



# **Automatic Tire Inflation System**

## **Installation Manual**

***Bearing Technologies, LTD***





# Installation Index

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# PressureGuard System Overview

**Warning:** Before proceeding with the installation.

Wear approved eye protection at all times.

Chock tires to prevent the trailer from moving during installation.

Stay clear and release all positive pressure from the air tank

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The **PressureGuard System** routes air from the trailer's supply tank through the axle, by way of vinyl tubing, to the hub caps and then to the tires. The system is designed to maintain tire pressure at a preset level.

If there is a tire blowout or major system leak, the patented valve stem adapter will maintain air in the remaining tires.

A pressure protection valve senses any sudden drop in the air pressure and will close to prevent air loss from the reservoir.

A loss in system air pressure will illuminate a trailer mounted warning light to alert the driver of a potential problem.

The carbon graphite seal (to) special rotating shaft insures miles of trouble free service in the systems only moving part.

The aluminum hubcap features a specially designed venting system that prevents hub pressure build up, and a see- thru Lexan window to check for proper oil level.

The major components of the system consist of:

Pressure protection valve

Pressure regulator and pressure switch

Spindle plugs with graphite seals

Hub caps with rotating shafts and braided tire connection hoses

Zero pressure relief vent in axle

Low pressure warning light (Optional)

Tubing, fittings, and miscellaneous hardware

**Note:** *Soap check all external fittings and joints before completing the installation.*

## Tools and Equipment

The following is a list of tools and equipment needed to install the PressureGuard system for most applications. In order to ensure proper installation, contact a Bearing Technologies' representative to help assist in acquiring the necessary tools.

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Power drill  
Tap holder  
Telescoping magnet  
Putty knife  
Ratchet set  
Hammer  
Tape measure  
Utility knife  
Open end wrenches  
Wheel chocks  
Eye protection  
Tapping fluid  
Electrical tape  
Slide hammer  
Teflon pipe thread compound

### **Installation Kit**

**P/N IK-1000**

Spindle Plug Driver  
Spindle Punch  
Fish Tape  
1/8"27 NPT Pipe Tap  
11/32 Drill Bit  
Axle Drill Fixture



# Wheel Preparation

## 1 - Wheel Preparation

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1-1 Remove the oil (or) grease hubcap. If working with oil filled hub caps, properly discard the oil.

*Note: Confirm that the spindle plugs (Detail 1-1 Assembly Drawing) received in your kit are the proper size and that the valve stems on the wheels are offset 180 degrees before proceeding.*

1-2 Completely remove all of the old hub cap gasket and clean the surface.

1-3 Wipe all oil or grease from the spindle and hub.

1-4 Remove the old spindle plug from the axle.

1-4-1 This will require punching a hole in the sheet metal plug and then using a slide hammer to remove it.

*Note: Do not use a drill for this step. The iron filings may destroy the hub bearing.*

1-4-2 If the axle is straight, an optional method is to drive the plug out with a long rod from the opposite end spindle after punching the hole.

1-5 Repeat steps 1-1 thru 1-4-2 on all axle ends.



# Axle Preparation

## 2 - Axle Preparation

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Each axle being fitted with the PressureGuard System will require three drilled and tapped holes on the top of the axle.

2-1 Drill three 11/32 inch holes in the top (12 o'clock) position of the axle. The horizontal location of the holes is not critical, and depends mostly on convenience and ease of drilling. However, the closer the holes are to the spindles, the easier it is to feed the tubing through the axle.

*Note: Do not drill on the center mark of the axle . This is needed for axle alignment purposes*

2-2 Tap each hole using a 1/8 inch-27 NPT pipe tap.

2-3 Clean the iron filings generated during the drill and taping process. Using a telescoping magnet thru each hole, remove debris from inside the axle.

2-4 Repeat steps 2-1 thru 2-3 on all axles being fitted



# Axle Tubing

## 3 - Axle Tubing

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3-1 Feed the ¼ inch tubing thru the drilled and tapped curb-side hole of the rear axle until approximately 6 inches of tubing extends out of the spindle. If you experience difficulty feeding the tubing through the axle you can use a fish tape and feed the tubing from the spindle end to the hole.

*Note: To avoid getting debris inside the tubing, cover the end of the tubing with electrical tape before routing thru the axle.*

3-2 Before proceeding to the next step, determine where the axle T-fitting (Detail 3-2 Assembly Drawing) will be located. P-G recommends mounting the fitting on the brake hose from the supply tank using two of the tie wraps provided.

3-4 Cut the tubing (Step 3-1) allowing enough slack to reach the T-fitting location with an additional 8 inches for suspension travel.

3-5 Slide tube fitting (Detail 3-5 Assembly Drawing) over the tube, apply pipe thread compound, and install fitting in to the axle. Do not tighten down on the tube at this time.

3-6 Repeat steps 3-1 through 3-5 on the road side spindle.

3-7 Repeat steps 3-1 thru 3-6 on other axles as required.



# Spindle Plug Installation

## 4 - Spindle Plug Installation

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4-1 Remove the tape from the tubing at the spindle and trim the end for a clean even cut.

4-2 Cut and install chafe guard on the tubing inside the axle to fit from the spindle to where the tubing enters the axle.

4-3 Fasten the tubing to the brass fitting on the spindle plug.

4-4 Align the vent holes of the spindle plug to the 12:00 o'clock position and insert the plug in to the spindle. Using the plug driver and hammer, drive the spindle plug in until the snap ring is flush with the spindle.

*Note: Due to the tight press fit, it is critical that the plug be driven in straight and square to the spindle.*

4-5 Repeat steps 4-1 thru 4-4 on all axle spindles.



# Pressure Regulator

## 5 - Pressure Regulator

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5-1 Using the regulator assembly (Detail 5-1 Assembly Drawing) as a guide, mark the location for the mounting holes.

*Note: PG recommends mounting the regulator on the trailer rear cross member facing the back so that rocks and debris will not damage it.*

5-2 Drill (2) 3/16” holes and use the #12 x 3/4” self drilling screws provided in the kit to mount the regulator.

5-3 Install lengths of tubing from the T-fitting on the output side of the regulator. Make each one long enough to reach the axle T-fittings. (Detail 3-2 Assembly Drawing) If this is a single axle application go directly from the regulator to the spindle hook up.

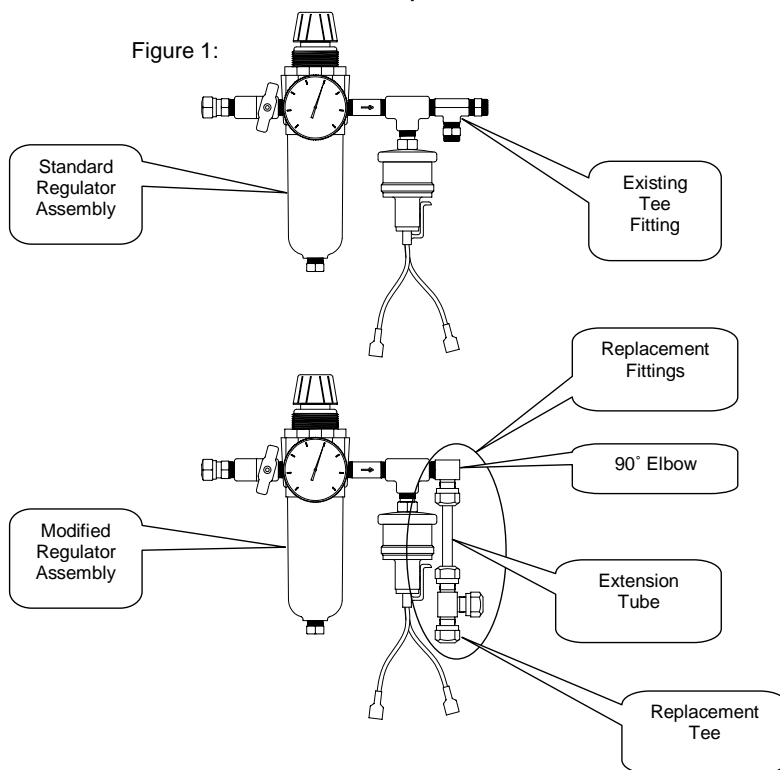
*Note: Use chafe guard anywhere the tubing comes in contact with the trailer frame, and secure the tubing where ever possible with the plastic tie wraps provided in the kit.*

5-4 Alternate pressure Regulator installation. (Next Page)

# Alternate Regulator Assembly

## 5A - Alternate Installation for Regulator Assembly

Occasionally obstructions under the trailer chassis make it difficult to route the tubing from the regulator assembly to the axle. If this is the case in your installation, the regulator assembly can be modified as shown in figure 1. The fittings for this modification are provided with the kit. It should be noted that this is **NOT** the preferred installation method and should only be used if necessary.



1. Carefully remove the existing Tee fitting from the assembly.
2. Apply pipe thread sealant to the 90° elbow provided with the replacement fittings and install it on the regulator assembly as shown in figure 1.
3. Install Replacement Tee and Extension Tube as shown in figure 1.
4. Route tubing from Replacement Tee to axle as shown in the installation diagram.
5. Leak check all fittings before completion of installation.

# Pressure Protect Valve

## 6-Pressure Protect (PP) Valve

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**Warning:** Verify that the tank air pressure has been fully relieved before proceeding to the next steps.

6-1 Locate and remove the accessory plug from the trailer air tank. If no plug exist then proceed to step 6-1-1. If a plug does exists, then proceed to step 6-2.

6-1-1 Remove the current pressure protect valve and replace with a size matching T-fitting. Using thread compound, re-install the current PP valve to one branch of the T-fitting, and the PG supplied valve to the other branch.

6-2 Referencing the accessory plug as a guide, locate the proper size bushing in the kit. Using thread compound, screw the bushing in to the tank along with a ¼” hex nipple.

6-3 Tighten the PP valve in to the nipple “**taking note of the air flow arrow**” on the valve. (Detail 6-3 Assembly Drawing) Align the relief holes in the down position to prevent moisture from getting into the valve.

6-4 Install a ¼” tube fitting to the PP valve and attach tubing from the output of the PP valve to the input of the regulator assembly shut-off valve.

*Note: Use chafe guard and tie wraps as required.*



# Tubing Installation

## 7- Tubing Installation

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**Note:** *Refer to the air flow drawing on the next page of this manual for visual clarification of these instructions.*

7-1 Install a T-fitting to the two tubes coming out of the rear axle.

7-1-1 Secure this T-fitting to a brake hose using two supplied tie wraps.

7-2 Repeat steps 7-1 thru 7-1-1 for the front axle if applicable.

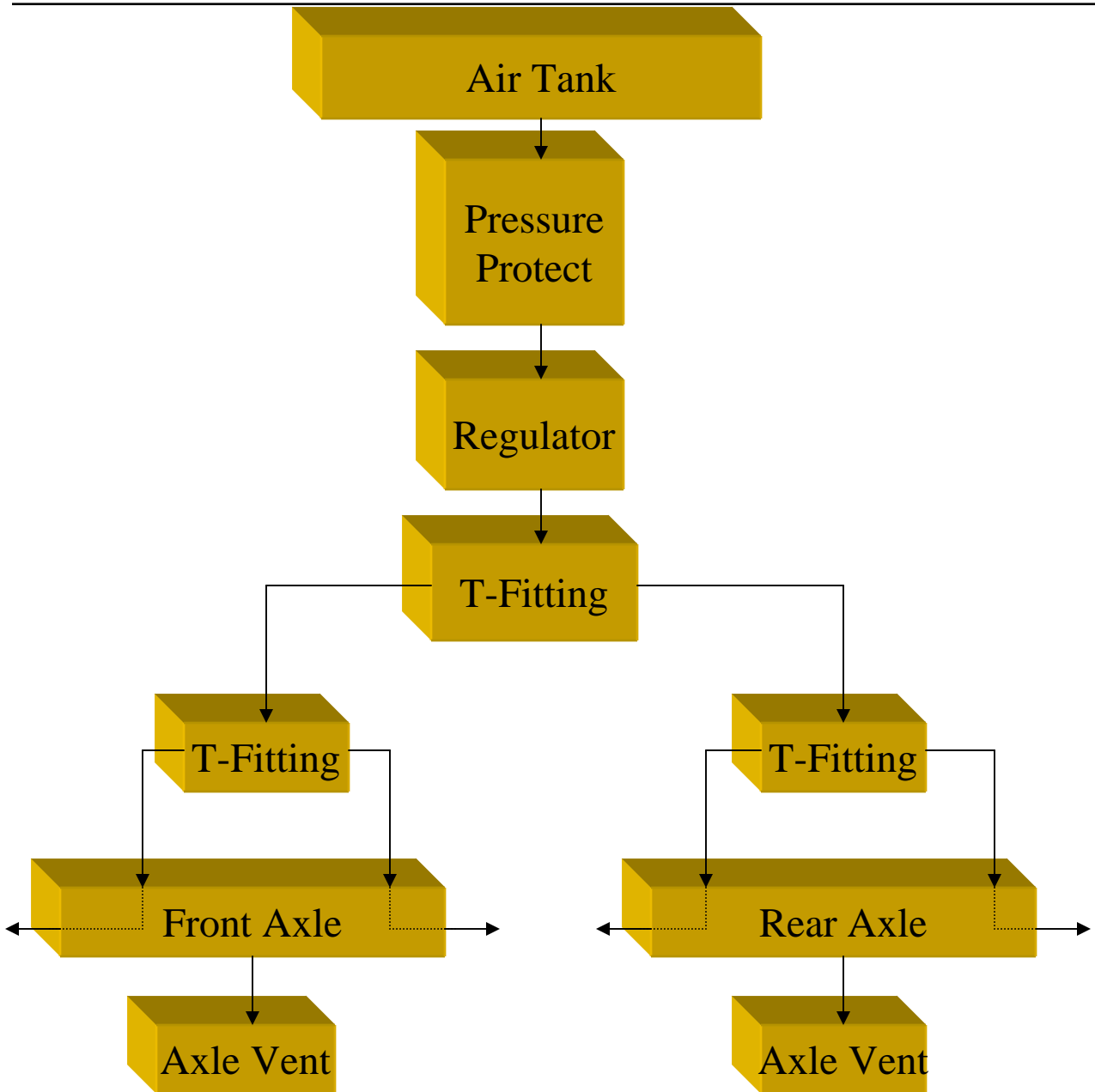
7-3 Hook up the tubing from each axle T-fitting to the regulator assembly T-fitting.

**Note:** *Take care to allow for axle location adjustments when determining the tube length.*

# Air Flow Hook-Up

## Dual Axle System

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## Axle Vents

### 8-Axle Vents

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**WARNING:** The axle vents are installed as a feature to prevent the axle from becoming pressurized as the result of a possible air leak.

They “must” be installed.

8-1 Install a tube fitting in the third drilled and tapped hole of the axle.

8-2 Cut a length of tubing long enough to reach up near the trailer floor and fasten to the fitting.

8-3 Install tube fitting to the air vent (Detail 8-3 Assembly Drawing) and fasten the vent to the end of the tubing.

8-4 Find a suitable location as far from the ground as possible and tie wrap the vent to the trailer frame work.

*Note: Allow 8” extra tubing to account for suspension movement.*

8-5 Repeat steps 8-1 thru 8-4 for additional axles.



# Hubcap Installation

## 9-Hubcap Installation

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**CAUTION:** When doing step 9-2-2 use care to fit the rotating shaft in to the spindle plug. Air will leak if improperly installed.

9-1 Install a gasket to the hubcap.

9-2 Align the hubcap so the hose connect holes are closely aligned to the valve stems.

9-2-1 Hold the cap with the palm of your hands and place your fingers around the hub to guide the cap.

9-2-2 Push the cap flush against the face of the hub using care to fit the rotating shaft seal in to the spindle plug assembly.

9-2-3 Bolt the cap to the hub using the bolts provided. Tighten to 16 ft. lb. of torque.

*Note: If the hubs are aluminum, coat the bolts with a corrosion prevention compound.*

9-3 Repeat steps 9-1 thru 9-2-3 for all hubcaps.



# Valve Stem Hoses

## 10-Valve Stem Hoses

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10-1 Remove the valve stem adapter from the hoses provided.

10-2 Slip a valve stem adapter on each of the wheels valve stem and tighten the body of the adapter using an open end wrench or deep well socket.

10-2-1 Tighten the back nut to secure the stem adapter.

*Note: Take care not to unscrew the adapter from the stem when tightening the back nut.*

10-3 Install the straight hose to the side of the hubcap for the inside wheel. The hose has an O-ring seal and requires a “hand tight” fit only.

10-3-1 Fasten the hose to the valve stem adapter.

10-4 Install the hose with the 180 degree bend to the hubcap on the outside wheel valve stem adapter.

10-5 Repeat steps 10-1 thru 10-4 on all wheel ends.



## Warning Light

### Low Pressure Warning Light

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**Note:** *PG recommends mounting the light 6 to 8 feet from the ground on the front roadside panel of the trailer. Refer to the electrical drawing on the next page of this manual for hook-up.*

11-1 Using the light bracket as a guide, mark and mount the bracket in the desired location. Self drilling screws are in the kit.

11-2 Plug the connector of the two conductor wire to the pressure switch located on the pressure regulator assembly.

11-3 Feed the cable to the power junction box on the trailer. If there is no J-box, connect to the seven way plug for power feed.

11-4 Connect another section of cable to the terminals on the light. Mount the light using the screws provided in the kit. Apply (1) "TIRE" sticker to the lens and one above the light on the trailer.

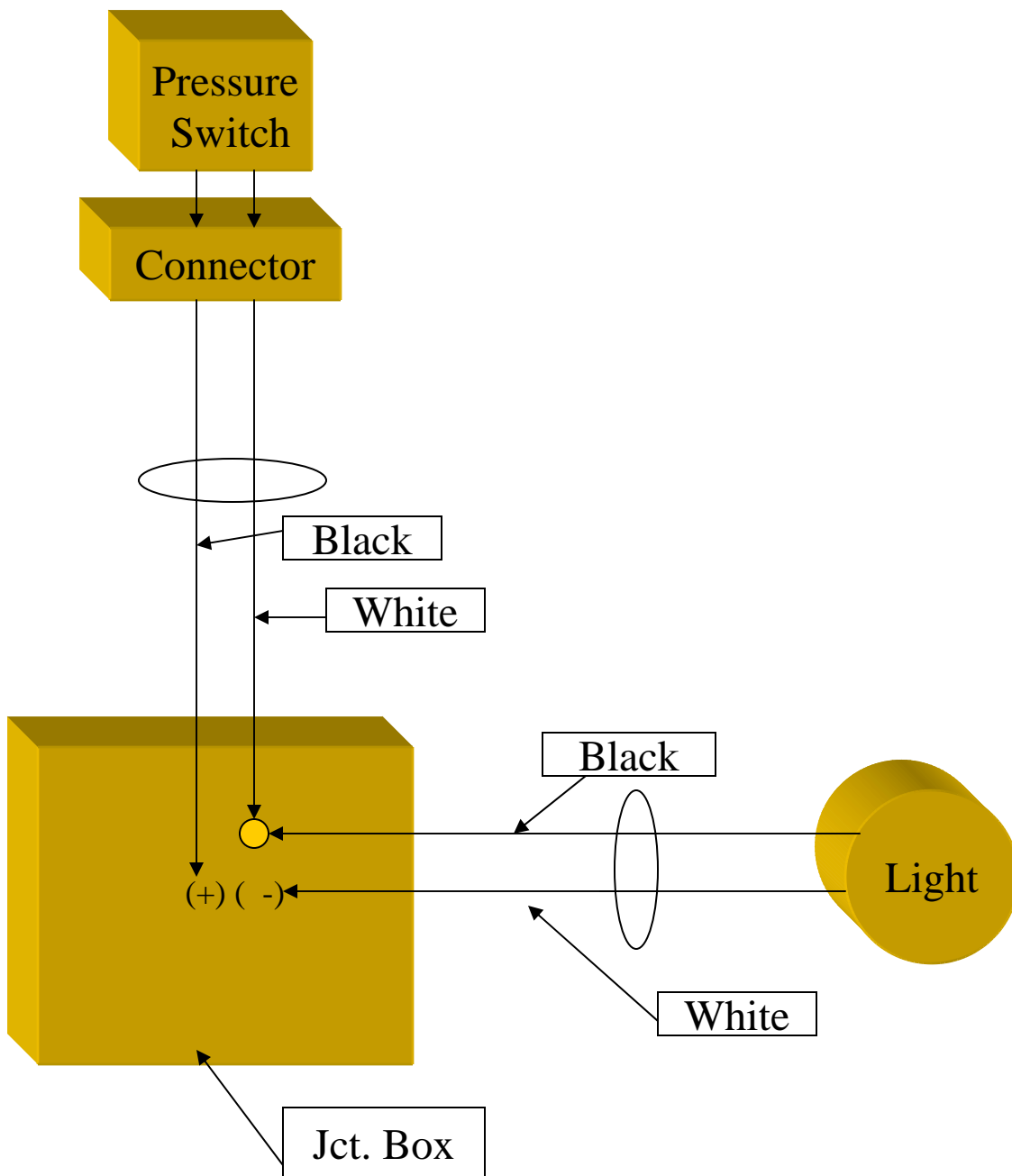
11-5 Run the light wire to the J-box (or power plug) securing the cable with straps or cable ties.

11-6 Connect the black wire from the pressure switch to the (+) positive source of the power. Connect the white wire from the pressure switch to the black wire from the light. Connect the white wire from the light to the (-) negative source of the power.

# Electrical Drawing

## System Warning Light

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# System Troubleshooting Guide

Condition	Possible Problem	Solution
Low air pressure at the output of the regulator.	Air supply valve at the input of the regulator is closed.	Open the valve.
	Pressure Protect Valve at the supply tank is improperly installed.	Install the valve per instructions in section (6) of the manual.
	Regulator setting is too low	Adjust the regulator to the desired setting.
	Trailer supply tank pressure too low.	Pressurize the tank to system pressure.
Tire pressure too low	Inspect the tire for punctures and faulty valve stems.	Repair or replace as required.
	Close the air supply valve at the input of the regulator. Disconnect the tubing at the output side of the regulator, and check for air flow from the tubing. Air flow indicates a faulty hose check valve.	Replace the hose.
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# System Troubleshooting Guide

<p>Air is leaking from the axle air vent.</p>	<p>The rotating shaft on the inside of the hubcap may not be properly inserted in to the spindle plug. If the hubs are lubricated with oil, remove the hubcap oil fill plug from the center of the hubcap. If the caps are grease lubricated, remove the aluminum cover. Inspect the rotating shaft to insure that the tip is inserted in the center of the spindle plugs. Improperly seated shafts will be bent or kinked and the open end will not be inserted in the spindle plug seal.</p>	<p>Remove the hubcap and replace the bent rotating shaft. Re-install the hubcap, and insure that the rotating shaft is properly inserted in to the spindle plug seal.</p>
	<p>The fitting inside the axle used to fasten the tubing to the spindle plug may be leaking. Remove the oil fill plug (or aluminum cap if grease lube) and listen for air leaks at both ends of the axle. If the leak sounds louder at one end of the axle, remove the spindle plug at that end of the axle.</p>	<p>Replace any loose or malfunctioning air fittings and re-install the spindle plug.</p>
	<p>If the air leak sounds similar at both ends of the axle the tubing inside the axle may be damaged.</p>	<p>Remove the spindle plugs and inspect for leaks or breaks in the nylon tubing. Repair as required and replace the spindle plugs and hubcaps.</p>
<p>18</p>		

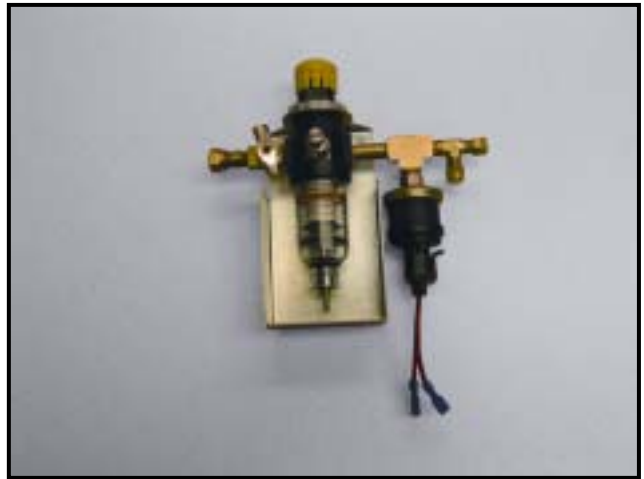
## System Troubleshooting Guide

Air leaks from a point other than the axle vent.	Supply air to the pressure tank. Open the valve at the regulator input. Set the regulator to the desired pressure. Close the valve at the regulator input. Wait one minute. If the pressure has dropped more than 10 PSI, check for leaks in the system.	Soap down all system components and fittings. Repair or replace as necessary.
Warning light turns on when power is applied to the trailer..	Supply tank pressure below 80 PSI.	Pressurize the tank to system pressure.
	Defective pressure switch	Replace the pressure switch
Warning light does NOT turn on when the system pressure is low.	Check for power on the pressure switch black wire at the Junction box.	If no power, then check for supply voltage.
	Check for power on the pressure switch white wire at the junction box.	If no power , then remove the connection on the PS and install a jumper to the cable. If the light comes on, replace the pressure switch. If the light does not come on, check the cable for breaks.
	Check for power at the light socket.	If there is power, change the light bulb.
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# System Components



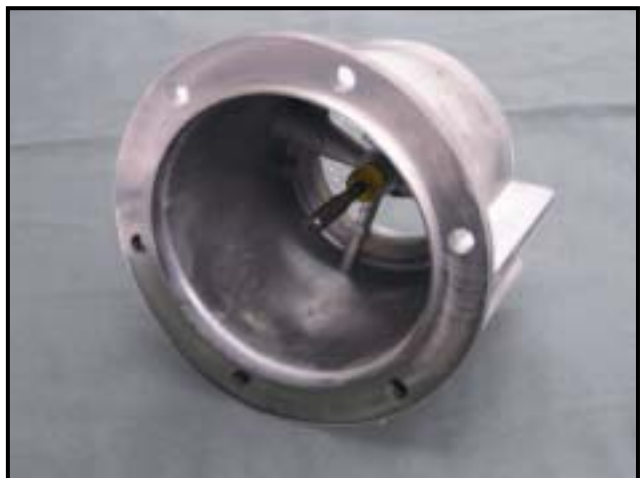
Pressure Protect Valve



Regulator & Pressure Switch



Spindle Plug



Hubcap Assembly

# System Components



180 Degree Hose (Outside)



Straight Hose (Inside)



Valve Stem Adapter



Axle Vent

# System Components



Tube Strain Relief



Tube Connector

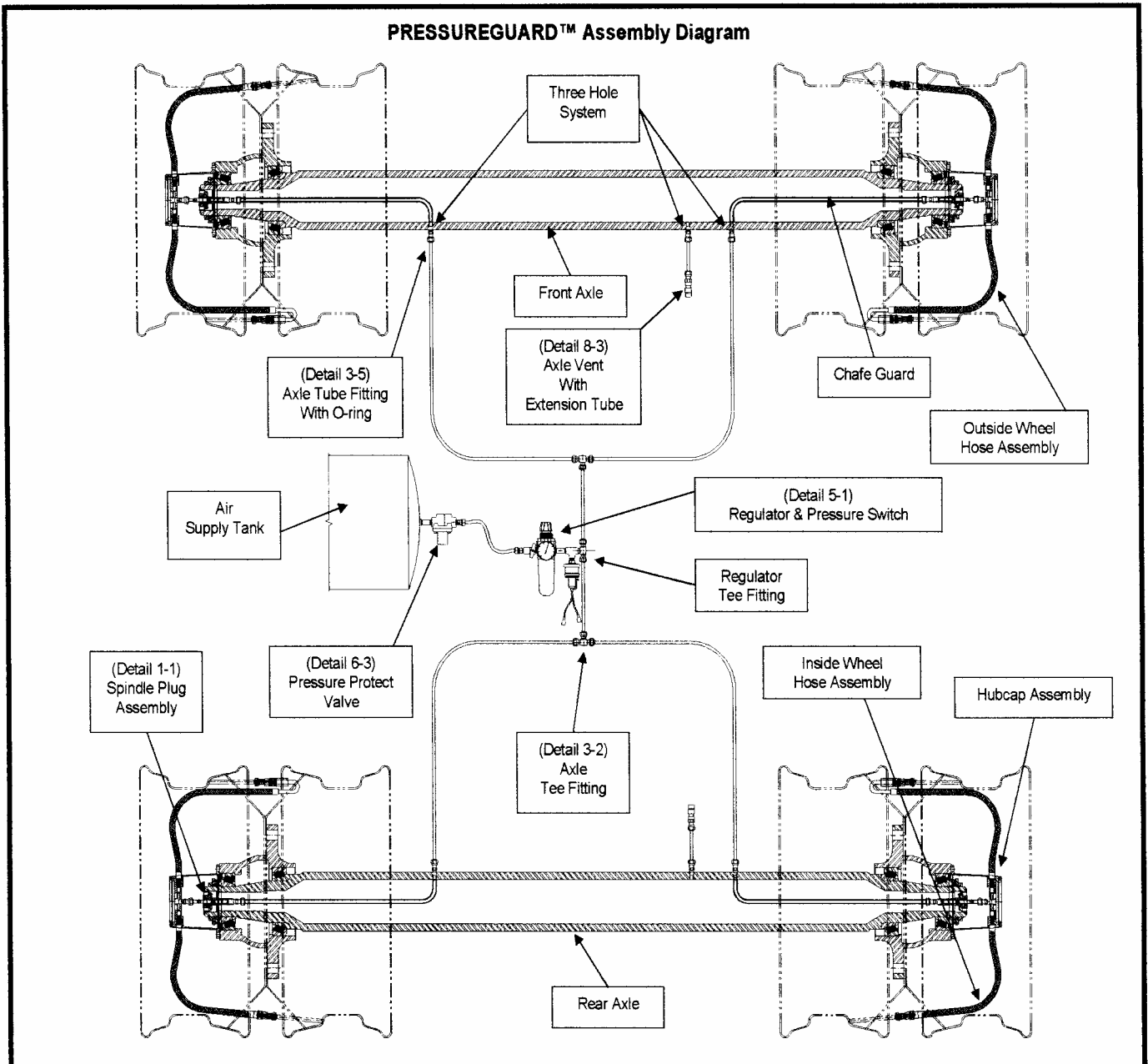


Alternate Regulator  
Hook-up



System Low Pressure Light

# Two Axle System





Notes

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