

TRUCK ADAPTATION INSTRUCTIONS: SPARTAN PUP TRAILER (SPT)



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Congratulations on your recent purchase of a Spartan Pup Trailer. Spartan Truck Company has been a leader in the manufacturing of Roll-Off trucks and trailers for the past 30 years. We are known for our high quality components and extremely durable, low-maintenance roll-off systems and trailers.

These instructions will guide you through the modifications necessary to adapt your truck to properly hook up, tow, and control your Spartan Pup Trailer.

A Truck Adaptation Parts Kit that contains most of the components you will need to upgrade your truck is included with your Pup Trailer.

Notice! *Spartan Truck Company is not responsible for the regulatory towing safety equipment on your truck necessary to comply with your local state and federal towing safety requirements. Most newer trucks are equipped with an OEM air brake Tractor Protection System, however we suggest that you confirm that your truck is equipped with such a system. If an OEM system is not in place, aftermarket systems are available. We recommend that you verify that your vehicle conforms to all safety regulations prior to taking your new trailer on the road.*

Safety First! Always take the time to ensure that your safety is not jeopardized. Be sure to use the right tools for the job at hand. Remember to wear all of the necessary safety equipment. When working on the vehicle's electrical or fuel system, always disconnect the battery ground (-) cable. Remember, a moment's lack of attention can result in an accident.

Section 1. Installing the hitch plate

The Spartan Pup Trailer requires a special hitch plate to properly align the towing tongue to your tractor's hitch at the correct height.

You will need to weld the hitch plate to the truck's main rails as shown in Figure 1. Be sure to add the extra reinforcements to the hitch plate as shown in Figure 2. The cross bar should be a minimum of 4" x 4" x 0.25" wall piece square steel tube and the diagonal gussets should be at least 2" x 2" x 0.25" wall square steel tubes. Both the cross bar and the diagonal gussets are not included in the Truck Adaptation Parts Kit. Be sure to properly coat all of the welds and any raw steel with paint to prevent rust.

Figure 3 shows the layout of the electrical sockets, gladhands, and hydraulic fittings on the hitch plate. Locating all of these components at the rear of the tractor will facilitate the process of hooking up a Pup Trailer to your tractor.

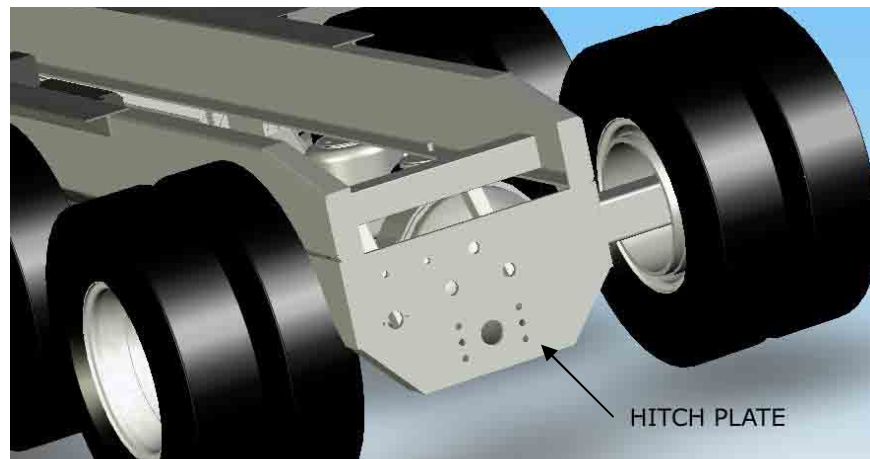


Figure 1. Hitch plate location

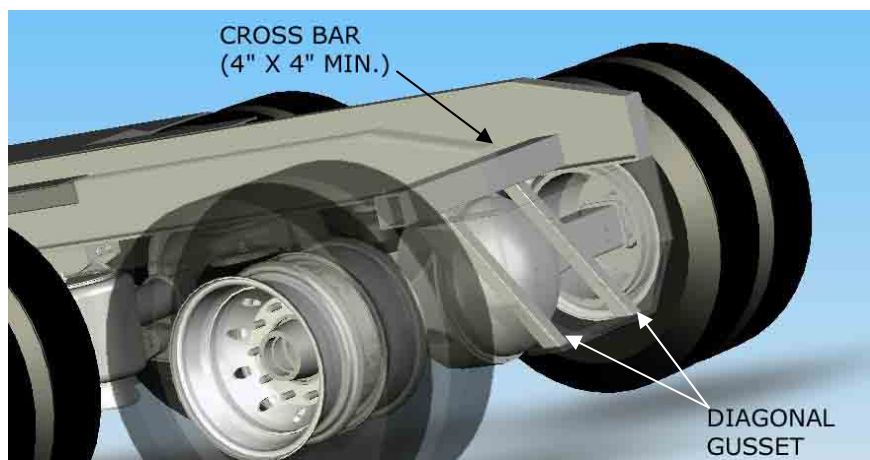


Figure 2. Hitch plate steel reinforcements



Figure 3. Hitch plate component identification

Section 2. Hydraulic System

The Pup Trailer will require hydraulic power from the tractor to operate the hoist and cable system. The hitch plate has been designed to accommodate the hydraulic out flow and back flow fittings necessary to feed the trailer's hydraulic system. Figure 4 shows the hydraulic power system schematic necessary to operate the Pup Trailer hoist and cable system.

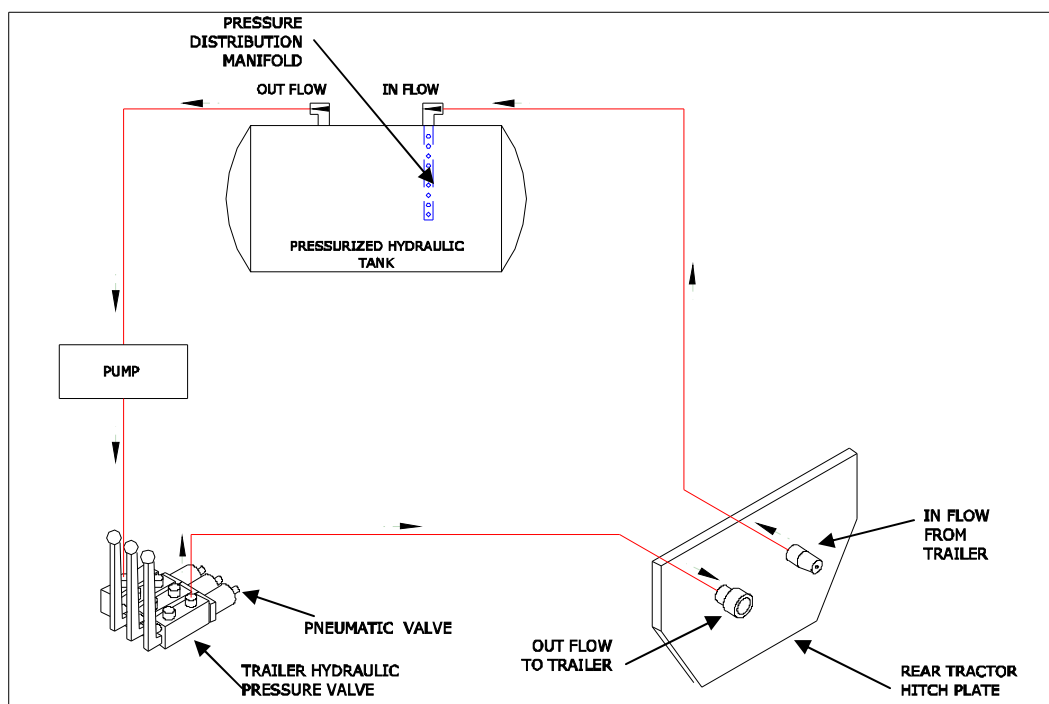


Figure 4. Hydraulic power system schematic

Your Truck Adaptation Parts Kit will include a hydraulic valve that you will need to add to your tractor's current hydraulic system. Figure 5 will illustrate the type of valve included in your kit as well as the standard installation arrangement on your truck.

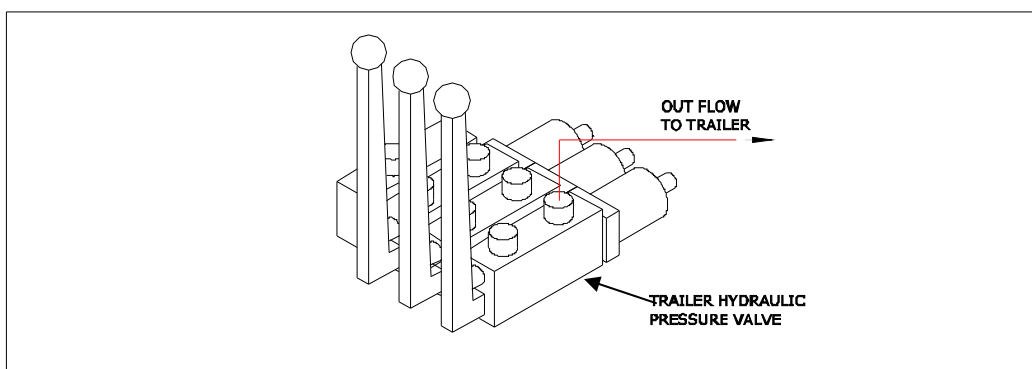


Figure 5. Third hydraulic valve for Trailer out flow pressure

Once the third hydraulic valve has been installed you may proceed to install the in or back flow hydraulic pressure distribution manifold to your hydraulic tank. It is extremely important that you install this manifold to your tank's return line to prevent any damage to your tank. Figure 6 illustrates the hydraulic pressure distribution manifold.



Figure 6. In-Flow hydraulic fluid pressure distribution manifold

To complete the hydraulic system install all of the hoses and fitting necessary to connect all of the components as shown in Figure 4. Please note that the hoses and most of the fittings are not included in your Truck Adaptation Parts Kit.

Section 3. Pneumatic System

One of the most exciting features of the Spartan Pup Trailer is that the driver does not have to get out of the cab to operate the hoist and cable system. Our Pup Trailer features an electric/pneumatic control system that operates the hydraulic hoist and cable system from the tractor's cab. Figure 9 shows a typical dash panel layout of the Pup Trailer control switches and indicator lights inside the tractor's cab.

In this section we will cover the steps necessary to install the pneumatic part of this control system. The electrical part of the system will be explained in the next section.

By this time you should have already installed the Pup Trailer's third hydraulic valve to your tractor's hoist and reeving valve system. This valve should have been sent to you with a pneumatic valve already installed at the tail end of the valve. If the pneumatic valve was not pre-installed, please do so now. Figure 7 will demonstrate the location of the pneumatic valve on the hydraulic valve.

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Next, install the two pneumatic toggle switches on your tractor. One will go inside the cab on the dash panel as shown in figure 9. The second one should be installed outside on the truck near the trucks hydraulic valve control deck.

Continue by installing the dual inlet-single outlet directional T-fitting to the tractor near the hydraulic valve control deck.

Finally, connect all of the components with the properly sized tubing as shown in the schematic in figure 7. Please note that the tubing required to make all of these connections is not included in your Truck Adaptation Parts Kit.

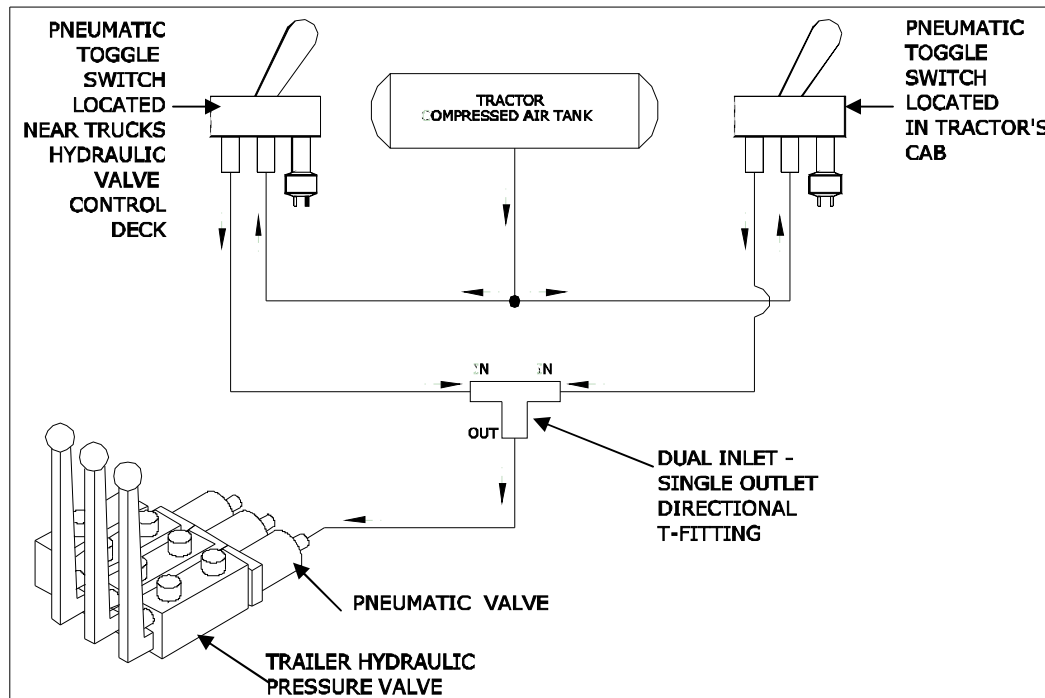


Figure 7. Pneumatic control system schematic

Section 4. Electrical System

The last section of this document will cover all of the electrical circuits that are necessary to properly power up and control the Pup Trailer.

The first step will be to run all of the wires to the 6-way electrical socket that will be installed at the rear of the tractor on the hitch plate. Refer to Figure 3 for an illustration of this socket and its location. This socket contains all of the leads necessary to control the hoist and cable system on the Pup Trailer. It also contains a line that feeds back to an indicator light in the cab of the tractor to inform the driver when the trailer's hoist is UP or in the raised position. Follow the schematic shown in Figure 8 to wire up the control switches and the indicator light. Figure 9 shows a typical layout you can use to install your switches and indicator lights in the cab of your tractor. The mounting plate shown is for illustration purposes only and is not included in your Truck Adaptation Parts Kit.

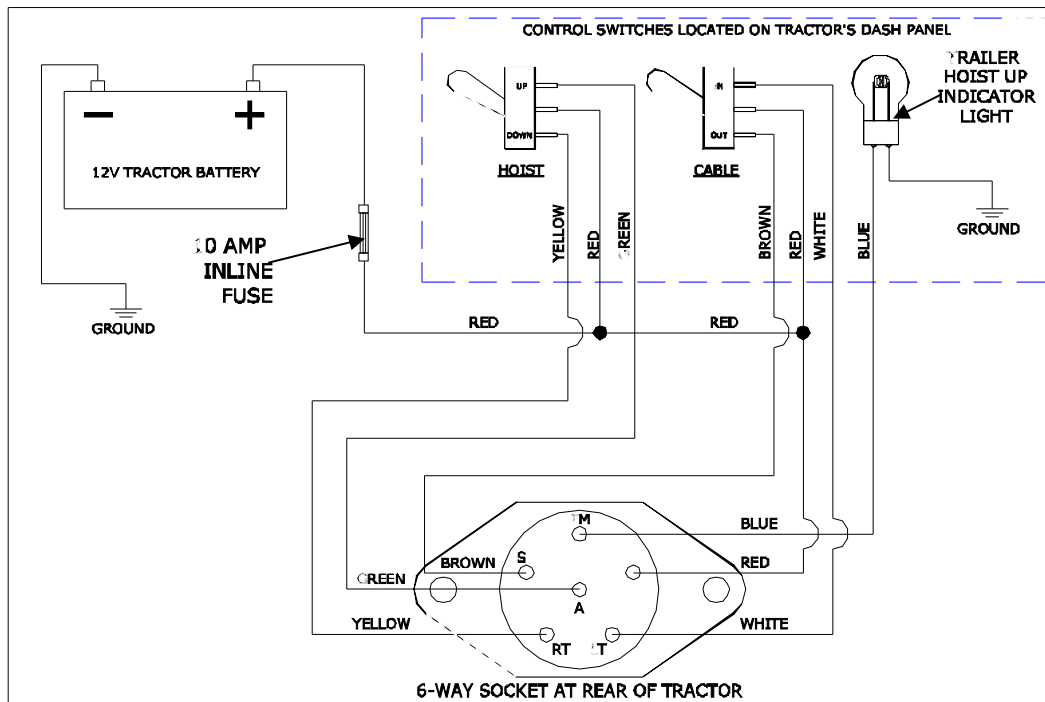


Figure 8. 6-way electrical socket schematic

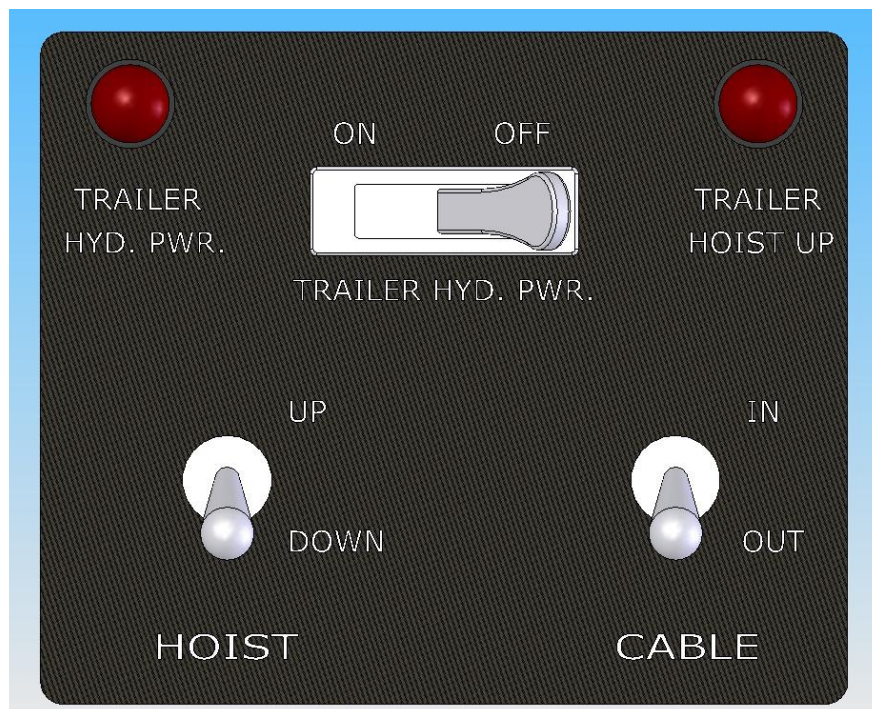


Figure 9. Typical dash panel layout for control switches and indicator lights inside the tractor's cab

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The next step will be to relocate the 7-way electrical socket at the rear of the tractor onto the hitch plate. Refer to Figure 3 for an illustration of this socket and its location. This is your typical 7-way electrical socket that feeds power to all of the parking, turn, and stop lights on the trailer. This socket is not included in your Truck Adaptation Parts Kit since most tractors come equipped with this socket from the Original Equipment Manufacturer.

One unique feature of the Pup Trailer is that it is equipped with reverse lights. In order to make this work you will have to make a small modification to the 7-way electrical socket wiring. The modification is to replace the black lead on the 7-way socket with a blue lead from the tractor's main electrical harness. The blue lead may be found in the tractor's electrical harness distribution box found at the rear of most trucks. Figure 10 shows the pin location of the black lead that must be replaced along with a sketch of a typical electrical harness junction box.

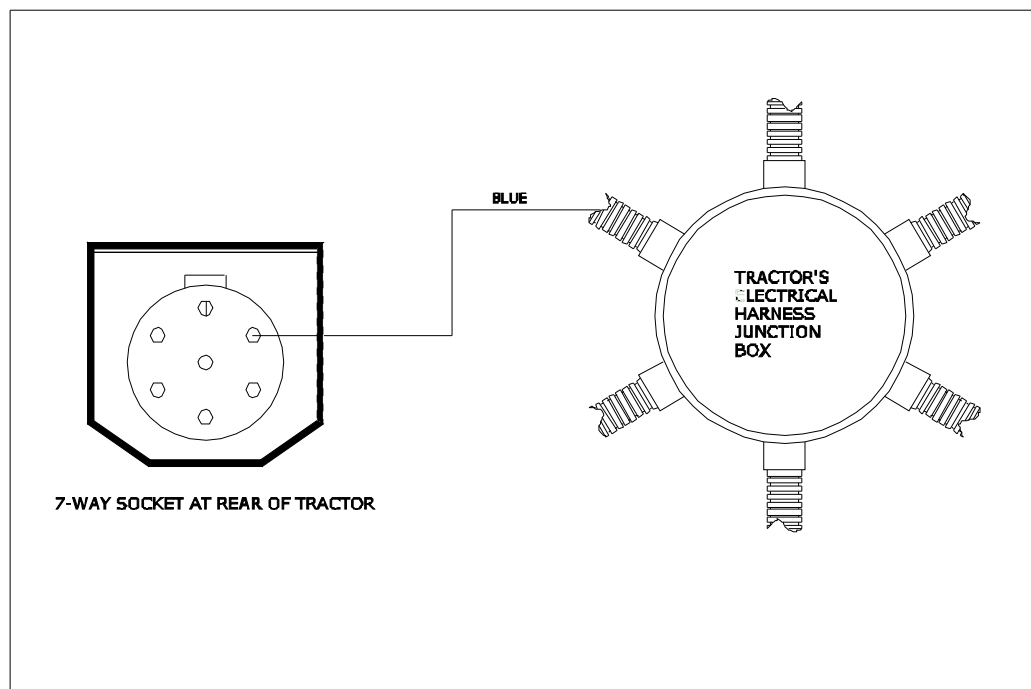


Figure 10. Trailer reverse light modification schematic

The final step is to install two indicator lights on the tractor to inform the operator that the trailer's hydraulic power is engaged. One indicator light will be installed in the cab's dash panel near the pneumatic toggle switch. The second light will be installed outside near the tractor's hydraulic valve control deck. These indicator lights require a pressure switch mounted on each of the respective toggle switches to activate the light. Refer to Figure 11 for a schematic of the electrical circuits for these indicator lights. Be sure to install the 10-Amp in-line fuse on the positive leads as shown below. The lights, fuse, and the pressure switches are included in your Truck Adaptation Parts Kit.

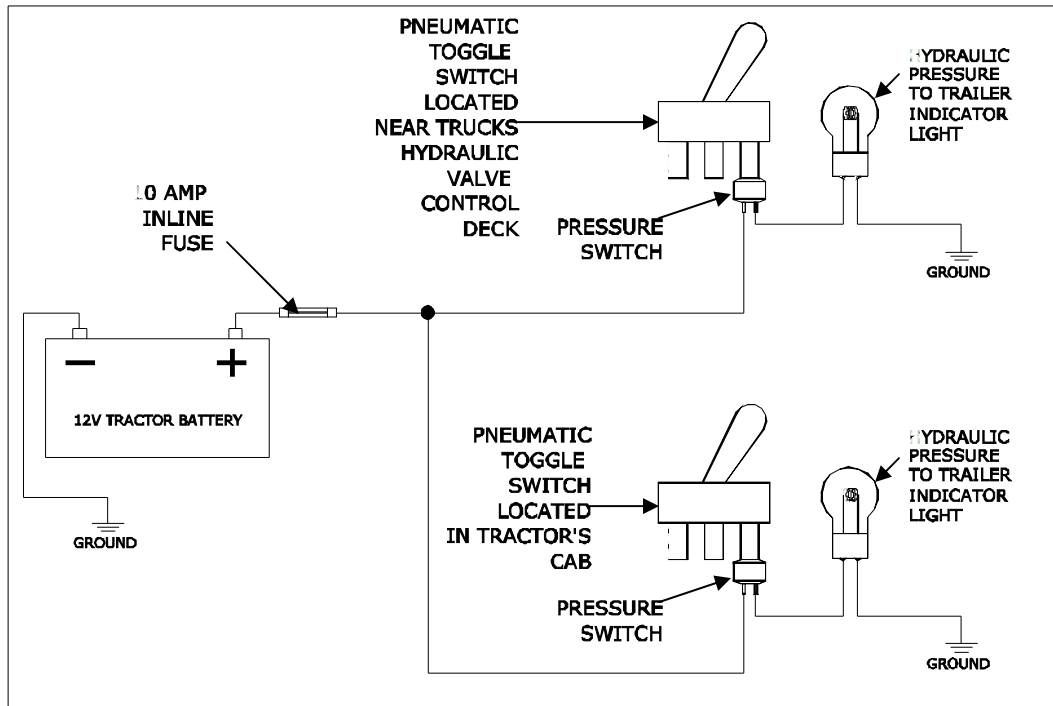


Figure 11. Trailer hydraulic pressure (power beyond) indicator light schematic