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SM64303
December 2008

Applicable additional manuals:
SU64235

Aerospace Group
Conveyance Systems Division
Carter® Brand Ground Fueling Equipment

Maintenance & Repair Manual

Digital Manifold with Fuel Operated Coupler and Pneumatic Hydrant Pit Controls

Model 64303

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Maintenance and Repair Manual
Carter Model 64303
Digital Manifold with Fuel Operated Coupler & Pneumatic Hydrant Pit Control

1.0 Introduction

This manual furnishes detailed instructions covering the maintenance and overhaul of Carter brand Model 64303 digital manifold block used with Model 64235 digital pressure control system. Model 64303 and its various options are listed in Section 3.0.

2.0 Equipment Description

Model 64303 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 Model 64802 digital coupler and an additional pneumatically operated solenoid to operate the hydrant pit valve. Solenoid valve "A" is a normally closed (N/C) valve and solenoid "B" is normally open (N/O) with solenoid "C" being a normally closed (N/C) valve which works to control surge. Solenoid "D" is a 3-way normally closed valve (N/C) to control the hydrant pit.

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

3.0 Table of Options

Options to be added to the 64303 Digital Control Manifold:

Option Letter	Description	Option Letter	Description
A	12 VDC Manifold Assembly	B	24 VDC Manifold Assembly

4.0 Disassembly

Note: Replacement of solenoids can be accomplished without removing the block from the vehicle if design and placement of unit permit.

4.1 Begin by removing the wires from solenoids A, B, C and D that connect them to the 64235 digital control board. It is recommended that the user label each wire upon removal with an A, B, C or D to ensure proper wiring connections on reinstallation.

4.2 Disconnect the tubing and fittings from the ports on the manifold block labeled "Accumulator", "Recovery Tank", "Accumulator Pre-Charge", "Coupler", "Hydrant and "Air". The hydraulic supply tubing will have fuel in the lines so consideration should be given to capturing fuel released during removal of the manifold assembly and to prevention of further leakage after its removal. If desirable, label tubing with the name of the port from which it was removed to ensure proper connections are made during reinstallation.

4.3 Remove mounting hardware securing the manifold block to the vehicle. The assembly may now be removed.

4.4 Unless there is leakage apparent between the solenoid and manifold, or a solenoid has failed, it is not necessary to remove any of the solenoid valves. To remove Solenoid Valve A (1-3), B Solenoid Valve (1-4) or D Solenoid Valve (1-2) first unscrew the connector screws on the top or side of the assemblies and remove connectors. Then remove the solenoid mounting screws, if present, removing the solenoid(s) from the Manifold (1-1). There are O-rings used to seal the interface between each solenoid and the manifold. A new solenoid should come with these O-rings. If reinstalling an existing solenoid be sure to retain these O-rings or have replacement O-rings on hand before discarding them.

4.5 It is not necessary to remove bleeder assembly unless it is to be replaced due to leakage from its threaded fastener, leakage from the bleeder valve itself, or if Solenoid C (1-5) is to be replaced or removed. The bleeder can be disassembled by removing the Cotter Pin (1-20) from the Valve Stem (1-16). Next remove the Valve Nut (1-19) then remove the Valve Stem (1-16), the Spring (1-18) and discarding O-rings (1-15) and (1-17).

4.6 If Solenoid C (1-5) is to be replaced, ensure items (1-15) thru (1-19) have been removed,

then use a wrench to alternately loosen and remove both Male Connectors (1-8) from the threaded OUT ports in Solenoid C (1-5) and the Manifold (1-1). Set assembled Pipe (1-9) and Male Connectors (1-8) aside.

4.6.1 Solenoid C (1-5) may now be removed from the ¼" Union (1-7).

4.6.2 Use a wrench to remove the ¼" Union (1-7) and set aside for reuse.

4.7 It is not necessary to remove the Check Valve (1-6) unless it is to be replaced due to leakage.

4.8 It is not recommended that the Orifice Screws (1-10) or (1-11) be removed unless it is suspected that these may have become blocked by system fouling or debris of some nature. If removed for any reason, it is highly recommended that they be placed in separate bags and labeled orifice A and orifice B. Screws (1-13) should be retained for reuse and O-rings (1-12) may be discarded.

4.9 It is not necessary to remove the Breather Plug (1-21) unless leakage is apparent and it needs replacing.

5.0 Reassembly

5.1 Reassembly is accomplished in essentially the reverse order of disassembly (Ref. Figure 1). A light coat of petroleum jelly may be used during overhaul but do not use any other type of lubricant, **ONLY PETROLEUM JELLY**. Loctite® Vibraseal or equivalent is to be used on NPT pipe thread joints. THE USE OF TEFLON TAPE IS NOT RECOMMENDED FOR ANY THREADED CONNECTION OF THIS MANIFOLD.

5.2 Make certain all components are clean and free from oil, grease and contaminants on all interior or exterior surfaces. Wash all parts with cleaning solvent, Federal Specification P-D-680, and dry thoroughly with a clean, lint-free cloth or compressed air.

5.3 If Breather Plug (1-21) is to be replaced install a new Breather Plug (1-21) in the port directly above the port labeled HYDRANT.

5.4 If Orifice Screws (1-10) or (1-11) were removed, ensure they are clean and free of any debris, then install them in their respective ports. It is important that Orifice Screw (1-11) be seated in the port labeled B until bottomed out, but not over- tightened and Orifice Screw (1-10) be seated in the port labeled A in the same manner.

5.4.1 Place lightly lubricated O-rings (1-12) over Screws (1-13) and thread into ports A and B until firmly seated.

5.5 If Check Valve (1-6) is being replaced, use Loctite® Vibraseal or equivalent (1-14) on the pipe threads and install Check Valve (1-6) into the check valve port of manifold.

5.6 Solenoid C, if removed, may be assembled by using Loctite® Vibraseal or equivalent (1-14) on the pipe threads of the ¼" Union (1-7) and using a wrench to connect it to the port labeled SOL C IN on the Manifold (1-1).

5.6.1 Install Solenoid C (1-5) onto the ¼" Union (1-7) and position as shown in Figure 1.

5.6.2 There should be a Male Connector (1-8) on both ends of the Pipe (1-9). Apply Loctite® Vibraseal or equivalent (1-14) on the pipe threads of both Male Connectors (1-8). With the Male Connector (1-8) on short side of Pipe (1-9) fitted to the port of Solenoid C (1-5) labeled OUT and the Male Connector (1-8) on long side of Pipe (1-9) fitted to the port of Manifold (1-1) labeled SOL C OUT use a wrench to alternately tighten the Male Connectors (1-8) until both are secured.

5.7 If removed, reassemble bleeder by installing a lightly lubricated O-ring (1-17) in the O-ring groove of the stem's center. Then install a lightly lubricated O-ring (1-15) in the smaller O-ring groove of the stem's base.

5.7.1 Position the Spring (1-18) over the base of the Valve Stem (1-16).

5.7.2 Insert the assembled unit into the bleeder port located between solenoid C's inlet and outlet ports. Thread in the Valve Nut (1-19). Note: Do not install Cotter Pin (1-20) until testing and set up of the vehicle have been accomplished.

5.8 If any of the Solenoids A (1-3), B (1-4) or D (1-2) were removed, observe orientation of solenoids per markings on the solenoids and manifold block as shown in Figure 1.

5.8.1 Solenoids (1-2), (1-3) or (1-4) can be installed by first securing the small interface O-rings to the bottom of the valves by applying a small amount of petroleum jelly to the bottom of the valve to help hold the interface O-rings in place, then install solenoids on the Manifold (1-1) using the solenoid mounting screws. Mount the connectors onto the solenoids and secure in place by use of the connector retaining screws. The 64303 is ready to be reinstalled on the refueling vehicle.

5.9 Reinstallation on Vehicle is as follows:

5.9.1 Use the mounting hardware removed during dis-assembly to fix the 64303 to the vehicle's frame.

5.9.2 Reconnect the tubing and fittings from the vehicle to their respective ports on the manifold block labeled "Accumulator", "Recovery Tank", "Accumulator Pre-Charge", "Coupler", "Hydrant" and "Air".

5.9.3 Solenoids A, B and D can be reconnected to the wires running from the Digital II control module by pulling the female connectors and screws from the solenoid block and connecting wire labeled A, B or D to the corresponding solenoid

on the manifold block and then securing lids, screws and female connectors.

5.9.4 Solenoid C has a length of wire extending from the housing that will need to be reconnected to the wire labeled C running from the Digital II control board if it is of sufficient length to do so, or a new wire will have to be run from the board.

The 64303 is ready for testing.

6.0 Test

6.1 Once the physical installation is complete and the vehicle is filled with fuel, upon first pressurization, the hoses and/or tubes that connect the 64303 manifold assembly to the digital coupler and its internal cavity must be bled of air.

6.1.1 The 64303 is equipped with a fast bleed valve feature to assist in bleeding trapped air from the coupler command line.

6.1.2 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 64303 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.

6.1.3 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 64303 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.

Note: After testing has been completed Cotter Pin (1-20) may be installed in Valve Stem (1-16) to prevent spills from unwanted discharge of fuel.

7.0 Illustrated Parts Catalog

Table 1

Fig.	Item	Part Number	Description	Units/ Assy	Spares/10 Units/Yr
1	1	222089	Manifold, Digital	1	-
	2	47455-1	Solenoid Valve D, 3 Way, N/C 12 VDC	1 Option A	
		47455-3	Solenoid Valve D, 3 Way, N/C 24 VDC	1 Option B	
	3	220785-1	Solenoid Valve A, 2 Way, N/C 12 VDC	1 Option A	-
		220785-3	Solenoid Valve A, 2 Way, N/C 24 VDC	1 Option B	-
	4	220785-2	Solenoid Valve B, 2 Way, N/O 12 VDC	1 Option A	-
		220785-4	Solenoid Valve B, 2 Way, N/O 24 VDC	1 Option B	-
	5	72X00461CM-12DC	Solenoid Valve C, 2 Way, N/C 12 VDC	1 Option A	-
		72X01930CM-24DC	Solenoid Valve C, 2 Way, N/C 24 VDC	1 Option B	-
	6	206D-1	Check Valve	1	-
	7	5404-4-4	Union, ¼" NPT	1	-
	8	GF51819-7SSA	Connector, Male	2	-
	9	222046	Tube	1	-
	10	29224-2	Orifice Screw	1	-
	11	29224-4	Orifice Screw	1	-
	12	MS29513-010	O-ring	2	-
	13	GF35206-276	Screw	2	-
	14*	503	Loctite® Vibraseal	A/R	-
	15	201201-007	O-ring	1	-
	16	222052	Bleed Valve Stem	1	-
	17	201201-008	O-ring	1	-
	18	71512S	Spring	1	-
	19	222053	Bleed Valve Nut	1	-
	20	98401A417	Cotter Pin	1	-
	21	40427	Breather Plug	1	-

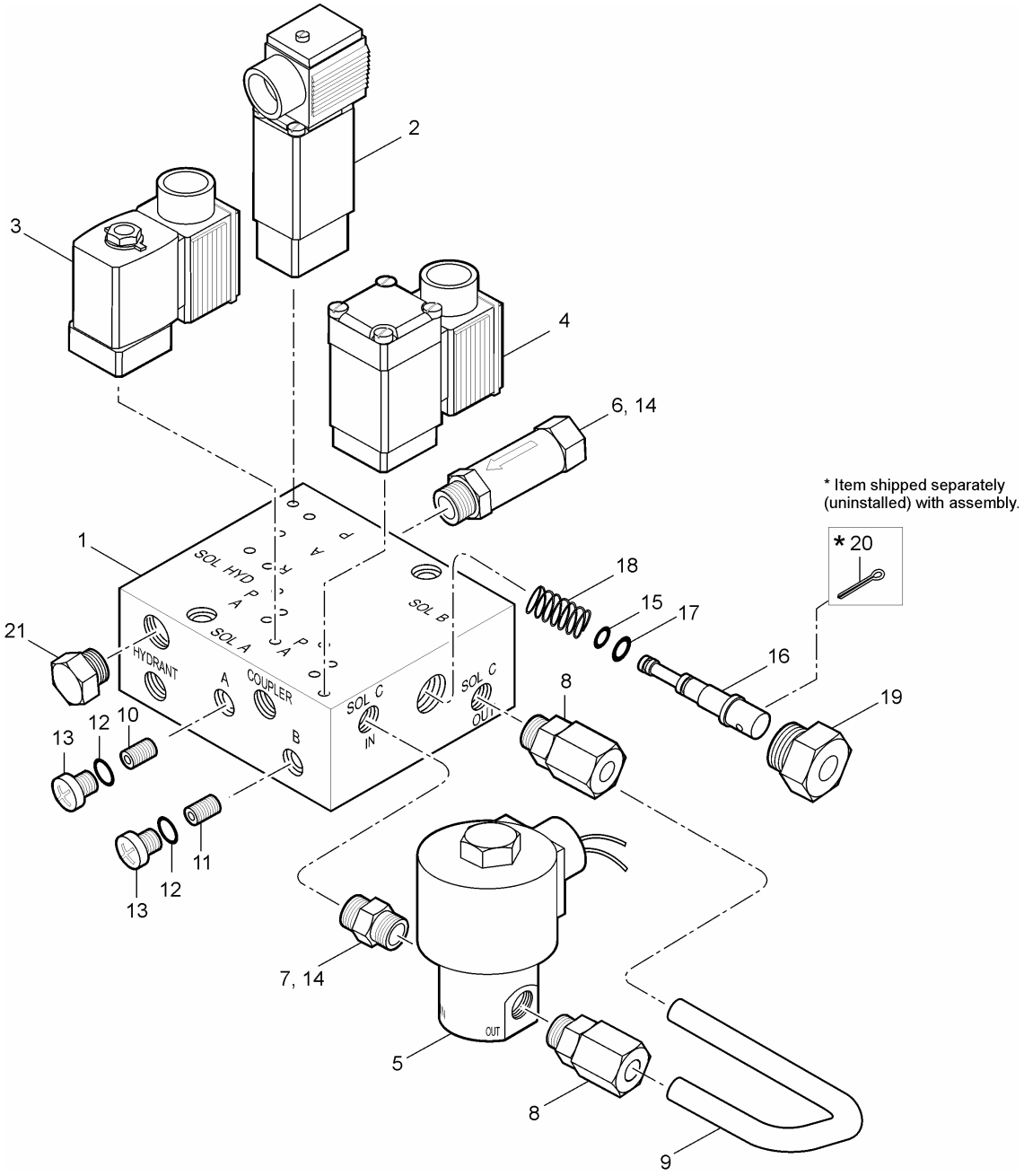

Figure 1
64303 Digital Manifold

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