Rigid Planters
All Makes & Models

Row by Row Down Force Master Kit
Installation Instructions
PN: 2006446-ENG REV. C
Introduction

Important Information
This guide provides the basic information needed to install the Ag Leader SureDrive system on a planter. It is intended to be used by Ag Leader dealers who are trained and knowledgeable about the installation of such systems.

It is important to read this guide prior to beginning the installation. This guide contains warnings of potential hazards, and a collection of best practices that will help your installation go smoothly, safely and be successful.

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Technical Support
Contact your Ag Leader Dealer or Ag Leader Technology for technical support.

- Telephone: (515) 735–7000
- Email: support@agleader.com

Legal Disclaimer

- Read and follow all instructions in this manual carefully before installing or operating the SureDrive system.
- Take careful note of safety information in this manual and additional safety messages provided throughout this and any other supplemental manuals provided.
- Ag Leader Technology disclaims any liability for damage or injury that results from failure to follow instructions, cautions and warnings communicated in this guide.
## Row Unit Components

### Required Items:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>QTY *</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4004426</td>
<td>1</td>
<td>ROW CONTROL MODULE (RCM)</td>
</tr>
<tr>
<td>Row Unit Specific</td>
<td>1</td>
<td>RCM INSTALLATION KIT</td>
</tr>
<tr>
<td>4004085 or 4005014</td>
<td>1</td>
<td>ROW ACCESSORY CABLE (DF, VAC, SEED SENSOR, AUX ON/OFF)</td>
</tr>
<tr>
<td>Row Unit Specific</td>
<td>1</td>
<td>ROW ACCESSORY CABLE (SEED SENSOR, AUX ON/OFF)</td>
</tr>
<tr>
<td>4003011</td>
<td>1</td>
<td>HYDRAULIC ACTUATOR KIT - 1 INCH CYLINDER, DOWN FORCE</td>
</tr>
<tr>
<td>Row Unit Specific</td>
<td>1</td>
<td>HYDRAULIC ACTUATOR BRACKET KIT</td>
</tr>
<tr>
<td>4003005</td>
<td>1</td>
<td>HYDRAULIC FITTING ASSEMBLY - BLEEDER - #4 FJIC</td>
</tr>
</tbody>
</table>

* QUANTITIES LISTED ARE PER ROW UNIT

### Installation Procedure:

**NOTE**

The Ag Leader down force system is not compatible with every option available for planter row units. Ag Leader advises fully equipping a single row unit before proceeding with all row units to ensure compatibility – in particular with non-Ag Leader aftermarket parts that may be installed.

1. **Hydraulic Actuator** (each row)
   - Instructions provided in Hydraulic Actuator Bracket kit
   - *Note: Bleeders will be installed on every actuator in the bottom port. It is recommended to install bleeders after row hoses are installed.*

2. **RCM** (Row Control Module) (each row)
   - Instructions provided in RCM Installation kit

3. **Implement Switch** (at least one row unit – two row units are recommended)
   - Instructions provided in Implement Switch kit

4. **Pressure Sensor**—if installing on a vacuum planter
   - (at least one seed meter, up to three sensors are supported)
   - Instructions provided in Pressure Sensor kit
# Planter Frame & Tractor Components

## Required Items:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>QTY *</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4101337</td>
<td>1</td>
<td>PCM KIT*</td>
</tr>
<tr>
<td>4101370</td>
<td>1</td>
<td>PRESSURE SENSOR KIT FOR BULK FILL SEED DELIVERY*</td>
</tr>
<tr>
<td>SEE TABLE 1</td>
<td>N/A</td>
<td>VALVE BLOCK ASSEMBLY – DOWNFORCE*</td>
</tr>
<tr>
<td>SEE TABLE 1</td>
<td>N/A</td>
<td>BRACKET KIT - ISO DF VALVE BLOCK MOUNT**</td>
</tr>
<tr>
<td>SEE TABLE 1</td>
<td>N/A</td>
<td>DOWNFORCE VALVE EXTENSION CABLES**</td>
</tr>
<tr>
<td>4002911</td>
<td>2</td>
<td>IMPLEMENT SWITCH MODULE**</td>
</tr>
<tr>
<td>4002658</td>
<td>2</td>
<td>IMPLEMENT SWITCH CABLE**</td>
</tr>
<tr>
<td>SEE TABLE 1</td>
<td>N/A</td>
<td>HYDRAULIC FITTINGS**</td>
</tr>
<tr>
<td>SEE TABLE 1</td>
<td>N/A</td>
<td>HYDRAULIC HOSES**</td>
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<tr>
<td>4004902-8</td>
<td>1</td>
<td>CABLE - DOWNFORCE - PRESSURE TRANSDUCER**</td>
</tr>
<tr>
<td>4005125</td>
<td>1</td>
<td>CABLE - 3-WAY HIGH CURRENT POWER SPLITTER (8 IN)*</td>
</tr>
<tr>
<td>4004876-2</td>
<td>2</td>
<td>LOCAL CANBUS EXTENSION – 2 FT (FOR FLEX JOINTS IN TOOLBAR)**</td>
</tr>
<tr>
<td>4004876-9</td>
<td>2</td>
<td>LOCAL CANBUS EXTENSION – 9 FT (FOR FRAME FOLDING)**</td>
</tr>
<tr>
<td>4004110-XX</td>
<td>1</td>
<td>IMPLEMENT HARNESS*</td>
</tr>
<tr>
<td>2003131-XXX OR 4004076</td>
<td>1</td>
<td>HYDRAULIC HOSE KIT (TO TRACTOR) – 25-65 FT**</td>
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<tr>
<td></td>
<td>1</td>
<td>HYDRAULIC HOSE KIT (TO TRACTOR) – 12 FT**</td>
</tr>
<tr>
<td>4101313</td>
<td>1</td>
<td>ISOBUS RETROFIT KIT*</td>
</tr>
<tr>
<td>4002584-XX</td>
<td>1</td>
<td>ISOBUS RETROFIT BATTERY CABLE*</td>
</tr>
<tr>
<td>4100879</td>
<td>1</td>
<td>SWITCH CONSOLE KIT*</td>
</tr>
</tbody>
</table>

* QUANTITIES LISTED ARE PER PLANTER

** QUANTITIES VARY BASED ON PLANTER CONFIGURATION AND PREFERENCE
Installation Procedure:

Figure 1: Hose Length and Valve Block Placement

Table 1: Hose Length and Valve Block Size

<table>
<thead>
<tr>
<th>Valve Block</th>
<th>6R</th>
<th>6/11R</th>
</tr>
</thead>
<tbody>
<tr>
<td># VB 6CH</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HOSES (IN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>80</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>110</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

5. Refer to Figure 1 on page 5 for recommended valve block mounting locations.

NOTE: Hoses have some extra length in some cases when valve blocks can not be mounted in the recommended locations.
a. If mounting a valve block on center section the cat walk support is a good option for mounting.

**IMPORTANT:** No matter how the valve block is mounted, it is imperative that the solenoid valves remain parallel to the ground!

6. Secure valve block to valve block bracket with 3/8” hardware. In some cases 4 bolts will be used but at least 3 bolts are required. (3 bolts and 8 section shown)
7. Next secure mounting bracket to a bar on planter.
   - Slots allow for use with a 3” bar to 10” wide bar. The provided ½” carriage bolts can be used for a bar that is up to 12” deep.
   - Use 2.75” carriage bolts for attaching to a plate with ½” holes up to 1 ½ inches thick (such as steps under central fill).

8. Mount assembly containing the valve block to mounting bracket that is installed on planter using carriage bolts and nylock nuts.

**NOTE:** Additional mounting options are shown below.
9. Refer to Figure 1 on page 5 for hose routing. Attach the appropriate #4 hose to the actuator and route hoses to the appropriate valve block.
Figure 2: 1 Valve Block

TO TRACTOR OR GENERATOR

- TANK
- RETURN
- POWER

HIGH LOUVER BOX

ROW HOSE 1/4"
2003130-X: 50IN, 80IN, 110IN, 144IN, 180IN, 200IN, 280IN

PRESSURE HOSE 3/8"
2003129-X: 72IN, 144IN, 190IN, 216IN, 252IN, 286IN, 324IN

RETURN HOSE 1/2"
2003120-X: 72IN, 144IN, 190IN, 216IN, 252IN, 286IN, 324IN

TANK HOSE 1/2"
2003120-X: 72IN, 144IN, 190IN, 216IN, 252IN, 286IN, 324IN
10. Connect the corresponding hose to the correct valve channel with a provided expander fitting. 90 degree fittings are provided if needed for cleaner routing of hoses.

11. Route Down Force Extension Cables from the correct RCM I/O connector to the corresponding connections on valve blocks.

   **NOTE:** Use the same method for cable selection as for hoses: Shorter cables to closer row units, Longer cables to farther row units.

12. Install PCM (Planter Control Module). Instructions provided in PCM kit.

13. **Optional:** If installing on a bulk-fill planter, install seed delivery pressure sensor. Instructions provided in bulk-fill pressure sensor kit.
14. Install an implement switch module on toolbar in front of each row unit that is equipped with an implement switch.

**NOTE:** Module can be secured loosely for now until local CAN Bus is routed and ideal location is determined.

15. Connect CAN implement switch cable to implement switch module that was mounted on toolbar in previous step.

16. Connect integral cable of implement switch to mating connector of CAN implement switch cable. A 42 in. extension cable is provided if required.

**NOTE:** Local CAN connectors of implement switch cable will be connected when local CAN Bus is installed in a following step.

**NOTE:** The following steps detail how to properly install the Local CANBUS and power distribution cables. Refer to the line art drawing and table on the following two pages to aid in this process.

**NOTE:** The diagram on the following page illustrates what the electrical components should look like. 4 rows are shown, but the same concept applies when there are more (or fewer) rows units.
Figure 2: Cable Routing Diagram
Table 2: Power Distribution Cables

<table>
<thead>
<tr>
<th>Description</th>
<th>6-Row</th>
<th>6/11 (30/15)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-Row Power Distribution Cable (P/N: 4004976)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6 AWG Power Extension Cable - 10 ft (P/N: 4005001-10) (CENTER 4 ROW SECTION)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6-Row Power Distribution Cable (Narrow Row / Interplant) (P/N: 4005027)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>RxR DF Only – Power Extension Cable (P/N: 4005117-10)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Only rear rows are supported with down force.

17. Connect power extension cables as follows:
   - Shortest extension is for center section connectors.
   - Longer extensions are for outer wing connectors.
   - See Table 1 on page 5 for additional clarification.

   **NOTE:** Power connectors on generator do not technically need to correspond to certain planter sections, but doing so is recommended for logical reasons.

18. Connect power distribution cables to extension cables installed in previous step.

19. Connect each drop of power distribution to mating connector of appropriate row unit RCM CAN stub.

   **NOTE:** Distribution cable shown is for 6 rows, but provided cables may have 4 or 8 drops, depending on planter configuration.

If SureDrive will be installed in addition to row by row down force, power extension cables will be a heavier gauge and look like the upper image. In that case, connect extension cables to generator.

If installing row by row down force only (no SureDrive), power extension cables will look like the lower image. In that case, connect extension cables to high current power connectors of implement cable using provided power splitters.
20. Connect terminating plug to mating connector of RCM CAN stub at left-most row unit. It is important to use the correct terminator so the display will know that the left-most row unit is row #1. Terminator will connect to “Local CAN left” connector as illustrated on RCM CAN stub.

**NOTE:** The RCM CAN stub at each row unit has a long and a short drop for the local CANBUS. The short drop should always be routed left and the longer drop to the right. This is very important to keep the row units indexed properly.

21. Connect terminating receptacle to mating connector of RCM CAN stub at right-most row unit. Terminator will connect to “Local CAN right” connector as illustrated on RCM CAN stub in previous illustration.

22. Connect each row unit RCM CAN stub to its adjacent row unit CAN stubs. Always route longer end of RCM CAN stub toward the right.

- Connect PCM to local CANBUS at middle of toolbar using 9 ft CAN extensions.
- 2 ft CAN extensions are provided to go between row units at toolbar flex joints.
- 9 ft CAN extensions are provided to go around toolbar fold joints.

Refer to Figure 2 on page 12 and Table 2 on page 13 for additional clarification.
23. Install implement harness on planter frame near PCM and connect to PCM as follows:

- Power 1 connector of implement cable mates with “ground” receptacle of PCM I/O cable.
- ISOBUS plug of implement cable mates with receptacle of PCM ISOBUS breakout cable.
- Install terminator (PCM kit) on remaining ISOBUS connector of PCM ISOBUS breakout cable.

24. Route opposite end of implement cable to tractor. Implement cable extensions are available if required.

25. Connect implement cable to IBBC connector of ISOBUS Power/Control assembly at rear of tractor. If an ISOBUS retrofit kit has not been installed, that must be done before this final step can be completed. Detailed installation instructions are provided in ISOBUS retrofit kit.

26. **Bleeding the system:** Pressurize the system to at least 1000 psi. Start at one side or the other. Attach a clear hose to the bleeder and run it into a oil catch pan or bucket. Open the bleeder with a wrench and close it when the oil runs free of air. Proceed to the next row unit until all the air is out of the system.

**Post-Installation Checklist**

- All cable ends and terminations are connected.
- All cables are secured with cable ties.
- Verify planter can fold and unfold without causing cable or hydraulic hose damage
- Verify CAN terminators are on correct ends of planter (see steps 13 & 14)