


# FIELDPILOT<sup>®</sup>

## INSTALLATION MANUAL

Assisted Steering Hydraulic Installation Manual for  
Vehicle Kit Number 91-02296

Fits Only John Deere 8x20 Series Tractors



A Subsidiary of  Spraying Systems Co.<sup>®</sup>

## FIELDPILOT®

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### Safety Information

TeeJet Technologies is not responsible for damage or physical harm caused by failure to adhere to the following safety requirements.

As the operator of the vehicle, you are responsible for its safe operation.

The FieldPilot is not designed to replace the vehicle's operator.

Do not leave a vehicle while the FieldPilot is engaged.

Be sure that the area around the vehicle is clear of people and obstacles before and during engagement.

The FieldPilot is designed to support and improve efficiency while working in the field. The driver has full responsibility for the quality and work related results.

Disengage FieldPilot before operating on public roads or when not in use to prevent loss of vehicle control.

## PREPARATION

1. Before beginning the installation, thoroughly clean the vehicle to remove dirt and contaminants that might get into the hydraulic circuit.
2. Park the vehicle on a clean, level floor with adequate clearance to work around.
3. Do not attempt to loosen any hydraulic fittings while the engine is running.
4. Allow the motor and the hydraulics to cool until it is no more than warm to the touch before proceeding.
5. Prior to loosening any hydraulic fittings, be sure to have the appropriate plugs and caps available in order to limit loss of hydraulic fluid from the open fittings.



**PREVENT HYDRAULIC SYSTEM CONTAMINATION.** It is essential to thoroughly clean hydraulic system fittings and hose connections prior to disconnecting or removing them. 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.

### **IMPORTANT**

**TO AVOID EXCESS LEAKAGE, DO NOT TURN THE STEERING WHEEL WHILE THE FITTINGS ON THE MANUAL STEERING VALVE ARE DISCONNECTED.**



**WARNING: HOT, HIGH PRESSURE FLUID HAZARD.** Hydraulic oil may be hot and under extreme pressure. To prevent serious injury or death, relieve system pressure and allow the system 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.

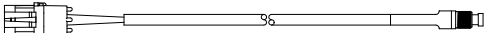


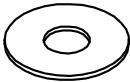
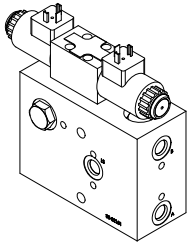
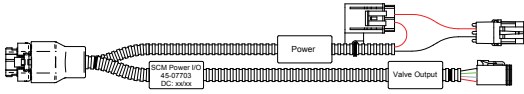
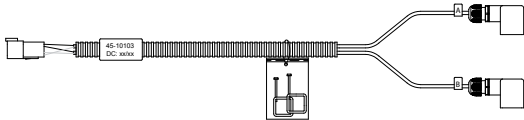
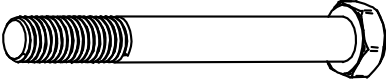
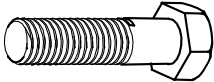


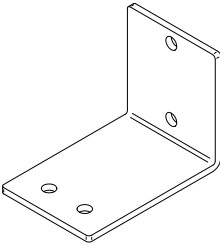
**WARNING: PINCH POINT HAZARD!** To prevent serious injury or death, avoid unsafe practice while manually operating hydraulic steering circuits. Keep others away and stay clear of mechanical steering linkages.

## KIT CONTENTS

Unpack the installation kit and identify the required parts.

Item	Part Number	Description	Quantity
A	32-04040	Switch, Engage/Disengage.....	1
B	350-0037	Washer, Flat - 3/8" SST .....	4
C	35-02180	Valve, FieldPilot 2.1GPM, CC, LS, PWM.....	1
D	45-07703	Harness, SCM .....	1
E	45-10103	Harness, Valve.....	1
F	60-04087	Bolt, Hex- 3/8-16 x 3-1/4" SST.....	2
G	60-04095	Bolt, Hex- 3/8-16 x 1-1/2" SST.....	2
H	60-04099	Set Screw, 10/24 X 3/8", Cup Point Allen .....	1
I	60-07027	Nut, NyLock 3/8-16, SST .....	4
J	65-05184	Bracket, Hyd. Block Mount - John Deere 8x20, 8x30 .....	1
K	68-01165	Hose, Hyd. - 3/8" x 83", #8FORF x #6FJIC 90° .....	2
L	68-01226	Hose, Hyd. - 3/8" x 21", #6FJIC x #6FJIC.....	3
M	68-02019	Adapter, Hyd. - #6MJIC x #6MORB.....	2
N	68-02026	Adapter, Hyd. Run Tee - #8 ORF .....	2
O	68-02078	Adapter, Hyd. 90° - #6MJIC x #6FJIC.....	3
P	68-02080	Adapter, Hyd. 90° - #6MJIC x #6MORB.....	3
Q	68-02084	Adapter, Hyd. - #6MJIC x M14x1.5 MORB .....	3
R	68-02120	John Deere Shuttle Disc .....	1
S	68-02161	Adapter, John Deere Shuttle Spacer Long (RE213458).....	1
T	90-50013	Cable Tie Kit, 15 .....	1
U	91-07011	Steering Wheel Switch Kit .....	1
V	98-05145	Installation Manual, John Deere 8x20 Series .....	1

Item	Part #	Description	Illustration
A	32-04040	Switch, Engage/Disengage, Momentary	

Item	Part #	Description	Illustration
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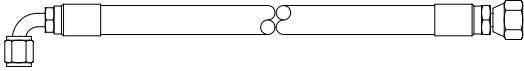
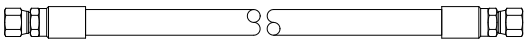
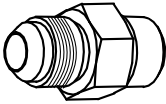
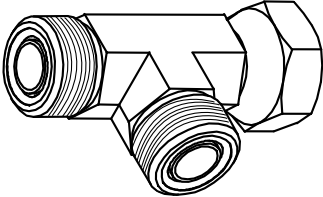
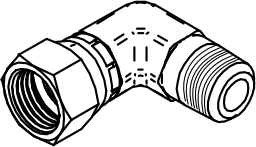
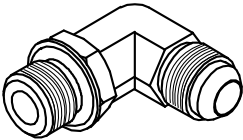
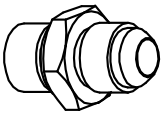

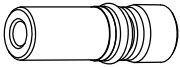
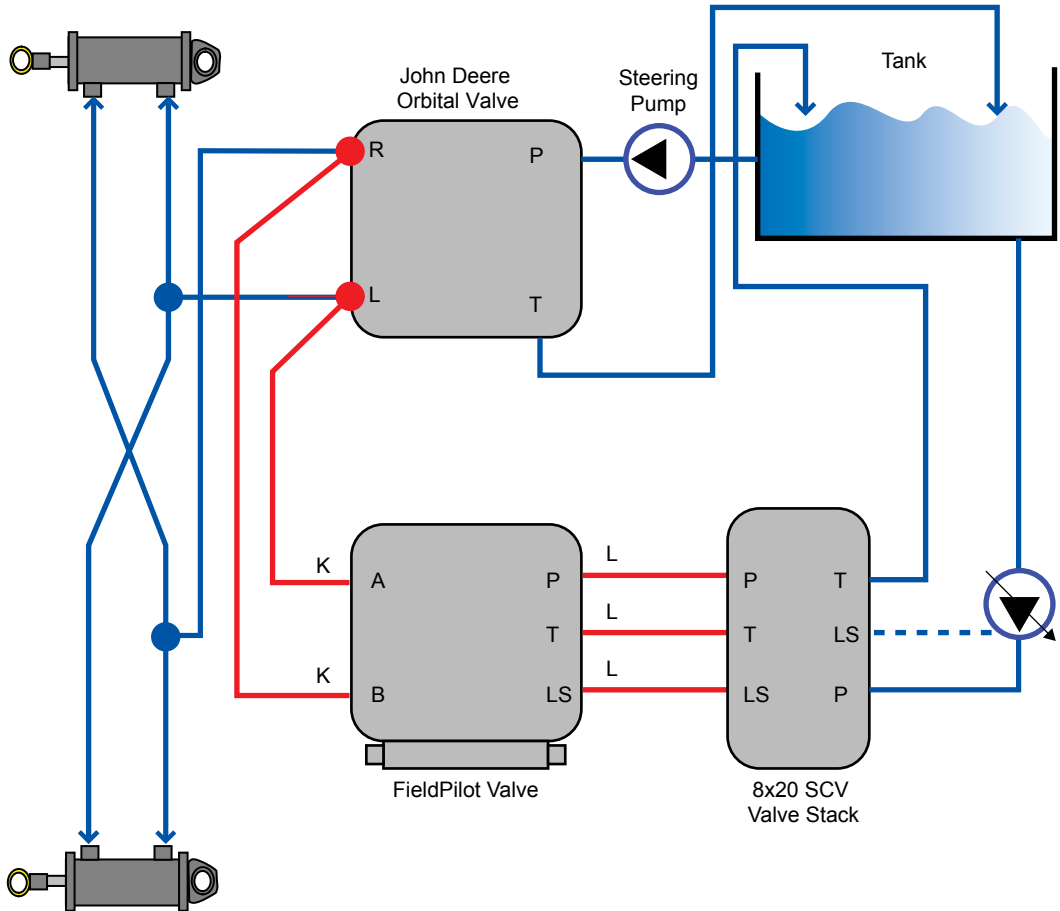
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U	91-07011	Steering Wheel Switch Kit	
V	98-05145	Installation Manual, John Deere 8x20 Series	

Figure 1-1: Hydraulic Diagram

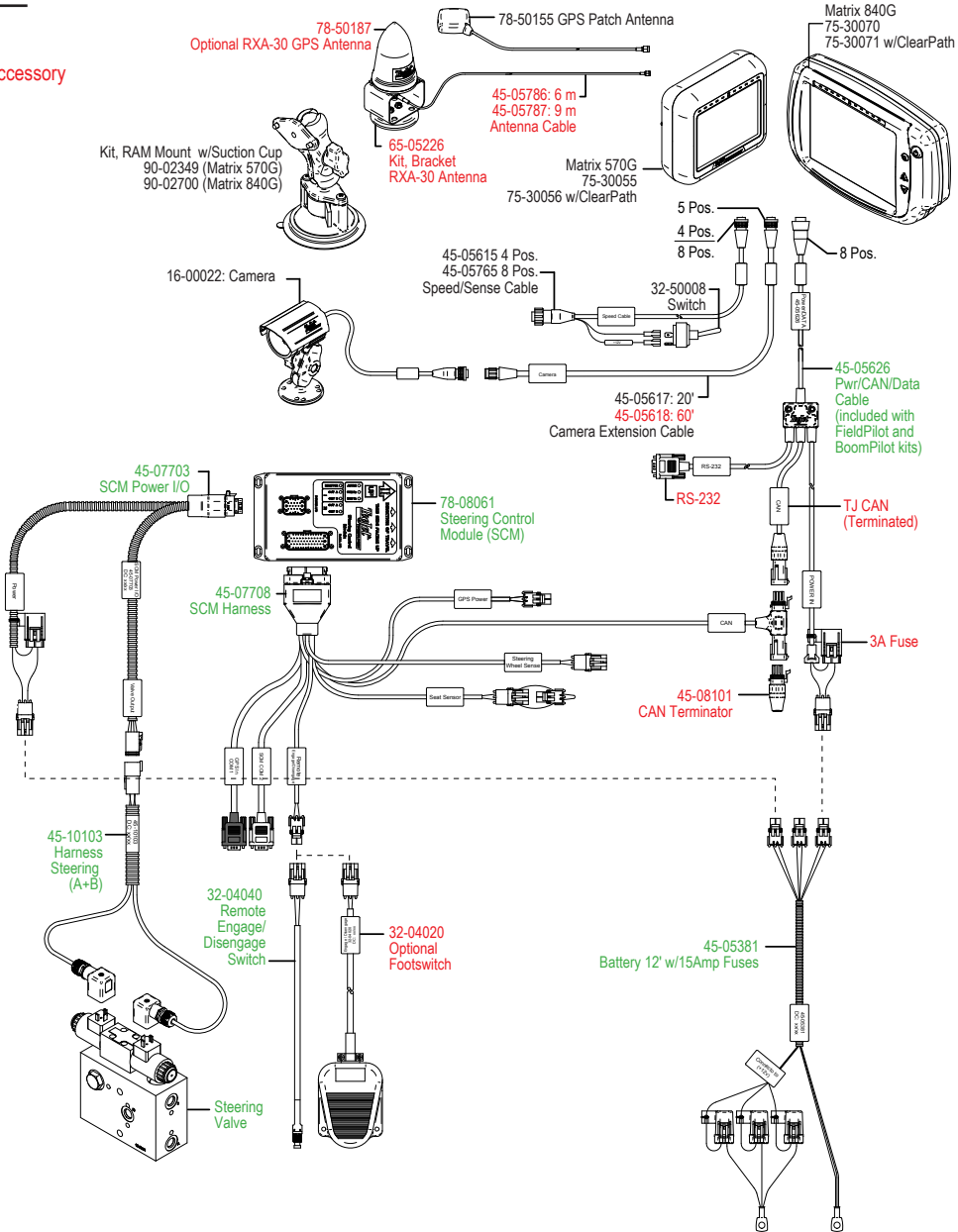


Existing Hoses —————

Hoses From Kit —————

Figure 1-2: System Diagram

Matrix  
FieldPilot  
Optional Accessory



## INSTALLATION



If there are questions concerning the installation of the FieldPilot system on this vehicle, or due to the changes in component specifications the parts supplied in the kit are not exactly as presented in this document, please contact your dealer or TeeJet Customer service representative for clarification before installation. TeeJet Technologies is not responsible for misuse or incorrect installation of the system.

**NOTE: BE VERY CAREFUL TO ABSOLUTELY SECURE ALL CABLES AND HOSES SO THAT THEY DON'T INTERFERE WITH THE MANY MOVING PARTS OF THE MACHINE!**

Due to difficulties accessing all the ports at the John Deere Orbital valve, most hydraulic connections are made on the rear of the John Deere 8X20 at the Selective Control Valve (SCV) stack. The A & B steering outputs from the FieldPilot valve are routed to the John Deere orbital valve located just forward of the cab.

### Overview of the Machine

- The FieldPilot valve will mount at the rear of the machine.
- The Tank, Pressure, and LS connections will be to the Selective Control Valve (SCV) stack at the rear of the machine.
- The GPS antenna will mount on the hood.
- The steering hose connections will be to the John Deere orbital valve just under the front left of the cab.

**NOTE: All references to left and right are stated as if the user is seated in the driver's seat.**

Figure 1-3: Overview of the Machine



**Selective Control Valve (SCV) stack**

**FieldPilot Valve**



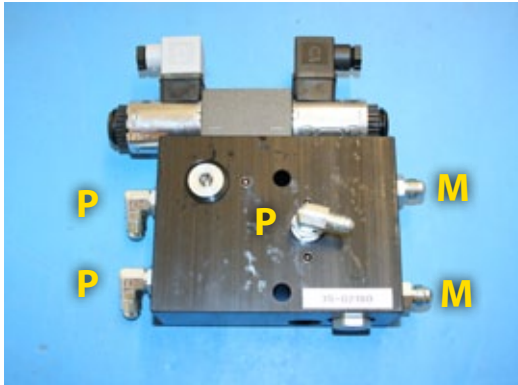
**Steering Hose Connections**

## 1. PREPARE THE FIELDPILOT VALVE

Install fitting **(M)** in the A & B ports. Install fitting **(P)** in the P, T and LS ports.

*Figure 1-4: Prepare the FieldPilot Valve*

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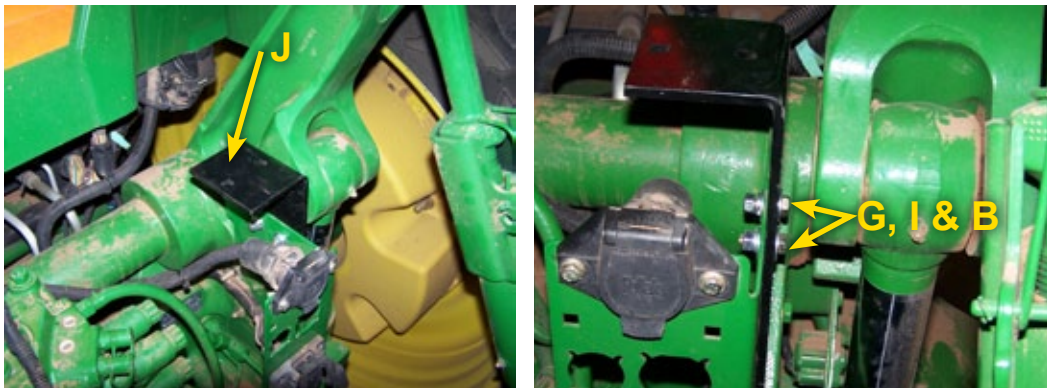


## 2. INSTALL THE FIELDPILOT VALVE BRACKET

The valve bracket **(J)** will mount to the rear of the tractor, on the right side just above the implement lights connector. Mount the bracket **(J)** as shown using (2) 3/8" bolts **(G)**, (2) 3/8 nuts **(I)** and (2) 3/8" washers **(B)**.

*Figure 1-5: Install Mounting Bracket for FieldPilot Valve*

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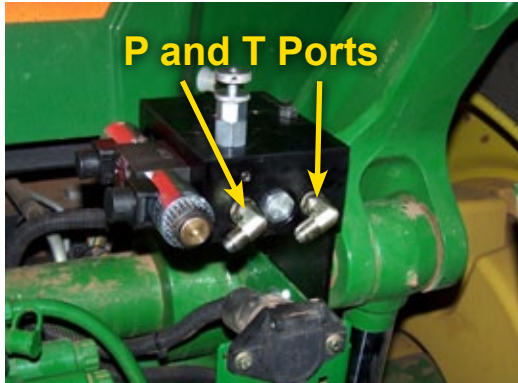


### 3. MOUNT THE FIELDPILOT VALVE

Mount the FieldPilot Valve to the bracket **(J)** using parts **(B, F & I)**. Mount it so the P & T ports are facing the rear and the solenoids are on the left side.

*Figure 1-6: Mount the FieldPilot Valve*

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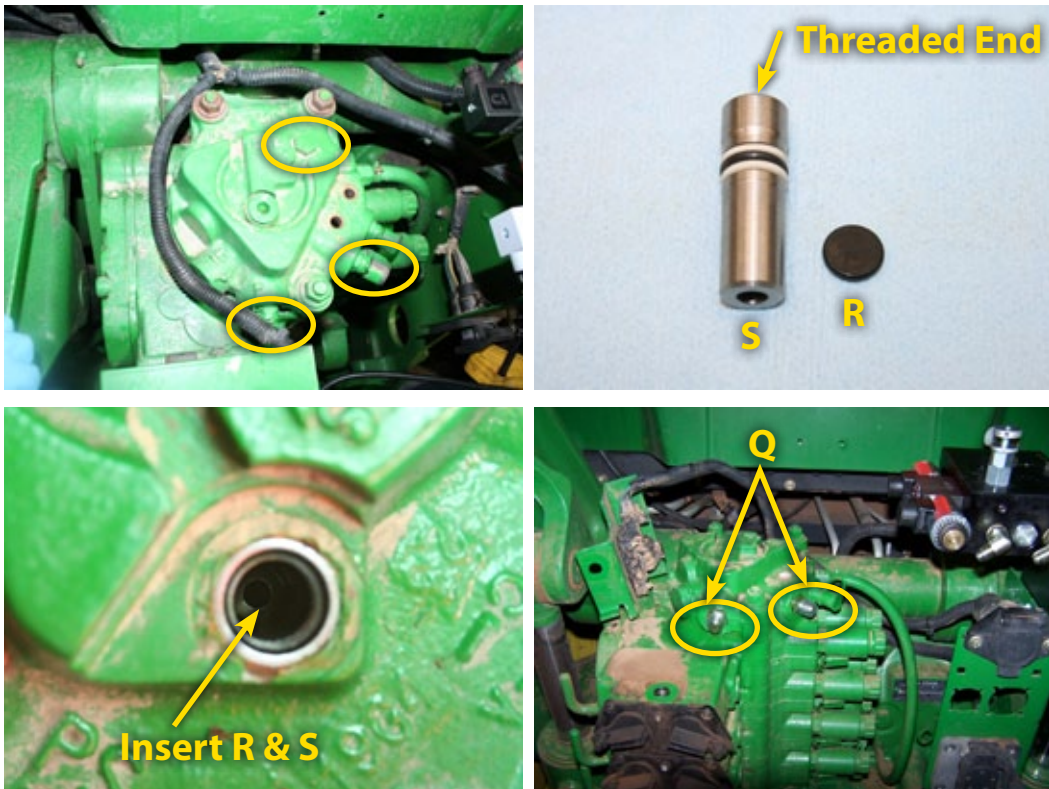


## 4. PREPARE THE REAR SCV STACK

Remove the plugs or test ports from the LS, T, and P ports of the rear SCV stack. Insert **(R)** in the LS port and then insert **(S)** with the threaded end up. Next install adapters **(Q)** in the LS, T, & P ports of the SCV stack.

*NOTE: If adapters **(Q)** have a metal washer it must be removed first.*

Figure 1-7: Prepare The Rear SCV Stack



## 5. INSTALL THE LS HOSE AND ADAPTER

Connect hose (L) from the SCV LS port to the LS port of the FieldPilot valve.

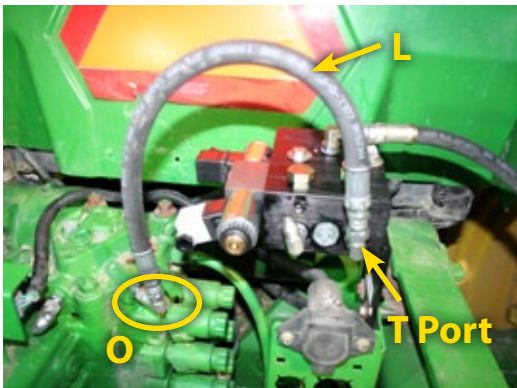
*Figure 1-8: Install The LS Hose and Adapter*



## 6. INSTALL TANK HOSE AND ADAPTER

Install adapter (O) onto adapter (Q) in the SCV T port and then connect hose (L) from (O) to the T port of the FieldPilot valve.

*Figure 1-9: Install Tank Hose and Adapter*

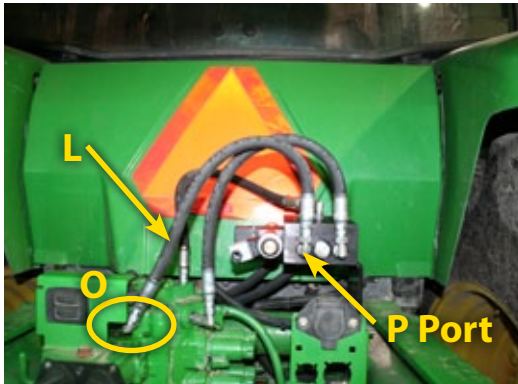


## 7. INSTALL PRESSURE HOSE AND ADAPTER

Install adapter (O) onto adapter (Q) in the SCV P port and then connect hose (L) from (O) to the P port of the FieldPilot valve.

Figure 1-10: Install Pressure Hose and Adapter

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## 8. INSTALL THE LEFT AND RIGHT STEER HOSES

Locate the John Deere orbital valve, just forward of the cab on the left hand side.

Figure 1-11: Install the Left and Right Steer Hoses

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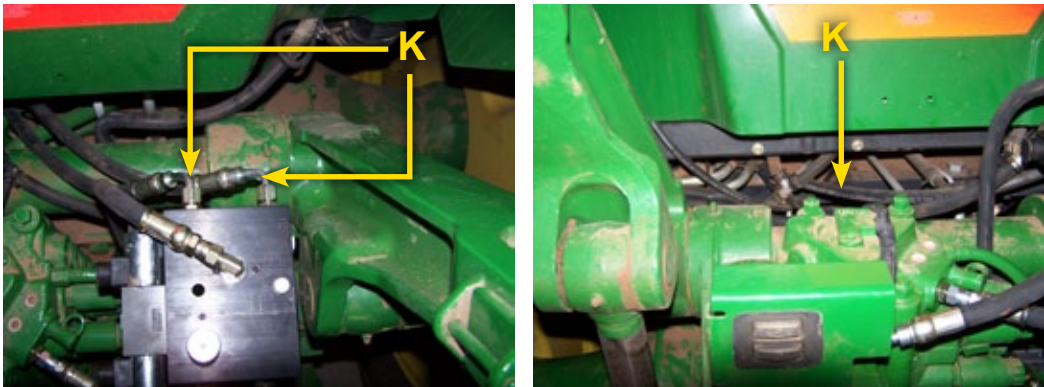
Trace the steering hydraulic lines from the steering cylinder back to the orbital valve to determine the left and right steering ports on the steering control unit. Disconnect these two lines at the orbital valve and install Run Tees (N) onto the orbital valve steering ports. Reconnect the John Deere steering hoses to the run of the tees.

Figure 1-12: Install the Left and Right Steer Hoses



The steer hoses (K) run under the cab on the left hand side of the vehicle. The hose ends with the 90° fittings will attach to ports A and B on the FieldPilot valve mounted at the rear of the vehicle. Route the other ends under the cab and connect to the run tees installed at the JD orbital valve.

Figure 1-13: Install the Left and Right Steer Hoses



## 9. INSTALL THE VALVE CONTROL CABLE

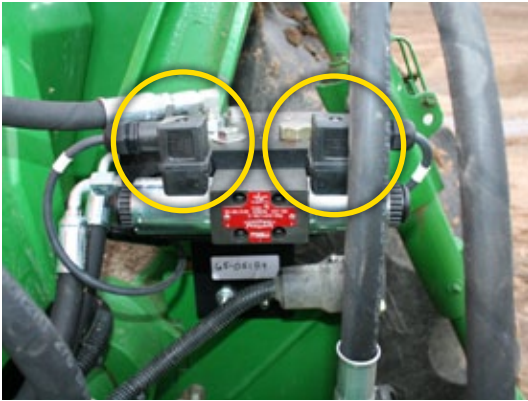
The valve cable exits the cab through an access plate with knockouts in the left rear section. Connect the FieldPilot valve control cable (E) to the FieldPilot valve by attaching the DIN connectors to the individual coils. Do not be concerned at this time about which connector is connected to which solenoid coil. Route the cable along the front underside of the cab and around the right side to the access panel. Secure with tie wraps as necessary.

*NOTE: If the vehicle steers the wrong way when it is tested, exchange the connector positions.*

*NOTE: After all cables and wires have been wired into the cab, ensure the knockout is resealed.*

*Figure 1-14: Install Valve Control Cable*

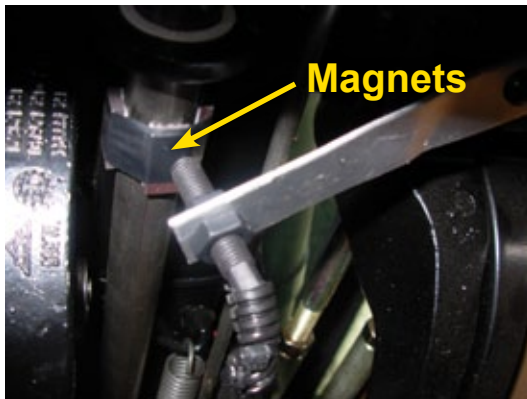
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## 10. INSTALL STEERING DISENGAGE SWITCH (KIT 91-07011)

The steering disengage kit (**U**) is used to automatically disengage FieldPilot when the steering wheel is turned. Remove the cover for the steering column. Attach magnets to shaft/knuckle as shown. Attach the aluminum bracket to an existing bolt and bend it so that the sensor is within 1/8" of the magnets. Route the cable and ensure it will not get tangled with any moving parts. Reattach the cover for the steering column.

*Figure 1-15: Install Steering Disengage Switch (Kit 91-07011)*



## 11. INSTALLATION OF ENGAGE/DISENGAGE SWITCH

Connect item (A) to the connector on the SCM harness labeled Remote Engage/Disengage. Install the push button in a location that is easily accessible during operation of the machine. This switch (A) is not required if the optional foot switch 32-04020 is used.

Figure 1-16: Engage/Disengage Switch

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## 12. RECOMMENDED ELECTRONICS INSTALLATION

The Steering Control Module (SCM) should be mounted securely to the floor of the cab. The control console can be mounted to the operator's preference. The GPS antenna should be mounted as far forward as possible on top of the cab on a metal surface of at least 4" square.

Figure 1-17: Recommended Electronics Installation

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### 13. VERIFY OPERATION OF HYDRAULICS AND SET THE STEERING CONTROL RATE

Clean and pick up the area around the vehicle and make certain that it is safe to operate. Start the engine and check hydraulic connections for leaks. Rotate the steering wheel from one extreme to the other and back to center, check for leaks. While steering through the extremes of movement, check the cables and hoses for wear points and strain, adjust as necessary.

**The final oil flow rate adjustment is accomplished through the Matrix console. The target lock to lock time is 5 seconds and the valve frequency is 110. Refer to the Matrix manual for further instructions.**

*NOTE: To activate the manual overrides, a tool such as a small screwdriver 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 practice while manually operating hydraulic steering circuits. Keep others away and stay clear of mechanical steering linkages.

### 14. COMPLETE ELECTRONIC INSTALLATION

Refer to the owner's manual supplied with the automated steering system to complete the electronic installation and setup.

# FIELDPILOT®


## INSTALLATION MANUAL

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A series of equipment-specific hydraulic installation kits have been developed to work in conjunction with your assisted steering system. This kit contains the necessary components and instructions to install assisted steering hydraulics on the John Deere 8x20 Series Tractors. Please review this manual thoroughly before beginning the installation process.



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