

JCB Fastrac 4000s CANBUS GPS installation kit

Prt No.148/00756



INSTALLATION INSTRUCTIONS

(*****)

JCB Fastrac GPS

JCB Kit

Prt No. 148/00756

(ENGLISH)

4160, 4190 and 4220 218XXXX Tractor Series

JCB Landpower
(01st October18)

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Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



Understand Signal Words

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

⚠ DANGER

⚠ WARNING

⚠ CAUTION

Follow Safety Instructions

Carefully read all safety messages in this instruction. Read the product operators manual for operating instructions and safety messages. Do not let anyone operate without instruction. (A copy of the operators manual may also be available from the Service ADVISOR application.)



Practice Safe Maintenance. Understand service procedure before doing work. Keep area clean and dry. Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool. Securely support any machine elements that must be raised for service work. Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris. On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



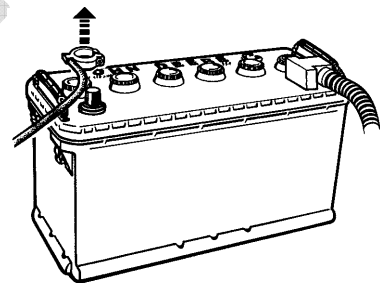
Use Steps and Handholds Correctly Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps, handholds, and handrails. Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



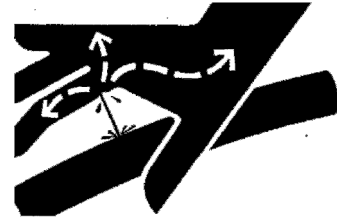
Handle Electronic Components and Brackets Safely Falling while installing or removing electronic components mounted on equipment can cause serious injury. Use a ladder or platform to easily reach each mounting location. Use sturdy and secure footholds and handholds. Do not install or remove components in wet or icy conditions. If installing or servicing a RTK base station on a tower or other tall structure, use a certified climber. If installing or servicing a global positioning receiver mast used on an implement, use proper lifting techniques and wear proper protective equipment. The mast is heavy and can be awkward to handle. Two people are required when mounting locations are not accessible from the ground or from a service platform.



Electrical System — General Instructions on Safety
CAUTION: When performing the work described, comply with the safety instructions in the relevant Operator and Technical Manuals CAUTION: Before working on the electrical system, always disconnect battery ground cable (-). NOTE: Refer also to the Operator and Technical Manuals before installing, removing, or adjusting components.



Avoid High-Pressure Fluids Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage. Replace worn or damaged hose assemblies immediately with JCB approved replacement parts. Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids. If an accident occurs, see a doctor immediately.

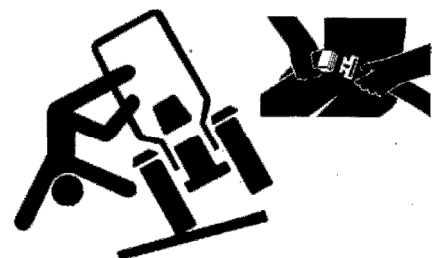


Operate Guidance Systems Safely Do not use guidance systems on roadways. Always turn off (disable) guidance systems before entering a roadway. Do not attempt to turn on (activate) a guidance system while transporting on a roadway. Guidance systems are intended to aid the operator in performing field operations more efficiently. The operator is always responsible for the machine path. Guidance systems do not automatically detect or prevent collisions with obstacles or other machines. Guidance Systems include any application that automates vehicle steering.

To prevent injury to the operator and bystanders:

- Never get on or off a moving vehicle.
- Verify the machine, implement, and guidance system are set up correctly.
- Remain alert and pay attention to the surrounding environment.
- Take control of the steering wheel, when necessary, to avoid field hazards, bystanders, equipment, or other obstacles.
- Stop operation if poor visibility conditions impair your ability to operate the machine or identify people or obstacles in the machine path.
- Consider field conditions, visibility, and vehicle configuration when selecting vehicle speed.

Use Seat Belt Properly. Use a seat belt when you operate with a roll-over protective structure (ROPS) or cab to minimize chance of injury from an accident such as an overturn. Do not use a seat belt if operating without a ROPS or cab. Replace entire seat belt if mounting hardware, buckle, belt, or retractor show signs of damage. Inspect seat belt and mounting hardware at least once a year. Look for signs of loose hardware or belt damage, such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with replacement parts approved for your machine.



Introduction

This installation instruction describes how to install components for a CANBUS based GPS platform kit for the 4000 Tractor Series. In addition to the tractor installation, a GPS display, receiver and control ECU with correct activations are required for using the system in the field. This kit has been developed for standard factory JCB tractors. That means if there are any special options installed in the tractor could be mismatched.

DISCLAIMER: The purpose of these installation instructions is to show how the ***/***** kit must be installed, the information provided in these assembly instructions are given as “Recommended Installation” only.

Average Installation Time

Approximate time required for installation is 6-8 hours.

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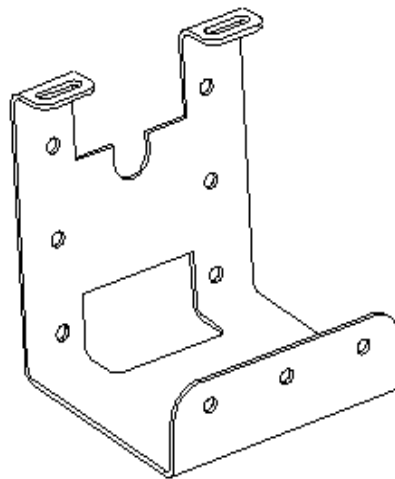
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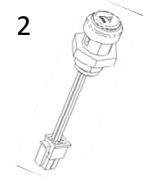
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4



2



6



Callout	Part Number	Description	Quantity
1	http://www.agra-gps.com/buy.html	Agra-GPS Bridge	1
2	400/U0692	Resume switch	1
3	400/P3721	JCB link harness	1
4	400/h4801	H-WIRED GPS MOUNT BRKT Part 1	1
5	400/E3645	H-WIRED GPS MOUNT BRKT Part 2	1

Contents of Kit 148/00756

Part Number	Description	Quantity
*** /*****	Installation manual	1
400/P3721	Agra - GPS link harness	1
400/B5539	Resume switch	1
270/00106	Cable tie 40	20
821/10297	P Clip 25mm	2
122/40304	Cable tie mount	4
400/H4801	H-WIRED GPS MOUNT BRKT Part 1	1
400/E3645	H-WIRED GPS MOUNT BRKT Part 2	1
334/R1374	M8 threaded insert	3
1420/0007D	M8 Washer	7
1315/0305D	M8 x 1.25 bolt	5
1370/0203D	M8 x 1.25 Nut	2
332/A7524	Decal - JCB	1
823/00386	Rubber sealing washer	2
1430/02027	Self-tappers	4
332/T6792	Grommet	1
400/X0782	Antenna harness cab	1
400/Y1428	Antenna harness roof	1
401/A7135	Coverage log harness	1
400/Y1426	ISOBUS Resistor/harness 1	1
400/Y1427	ISOBUS Resistor/harness 2	1
400/Y1431	Resume switch link	1
400/Z4568	Work light bracket LH/RH (LED)	LED option x2
400/Z4788	Work light bracket LH	Halogen option x1
400/Z4796	Work light bracket RH	Halogen option x1

Antenna bracket (400/H4801 and 400/E3645)

Fitting location:

The antenna bracket is in two parts. The installation requires the drilling of the black plastic at the front of the cab. M8 threaded inserts are used, three M8 bolts bolt the bracket in place. Two existing bolts are used to secure the second part of the bracket to the roof. The two brackets are bolted together.

The image below shows the installed two piece antenna bracket:

*Note the additional green bracket is not included.

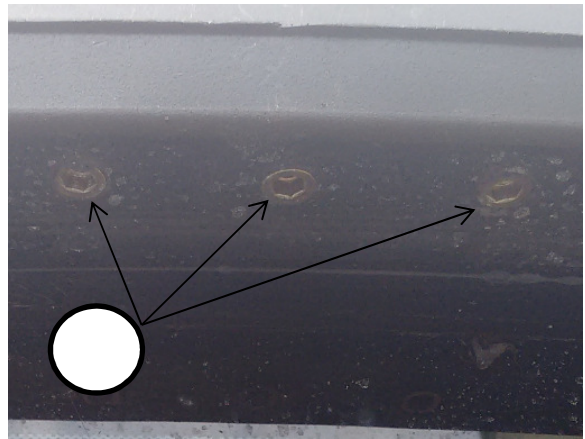


1	400/H4801	x1	H-WIRED GPS MOUNT BRKT Part 1
2	400/E3645	x1	H-WIRED GPS MOUNT BRKT Part 2
3	334/R1374	x3	M8 threaded insert
4	1420/0007D	x7	M8 Washer
5	1315/0305D	x5	M8 x 1.25 bolt
6	1370/0203D	x2	M8 x 1.25 Nut
7	823/00386	x2	Rubber sealing washer

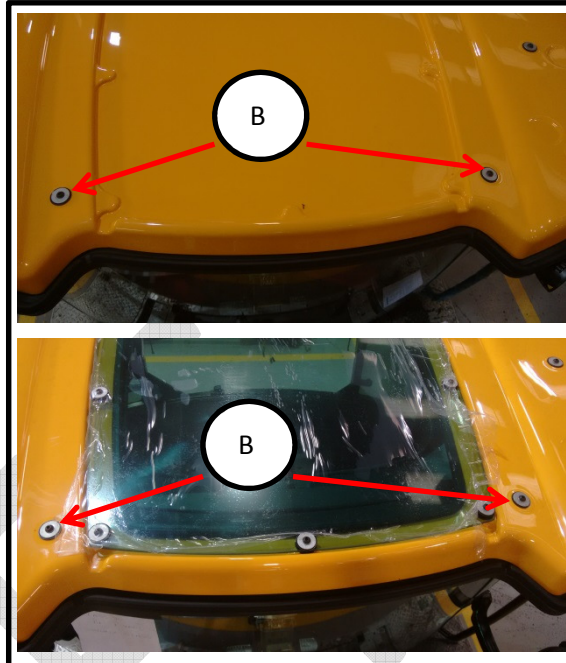
Installing the antenna bracket

1. Suitable access is required to the cab roof.
2. 3x 10mm holes are to be drilled into the black moulding – A. Ensure the holes are in central of the cab (use the bracket as a template). Screw the M8 inserts (334/R1374) 8mm allen key is used to fit these inserts.

*Note: do not over tighten



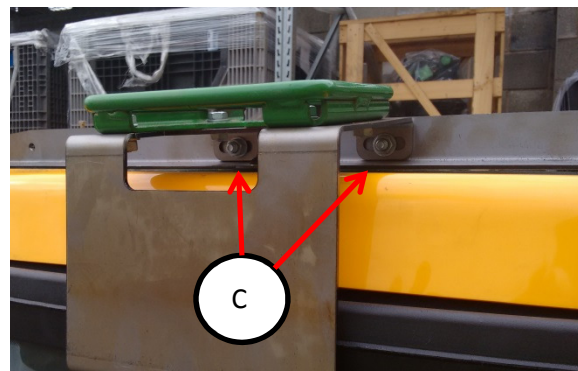
3. The three M8 bolts with 10mm heads are used to fix the underside of this bracket
4. The bracket is designed to fit either sun roof or none sun roof option. Remove the two bolts – B.



- 5 Use bolts B to fix the second part of the antenna bracket to the roof. Put the additional rubber washer 823/00386 under the bracket so it seals correctly.

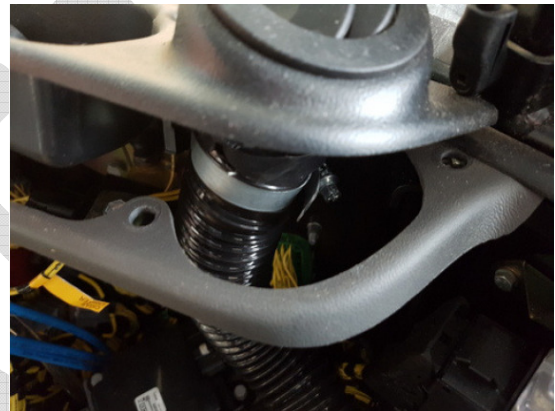


- 6 Using M8 nuts, bolts and washers, bolt the two parts together - C



Installation of the JCB-JD Bridge harness - 400/P3721 and 400/ Y1426, 400/Y1427, 400/Y1431

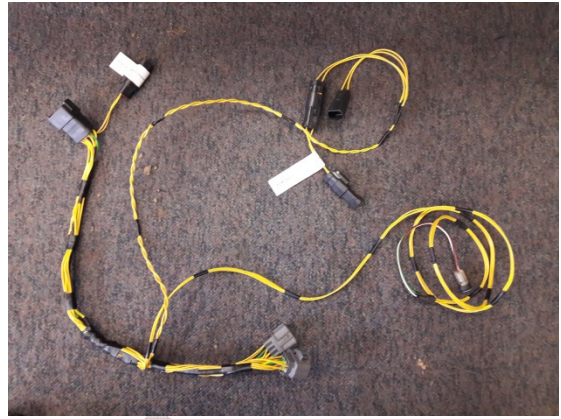
1. The JCB-JD Bridge harness is installed right of the driver seat.
2. Remove all screws from the lower part of the plastic panel. 2 extra screws are below the cigarette lighter plastic. Remove the top cover carefully as the air outlet is attached with a clamp.



3. Locate the GPS010 connector harness. The 8 way connector has a push tab on the top, press this and pull the connector apart.



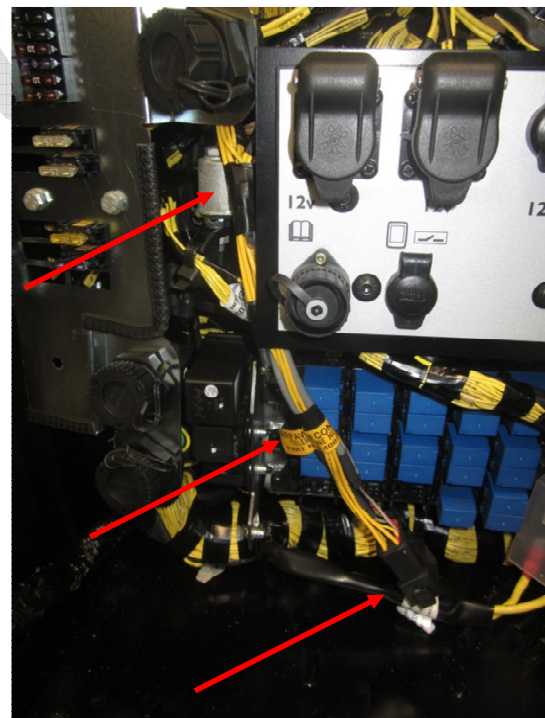
4. JCB-JD Bridge adapter cable. 400/P3721 and 400/Y1426, 400/Y1427, 400/Y1431



5. Connect the JCB-JD Bridge harness. Ensure both connectors are fully clipped together

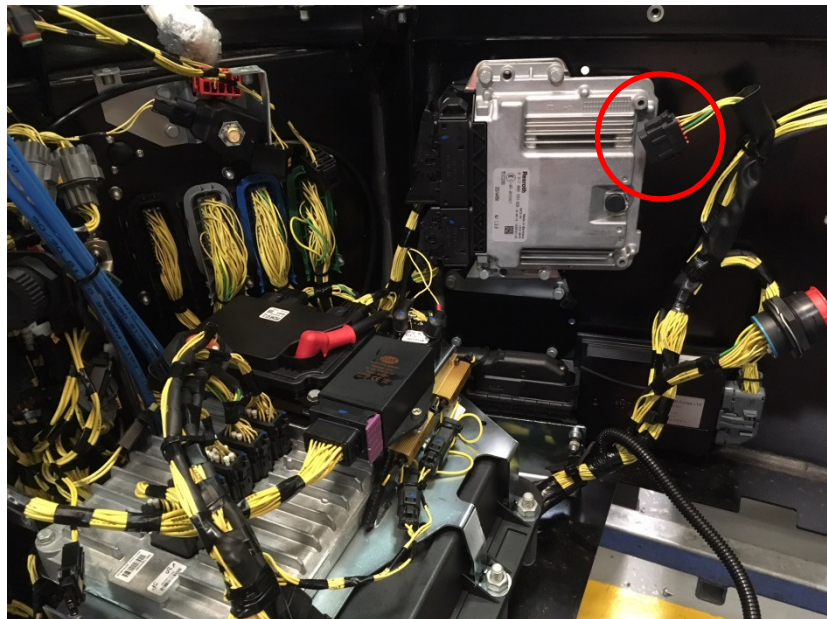


6. The JCB-JD Bridge harness should be run behind diagnostic 1 socket down in front of the relays.

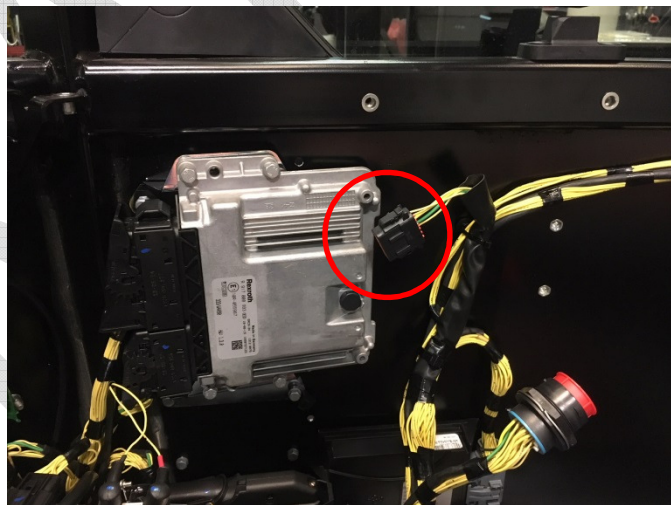


Installation of Coverage log harness 401/A7135

1. With the pannels reomved locate the 12 way Deutch connector on the rear of the cab.



2. Connect harness coverage log harness 401/A7135 to this 12 way connector and route cable towardss fuse panel hole. This harness will connect to the Bridge.

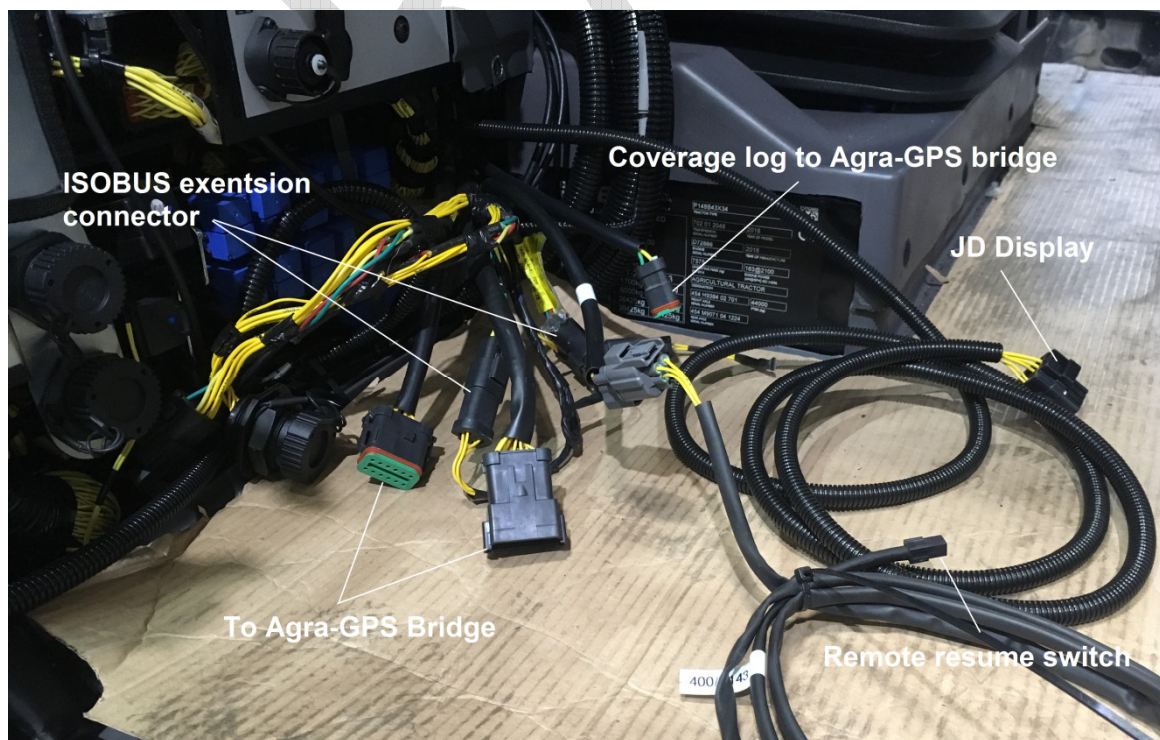


ISOBUS

1. The ISO BUS connections should be run along the top of the ECU.



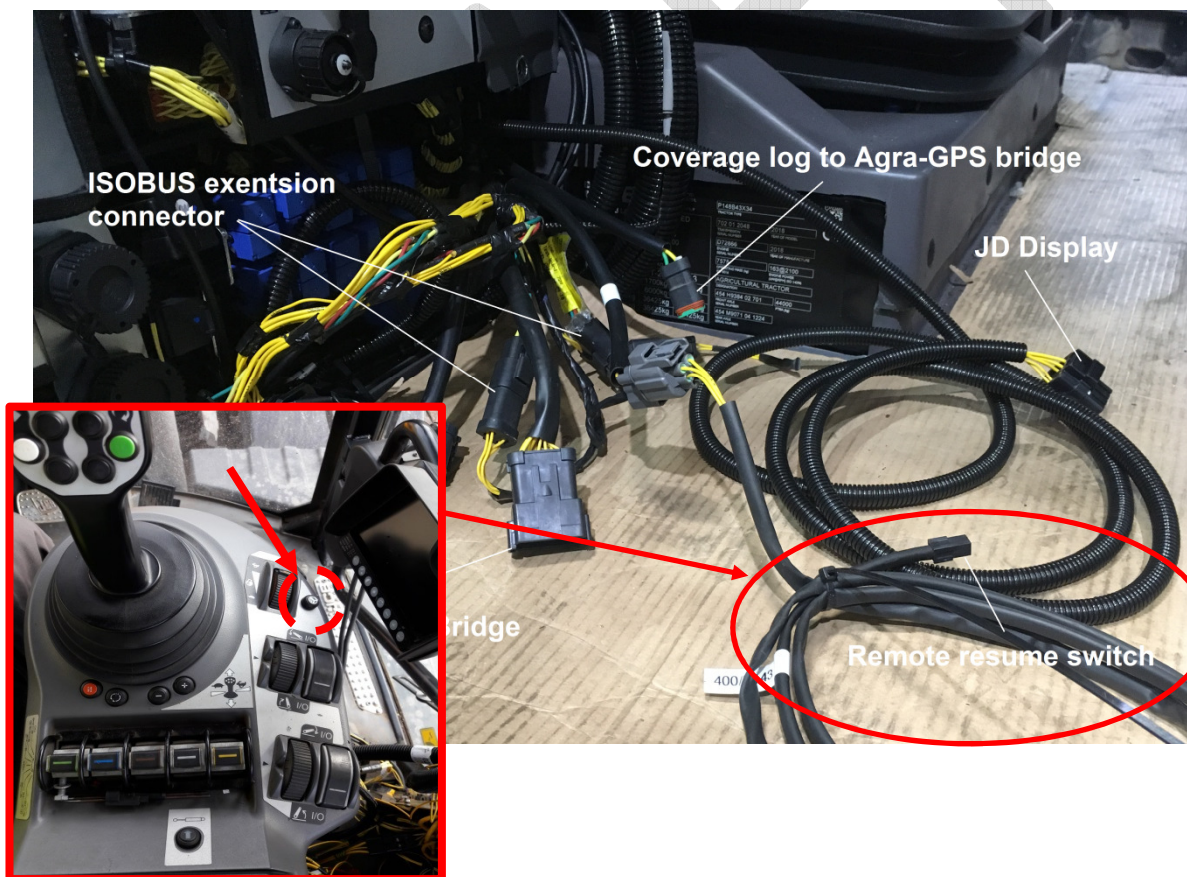
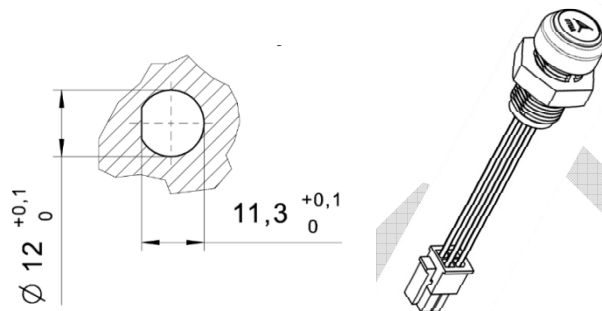
2. If an ISOBUS harness is fitted then the terminating resistors can be discarded and the JCB JD-Bridge harness can be connected to the in cab ISOBUS connector - 4 way Deutsch connectors.



Resume Switch – 400/U0692

If a joystick button is not programmed or not available JCB have conveniently placed a hardwired auto guidance resume switch. This is located behind the fuse panel and can be fitted

The switch can be located where convenient for the operator to use. The cabling is long enough for it to be installed in the end of the arm rest as shown below.



Mounting the JD Display

The mounts for the JD display are NOT part of the JCB-JD Bridge, however they can either be ordered as an optional item from AgraGPS or directly from RAM.

The JD-display may be mounted many different ways.

You may use the standard JD mounts or a

RAM mount. RAM-270U + 2 * 1.5" balls

(RAM-202U) + 4" double socket arm (RAM-201U)

<http://www.rammount.com/part/RAM-270U>



Installing the Antenna harness

1. The harness that comes with the Agra-GPS Bridge can be routed up behind the “B” post moulding.



2. The cable should be cable-tied tightly against the existing harness behind the “B” post moulding.



3. Remove the radio/blank and pull out the HVAC control panel. Also remove the main black plastic panel within the roof liner.



4. Locate the tractor's radio antenna cable. Use the hole where this comes through and push the JD Antenna cable through this.



5. Locate the Front right hand work light on the cab roof. Remove the whole work light assembly to gain access in the roof moulding. The JD antenna cable should be accessible.
6. Remove spare grommet (None US machines) and replace with 332/T6792. JD antenna should come through here.
7. Clip and tidy all cabling so no snagging will occur.



Mounting the Agra-GPS Bridge

1. Using self tapping screws (1430/02027) fix the Agra-GPS bridge to the fuse panel. The harness can be run through the hole and connected up behind this panel.

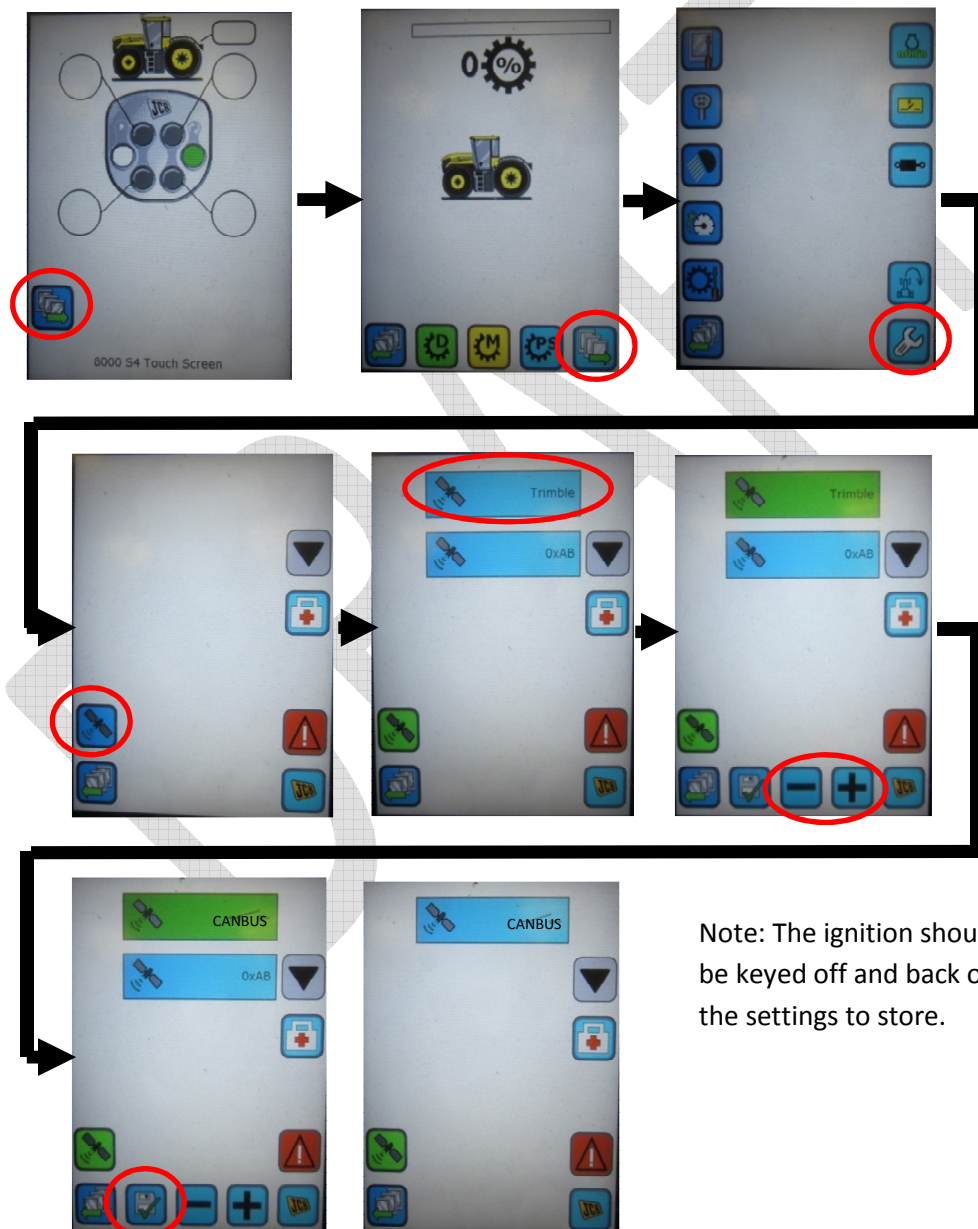


Machine software and set up

On earlier machines (pre 218****) a software update is required. Software ***/**** or later must be used. This option allows GPS display to be powered on whilst the ignition is on.

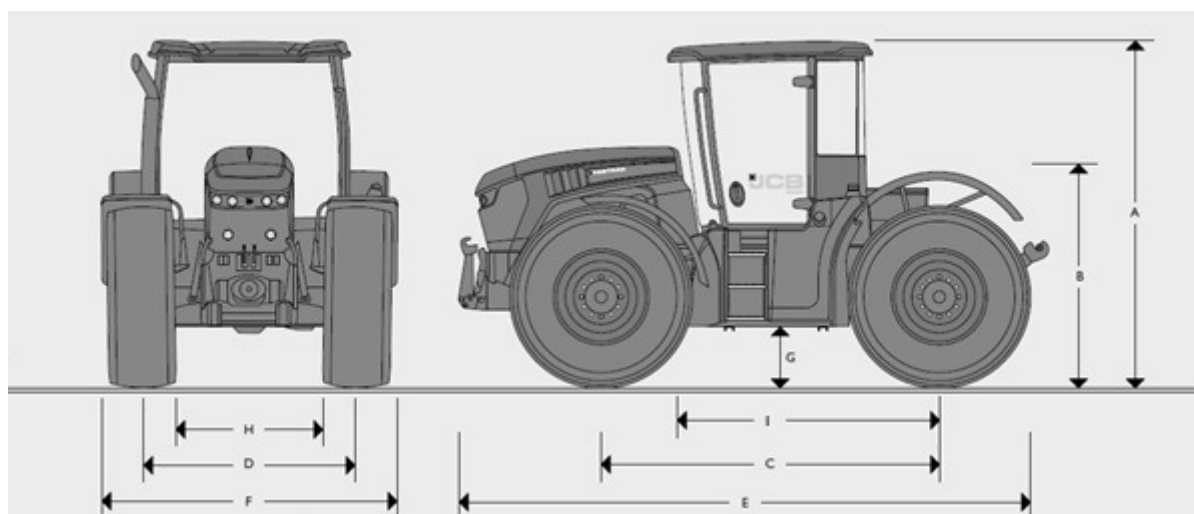
- DECU vv04-21 or later
- Decu icons v03-04 or later
- FCCB vv00-50 or later

The DECU screen needs to have the correct GPS setting so that the “CANBUS” option is selected. If this page is not available then DECU and FCCB software is required. Press save once selected.



Note: The ignition should now be keyed off and back on for the settings to store.

Static machine dimensions (4160, 4190 & 4220)

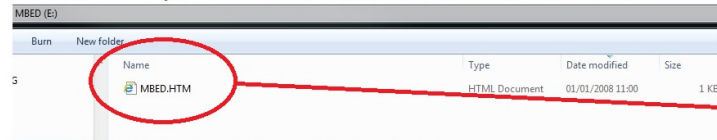


Tyres		540/65 R34	
A	Height over cab	m	3.00
B	Height to deck	m	1.67
C	Wheelbase	m	2.98
D	Track width	m	1.83 / 2.02 standard 1.93 / 1.78 reversed
E	Overall length	m	5.40
F	Overall width	m	2.55
G	Ground clearance	m	0.45
H	Width between tyres	m	1.47
I	Front antenna mount	m	2.260

Bridge Software

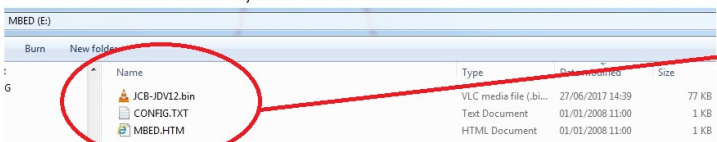
When connecting to the AGRA-GPS Bridge there are two mini USB ports. One board requires 1 file
The second board requires three files.

Top Board, behind front AGRA-GPS label - second CAN

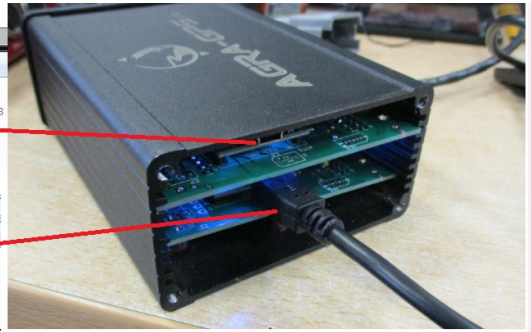


Name	Type	Date modified	Size
MBED.HTM	HTML Document	01/01/2008 11:00	1 KB

Bottom board, closest to data lable

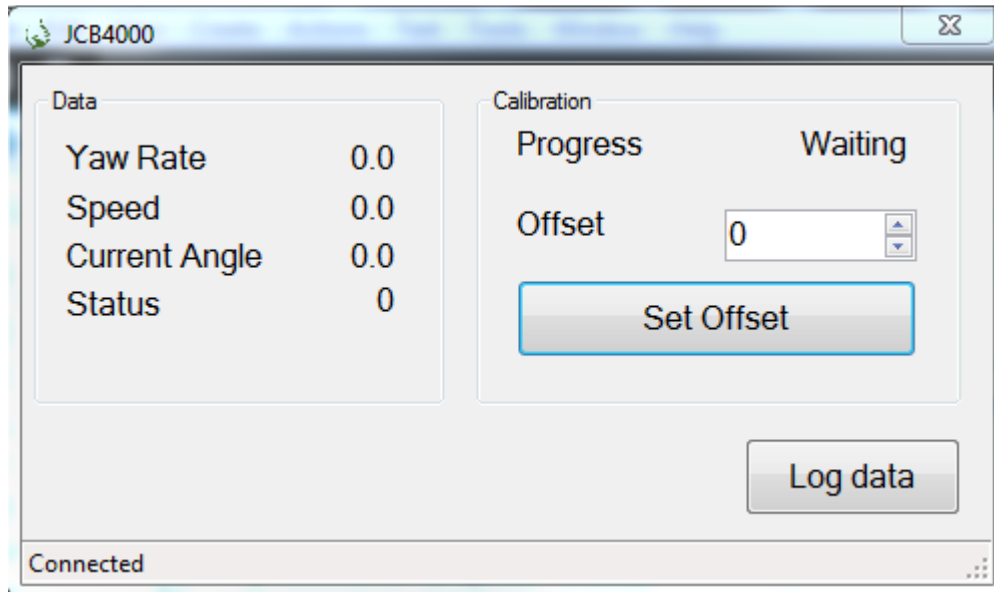


Name	Type	Date modified	Size
JCB-JDV12.bin	VLC media file (.bin)	27/06/2017 14:39	77 KB
CONFIG.TXT	Text Document	01/01/2008 11:00	1 KB
MBED.HTM	HTML Document	01/01/2008 11:00	1 KB



Calibration

To calibrate the AGRA-GPS Bridge the following tool must be used.



Drivers must also be installed to connect calibration tool to Bridge:

<https://os.mbed.com/handbook/Windows-serial-configuration>

mbedWinSerial_16466.exe

1. Remove the cover of the end of the AGRA-GPS Bridge and connect the the USB cable to the mini USB port and the other end to a laptop.
2. Open up the "JCB Calibration" tool.
3. Check it is connected
4. Engage auto guidance.
5. An AB line is required to start the calibration. Drive the machine along the AB line at ~5kph. The calibration tool will automatically start. The machine does not stay on the line so enough space is required for run off.
6. Once complete click "set offset"
7. Disconnect the tool and check the auto guidance performance

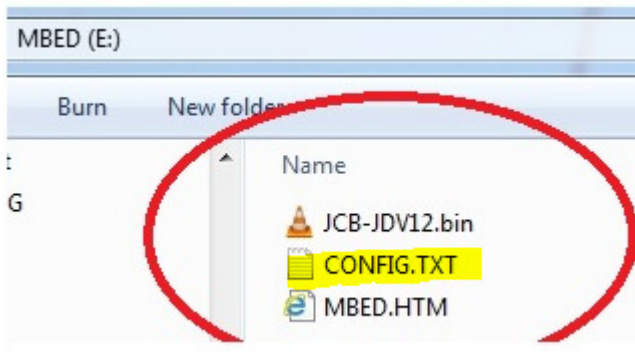
Typical Advanced AutoTrac Settings

Line Sensitivity – Tracking	165
Line Sensitivity – Heading	150
Heading Lead	80
Steering Response Rate	130
Acquire Sensitivity	150
Curve Sensitivity	120

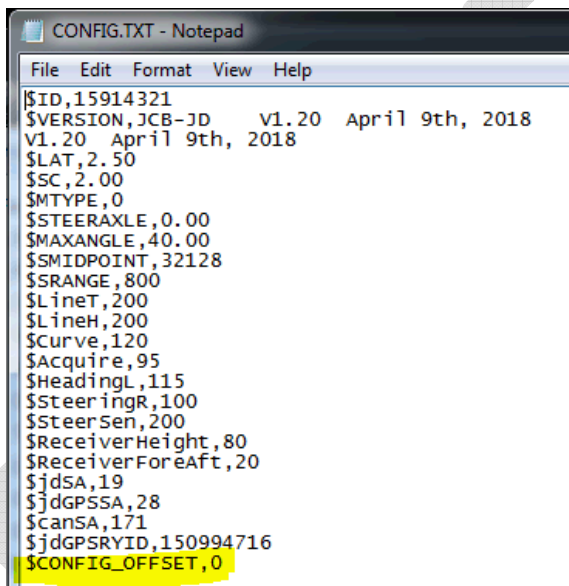
Fault finding

If machine is hanging off the line (i.e. 5 to 15 cm to the left or right)

1. Connect Bridge to USB on computer, open "MBED" file.

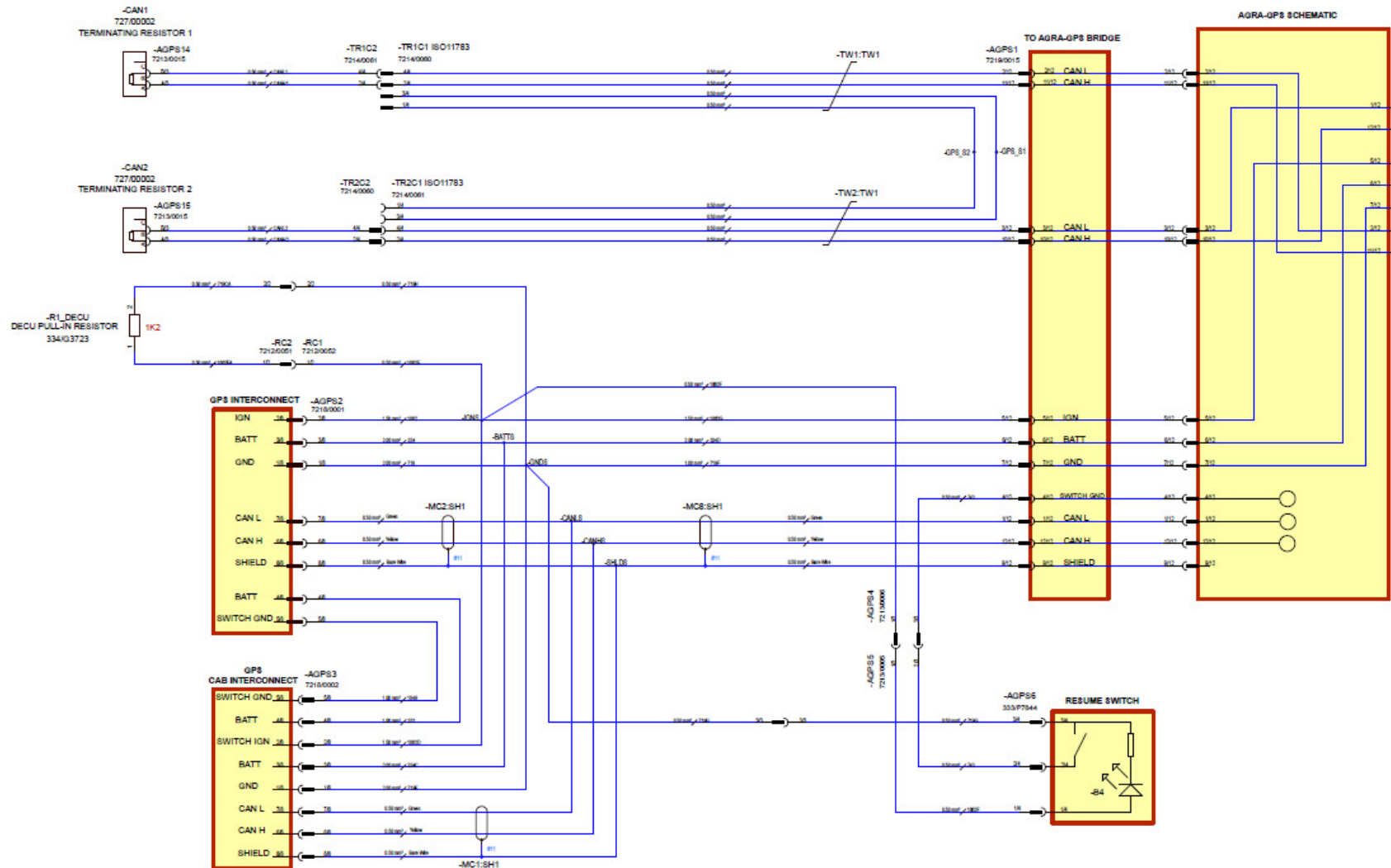


2. Open file "CONFIG.TXT"

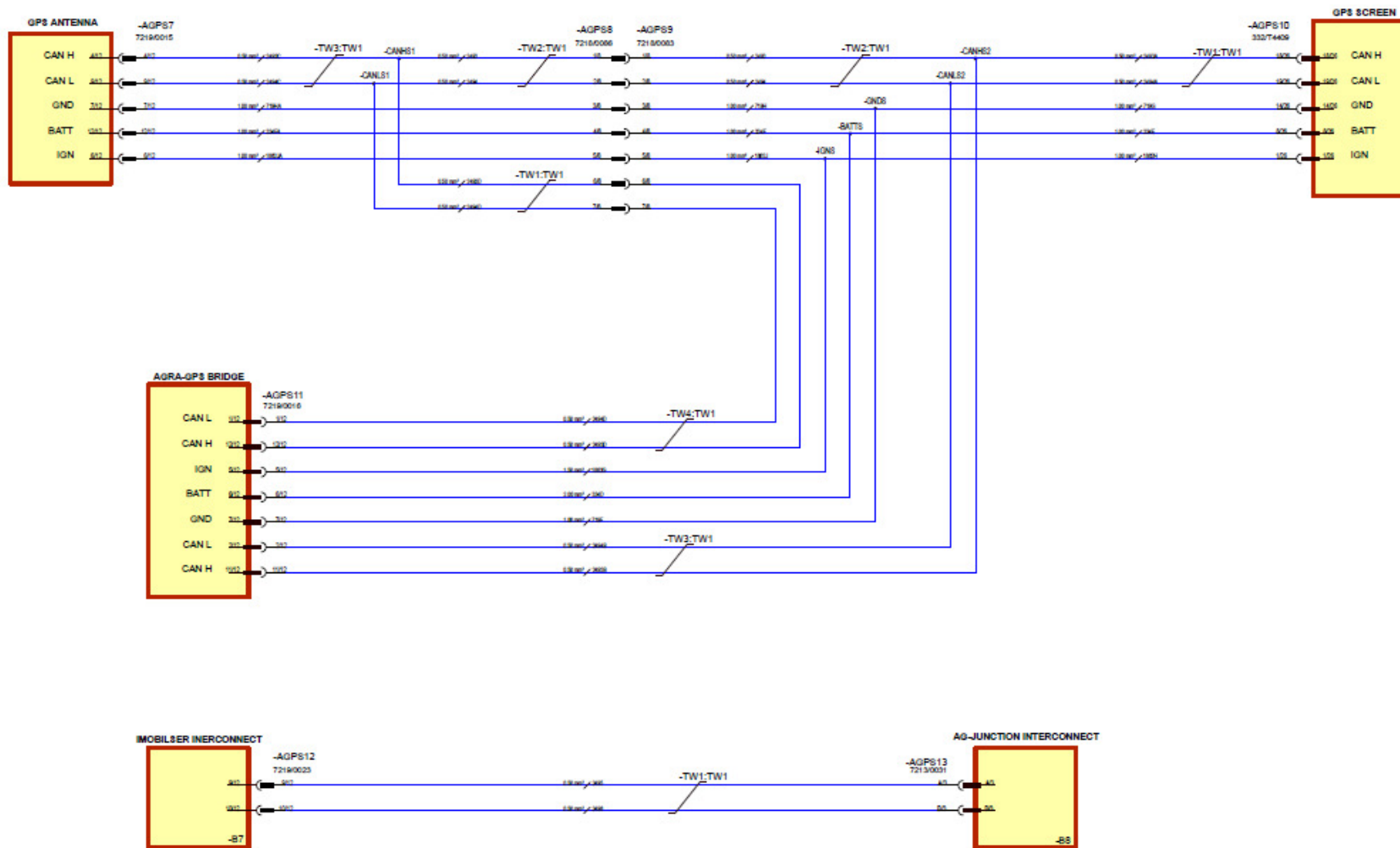


3. Change "CONFIG_OFFSET," - Increase the value in steps of "5" and test. Save. cycle the power to the Bridge.

Appendix 1 – GPS machine link/Bridge/ISO BUS schematic

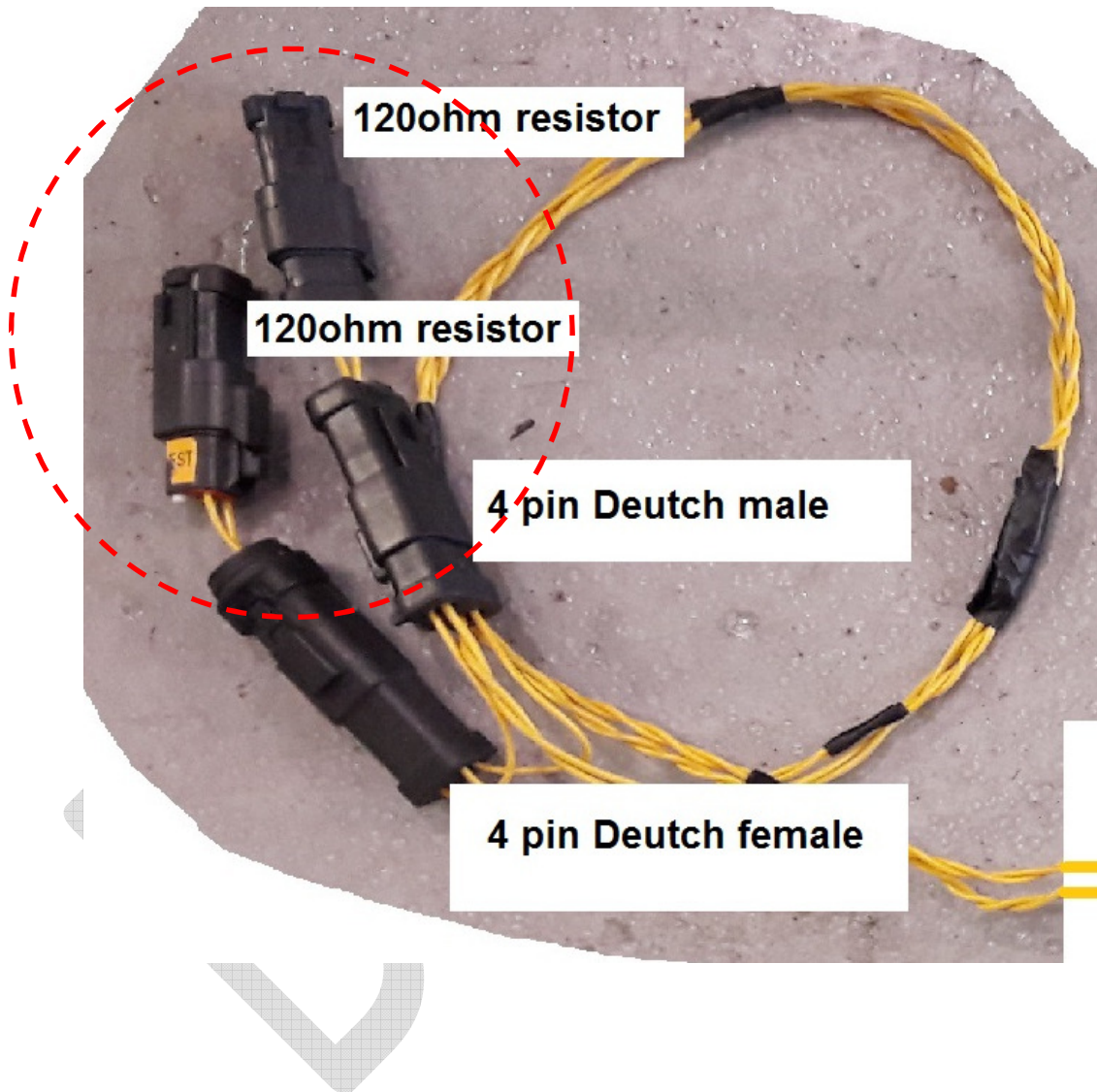


Appendix 1 – GPS antenna/Screen/Bridge harness/Coverage log schematic



Appendix 2 – ISOBUS

When connecting the JD Bridge to the tractor's ISOBUS harness remove the two 120ohm resistors and discard. Connect the bridge harness to the 4 way Bus extension connector located behind the fuse panel at the bottom.



Appendix 3 – General Bridge connections

