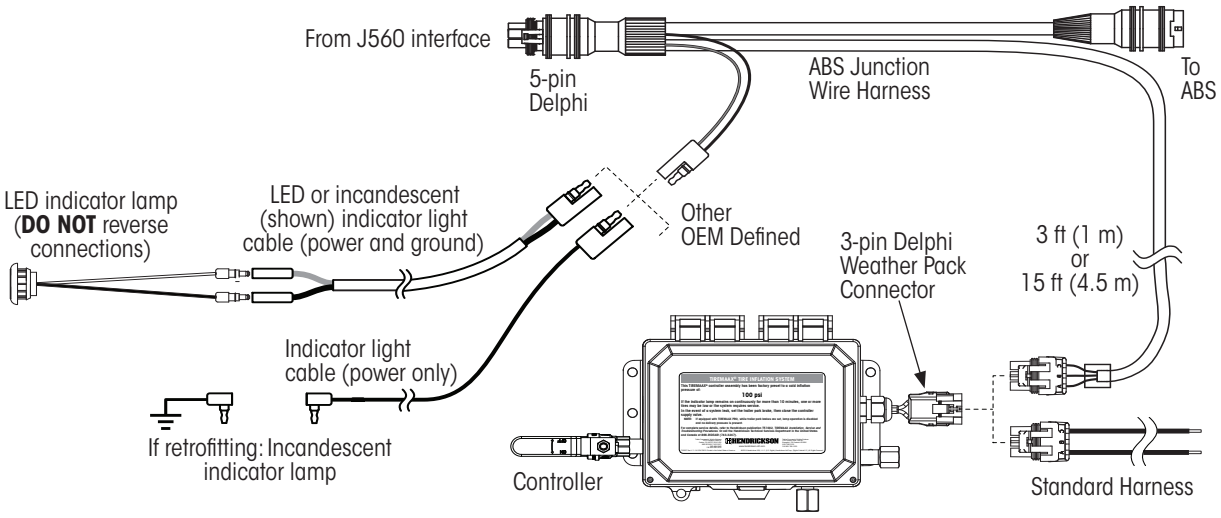



*Figure 38: Wire harness and indicator lamp options*

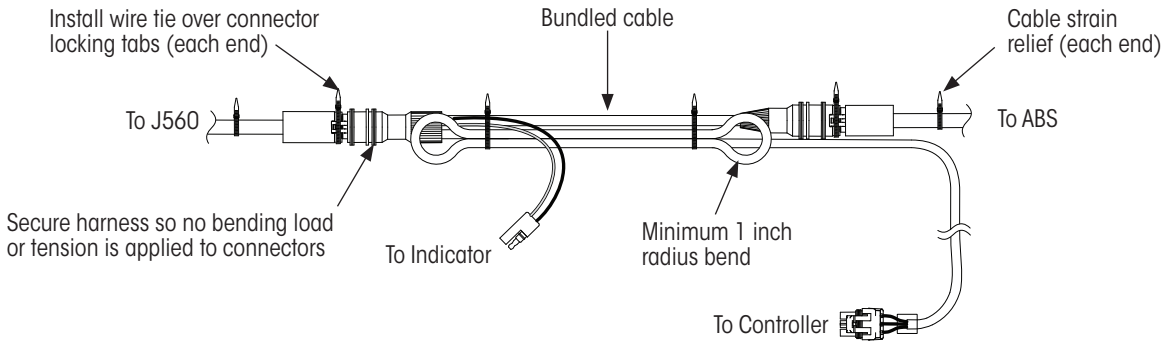



*Figure 39: Harness restraints*

**STANDARD WIRE HARNESS INSTALLATION**
Refer to Figure 37 schematic before continuing.

1. **Connect** the blue wire (terminal C) to vehicle uninterrupted power.
2. **Route** 16 AWG (min) indicator lamp power wire and connect to red wire on the 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 TRAILER-MOUNTED INDICATOR LAMP INSTALLATION on page 30.

3. **Connect** other end of indicator lamp power wire and ground connection according to Figure 37.
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 Figure 38 before continuing.

1. Using Figure 37 on page 28: **Unplug** 5-pin Delphi ABS power connector.
2. **Connect** 5-pin male Delphi connector from the Hendrickson TIREMAAX® ABS Junction Wire Harness to 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 as shown in Figure 37 on page 28.
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 recomended wiring practices.
6. **Secure** harness and wires as needed. Refer to ADDING RESTRAINT TO WIRING.
7. **Proceed** to TRAILER-MOUNTED INDICATOR LAMP INSTALLATION on page 30.

**ADDING RESTRAINT TO WIRING**
This procedure outlines best practices for securing the TIREMAAX Premium 15 ft. power harness. A 3 ft. version is also available contact Hendrickson Aftermarket or OEM Sales at 866-RIDEAIR (743-3247) for details.

**IMPORTANT:** The cable bend radius should not be less than 1 inch.

**DO NOT** make bends in the cable near the connectors, Figure 42. 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.

To restrain the harness:

1. **Route** harness under trailer as required.
2. **Secure** every 12 -18 inches using nylon ties, conduit, or wire trays.
3. **Support** harness near connectors, as shown in Figure 38, to prevent strain. Ensure connections are secure and unable to move during operation.
4. **Bundle** excess cable as shown in Figure 38.

**TRAILER-MOUNTED INDICATOR LAMP INSTALLATION**
If not pre-configured, install an indicator lamp per system requirements.

Mount indicator lamp to trailer as follows:

1. **Select** a location visible from the driver's side mirror (typically front corner or side of trailer).

   **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.

2. **Mount** lamp using #10 machine screws. (recommended)

   » Torque: 17.5 ± 2.5 in-lbs (2.0 ± 0.3 Nm)

3. **Wire** lamp per figure 37 and harness instructions (see page 29).

**NOTE:** Reference TMC RP 161 and RP 704 for additional guidance.

## SYSTEM INTEGRITY CHECK

Before placing the trailer into service:

**A.** Complete the procedure CHECKING FOR AIR LEAKS on page 42.
**B.** Perform the INDICATOR LAMP TEST on page 43.

The test procedure for validating proper TIREMAAX PRO controller function during the application of the trailer emergency brake should be as follows:

1. **Set** trailer emergency brakes by removing the emergency/supply gladhand or exhausting the pilot pressure at controller. Audible exhaust should last ≤ 10 seconds.
2. After the exhaust stops, apply leak detection solution to exhaust port. Bubble formation must cease within 5 minutes. If within limits, controller meets factory specifications.

## SYSTEM SETUP

TIREMAAX controllers are pre-set at the factory. No setup is required unless a different inflation pressure is needed. ADJUSTING PRO INFLATION PRESSURE on page 45

## DECAL LOCATION

Various decals, Table 5 are provided with TIREMAAX® systems. These decals include important information related to TIREMAAX 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 the below figures and table.

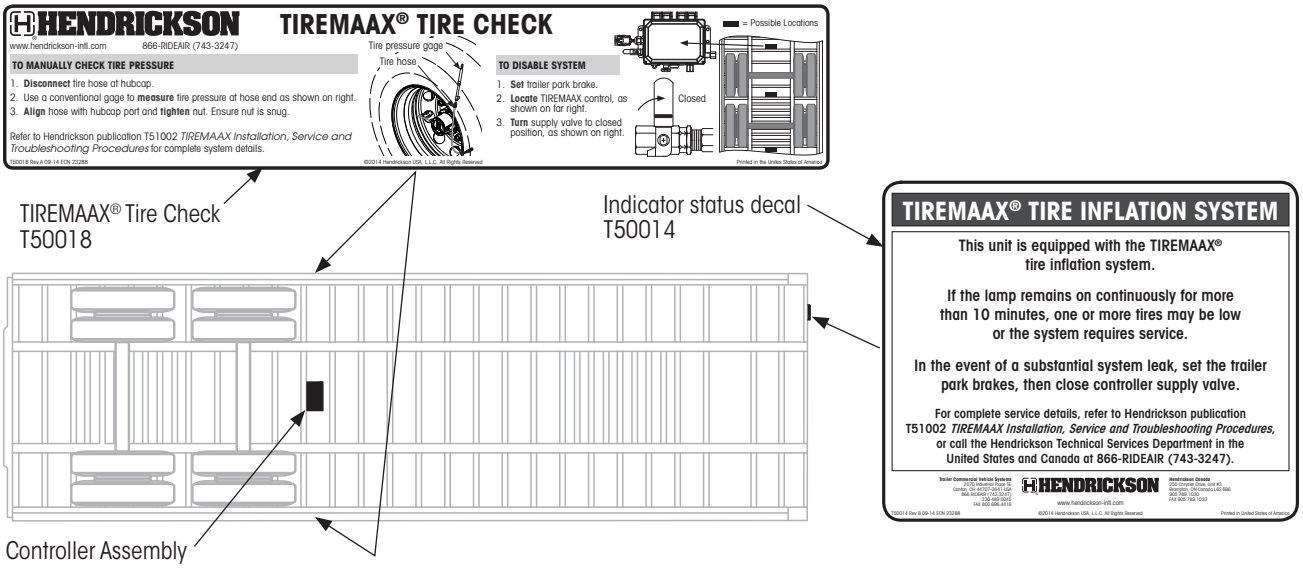



*Figure 40: Trailer decal locations*

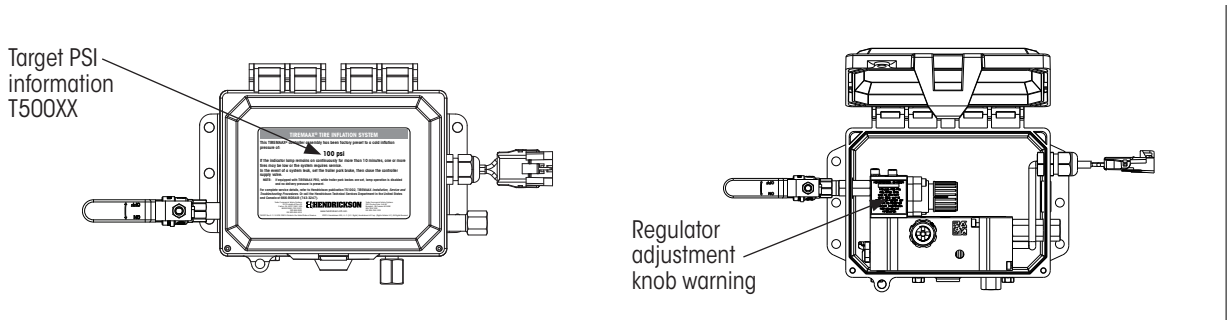



*Figure 41: Controller decal locations (Installed by Hendrickson)*

| DECAL # | DESCRIPTION | LOCATION | FIGURE |
|---|---|---|---|
| **T50003 - T50011** | Inflation Pressure information. | On the outside surface of the controller cover. | Figure 40 |
| **Label** | Regulator adjustment knob warning. | On the regulator body. | |
| **T50014** | Should the lamp remain on, this decal includes instructions and contact information. | Depending on trailer type, locate near the indicator lamp. | Figure 41 |
| **T50018** | Manually check tire pressure | Depending upon trailer type, locate on the trailer rail near the controller box. | |

*Table 5: Decal locations*

## TROUBLESHOOTING

Troubleshooting aids include:

- Troubleshooting Matrix on page 33
- List Of Effects with Descriptions on page 35
- Probable Causes with Recommended Fix on page 36

**IMPORTANT:** In the event of a severe leak, TIREMAAX® is designed to isolate tires. **Check valves will close and not allow air to completely exhaust from tires**. This **allows the driver to cautiously transport trailer** to the nearest service center.

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

## TROUBLESHOOTING PROCEDURE

**⚠CAUTION** Follow recommended safety practices at all times while troubleshooting.

1. **Should a problem occur**:
   A. **Conduct a general inspection** for obvious signs of damage and leaks at all TIREMAAX components. **If not found**, proceed to B. **If found and the fix is not obvious**, proceed to Step 2.
   B. **Check** tires and components for leaks using a soapy water solution and **check** each tire for a low pressure condition. It is recommended to rinse the soapy water solution when complete to prevent corrosion. Refer to IN THE EVENT OF A LEAK on page 40. Proceed to Step 2 if needed.
2. From Troubleshooting Matrix on page 33, **select the effect (letter)** that best matches the symptoms associated with problem.

   **NOTE:** If needed, refer to List Of Effects with Descriptions on page 35.
3. Following down the lettered effect column from Step 2, **select a numbered probable cause** that most likely applies according to problem's symptoms.
4. **Refer to** Probable Causes with Recommended Fix on page 36.

   **If**, while investigating each probable cause, it is determined that:
   A. The probable cause does not apply, investigate the next most likely or simplest probable cause.
   B. The probable cause is found, complete the recommended fix, test and, if no other effects, restore system to normal operation.
   C. None of the probable causes for the selected effect prove valid, return to Step 2 and investigate the next likely effect with its probable cause(s).
5. **Repeat** process until the problem is resolved. If help is required, refer to CONTACTING HENDRICKSON on page 4.

## TROUBLESHOOTING MATRIX

This matrix includes a list of effects (lettered columns) and probable causes (numbered rows) to problems that may arise during the life of TIREMAAX® PRO. Start by evaluating the list of effects to determine those which may apply to your symptoms. Then match the checked (✓) probable cause which also applies.

| For details on Effects (letters), refer to page 57; for numbered Probable Causes, refer to page 37.<br><br>If the problem is not found within this matrix, refer to CONTACTING HENDRICKSON for assistance. | | EFFECTS | Indicator lamp on intermittently | Indicator lamp on for more than 10 min | Indicator lamp continuously on | Indicator lamp is always off | All tires low | Tires low at any one wheel-end | Tires low on one axle | Tires not inflating to target | One dual tire low | Air leaking from controller enclosure | Exhaust ports leaking air | Damage to tire hose | Air exhausting from axle vent | Controller cover missing or damaged | No Inflation Pressure | Low Inflation Pressure | Controller cover will not close | Air leaking at controller when gladhand removed | Contamination ingress to controller parts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Probable Causes** | | ✓ | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
| System is functioning normally | | 1 | ✓ | | | | | | | | | ✓ | ✓ | | | | | | | | |
| **Leakage** | Slow leak | 2 | ✓ | | | | | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | |
| | Medium leak | 3 | | ✓ | | | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | |
| | Severe leak | 4 | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | | | ✓ | | | |
| | Tire or rim leak | 5 | | ✓ | ✓ | | | ✓ | | ✓ | ✓ | | | | | | | ✓ | | | |
| | Manifold leak (if included) | 6 | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | |
| | Axle supply line/fitting leak | 7 | | | | | | ✓ | ✓ | ✓ | ✓ | | | | ✓ | | ✓ | ✓ | | | |
| | Controller component leak | 8 | ✓ | ✓ | | | ✓ | | | ✓ | | ✓ | | | | | | | ✓ | | |
| | Leak at hubcap assembly | 9 | ✓ | ✓ | | | | ✓ | | | ✓ | | ✓ | | ✓ | | | | | | |
| | Axle hose leak | 10 | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | | | ✓ | | | | | | |
| | Tire hose leak | 11 | ✓ | ✓ | | | | ✓ | | | ✓ | | | | | | | | | | |
| **Equipment** | Controller malfunction | 12 | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | |
| | Debris (blockage) in air system | 13 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | ✓ | | | | |
| | Pinched or obstructed line | 14 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | | | | |
| | Ice in system | 15 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | ✓ | | | | |
| | PPV not functioning correctly | 16 | | | | ✓ | ✓ | | | ✓ | | | | | | | ✓ | ✓ | | | |
| | Hubcap not properly clocked | 17 | | | | | | | | | | | | ✓ | | | | | | | |
| | Hubcap wheel valve problem | 18 | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | |
| | Problem in hubcap assembly | 19 | | | | | | ✓ | | ✓ | ✓ | | | | ✓ | | | | | | |
| | Controller improperly mounted | 20 | | | | | | | | | | | | | | ✓ | | | ✓ | | ✓ |
| | Cover not properly closed | 21 | | | | | | | | | | | | | | ✓ | | | | | ✓ |
| | Insufficient air tank pressure | 22 | | | | ✓ | ✓ | | | ✓ | | | | | | | ✓ | ✓ | | | |
| | Problem at emergency supply port | 23 | | ✓ | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | |
| | Low tire pressure | 24 | | ✓ | | | | | | | | | | | | | | ✓ | | | |
| | Test port vent in wrong position | 25 | ✓ | | ✓ | | | | | | | ✓ | | | | | | | ✓ | | |
| | Problem not with TIREMAAX | 26 | | | | | | | | | | | | | | ✓ | | | | ✓ | |

| For details on Effects (letters), refer to page 57; for numbered Probable Causes, refer to page 37.<br><br>If the problem is not found within this matrix, refer to CONTACTING HENDRICKSON for assistance. | | EFFECTS | Indicator lamp on intermittently | Indicator lamp on for more than 10 min | Indicator lamp continuously on | Indicator lamp is always off | All tires low | Tires low at any one wheel-end | Tires low on one axle | Tires not inflating to target | One dual tire low | Air leaking from controller enclosure | Exhaust ports leaking air | Damage to tire hose | Air exhausting from axle vent | Controller cover missing or damaged | No Inflation Pressure | Low Inflation Pressure | Controller cover will not close | Air leaking at controller when gladhand removed | Contamination ingress to controller parts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Probable Causes** | | ✓ | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** | **N** | **O** | **P** | **Q** | **R** | **S** |
| **Electrical** | No power to controller | 27 | | | | ✓ | Not Applicable | | | | | | | | | | | | | | |
| | Failed connection or cable | 28 | | | | ✓ | | | | | | | | | | | | | | | |
| | Bad bulb or LED indicator | 29 | | | | ✓ | | | | | | | | | | | | | | | |
| | Electrical short | 30 | | | ✓ | | | | | | | | | | | | | | | | |
| | Bad ground | 31 | | | | ✓ | | | | | | | | | | | | | | | |
| | Loose wire or connection | 32 | ✓ | | | ✓ | | | | | | | | | | | | | | | |

## LIST OF EFFECTS WITH DESCRIPTIONS

Referenced from the TROUBLESHOOTING MATRIX, use the below table to obtain a more detailed description of the effects. Each is identified by the corresponding name and letter (column).

| | EFFECT | DESCRIPTION |
|---|---|---|
| **A** | Indicator lamp on intermittently | The indicator lamp flickers and does not stay lit for any length of time while inflating. |
| **B** | Indicator lamp on for more than 10 min | During normal operation, the indicator lamp may come on while tires are being inflated. If the indicator lamp is on for more than 10 min., it is likely indicating the existence of a leak.<br>**NOTE:** After startup, the lamp will remain on while inflating low tires. |
| **C** | Indicator lamp continuously on | The lamp comes on and stays on after power is applied to trailer. |
| **D** | Indicator lamp is always off | There may be no noticeable change in lamp status after power is applied to trailer if system integrity is good and tires are consistently at the desired Inflation Pressure. If in doubt, perform INDICATOR LAMP TEST on page 42. |
| **E** | All tires low | For the PRO system, wheel valves allow air flow in both directions and tire pressures are equalized while trailer emergency brakes are released. As a safety precaution, wheel valves automatically close when necessary. |
| **F** | Tires low at any one wheel-end | All other wheel-ends appear to have normal inflation and tire pressure. |
| **G** | Tires low on one axle | Tires are low at both wheel-ends of a common axle. |
| **H** | Tires not inflating to target | Tires are low with no indication of being inflated by TIREMAAX®. Refer to effect E. |
| **I** | One dual tire low | Only one tire is affected for the wheel-end of a dual tire wheel-end. |
| **J** | Air leaking from controller enclosure | Air can be heard or felt leaking from inside the controller enclosure. If air continues to exhaust or leak, investigate probable causes. |
| **K** | Exhaust ports leaking air | (Figure 46 on page 45): After the trailer emergency brakes are set, 1-2 seconds to close is normal. Abnormal conditions would include the exhaust valve not closing and hubcap wheel valves not closing or closing slowly. |
| **L** | Damage to tire hose | Noticeable damage exists to tire hose(s), especially on the same wheel-end or side. |
| **M** | Air exhausting from axle vent | Escaping air pressure can be heard or felt leaking from axle vent tube Figure 14 on page 16. |
| **N** | Controller cover missing or damaged | The controller cover is not present or is damaged in some way. |
| **O** | No Inflation Pressure | No air (pressure) is available at the delivery port on the controller |
| **P** | Low Inflation Pressure | It is normal for the Inflation Pressure to be low while there is no air flow through the controller. Otherwise, a problem may exist. |
| **Q** | Controller cover will not close | The cover closes with difficulty or not at all. |
| **R** | Air leaking when gladhand removed | A short spurt of air is normal as air bleeds from the gladhand connectors at the front of the trailer, when the gladhand is removed. If air continues to bleed from the gladhand, determine if the controller is the source by:<br>I. Close the supply valve at the controller. If air stops leaking out the gladhand, there could be a plumbing issue.<br>II. Disconnect the emergency line at the bottom of the controller. This is the line that connects the emergency air supply to the port at the controller.<br>a. If air comes out of the emergency air supply port from the controller, replace the controller.<br>b. If air comes out of the emergency air line, the issue must be in the parking brake valve or a plumbing error. |

## PROBABLE CAUSES WITH RECOMMENDED FIX

As with the list of effects, one or more probable causes may apply. For each effect selected, choose the most likely probable cause or ones that are easy to investigate first. Footnotes are located at end of table.

| PROBABLE CAUSES | | DESCRIPTION | RECOMMENDED FIX |
|---|---|---|---|
| 1 | System is functioning normally [1] | | **No action may be required**. |
| | | During normal operation, the indicator lamp remains off if tire pressures are at or near the desired Inflation Pressure. | If the integrity of the indicator lamp is in question, **perform** the INDICATOR LAMP TEST on page 42. Also refer to the Electrical short section of the matrix and this table. |
| | | Should tires lose air during trailer idle time, the system will restore pressure at startup and the indicator lamp will remain ON until target is reached. | If necessary, see effect B Indicator lamp on for more than 10 min or review other causes listed in the TROUBLESHOOTING MATRIX. |
| | | **E**xcess pressure is relieved when tire pressures exceed the target setting by 10 psi. | If the air flow is continuous, check if test port fitting is in the "STORE" position or replace controller. If air flow is continuous, verify controller settings. |
| **Leakage** [2] | | | |
| 2 | Slow leak | A slow leak in a tire or elsewhere may cause the system to frequently or continuously deliver air to inflate tires. **The amount of air flow may not be enough to turn on the indicator lamp**, but the system will be able to maintain Inflation Pressure as long as tank pressure is maintained. | I. **Check** tire for leaks from puncture, rim leaks, etc.<br>II. **Perform** CHECKING FOR AIR LEAKS on page 41 for tire hose and fittings. |
| 3 | Medium leak | Light on more than 10 minutes or intermittent. The **leak should be audible**.<br>This type of leak flows enough air out the system to cause the indicator to come on, but the system can still maintain tire pressures. | I. **Check** for system damage and obvious leaks in tires or plumbing.<br>II. **Refer** to effect M Air exhausting from axle vent.<br>III. If needed, **perform** SYSTEM INTEGRITY CHECK on page 30.<br>IV. **Repair** as needed. |
| 4 | Severe leak | Light on continuously, damaged tire or other condition that allows maximum air flow. In this case, the source of **the leak should be audible and obvious**. | |
| 5 | Tire or rim leak | If the tire or rim leak is large enough, the wheel valve will close and isolate the tire at the hubcap. | **Refer to** IN THE EVENT OF A LEAK on page 40. |
| 6 | Manifold leak (if included) | If your system has a manifold, it is a potential source of leaks, refer to Figure 36 on page 26. | I. **Perform** CHECKING FOR AIR LEAKS on page 41 for manifold hoses and fittings.<br>II. **Repair or replace** as needed. |
| 7 | Axle supply line/ fitting leak | These are the hoses and fittings that supply air to both ends of the axle, refer to Figure 34 through Figure 36. | I. **Perform** CHECKING FOR AIR LEAKS on page 41 for supply lines and fittings.<br>II. **Repair or replace** as needed. |
| 8 | Controller component leak | If air is exhausting from the controller enclosure, first check Effect K. If air is leaking from the test port, check probable cause 37.<br>Controller leaks can be caused by operator error, damage, corrosion, worn or malfunctioning components. | I. **Check** controller enclosure and components for possible damage and leaking.<br>II. **Check** the test port vent for proper installation, Figure 43 on page 43.<br>III. Unless the leaky component is an external OEM supplied fitting, **replace** controller. |

## PROBABLE CAUSES WITH RECOMMENDED FIX

As with the list of effects, one or more probable causes may apply. For each effect selected, choose the most likely probable cause or ones that are easy to investigate first. Footnotes are located at end of table.

| PROBABLE CAUSES | | DESCRIPTION | RECOMMENDED FIX |
|---|---|---|---|
| **Leakage**[2] | | | |
| 9 | Leak at hubcap assembly | Rotary union or other assembled components in hubcap assembly may have worn or failed, resulting in a leak or blockage. Leaking air pressure in the wheel-end and axle is vented at the axle vent. | **Refer to** the applicable plumbing schematic to help **locate and repair** leak.[3]<br>I. Set the trailer emergency brake<br>II. **Temporarily disconnect** the airline going to one end of the axle.<br>III. Charge the emergency/supply line.<br>**⚠CAUTION** Make sure the wheels are chocked when releasing trailer emergency brake.<br>IV. **Check** for air escaping axle vent. If:<br>a. Air continues escaping from the axle vent, **repeat** Step I. **Reconnect** the airline. **Disconnect** and **plug** the airline on the **opposite end** of the axle. **Repeat** Step III.<br>b. Air stops escaping from the axle vent, it indicates the leak exists on the axle hose and or the hubcap of the disconnected airline.<br>V. **Inspect** the suspect hubcap and axle hose. **Replace** if found to be defective.[3,4] |
| 10 | Axle hose leak | Leaking air pressure in the axle is vented at the axle vent. Most likely the leak is at an end fitting. If not follow procedure to isolate the leak. | |
| 11 | Tire hose leak | A leak in the tire hose can be the result of:<br>3. Over stretching<br>4. Hose catching on object while driving<br>5. Improper installation<br>6. Cut O-ring or gasket<br>Also refer to probable cause 29. | I. **Perform** CHECKING FOR AIR LEAKS on page 41 for tire hose(s) and fittings.<br>II. **Replace** the tire hose if:<br>a. Leaking or shows any evidence of damage.<br>a. O-ring is torn, distorted or is otherwise damaged.<br>b. Threads are damaged, in which case the hubcap may also need to be replaced. |
| **Equipment**[4] | | | |
| 12 | Controller malfunction | Once closed and sealed, the internal components are protected. However, environmental changes and external influences from air supply can effect component operation. | I. **Check** controller for damage.<br>II. **Perform** CHECKING FOR AIR LEAKS on page 41 for components inside the controller and external fittings.<br>III. **Repair**[4] or replace as needed.<br>IV. Refer to probable cause 37. |
| 13 | Debris (blockage) in air system | The supply valve includes a screen to filter larger debris from entering and contaminating the air within the system. However, should passable bits of debris collect at any point within components of the system, a blockage can occur. Regular maintenance of the compressor and air tank can help to avoid this problem. | I. **Check** and clean the screen filter at the supply valve. Replace valve as needed.<br>II. If the effect of a possible blockage can be narrowed with the matrix, **disconnect** fittings and hoses to clear the suspected blockage.[4]<br>III. If attempts to clear the suspected blockage fail, **replace** components as needed. |
| 14 | Pinched line | Air line is kinked or pinched between objects. | Make corrections as needed. |
| 15 | Ice in system | Moisture and low temperatures can combine to form ice particles in the system plumbing. This can lead to blockages or diminished air flow and corrosion. | I. **Park** trailer in warm environment.<br>II. **Bleed** moisture from air tank.<br>III. **Check** drier at compressor (TMC RP 637).<br>IV. **Replace** components that show evidence of corrosion.<br>V. **Perform** CHECKING FOR AIR LEAKS on page 41 for components inside the controller and external fittings. |

| PROBABLE CAUSES | | DESCRIPTION | RECOMMENDED FIX |
|---|---|---|---|
| 16 | PPV not functioning | The Hendrickson PPV has an opening pressure of 75±10 psi and a closing pressure of 70±10 psi. For various reasons, it may fail to open or close. | If the pressure in the tank is known to be above 85 psi and the valve remains closed, **replace** the PPV. |
| 17 | Hubcap not properly clocked | Improperly installed (clocked) hubcaps can lead to stretching or expose tire hoses to objects that can damage the tire hose. | Refer to and **review** TIRE HOSE INSTALLATION on page 21 to determine if properly installed and clocked. **Make corrections** as needed. |
| 18 | Hubcap wheel valve problem | When the trailer emergency brake are set, the wheel valves should close within a few seconds.<br>Debris or contaminants in the air lines can cause wheel valves to close more slowly and bleed air from one or more wheels out through the controller exhaust ports. Additionally, a kinked axle hose can affect the ability of wheel valves to close. | I. Inspect delivery airlines for kinks. Confirm that plumbing meets requirements specified in section CONTROL LINE INSTALLATION on page 24.<br>II. With brakes set, isolate the affected hubcap by disconnecting tire hoses at the hubcaps, one at a time, until air stops exhausting from the controller exhaust vents.<br>III. Replace the hubcap if:<br>a. Air stops exhausting from the controller exhaust vents when the tire hose is disconnected.<br>b. Tire pressure is significantly below the set Inflation Pressure.<br>**NOTE:** More than one hubcap may need to be replaced before the problem is resolved.<br>IV. **If all hubcaps exhibit the issue, inspect** the axle hoses by removing the 90 degree axle connector fitting and insert a .078" diameter pin into the axle hose bulkhead fitting. The pin should pass through the orifice in the fitting. If it does not, replace the axle hose if it is observed to be kinked. |
| 19 | Problem in hubcap assembly[3,4] | The hubcap contains moving parts, valves and other components that have the potential for mechanical issues caused by debris or contaminants. | If contamination is suspected, **See** probable cause 25.<br>**Replace** entire hubcap assembly as needed. |
| 20 | Controller improperly mounted | The controller should be placed in a location to minimize exposure to the environment and flying road debris. Hendrickson sliders include pre-drilled holes to mount the controller on the front crossmember. | **Refer to** CONTROLLER INSTALLATION on page 22 to verify proper controller installation and mounting. |
| 21 | Cover not properly closed | Not properly closing and securing the controller cover directly exposes internal components to the environment and flying road debris. | I. **Refer to** probable cause 37.<br>II. **Close and secure** the controller cover with a wire tie or fastener. |
| 22 | Insufficient air tank pressure | 1. Air tank pressure must be greater than 75±10 psi to open Hendrickson's PPV. See probable cause 28.<br>2. Tank pressure is below the Inflation Pressure setting listed on front of the controller. Refer to DECAL LOCATION on page 31.<br>3. Compressor maximum output is below target. | I. **Check** truck air outlet and correct as needed.<br>II. **Inspect** hoses and fittings from gladhand coupling to air tank.<br>III. **Inspect** air tank for damage and leaks. |
| 23 | Problem at emergency supply port | While trailer emergency brakes are set, no pressure should be present at controller's emergency air supply port. Zero pressure is required to fully close off the delivery port. See effect K for more details.<br>Alternately, while emergency brakes are released, air pressure should be present at the emergency air supply port to open the delivery port. | Check to **ensure**:<br>I. Emergency air line is **connected** to the emergency air supply port.<br>II. When trailer emergency brakes are **released**, not set, pressure is present in the line.<br>III. When trailer emergency brakes are **set**, pressure is not present in the line.<br>IV. The emergency **air lines and fittings** have no blockages, breaks, leaks or kinks. |

| PROBABLE CAUSES | | DESCRIPTION | RECOMMENDED FIX |
|---|---|---|---|
| 24 | Low tire pressure | One or more tires appear to be low. This could be a normal condition if the trailer has been idle for a period of time and the controller is off. Decreased elevation or drop in temperature can also cause tire pressures to drop. | If all tires are low, the problem may exist with the controller and associated plumbing. If one or more tires are low, look for other probable causes such as a 90 degree fitting on the delivery port or a kinked axle hose. **Refer to** IN THE EVENT OF A LEAK on page 40. |
| 25 | Test port vent in wrong position | The test port vent is included with current TIREMAAX PRO controllers. It can be threaded to the test port in the TEST or STORE position, see INDICATOR LAMP TEST on page 42. If left in the TEST position:<br>1. Air may leak out the test port.<br>2. The controller cover will not properly close. | **Unthread** test port vent from the test port, **flip** and **reinstall** in the STORE position. **Ensure** cover completely closes and latches. If the cover is damaged, replace it. |
| 26 | Problem not with TIREMAAX | TIREMAAX depends on supply air integrity, power for the indicator lamp and emergency air pressure. | Where applicable, check each input to the controller to ensure no problems exist. Check other effects and probable causes related to these external inputs. |
| | | **Electrical** [5] | |
| 27 | No power to controller | Power is not required for the TIREMAAX system to operate, but it is required to operate the indicator lamp and inform the driver of malfunctions and status. | I. **Ensure** truck uninterrupted power is available at the J560 connector.<br>II. **Check** wiring to controller according to Figure 37 on page 28. |
| 28 | Failed connection or cable | Loss of connection anywhere in the system can prevent the indicator lamp from illuminating. If not properly secure, connected or weather proofed, connections can fail. | I. **Check** wiring according to Figure 37 on page 28.<br>II. **Ensure** all connectors are properly and securely connected. Refer to ELECTRICAL COMPONENT INSTALLATION on page 28. |
| 29 | Bad bulb or LED indicator | Like power, the TIREMAAX system is fully functional with a bad indicator lamp. However, driver visual feedback for malfunctions and status is not provided. | **Perform** INDICATOR LAMP TEST on page 42. |
| 30 | Electrical short | Power side of indicator lamp is shorted or flow switch is stuck on. Refer to Figure 37 and Figure 38 on page 28. | I. **Disconnect** connector at controller. If lamp stays on, power wire or lamp cable is shorted. **Fix or replace** as needed.<br>II. **Close** supply valve. If lamp stays on, flow switch is stuck in ON position or short is in controller. **Replace** controller. |
| 31 | Bad ground | Corrosive surface bonding and frayed wires can result in poor electrical connection. This would effect indicator lamp function during inflation. | I. **Refer to** Figure 37 on page 28 to trace and check all electrical wiring and connections.<br>II. **Repair** as needed. In some cases, **sealing** connections against weather conditions may be necessary. |
| 32 | Loose wire or connection | Loose wires can lead to no or intermittent illumination of the indicator lamp during inflation. | I. **Refer to** Figure 37 and Figure 38 on page 28 to trace and check all electrical connections.<br>II. **Refer to** ADDING RESTRAINT TO WIRING on page <?> to ensure all wires and wire harnesses are properly restrained. |
| **PROBABLE CAUSES** | | **DESCRIPTION** | **RECOMMENDED FIX** |

[1] If there are no tires damaged and no leaks present, let the TIS continue to operate. Low temperature, poor air supplies and low tire pressures will increase the period of time required to inflate and maintain tire pressure. If the indicator lamp remains on after an additional 10 minutes, service is required. **The use of air additives and antifreeze containing alcohol will cause deterioration of rubber components and must be avoided.**

[2] The system identifies leaks and reports them by illuminating the trailer-mounted indicator lamp. The operator is informed whenever a tire is low enough to require service or there is a leak in the system. **Wheel valves isolate the leaking or damaged wheel from the system. Probable cause 2, 3 and 4 help identify the severity of the leak** in general and apply to all other causes of leaks. Other causes, with their associated effect, help to identify the location of the leak referenced in causes 2, 3 and 4.

[3] Before removing a hubcap for any procedure, refer to manufacturer's warranty requirements. **Disturbing spindle nut, wheel bearings and hub assembly can violate the wheel-end warranty.** Also, replace the gasket with new and replenish any lost lubricant during reassembly according to manufacturer's requirements.

[4] Any attempts to disassemble hubcap assembly or controller and its components **will void the TIREMAAX® warranty**.

[5] When working around electricity and with electrical components, always observe proper safety precautions.

# SERVICE PROCEDURES

This section includes service information and requirements relative to TIREMAAX® PRO systems.

## TOOLS REQUIRED

| TOOL | WHERE USED |
|---|---|
| PRO Target Gauge VS-32331 [1] | SETTING TIREMAAX® PRO INFLATION PRESSURE on page 44 |
| Tire pressure gauge | Checking tire pressures |
| 1/8 inch Allen wrench | Adjusting controller pressure |
| 3/8 inch wrench | HUBCAP INSTALLATION on page 19 |
| 7/16 inch open-end torque wrench | |
| 7/16 inch wrench | Tighten tire hose/valve stem connection |
| [1] Available from Hendrickson, refer to L878 TIREMAAX Parts List. | |

*Table 6: List of required tools*

Table 6 includes a list of primary tools required to install and service TIREMAAX systems.

## 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 MANUALLY CHECK TIRE PRESSURE. Reference tire manufacturers' guidelines for acceptable inspection intervals.
- At regular intervals, check TIREMAAX components for air leaks and indicator lamp operation.

In addition to the periodic intervals listed below:

- 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 system components.

### EVERY THREE MONTHS

To test system integrity, perform the following:

1. **Check** indicator lamp, see INDICATOR LAMP TEST on page 42.
2. **Manually check** all tires for a low pressure condition by removing the tire hoses at the hubcap using MANUALLY CHECK TIRE PRESSURE on page 43.
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:

1. **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.** It is recommended to rinse soapy water after leak testing.
2. **Check**:
   A. Regulator Inflation Pressure
   B. Pressure setting

## 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 DISABLE TIREMAAX® on page 43.

## 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.

**⚠WARNING** Chock all wheels before beginning this procedure. Refer to Hendrickson literature number T12007 for details.

**NOTE:** A simple test for a leak would be to temporarily close the supply valve and observe to see if pressure holds steady. If pressure decreases, there may be a leak in the system.

**NOTE:** The TIREMAAX® system can be pressurized without applying electrical power (indicator lamp is disabled).

Pressurize and check the TIREMAAX system as follows:

1. **Fill** trailer air system to at least 90 psi. If conducting an integrity check after installation, the trailer air tank must be filled to 5 psi above the desired Inflation Pressure.
2. **Chock** wheels and **release** trailer emergency brake while checking for leaks.

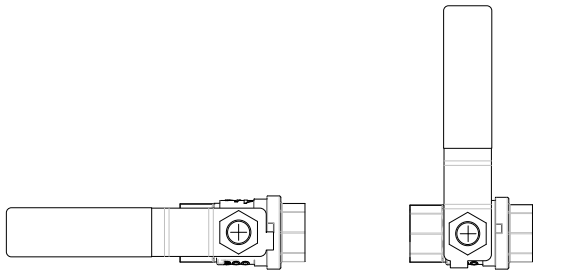



*Figure 42: Supply Valve Operation*

3. **Ensure** TIREMAAX supply valve (if equipped) is in open position (Figure 42).
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. It is recommended to rinse the soapy water solution once complete to prevent corrosion.

**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 supply 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.

**NOTE:** If conducting a system integrity check to identify possible leaks, an additional benefit is all tires will be inflated to the Inflation Pressure (refer to TIRE INFLATION on page 10).

## 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 Figure 38 on page 28 for wiring diagrams.
2. **Enable** air flow through controller (**select** applicable method, A or B):

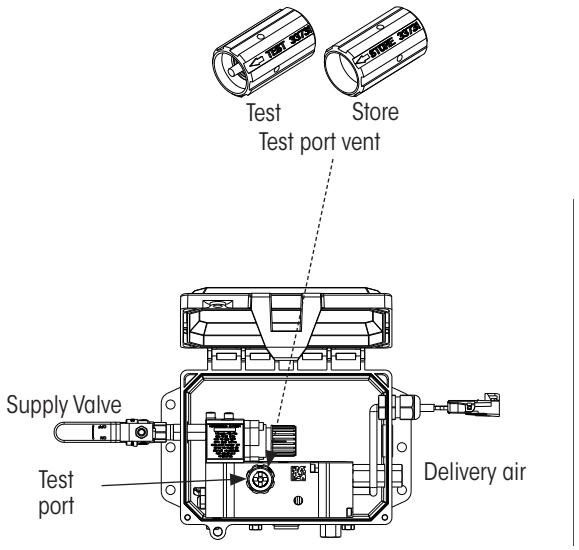



*Figure 43: TIREMAAX® PRO controller with test port vent*

   A. The current PRO controller includes a **test port vent tool** that threads into the test port (Figure 38) in the STORE position. To perform a lamp test:
      i. **Open** controller.
      ii. **Unthread** the test port vent from the test port.
      iii. **Reverse** the test port vent and reinstall in the TEST position. In this position, the inner pin allows air to pass out the port.
3. **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 the indicator.
      iii. If indicator lamp is still not on, **check** wiring.
4. Test complete:
   A. **Unthread** test port vent and **reinstall** in the STORE position.
   B. **Close** the controller cover.

## MANUALLY CHECK TIRE PRESSURE

**⚠WARNING** 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.

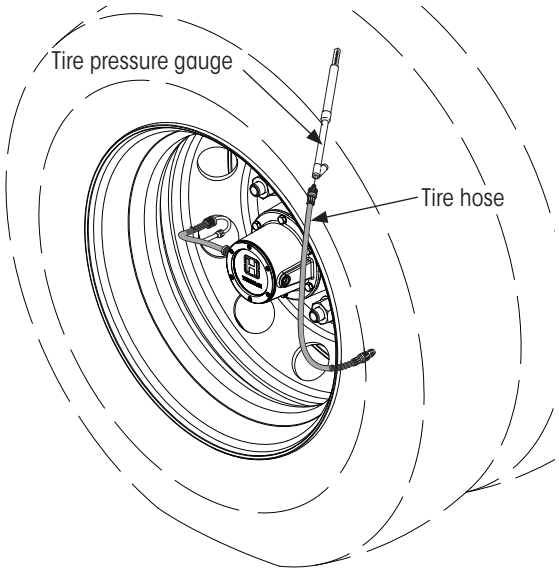



*Figure 44: Manually checking tire pressure*

To manually check tire pressure (Figure 44):

- Turn vehicle off.
- Disconnect tire hose from hubcap.
- Use a conventional gauge to measure tire pressure at hose end.
- 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 TIRE HOSE INSTALLATION on page 21 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®

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

1. **Set** trailer emergency brake.

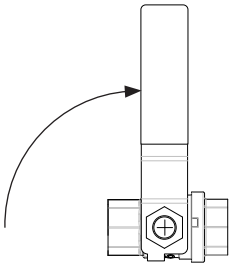


*Figure 45: Supply valve closed*

2. Located on the TIREMAAX controller, **turn** the Supply valve (if equipped) to the closed position (Figure 45).
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. Refer to MANUALLY CHECK TIRE PRESSURE. Adjust accordingly, if necessary.

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

4. **Seek service** when possible.

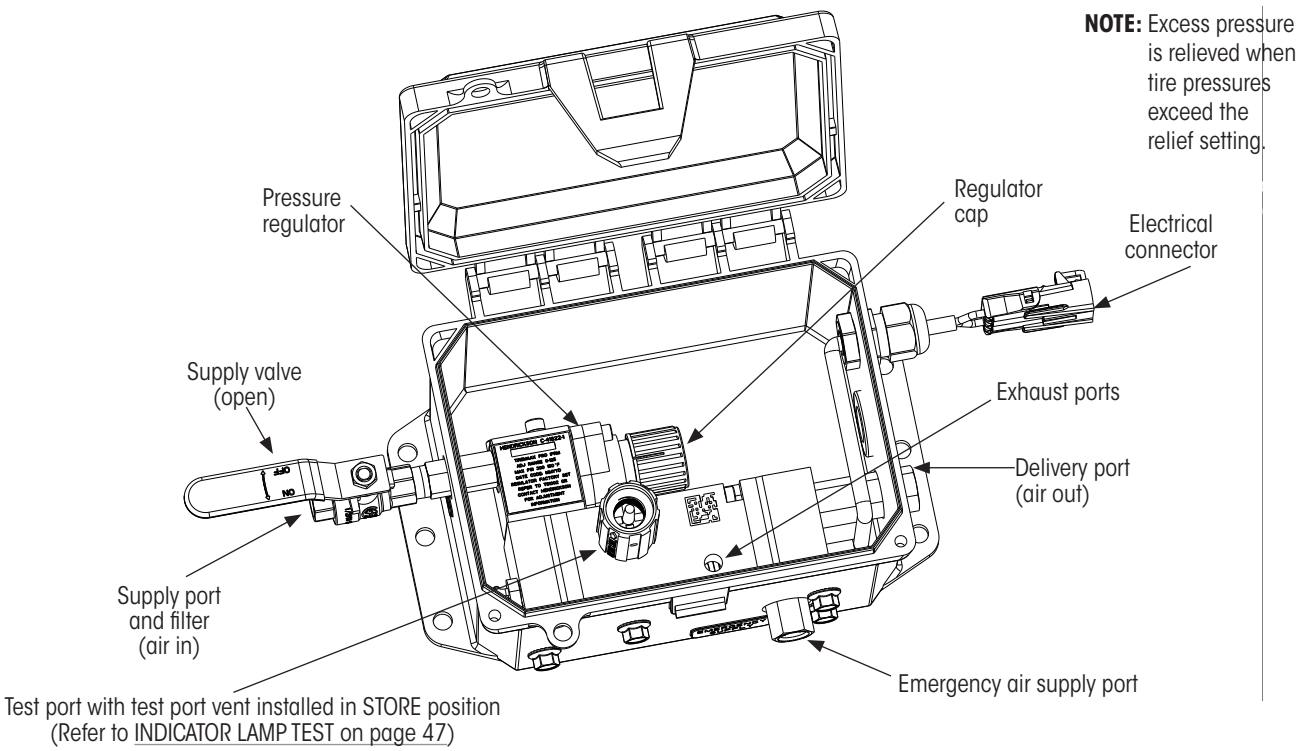



*Figure 46: Setting TIREMAAX® PRO*

## SETTING TIREMAAX® PRO INFLATION PRESSURE

The TIREMAAX PRO controller is pre-set at the factory, therefore additional setup is **normally not required**. If a change to the Inflation Pressure or Tire Pressure Relief settings are required, follow these instructions.

**IMPORTANT:** The system must be free of air leaks prior to performing these procedures. Refer to CHECKING FOR AIR LEAKS on page 41.

**⚠WARNING** Emergency air supply must be available at the emergency air supply port on the controller to enable TIREMAAX PRO operation. Supplying air at the emergency gladhand will also release trailer brakes.

These procedures can also be found in Hendrickson literature number T52007 Toolbox tips: TIREMAAX PRO (AFTER MAY 2026)- Setting Target Pressures.

### REQUIRED TOOLS

The following tools are required to adjust TIREMAAX PRO controller settings.

- Clean, dry shop air capable of supplying at least 15 psi (not exceeding 140 psi) above Inflation Pressure listed on controller decal.
- Tire pressure gauge.

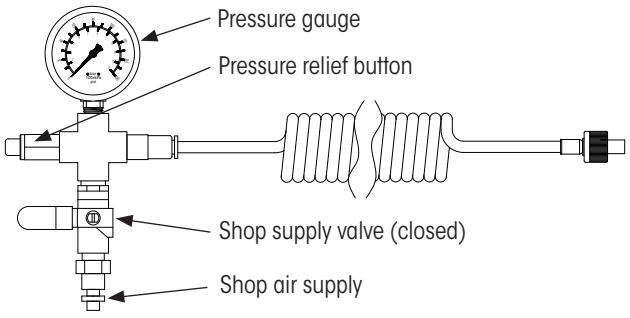



*Figure 47: TIREMAAX PRO target gauge VS-32331*

- TIREMAAX PRO target gauge (Figure 47).

**NOTE:** The PRO target gauge might not display an accurate Inflation Pressure while trailer emergency brake are released. To isolate the delivery lines from the air supply, set the trailer emergency brake before reading the gauge.

- 1/8 inch Allen wrench.

### CHECKING PRO COLD INFLATION PRESSURE

Follow this procedure to check the cold Inflation Pressure for TIREMAAX® PRO systems.

**IMPORTANT:** The TIREMAAX PRO target gauge (Figure 47) is required for this procedure.

Available clean, dry shop air supply must be at least 15 psi above cold target Inflation Pressure for this test.

1. **Set** trailer emergency brake.
2. **Chock** wheels or otherwise **immobilize trailer**.
3. **Locate** controller on the trailer, Figure 46 on page 44.
4. Using clean, dry shop air supply, **pressurize** trailer air tank to at least 15 psi above desired Inflation Pressure by connecting to emergency air supply gladhand. Once charged, disconnect from emergency air supply gladhand.
5. **Open** controller cover and **remove** test port vent, if included, Figure 46.
6. **Connect** shop air to PRO target gauge shop air supply port, Figure 47.
7. **Connect** PRO target gauge to controller test port.

**IMPORTANT:** Ensure PRO target gauge shop supply valve is closed and the pressure relief button is not pressed during installation and removal.

8. **Check** PRO Inflation Pressure.
   A. **Ensure** PRO target gauge shop supply valve is closed.
   B. **Press and release** the pressure relief button on PRO target gauge.
   C. **Read and record** target gauge pressure.

**NOTE:** Current Inflation Pressure **should be at the specified cold target** Inflation Pressure on the controller decal.

9. **Check** PRO Tire Pressure Relief.
   A. **Open** the shop supply valve. You should hear air exiting the valve.
   B. **Close** the shop supply valve. Air should stop exiting after 45 to 60 seconds.
   C. **Read and record** the target gauge pressure. This is the current Tire Pressure Relief setting.
10. **Compare** measured Inflation Pressure and Tire Pressure Relief readings to desired settings.

**NOTE:** Tire Pressure Relief should be approximately 10 psi higher than the specified cold Inflation Pressure on the controller decal.

   A. **If** not at specified cold Inflation Pressure settings, refer to TROUBLESHOOTING on page 32.
   B. **If** adjusting Inflation Pressure, proceed to ADJUSTING PRO INFLATION PRESSURE.

11. **Disconnect** shop air supply at target gauge.
12. **Disconnect** target gauge from controller test port.
13. **Reinstall** test port vent, if included, in **STORE** position.
14. **Close** controller cover.

### ADJUSTING PRO INFLATION PRESSURE

**NOTE:** To properly perform this procedure, there must be sufficient air pressure in the trailer air tank and the trailer emergency brake must be set.

#### Adjust PRO Inflation Pressure

This adjustment is set at the controller regulator on page 45.

**IMPORTANT:** The TIREMAAX® PRO system is designed to operate with cold inflation pressures between 85 and 120 psi. Setting the inflation pressure outside of this range may cause the system to function improperly.

1. **Set** trailer emergency brake and **open** the controller supply valve.
2. **Remove** regulator cap by pulling to the right.
3. **Momentarily press** the pressure relief button on the PRO target gauge after each adjustment and before reading the gauge. This removes any residual air pressure in the gauge.
4. **Use** a $^1/_8$ inch Allen wrench to **adjust** controller regulator until desired Inflation Pressure is reached:

**NOTE:** Always approach the Inflation Pressure setting from an increasing-pressure direction.

A. **If Inflation Pressure is set too low**, increase pressure by rotating the regulator adjustment screw **clockwise** (as viewed from the end of the screw).

B. **If Inflation Pressure is set too high**:

   i. **Decrease** it by rotating the regulator adjustment screw **counterclockwise** (as viewed from the end of the regulator screw).

   ii. **Use** pressure relief button on target gauge (Figure 55) to **lower** Inflation Pressure **at least 5 psi below the desired Inflation Pressure** setting.

   iii. **Turn** screw clockwise again to the desired Inflation Pressure.

5. **Repeat** Step 3 and Step 4 until the desired pressure is reached.

6. **Reinstall** regulator cap.

**Restore PRO System to normal operation**

At this point, the controller should be set to the desired Pressures to restore system to normal operation:

1. **Disconnect** shop air supply from PRO target gauge.
2. **Disconnect** PRO target gauge from controller.
3. **Reinstall** the test port vent (Figure 46) in the store position.
4. **Close** controller, **secure** latch and **ensure** controller supply valve is open.
5. **Update** decal on controller cover (Figure 40 on page 31), if necessary.

## WIRING HARNESS REPLACEMENT

As discussed in WIRE HARNESS OPTIONS AND DETAILS on page 28, various wiring harnesses are available.

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

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 39 on page 29.

**Removal**

1. **Turn off** all power to trailer.
2. **Disconnect** the following:
   A. Five-pin ABS connector (Figure 39 on page 29).
   B. Five-pin power supply connector.
   C. Indicator lamp connection.
   D. Controller assembly connector.

**Installation**

For installation details and criteria, refer to ABS JUNCTION WIRE HARNESS INSTALLATION on page 29.

1. **Connect** the following:
   A. Five-pin ABS connector.
   B. Five-pin power supply connector.
   C. Indicator lamp connector.
   D. Controller assembly connector.
2. **Refer to** ADDING RESTRAINT TO WIRING on page 29 to **weatherproof, secure and restrain** harness and wiring as needed.

## CONTROLLER ASSEMBLY REPLACEMENT

This procedure replaces the controller assembly as one complete unit.

### REMOVAL

1. **Exhaust** air from trailer air tank. This will cause trailer emergency brake to be set.
2. **Disconnect** controller electrical connector.
3. **Disconnect** air supply line. Label the line "SUPPLY" to avoid confusion when installing the new controller assembly.
4. **Disconnect** emergency air supply line. Label the line "EMERGENCY" to avoid confusion when installing the new controller assembly.
5. **Disconnect** delivery air line. Label the line "DELIVERY" to avoid confusion when the new controller assembly is installed.
6. If reusing air fittings, **remove** air fittings from the ports on the controller assembly.
7. **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 CONTROLLER INSTALLATION on page 22 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 shown in Figure 19 on page 19 to avoid overtightening the fittings. **Repeat** Step 3 for Emergency air supply port.
4. **Connect** air lines, labeled from removal procedure, to the appropriate ports:
   A. SUPPLY
   B. DELIVERY
   C. EMERGENCY
5. **Connect** controller assembly wire connector.
6. **Recharge** trailer air system.
7. **Test** for air leaks by listening or using soapy water. Refer to CHECKING FOR AIR LEAKS on page 41. It is recommended to rinse the soapy water solution when complete.
8. **Perform** MANUALLY CHECK TIRE PRESSURE on page 43 for at least two tires.
9. **Check** Inflation Pressure:
   CHECKING PRO COLD INFLATION PRESSURE on page 45

## REPLACING HUBCAP WINDOW

**OIL (ALL YEARS) & GREASE (PRIOR TO 2026)**

Replacement hubcap window kits are available (Hendrickson literature number L878 *TIREMAAX® Parts List*) for various TIREMAAX hubcap windows.

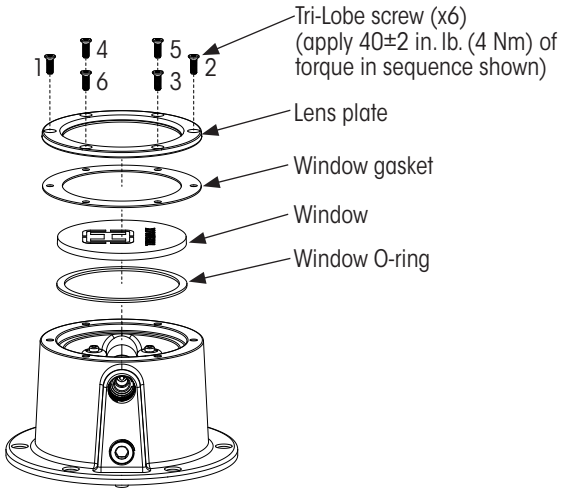



*Figure 48: Hubcap window assembly*

When replacing the window, assemble in the order shown in Figure 56. **Tighten** Tri-Lobe screws to 40±2 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 (Figure 22 on page 20). The tire hose can remain attached to the valve stem if desired.
3. **Observe and record** wheel orientation (clocking) Refer to Figure 21on page 20.
4. **Remove** wheel(s) as needed.

***NOTICE*** Take care not to damage the hubcap port and threads.

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

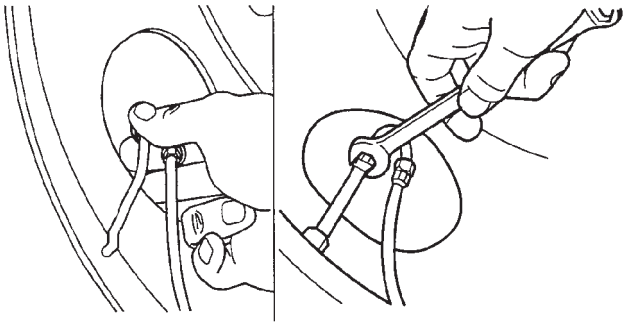


*Figure 49: Reattaching tire hoses to tire valve stem*

6. **Attach tire hose(s) to tire valve stem(s)** and tighten finger tight (Figure 49).

**NOTE:** Tire hoses must be connected directly to the tire valve stems and hubcap port. **DO NOT use valve stem extenders**.

7. Using a $^{7}/_{16}$ inch wrench, **tighten tire hose/valve stem connection** an additional one-half turn (or 28 in-lbs) (Figure 46).

   **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:** 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.

8. **Reattach** tire hose(s) to hubcap, hand-tighten. Using pliers, carefully and gently verify the hose connection is tight.

## CONVERTING FROM CP TO PRO

Plumbing from the delivery port to the hubcap is the same for current TIREMAAX® CP and PRO systems. To convert, only the controller and hubcaps need to be exchanged.

**IMPORTANT:** For converting legacy TIREMAAX CP or EC systems purchased prior to April 2012; the axle hose, axle vent, spindle plug and tire hoses must also be changed. Hendrickson recommends using the TIREMAAX ordering guide to configure a complete TIREMAAX PRO system, minus electrical components.

Electrical components are also the same or can be easily adapted as needed for both current and legacy systems.

Procedures for completing the conversion include:

- CONTROLLER ASSEMBLY REPLACEMENT on page 47
- HUBCAP INSTALLATION on page 19

If for legacy CP or EC systems, also include:

- AXLE HOSE INSTALLATION on page 15
- AXLE VENT INSTALLATION on page 17
- SPINDLE PLUG INSTALLATION on page 19
- TIRE HOSE INSTALLATION on page 21

For assistance or questions, refer to CONTACTING HENDRICKSON on page 4.

# APPENDIX A: GLOSSARY

References to system components mentioned in the following descriptions can be found in OPERATION on page 10, Figure 52 on page 45 and Figure 54 on page 49.

The following terms are relative to TIREMAAX PRO systems defined and discussed in this document:

**Crack Pressure**
A characteristic of spring-loaded check valves.
The spring tension determines the pressure differential required to open the valve.

**Relief Pressure**
This is designed into the regulator to be approximately 10 PSI above the Inflation Pressure. Tire pressures above this setting will be exhausted out of the regulator.

**Emergency close (run-flat) pressure**
A minimum pressure that tires will deflate to in the event of a catastrophic leak in the system.

**Inflation Pressure**
Set at the controller's regulator, this is the desired tire pressure for tire inflation when tires are at ambient temperature. The minimum pressure is based on tire manufacturer's tire load/psi charts and tables.

**OEM**
**O**riginal **E**quipment **M**anufacturer

**Rotary Union**
Rotary air sealed assembly that allows air transfer from fixed spindle to the rotating wheel-end and wheel(s).

**TIS**
(**T**ire **I**nflation **S**ystems)
A system designed to maintain desired pressure in tires and activates a warning to alert the vehicle operator if there is a system or tire leak.

**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.*

HENDRICKSON

**www.hendrickson-intl.com**

T51009 04-26 CN 048237

**TRAILER COMMERCIAL VEHICLE SYSTEMS**
2070 Industrial Place SE
Canton, OH 44707-2641 USA
866.RIDEAIR (743.3247)
Fax 800.696.4416

**Hendrickson Canada**
2825 Argentia Road, Unit #2-4
Mississauga, ON Canada L5N 8G6
800.668.5360
905.789.1030 • Fax 905.789.1033

**Hendrickson Mexicana**
Circuito El Marqués Sur #29
Parque Industrial El Marqués
Pob. El Colorado, Municipio El Marqués,
Querétaro, México C.P. 76246
+52 (442) 296.3600 • Fax +52 (442) 296.3601

©2026 Hendrickson USA, L.L.C. All Rights Reserved. All trademarks shown are owned by Hendrickson USA, L.L.C., or one of its affiliates, in one or more countries.
Information contained in this literature was accurate at the time of publication. Product changes may have been made after the copyright date that are not reflected.

Printed in United States of America