Automated Steering Hydraulic Installation Kit

P/N: ED-CMX3

Fits Case Tractor Models:

MX210	***MX215***
MX230	***MX245***
MX255	***MX275***
MX285	***MX305***

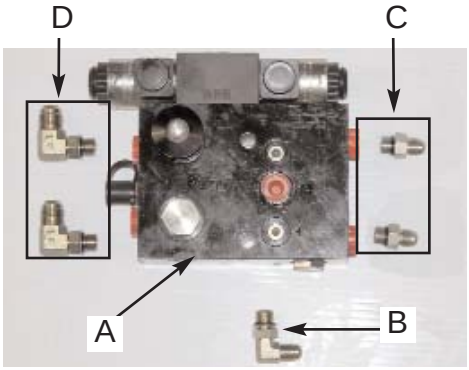
(SN #JAZ126070 - present Excluding suspended front axle models)

Overview

A series of equipment specific hydraulic installation kits have been developed to work in conjunction with your automated steering system. This kit contains the necessary components and instructions to install automated steering hydraulics on the tractor models listed above. Please read this manual thoroughly before beginning the installation.

Tractor Preparation

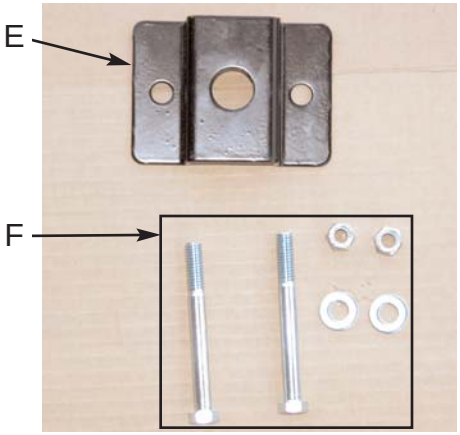
Before attempting to install hydraulics, park the tractor on a clean level floor with adequate clearance to work all around.



Kit Contents

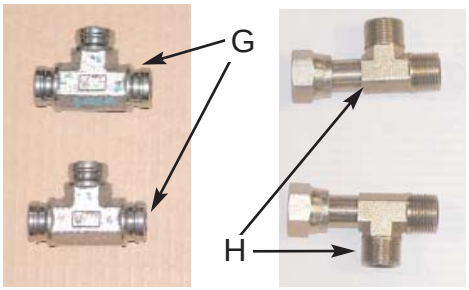
Unpack the installation kit and identify the required parts as shown.

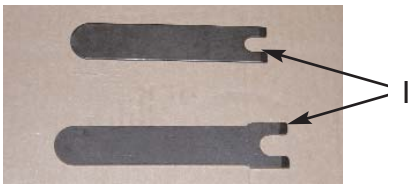
REF	P/N	QTY	DESCRIPTION
A	760-0003	1	Assy, Hyd. Valve Block - LS
	Bag #1 of 4 includes B, C, & D		
B	760-2058	1	Adapter, Hyd. 90 Elbow - #6maleJIC x #6maleORB
C	760-2056	2	Adapter, Hyd. - #6maleJIC x #6maleORB
D	760-2074	2	Adapter, Hyd. 90 Elbow - #8maleJIC x #6maleORB
E	640-0005	1	Hyd Block Mnt, CMX/AP780
	Bag #2 of 4 includes F		
F	675-2005	2	Bolt - 3/8NC x 3-1/4" Gr5, ZP
	678-1054	2	Washer, Narrow Flat - 3/4"OD x 13/32ID x 1/16"thk, ZP
	676-1035	2	Nut, NyLock - 3/8NC ZP

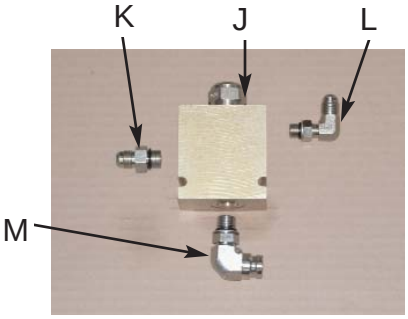


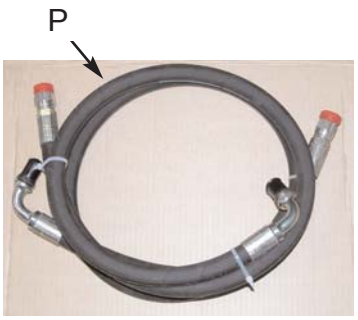
Kit Contents (cont.)

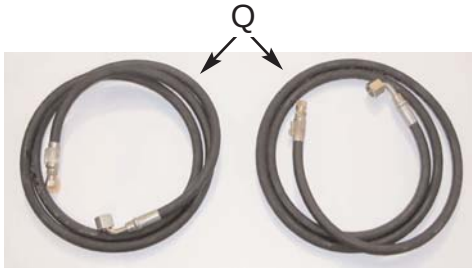
REF	P/N	QTY	DESCRIPTION
	Bag #3 of 4 includes G & H		
G	760-2081	2	Adapter, Hyd. Union Tee - #8 STC
H	760-2069	2	Adapter, Hyd. Run Tee - #8 ORFF
I	675-0080	1	Tool, STC Hyd. Fitting - #8
	675-0081	1	Tool, STC Hyd Fitting - #6
	Bag #4 of 4 includes J, K, L, & M		
J	760-0009	1	Assy, Hyd. Dynamic Load Sense Valve
K	760-2056	1	Adapter, Hyd. - #6maleJIC x #6maleORB
L	760-2082	1	Adapter, Hyd. 90 Elbow - #6maleJIC x #4maleORB
M	760-2043	1	Adapter, Hyd 90 Elbow - #6maleORB x #6 female STC
N	760-1087	1	Hose, Hyd. - 3/8” x 8”, #6femJIC x #6maleSTC
O	760-1088	2	Hose, Hyd. - 1/2” x 8”, #8maleSTC both ends
P	760-1253	2	Hose, Hyd. - 1/2” x 46”, #8femJIC x #8maleSTC 90EL
Q	760-1085	2	Hose, Hyd. - 3/8” x 86”, #6femJIC x #8femORFF 90EL
R	760-1019	1	Hose, Hyd. - 1/4" x 42", #6femJICswivel Both Ends
S	051-0143	1	Cable, Interface - 15 ft.
	677-2001	20	Tie Strap, 11" Heavy Duty, Not Shown
	710-0053	1	Kit, Steering Wheel Switch, Not Shown











WARNING: **HIGH-PRESSURE FLUID HAZARD.** Hydraulic oil may be hot and under high pressure. To prevent serious injury or death: Relieve system pressure and allow to cool before repairing or disconnecting. Wear proper hand and eye protection when searching for leaks, using wood or cardboard instead of hands. Keep all hydraulic components in good repair.

IMPORTANT: **PREVENT HYDRAULIC SYSTEM CONTAMINATION.** It is essential to thoroughly clean hydraulic system fittings and hose connections prior to disconnecting or removing. Use a spray cleaner such as ‘Brake Clean’ to prevent hydraulic system contamination. Note that o-rings used on ORB and ORFF type fittings may be damaged by solvent cleaners such as ‘Brake Clean’. If a fitting is to be cleaned internally, the o-ring should first be removed and cleaned with a fiberless cloth.

INSTALLATION

1. Prepare Hydraulic Control Block:

Make sure the hydraulic control block is clean and dust free. Remove the plastic plugs and install straight adapters **(C)** into the **A** and **B** ports and elbow adapters **(D)** into the **P** and **T** ports. Install elbow adapter **(B)** into the **LS** port and orient as shown. (Figure 3.1)

Note: *To install the elbow fittings into the **P** and **T** ports, the pressure test port fitting and valve coil must first be removed. To remove the coil, unscrew the plastic retaining nut on the end of the coil, remove the o-ring and slide the coil off of the shaft. Install the elbows into the **P** and **T** ports. (Figure 3.2) Reinstall the coil and the pressure test port fitting. Do not over tighten the plastic retaining nut on the electric coil. Hand tight is sufficient.*

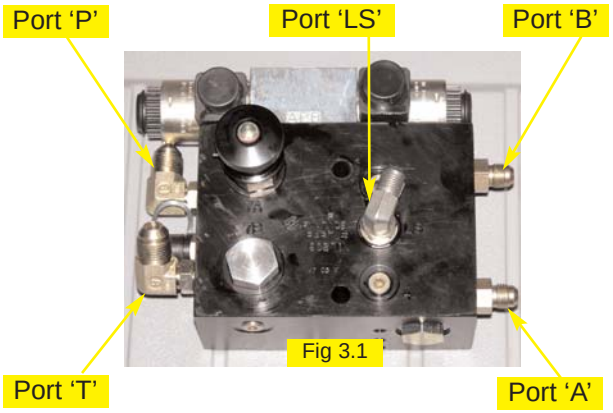


Fig 3.1

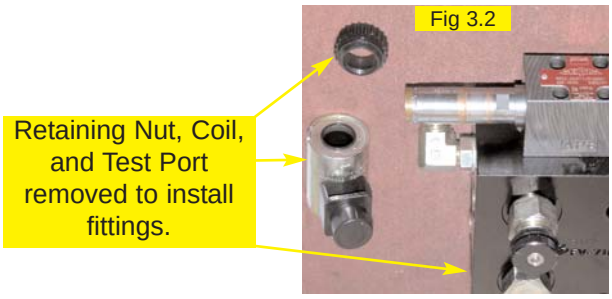


Fig 3.2

2. Install Steering Output Hoses:

Remove the side-shield, as shown, to allow better working access for the hydraulic installation.(Figure 3.3)

Route the steering output hoses **(Q)** up from the steering cylinders, through the tractor frame, and to the left side of the tractor near the fuel tank. (Figure 3.4) Hoses will follow a similar path with the tractor steering lines routed from the steering orbital to the front steering cylinders. (Figure 3.5)

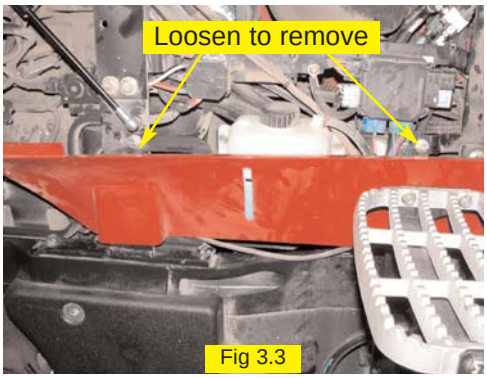


Fig 3.3

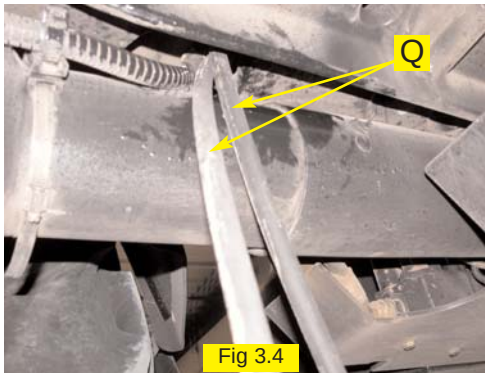


Fig 3.4

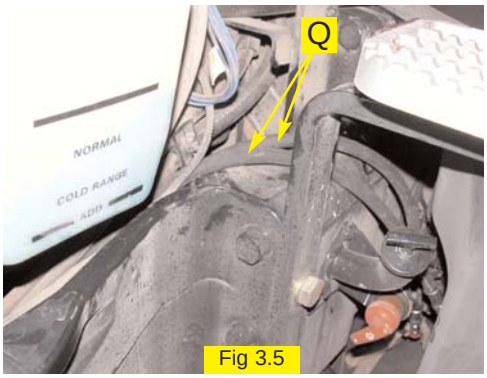


Fig 3.5

3. Mount Hydraulic Control Block:

The hydraulic control block will be mounted to the tractor frame on the left side, below the cab, and beside the fuel tank. Locate and remove the lower of the two bolts securing the step mounting bracket to the tractor frame. (Figure 4.1) Using this bolt, secure the hydraulic control block mounting bracket **(E)** to the frame as shown. (Figure 4.2)

Attach the two pre-routed steering output hoses to the **A** and **B** ports of the prepared hydraulic control block. Install the hydraulic block to the mounting bracket using the hardware in group **(F)** as shown. (Figure 4.3, 4.4, and 4.5)

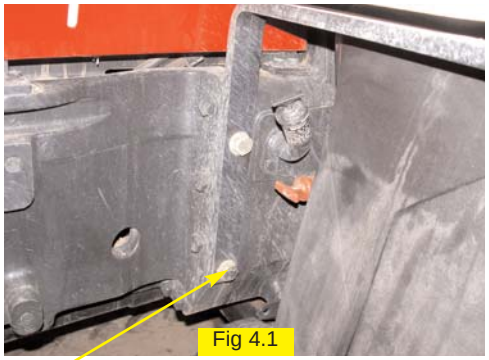


Fig 4.1

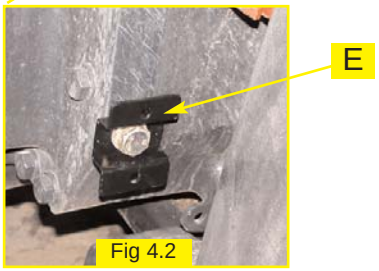


Fig 4.2

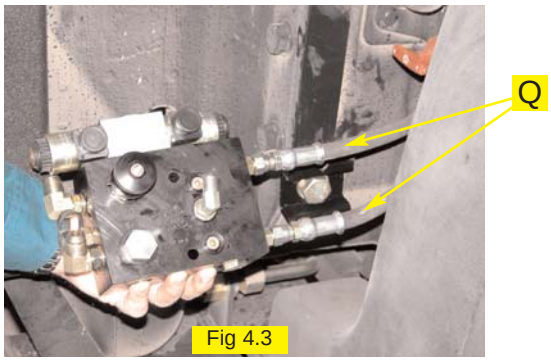


Fig 4.3

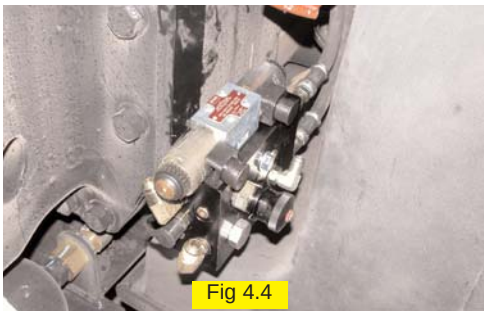


Fig 4.4

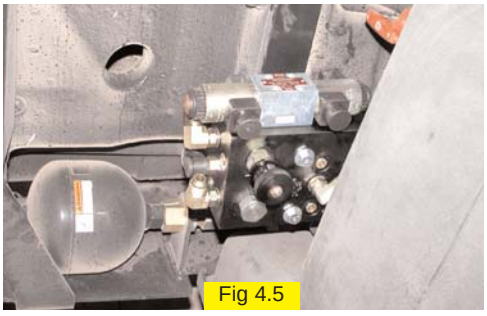


Fig 4.5

4. Install Steering Output Fittings:

Locate the tractor steering lines attached to the steering cylinders at the front axle. (Figure 5.1and 5.2) Install the provided run-tees **(H)** to the head end of the right and left steering cylinders as shown. (Figure 5.3) Reattach the tractor steering lines to the ends of the run-tees.

If the tractor is equipped with a single steering cylinder then the run-tee fittings must be installed, one each, at both ends of the cylinder.

Attach the pre-routed steering output hoses **(Q)** to the branches of the run-tees and secure the hoses to other tractor plumbing using heavy ties straps (provided). (Figurd 5.4 and 5.5) Be sure hoses are routed and secured for problem free operation.

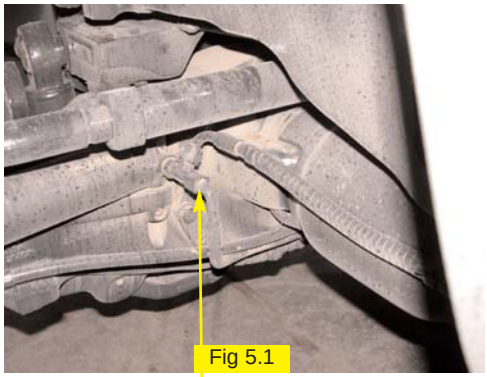


Fig 5.1

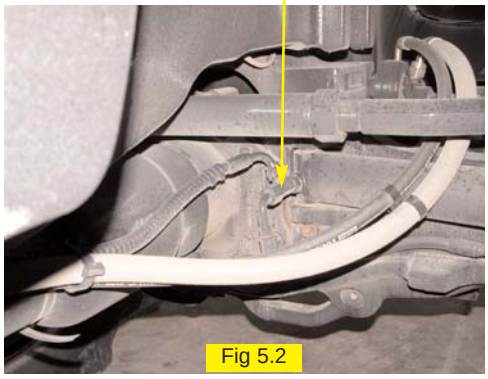


Fig 5.2

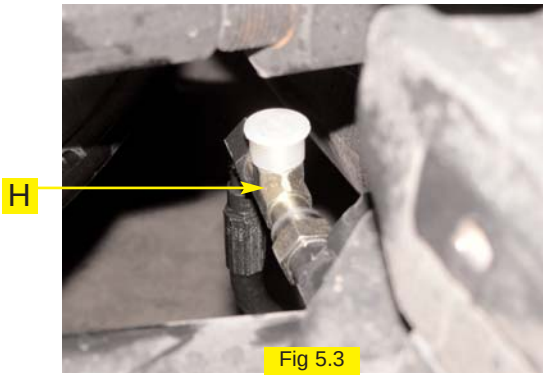


Fig 5.3

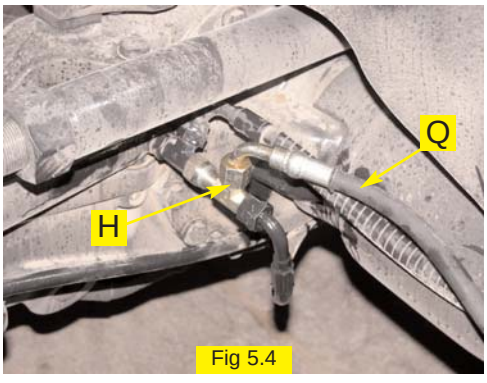


Fig 5.4

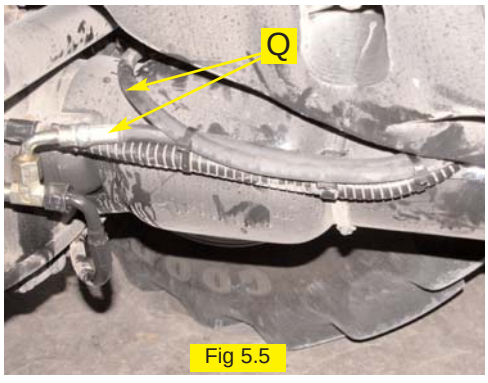


Fig 5.5

5. STC (snap-to-connect) fitting assembley and disassembly.

The pressure, tank, and load sense connections on the tractor steering orbital are made with STC (snap-to-connect) fittings. An STC release tool **(I)**, included, is required to disassemble these types of fittings and allow for hydraulic steering installation. (Figure 6.1)

To release an STC connection the proper size tool must be inserted behind the rubber release sleeve and the two halves of the connection can be pulled apart. (Figure 6.2)

To assemble an STC connection, simply insert the male connector into the female and push together until connections click. Verify the STC connection has been made successfully by pulling the connection.

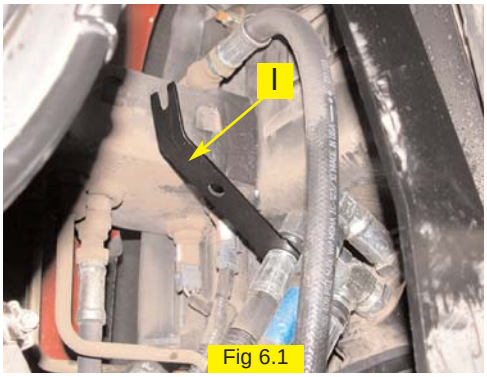


Fig 6.1

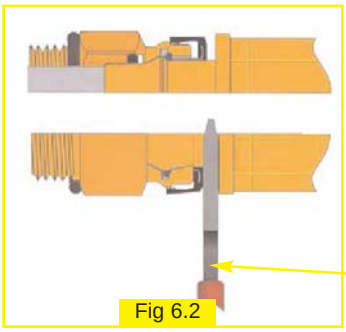


Fig 6.2

6. Install Pressure, Tank, and Load Sense Fittings:

Pre-assemble the load sense shuttle **(J)** with fittings **(K)**, **(L)**, and **(M)** as shown. (Figure 6.3)

Locate the small load sense hose on the left side of the steering orbital. (Figure 6.4) Using the small #6 STC release tool **(I)**, remove the load sense hose from the steering orbital. Connect the center position **(M)** of the prepared load sense valve to the tractor load sense hose. (Figure 6.5) Connect the provided hose **(N)** between the load sense fitting on the steering orbital and the end of the load sense shuttle with the straight adapter fitting as shown on page **7**. (Figure 7.1 and 7.2)

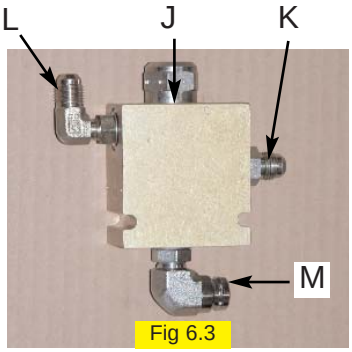


Fig 6.3

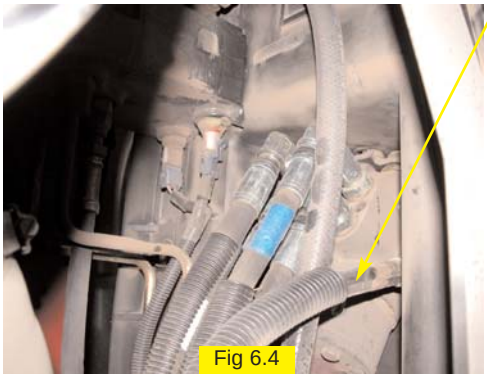


Fig 6.4

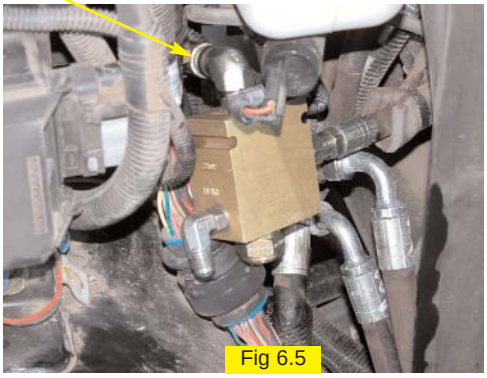


Fig 6.5

6. Continued...

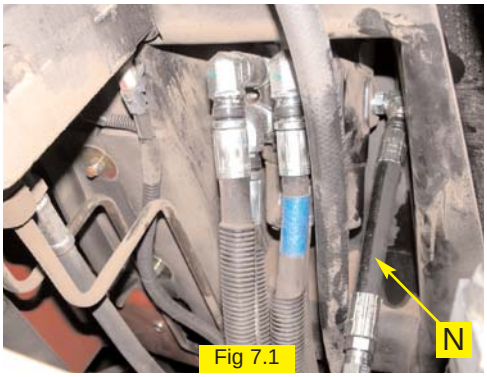


Fig 7.1

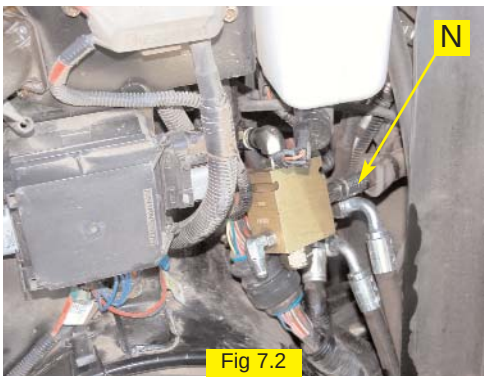


Fig 7.2

Locate the pressure and tank ports on the tractor steering orbital, stamped **P** and **T** on the casting. (Figure 7.3) Using the large #8 STC release tool **(I)**, remove the pressure and tank hoses from the orbital. Connect the provided hoses **(O)** to the pressure and tank fittings on the orbital. Use the provided union tee **(G)** to reconnect the pressure and tank hoses as shown. (Figure 7.4)

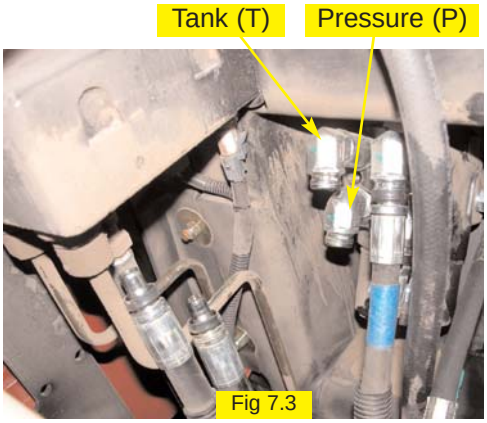


Fig 7.3

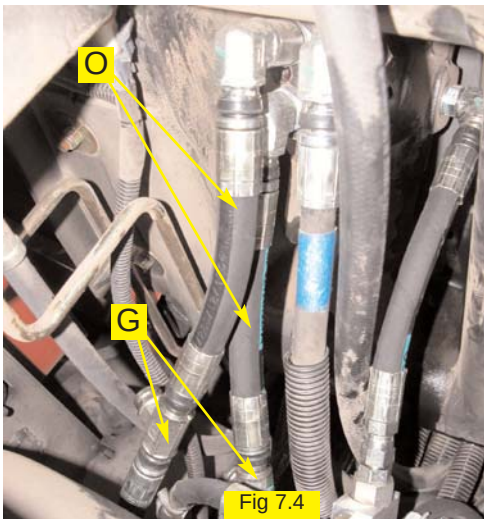


Fig 7.4

7. Install Pressure, Tank, and Load Sense Hoses:

Connect the provided load sense hose **(R)** between the PILOT port of the load sense valve **(J)** and the **LS** port of the hydraulic control block. (Figure 8.1 and 8.2)

Connect the provided pressure and tank hoses **(P)** between the union tees installed in step **6** and the **P** and **T** ports of the hydraulic control block respectively. (Figure 8.3 and 8.5)

Be sure hoses are routed to avoid entanglement to promote problem free operation as indicated by photos. (Figured 8.4)

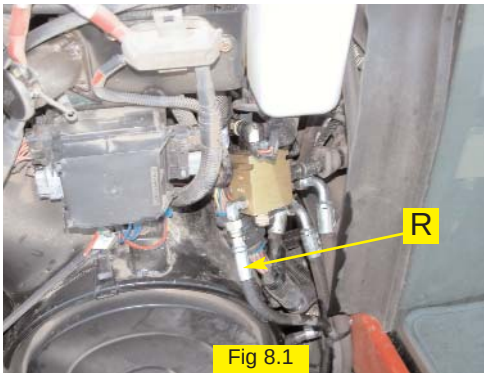


Fig 8.1

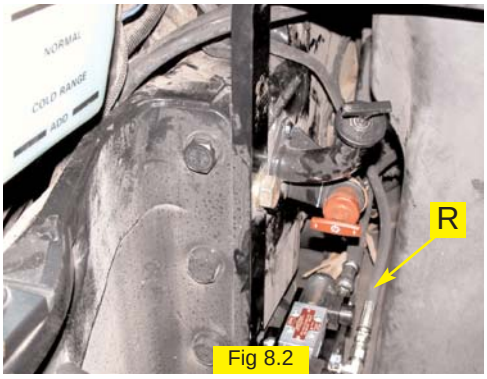


Fig 8.2

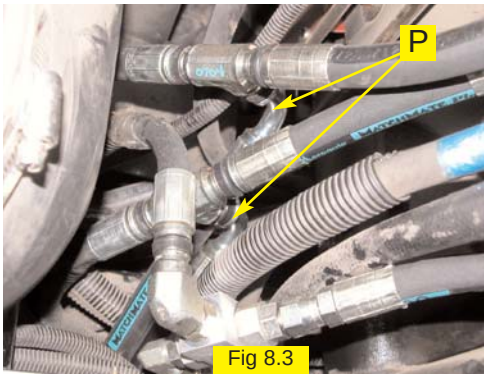


Fig 8.3

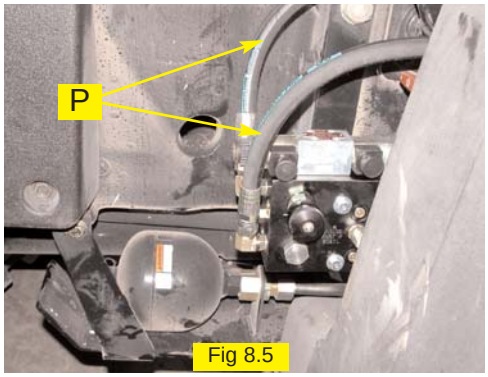


Fig 8.5

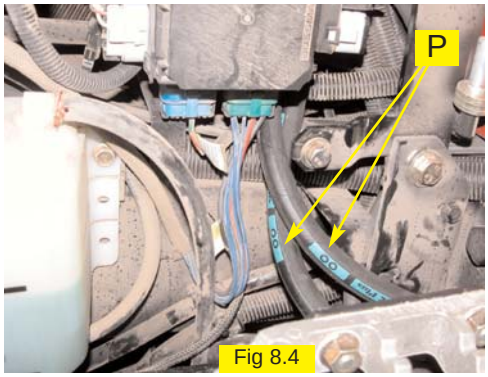


Fig 8.4

8. Install the Valve Control Cable:

Remove the red cab trim on the left side of the tractor and loosen the door jam plate. (Figure 9.1) Route the valve cable **(S)** from the hydraulic control block, under the cab trim, and up into the cab through the door jam. (Figure 9.1 and 9.3) Route the cable under the floor mat to the desired cab location. Re-attach the trim and door jam plate. Attach the valve DIN connectors from the cable at the hydraulic block and secure. (Figure 9.2)

Remove enough slack out of the cable to prevent entanglement with tractor moving parts. Use tie straps as needed.

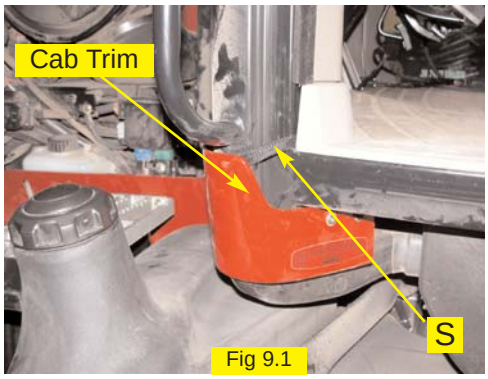


Fig 9.1

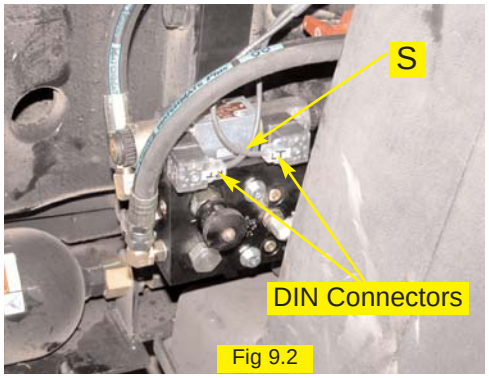


Fig 9.2

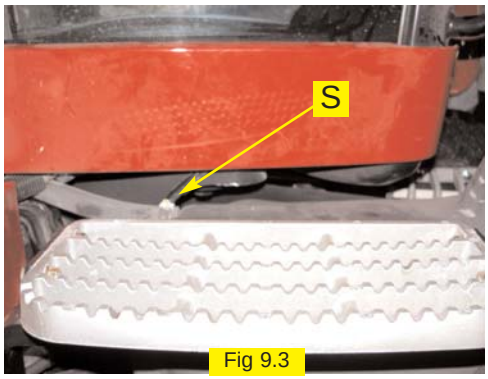


Fig 9.3

9. Verify Operation and Set Steering Control Rate: Cleanup the installation area around the tractor and make certain that it is safe to operate. Start the tractor and check hydraulic connections for any leaks. Rotate the steering wheel from one extreme to the other, and back.

Adjust the hydraulic oil flow control knob to a starting position of **3 turns** from completely closed. (Figure 10.1) To adjust the knob, turn clockwise to reduce flow, counter-clockwise to increase flow. To adjust the knob, lift and turn clockwise to reduce flow, counter-clockwise to increase flow.

The coils on the control block have manual push button overrides. Push either manual override to move the tractor steering linkage all the way to one extreme. Count the number of seconds for the tractor steering linkage to move all the way in the opposite direction while pressing the manual override of the other coil.

Adjust the hydraulic oil flow control knob to achieve an end to end steering cycle time of approximately **18** seconds.

10. Complete Electronic Installation and Setup: Refer to the owner's manual supplied with your automated steering system to complete the electronic installation and setup.

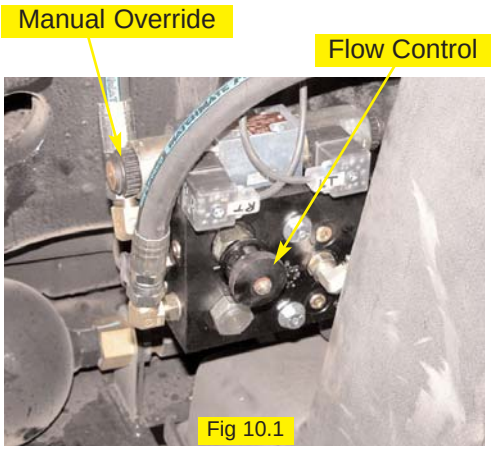


Fig 10.1

Note: *To activate the manual overrides, a tool such as a small screw driver or allen wrench must be inserted into the end of the coil to depress the override button.*

WARNING: **PINCH POINT HAZARD.** To prevent serious injury or death, avoid unsafe practices while manually operating hydraulic steering circuit. Keep others away and stay clear of mechanical steering linkages.