Steer Ready Kit
Installation Guide

Kit: EDX-SR-CPuma, P/N 911-3016-000

Fits CaseIH Tractors:

Puma 130	**Puma 200**
Puma 145	**Puma 215**
Puma 160	**Puma 230**
Puma 170	
Puma 185	

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.
- Before installing, operating, or performing maintenance or service on any part of the system:
  - Read and understand this installation guide and all of the safety information.
  - Read and understand the Steer Ready User Guide.
- Do not allow anyone to operate without instruction.
- Keep these instructions and all related safety information with the manual for your machine and other implements.

If you have any questions or need assistance, contact your local dealer or distributor.

Overview

A series of equipment specific kits has been developed to work in conjunction with your steer ready system. For the machine models listed above, these kits contain the components for:

- the wheel angle sensor (WAS) - if applicable
- the steering wheel switch (SWS - for steering override) - if applicable
- the electronic control unit (ECU - includes steering controller)

The items in each applicable kit are detailed in the tables that follow the safety warnings on the next page. After the kit tables there are step-by-step installation instructions for each of the kits supplied.

Please read this manual thoroughly before beginning the installation.

⚠WARNING:

To avoid serious injury or death during machine operation, install the appropriate kits 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 steer ready 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.

Turn off the machine and power off all steer ready components when installing or performing maintenance.

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

Before you perform any drilling, cutting or fastening, ensure that no other machine components, such as hydraulic hoses or electrical wiring, will be damaged. Failure to follow this warning may cause physical injury and/or damage to the machine.

Kit Contents - Wheel Angle Sensor

Unpack the wheel angle sensor kit and identify the required parts as shown. Kit items are A, B, C etc. with a W (Wheel) prefix.

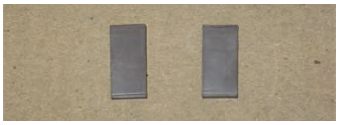
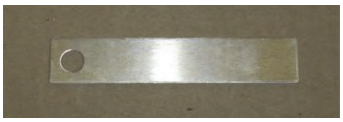
REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
Bag 710-0099-000 (W1 of 3) contains WA to WF				
WA	720-0045-000#	1	WAS assembly	
WB	750-5002-000	1	Sensor, dual output, BEI	
WC	602-1087-000	1	Connector arm, steering	
WD	675-1191-000	2	Screw, mach, 8-32 x 3", PPH ZP	
WE	676-1054-000	3	Nut, nylock 8-32NC, ZP	
WF	675-1150-000	1	Screw, 8-32 x 1", Allen socket cap, ZP	

Kit Contents - Wheel Angle Sensor *(continued)*

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
WG	675-2031-000	1	Threaded rod, 5/16-24 x 12"	
Bag W2 of 3 contains WH, WI and WJ				
WH	676-1053-000	4	Nut, 5/16-24 standard ZP	
WI	760-0018-000	2	Rod end swivel with stud, 5/16-24	
WJ	675-2010	2	Bolt, 5/16NC x 3/4" Gr5 ZP (Attach WAS assembly to WK)	
WK	640-0142-000	1	WAS assembly mounting bracket	
Bag W3 of 3 contains WL and WM				
WL	675-2064-000 678-1124-000	1 1	Bolt, M12-1.25, 25mm, Gr 8.8 ZP Washer, flat, M12, OD-24mm, TH-2.7mm, ZP (Mount WAS assembly on axle when no fender fitted)	
WM	675-0132-000	1	Clamp bracket, 1.62" - 1.87" TBOLT, SS (For link rod assembly)	

Kit Contents - Steering Wheel Switch

Unpack the steering wheel switch kit and identify the required parts as shown. Kit items are A, B, C etc. with an S (Switch) prefix.

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
SA	478-0008	2	Magnet, flex - 1/2" W x 1" L x 1/8"thk, plain 1 (Only one required for this installation)	
SB	675-0077	1	Epoxy, Hardman 04001 - single double bub	
SC	602-1062	1	Bracket, steering wheel switch mounting	
SD	726-1054	1	Assembly, steering wheel switch/cable	

Kit Contents - Electronic Control Unit

Unpack the electronic control unit kit and identify the required parts as shown. Kit items are A, B, C etc. with an E (Electronic) prefix.

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
EA	051-0226-000#	1	Main cable	
EB	054-0115-000#	1	Extension cable	
EC	051-0228-000#	1	Steering controller main cable	
ED	051-0231-000#	1	Valve cable	
EE	051-0230-000#	1	WAS cable	
EF	051-0229-000#	1	SWS cable	

Kit Contents - Electronic Control Unit *(continued)*

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
EG	054-0117-000#	1	Power switch	
EH	051-0166-000#	1	CAN-PWR cable	
EI	640-0155-000	1	Steering controller mounting bracket	
Bag E1 of 3 contains EJ				
EJ	675-2028-000	2	Bolt, M14-2, 30MM, Gr 8.8 ZP	
	678-1056-000	2	Washer, flat - 5/8" nominal ZP	
			(Mount EI on machine)	
EK	750-5003-000	1	Steering controller	
Bag E2 of 3 contains EL				
EL	675-2002	2	Bolt, 1/4NC x 2-1/2" Gr5, ZP	
	678-1053	2	Washer, narrow flat, 1/4" ZP	
	676-1034	2	Nut, lock - 1/4NC ZP	
			(Mount EK on EI)	

Kit Contents - Electronic Control Unit *(continued)*

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
EM	640-0091-000	1	ECU mounting bracket	
EN	806-1031-000#	1	Controller (ECU)	
EO	726-1093-000	1	Switch bracket	
Bag E3 of 3 contains EP and EQ				
EP	675-1228-000#	4	Screw, self-drilling, #10-16 x 2", Hex, ZP (Attach EM to cab floor)	
EQ	675-1188-000	4	Screw, mach, M6 x 12mm, PPH, ZP (Attach EN to EM)	
ER	677-2002	20	Tie strap, 7" releasable	

Installation - Steering Controller

⚠WARNING:

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

See Appendix A for a schematic of the cable connections.

1. Install the steering controller.

a. Locate the lower two holes (of the four matching holes) in the engine casting on the left side of the tractor forward of the fuel tank. Remove the hole plugs (if fitted - Figure 1a and left inset).

Using hardware **EJ**, mount steering controller bracket **EI** at the location identified (Figure 1a, right inset - note, prototype bracket shown).

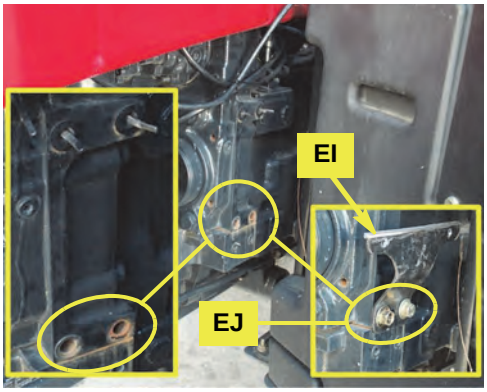


Figure 1a with insets: Steering controller mounting location and (right inset) bracket installed (prototype bracket shown)

b. Using hardware **EL** mount steering controller **EK** on its bracket **EI**. Mount **EK** with its connectors downward and the pressure wash warning outward (Figure 1b).

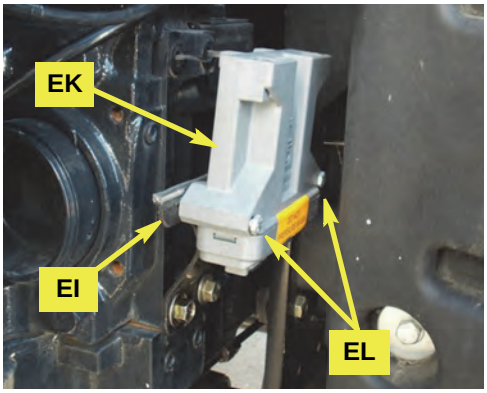


Figure 1b: Steering controller installed

2. Connect to the factory autosteer valve.

Locate the factory-fitted autosteer valve ('FAV' in this document) mounted at an angle in and to the rear of the left hood support - Figure 2-i). Disconnect the factory connections and connect **ED**'s three 2-pin connectors (labeled 'RIGHT', 'LEFT' and 'ENABLE') as follows (Figures 2-i and 2-ii).

- **ED**'s 'RIGHT' to FAV's "TURN RIGHT (TOP)" (at top solenoid coil connector, Figure 2-i, top inset)
- **ED**'s 'LEFT' to FAV's "TURN LEFT (BOTTOM)" (at bottom solenoid coil connector, Figure 2-i, bottom right inset)
- **ED**'s 'ENABLE' to FAV's "ISOLATION (MANIFOLD)" (at base of FAV, Figure 2-i, bottom left inset)

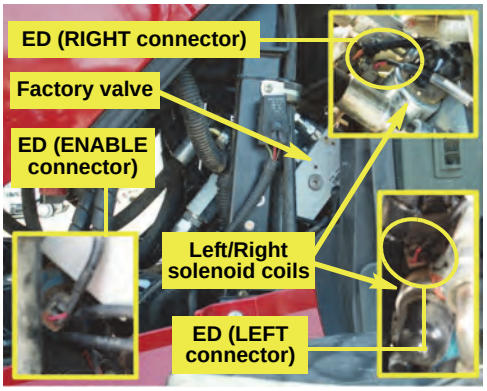


Figure 2-i with insets: Connections at factory autosteer valve

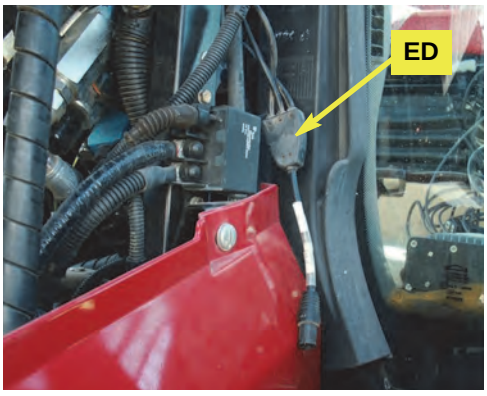


Figure 2-ii: Valve cable connected to factory autosteer valve

3. Connect the steering controller to the factory autosteer valve.

a. Connect steering controller cable **EC**'s two 12-pin connectors (black and gray) to their respective sockets on the steering controller **EK** (Figure 3a).

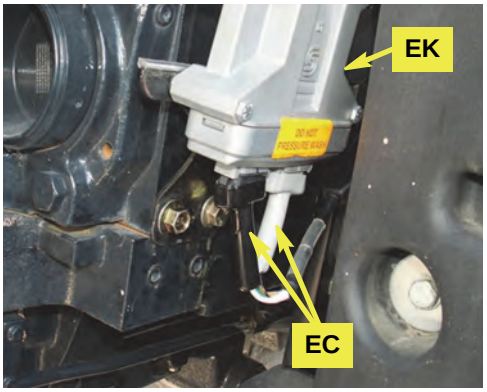


Figure 3a: Steering controller main cable connected

b. Connect valve cable **ED** to **EC**'s connector labeled 'VALVE' (Figure 3b).

NOTE: *See "Installation - Electronic Control Unit (ECU)" on page 14 for details on the WAS, SWS and ECU connections to the steering controller.*

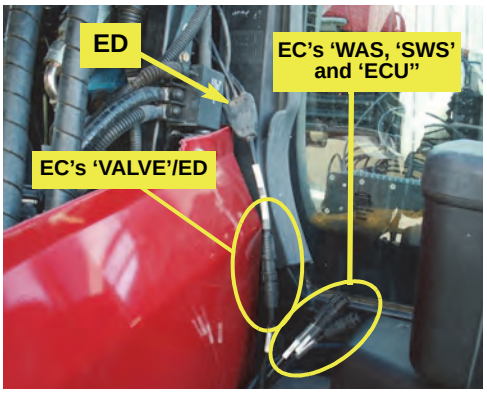


Figure 3b: Valve cable connected between factory autosteer valve and steering controller and other controller connectors (WAS, SWS and ECU)

Installation - Wheel Angle Sensor (WAS)

⚠WARNING:

Switch off the machine's engine while installing or adjusting the WAS. 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.

1. Prepare the wheel angle sensor.

a. Using the provided hardware **WE** (nuts) and **WD** (bolts - not visible), attach the WAS wire connector **WB** to the WAS housing **WA**. Install the bolts up through the bottom of the housing. The WAS wire connector **WB** can be mounted 90° to any of the WAS housing **WA** sides (Figure 1a).

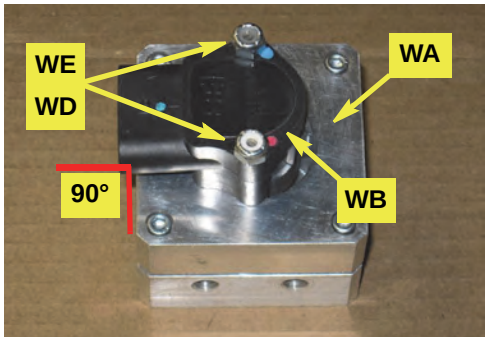


Figure 1a: Prepared WAS housing\connector

b. Cut five holes off WAS arm **WC** at the opposite end from the WAS shaft mounting hole (Figure 1b).

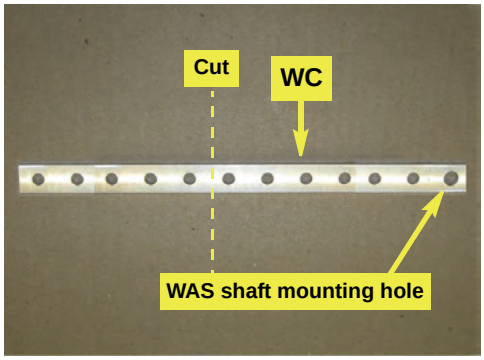


Figure 1b: WAS arm preparation

c. Using hardware **WF** (screw) and **WE** (nut), attach the WAS arm **WC** to the WAS assembly. Mount the arm in the opposite direction to the WAS wire connector **WB** (Figure 1c with inset).

NOTE: *Before you cut the rod at step d, screw the provided nuts **WH** onto the threaded rod **WG** so that they are inside the cut you will make. After you have cut the rod, the nuts can help clean the threads.*

d. Cut threaded rod **WG** to 7½" long (Figure 1d-i) then screw swivel rod ends **WI** onto the cut rod to achieve a center-to-center stud measurement of 8¾" (Figure 1d-ii). Leave **WH** loose until you complete linkage adjustment at step 2f.

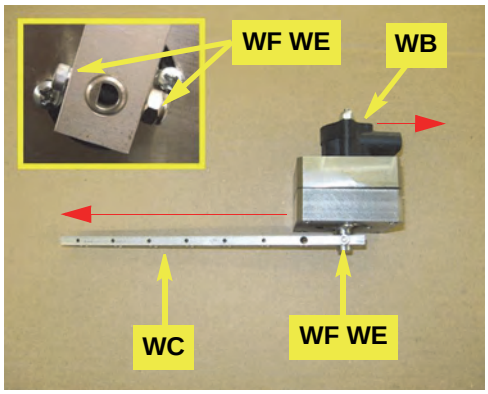


Figure 1c with inset: WAS arm installed

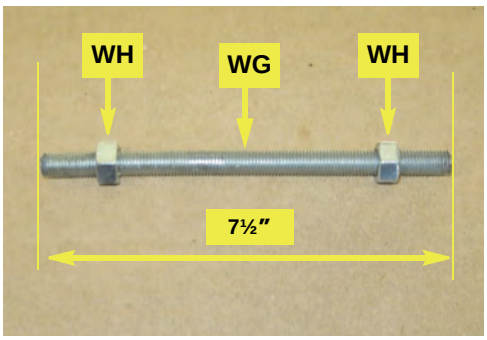


Figure 1d-i: Threaded link rod preparation

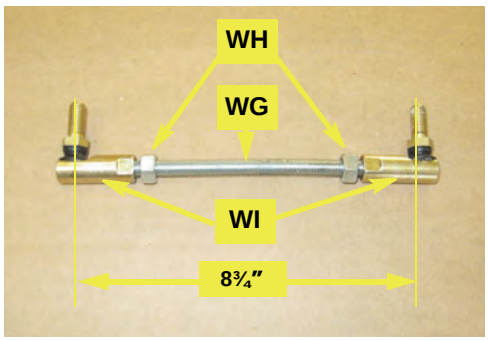


Figure 1d-ii: Assembled threaded rod link

2. Mount the wheel angle sensor.

NOTE: *The figures in this section show prototype brackets and fittings. Install your brackets and fittings as described.*

a. Identify the WAS assembly location on the left front axle (Figure 2a with inset). Figure 2a shows a machine with fenders installed; Figure 2a inset shows a machine without fenders installed.

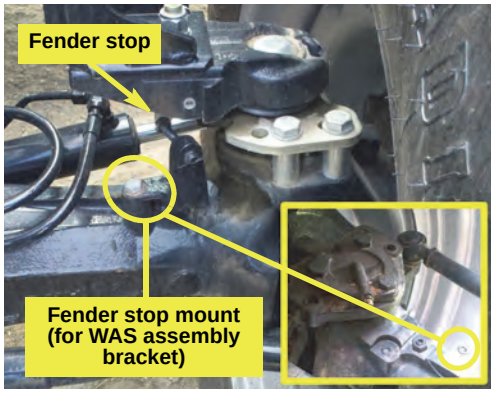


Figure 2a with inset: WAS bracket mounting location - inset is without fender mountings

b. If fender is fitted, remove the fender stop mounting bolt (Figure 2b, top left inset), remove and discard the spacing washer if fitted (Figure 2b, top right inset) and install WAS assembly bracket **WK** (Figure 2b). If no fender, remove the plug in the cast mounting boss (Figure 2a inset) and use hardware **WL** to install **WK** (this alternative installation not shown). Mount **WK** with its rearmost edge parallel to the cast ridge along the top of the axle casing (Figure 2b, bottom inset) and with its WAS assembly mounting bolt holes upward (Figure 2b).

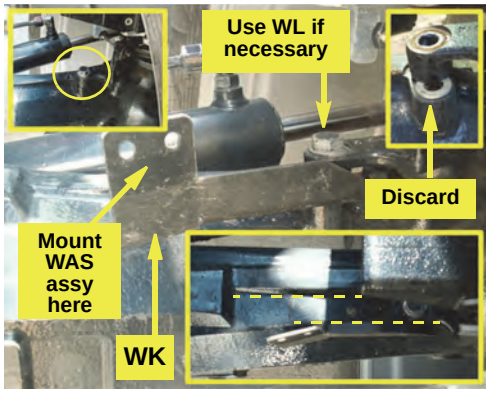


Figure 2b with insets: WAS mounting bracket installed

c. Using hardware **WJ** (not visible), mount the WAS assembly (from steps 1a-1c) on bracket **WK**. Mount the assembly with wire connector **WB** at the bottom and facing inward (toward the machine) and **WC** facing outward (Figure 2c).

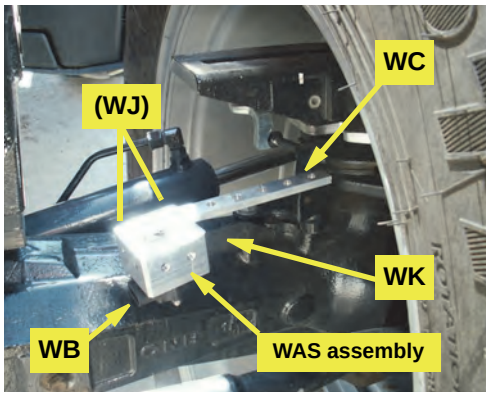


Figure 2c: WAS assembly installed

d. Install clamp **WM** on the tie rod with its flanges uppermost and horizontal (even though tilted sideways by the bend in the tie rod). Set the clamp's centerline 9″ from the shoulder where the tie rod narrows (Figure 2d).

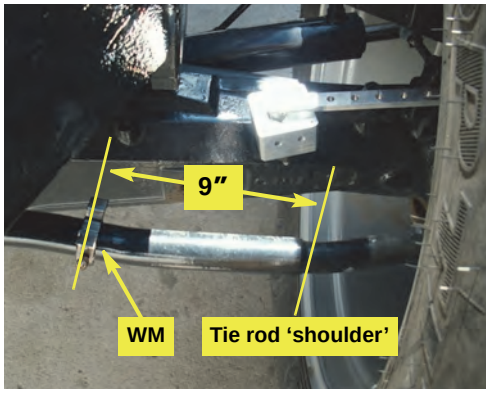


Figure 2d: Link rod clamp installed

2. Mount the wheel angle sensor *(continued)*.

e. Using hardware **WH**, install the link rod from step 1 between the last hole in WAS arm **WC** and the forward flange hole of **WM**. Set the swivel stud upward into **WC**, downward into **WM** (Figure 2e). Leave swivel nuts **WH** loose.

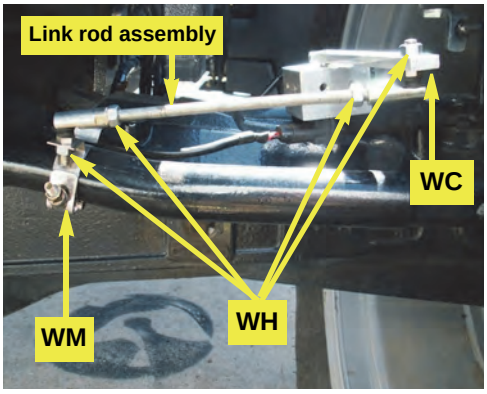


Figure 2e: Link rod assembly installed

f. With all hardware **WH** loose, slowly turn the wheels full left lock (Figure 2f-i) then full right lock (Figure 2f-ii). Check that the linkage moves freely without binding and adjust the linkage as necessary.


Figure 2f-i: Full left lock (viewed from front)


Figure 2f-ii: Full right lock (viewed from rear)

g. When the linkage does move freely and without binding, tighten hardware **WH** on the rod and the swivels (Figure 2e).

Installation - Steering Wheel Switch (SWS)

1. Install the steering wheel switch.

a. Locate where the male splined steering shaft engages with the splined sleeve of the orbital shaft between the brake and clutch pedals (Figure 1a with insets).

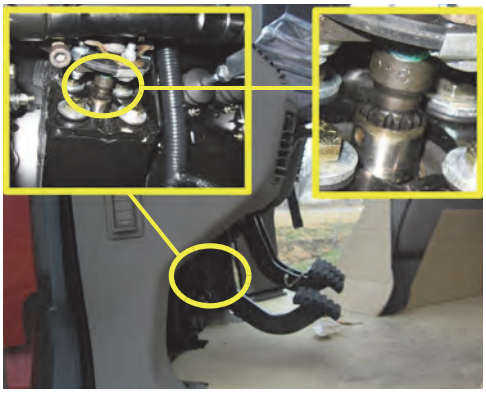


Figure 1a with insets: Switch bracket and magnets mounting location

b. Put a 90° bend in the switch bracket **SC** 5/8″ from the pre-drilled end and another, in the opposite direction, 1″ from the first bend (Figure 1b).

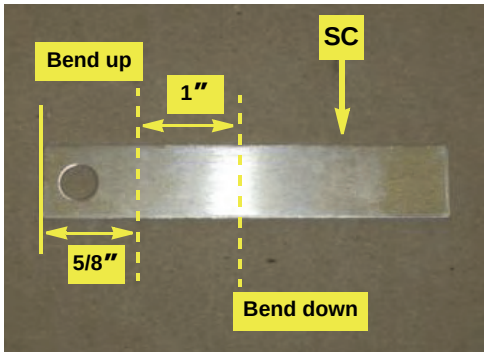


Figure 1b: Bent switch bracket (not to scale)

c. Trim magnets **SA** to the height of the orbital's splined sleeve and, using the two-part epoxy **SB**, attach the magnets 180° apart on the splined sleeve (Figure 1c).

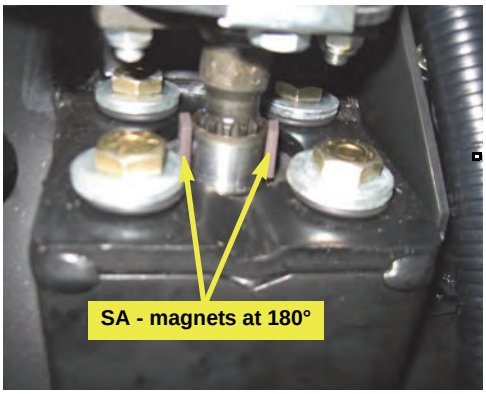


Figure 1c: Installed magnets

d. Using the two-part epoxy **SB** attach the prepared switch bracket **SC** to the near face of the box casing around the orbital (Figure 1d).

Install switch **SD** in its bracket and adjust it so that the sensor face is 1/8″ to 1/4″ from the magnets (Figure 1d).

e. Use cable ties **ER** to secure **SD**'s cable which you will connect later.

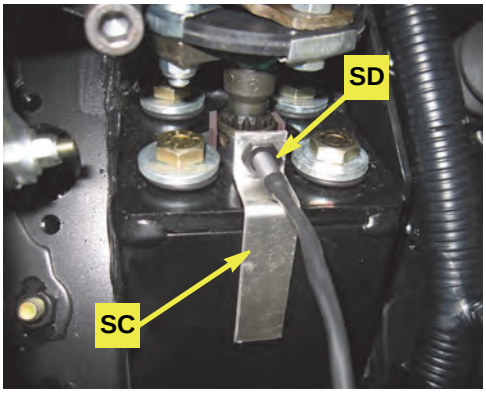


Figure 1d with inset: Installed sensor bracket and sensor.

Installation - Electronic Control Unit (ECU)

See Appendix A for a schematic of the cable connections.

NOTE: *Although the measurements provide an accurate guide, ensure that when installed, the bracket will be parallel to the front of the machine (that is, perpendicular to the machine's fore/aft centerline).*

1. Install the ECU.

a. Identify the ECU mounting location on the cab floor inside the right door.

Facing the one inch tabs of bracket **EM** toward the rear of the cab, align the bracket parallel to floor mat ribs (Figure 1a) with:

- The left front edge of the bracket 7-3/8″ from the front of the cab
- The outer edge of the right one inch tab 5″ from the right door
- The rear edge of the right one inch tab 1-3/4″ from the base of the wheel well

Using hardware **EP**, fasten the bracket to the cab floor (Figure 1a). Use a small level (not shown) to check the level of the bracket. Adjust accordingly.

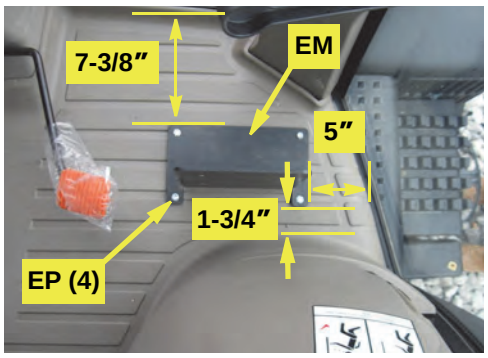


Figure 1a: ECU mounting bracket location/installed

NOTE: *Do not overtighten the self-drilling screws. Overtightening could cause the fastener to fail.*

b. Using hardware **EQ** attach the ECU **EN** to bracket **EM**. Have the wire connections (not visible) toward the right door and the power and communications indicators at the top (Figure 1b).

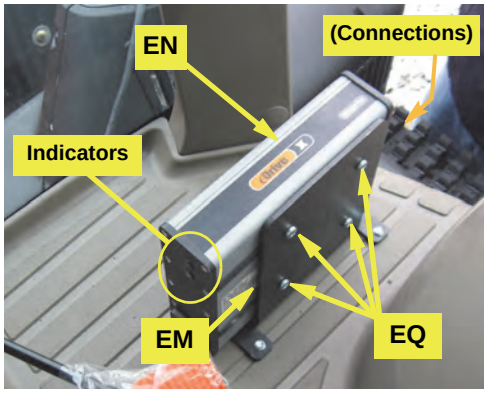


Figure 1b: ECU installed

2. Install the remaining cables.

On a clean surface, lay out the remaining cables and become familiar with the connections and where they are to be placed. See Appendix A.

a. Connect cable **EA** to the ECU **EN** using an Allen wrench to secure the cable to the ECU (Figure 2a). The **EA** connector will fit only the ECU socket that is in line with the power and communications indicators at the opposite end of the ECU. Connect **EA** to the top socket on **EN** in this installation.

Figure 2a: Installed ECU main cable

b. Install WAS cable **EE** between **EC**'s connector labeled 'WAS' (Figure 2b) and the WAS assembly on the left front axle. Connect **EE** to **WB**'s wire connector (Figure 2c).

c. Install extension cable **EB** between steering controller cable **EC**'s connector labeled 'ECU' (Figure 2b) and, in the cab, **EA**'s connector labeled 'STEERING CONTROLLER'. (See step 2e for routing details.)

d. Install SWS cable **EF** between steering controller cable **EC**'s connector labeled 'SWS' (Figure 2b) and, in the cab, steering wheel switch connector **SD**. (See step 2e for routing details.)

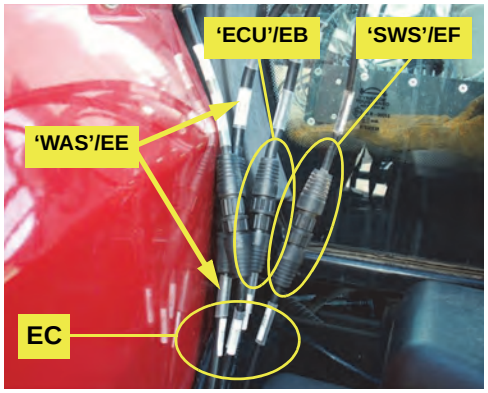


Figure 2b: WAS, ECU and SWS connections, steering controller to functions

2. Install the remaining cables *(continued)*.

e. Route extension cable **EB**, SWS cable **EF** and the power cable to the battery in/out of the cab through the access hole in the back of the cab on the right side (Figure 2d and bottom inset). Outside the cab (Figure 2d top inset), use cable ties **ER** to secure cables with other cables or plumbing when routing the cables to the steering controller connectors or the battery.

f. Attach power switch **EG** to cable **EA**'s connector labeled 'SWITCH'. Some machines are equipped with pop out tabs that you can remove and replace with switch **EG**. If no tab is available, you can use bracket **EO** mounting it in the cab at the operator's preferred location.

NOTE: *Set the switch to OFF before connecting **EA** to the battery at step h.*

g. Connect CAN-PWR cable **EH** to **EA**'s open connection labeled 'TERMINAL/RECEIVER'. Route the cable in the cab so that it is clear of any machine operation controls. Connect the opposite end of cable **EH** to the guidance terminal.

NOTE: *Ensure you have connected main cable EA to the ECU (step 2a) and reconnected EA's power cable (after routing in/out of the cab) before you connect to the machine's battery at the next step.*

h. Route the power cable part of cable **EA** to the tractor's 12V battery and connect it.

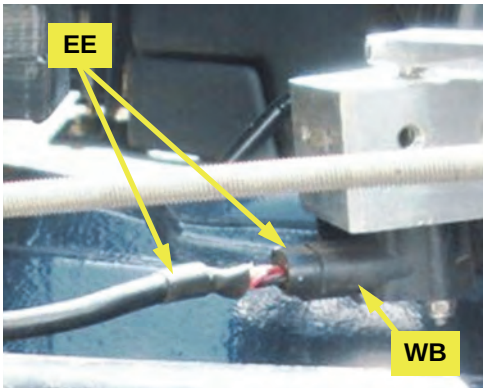


Figure 2c: WAS cable at WAS connector

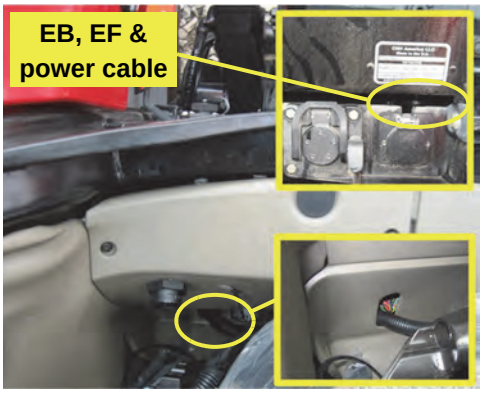


Figure 2d with insets: Cabling into (or out from) cab

Appendix A - ECU Cables and Connections