



*Powering Business Worldwide*

Aerospace Group  
Conveyance Systems Division  
Carter® Brand Ground Fueling Equipment

**IN64304**

December 2008

Applicable additional manuals:

IN64235

IN64108

IN64702

SU64235

## Installation Instructions

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## Digital Manifold Assembly

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**Model 64304**

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# Installation Instructions

## Model 64304

### Digital Manifold

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#### 1.0 Scope

These installation instructions have been developed for use in mounting the Model 64304 Solenoid Manifold Assembly on any hydrant service vehicle for use in controlling Carter brand hydrant coupler Models 64702, 64802, 64804 and 64902. These instructions do not cover all requirements for such an

installation which might be dictated by other authorities which have jurisdiction over the use of the vehicle. The responsibility for proper final installation configuration is that of the OEM. Consult with the local airport authority or corporate authority for further information.

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#### 2.0 Equipment Supplied by Customer

The following is a listing of the required equipment supplied by the customer on the refueling vehicle. The digital system needs to interface with all of the items below:

- Mounting hardware needed to affix the 64304 to the vehicle.
- Wire to connect solenoids A thru C to the Digital II control panel.
- Hose and fittings to connect between the 64304 Solenoid Manifold Assembly and the hydrant coupler being operated by the 64304.

- An accumulator to be utilized as the fluid power source for the 64304. It is recommended that an accumulator with a minimum volume of 2.5 cubic feet be utilized. An accumulator of lesser volume can be used, especially if the hydrant system pressure is never lower than 90 psi. The amount of volume used provides a capability to operate longer at lower pressures. If a smaller accumulator is used, contact Carter prior to proceeding.
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#### 3.0 General Description

3.1 Model 64304 is an assembly of two solenoid valves mounted to a manifold block to constitute a pilot to operate a pressure control coupler such as Carter brand Model 64802 Digital Coupler. Solenoid valve "A" is a normally closed (N/C) valve and "B" is a normally open (N/O). Solenoid "C" is a normally closed (N/C) valve which works to control surge.

become blocked, it will adversely affect performance of the pressure control valve.

3.1 The manifold block is equipped with two fittings with two orifice screws labeled "A" and "B" located next to each other on one side of the manifold block. These are factory installed orifices which are critical to the function of the Digital system. **Do not tamper with these two fittings, or the orifices with in them, in any way other than as stated within this document. Take great care to keep these orifices clean at all times, especially during first wetting of the system.** If these orifices

- 3.1 One hose, or other suitable conduit, will be utilized to connect the center passage of the manifold to the control cavity of the pressure control coupler.
- 3.1 Two wires will be connected to each of the three solenoid valves of the manifold assembly (six (6) wires total) to connect them to the Model 64235 Digital Control Module.
- 3.1 The 64304 can be mounted at any convenient location on the refueling vehicle in any orientation. However, it is best, if possible, to mount the assembly with the valves upright and the manifold on the bottom.
- 3.1 An accumulator must be used to store fluid power to be utilized as the source of inlet pressure for the 64304 manifold block.

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## 4.0 Installation

- 4.1 Mounting 64304 on the vehicle:
- 4.1.1 The manifold assembly can be mounted to the refueling vehicle by utilizing the two holes drilled through the face of the manifold block.
- 4.2 Solenoid Connections
- 4.2.1 Solenoids "A" and "B" can be connected to the Digital II control module by pulling the female connectors and screws from the block and connecting 18 gauge (recommended) insulated wires to the solenoids then securing lid, screws and female connectors.
- 4.2.2 Solenoid "A" (slightly shorter of the two) should be wired to the terminals numbered 41 and 42 on the control board for digital II.
- 4.2.3 Solenoid "B" (slightly taller of the two) should be wired to the terminals numbered 39 and 40 on the control board for digital II.
- 4.2.4 Solenoid "C" has a length of wire extending from the housing that will need to be connected to another piece of wire of suitable length for connection to the digital II control board. Solenoid "C" should be wired to the terminals numbered 37 and 38.
- 4.3 Accumulator
- 4.3.1 Any 2.5 gallon bladder accumulator can be utilized for the fluid power source for the manifold block used to control the digital coupler. Follow the manufacturer's instructions for mounting the accumulator on your vehicle.
- 4.3.2 Connect a line to the fuel reservoir portion of the accumulator from a high pressure source on the vehicle. This line will be used to charge the accumulator with fuel pressure.
- 4.3.3 Install a check valve in this line which will allow flow from the vehicle plumbing into the accumulator but not allow flow from the accumulator back into the plumbing. The result is that fuel pressure will be applied to the inlet of the manifold block from the accumulator and it will become re-charged whenever the pressure in the vehicle is greater than the pressure within the accumulator.
- 4.3.4 Also connect the fuel reservoir portion of the accumulator to the inlet of the manifold block used to control the digital coupler.
- 4.3.5 Pre-charge the gas end of the accumulator with 60 psi of air (or nitrogen) pressure.
- 4.4 Manifold Fluid Connections
- 4.4.1 There are seven ports on the manifold block, each a female 1/4 NPT. Four of these fluid ports will have to be connected to other fluid sources on the vehicle.
- 4.4.2 The two fittings marked "A" and "B" located on either side of the port marked "coupler" have factory installed orifices within them which are critical to the function of the digital valve system. **Do not tamper with these two fittings, or the orifices with in them, in any way other than as stated within this document. Take great care to keep these orifices clean at all times, including during first wetting of the system.**
- 4.4.3 Connect the high pressure source, such as an accumulator used in conjunction with the coupler to the port marked "accumulator" on the manifold block. Use a **1/4 or 3/8** inch inside diameter hose, tube or pipe for this application.
- 4.3.4 Connect the port marked "accumulator pre-charge" on the manifold block to the accumulator hand pump. Use a **1/4 or 3/8** inch inside diameter hose, tube or pipe for this application.
- 4.4.5 Connect the low pressure point to the port marked "recovery tank". Use a 1/4 or 3/8 inch inside diameter hose, tube or pipe for this application. NOTE: The hose or conduit selected for this purpose must be free flowing. Any major resistance to flow in this line will adversely affect the operation of the 64304. Free flow of fluid in this line is imperative.
- 4.4.6 Connect the hose or conduit which carries fluid to the pressure control coupler to the port on the manifold block marked "coupler". Use a 1/4 or 3/8 inch inside diameter hose, tube or pipe for this application. If using hose, it must be a braid reinforced hose suitable for 300 psi service or some other very stiff conduit. For best results, use the stiffest (least inflatable) hose you can. (Good results have been accomplished with the 1/4" DAYCO 6L2 hose.) The hoses can be no longer than 60 feet. The other end of the hose or conduit is connected to the control cavity of the pressure control coupler.

4.4.6.1 When making this connection, use free flowing fittings which will not restrict flow through this conduit. Any major resistance to flow in this line will adversely affect the operation of the coupler. Free flow of fluid in this line is imperative.

#### 4.5 Air Bleeding

4.5.1 Once the physical installation is complete and the vehicle is filled with fuel, upon first pressurization, the hoses and/or tubes that connect the 64304 manifold assembly to the digital coupler and its internal cavity must be bled of air.

4.5.2 The 64304 is equipped with a fast bleed valve feature to assist in bleeding trapped air from the coupler command line.

4.5.3 Use the hand pump to ensure the accumulator has at least 80 psi of fuel pressure. Remove the fuel command line

from the coupler and press the rapid bleed valve button on the 64304 catching the fuel emitted from the control line in a suitable container. Release the button and place a finger over the end of the command line to minimize further ingestion of air. Reconnect the line to the coupler.

4.5.4 Using the hand pump recharge the accumulator to 80 psi fuel pressure. Loosen the bleed plug on the top of the hydrant coupler and press the rapid bleed button on the 64304 again. When the residual air is bled, tighten the bleed plug on the coupler. Repeat this step if necessary until satisfied that all the air is removed from the control line and from the control cavity of the coupler.

The unit is ready for testing and setup of the digital control system. Refer to manual SU64235 for instructions.

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## 5.0 Illustration

See following page.

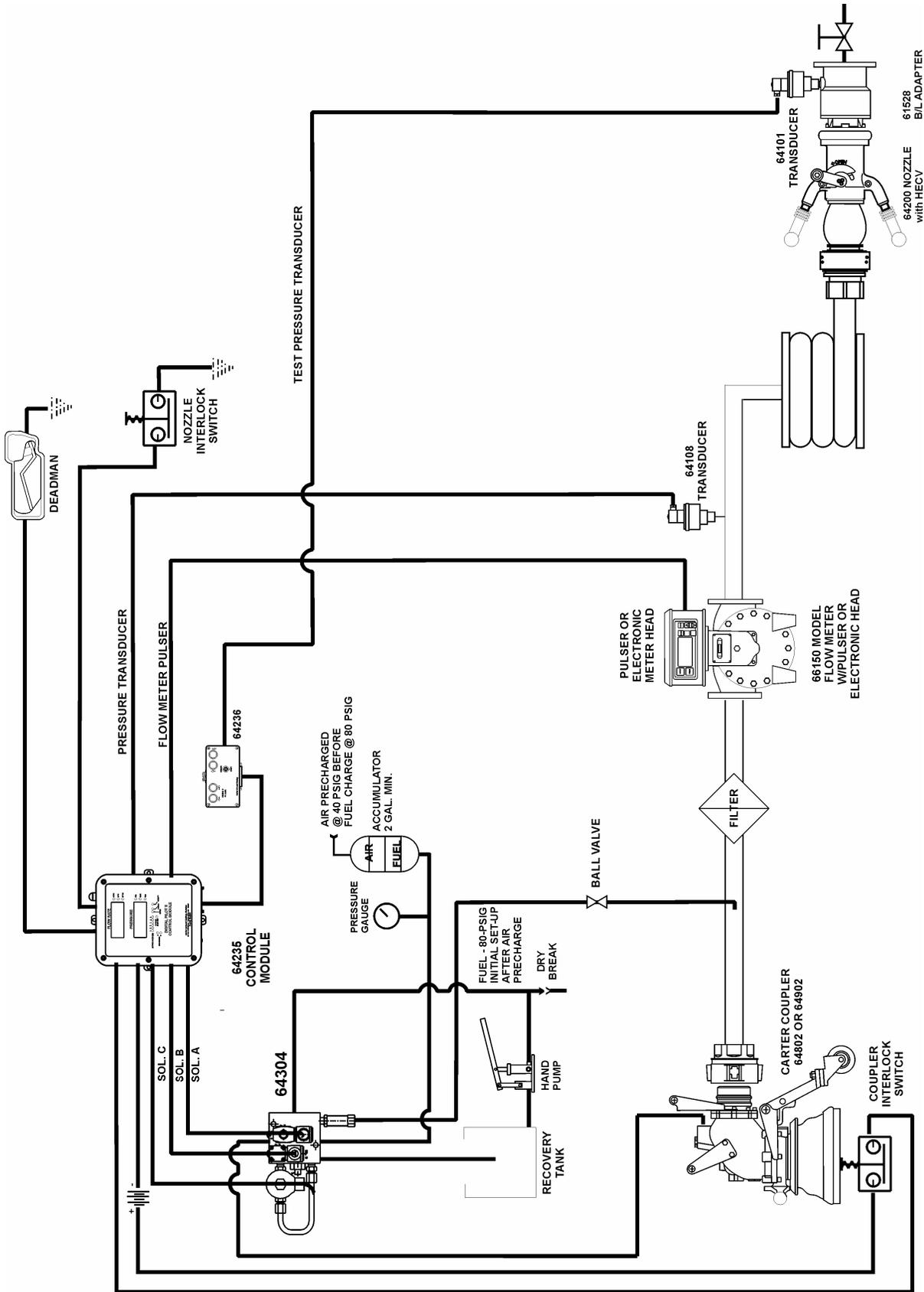


Figure 1  
64304 Connection Schematic

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