

eDrive VSi Installation Guide

Kit: eDTC / eDX VSi - CNH WDX2

P/Ns 911-1002-000 (TC), 911-4010-000 (eDX)

Fits Case and New Holland Swather and Combine Models:

Case Swathers*

WDX1002S WD1203
WDX12002S WD1903
WDX1202 WD2303
WDX1902
WDX2302

New Holland Swathers*

HW325 H8040
HW345 H8060
HW365 H8080

**eDTC only*



Case Combines


7010 7120 7230†
8010 8120 8230†
 9120 9230†

New Holland Combines

CR940 CR9040
CR960 CR9060
CR970 CR9070
CR980 CR9080
 CR9090
CX8080
CX8090

† *Deluxe cab models only, see picture (inset) at far right*

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.
- Do not allow anyone to operate without instruction.
- Keep these instructions and all related safety information with the manuals for your machine and other implements.

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

Overview

This is a general guideline for the installation of the VSi electric steering wheel and either eDriveTC or eDriveX. Every effort has been made to verify the following installation procedure. However, due to the manufacturing process outside of AgJunction's control, the installer may have to adapt this kit to your distinct situation.

The items in the kits are detailed in the table that follows the safety warnings on the next page. After the kit tables there are step-by-step installation instructions.

Please read this manual thoroughly before beginning the installation.

⚠ WARNING:

The VSi Electric Steering Wheel is designed as a driver aid for precision agriculture applications. At all times the driver is fully responsible for the safe operation of the vehicle. It is not intended for and must not be enabled for use on roadways.

⚠ 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 before installing the VSi kit (for example, adjust the steering linkage so that the machine drives straight ahead without manual steering). 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 properly adjusted steering linkage can cause loss of directional control resulting in serious injury or death.

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




Before attempting to install any of the components:

- Park the machine on a clean level floor
- Ensure adequate clearance to work all around
- Lower all implements and headers to the ground
- Apply the park brake and chock the wheels






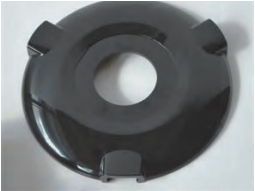


Before you perform any drilling, cutting or fastening, ensure that no other machine components, such as electrical wiring, will be damaged. Failure to follow this warning may cause physical injury and/or damage to the machine.

Kit Contents - eDriveTC and eDriveX



Unpack the supplied kit and identify the required parts as shown. Kit items, which are applicable to both VSi/eDriveTC and VSi/eDriveX installations, are referenced as A, B, C etc. with the item references being used in the step-by-step installation sections of this guide.

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|-----|--------------|-----|--|---|
| A | 750-8001-000 | 1 | VSi steering wheel |  |
| B | | 1 | Shaft adapter (Use in A) |  |
| C | | 4 | Screw, M5 x 10M flat head socket cap screws (Attach B to A) |  |

Kit Contents - eDriveTC and eDriveX (continued)

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|-----|-------------|-----|---|---|
| D | | 1 | Anti-rotation (a/r) 'T' bracket (Attach to A with E, use with F) |  |
| E | | 2 | Bolt, M6 x 16, hex head |  |
| | | 2 | Washer, M6 spring (Attach D to A) | |
| F | | 1 | Anti-rotation pillow block/U-bolt assembly: Pillow block |  |
| | | 1 | U-bolt and saddle | |
| | | 2 | Nut, nylock (Restrains D) | |
| G | | 1 | Linchpin (Retains D) |  |
| H | | 1 | Special nut, 3/4NC (Attach A to steering shaft) |  |
| I | | 1 | VSi steering wheel center cover |  |
| J | | 1 | Column telescoping actuator |  |
| K | | 1 | Column telescoping actuator center cap |  |

Kit Contents - eDriveTC and eDriveX *(continued)*

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|-----|--------------|-----|---|---|
| L | | 2 | Column telescoping actuator plate (Place on steering shaft before and after J) |  |
| M | 750-8003-000 | 1 | VSi power cable |  |
| N | 750-8002-000 | 1 | VSi junction box |  |
| O | | 1 | Junction box mounting bracket |  |
| P | | 1 | Junction box comms cable clip |  |
| Q | 750-8005-000 | 1 | CAN bus terminator |  |

Kit Contents - eDriveTC Only

Unpack the supplied kit and identify the required parts as shown. Only item TC is referenced in the step-by-step installation sections of this guide. For information of the installation of the other items, refer to “Installing the eDriveTC” in Chapter 2 of the **Outback eDrive User Guide**.

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|-----|--------------|-----|---|---|
| | 051-0166-000 | 1 | CAN-PWR cable (Use 054-0123 to connect to battery) |  |
| | 054-0123-000 | 1 | Battery terminal cable (Connect 051-0166 to battery) |  |
| | 806-1007-03A | 1 | ECU, eDriveTC |  |
| | 054-0044-003 | 1 | Power cable, eDriveTC |  |
| TC | 051-0259-000 | 1 | CAN bus harness, eDriveTC |  |

Kit Contents - eDriveX Only

Unpack the supplied kit and identify the required parts as shown. Kit items, which are applicable to VSi/eDriveX installations only, are referenced as EA, EG, EH etc. (from ECU - see Note after EA) with the item references being used in the step-by-step installation sections of this guide.

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|---|---------------|-----|---|---|
| EA | 051-0226-000# | 1 | Main cable |  |
| Note: Items EB to EF are not used in this installation | | | | |
| EG | 054-0117-000 | 1 | Power switch |  |
| EGa | 726-1093-000 | 1 | Switch bracket |  |
| EH | 051-0166-000 | 1 | CAN-PWR cable (Use EI to connect to battery) |  |
| EI | 054-0123-000 | 1 | Battery terminal cable (Connect EH cable to battery) |  |
| EJ | 640-0091-000 | 1 | ECU (EK) mounting bracket |  |
| EK | 806-1031-000 | 1 | eDriveX ECU |  |

Kit Contents - eDriveX only (continued)

| REF | PART NUMBER | QTY | DESCRIPTION | PHOTOGRAPH |
|---|---------------|-----|--|---|
| Bag E1 of 1 contains EL, EM and EN | | | | |
| EL | 675-1197-000 | 4 | Screw, self-drilling, #10-16 x 2-1/2", hex, ZP (Attach EJ to cab floor - or use EM) |  |
| EM | 675-1192-000 | 4 | Screw, self-drilling, #10-16 x 3", hex, ZP (Attach EJ to cab floor - or use EL) |  |
| EN | 675-1188-000 | 4 | Screw, mach, M6 x 12mm, PPH, ZP (Attach EK to EJ) |  |
| EO | 051-0316-000 | 1 | CAN bus harness - eDX |  |
| EP | 677-2002 | 20 | Tie straps, 7" heavy duty |  |
| EQ | 051-0304-000# | 1 | Power cable - long (combines only) (eDriveX only) |  |

eDrive VSi Installation Procedure

NOTE:

On a clean surface lay out all the components and check them against the “Kit Contents - eDriveTC and eDriveX” on page 2. Become familiar with the components and where they are to be installed before proceeding with the installation (see “Appendix A - eDriveTC VSi Connections” on page 15 or “Appendix B - eDriveX VSi Connections” on page 16).

1. Prepare the eDrive VSi electric steering wheel.

- a. Place the VSi steering wheel **A** on a clean surface with the wheel facing up. Insert shaft adapter **B** into steering wheel **A** (Figure 1a).



At step 1b following, tighten the screws to the specified torque only. **DO NOT OVERTIGHTEN - DAMAGE MAY OCCUR.**

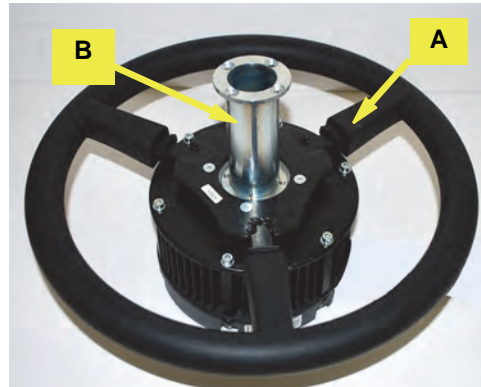


Figure 1a: Inserting shaft adapter into steering wheel

- b. Using the four countersunk screws **C**, secure the shaft adapter **B** in the steering wheel. Torque the screws to **6 N·m (53 in-lb)** (Figure 1b).

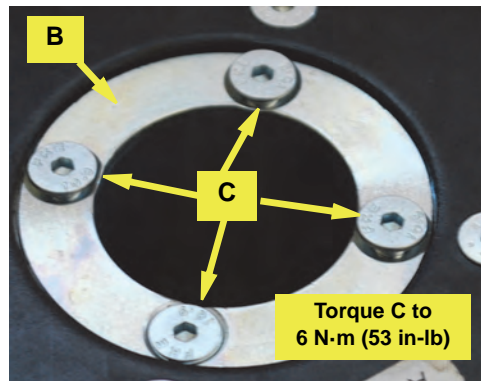


Figure 1b: Securing the shaft adapter

2. Install the anti-rotation ‘T’ bracket.

NOTE:

The anti-rotation (a/r) ‘T’ bracket will be held in position at the front of the steering column. This will fix the position of the steering wheel assembly’s communications (comms) port. So, before you install the a/r ‘T’ bracket, decide where you want the communications port to be. Consider the cabling and visibility of the work area. In Figure 2, the comms port will be to the right of the steering column.



When completing this step, ensure that you (i) use only the bolts provided, (ii) use the washers provided, and (iii) tighten the fasteners to the specified torque only. **DO NOT OVERTIGHTEN OR OMIT WASHERS - DAMAGE WILL OCCUR.**

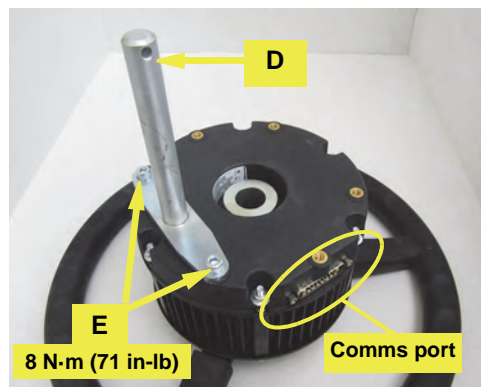


Figure 2: Anti-rotation ‘T’ bracket installed. Comms port will be right of steering column.

Turn the steering wheel assembly over then, using hardware **E**, attach the anti-rotation ‘T’ bracket **D** to the base of the steering wheel assembly. Screw **E** into the appropriate threaded inserts (see note preceding). Torque all fasteners to **8 N·m (71 in-lb)** (Figure 2).

3. Remove the steering wheel.

- a. Remove the steering wheel center cap, the steering telescoping actuator nut, upper washer, actuator and lower washer. Remove the nut holding the steering wheel on the splined steering shaft (Figure 3a and inset).

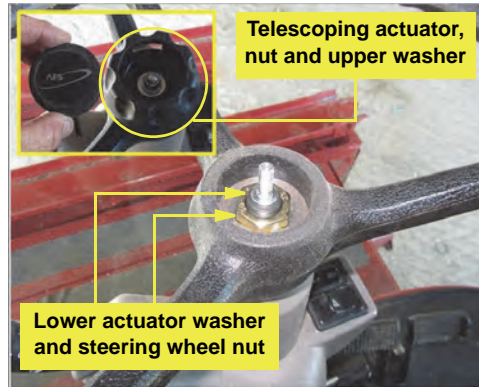


Figure 3a with inset: Steering cap, telescoping actuator and steering wheel nut removal

- b. Following the manufacturer’s recommended procedure, remove the steering wheel (Figure 3b).

NOTE: Consult your equipment dealer if you are unsure of the correct procedure for removing the steering wheel.



Figure 3b: Steering wheel removed

4. Modify the steering column upper console.

NOTE: You modify the steering column upper console by cutting a measured amount from the top of it. This is a permanent modification.

- a. Remove the steering column upper console and reassemble the two halves on a clean, even surface (Figure 4a with inset).



Figure 4a with inset: Removing/reassembling steering column upper console

- b. Measure 60 mm from the base of the console and mark a circle around the console (Figure 4b-i).
Neatly cut the top of the console off—the cut is just above the screw holes (Figure 4b-ii).

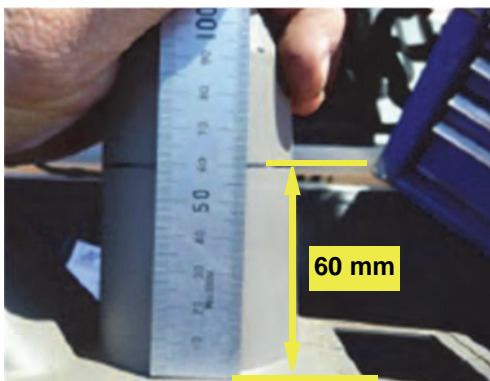


Figure 4b-i: Measuring and marking for console modification

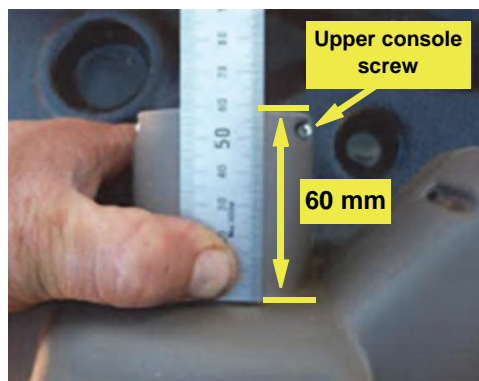


Figure 4b-ii: Modified console

4. **Modify the steering column upper console** (*continued*).
- c. Refit the modified console around the steering column (Figure 4c).



Figure 4c: Reinstalled modified column console

5. **Install the anti-rotation pillow block/U-bolt assembly.**

Install the anti-rotation pillow block/U-bolt assembly **F** on the newly exposed steering column. Set the pillow block towards the front of the vehicle. Leave the nylock nuts loose enough to move the assembly (Figure 5).

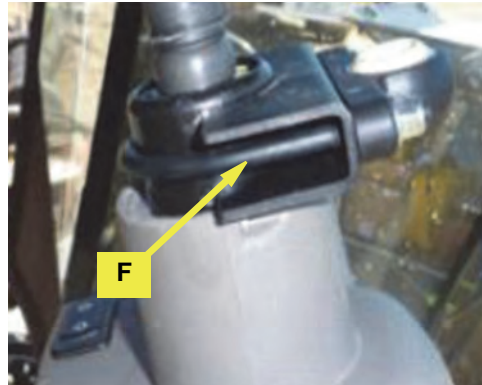


Figure 5: Loosely attached anti-rotation pillow block/U-bolt assembly

6. **Install the VSi steering wheel assembly.**

- a. Apply a small amount of an anti-seize compound (not supplied) to the splines of shaft adapter **B** (Figure 6a inset), then, carefully aligning **B**'s splines with those on the steering shaft, slide the steering wheel assembly onto the shaft while guiding the shaft of 'T' bracket **D** into the pillow block bushing. Insert and lock linchpin **G** (Figure 6a).

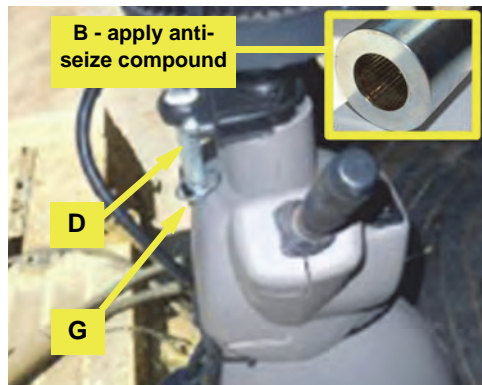


Figure 6a with inset: Installed steering wheel assembly and locked linchpin

- b. Using the provided special nut **H** tighten the steering wheel assembly to the manufacturer's recommended torque (Figure 6b).
- c. Install the steering wheel assembly center cover **I** (Figure 6b inset).
- d. Position the pillow block assembly as high as possible on the steering column and secure.

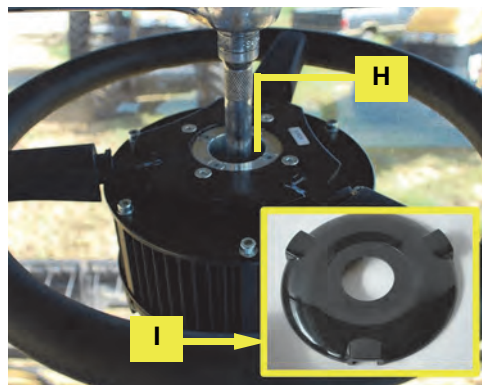


Figure 6b with inset: Securing steering wheel assembly at correct torque

7. Install the column telescoping actuator.

a. Install:

- The steering wheel center cover **I** over the steering wheel hub (Figure 7a-a)
- One of the actuator plates **L** on the actuator extension of the steering shaft (7a-b)
- The column telescoping actuator **J** and the second actuator plate **L** (7a-c)
- The original actuator nut—removed at step 3a (7a-d)

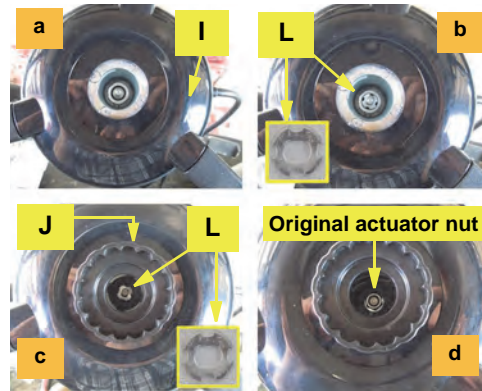


Figure 7a with insets: Assembling the telescoping actuator

- ### b.
- Snap the steering wheel center cap **K** into place and thread the telescoping actuator assembly into place in the center of the steering wheel assembly. Telescoping movement is now enabled (Figure 7b).

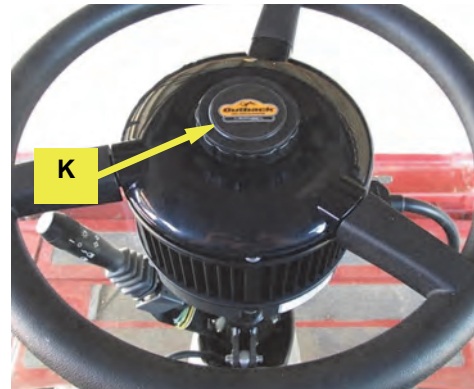


Figure 7b: Installed telescoping actuator

8. Install and connect the electric steer junction box.

NOTE:

Before continuing, refer again to “Appendix A - eDriveTC VSi Connections” on page 15 or “Appendix B - eDriveX VSi Connections” on page 16.

- ### a.
- Route the power supply cable **M** from the battery into the cab to where you will mount the junction box **N** at steps 8b and 8c. Ensure the cable will not be a trip hazard. Connect the ring terminals to the battery (not shown).



When mounting the junction box **N** in the following steps, ensure that the ON/OFF switch on the junction box is within easy reach of the operator. The switch must be in the OFF position when the vehicle is not under field guidance or on a road. See Figure 8a.

Ensure that the mounted junction box cannot interfere with movement of the steering column or visibility to the work area. Also keep in mind the location of the steering wheel assembly’s comms port.

- ### b.
- Mount the electric steer junction box bracket **O** (not shown) on the steering column or windscreen using your preferred method, for example fasteners, double-sided tape, nylon ties (not provided).



If drilling the steering column, ensure nothing inside the column can be damaged.

- ### c.
- Clip the junction box **N** into place on its bracket **O** (neither shown) then connect **N**’s 15-pin connector cable to the communications port on the steering wheel assembly (Figure 8b). Use the comms cable clip **P** (inset) suitably.

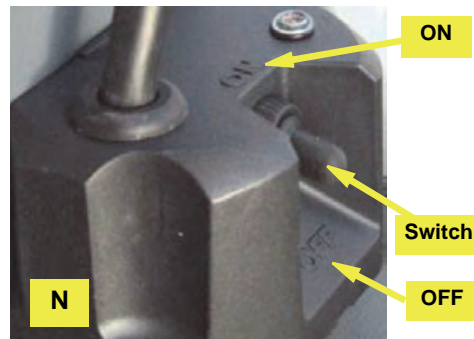


Figure 8a: Junction box ON/OFF switch

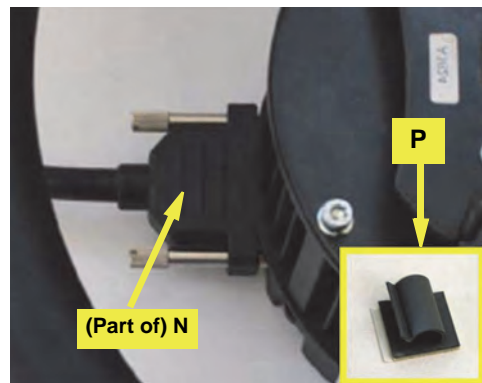


Figure 8b with inset: Junction box comms cable connected to steering wheel assembly

8. **Install and connect the electric steer junction box (continued).**

d. Connect the gray connector of the power cable **M** (routed into the cab at step 8a) to the gray cable from the junction box **N** (Figure 8c).

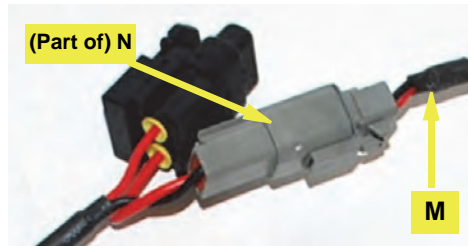


Figure 8c: Power cable to junction box cable

e. Connect the threaded 5-pin connector on the CAN bus harness **TC** (eDriveTC) or **EO** (eDriveX) to either of the threaded connectors on the junction box **N**. Connect the CAN bus terminator **Q** to the other threaded connector on the junction box (Figure 8d).

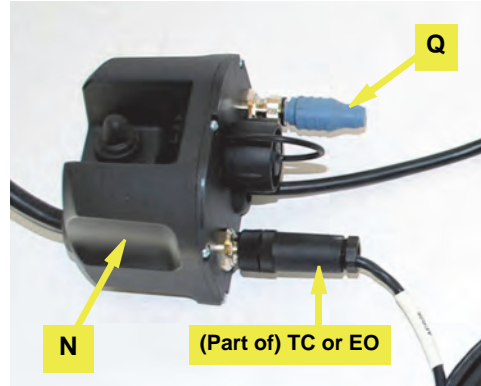


Figure 8d: CAN harness and terminator connected to junction box

f. **eDriveTC:** Connect the two other connectors on CAN cable **TC** to the 'eDriveTC' (as labeled) and the terminal/receiver (Figure 8e-i).



Figure 8e-i: CAN cables to eDriveTC and terminal/receiver

eDriveX: Connect CAN cable **EO** to the eDriveX main cable's (**EA**) branch cable labeled 'STEERING CONTROLLER' (Figure 8e-ii - you will install **EA** in the next section).



Figure 8e-ii: CAN cable to eDriveX

Installation - Electronic Control Unit (ECU)

NOTE:

The high precision guidance capability of eDriveX depends, in part, on the exact installation of the ECU as detailed in this section. For details on installing an eDriveTC, refer to “Installing the eDriveTC” in Chapter 2 of the **Out-back eDrive User Guide**. This eDriveX ECU installation section is for combines only.



Before drilling (or using self-drilling screws) in the cab, make sure there is nothing that can be damaged by the drilling or any self-drilling screws used to secure the ECU mounting bracket. Secure anything that could be damaged away from where the screws come through. See Figure 1 for an example of a pre-drilling check; it shows an under-floor cabling compartment.

1. Install the ECU (combines only).

NOTE:

Although measurements provide a good guide, ensure that when installed, the bracket will be perpendicular to the front of the machine (that is, parallel to the machine’s fore/aft centerline). Also, use a small level to set the bracket as level as possible - see steps following.

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

Facing the one-inch tabs of bracket **EJ** toward the right side of the cab, place the bracket with (Figure 1a):

- The rear edge 4” from the back of the cab
- The inner edge 10” from the right side of the driver’s seat

NOTE:

At the next step, do not overtighten the self-drilling screws. Overtightening could cause the fastener to fail.

- b. Using screws **EL** or **EM** (depending on the floor thickness - see warning above) fasten the bracket to the cab floor (Figure 1b - left image). Use a small level (not shown) to check the level of the bracket. Adjust accordingly.
- c. Using screws **EN** attach the ECU **EK** to the inner face of bracket **EJ**. Have the wire connections toward the rear and the power and communication indicators at the bottom (Figure 1b - right image).



Figure 1: Example pre-drilling check

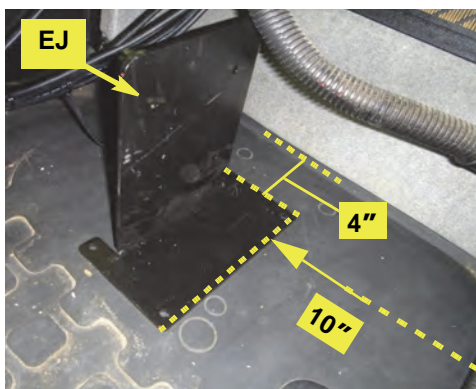


Figure 1a: ECU mounting bracket location

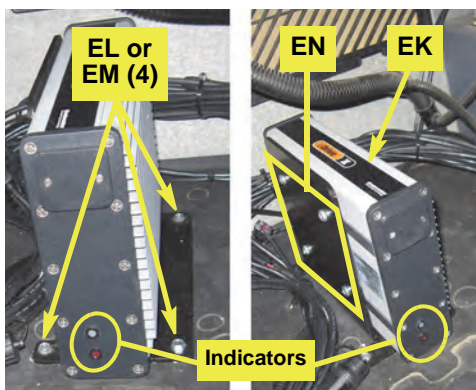


Figure 1b: ECU and bracket installed

2. **Assemble and install the cables.**

On a clean surface lay out all the cables and become familiar with the connections and where they are to be placed. See “Appendix B - eDriveX VSi Connections” on page 16. Use cable ties **EP** as required.

- a. Connect cable **EA** to the ECU **EK** using an Allen wrench to secure the cable. The **EA** connector will only fit the ECU socket that is in line with the power and communications indicators at the opposite end of the ECU—the bottom socket in this installation (Figure 2).
- b. Routing cables suitably, attach cable **EA**'s connector labeled ‘STEERING CONTROLLER’ to cable **EO** connected to the VSi junction box **N** (see *eDriveX* step 8f, page 12).
- c. Attach power switch **EG** to **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 **EGa** mounting it in the cab at the operator's preferred location.

NOTE: Set switch **EG** to *OFF* before connecting **EA** to the battery at step *e* below.

- d. Connect CAN-PWR cable **EH** to **EA**'s open connection labeled ‘TERMINAL/RECEIVER’ and the guidance terminal. Route the cable in the cab so that it is clear of any machine operation controls.
- e. Install battery terminal cable **EI** between **EH**'s remaining connector and the machine's 12V battery.

⚠ WARNING:

Ensure you have connected main cable **EA** to the ECU (step 2a) and **EQ** to **EA** (step *f* following) before you connect **EQ** to the machine's battery.

- f. Disconnect the standard length power cable from ECU main cable **EA** and connect the extended power cable **EQ**. Route the extended power cable to the machine's 12V battery and connect it.

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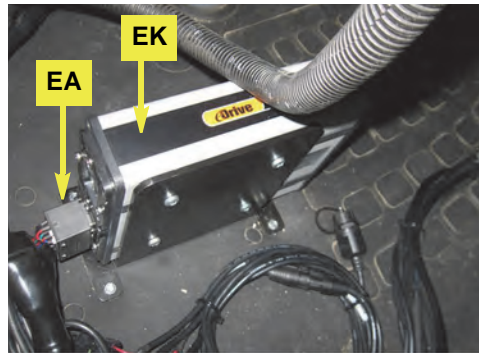
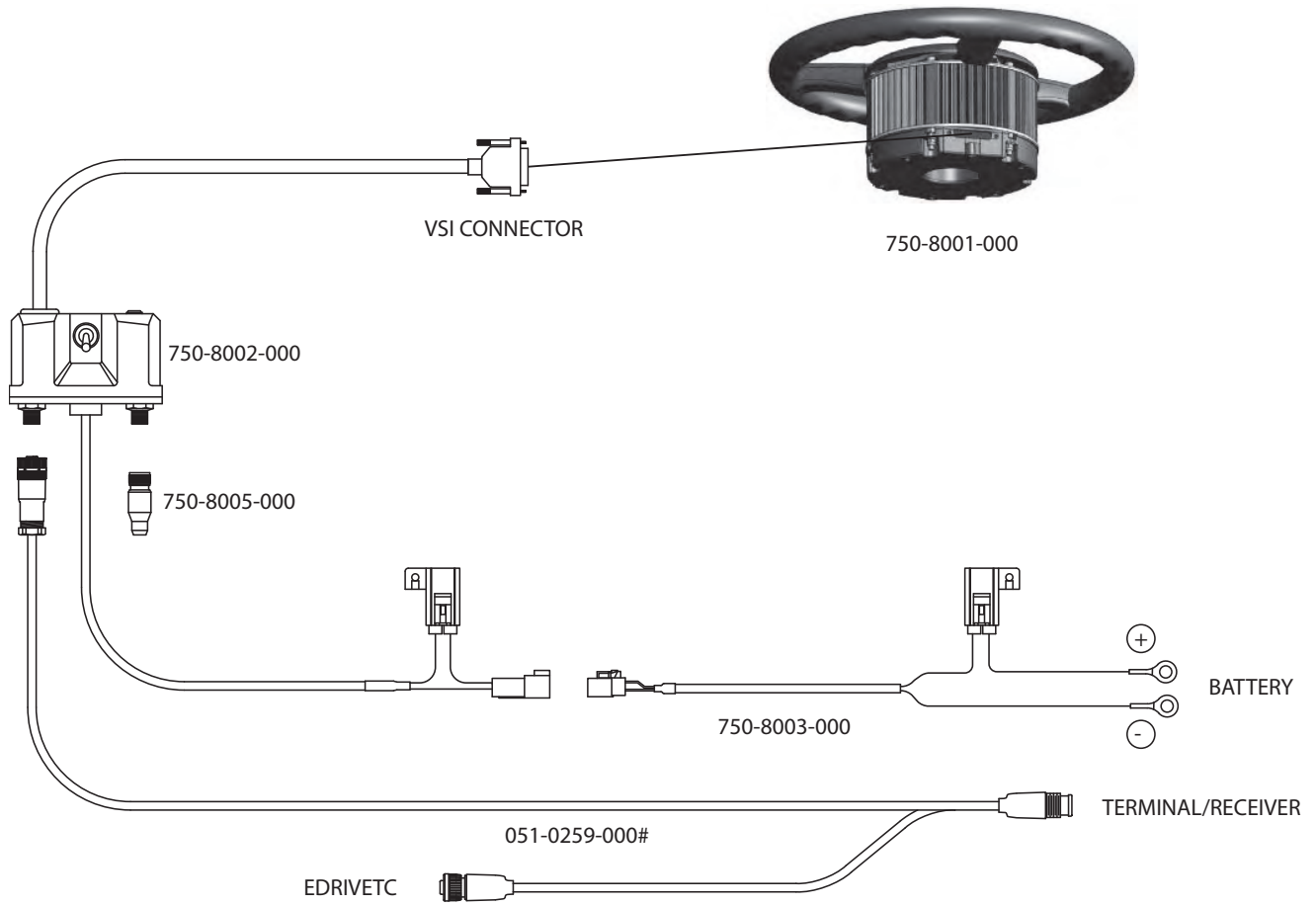


Figure 2: Steering controller main cable installed

Appendix A - eDriveTC VSi Connections



Appendix B - eDriveX VSi Connections

