

Automated Steering Hydraulic Installation Kit

P/N: ED-MF220

Fits Massey Ferguson Swather Models:

220

Read and Follow Safety Messages

In these instructions, you will see the heading, WARNING, and the safety alert symbol .

They indicate a hazardous situation that, if not avoided, could result in death or serious injury. The safety messages provide information to identify a hazard associated with potential injury.

Read and understand the Automated Steering Hydraulic Installation Kit instructions and all of the safety information before installing, operating, or performing maintenance or service on the hydraulic system. Before installing the Automated Steering Hydraulic Installation Kit, read and understand the Automated Steering System User Guide. Do not allow anyone to operate without instruction. If you have a question or need assistance, contact your local dealer or distributor.

Keep these instructions and all related safety information with the manuals for your machine and other implements.

Overview

A series of equipment-specific kits has 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 Massey Ferguson Swather models listed above.

WARNING:

To avoid serious injury or death during machine operation, install the appropriate kit for your machine make and model.

Machine Preparation

WARNING:

Inspect the machine and perform any needed maintenance (for example, contaminated hydraulic fluid) before installing the Automated Steering Hydraulic Installation Kit. This kit cannot perform as intended on a machine that is not maintained properly. Errors in performance increase the risk of operator and bystander injury or death.

Failure to maintain clean hydraulic fluid and operational hydraulic components can cause loss of directional control resulting in serious injury or death.

To avoid serious injury, wear hand and eye protection and use wood or cardboard when checking for leaks.

Turn off the machine and power off the automated steering controller when installing or performing maintenance.

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

To 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, referred to in the Kit Contents section, 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.



Kit Contents

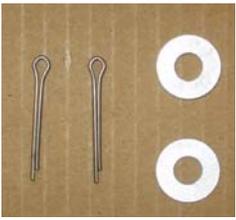
Unpack the installation kit and identify the required parts as shown.

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
A	760-0014-000	1	Assy, Hyd. Valve Block- PC w/o PO eDrive	
Bag 1 of 6 contains B and C				
B	760-2058	2	Adapter, Hyd. 90 Elbow - #6maleJIC x #6m	
C	760-2056	2	Adapter, Hyd. - #6maleJIC x #6maleORB	
D	640-0020	1	Hyd. Block Mnt, SPX3200	
Bag 2 of 6 contains E				
E	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	
	676-1035	2	Nut, NyLock - 3/8NC ZP	
Bag 3 of 6 contains F, G, H, and I				
F	760-2006	1	Adapter, Hyd. Run Tee - #10 JIC	
G	760-2002	1	Adapter, Hyd. - #10femJIC x #8maleJIC	

Kit Contents (continued)

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
H	760-2027	1	Adapter, Hyd. Run Tee - #16 JIC	
I	760-2026	1	Adapter, Hyd. - #16femJIC x #8maleJIC	
J	675-0114-000	3	CLAMP, 3/4" POLYPROPYLENE	
K	640-0079-000	1	Brkt, Hyd Cylinder Mnt Rod, ED-Massey 220	
L	640-0080-000	1	Brkt, Hyd Cylinder Mnt Ram, ED-Massey 220	
M	640-0082-000	1	Brkt, Hyd Cylinder Mnt,Rod/botm ED-Massey 220	
Bag 4 of 6 contains N				
N	675-2038-000	4	Bolt, 3/8-16 x 2 1/2, Gr5 ZP	
	678-1081-000	4	WSHR, FLT, 3/8"ID x 1" OD	
	676-1035	4	Nut, NyLock - 3/8NC ZP	
O	760-0019-000	1	Hyd. Cyl, 6 x 5/16 x 1	
Bag 5 of 6 contains P, Q, R, and S				
P	760-2102-000	2	Adapter, Hyd. - 1/8-27 x #4mJIC	

Kit Contents (continued)

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
Q	760-0016-000	1	Cyl. Rod end swivel	
R	680-1055-000	2	SPCR - 0.438" ID, 0.875" OD, .1/4" LNG, ZP	
S	678-1053	2	Washer, Flat - 1/4" ZP	
	675-0087-000	2	PIN, COTTER 3/32 x 3/4 ZP	
T	760-1295-000	2	Hose, Hyd-1/4" x 63", #6fJIC x #4fJIC90	
U	760-1296-000	1	Hose, Hyd-3/8" x 74", #6fJIC x #8fJIC90	
V	760-1297-000	1	Hose, Hyd-3/8" x 63", #6fJIC x #8fJIC90	
W	640-0081-000	1	Brkt, Antenna Mnt front, ED-Massey 220	

Kit Contents (continued)

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
X	640-0084-000	1	Brkt, Antenna Mnt rear, ED-Massey 220	
Bag 6 of 6 contains Y, Z, AA, and BB				
Y	675-2003	2	Bolt, 3/8NC x 1Gr5ZP	
	678-1054	2	Washer, Narrow Flat - 3/4"OD x 13/32ID x	
	676-1035	2	Nut, NyLock - 3/8NC ZP	
Z	675-2007	3	Bolt, 3/8NC x 3/4Gr5ZP	
	676-1035	3	Nut, NyLock - 3/8NC ZP	
AA	680-1053	2	SPCR - 0.438 ID, 0.875 OD, 1 LNG, ZP	
BB	675-2021	2	Bolt, 3/8NC x 2 Gr5 ZP	
	678-1054	2	Washer, Narrow Flat - 3/4"OD x 13/32ID x	
	676-1035	2	Nut, NyLock - 3/8NC ZP	
CC	051-0144	2	Cable, E-Drive Interface - 10 ft.	
	677-2001	20	Tie Strap 11" Heavy Duty	Not Shown
	710-0062-000	1	Kit, Universal Swather Push Button Disengage	Not Shown

INSTALLATION

⚠ WARNING: Before installing, disconnecting or repairing the hydraulic hoses and components, turn off the machine and relieve all pressure from the hydraulic system by turning the steering wheel left and right. Failure to remove the pressure can result in serious injury or death from unexpected machine movement.

To avoid burn injury when installing, disconnecting or repairing the hydraulic hoses and components, turn off the machine and allow the system to cool down prior to touching the parts of the machine that are heated.

To avoid burn or electric shock injury when installing or removing the kit, do not touch parts of the machine that are heated or electrically energized.

1. Prepare the automated steering block.

- a. Make sure the automated steering block **A** is clean and dust free.
- b. Install adapter fitting **B** in the **P** and **T** ports and adapter fittings **C** in the **A** and **B** ports of the automated steering block (Figure 1).

NOTE: Remove the pressure test port fittings before installing the elbow fittings into the **P** and **T** ports. Once the elbows are installed, reinstall the pressure test port fitting.

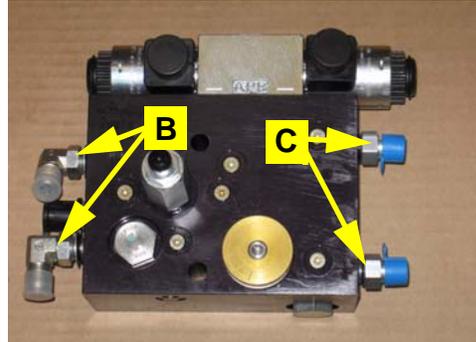


Figure 1: Prepared automated steering block

2. Mount the automated steering block.

- a. Remove the hand rail bolt on the frame in order to mount the automated steering block on the left frame beside the cab steps (Figure 2a).



Figure 2a: Mounting location

- b. Mount the bracket **D** as shown using the removed bolt and nut from the hand rail (Figure 2b).

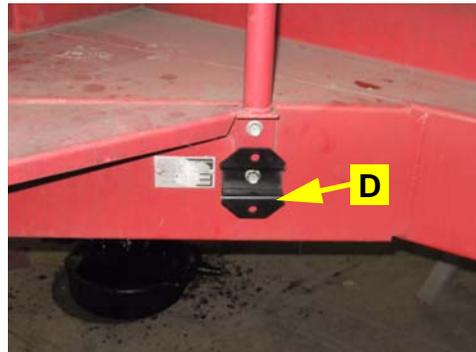


Figure 2b: Mounted bracket

- c. Use the provided mounting hardware in group **E** to attach the automated steering block, as prepared in **step 1**, to the mounting bracket **D** (Figure 2c).

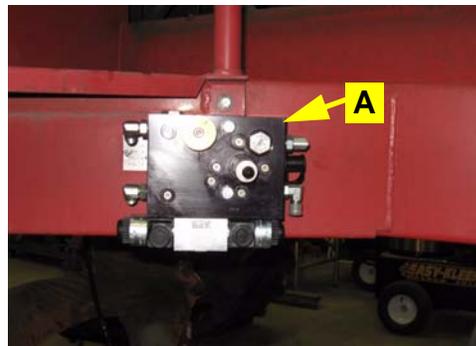


Figure 2c: Mounted automated steering block

3. **Install the pressure and tank fittings.**

a. The automated steering block receives pressure from the hydraulic pump located under the center of the cab (Figure 3a).

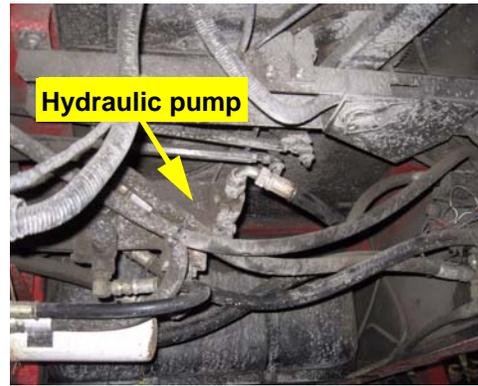


Figure 3a: Pressure location

b. Locate the pressure hose on the side of the hydraulic pump. Install the run-tee adapter fitting **F** between the rubber hose and the hydraulic pump (Figure 3b).

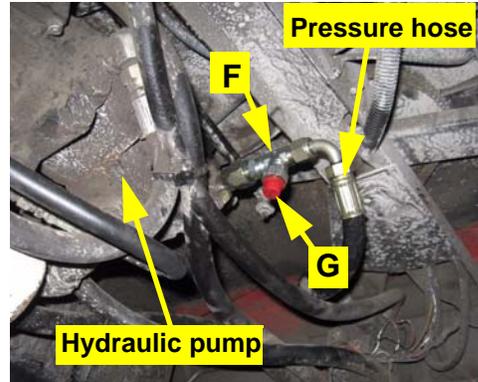


Figure 3b: Installed pressure fitting

c. Install the reducer fitting **G** to the branch of the run-tee fitting **F** (Figure 3b).

d. Locate the hydraulic reservoir mounted on the back side of the cab. Remove the hydraulic return hose on the side of the reservoir and install adapter fitting **H** and reducer fitting **I**. Reattach the return hose to the end of the run-tee fitting **H**. This run-tee will be used as the tank return for the automated steering block (Figures 3c and 3d).

NOTE:

Note: Leave the run-tee fittings loose so you can align the hoses as you attach them. Place the plastic caps on the open ends of the fittings to prevent excessive leakage prior installing the hose.

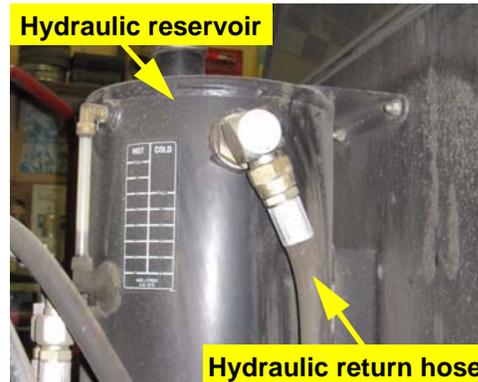


Figure 3c: Tank location

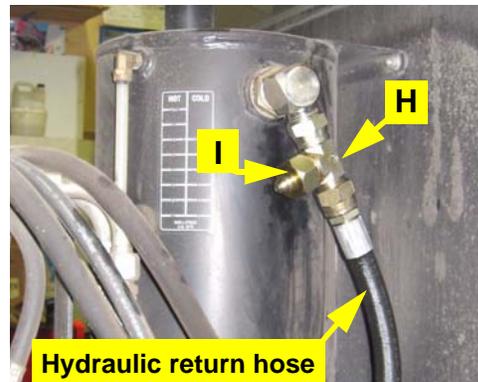


Figure 3d: Installed tank fitting

4. **Install the pressure and tank hoses.**

- a. Connect the pressure hose **U** from the **P** port of the automated steering block to the adapter fitting **G** installed on the hydraulic pump (Figures 4a and 4b).



Figure 4a: Installed pressure and tank hoses at block

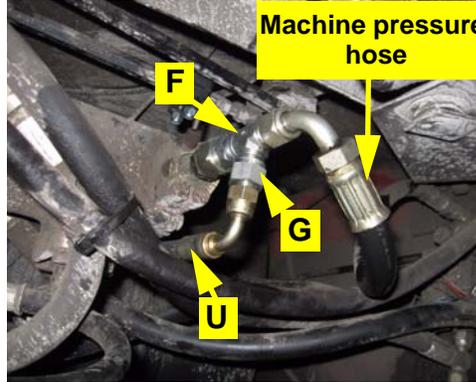


Figure 4b: Installed pressure hose

- b. Connect the tank hose **V** from the **T** port on the automated steering block to the reducer fitting **H** on the hydraulic reservoir (Figures 4a and 4c).
- c. Route the pressure and tank hoses from the automated steering block under the frame clear from any moving parts.

NOTE: Route all installation kit hoses with the machine's hoses to keep them free from entanglement. Secure the hoses together with the provided heavy tie straps.

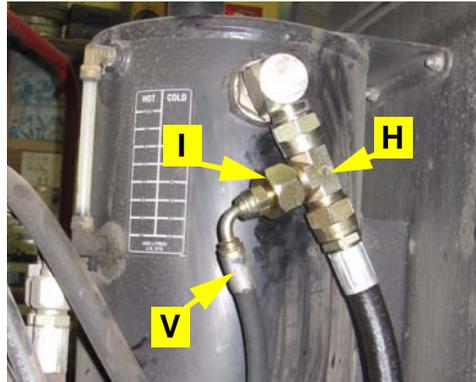


Figure 4c: Installed tank hose

5. **Install the steering cylinder mounting brackets.**

- a. Locate the steering control linkage under the cab. The ram end of the cylinder will mount to the left steering arm and the rod end of the cylinder will mount on right rear steering arm (Figures 5a, 5b and 5d).

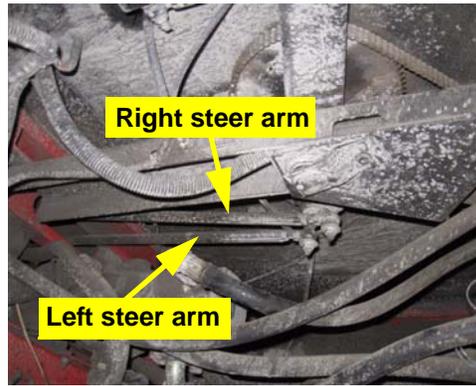


Figure 5a: Steering arm location

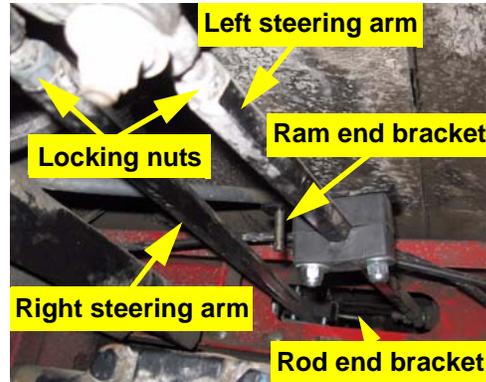


Figure 5b: Steering bracket location

- b. Mount the cylinder ram bracket **L** to the left steering arm using the provided plastic clamp **J** with hardware **N**. The front face of the plastic clamp should measure 9 3/4 inches from the center of the steering arm swivel bolt (Figure 5c).

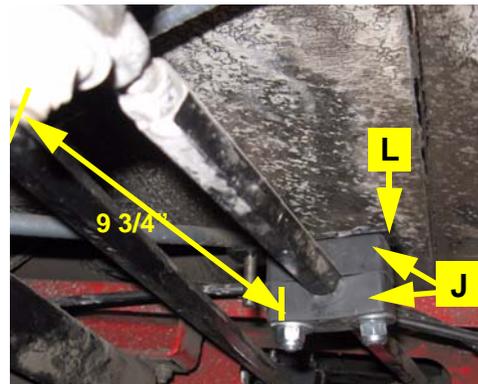


Figure 5c: Steering ram bracket location

- c. Mount the cylinder rod bracket **K** and bottom bracket **M** to the right steering arm using the provided plastic clamp **J** with hardware **N** near the back of the steering arm (Figure 5d).

NOTE:

Note: Leave the rod bracket loose for proper cylinder alignment and placement in the next installation step. It might be necessary to loosen the steering arm locking nut to align the arm with the cylinder. The cylinder should be parallel to the steering arms.

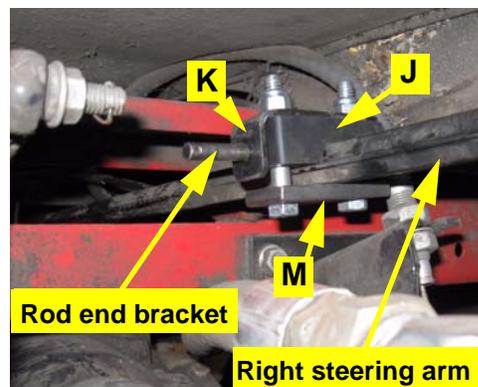


Figure 5d: Steering rod bracket location

6. Install the steering cylinder.

- a. Install the adapter fittings **P** into the two ports on the hydraulic cylinder **O**. Use Teflon thread sealant on the NPT ends of the adapter fittings **P** prior to installing in the hydraulic cylinder (Figure 6a).
- b. Attach the cylinder rod end swivel **Q** to the rod end of the cylinder (Figure 6a).
- c. Slide spacer **R** over the ram and rod mounting pin of brackets **K** and **L**.
- d. Attach the prepared steering cylinder from **step 6a** to the ram and rod brackets (Figure 6b). Use the provided hardware **S** to secure the steering cylinder. (Figures 6b and 6c).
- e. To align the steering cylinder, place the hydro lever in neutral and turn the steering wheel all the way to the right. Using your hand, pull the steering cylinder rod all the way out and tighten the rod bracket. Have another person watch the movement of the cylinder as you turn the steering wheel left and right to double check the alignment of the steering cylinder.

NOTE:

Note: It might be necessary to disconnect the rod end of the steering cylinder from the rod clamp before turning the steering wheel.

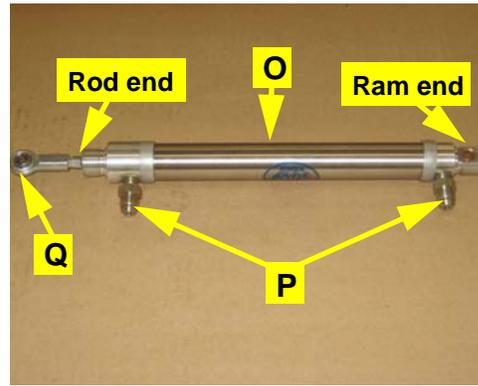


Figure 6a: Assembled steering cylinder

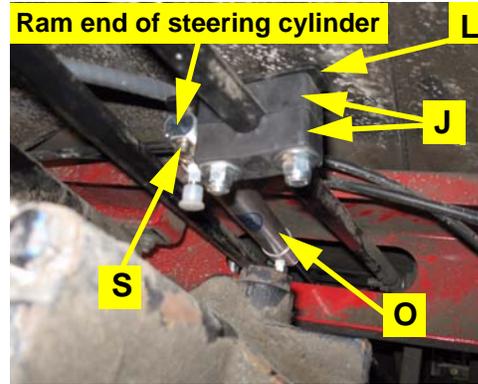


Figure 6b: Mounted steering cylinder

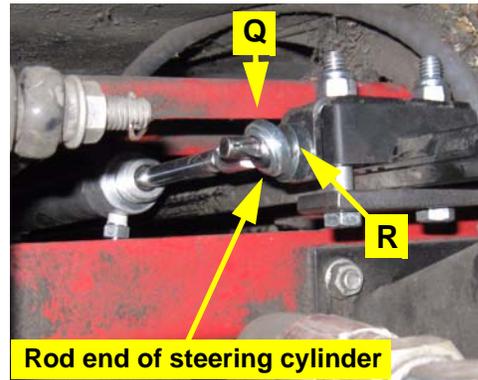


Figure 6c: Mounted steering cylinder, rod end

7. Install the steering output hoses.

Connect the two steering hoses **T** from the automated steering block to the steering cylinder. Route the hoses from the automated steering block under the frame and to the steering cylinder (Figures 7a and 7b).

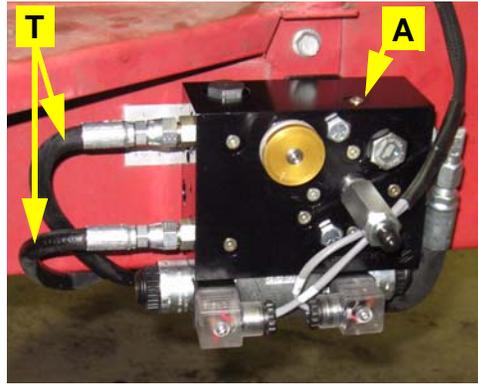


Figure 7a: Install steering hoses

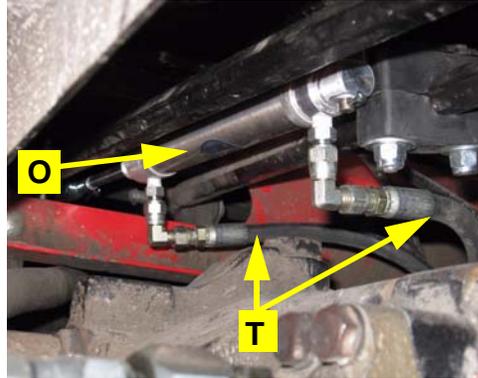


Figure 7b: Installed steering hoses

8. Install the valve control cable.

Route the valve control cable **CC** from the automated steering block, to the back of the cab and then through the cab door (Figures 8a and 8b).

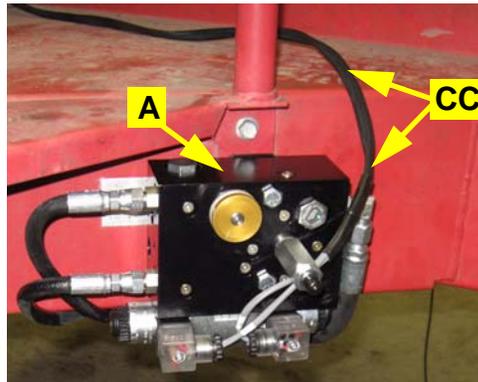


Figure 8a: Install valve cable



Figure 8b: Install valve cable

9. Install the antenna bracket.

- a. Locate the $\frac{3}{4}$ mounting lip on the front of the cab above the lights. Open the top of the cab to gain access. Using the rear antenna bracket **X** as a guide drill 4, $\frac{3}{8}$ holes in the sheet metal as close to the center to the cab as possible (Figures 9a and 9b).
- b. Attach the rear antenna bracket **X** to the cab with hardware **Y**. Place spacers **AA** between bracket **X** and the cab overhang. Secure the spacers **AA** and bracket **X** with hardware **BB** (Figures 9a and 9b).



Figure 9a: Installed antenna bracket

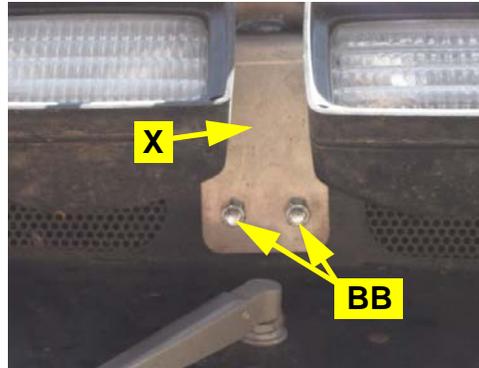


Figure 9b: Installed rear antenna bracket

- c. Attach the front antenna bracket **W** with hardware **Z** (Figure 9c).

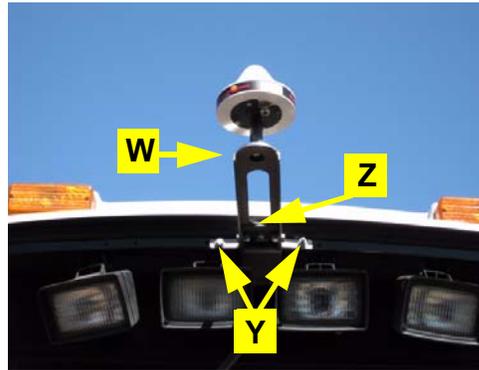


Figure 9c: Installed front antenna bracket

10. Verify operation and set the automated steering control rate.

⚠ WARNING: During tests of the hydraulic response, the tractor may move unexpectedly. Be prepared for machine movement to avoid injury.

Keep others away and stay clear of mechanical steering linkages to prevent serious injury or death from pinch point hazards while manually operating the hydraulic steering circuit.

- a. Tighten all the connections and clean up the installation area around the machine and make certain that it is safe to operate.
- b. Start the machine and check the Automated Steering connections for leaks.
- c. Rotate the steering wheel from one extreme to the other and back.
- d. Adjust the Automated Steering oil flow control knob to a starting position of $\frac{3}{4}$ turns from completely closed. To adjust the knob:
 - Turn clockwise to reduce flow.
 - Turn counter clockwise to increase flow. (Figure 10).
- e. The coils on the Automated Steering Block have manual push button overrides. Push either manual override to move the steering wheels all the way to one extreme (Figure 10).

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.

- f. While pressing the override button of the other coil, count the number of seconds for the steering wheels to move all the way in the opposite direction (Figure 10).

11. Complete Automated Steering Electronic Installation and Setup:

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

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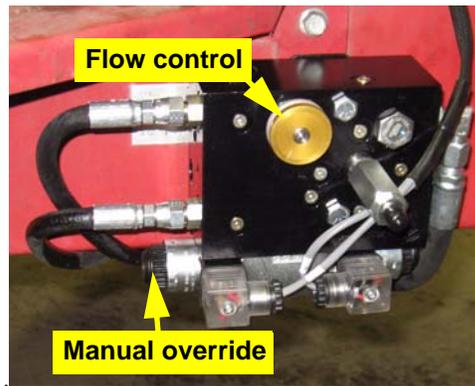


Figure 10: Steering block manual override and flow control

