

SABANTO AUTONOMY SYSTEM

**INSTALLATION GUIDE for JOHN DEERE
6105E, 6120E, and 6135E Cab Tractor Models**

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SABANTO

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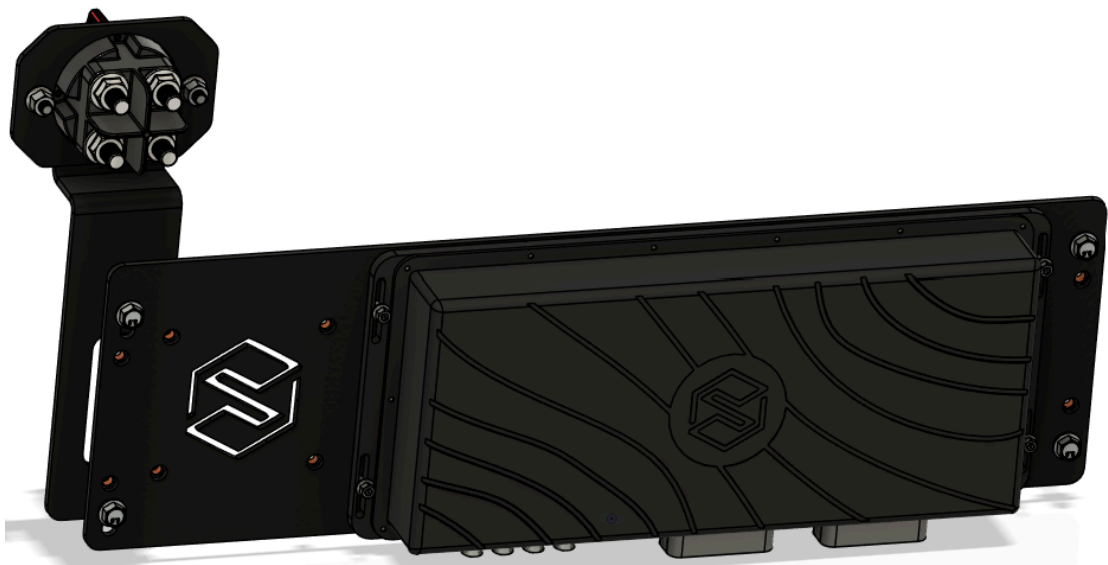
[Camera/Ethernet Cables](#)

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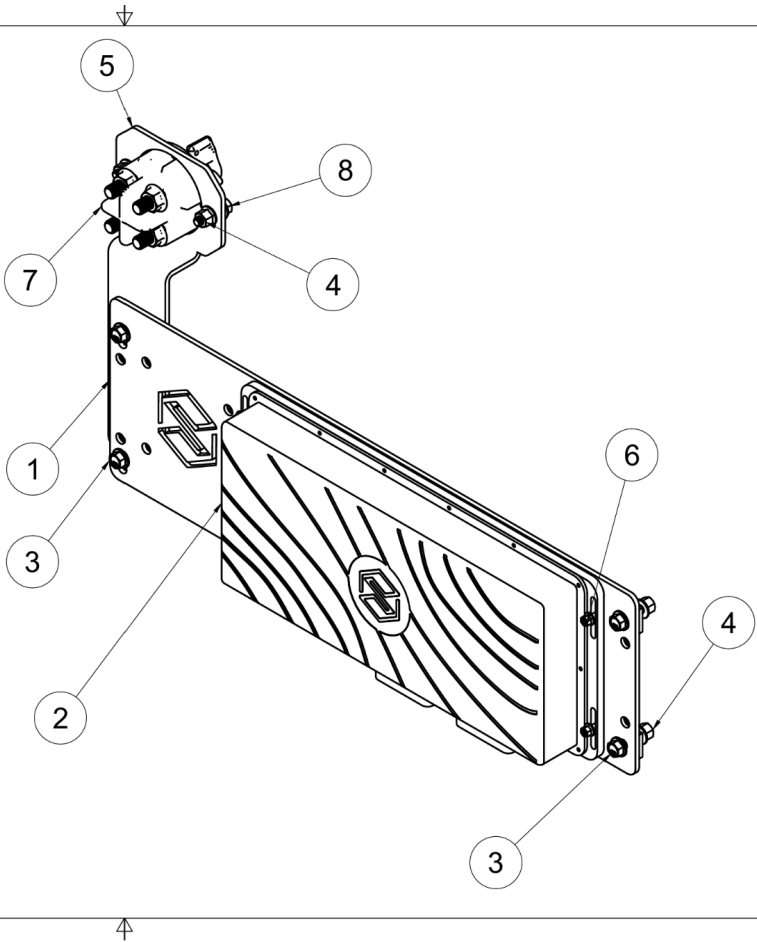
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PFM & Battery Disconnect Installation

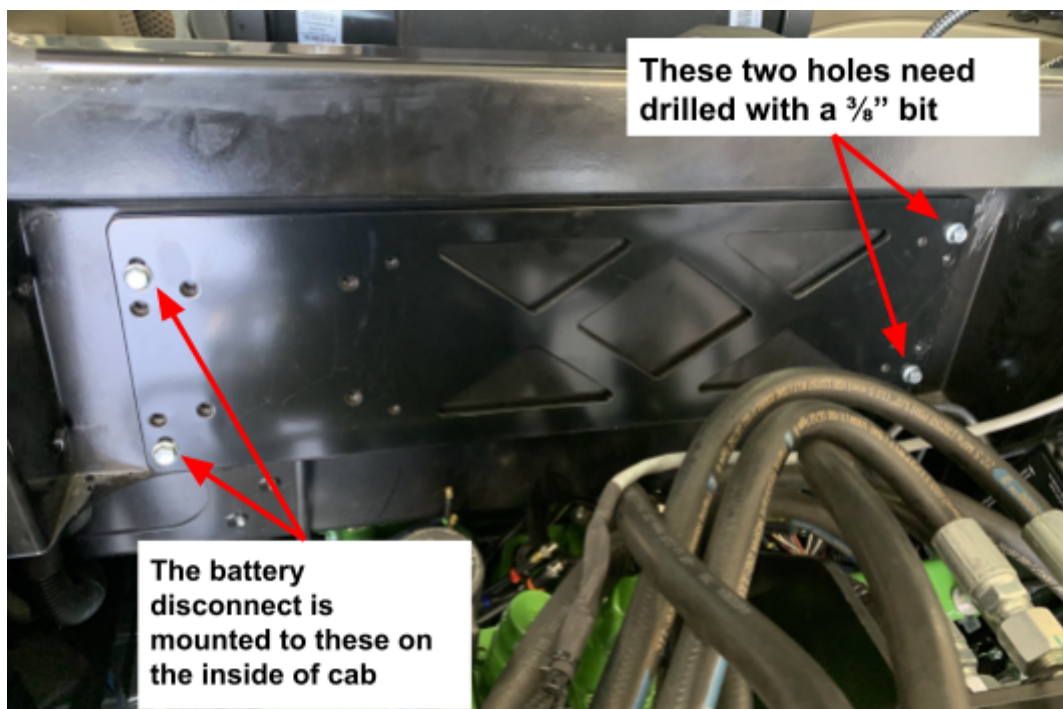


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0803-MP-2005	PFM MOUNT WLDMT
2	1	9999-DD-3001	PFM ASSEMBLY
3	4	9999-HA-1200	SCREW, M8-1.25 X 35MM, SFHCS, ZP
4	6	9999-HA-1128	NUT, M8-1.25, NYLOC, FH, ZP
5	1	0899-MP-1004	PLATE, FORMED, DUAL POLE BATTERY DISCONNECT MNT
6	4	9999-HA-1135	MEDIUM-STRENGTH STEEL NYLON-INSERT FLANGE LOCKNUT, CLASS 8, ZINC-PLATED, M5 X 0.8 MM THREAD
7	1	9999-EP-1701	DUAL POLE MASTER DISCONNECT SWITCH WITH RED HANDLE
8	2	9999-HA-1289	SCREW, M8-1.25 X 30MM, FHHCS, ZP





Remove the 4 factory bolts during this step

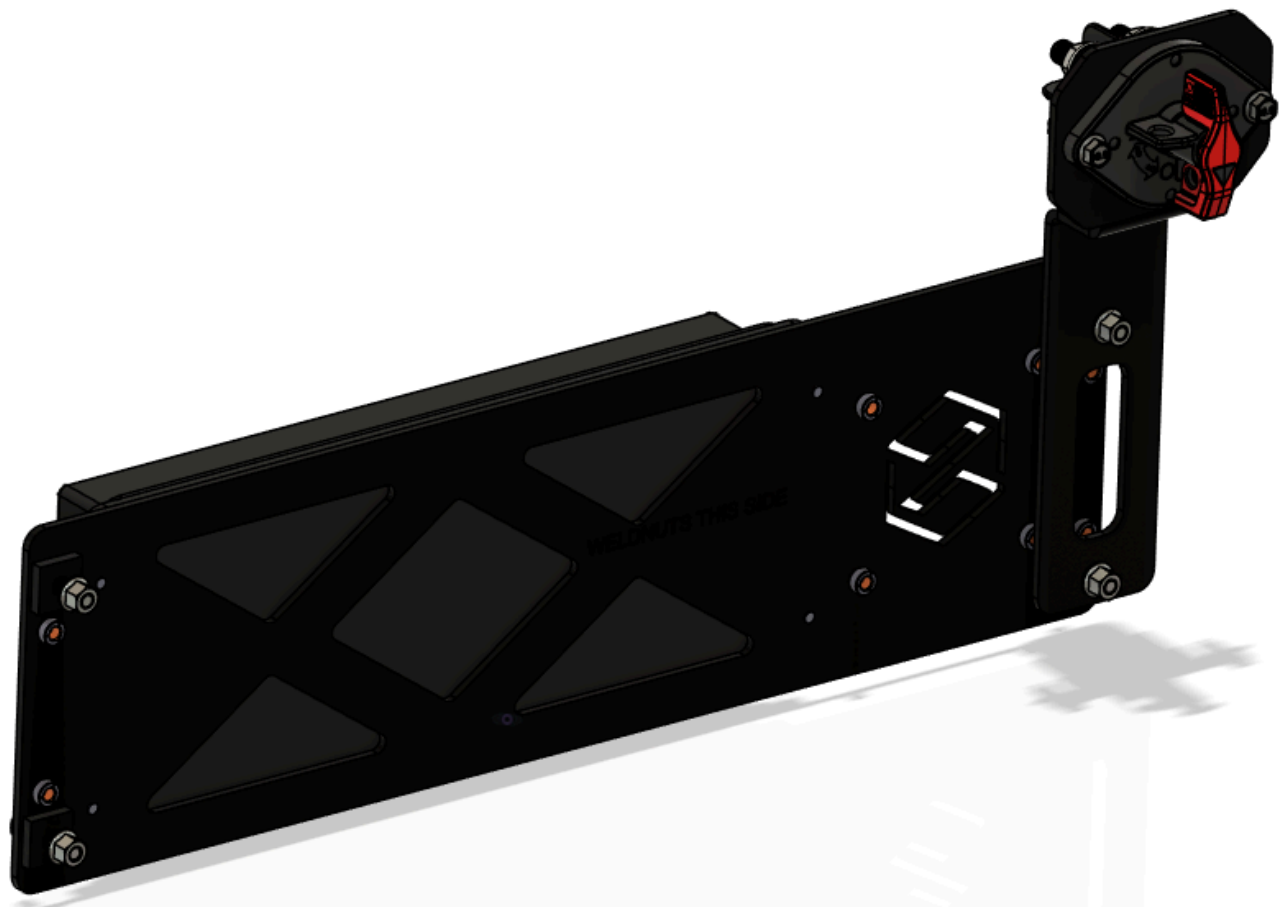


These two holes need drilled with a $\frac{3}{8}$ " bit

The battery disconnect is mounted to these on the inside of cab



The battery disconnect bracket uses the same bolts as the rear vPFM bracket.



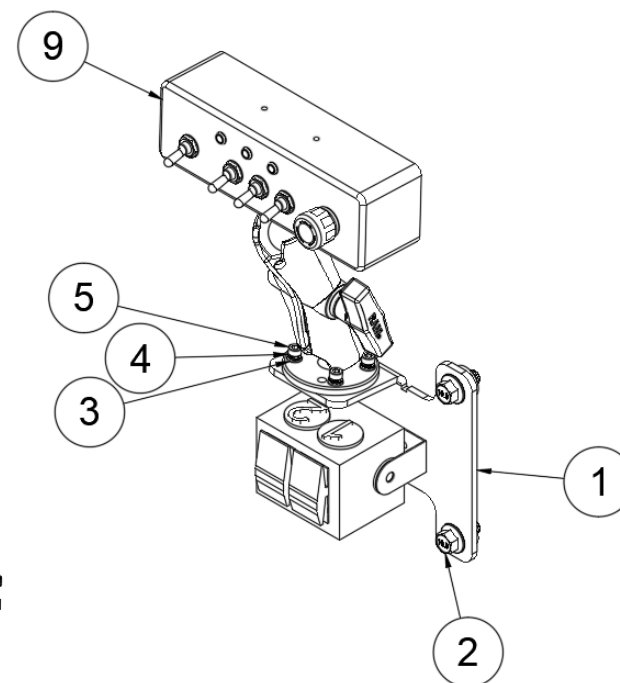
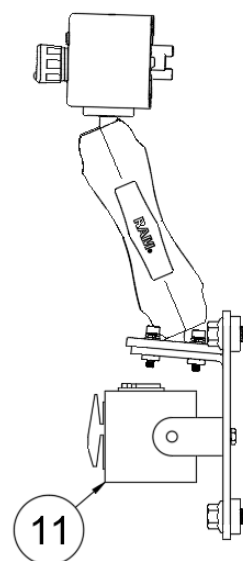
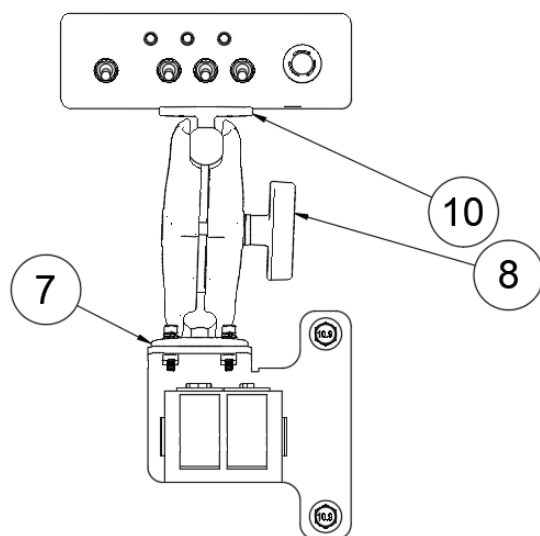


Remove cover
to mount

Tractor Control and Remote Valve Switch Box Installation



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0801-MP-2015	SWITCH BOX MOUNT WLDMT
2	2	9999-HA-1201	SCREW, M10-1.25 X 20MM, FHHCS, ZP
3	4	9999-HA-1010	WASHER, M5, FLAT, ZP
4	4	9999-HA-1004	WASHER, M5, LOCK, ZP
5	4	9999-HA-1002	SCREW, M5-0.8 X 22MM, SHCS, SS
6	2	9999-HA-1074	SCREW, M4-0.7 X 10MM, PHCS, WITH SPLIT LOCK WASHER, ZP
7	1	9999-HA-1062	RAM ROUND PLATE WITH BALL
8	1	9999-HA-1061	RAM DOUBLE SOCKET ARM
9	1	9999-DD-3002	TRACTOR CONTROL SWITCH BOX
10	1	9999-HA-1063	RAM DIAMOND BALL BASE
11	1	9999-EH-2001	SWITCH BOX, MOMENTARY ON/OFF CONTROL FOR 2-SPOOL MONOBLOCK VALVE



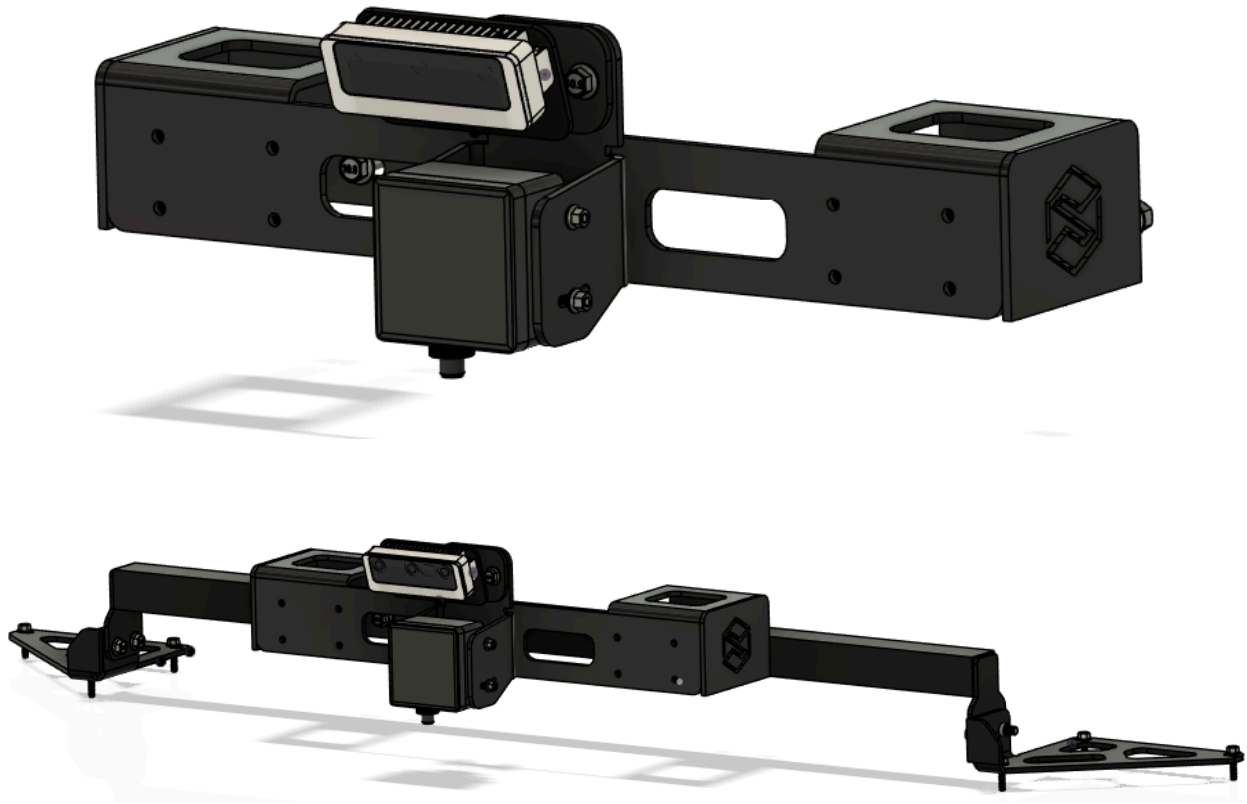
Front Roof Installation

For addition of AV&L kit, see these instructions

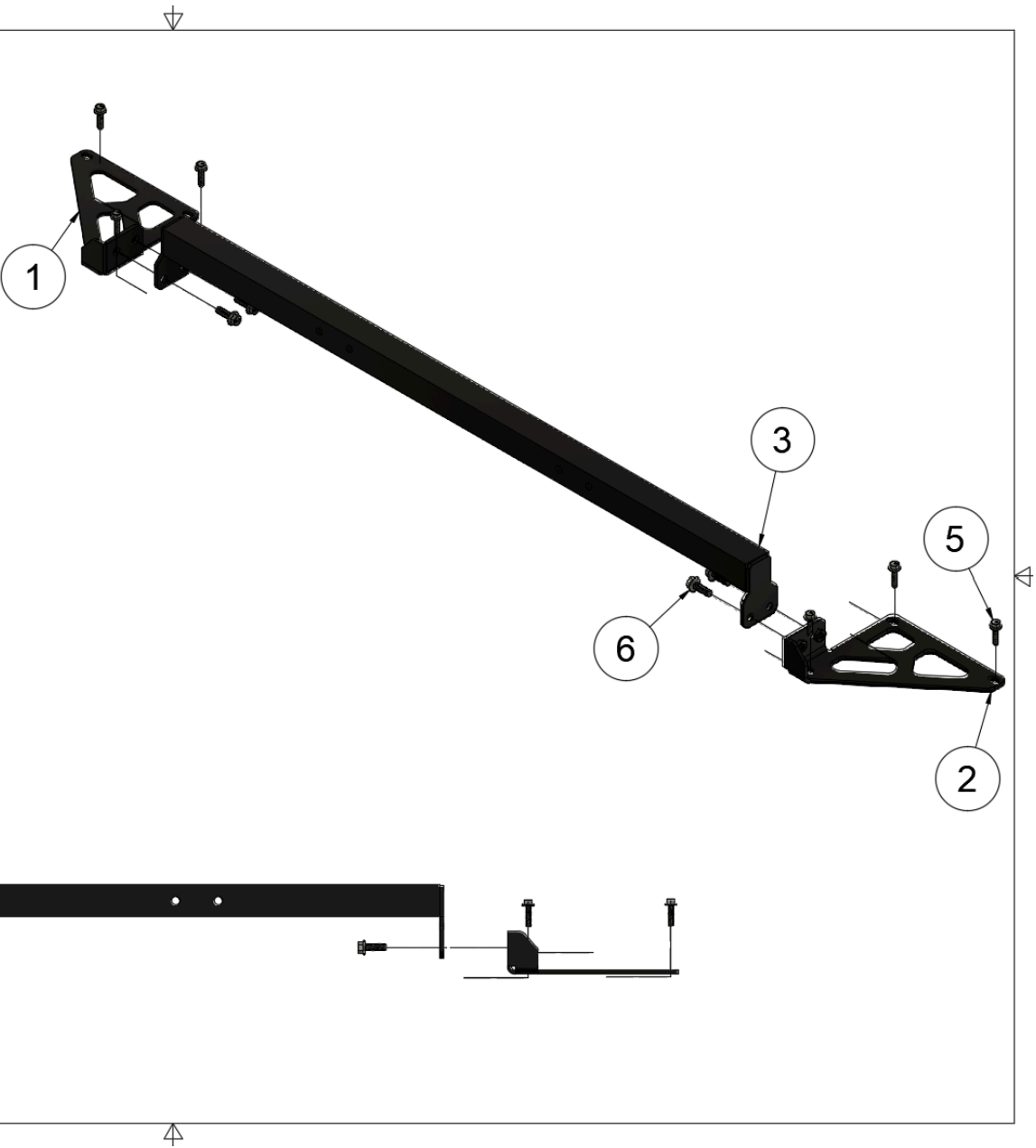
See Radar Installation Guide for more <https://support.sabantoag.com/radar-install>

Radar @ 8.5 degree relative to ground

Camera @ 35 degree relative to ground



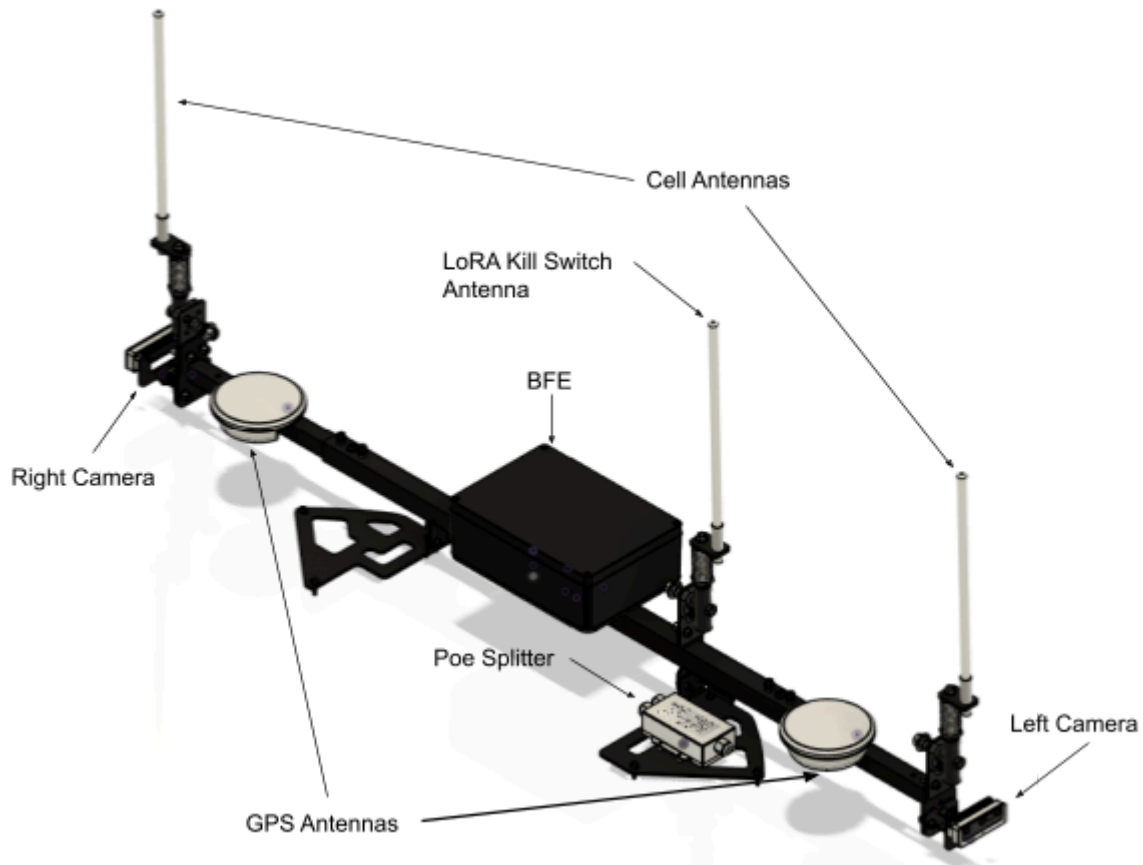
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0801-MP-2007	RIGHT BASE MOUNT WLDMT
2	1	0801-MP-2006	LEFT BASE MOUNT WLDMT
3	1	0801-MP-2005	FRONT BAR WLDMT
5	6	9999-HA-1130	SCREW, M6-1 X 25MM, SFHHCS, ZP
6	4	9999-HA-1132	SCREW, M8-1.25 X 25MM, FHHCS, ZP
7	1	9999 OAK 1-AXIS	----
9	1	9999-MP-1046	PLATE, FORMED, FRONT CAB POD LIGHT MOUNT





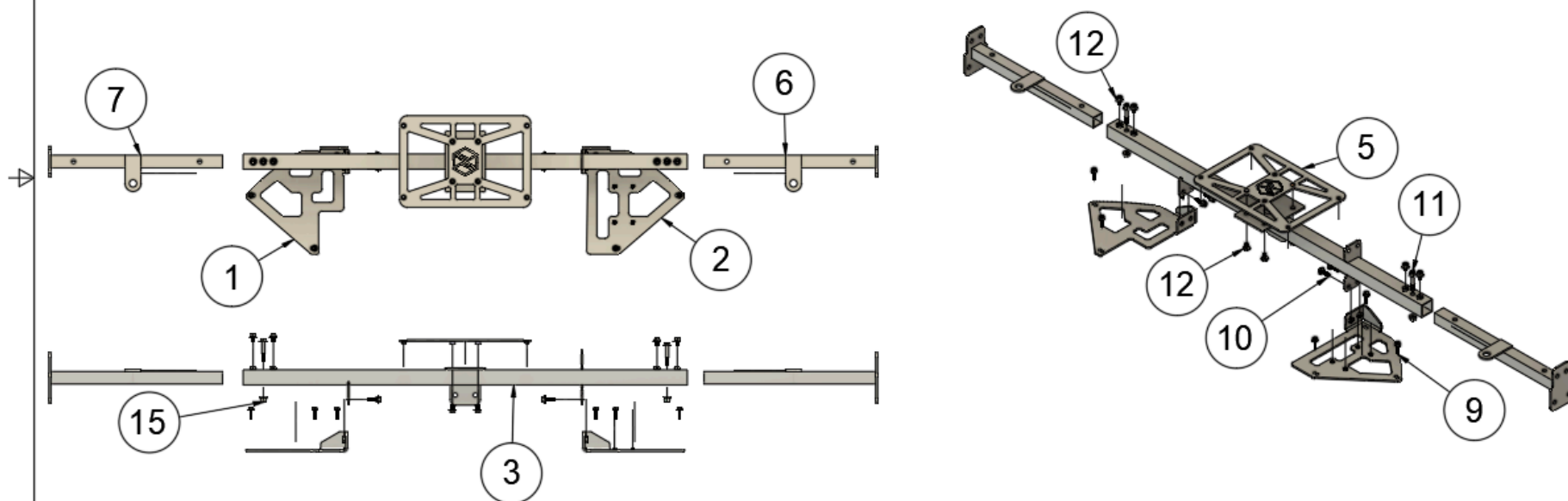
Rear Roof Installation

For addition of AV&L kit, see these instructions



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0801-MP-2012	RIGHT REAR BASE MOUNT WLDMT
2	1	0801-MP-2011	LEFT REAR BASE MOUNT WLDMT
3	1	0801-MP-2013	REAR BAR WLDMT
5	1	9999-MP-2006	WLDMT, BFE MOUNT
6	1	0103-MP-2002	REAR CAB BAR EXTENSION WDMLT LEFT
7	1	0103-MP-2004	REAR CAB BAR EXTENSION WDMLT RIGHT
9	6	9999-HA-1130	SCREW, M6-1 X 25MM, SFHHCS, ZP
10	4	9999-HA-1132	SCREW, M8-1.25 X 25MM, FHHCS, ZP

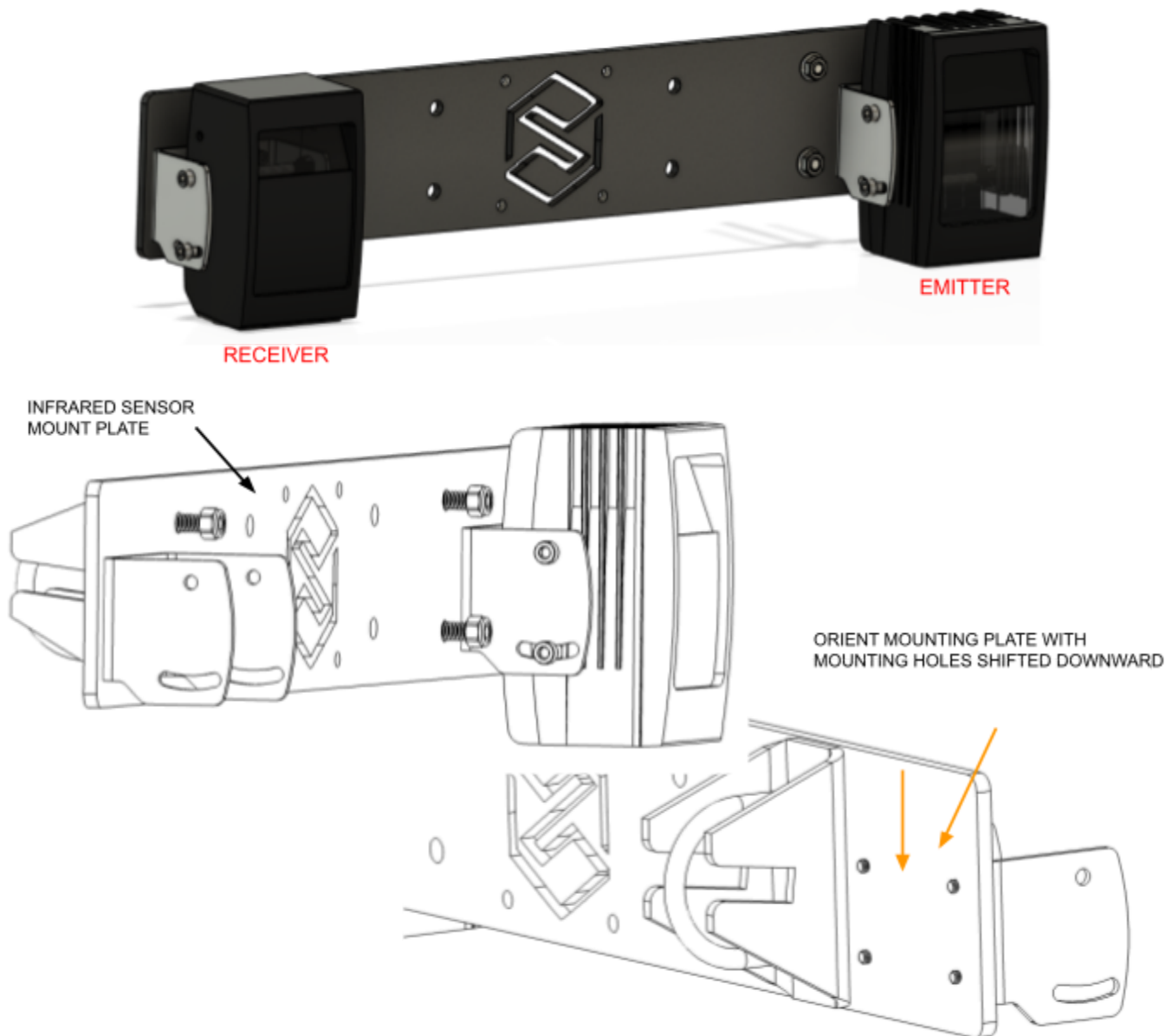
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
11	2	9999-HA-1122	SCREW, M8-1.25 X 50MM, FHHCS, PT, ZP
12	8	9999-HA-1156	SCREW, M8-1.25 X 12MM, FHHCS, ZP
15	2	9999-HA-1128	NUT, M8-1.25, NYLOC, FH, ZP





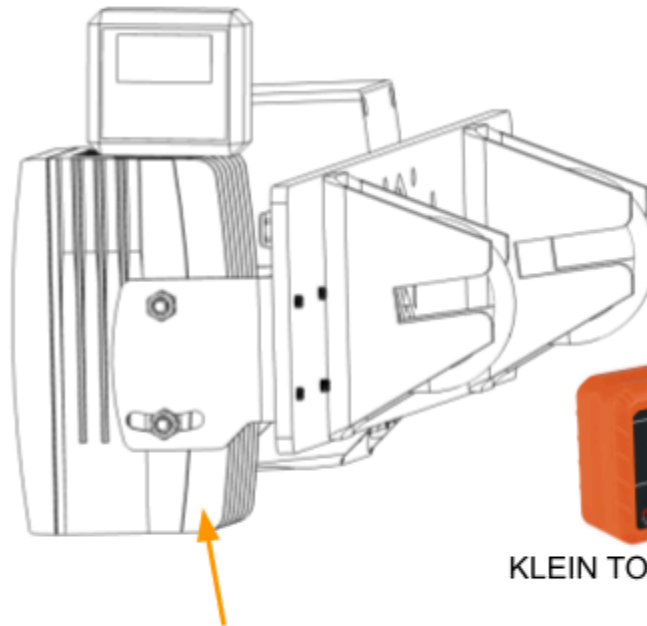


Infrared Sensor Installation



LEFT SIDE (EMITTER)

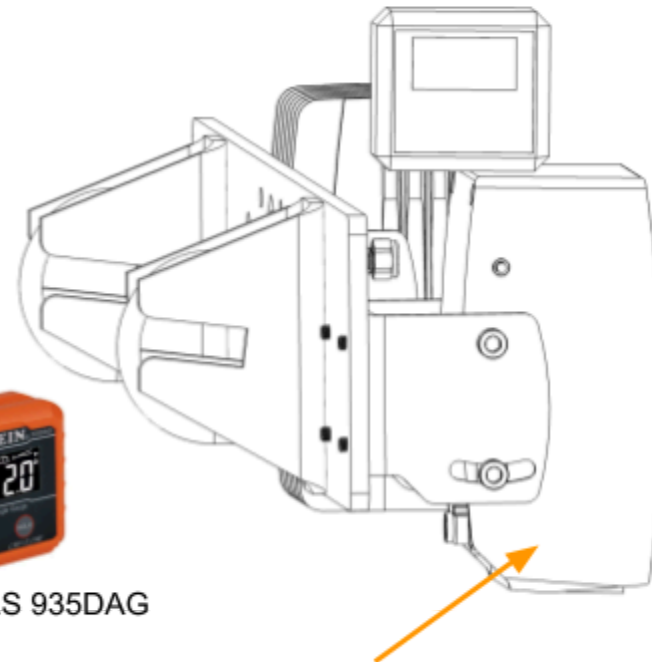
PLACE ANGLE FINDER ON REAR FINS OF
DEVICE HOUSING



LEFT SIDE (EMITTER)

RIGHT SIDE (RECEIVER)

PLACE ANGLE FINDER ON REAR
"HALF" OF DEVICE HOUSING



RIGHT SIDE (RECEIVER)



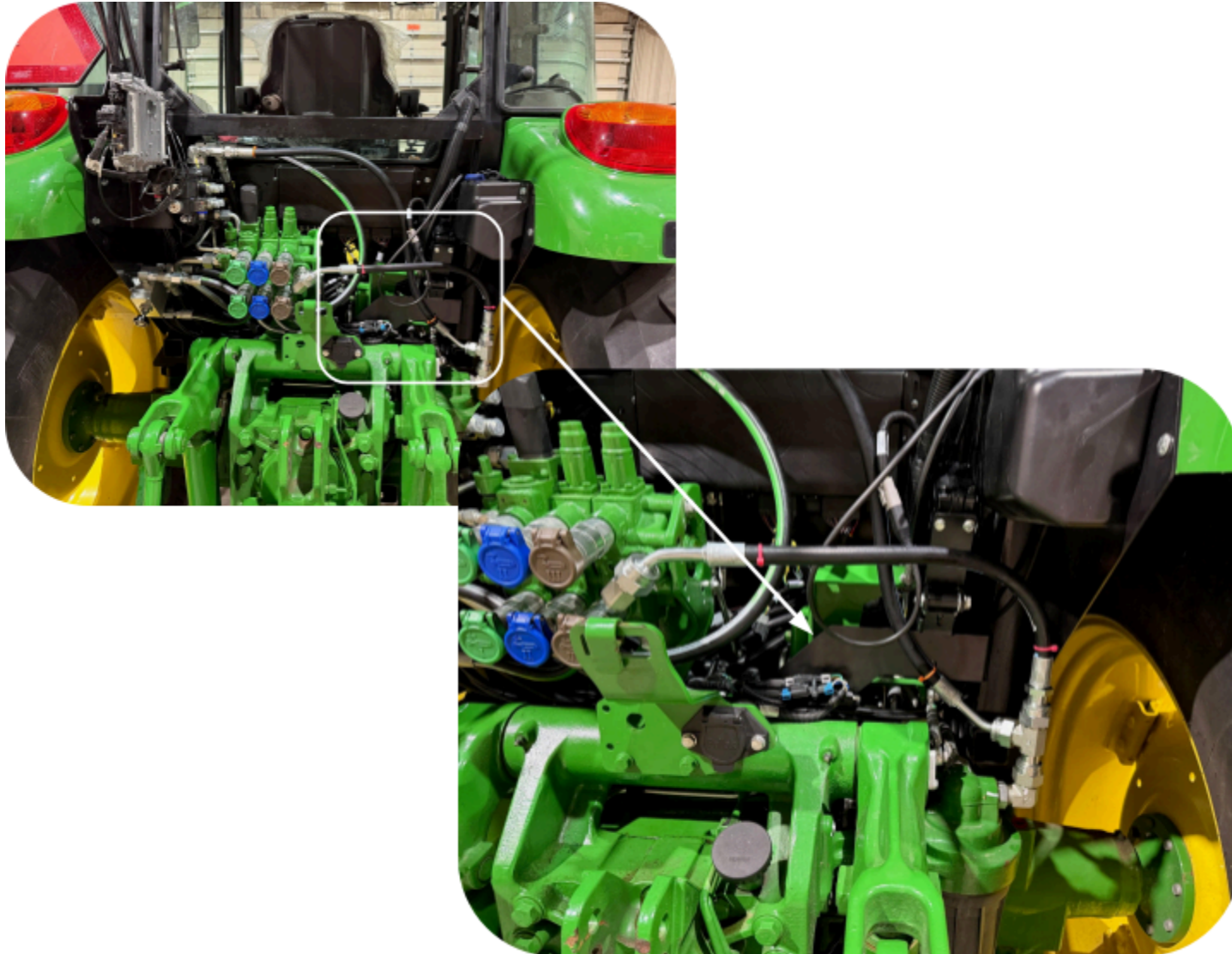
KLEIN TOOLS 935DAG

LEVELING PROCEDURE

1. GRAB A DIGITAL ANGLE FINDER, SUCH AS A KLEIN TOOLS
2. PARK TRACTOR ON A LEVEL SURFACE
3. ONE DEVICE AT A TIME, PLACE THE DIGITAL ANGLE FINDER ON THE EMITTER AND RECEIVER DEVICES, AS SHOWN ABOVE.
4. ADJUST THE ANGLE OF EACH DEVICE, SO THEY ARE LEVEL TO 0 DEGREES, +/- 1 DEGREE.



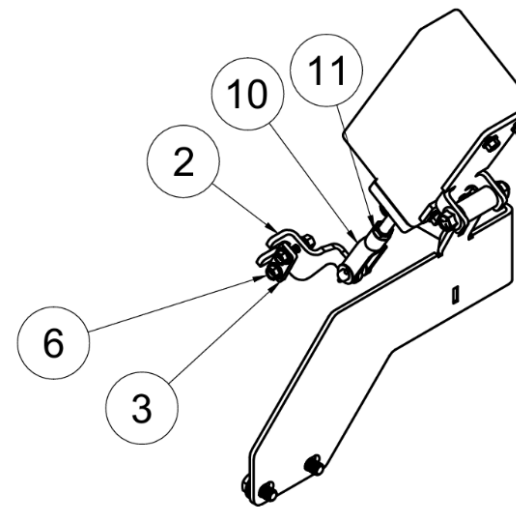
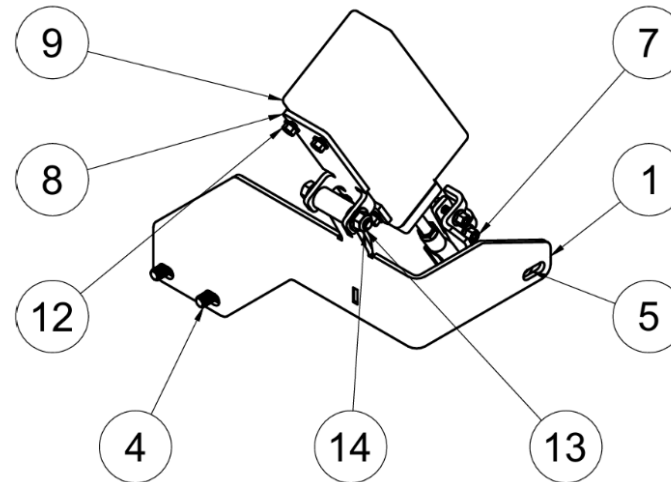
3-Point Hitch Actuator Installation

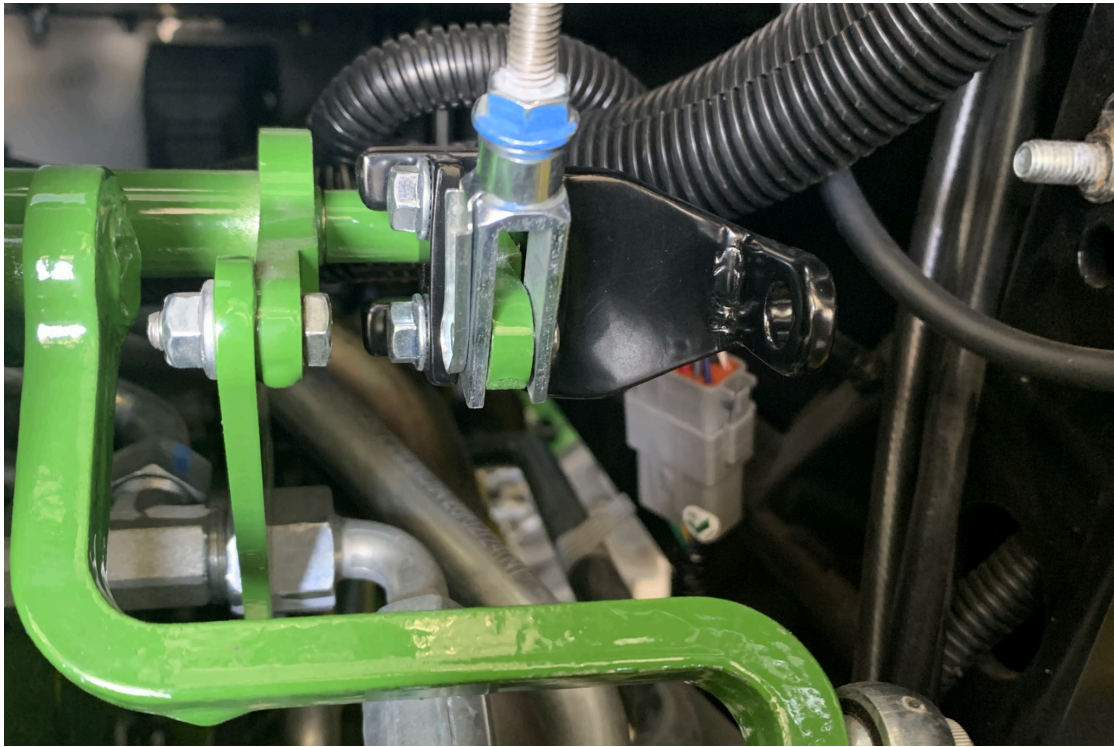


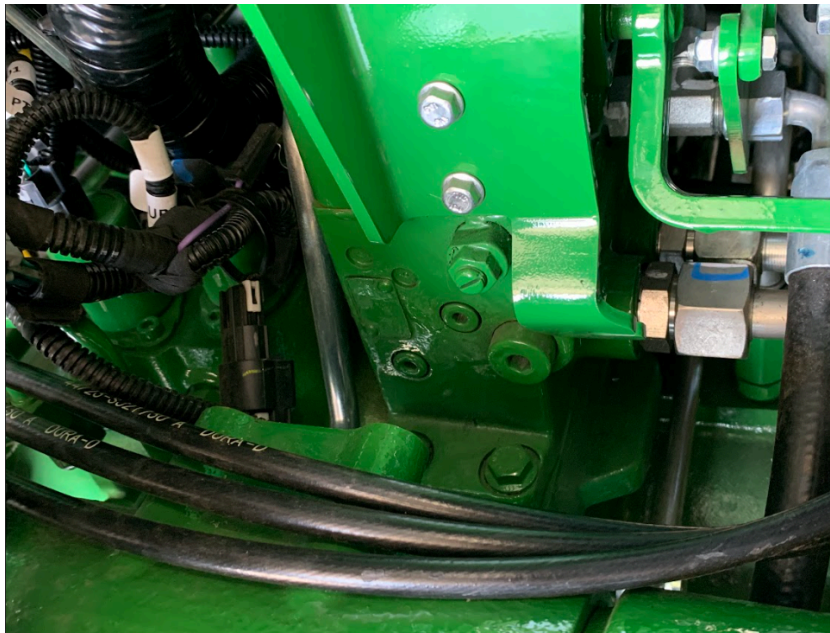
Note: If the tractor does not have mid mount hydraulics, it is recommended to remove and install the pressure line for the rear remote valve before installing the hitch actuator. Removal of the factory tank hardline is required in order to install the hitch bracket. The hardline is run from the factory SCV remote stack and the tank filter. The hardline will be replaced with a hydraulic hose.

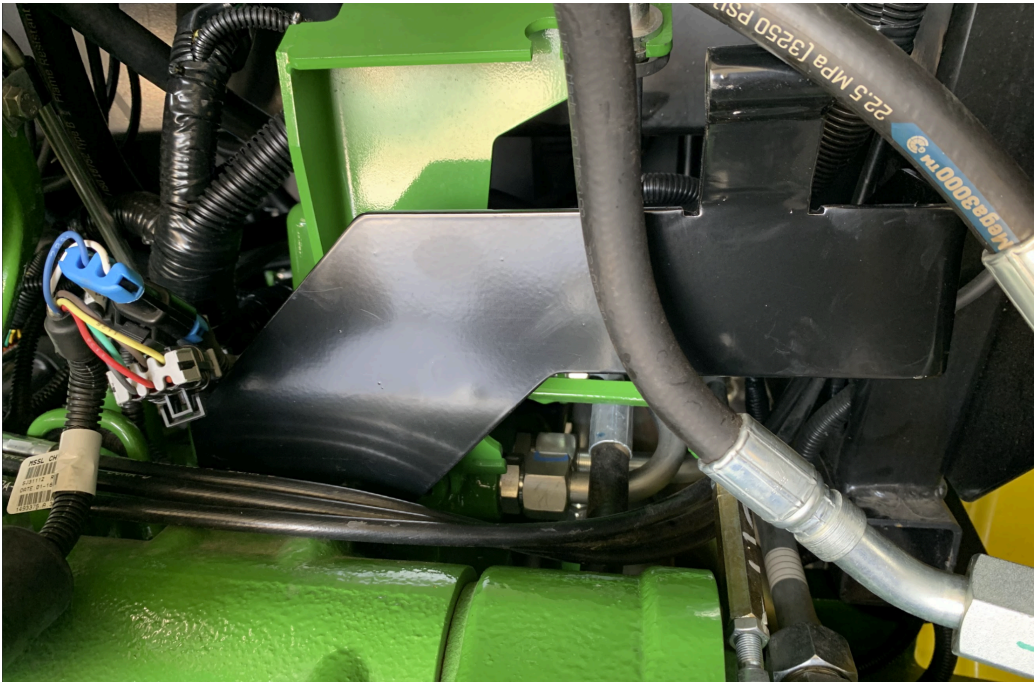
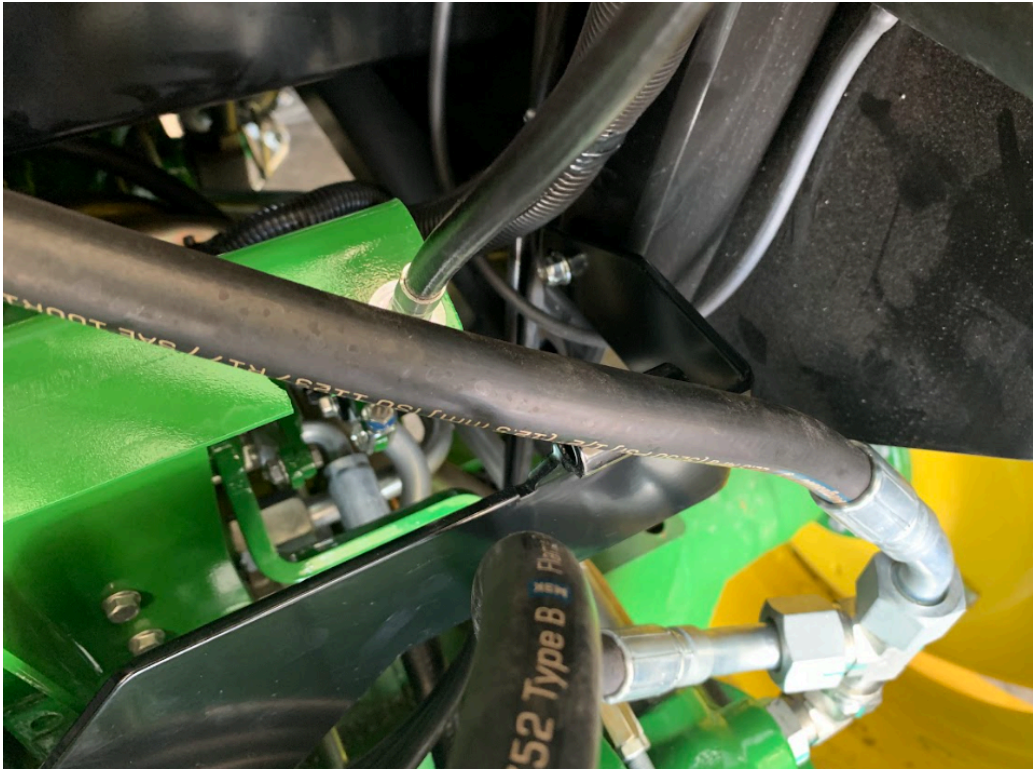


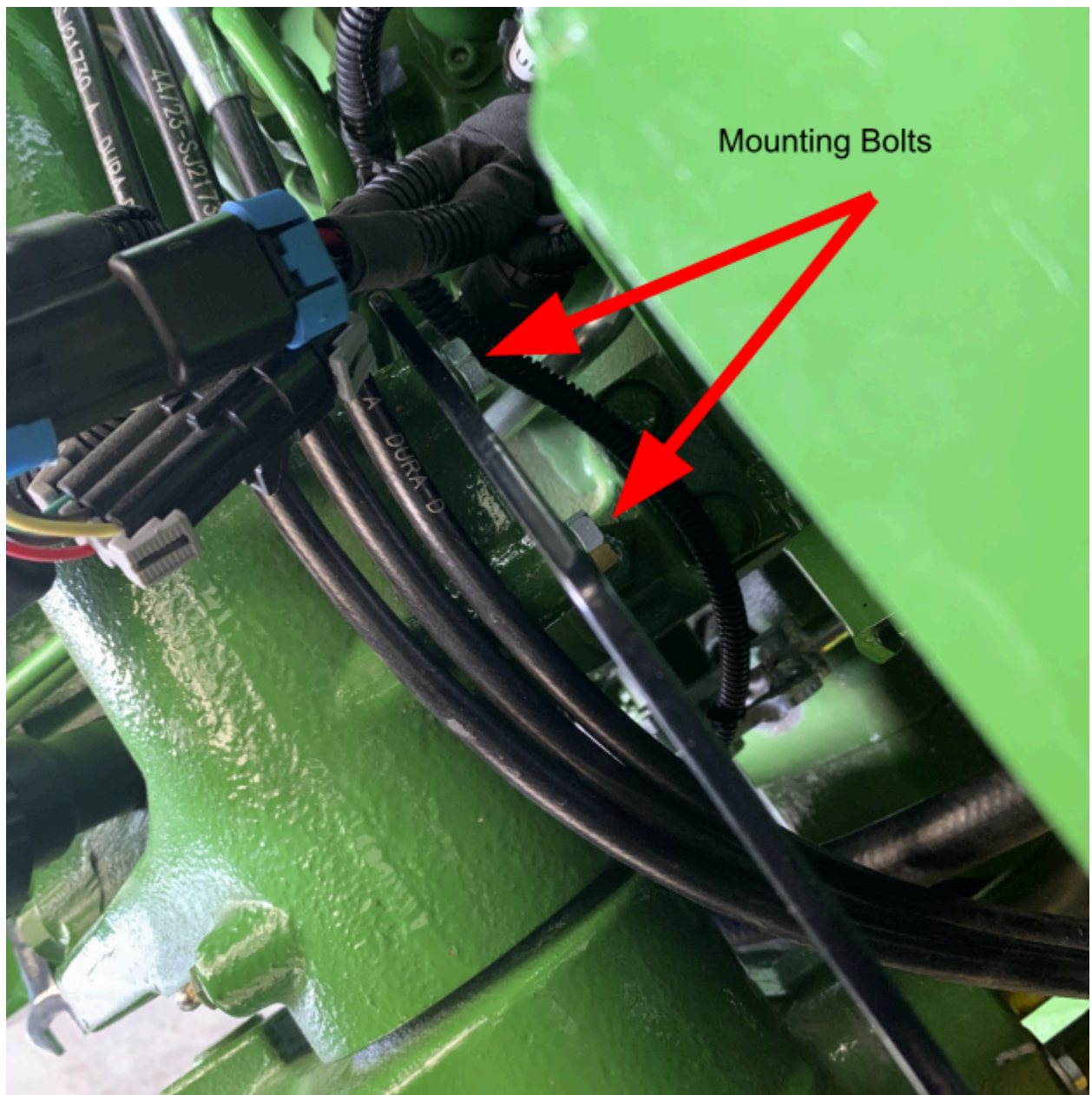
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0806-MP-2001	WLDMT, HITCH ACTUATOR MOUNT
2	1	0806-MP-1004	PLATE,FORMED, HITCH LINKAGE PUSH TAB
3	1	0806-MP-1005	PLATE, HITCH LINKAGE SQUEEZE TAB
4	2	9999-HA-1218	SCREW, M10-1.50 X 20MM, SFHHCS, ZP
5	1	9999-HA-1128	NUT, M8-1.25, NYLOC, FH, ZP
6	2	9999-HA-1259	SCREW, M6-1 X 30MM, SFHHCS, ZP
7	2	9999-HA-1131	MEDIUM-STRENGTH STEEL NYLON-INSERT FLANGE LOCKNUT, CLASS 8, ZINC-PLATED, M6 X 1 MM THREAD
8	1	0102-MP-1010	3 PT HITCH ACTUATOR MOUNT BRKT 2
9	1	9999-DD-1003A	KAR-TECH 3IN-90LB-F LINEAR CAN ACTUATOR
10	1	9999-HA-1027	CLEVIS ROD END, 3/8-24, 2.50 SHANK CENTER LENGTH, ZP
11	1	9999-HA-1064	THIN HEX NUT, ZN PLTD, GR 5, 3/8-24
12	4	9999-HA-1173	SCREW, M6-1 X 12MM, SFHHCS, ZP
13	1	9999-HA-1198	SCREW, 3/8-16 X 2.50, FHHCS, PT, ZP
14	1	9999-HA-1199	NUT, 3/8-16, NYLOC, FH, ZP





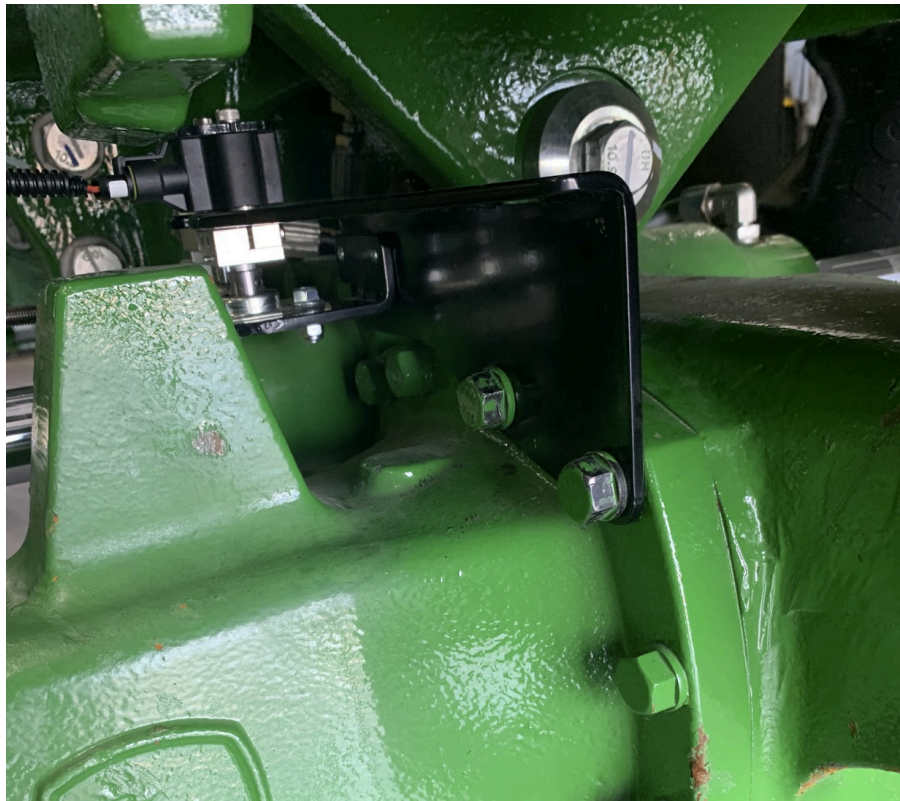
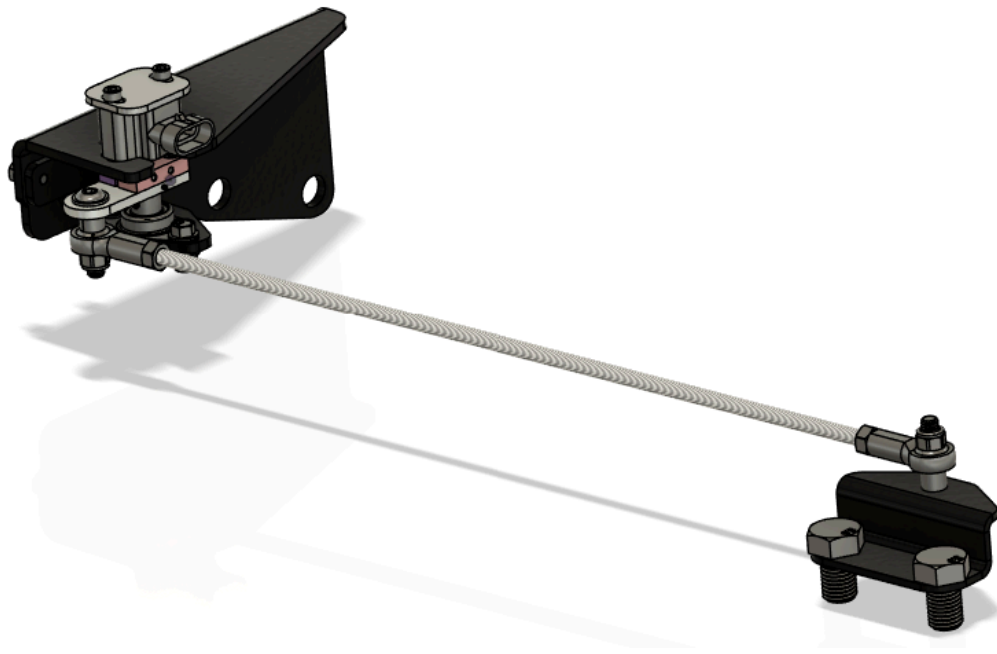


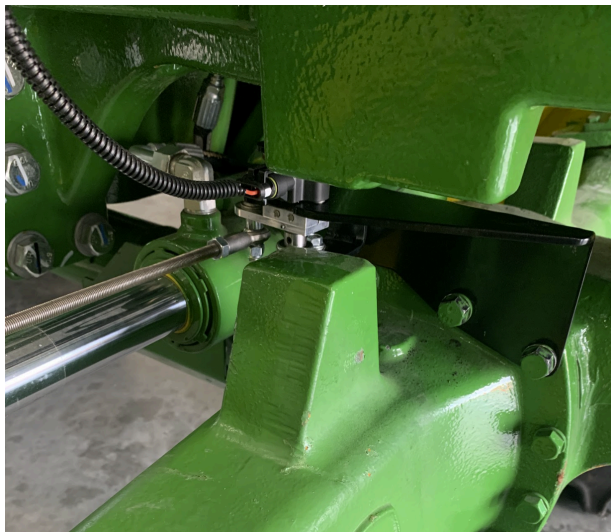






Wheel Angle Sensor Installation





Adjusting the sensor

Upon installation of the wheel angle sensor, some adjustments may need to be made to the length of the all-thread between the sensor flange and the outer mounting bracket. The ideal position is shown in image 1, the centerline of the sensor shown in image 2 should be parallel to the centerline of the axle. This should be relatively close since it comes preassembled. With the wheels pointed straight forward, the centerline of the aluminum flange below the sensor should be parallel to the centerline of the wheel. If it is not parallel, undo one of the tie rod ends from its mounting bolts and loosen the jam nuts. Spin the all-thread/tie rod ends to either lengthen or shorten to overall distance.

Image 1

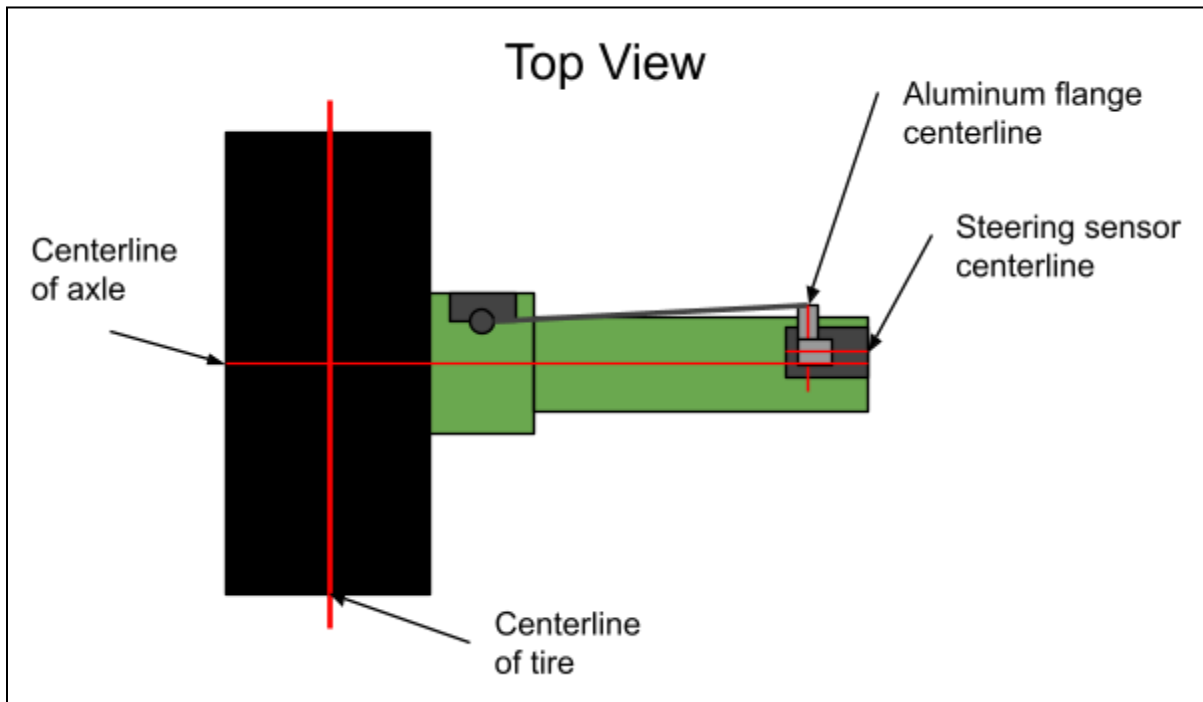
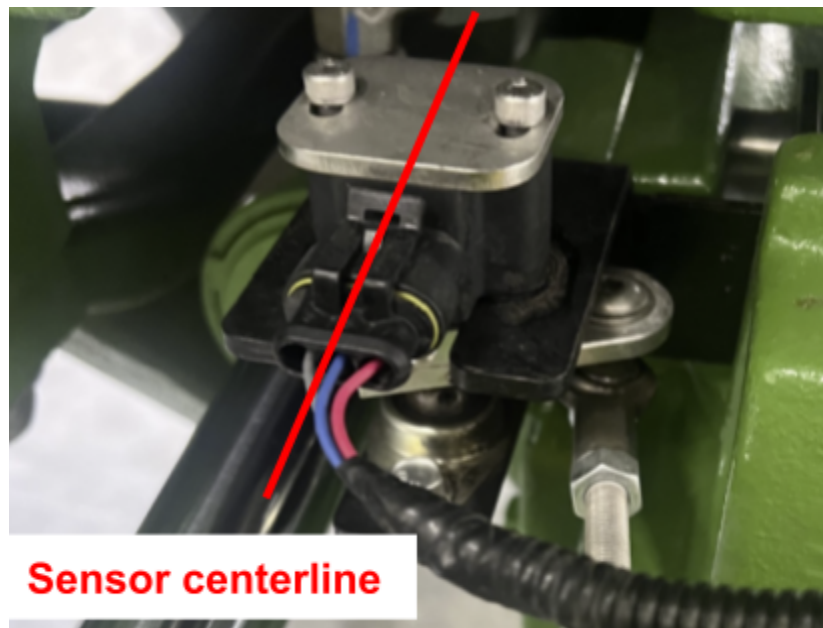


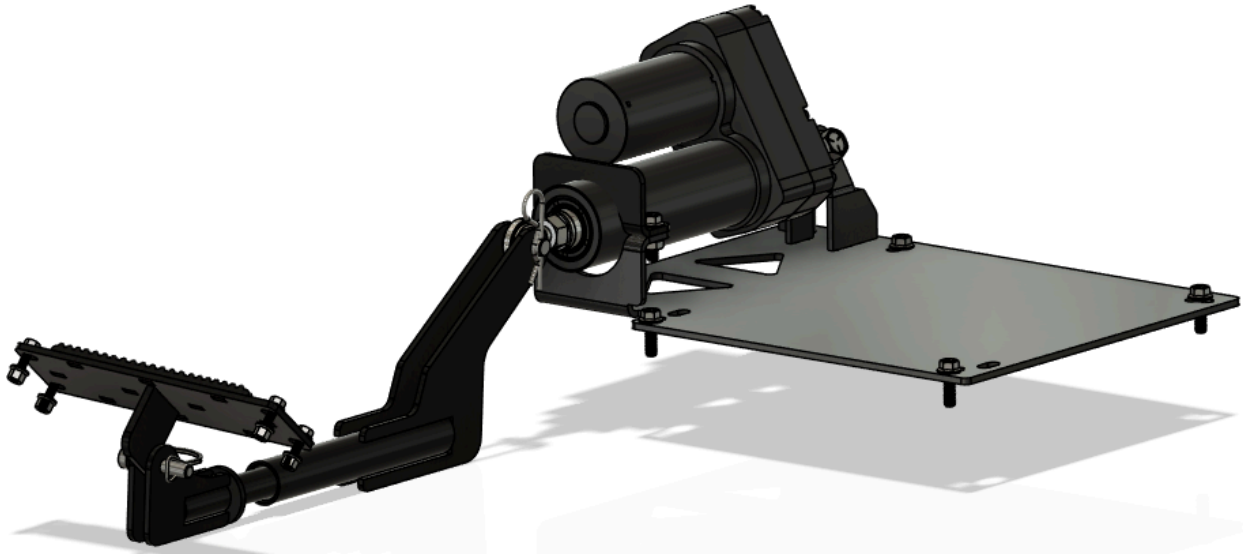
Image 2



Brake Installation

Note: Easiest installation tip - remove 4 bolts holding the seat down. Leave the seat in the cab, tip it back and slide the bracket under, insert the new included bolts and set the seat back down over the bolt heads using the slot cutouts in the seat base.

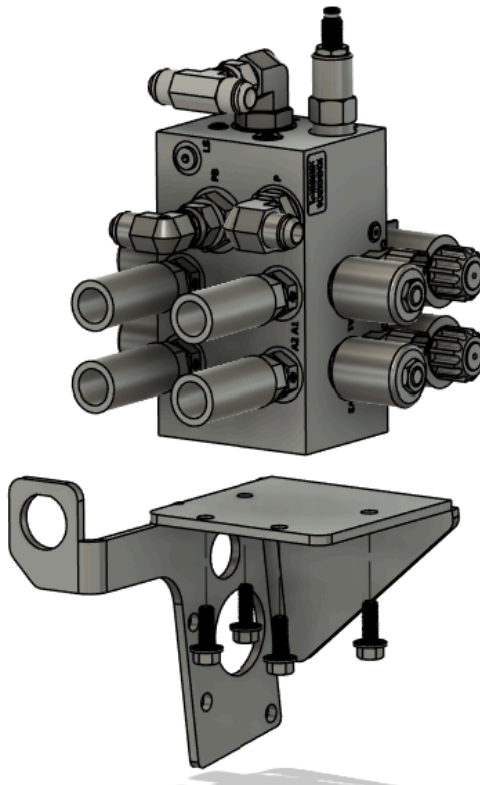
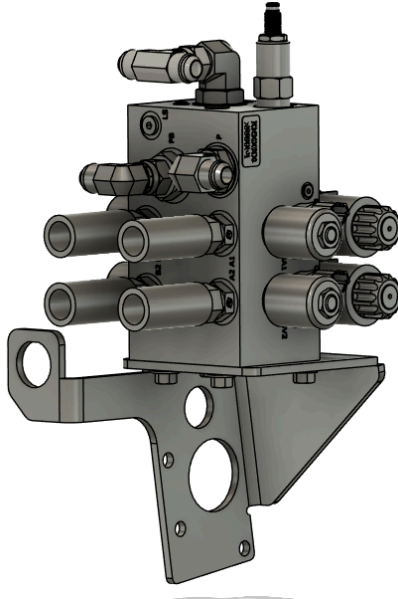
MAKE SURE RUBBER EDGE TRIM IS INSTALLED ON TOP AND BOTTOM OF ACTUATOR CLAMP. The provided rubber may be trimmed down, at a minimum use ~1in on the top and bottom.

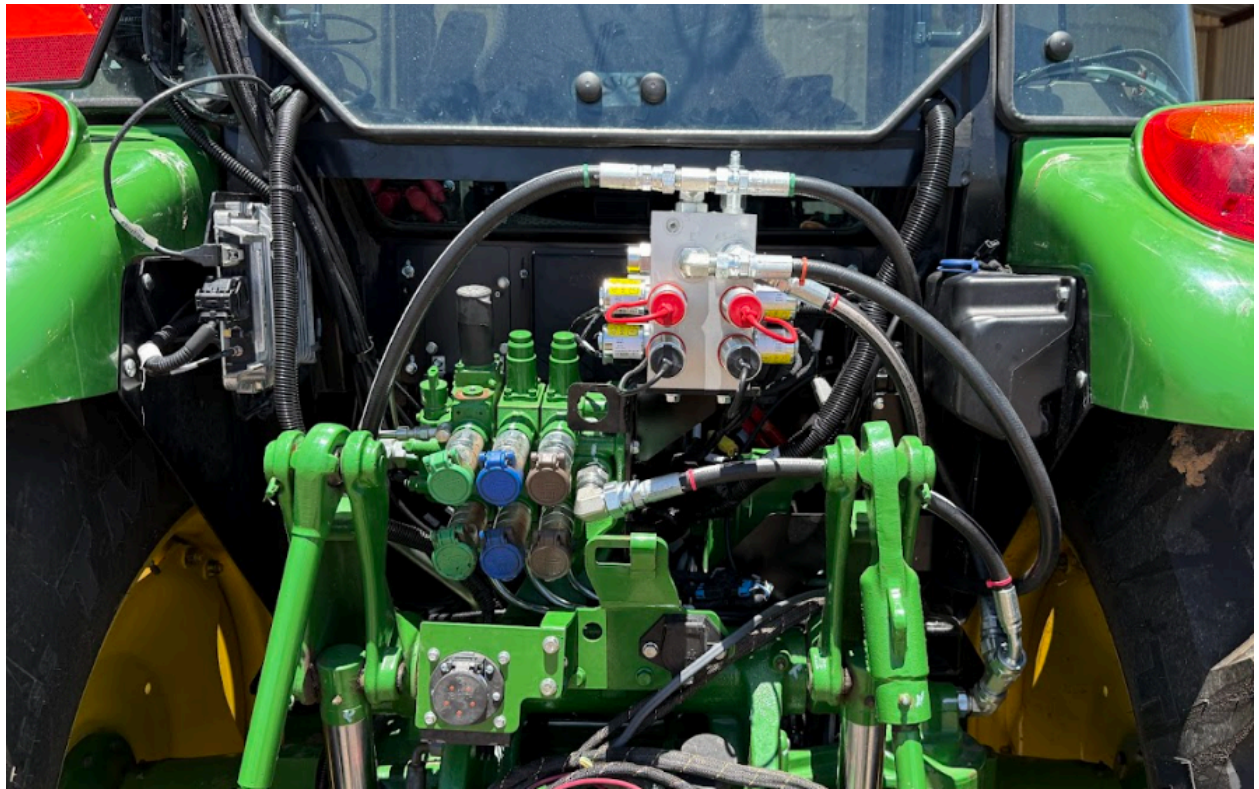




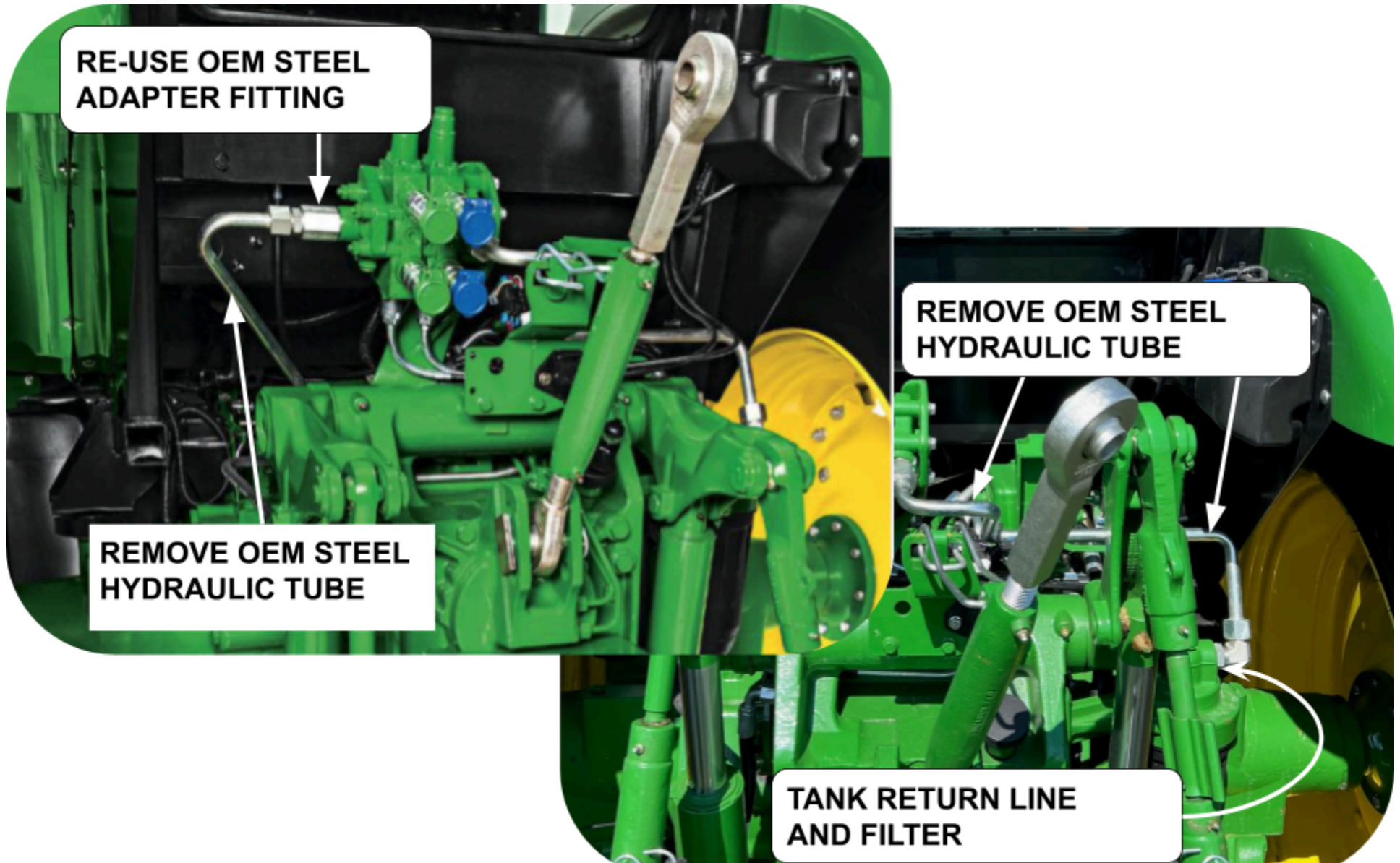
Rear Remote Valve Installation

- Remove the three (3) lower factory bolts on the side of the factory SCV stack to mount bracket

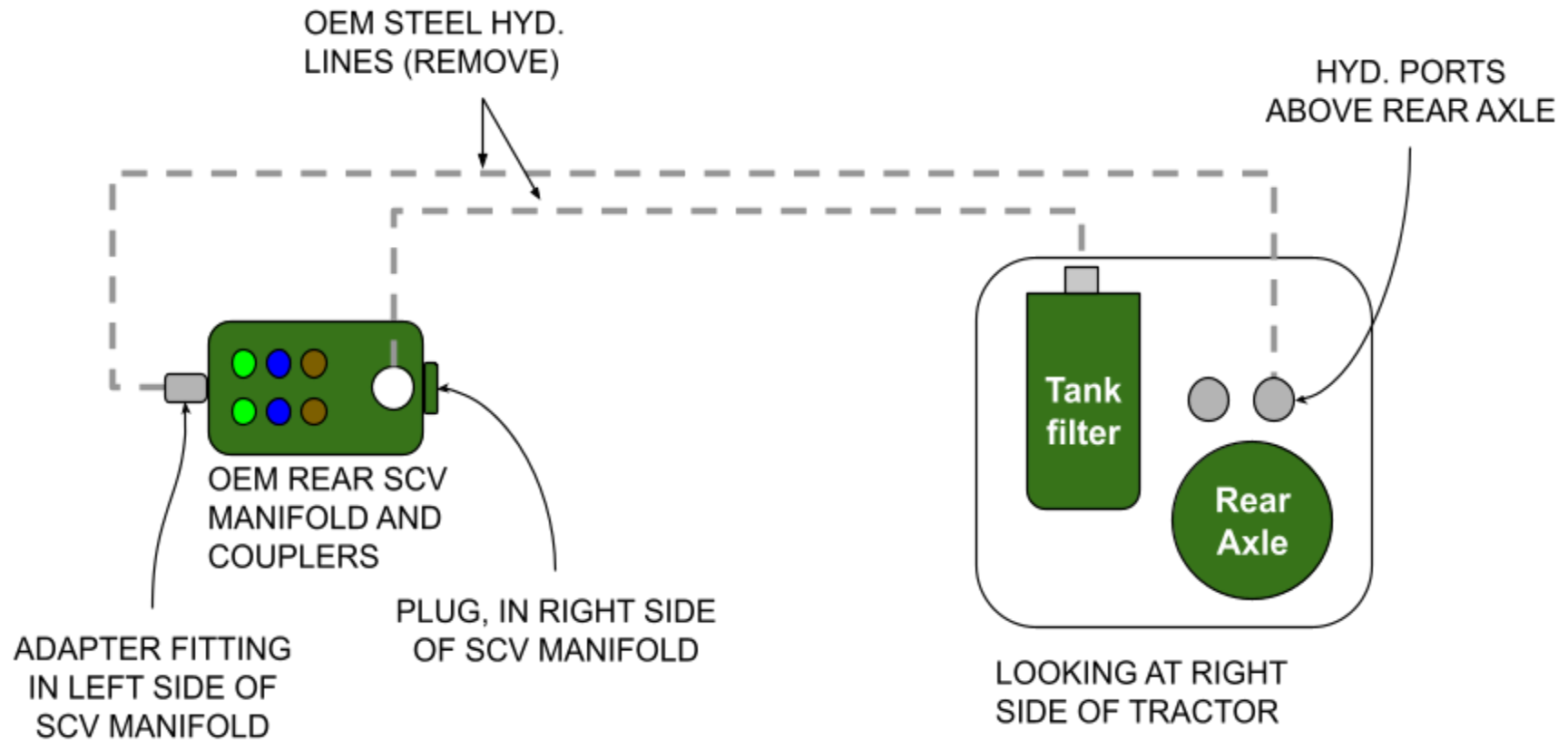




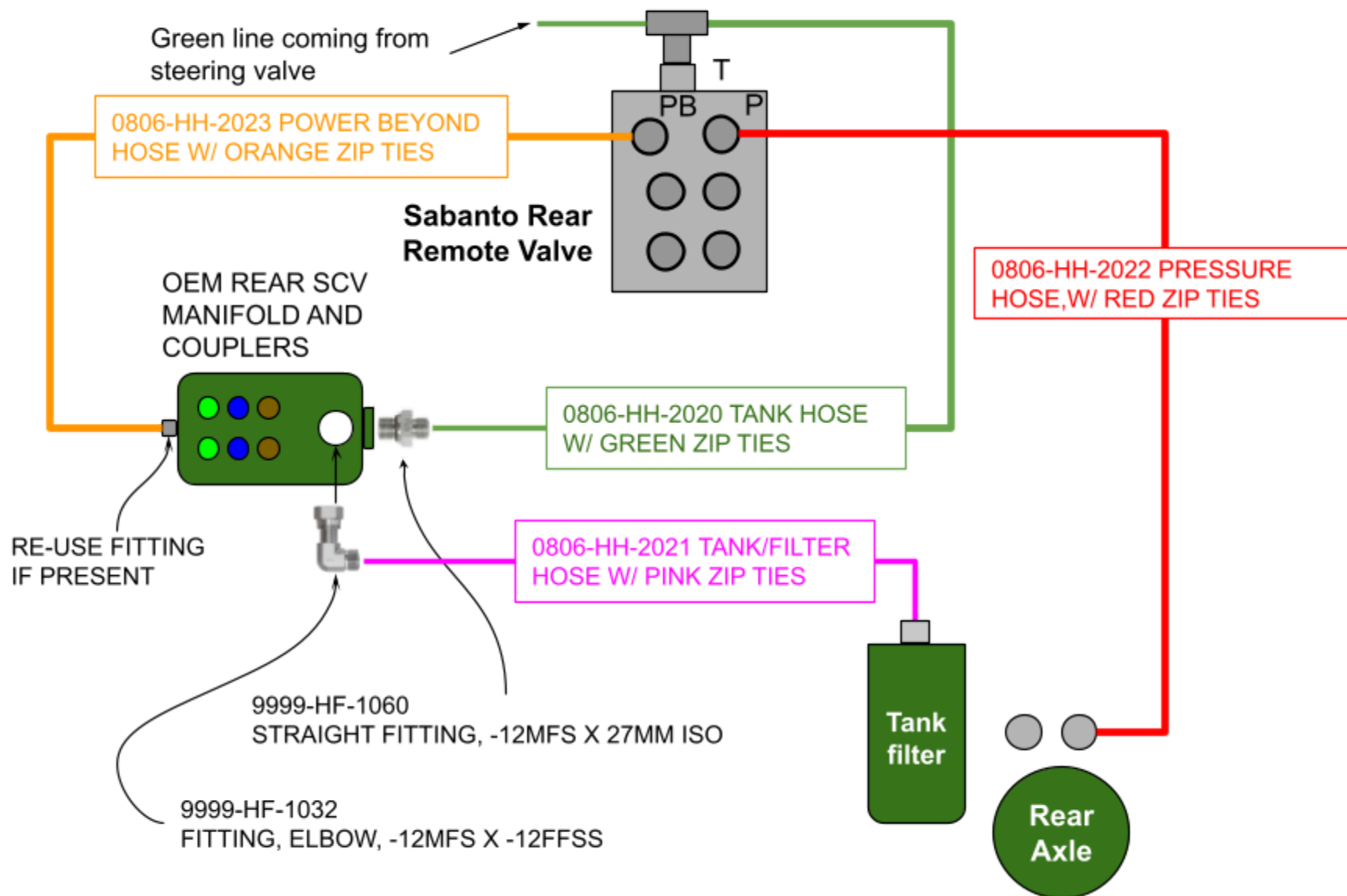
Remote Valve Installation, Tractor without Mid-mount Hydraulic Valve:

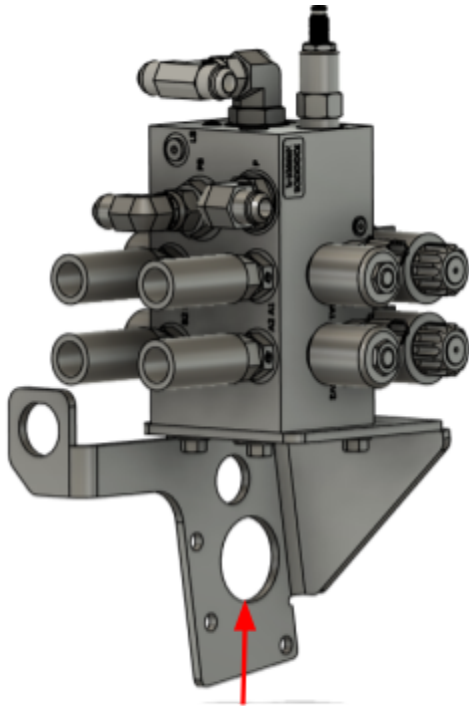


OEM PLUMBING DIAGRAM - TRACTOR WITHOUT MID-MOUNT HYD. VALVE



SABANTO REMOTE VALVE PLUMBING DIAGRAM - TRACTOR w/o MID-MT. HYD. VALVE

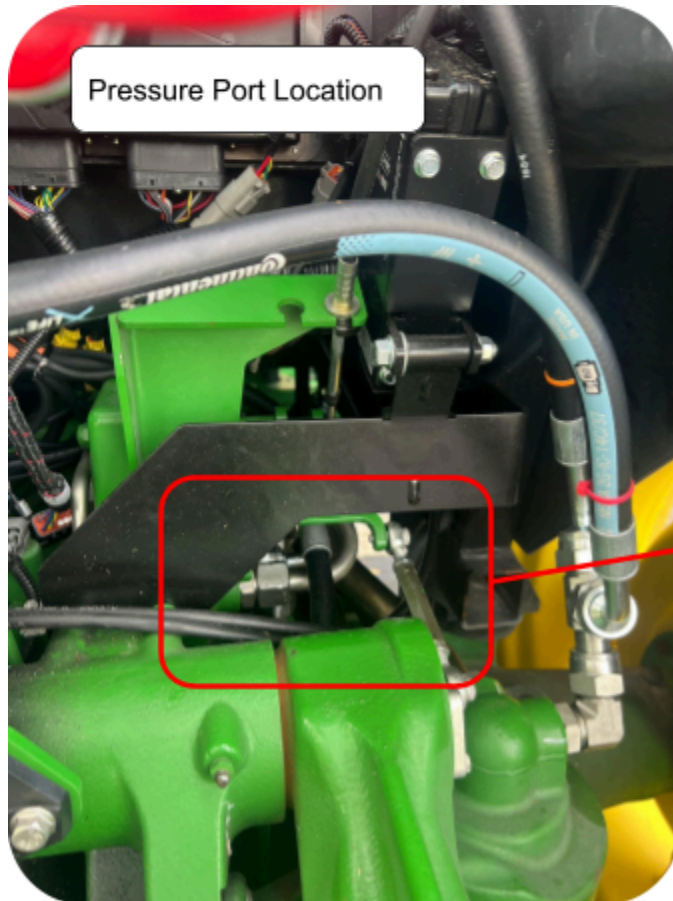




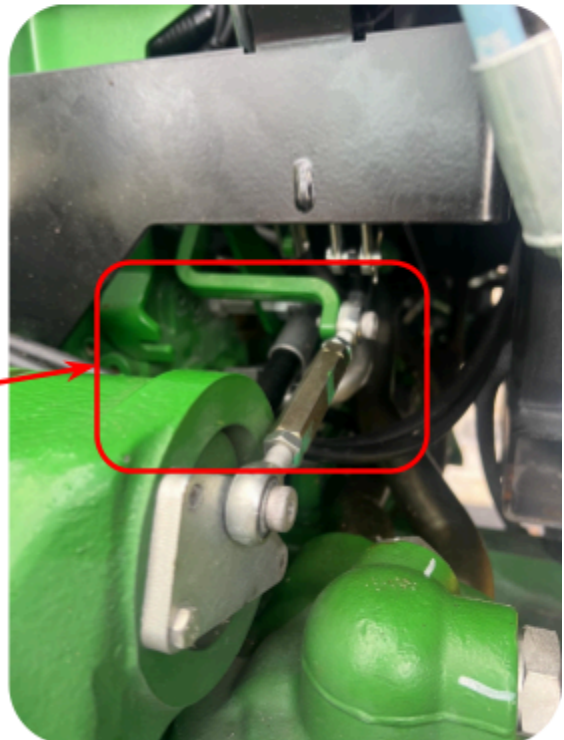
Location of plug to remove for tank line



Remove plug with HEX bit and insert 9999-HF-1060 straight adapter to connect tank return hydraulic hose.



Pressure Port Location



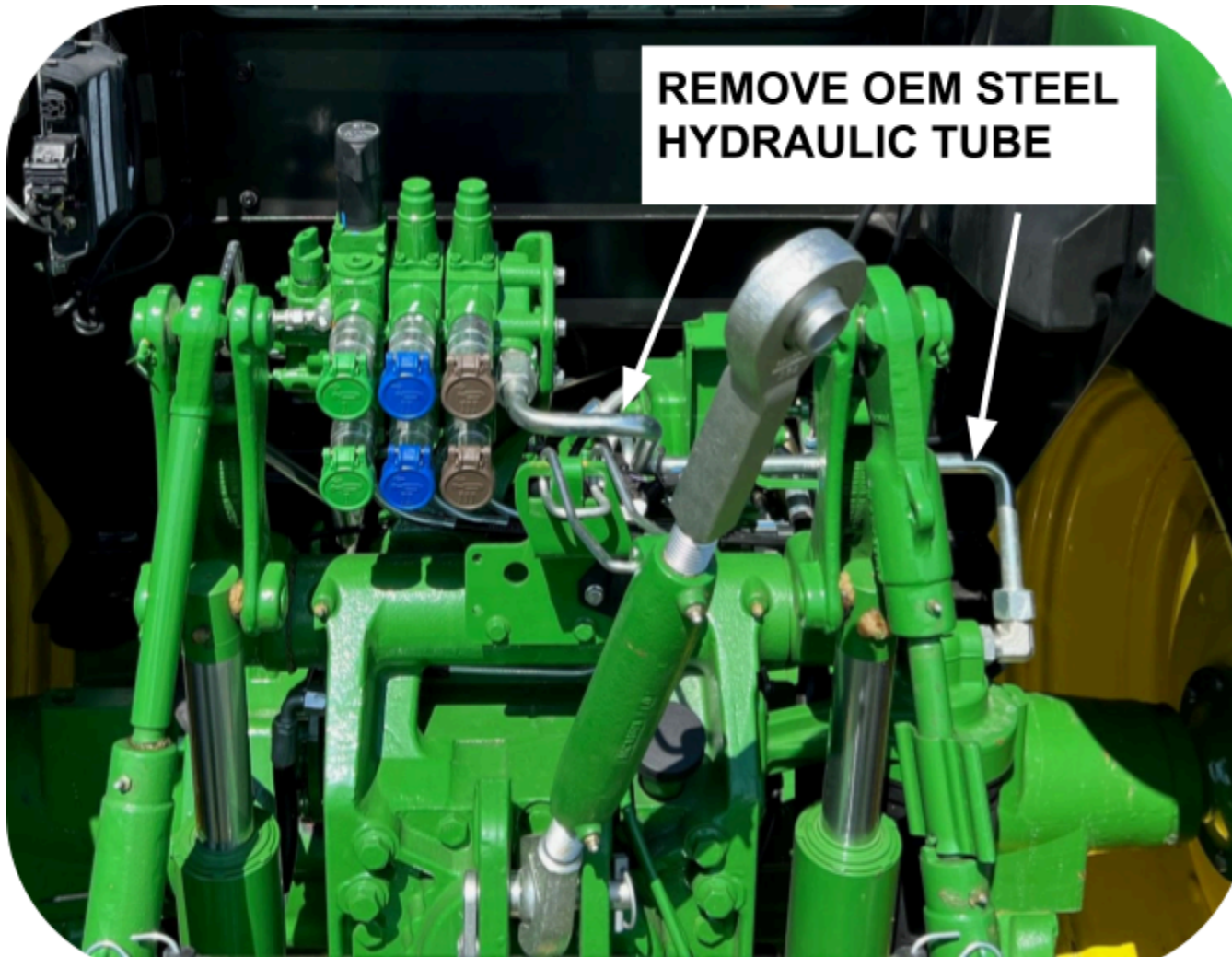


Pressure port where hardline must be removed

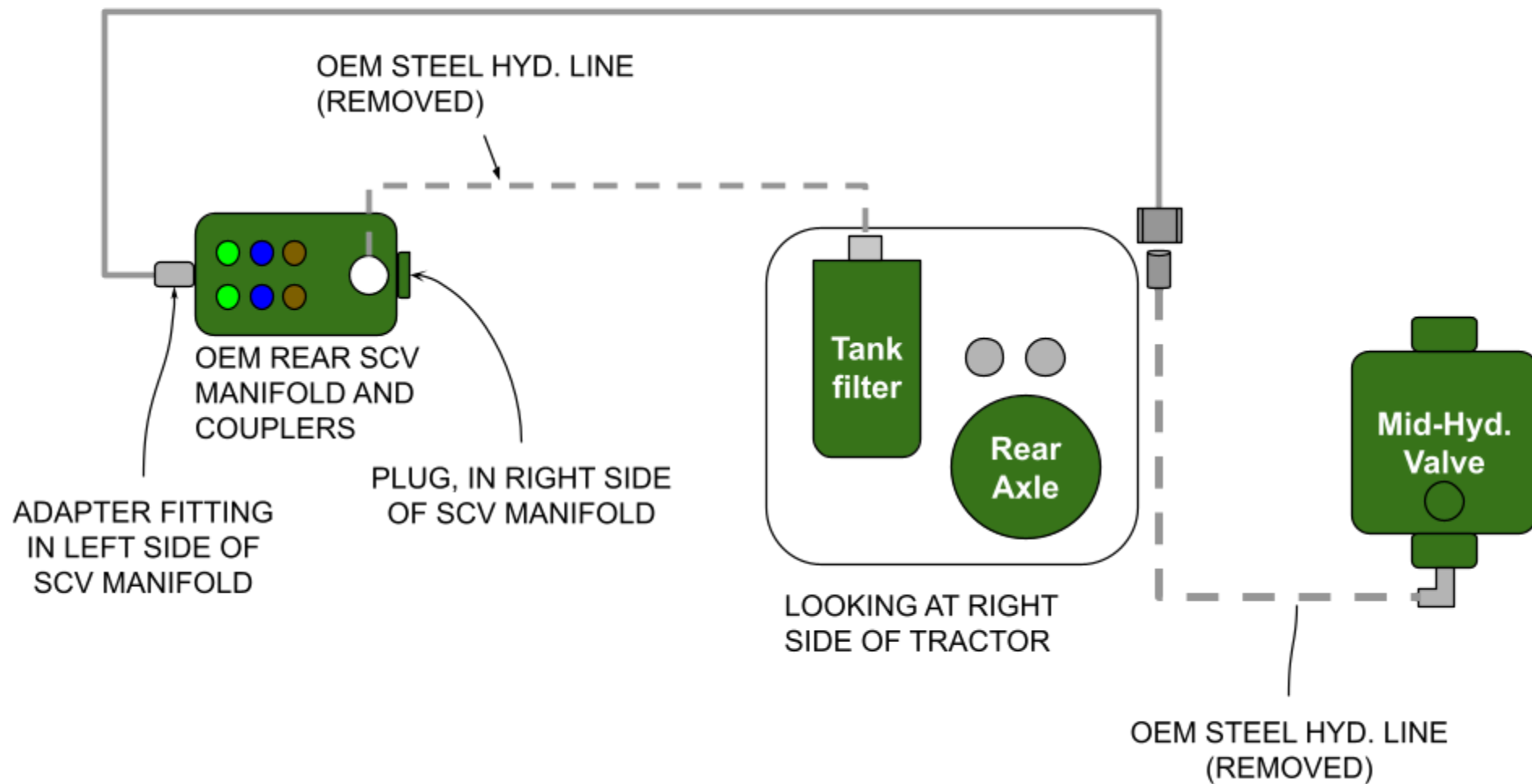


0806-HH-2023 Power Beyond
Hose w/ orange zip ties

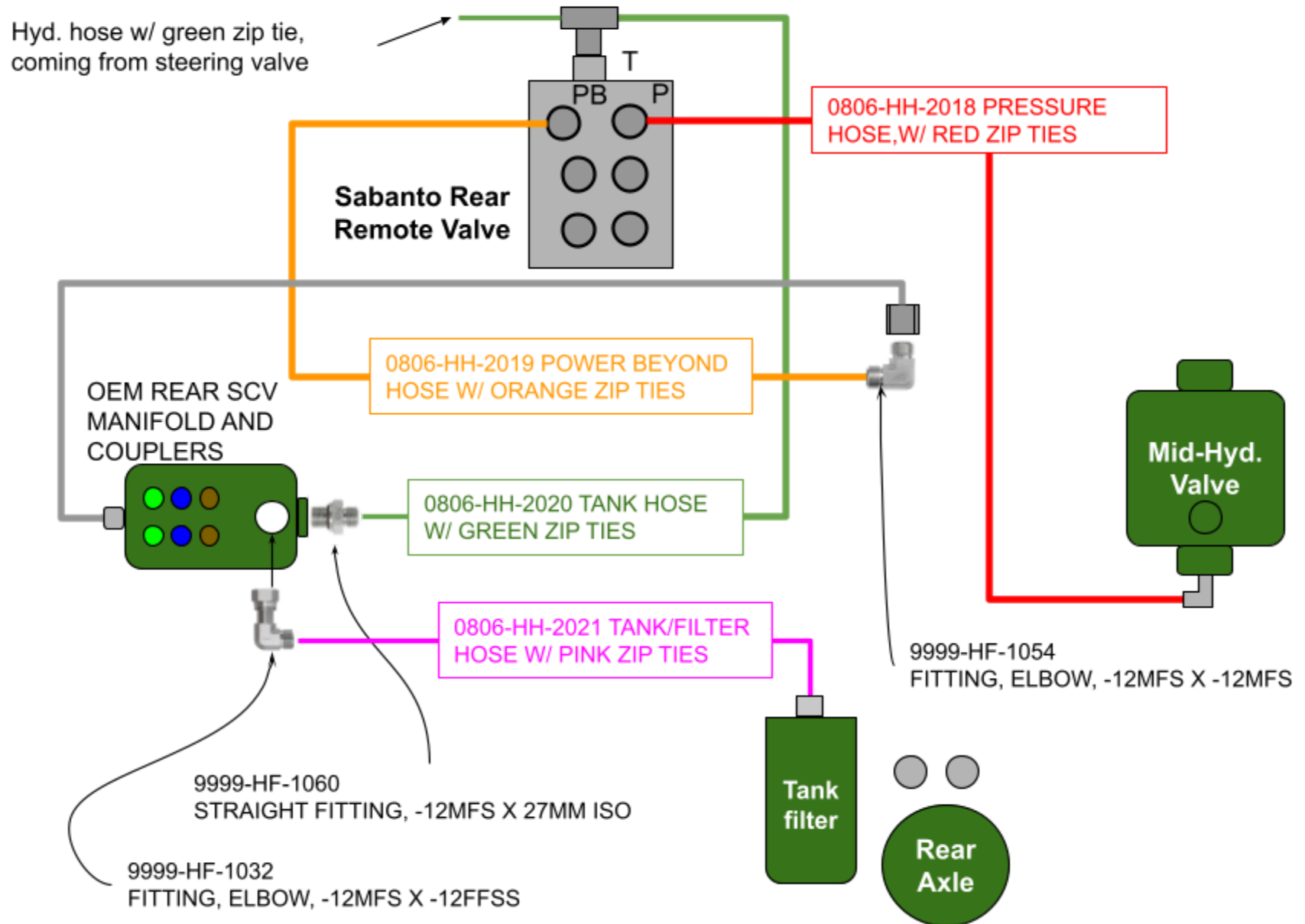
Remote Valve Installation, Tractor with Mid-mount Hydraulic Valve:

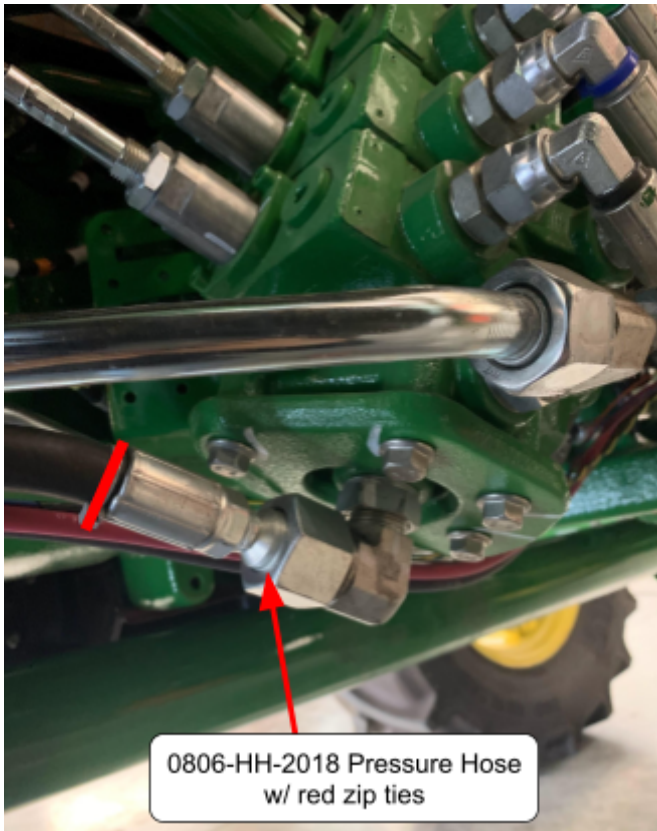


OEM PLUMBING DIAGRAM - TRACTOR WITH MID-MOUNT HYD. VALVE

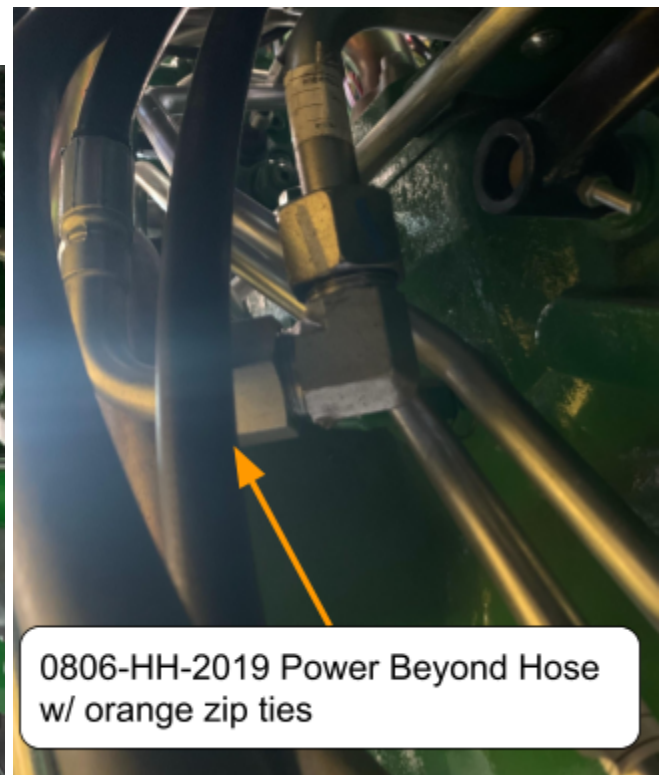


SABANTO REMOTE VALVE PLUMBING DIAGRAM - TRACTOR W/ MID-MT. HYD. VALVE

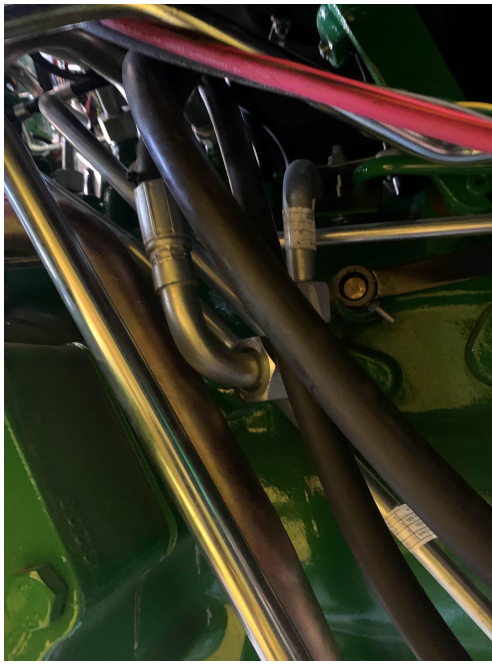




0806-HH-2018 Pressure Hose
w/ red zip ties



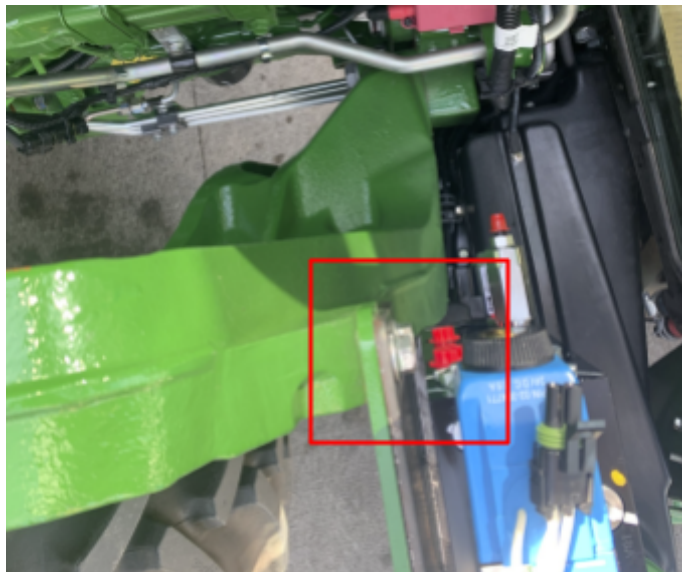
0806-HH-2019 Power Beyond Hose
w/ orange zip ties



Steering Valve

Mounting with Loader Bracket

- Use the factory bolts to attach the bracket

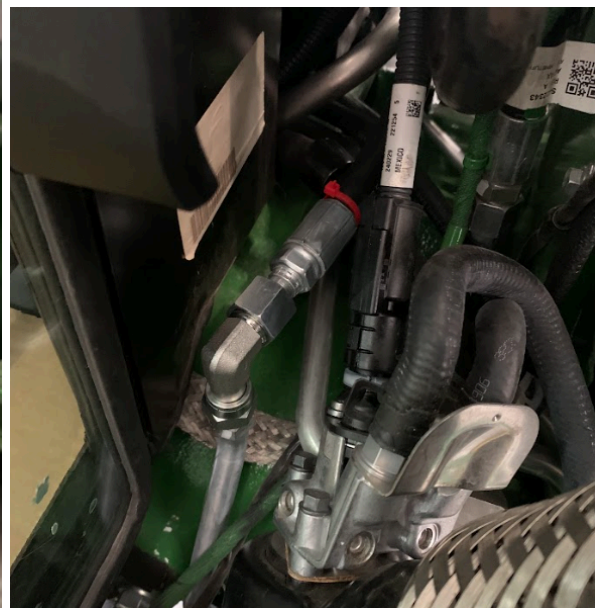
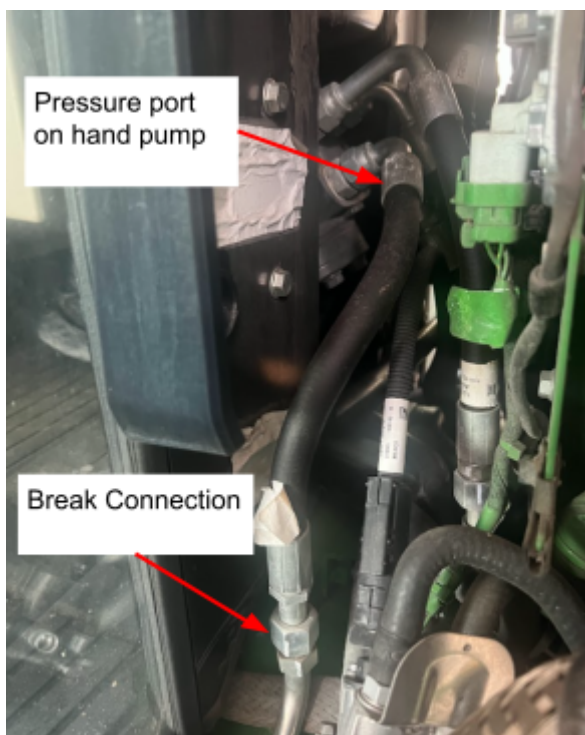
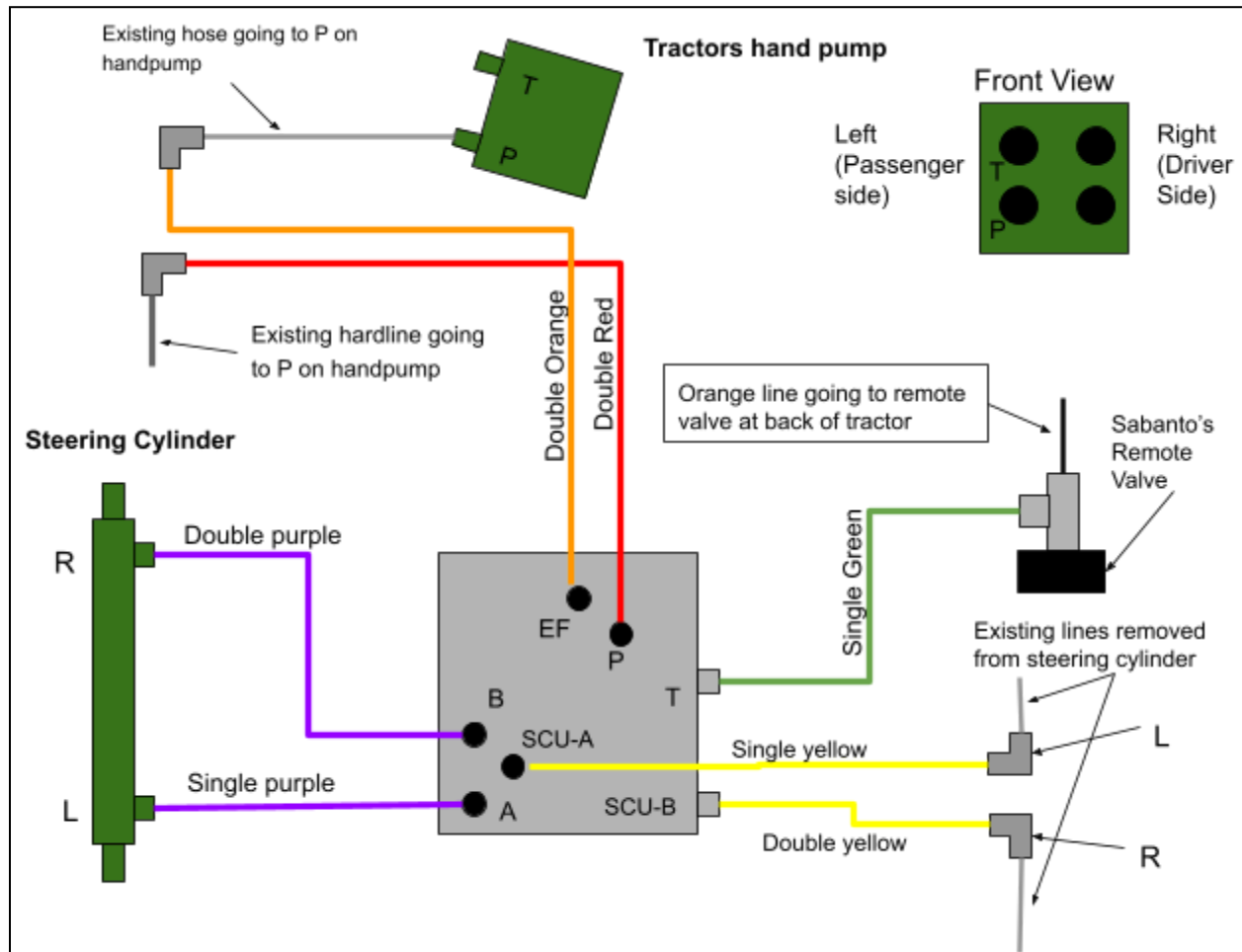


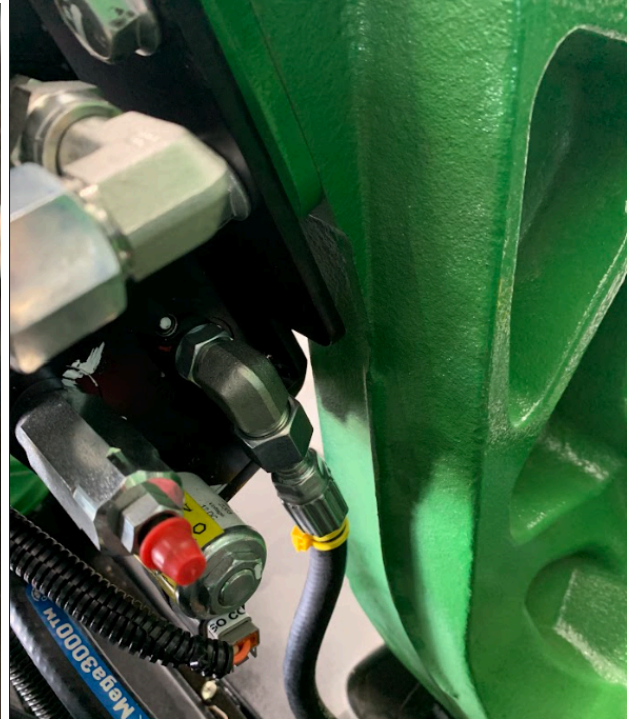
Mounting without Loader Bracket

- On tractors with a factory mounted toolbox, you will be replacing the mount
- Remove the toolbox from the factory mount and mount it using the four square holes on the back tab

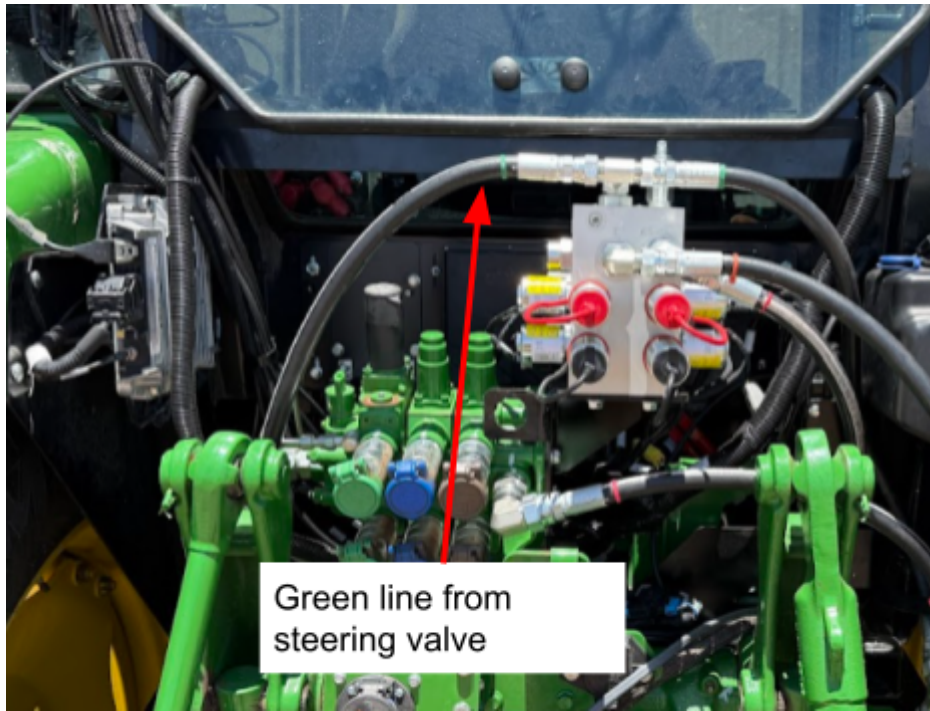


Steering Valve Hydraulic Installation

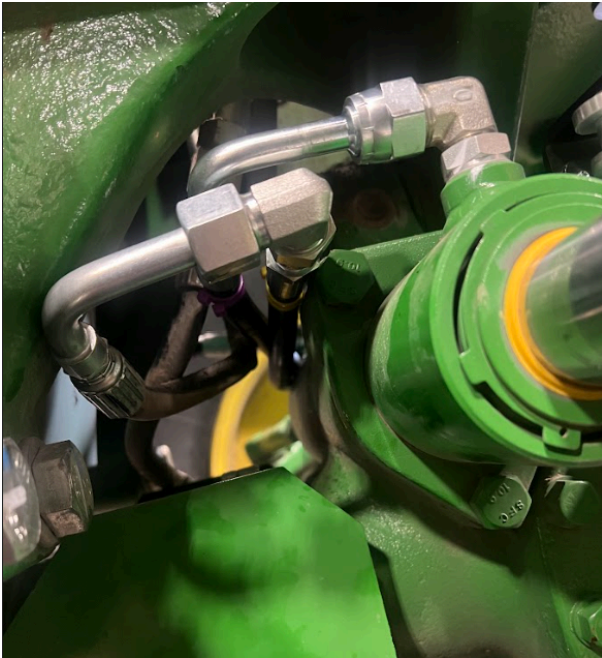








Green line from
steering valve





Harnessing

CAN Harness:

- PN: 0801-EH-3010
- Access the OBDII port under the plastic cover on the LH side of the cab
- Harness is T'd into tractor's OBDII port
- Route harness straight down and out of the cover along the ledge on the back of the cab



Tractor Control & Valve Switch Box Harness:

- The tractor control harness 9999-EH-3001 plugs into the back of the tractor control switch box and runs to the main harness
- The switch box for the valve comes with fly wires for power/ground
 - You will need install the 2 pin connector
 - Route wires to find length where it meets connector labeled “RR_Box” off the main harness
- Connect the 6 pin connector from valve SW box to “RR_MAN” on the main harness
- Route all harness down the B column and along the window



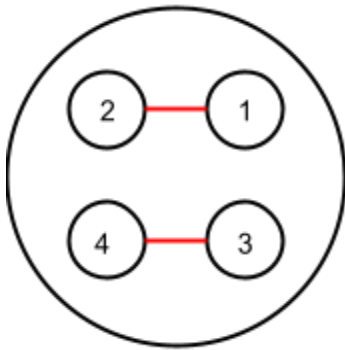
Controls and PTO Harness:

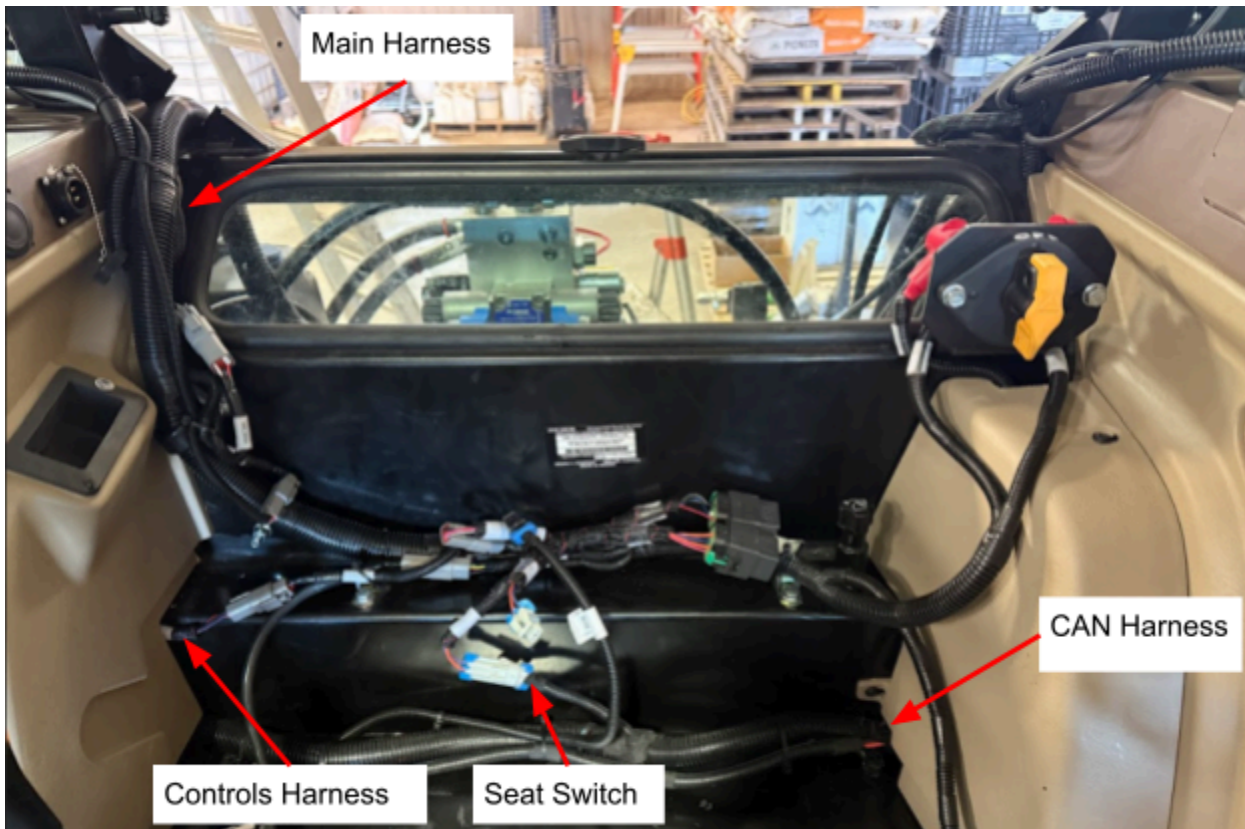
- Controls Harness PN: 0801-EH-3004
 - T's into throttle, connects to PTO harness and main harness
- PTO Harness PN: 0801-EH-3004
 - T's into PTO and connects to controls harness
- PTO switch and throttle under the plastic cover on the RH side of the cab
- To gain access
 - Remove plastic cover around the 3-PT hitch lever
 - Remove plastic cover around the SCV control levers
- Route down on the inside of the plastic and bring out at bottom of plastic panel near the ledge at back of cab



Main Harness:

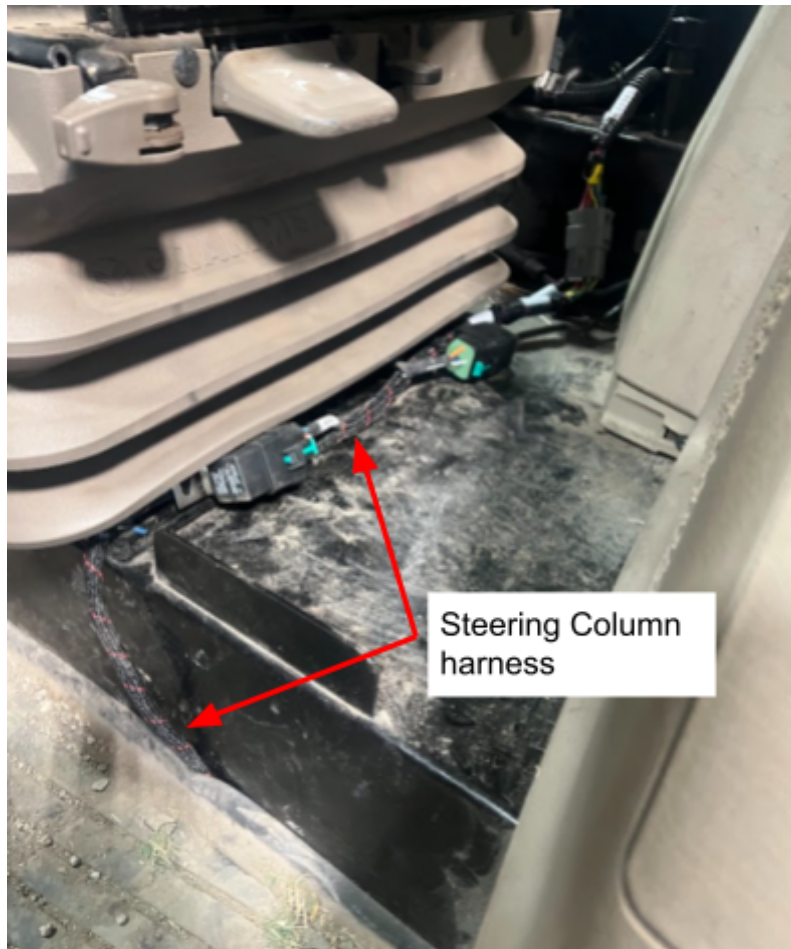
- Connects the vPFM to all peripherals of the autonomy kit
- The main power for the system is switched with a large battery disconnect switch to avoid draining the battery during extended periods without operation
- The ring terminals on the main harness must be connected to the large disconnect switch shown below
 - Ring terminals must be placed on lugs 1 & 2 OR 3 & 4





Column Harness:

- PN: 0803-EH-3002
- Connects to main harness at rear of cab and routed along the seat, under the floor mat and up into the steering column
- Inside the steering column route it up the LH side, find the matching connector and T into the shuttle connector
- Route branch for key across the back of the column and T into the key harness
- Secure harness with zip ties, make sure it is clear of interference from clutch pedal
- Secure harness with zip ties to base of seat using mounting holes



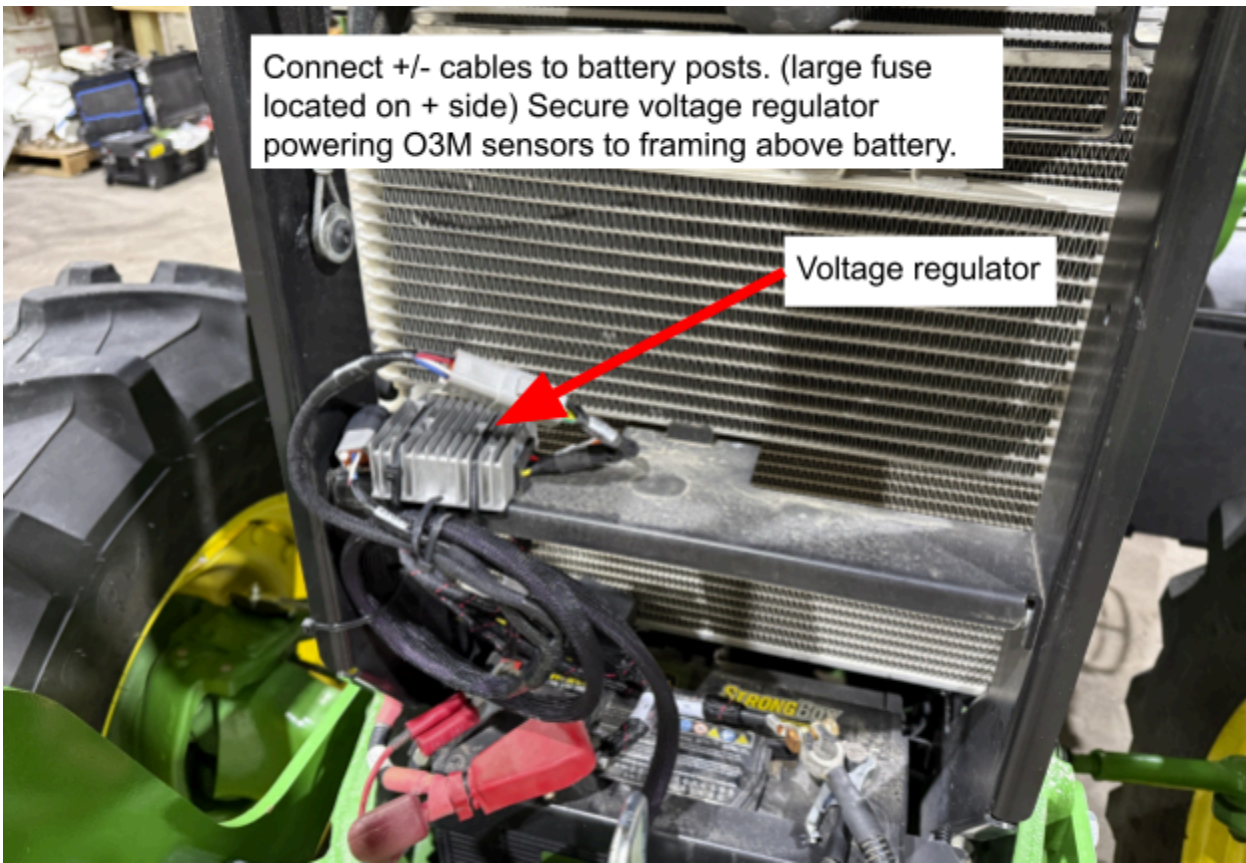


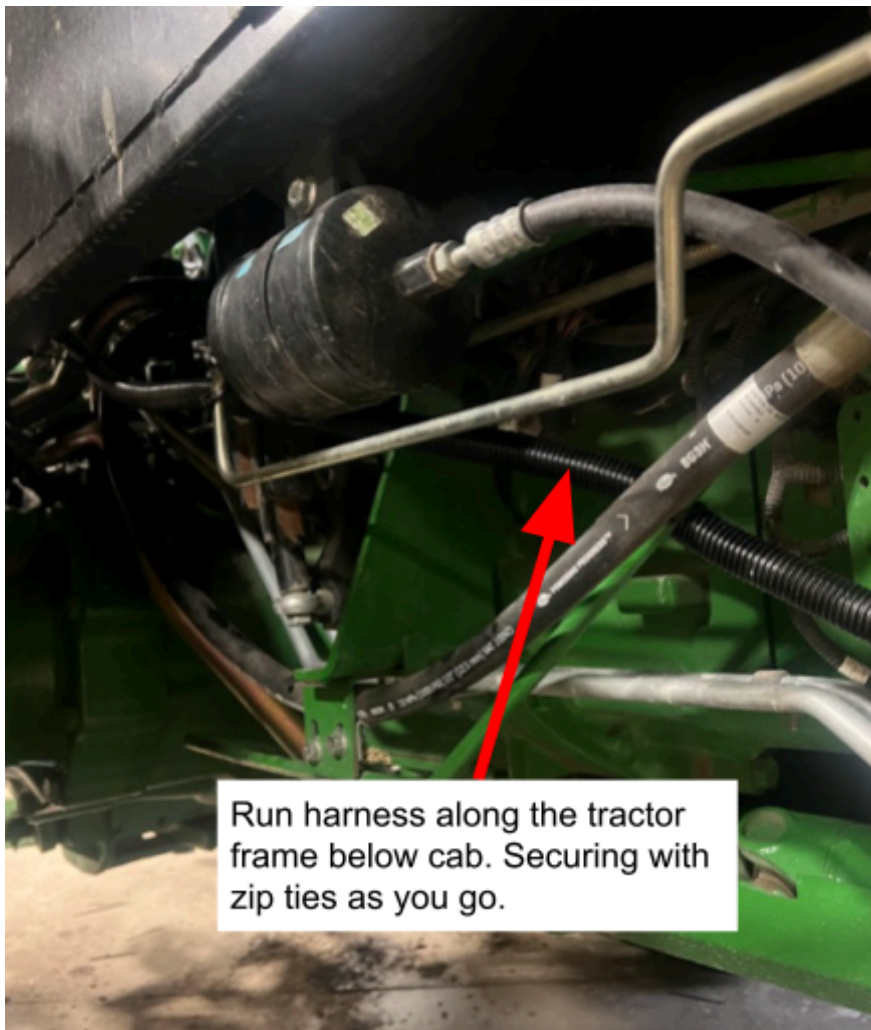
Wheel Angle Sensor Harness (WAS)

- PN: 0806-EH-3002
- Routed down the RH side of the tractor from the battery at front of tractor under the hood to the main harness behind the cab
- O3M sensors and wheel angle sensor are plugged into RSH
- Connect ring terminals to battery posts
- Position the harness so the pig tail reaches the wheel angle sensor. Make sure pigtail is not pulled tight when plugged in
- The RSH harness will plug into the main harness towards the rear of the cab near the hitch actuator

Connect +/- cables to battery posts. (large fuse located on + side) Secure voltage regulator powering O3M sensors to framing above battery.

Voltage regulator

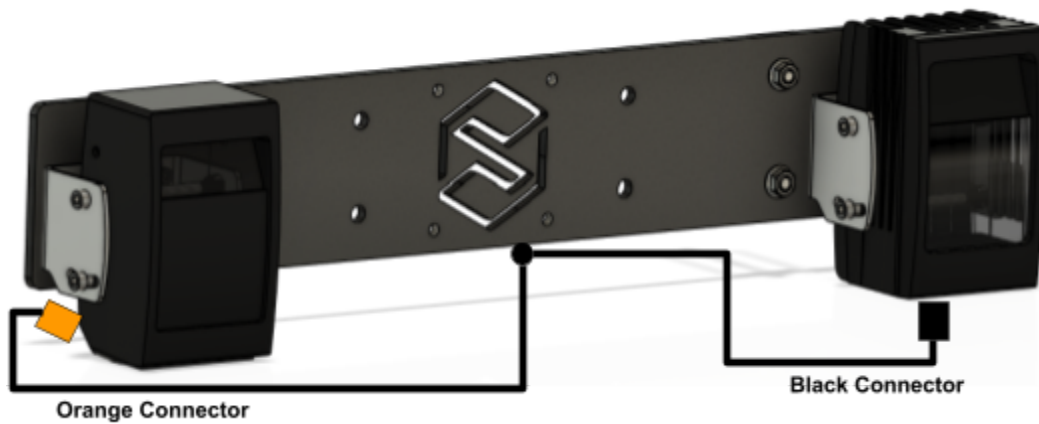




Run harness along the tractor frame below cab. Securing with zip ties as you go.

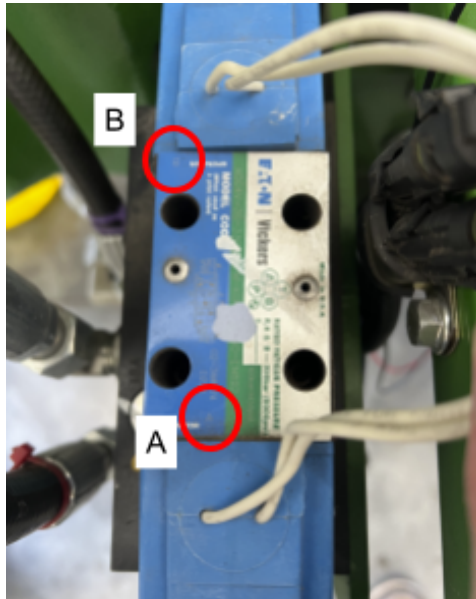
O3M Infrared Sensors

- PN: 9999-EH-3003
- Connects to both the O3M infrared sensors mounted on the grill guard
- Take note of the labels on the cable ends, they are specific
- Route the harness down the side of the grill guard and underneath the hood
- Will plug into the grey voltage regulator secured near the battery
- Due to the the radar device being mounted on the roof and O3Ms on the grill guard, the RADAR connector will be capped
- PN: 9999-EH-2002 goes between the two infrared sensors



Steering Harness

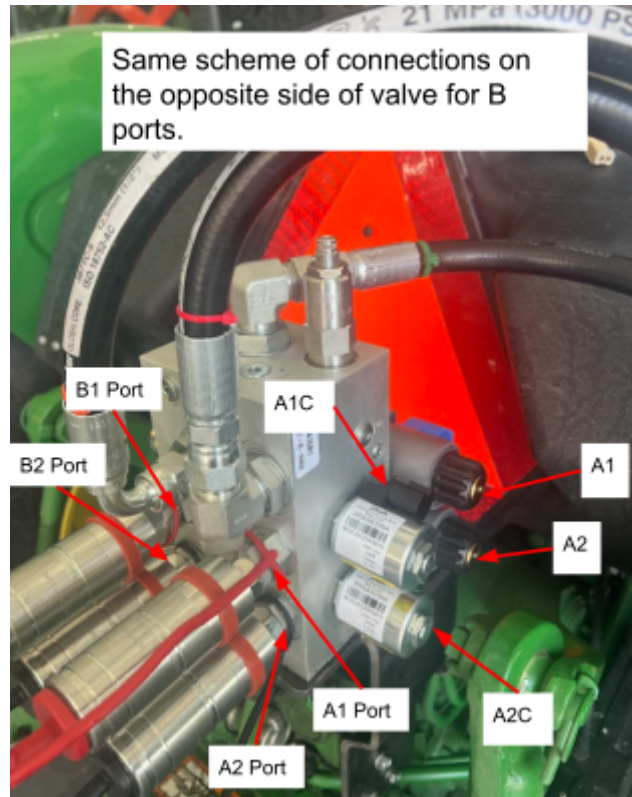
- PN: 0801-EH-3002
- Connects the hydraulic steering valve to the main harness at the rear of the tractor
- Plug harness connectors into their corresponding labeled connectors on top of the hydraulic valve
- The top of the valve is labeled A/B
- Plug the two pin connector into the isolation solenoid on towards the bottom inner side of the valve
- Route the harness underneath the LH side of the cab on top of the fuel tank
 - Plug into corresponding connector on main harness behind the cab



Force America Valve Harness

- PN: 1499-EH-3003
- Harness plugs directly into the valve and connects to the main harness

- The hydraulic ports are labeled on the face of the valve block
- Connectors on the harness are labeled to correspond with the port they are controlling



SIG Harness

- PN: 9999-EH-3009
- The bulkhead is secured through a metal bracket at the rear of tractor near the Sabanto rear remote valve block
- Plugs into the main harness
- Used for implement integration



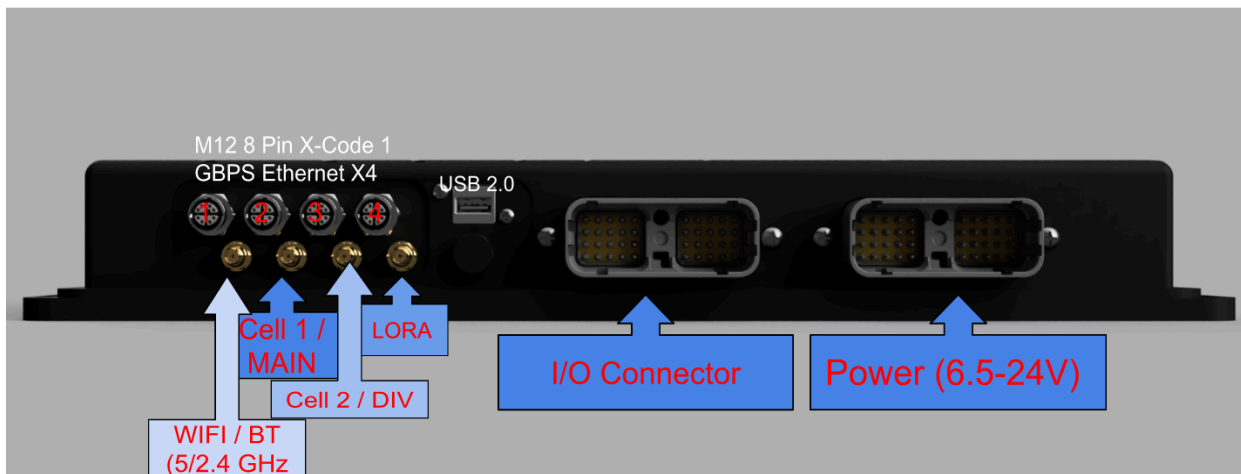
BFE Harness

- PN: 9999-EH-3007
- Connects the BFE enclosure (houses the GPS unit) on the roof to the main harness to the main harness behind the cab

Radar Harness

- PN: 9999-EH-3015
- Plugs into the radar device on the front edge of the cab roof route to the back side of the cab roof and plugs into a pig tail off of the BFE harness

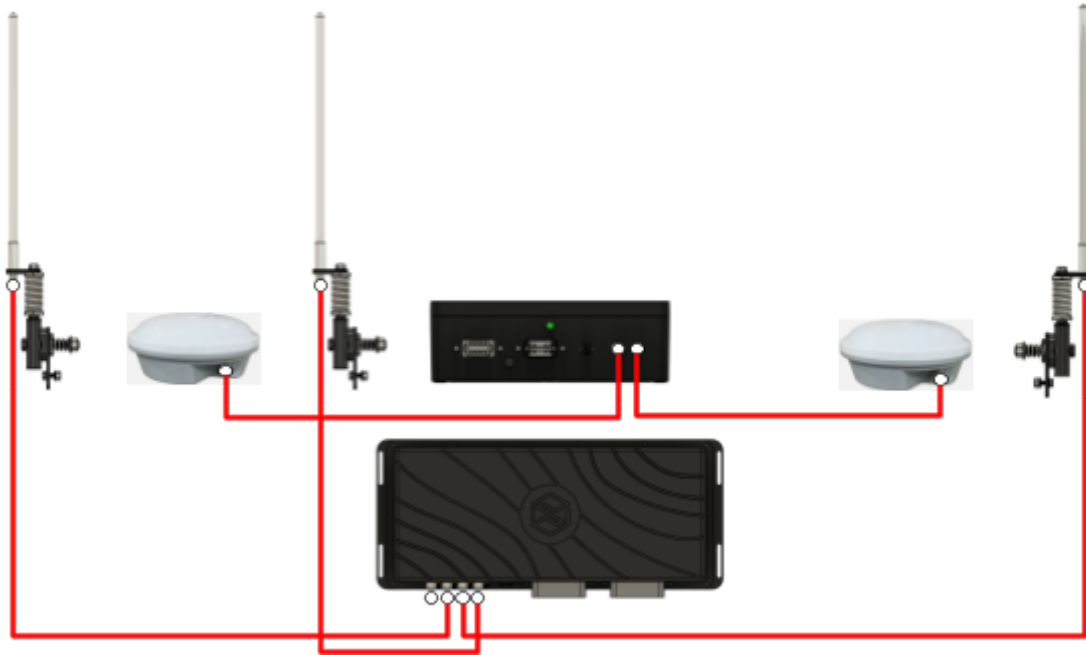
PFM Connection Diagram



Antenna Cables

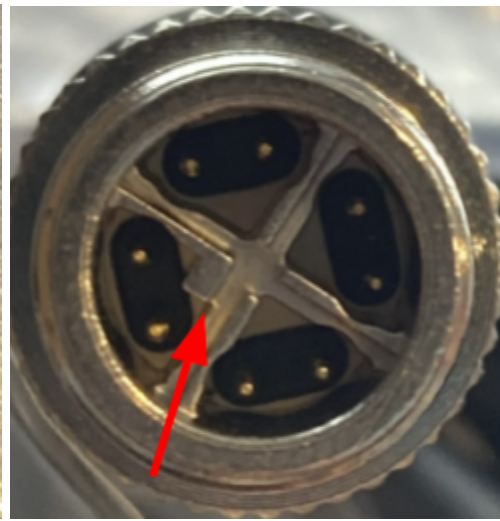
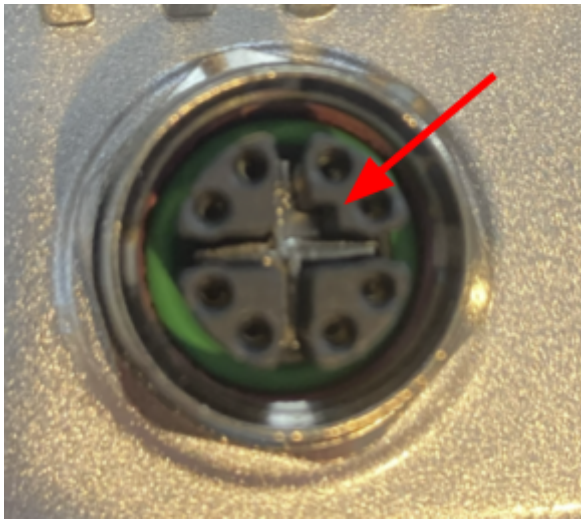
- Cellular and LORA antennas (tall white antennas)
 - Two different lengths will come with the kit
 - Two shorter 10ft and one longer 15 ft
 - Connect the two shorter 10ft cables to the LEFT cell antenna (far left) and the LORA antenna (middle/left)
 - Connect the longer 15ft cable to the far right cell antenna
 - Route along the rear cross bar
 - Cables will be route down the LH side of the rear window of the cab and connected to the PFM
 - Use the provided labels within the BA kit box to label both ends of the cables
- GPS antenna cables
 - Connect the GPS antennas (white dishes) to the BFE enclosure

Antenna Cable Diagram

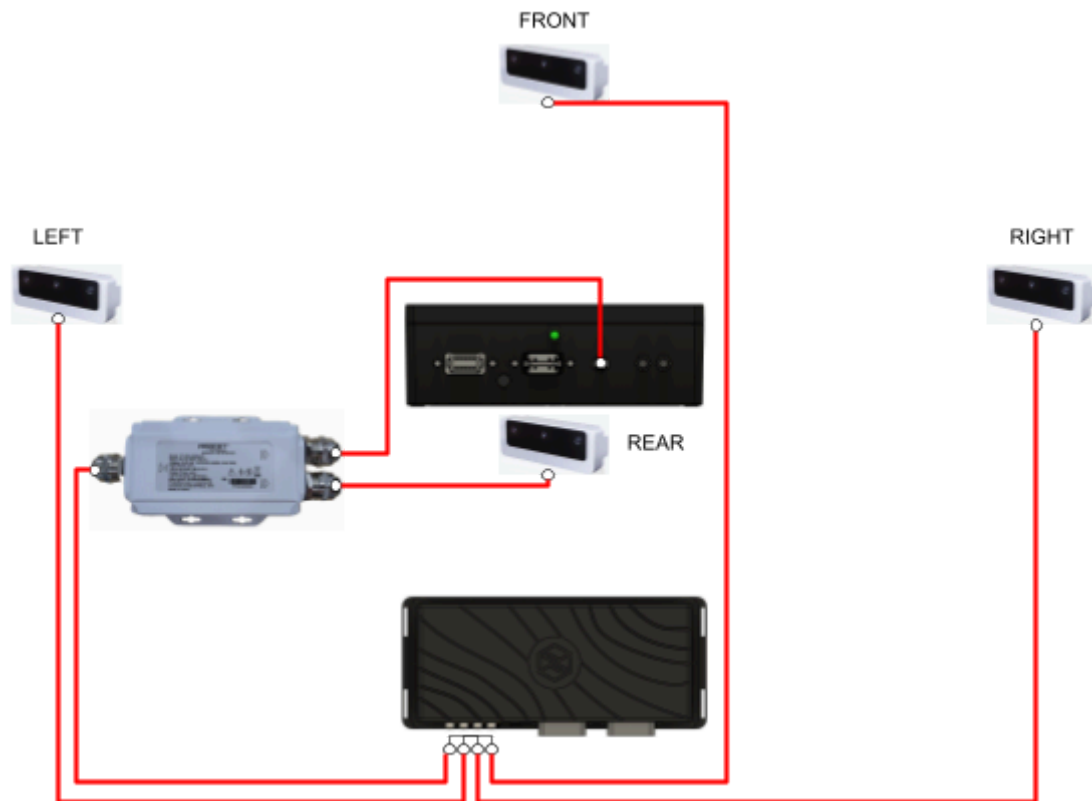


Camera/Ethernet Cables

- A preassembled ethernet splitter and loose ethernet cables will be provided to connect the 4 cameras to the pfm
- Loose cables
 - The 5m cables will be routed from the PFM to the front and right side camera
 - The 3m cable will be routed from the PFM to the left side camera
- Ethernet splitter
 - IN port of splitter connected to PFM
 - Two cables from OUT port of splitter connect to rear camera and BFE GPS enclosure
- Add a supplied label to both end of cables for easier routing and diagnosing
- Route and secure cables along the rear mounting bar
- Ethernet ports on PFM are internally connected, no specific port necessary for a given cable
- Secure cables to PFM **AFTER** antenna cables have been connected
- **CAUTION** as you connect cable ends, take note of the keying, they must be clocked in a certain direction to properly be connected. See images below of keying



Camera/Ethernet Cable Diagram



Harness Overview

Item	Part Number	Description
1	0806-EH-3001	Main Harness
2	0801-EH-3004	Vehicle Controls
3	0801-EH-3006	PTO Harness
4	9999-EH-3003	O3M Infrared Sensor Harness
5	0806-EH-3002	RSH/Wheel Angle Sensor
6	9999-EH-3009	SIG - System Integration Gateway
7	9999-EH-3007	BX992 Interface w/ IFM 6 pin
8	0801-EH-3002	Steering Interface
9	1499-EH-3003	Force America Valve Interface (Non-Float)
10	9999-EH-3001	SWITCH BOX
11	0801-EH-3007	Seat Switch
12	0801-EH-3005	Steering Column
13	0801-EH-3010	CAN Interface
14	9999-EH-2001	Switch Box, Momentary ON/OFF
15	9999-EH-2002	O3M Patch Cable
16		“Marlin” Connector
17	9999-EH-3015	Radar Harness
18	9999-DD-3013	Voltage Regulator

Harness Overview Diagram

