

eDrive ESi Installation Guide

Kit: Kubota M7 ESi for eDriveXC or eDriveXD

P/N: 912-0001-01

Fits Kubota M7 Models:


M7-131

M7-151

M7-171



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 ESi electric steering wheel and either eDriveXC or eDriveXD. 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 kit are detailed in the table that follows the safety warnings starting below. After the kit table there are step-by-step installation instructions.

Read this manual thoroughly before beginning the installation.

WARNING:

The ESi 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 make and model.

Machine Preparation

⚠ WARNING:

Inspect the machine and perform any needed maintenance before installing the ESi 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.


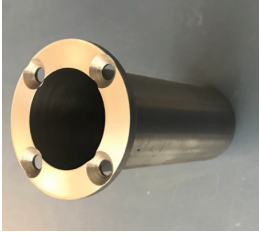


Before attempting to install any of the components:

- 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

Unpack the supplied kit and identify the required parts as shown. Kit items, which are applicable to both ESi/eDriveXC and ESi/eDriveXD 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	750-0170-000 (wheel) 806-2019-000 (motor)	1	ESi steering wheel/motor assembly (From kit 910-4022-000 - comes assembled)	
B	506-0168-01	1	Shaft adapter (Use in A)	
C	675-1300-000	4	Screw, M5 x 8 flat head socket cap screws, ZP (Attach B to A)	
D	607-0024-01	2	Anti-rotation bracket (ARB) (Attach to base of A using E)	

Kit Contents (continued)

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
E	515-0143-01	4	Screw, flanged, M6x1x12, Gr 10.9, ZP (Attach D to A - use three only in this installation)	
F	516-0002-01	2	Washers (as spacers) (Use to support second ARB - see steps)	
G	676-1093-000	1	Nut, M18 (Attach A to steering shaft - replaces machine's original steering wheel nut)	
H	600-1440-000#	1	Steering wheel center cap (Install using I)	
I	675-1312-000#	5	Center cover screws (Install H)	
J	054-0202-000#	1	ESi main cable (Connects A to K [and battery] - from kit 910-4022-000)	
K	051-0377-000# <i>or</i> 050-0016-01	1 1	Main cable (at right) <i>or</i> Main cable (has an added Ethernet port for connection to a REBEL terminal) (You will receive one or the other with your kit.)	
L	051-0364-000#	1	Power cable, 4.5 m (Connects K to battery)	

Kit Contents (continued)

REF	PART NUMBER	QTY	DESCRIPTION	PHOTOGRAPH
M	054-0204-000#	1	Steering controller adapter cable (Connects—adapts—ECU main cable K's 'VALVES' connector to ESi main cable J)	
N	051-0397-000	1	Steering remote engage cable/switch (Connects to K)	
O	054-0168-000	1	Three-position power switch and cable (Connects to K - can mount using P)	
P	640-0180-000	1	Switch bracket (Mount O if applicable/necessary, using Q)	
Q	675-1019-000#	2	Screw, 8-32, 5/16", SS	
	678-1052-000#	2	Washer, split-lock, #8 (Mount P if used)	
R	677-2002	20	Tie straps, 7" releasable	
S	607-0011-01	1	ECU mounting bracket (Mount using U)	
T	806-1044-000# <i>or</i> 806-1046-000#	1 1	eDriveXC controller (ECU) <i>or</i> eDriveXD controller (shown) (Mount on S using V)	
U	513-0002-01	2	Bolt, M8x1.25x40	
	517-0002-01	2	Washer, 8mm, flat, ZP (Mount S on machine)	
V	675-2081-000	3	Bolt, M8-08, 35mm, GR 8.8, ZP (Mount T on S)	

ESi Installation Procedure

NOTE: On a clean surface lay out all the components and check them against the “Kit Contents” table on pages 2 to 4. Become familiar with the components and where they are to be installed before proceeding with the installation (see the Appendix, page 8).

1. Prepare the ESi electric steering wheel.

- a. Place the ESi 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, tighten the screws to the specified torque only. **DO NOT OVERTIGHTEN - DAMAGE MAY OCCUR.**

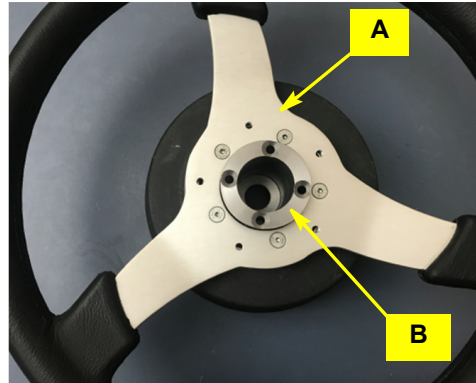


Figure 1a: Installing the shaft adapter

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

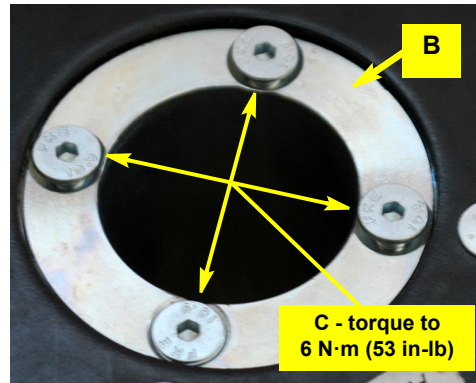


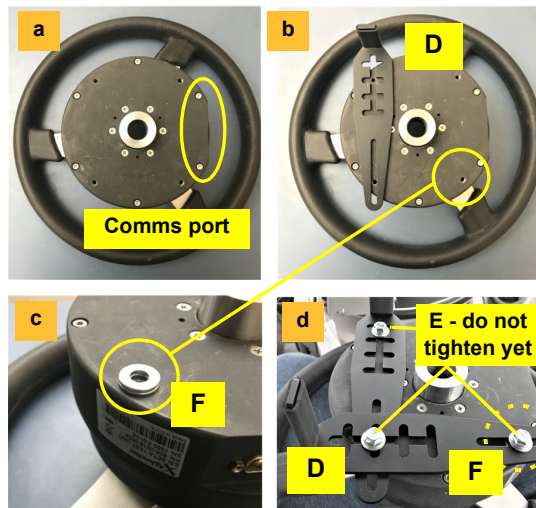
Figure 1b: Securing the shaft adapter

2. Install the anti-rotation brackets on motor base.



When completing this step, ensure that you (i) use only the screws provided, (ii) **do not** use washers with the screws, (iii) tighten the fasteners to the specified torque only at step 4d, page 6. **DO NOT OVERTIGHTEN - DAMAGE WILL OCCUR.**

- a. Turn the steering wheel assembly over and set the comms port to your right (Figure 2a).
- b. On the base of the wheel assembly, arrange brackets **D** as follows:
 - i. The first (against the base) ‘vertical’ to you with its short (padded) leg at the far end and upward (2b).
 - ii. Placing washers **F** (as spacers) under the second bracket at the tapered end (around the screw hole - 2b/2c), set the bracket horizontal to you, its short leg to your left and upward (2d).
- c. Using screws **E** *without washers* (use three of four supplied), loosely attach the two brackets as follows (2d):
 - i. Put one screw in the first bracket, at the ‘far’ end between the first two cross slots.
 - ii. Put the second screw through both brackets at the second bracket’s second cross slot.
 - iii. Put the third screw through the long slot (and the washers) at the tapered end of the second bracket.



Figures 2a-2d: Arranging and loosely attaching the anti-rotation brackets

3. **Remove the steering wheel.**

Carefully remove the cap from the center of the steering wheel (Figure 3a/3b). Remove the steering wheel nut (3b/3c) and the steering wheel (3d).

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

4. **Install the ESi steering wheel assembly.**

- a. Apply a small amount of an anti-seize compound (not supplied) to the splines of shaft adapter **B**. Invert the prepared steering wheel assembly and slide it onto the steering shaft with the comms port to the right (Figure 4a).
- b. Using nut **G**, secure the steering wheel assembly on the steering shaft (not shown).

NOTE: Torque nut **G** to the machine manufacturer's specification.

! At step 4d, **DO NOT OVERTIGHTEN - DAMAGE MAY OCCUR.**

- c. Slide the two AR brackets **D** inward to make firm contact with the steering column housing. Set the near edge of the padded leg of the second (now front) bracket against the front of the housing, near its left edge; set the inside face of the padded leg of the first (now rear) bracket against the back of the housing (Figure 4b).
- d. Tighten the three bracket screws **E** to **5 N·m (44 in-lb)**: *do not overtighten.*

5. **Install the steering wheel center cap.**

Place **H** in the center of the wheel assembly and secure with **I** (Figure 5).

6. **Connect the ESi main cable.**

Connect ESi main cable **J** to the comms port (Figure 6). Route the cable connectors to the ECU main cable **K** and the machine's battery.

For further information on connecting **J** to **K**, see the next section.



Figures 3a-3d: Removing the horn switch and steering wheel



Figure 4a: Wheel assembly installed - comms port to the right

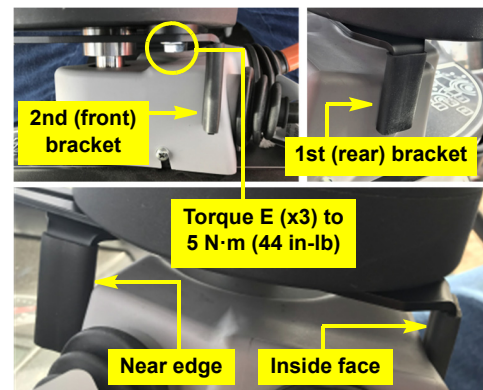


Figure 4b: AR brackets adjusted and tightened



Figure 6: ESi main cable in comms port



Figure 5: Center cap in wheel

Installation - Electronic Control Unit (ECU) and Cables

See the Appendix (page 8) for a schematic of the cable connections.

1. Install the ECU mounting bracket and the ECU.

- a. Identify the ECU mounting location behind the operators seat (Figure 1a, top image). Remove the two bolts viewed through the plate.

Using hardware **U** in the two bolt holes, attach bracket **S**, its tall, vertical side toward the seat (Figure 1a, bottom image).

- b. Using screws **V**, fasten ECU **T** on bracket **S** with its connector to the right (left as viewed) and its logo rearward.

NOTE:

Figure 1b shows the ECU attached with temporary hardware; use bolts *V* supplied.

- c. Connect main cable **K** to ECU **T** (Figure 1b, inset).

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 - ESI and ECU Connections” on page 8. Use cable ties **R** as required.

- a. Using adapter cable **M**, connect ESI main cable **J** to ECU cable **K**'s ‘VALVES’ connector.
- b. Connect **J**'s battery connectors to the machine's 12 V battery.
- c. Attach power switch **O** to **K**'s ‘PWR_SWITCH’ connector. Some machines are equipped with pop out tabs that you can remove and replace with switch **O**. If no tab is available, you can use bracket **P**, mounting it in the cab at the operator's preferred location.

NOTE:

Set switch *O* to OFF before connecting *K/L* to the battery at step *g* below.

- d. Connect **K**'s ‘RMT_ENGAGE’ connector to **N**.
- e. **For MAX/STX terminals:** connect **K**'s ‘TERMINAL’ connection to your terminal.
For REBEL terminals: connect **K**'s ‘GNSS’ connection to your terminal.
- f. Route the cable in the cab so that it is clear of any machine operation controls.

WARNING:

Ensure main cable *K* is connected to ECU *T* (step 1c above) before you connect power cable *L* to the machine's battery at the next step.

- g. Connect **K**'s ‘EXT_PWR’ connector to battery terminal cable **L** (and **L** to machine's 12 V battery).

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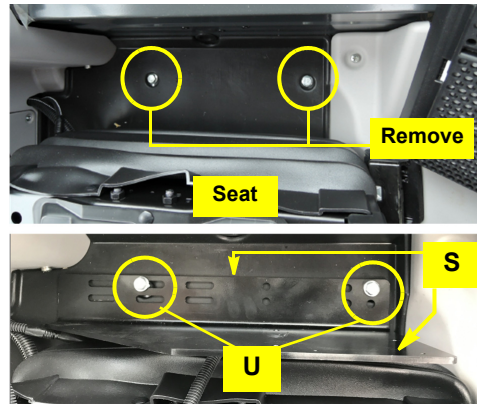


Figure 1a: ECU mounting bracket location and installed

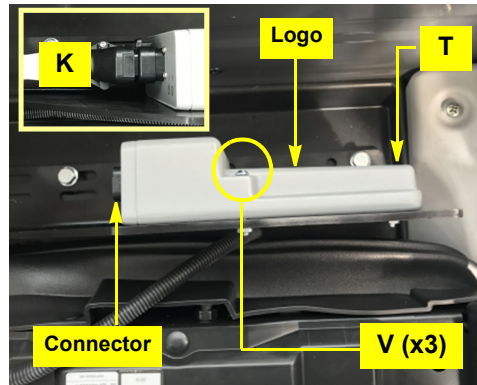


Figure 1b: ECU installed

Appendix - ESI and ECU Connections

