

Utility Controller Hand-Air Operated

Installation Instructions

P-1395-WE
819-0288



Introduction

The Warner Electric air/manual Utility Controller combines manual and automatic (air) actuation for the operation of 4, 6, 8, or 12, twelve-volt electric wheel brakes. Some of the features of this controller are:

- Permits manual over-ride of automatic operation.
- Brake pedal operated when connected into towing vehicle air system.
- Highly sensitive for accurate brake control.
- Wide range of adjustability to compensate for varying loads and changing road conditions.
- Can be installed to operate automatically and/or manually.

Product Specifications

Model Number	Capacity	Voltage Rating	Air Capacity	Adjustment
1300-80	4, 6, 8 Brakes	12 Volts	2.8 cu. in. fully actuated @100 PSI	Initial pressure, maximum pressure adjustable
1300-83	12 Brakes	12 Volts	2.8 cu. in. fully actuated @100 PSI	Initial pressure, maximum pressure adjustable

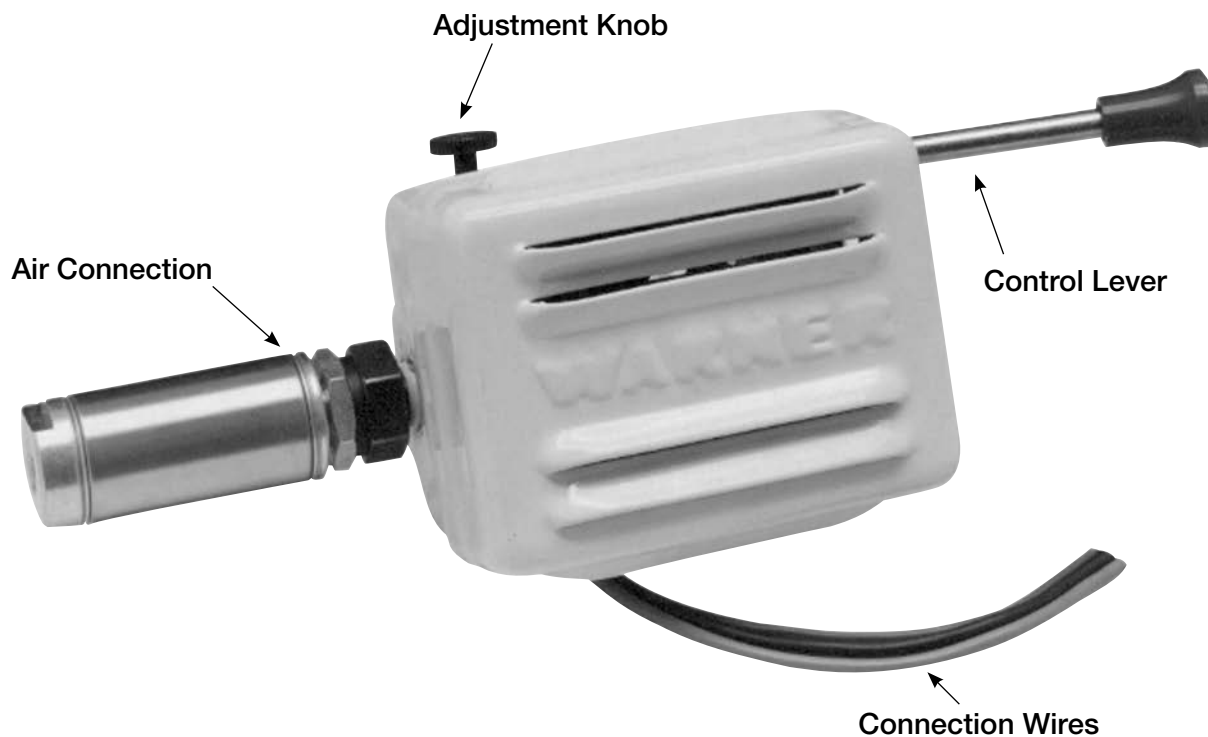


Figure 1

Controller Mounting Instructions

Important Notice to Purchaser

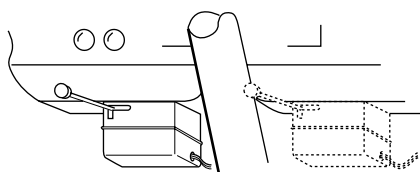
Since neither the manufacturer nor the seller of this product can control the manner in which it is installed or used or the suitability of components used in combination with it, the installer and ultimate user assume all risks and liabilities appurtenant to installation and conjunctive use. Therefore, appropriate steps should be taken in advance by every purchaser and user to insure that the product is assembled properly with suitable component elements and is used in compliance with generally accepted industry practice, in accordance with the instruction manual, and as supplemented by other information contained herein.

These instructions provide for ease of installation. Please follow them carefully. The basic installation steps are:

- A. Mount controller inside the cab of towing vehicle.
- B. Connect the controller into the towing vehicle's air system.
- C. Connect controller electrically.
- D. Adjust controller for synchronized braking.

A. Mounting Under Instrument Panel

1. Position the controller under the instrument panel to the left or right of the steering column, based on available space and driver preference. (See Figure 2)



Mount on either side

Figure 2

2. While sitting in a normal driving position, place the controller so its handle is within easy reach.

3. Remove the controller cover, and while holding the controller in place, select at least two holes through the case which best mount the controller. Mark the underside of the instrument panel through these holes. (See Figure 3)

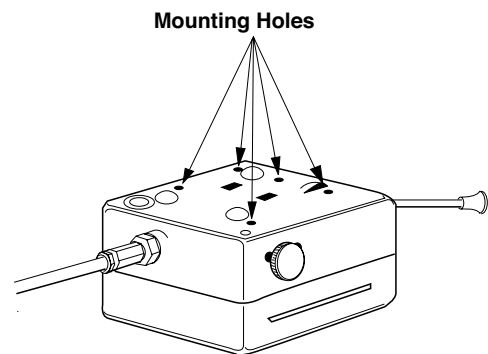


Figure 3

4. Drill 3/16-inch diameter holes where marked, being careful not to damage anything under the instrument panel.
5. Attach the controller with 3/16-inch bolts, nuts, and lock washers, and tighten securely. Bolt heads are to be inside the controller.

B. Air Line Connection – Vehicles equipped with FMVSS-121 Air Brake Systems

(Instructions for connecting vehicles equipped with pre-FMVSS-121 air brake systems are on page 5.)

Important: The customer must supply the 3-way tees, tubing, and double check valve needed for this connection.

The 3-way tees needed for splicing into the primary and secondary outlet lines should be obtained from the vehicle manufacturer's service parts organization and installed per the vehicle manufacturer's instructions.

To obtain the correct tubing, measure the diameters of the primary and secondary lines, and determine the type of tubing material used (normally nylon or copper).

Obtain a double (two way) check valve from the vehicle manufacturer's service parts organization.

1. Refer to the schematic diagram in Figure 4.
2. Locate the primary and secondary brake control outlet lines at the brake control valve.

Typical Installation Schematic Diagram Warner – Air Electric Controller To FMVSS – 121 Air Brake Equipped Truck

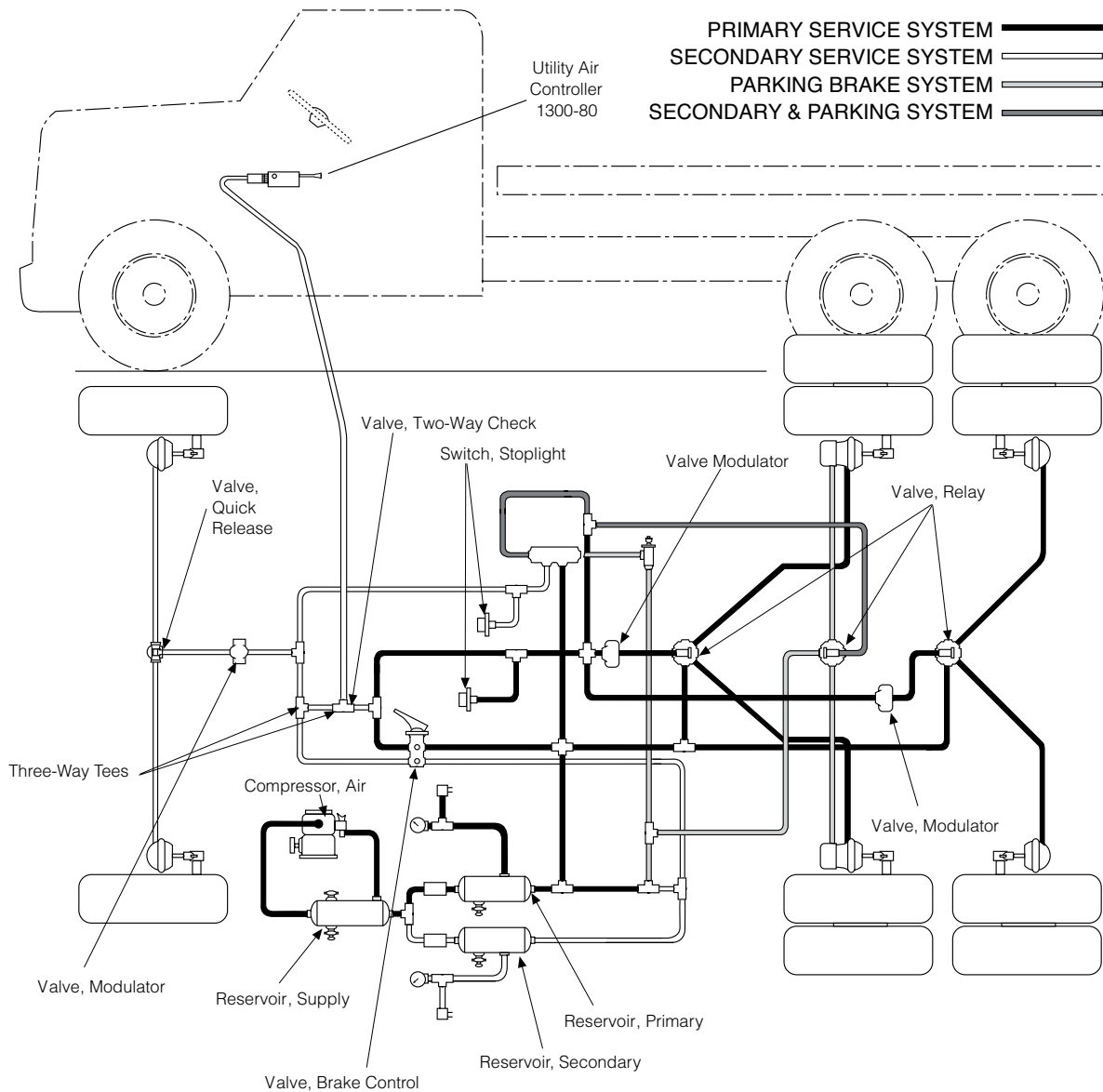


Figure 4

Notice

The schematic diagram shown is not intended to be representative of any specific air brake system in compliance with FMVSS-121. It is shown to illustrate the principle of interconnection of the primary and secondary air brake service systems through a two-way check valve for the purpose

of providing an air control line for actuating the Warner – Air Electric Controller. Installation instructions for connecting the Warner – Air Electric Controller into any specific vehicle or air brake system must be obtained from the manufacturer of the vehicle or air brake system.

3. Install one 3-way tee in each of the primary and secondary service system control lines. They should be installed as close as possible to the control valve and ahead of any other valves in the air brake system. The tee should provide straight-through flow for the service brake system.
4. After installing the 3-way tees in the primary and secondary control lines, connect the open (right angle) port of each tee to the inlet sides of the double check valve. (Refer to Figure 4). The double check valve serves two purposes: it provides a single connection between both brake lines and the air controller while keeping the primary and secondary brake systems isolated.

⚠ WARNING This installation must not be made without the double check valve to protect the truck air brake system.

5. Install the air supply line from the outlet port of the double check valve to the inlet port of the controller using either 3/16-inch or 1/4-inch diameter air supply tubing.
6. Check all tees, valves, fittings, and air lines to assure that the entire installation, including torque settings, is consistent with the vehicle manufacturer's service instructions for the types of components used.
7. Inspect all air lines to assure that no kinks are present. Fasten all nylon or plastic lines at least 6 inches away from possible heat sources.

Air Line Connection – Vehicles Equipped with Pre-FMVSS-121 Brake Systems

Important: The customer must supply the 3-way tee and tubing needed for this connection.

The three-way tee should be obtained from the vehicle manufacturer's service parts organization and installed per the vehicle manufacturer's instructions.

To obtain correct tubing, measure the diameter of the brake line tubing and determine the type of tubing material used (normally nylon or copper).

Note: No double check valve is needed to connect this system.

1. Systems used before the FMVSS-121 contain only one brake line instead of both the primary and secondary systems.
2. Install the tee into the system at either the front or rear brake line. The tee should provide straight-through flow for the service brake system.
3. Connect the open (right angle) port of the 3-way tee to the inlet side of the air controller.
4. Check all tees, fittings, valves, and air lines to assure that the entire installation, including torque settings, is consistent with the vehicle manufacturer's service instructions for the type of components used.
5. Inspect all air lines to assure that no kinks are present. Fasten all nylon or plastic lines at least 6 inches away from the possible heat sources.

C. Electrical Wire Connections

Electrical connections are required for all installations. The customer must furnish a sufficient amount of automotive-type, multi-stranded, single conductor, 12 gauge (or heavier) wire with thermo-plastic insulation (nylon, polyvinyl chloride, etc.).

The air controller is furnished with three wires: blue, red, and black. (Refer to Figure 5 when wiring).

Note: Solder or crimp clamp connections are required for connecting all three controller lead wires. Wrap electrician's tape around all bare wire joints. Do Not Use twist-type connections.

Blue Wire:

1. Detach the power cables from the towing vehicle battery.
2. An electrical socket which mates with the trailer power cable is to be installed in the rear of the towing vehicle.
3. Extend the wire along the underside of the towing vehicle to the engine fire wall. Position the wire to ensure maximum protection from flying stone, spray, and dragging on the road. Also avoid attaching wires near mufflers and exhaust pipes.

Clamp the wires at frequent intervals.

4. Remove a knock-out plug or cut a hole in the firewall near the mounted controller.
5. Cut the wire to a proper length for reaching the controller. Strip the wire and feed it through the firewall hole.
6. Connect this wire to the blue brake lead wire extending from the back of the controller.
7. Strip one end of a second length of hook-up wire. Connect it securely to the ground terminal of the socket at the rear of the towing vehicle.
8. Extend the wire under the towing vehicle to a convenient chassis ground, such as a body or chassis nut and bolt, battery ground post, etc. Remove all rust, dirt, and other corrosion from the fastening surface.

Cut and strip the wire and attach it securely to this ground.

A good ground connection is essential for proper operation.

Red Wire:

9. The red lead actuates the stoplights when the controller is operated manually. An interrupted stoplight circuit for turn signals is used on most towing vehicles.

Connect the controller's red lead to the output side of the towing vehicle stoplight switch. This switch could be a pressure switch located in the brake line or a limit switch activated by the brake pedal.

Connect an in-line fuse in series between the red lead and the stoplight switch. This fuse should be the same type and rating as recommended for the tow vehicle's existing stoplight circuit.

Splice a length of hook-up wire from the red lead to the stoplight switch output.

If your towing vehicle uses another system, consult your vehicle dealer.

Black Wire:

10. The black or power lead of the controller is the last connection made.

Strip one end of the hook-up wire. Feed it through the hole in the fire wall from the engine side.

Solder or crimp clamp this wire to the black controller lead.

11. Cut the hook-up wire to the proper length to attach it to the terminal of the starter solenoid or relay.

Strip the wire and complete the connection. Attaching this lead completes your electrical connection.

Reconnect the towing vehicle battery cable.

12. Tape together the wires leading from the controller and secure them to the steering column or underside of the dash.
13. Plug all holes in the firewall with sealant or rubber grommets to prevent exhaust gases from entering through the holes and to protect the wires from abrasion.

D. Adjustment

After the entire controller system has been installed and is operating, adjust the controller to balance the towing vehicle brakes and the trailer brakes.

⚠ WARNING Proper adjustment of your controller/braking system is important for safe automatic operation.

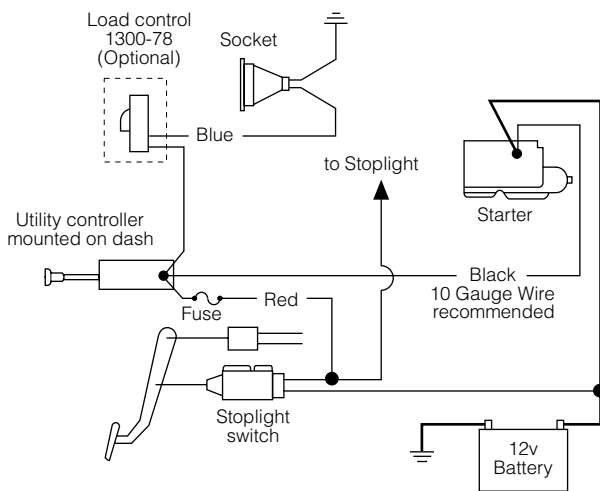


Figure 5 - Wiring Diagram

Warner Electric's Air Utility Controller has an adjustment knob to control trailer brake synchronization. This adjustment does not affect maximum braking capacity of the trailer brakes. Because of the wide variety of towing vehicles encountered, balancing towing vehicle brakes and trailer brakes is necessary for smooth, synchronized stops. To achieve this, the controller adjustment should be set to provide a slight lead in trailer braking over towing vehicle braking. Setting the adjustment in the "MORE" brake direction will increase the trailer brake rate of the application, while setting in the "LESS" direction will decrease the trailer brake rate of the application. When proper adjustment has been achieved, there should be no sensation of the trailer pushing or pulling the towing vehicle during a stop. When this setting has been reached no further adjustment should be required, unless trailer load changes.

For operating with varying load weights, read the following section on "Optional Equipment".

Optional Equipment

When the trailer load is variable or less than trailer brake capacity, a Warner Electric Load Control, Part No. 1300-78, should be added in series with the brake circuit. The Load Control provides the capability to properly proportion the braking power of the trailer brakes to the trailer weight. The Load Control is connected into the trailer brake wire connected to the blue lead from the controller. Its position is shown in Figure 5. Contact your Warner Electric distributor or the factory if you require additional information.

Warranty

Warner Electric LLC warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from the date of original purchase for consumer, commercial or industrial use.

This warranty extends only to the original purchaser and is not transferable or assignable without Warner Electric LLC's prior consent.

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A purchase receipt or other proof of original purchase will be required before warranty service is rendered. If found defective under the terms of this warranty, repair or replacement will be made, without charge, together with a refund for transportation costs. If found not to be defective, you will be notified and, with your consent, the item will be repaired or replaced and returned to you at your expense.

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