

# FIELDPILOT<sup>®</sup>

## INSTALLATION MANUAL

Assisted Steering Hydraulic Installation Manual for  
Vehicle Kit Number 91-02320

Fits Only Miller 22xx T, T-SS, T-ET, HT



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

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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.

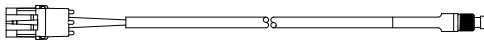




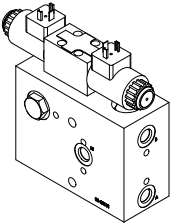
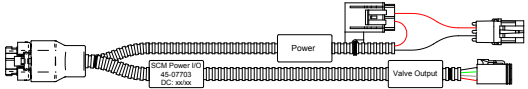
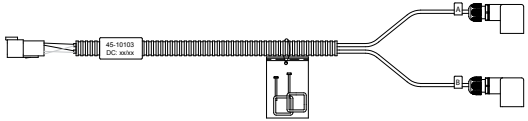
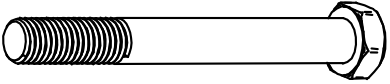

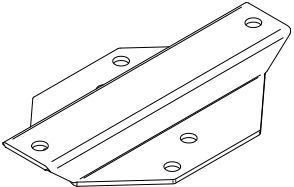
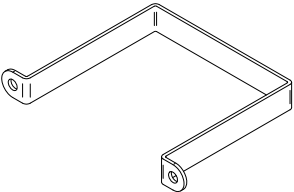
**WARNING: PINCH POINT HAZARD!** To prevent serious injury or death, avoid unsafe practice while manually operating hydraulic steering circuits. Keep others away and stay clear of mechanical steering linkages.

## 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, 1" OD .....	2
C	350-0601	Bolt, 3/8 x 16 x 3/4 SST, H.H. ....	2
D	35-02180	Valve, FieldPilot, PWM, CC, 2.1GPM .....	1
E	45-07703	Cable, SCM to Power .....	1
F	45-10103	Harness Steering (A&B) .....	1
G	60-04087	Bolt, HEX 3/8-16 x 3-1/4" SST .....	2
H	60-07027	Nut, Nylock 3/8-16 SST .....	4
I	65-05156	Bracket Hydraulic Block, Mount N2200 .....	1
J	65-05157	Bracket Hammer Strap, N2200.....	1
K	68-01071	Hose Hydraulic, 3/8" x 105" #6FJIC x #8FORF 90°.....	3
L	68-01072	Hose Hydraulic, 3/8" x 17" #6FJIC 90° x #8FORF .....	1
M	68-02019	Adapter Hydraulic, #6MJIC x #6MORB .....	2
N	68-02026	Adapter Hydraulic Run Tee, #8ORF .....	4
O	68-02070	Adapter Hydraulic Plug, #6 MORB .....	1
P	68-02080	Adapter Hydraulic, 90° #6MJIC x #6 MORB .....	2
Q	90-50013	Kit, Cable Tie, Bundle (15).....	2
R	91-07011	Kit, Steering Wheel, Switch .....	1
S	98-05157	FieldPilot Installation Manual Miller 22xx T, T-SS, T-ET, HT .....	1

Item	Part #	Description	Illustration
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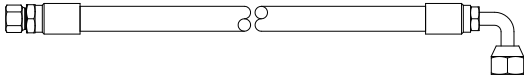
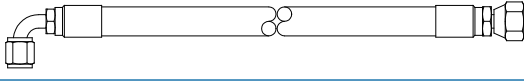
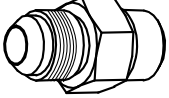
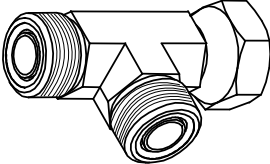

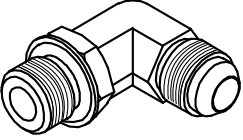
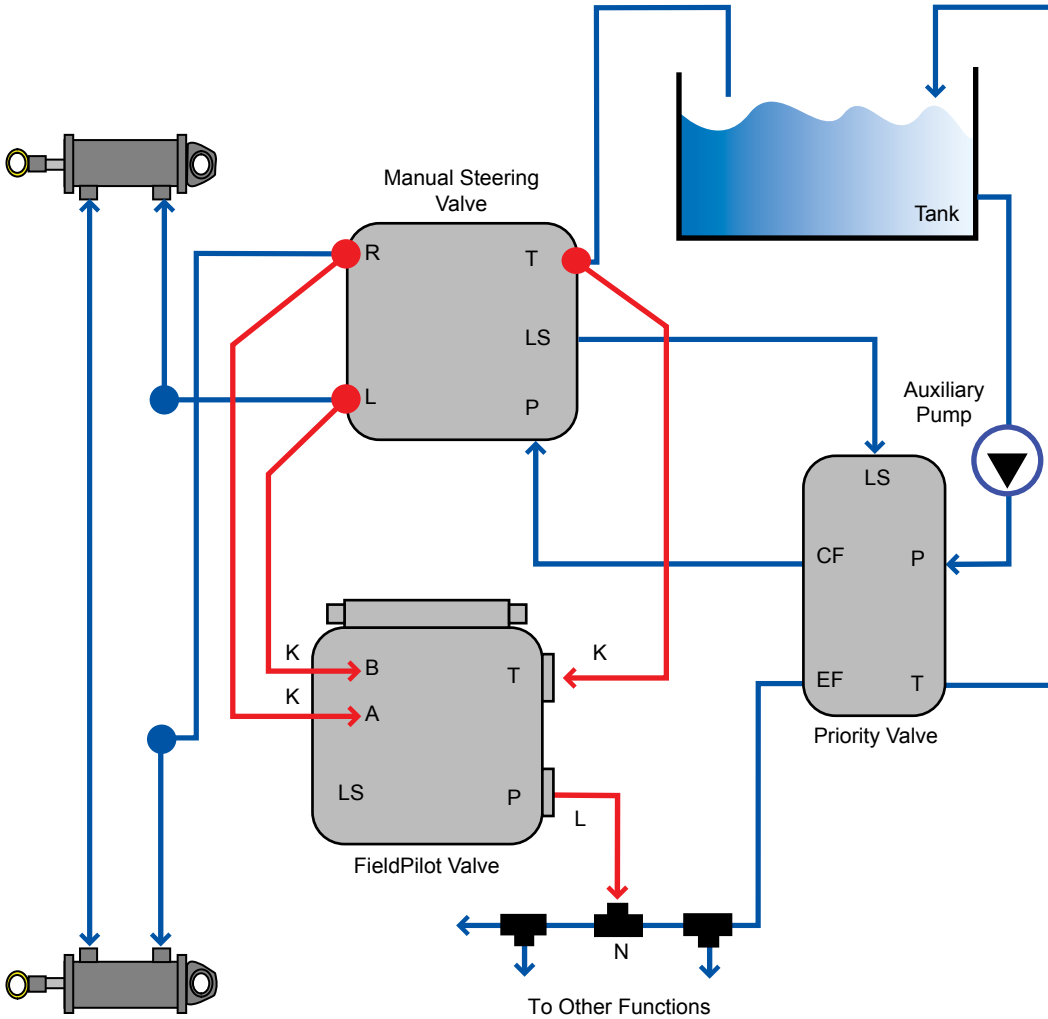
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K	68-01071	Hose Hydraulic, 3/8" x 105" #6FJIC x #8FORF 90°	
L	68-01072	Hose Hydraulic, 3/8" x 17" #6FJIC 90° x #8FORF	
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S	98-05157	FieldPilot Installation Manual Miller 22xx T, T-SS, T-ET, HT	

Figure 1-1: Hydraulic Diagram



Existing Hoses

Hoses From Kit



## 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!*

### Overview of the Machine

- The FieldPilot valve will mount on the left had side of machine above the cat walk between cab and tank using the main cross over beam.
- The pressure will come from an existing Run T off the pressure port of the priority valve-located between cab and tank.
- The Left & Right and tank connections will be at the steering orbital, front of machine

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

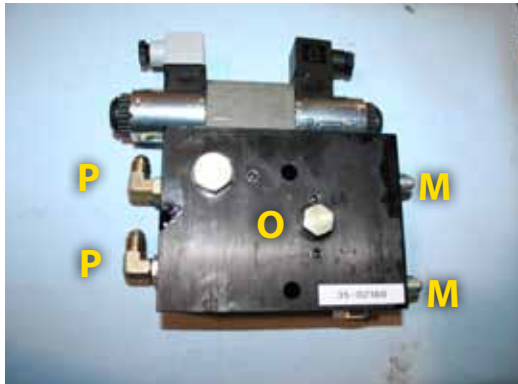
*Figure 1-3: Overview of the Machine*



## 1. PREPARE THE FIELDPILOT VALVE

Install adapters **(P)** in the P & T ports. Install adapters **(M)** in the A & B ports. Finally, install adapter **(O)** in the LS port.

Figure 1-4: Prepare the FieldPilot Valve



## 2. INSTALL THE FIELDPILOT VALVE BRACKET

Identify valve mounting location. Wrap strap **(J)** around main cross over beam so that mounting holes are facing the tank. Next attach bracket **(I)**, so that mounting holes for the FieldPilot valve are facing the tank, to bracket **(J)** using (2) **(C)** 3/8" x 16 x 3/4" bolts and (2) **(H)** 3/8 nuts as depicted.

Figure 1-5: Install Mounting Bracket for FieldPilot Valve

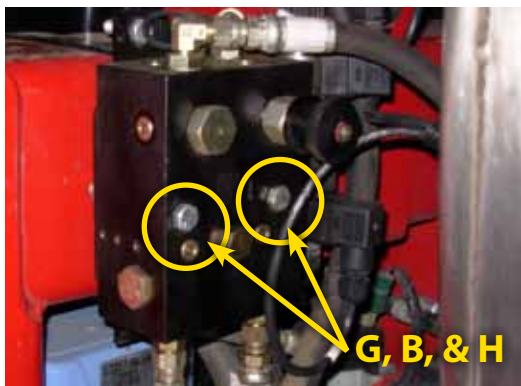


## 3. MOUNT THE FIELDPILOT VALVE

Use parts **(G, B, & H)** mount the FieldPilot valve **(D)** to the bracket **(I)** as shown.

*Figure 1-6: Mount the FieldPilot Valve*

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#### 4. INSTALL THE STEERING HOSES AND ADAPTERS

Locate the steering hose connections at the machine steering orbital. Disconnect the two steering hoses (make sure to label them first) and install run tees (**N**). Reconnect original hoses to the run of the tees. Then connect hoses (**K**) from the branch of the run tees to the A & B ports of the FieldPilot valve. The hoses will route down from FieldPilot valve and underneath the cab to the branch of the run tees at steering orbital.

*Figure 1-7: Install the Steering Hoses and Adapters*



## 5. INSTALL THE TANK HOSE

Locate the tank connection at the steering orbital. Disconnect the tank hose and install run tee (**N**). Reconnect original hose to the run of the tee. Then connect hose (**K**) from the branch of the run tee to the tank port of the FieldPilot valve. The hose will route down from FieldPilot valve and underneath the cab to the branch of the run tee at steering orbital.

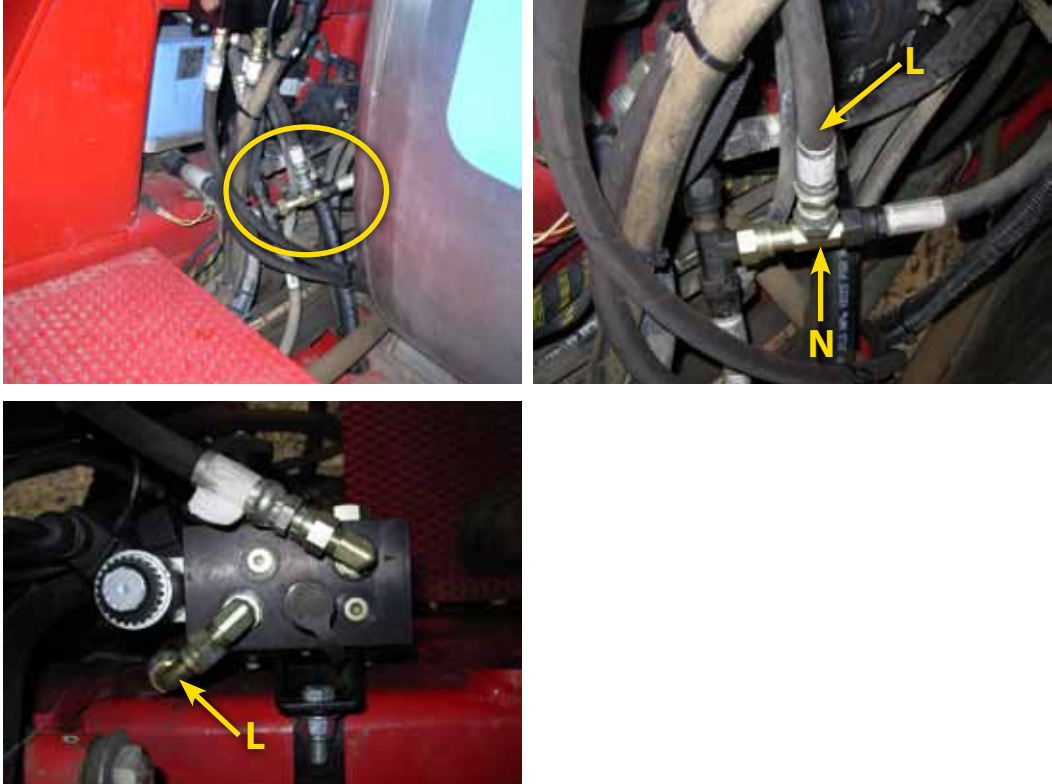
Figure 1-8: Install The Tank Hose



## 6. INSTALL PRESSURE HOSE

Locate an existing run tee in the excess flow line exiting the priority valve. Disconnect the existing pressure hose attached to branch of run tee. Install run tee (**N**) to branch of existing run tee on Nitro. Reconnect original hose to the run of the tee. Then connect hose (**L**) from the branch of the new TeeJet run tee to the pressure port of the FieldPilot valve. Hose will route down from FieldPilot valve along the cross over beam.

*Figure 1-9: Install Pressure Hose*

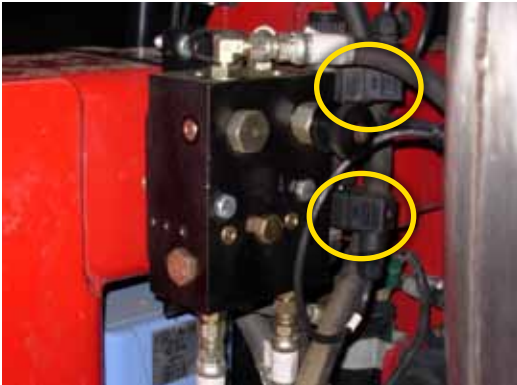


## 7. INSTALL THE VALVE CONTROL CABLE

The valve control cable (F) will connect from the coils on the FieldPilot valve and will route into the rear of the cab.

*Figure 1-10: Install the Valve Control Cable*

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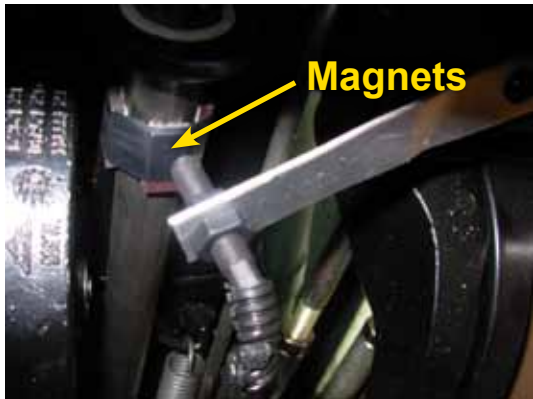
## 8. INSTALL STEERING DISENGAGE SWITCH (KIT 91-07011)

The steering disengage sensor (R) will mount near the bottom of the steering shaft. Check clearance of the clutch pedal before installing. Mount 3 or 4 magnets to the steering shaft. It may be best to cut the magnets in half. Bend the aluminum mounting bracket as illustrated, and mount the disengage sensor as shown. Set the clearance between the sensor and magnets to 1/8" and rotate the steering wheel in both directions to be sure that the sensor does not contact the magnets or the shaft. Connect the sensor to the Steering Control Module Cable labeled 'Steering Wheel Sense' and secure the cables in position so that they cannot interfere with the rotation of the steering shaft.

*Figure 1-11: Install Steering Disengage Switch (Kit 91-07011)*

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## 9. 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 1-12: Engage/Disengage Switch*



## 10. 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.

**NOTE: THE CENTER OF THE CAB IS NOT THE CENTER OF THE MACHINE.**

Figure 1-13: Recommended Electronics Installation



## 11. 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 Max Duty Cycle. The target lock to lock time is 6 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.

## 12. 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 Miller 22xx T, T-SS, T-ET, HT. Please review this manual thoroughly before beginning the installation process.



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