



CRX/VIPER 4+ ROS - SC1/TC1 RAVEN EUROPE KIT INSTALLATION MTZ - BELARUS

016-5035-063REV. A

Installation manual

(English) (Original)

RAVEN

PREFACE

This installation manual is intended for persons responsible for installing a CRX\Viper 4+ ROS kit. The manual contains important instructions that should be complied with when commissioning, operating and servicing the CRX\Viper 4+ ROS kit.

This manual has been compiled with the utmost care. Raven Europe assumes no responsibility for any errors or omissions in this document.

Any comments or questions can be sent to service-eu@ravenind.com.

Raven Europe or any of its suppliers will accept no liability for physical or material damage caused whilst using the CRX\Viper 4+ ROS.

The installed Raven system produces less than 70dB (A) noise.

This installation guide uses a number of concepts for extra attention to a few things:

**Hint!:**

Provides recommendations on how certain activities can be performed much easier.

**Please note!:**

Indicates certain problems that the user should take note of.

**Caution!:**

Indicates that the machine can be damaged.

**Warning!:**

Indicates a risk of injury.

DISCLAIMER

WARNING!

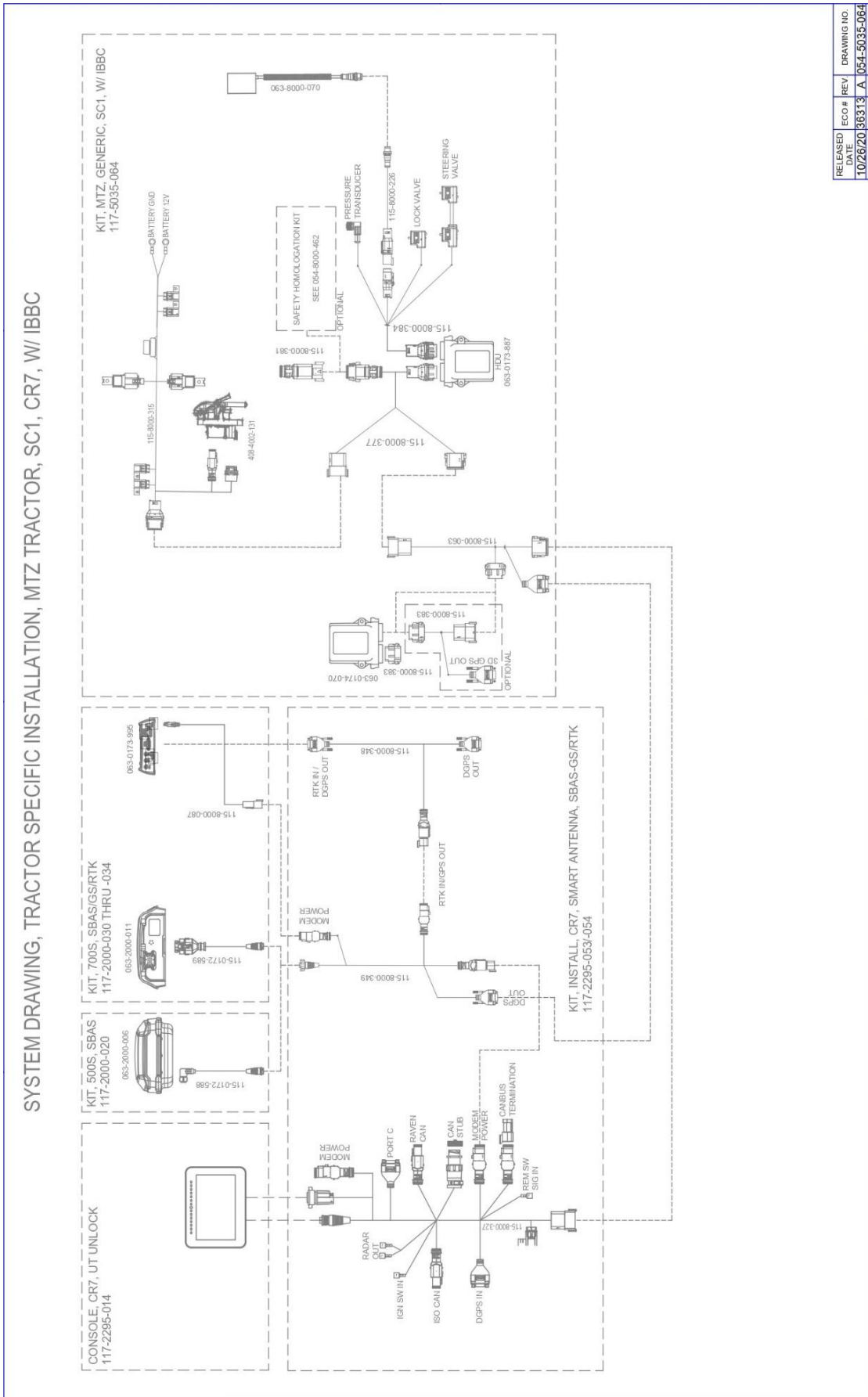
- The safety instructions contained in the manuals of the tractor or implements must be complied with at all times.
- Always switch off the tractor before installing or repairing hydraulic and electrical components of the Raven system.
- It is strictly prohibited to use the CRX\Viper 4+ ROS systems on public roads.
- It is strictly prohibited to leave a driving vehicle unattended when the CRX\Viper 4+ ROS system is switched on. The driver is always responsible for the direction and course of the vehicle.
- To prevent injury or fire, replace defective fuses only with fuses of the same type and amperage.
- The Raven the operating system is not able to detect and avoid obstacles. If there is an obstacle in your path, you will always need to take action for it to be avoided.
- Only allow authorized/qualified persons to operate the system. Authorized/qualified persons are defined as: persons who have read and understood the manual, have been given instructions by a product specialist, and who are both physically and mentally fit and able to operate the system.
- The system contains moving parts! Make sure the immediate environment is clear of people before operating the system.
- In case of system failure or breakdown switch of the tractor and disconnect the electrical power source to avoid further damage. Contact your dealer for further instructions on how to repair your system.
- Always wear personal protective equipment when operating/adjusting/repairing the system outside of the tractor cab.
- In order to prevent power surges from occurring, always start the machine first, before initiating the Raven control system.

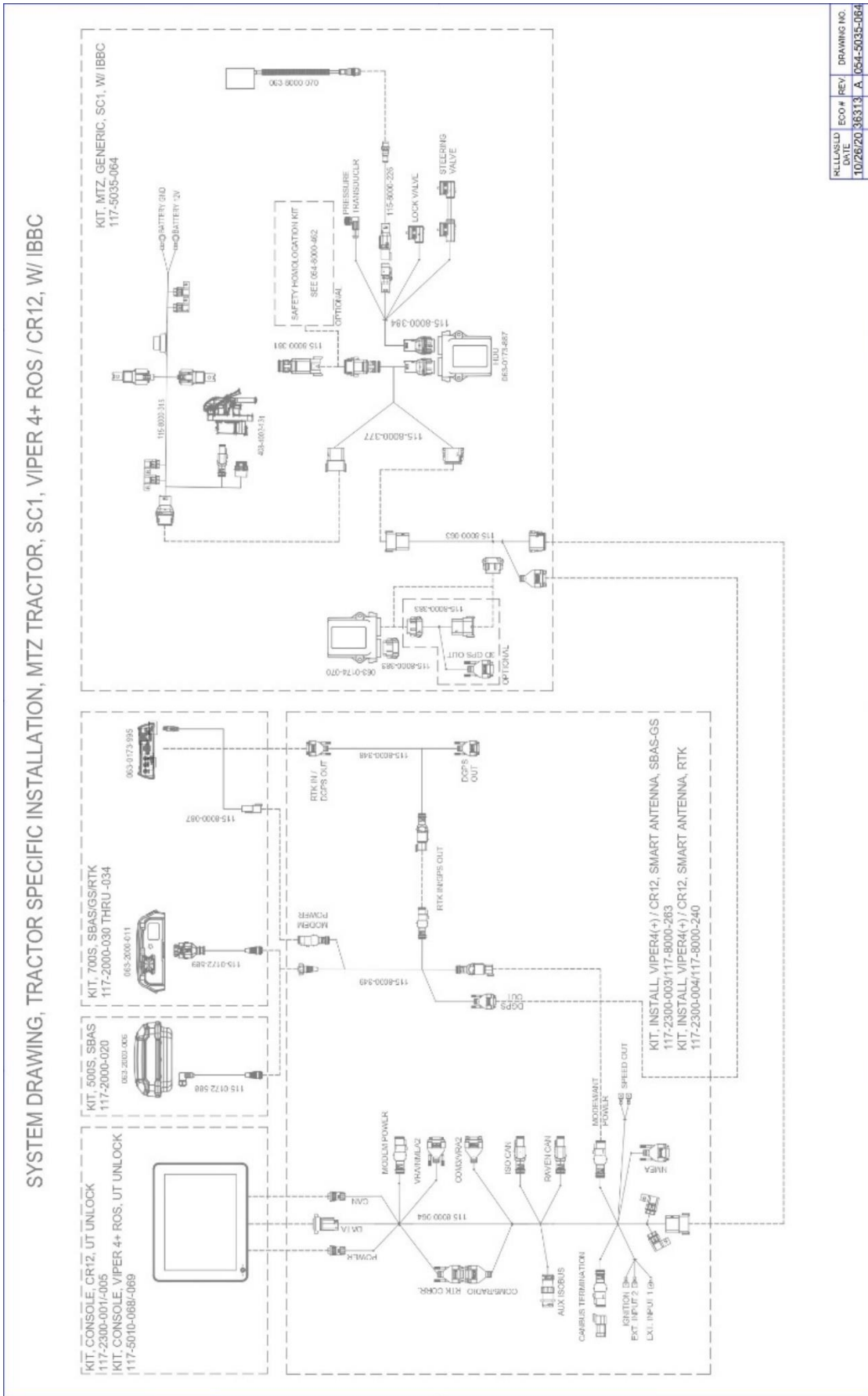
PAY ATTENTION!

- Only touch the touch-screen with your finger or by using a special touch-screen stylus/pen. Operating the touch-screen with sharp objects may cause permanent damage to the screen.
- Always consult your supplier as to which products are best suited first before cleaning the touch-screen with chemicals or alcohol.
- If the terminal is not used for a long period, better remove the terminal from the tractor and store in a heated environment. This will extend the life span of the electronic components.
- To prevent theft, it is better to not let the terminal and GPS-antenna unattended in the tractor on the field

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1 STEERING SYSTEM INSTALLATION

This chapter describes the installation of hydraulic steering system. Look carefully at the system overviews to know which parts of the installation are applicable.

1.1 MOUNTING HARNESSES

When installing an autosteer system, the power cables should always be connected to the battery. Two options are possible, a Basic Harness (1-115-8000-141) or an Implement Ready Harness (1-115-8000-060 frontmount or 1-115-8000-315 midmount). The difference between these harnesses is the IBBC connector, this one is included at an Implement Ready (IR) Harness (Figure 1)

Power harness: an Implement Ready power harness is mounted from the battery to the rear of the tractor. A Basic power harness is mounted from the battery to the chassis harness. Make sure that the relays and fuses are mounted in a dry, clean and accessible spot (Figure 2).

The harness that is connected to the Power Harness depends on the steering type that will be installed. For system overviews, see pages 6 - 10. All the harnesses with a hard casing should be mounted outside the cabin, all the harnesses with a braided sleeve should be mounted inside the cabin. At all time, find a good location where the cabling can enter the cabin.

In addition, several guidelines have been established for the assembly of all types of cable harnesses:

- Mount the relays fixed and in a dry, clean and accessible spot (Figure 2).
- The red wire is + (12V). The black wire is (ground). Make sure that the first part of the red wire (part in between battery and fuses) cannot damage during operation.

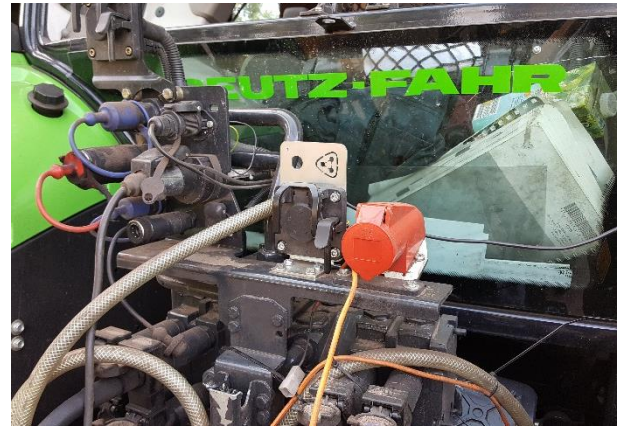


FIGURE 1 IBBC CONNECTOR

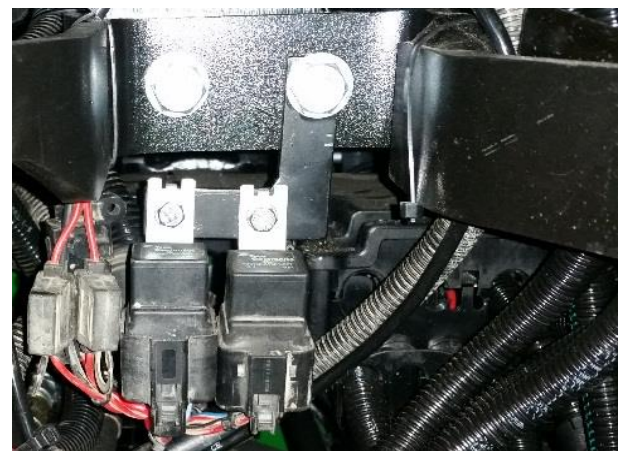


FIGURE 2 CORRECT MOUNTED RELAYS AND FUSES

- If necessary the positive and negative wires, in between the battery and the fuses, can be shortened. Be sure to use cable sockets with the correct size for proper connection.
- If a ground switch is used, connect the wiring harness behind the ground switch (not at the battery side of the ground switch!).
- If a main (12V) switch is used in the red wire, connect the wiring harness behind the main switch (not at the battery side of the main switch!).
- If no main switch is used, always connect the wiring harness directly to the battery.
- If the system is connected to a 24 Volt machine, always use a 24V to 12V converter. Never connect between the two batteries of a 24V machine!
- Lead the terminal harness along with the GPS and radio/GSM antenna cables through one pillar of the cab.
- Tie-wrap the wires so they are attached free from vibration and friction.



Caution! :

It is important to ensure that the wiring harness is always connected to the battery AFTER installing all wires and controllers!

1.2 SC1

The following guidelines have been established for mounting the SC1:

- A SC1 should be attached in an appropriate place in the cabin that is free from vibrations.
- A SC1 may only be mounted in a horizontal position (with the sticker side up). The connectors may be orientated in four directions (0, 90, 180, 270 degrees).
- By default, the orientation of the SC1 is set to: horizontal position with connectors pointing towards the rear (as shown in Figure 3). Any other orientation should be set in the software!

There are 2 ways to install a module on an MTZ tractor.

1.2.1 ON A RIGHT-SIDE PILLAR

- Take BRACKET, SC1, MTZ, UNIVERSAL 107-0172-714.
- Mount the bracket to the right rear pillar and screw with the supplied self drilling screws.
- Mount SC1 on a top of the bracket with connectors pointing towards the rear.

1.2.2 ON A FRONT PILLAR

- Take BRACKET, SC1, MTZ, UNIVERSAL 107-0172-714.
- Mount on a correct place so that the hydraulic control levers do not rest against the bracket.
- Secure the bracket on the supplied self drilling screws.
- Mount SC1 on a top of the bracket with connectors pointing towards the rear (**Figure 4**).



FIGURE 3. SC1/TC1 MOUNTED ON A RIGHT-SIDE PILLAR



FIGURE 4 SC1/TC1 MOUNTED ON A FRONT PILLAR

1.3 HYDRAULIC

In this chapter a short overview of the hydraulic system that needs to be installed on a tractor will be given.

1.3.1 PRESSURE RELIEF VALVE

A pressure relief valve is mounted to the add-on part of the open center manifold (Figure 5). This pressure relief valve must be set to the maximum allowable control pressure of the steering system. The default setting of the pressure relief valve is about 180 bar. Determine the maximum pressure of the steering system before mounting the manifold. Follow the next steps:

- Mount a pressure gauge in the pressure line between the hydraulic pump and the steering orbitrol.
- Steer the front wheels to one side and keep steering until the maximum pressure is reached.
- Read out the value on the pressure gauge.

After mounting the manifold. Set the maximum pressure of the pressure relief valve, equal to the maximum pressure of the steering system. To achieve this, follow the next steps:

- Mount a pressure gauge in the pressure line between the hydraulic pump and the manifold.
- Loosen the locking nut of the pressure relief valve.
- Loosen the pressure relief valve two turns counter clockwise.
- Steer the front wheels to one side, using the Left/Right buttons of the CRx. Keep steering until the maximum pressure is reached.
- Read out the value on the pressure gauge.
- Adjust the pressure relief valve until the pressure is equal to the pressure it was before mounting the manifold.
- Secure the pressure relief valve with the locking nut.

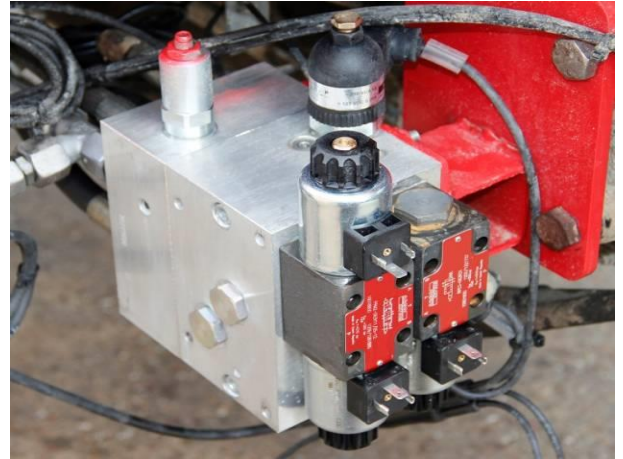


FIGURE 5 OPEN CENTER MANIFOLD

1.3.2 HYDRAULIC VALVE INSTALLATION

Figure 6 shows the manifold mounted onto a manifold bracket with four M8 bolts. The manifold bracket is preferably mounted at the left-hand side of the MTZ tractor (Figure 9) because this is usually the side of the tractor with the most space.

Method of mounting:

- Unscrew toolbox (Figure 7).
- Mount the Manifold Bracket (107-8000-062) to the tractor frame on a holes showed on a Figure 8.
- Install the Manifold valve to the bracket (107-8000-062).
- Mount toolbox back (Figure 9).

Please note!:

Make sure the connectors of the valves and the pressure sensor can still be connected after mounting the manifold.

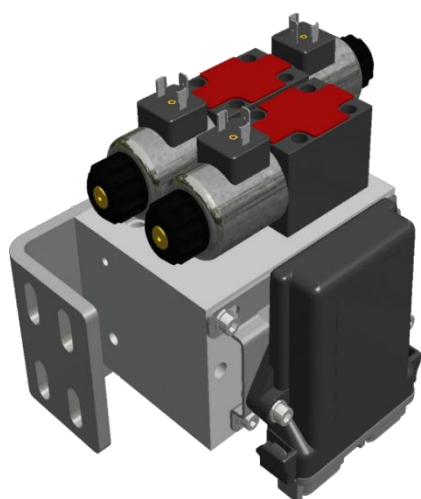


FIGURE 6 MANIFOLD BRACKET WITH A MANIFOLD AND HURAILIC DRIVE UNIT MOUNTED



FIGURE 7 TOOLBOX

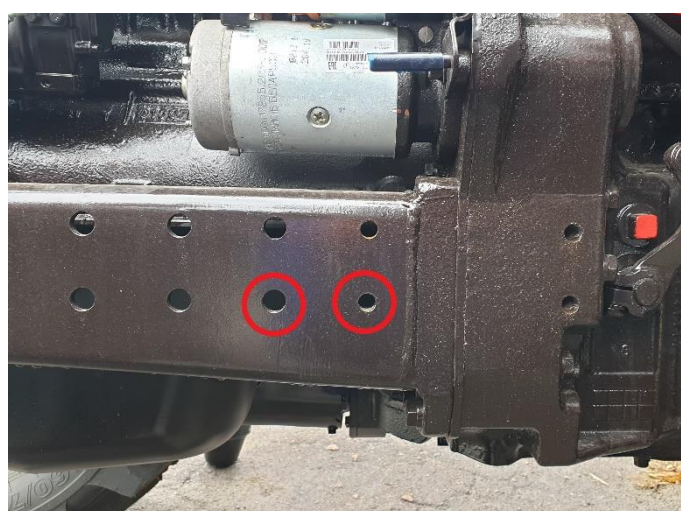


FIGURE 8 TRACTOR FRAME HOLES FOR THE MANIFOLD BRACKET MOUNT

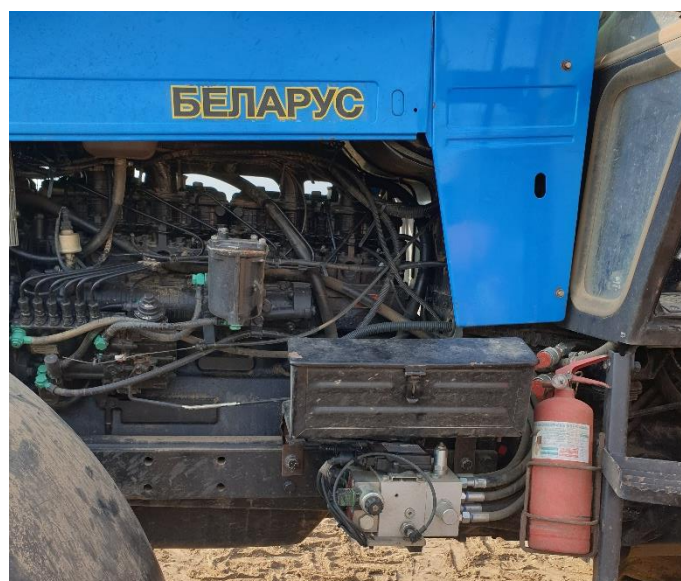


FIGURE 9 MANIFOLD BRACKET WITH A MANIFOLD AND HURAILIC DRIVE UNIT MOUNTED ON MTZ

1.3.3 HYDRAULIC INSTALLATION OPEN CENTER

The manifold v3 open center consists of the standard load sense manifold v3 (p/n 334-8000-008) with an add-on open center part (p/n 334-8000-012) (Figure 10).

MANIFOLD VALVE PARTS CONNECTION

Put 7 o-rings in grooves on manifold with p/n 334-8000-008, install the second part of the valve body with p/n 334-8000-012 on top of the first part and screw them on 4 bolts like showed on a Figure 10.

Before mounting the manifold v3 valve on the machine, install the proper fittings in the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure (Figure 11).

HOSES LIST

In tablet 1 is a list of the hose for connecting to the manifold v3 valve and MTZ 892 tractor hydraulic steering system.

TABLET 1: HYDRAILIC HOSE

Hole	Item Description
A	Hydraulic Hose-DKOL, M18*1.5 (F) (90°) to -DK, M20*1,5 (F) (90°)-120 cm
B	Hydraulic Hose-DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (F) (90°)-120 cm
A1	Hydraulic Hose-DKOL, M18*1.5 (F) (90°) to-DK, M20*1,5 (M)-120 cm
B1	Hydraulic Hose-DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (M)-120 cm
P	Hydraulic Hose-DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (F) (90°)-120 cm
P1	Hydraulic Hose-DKOL, M18*1.5 (F) (90°) to-DK, M20*1,5 (M)-120 cm
T	Hydraulic Hose-DKOL, M18*1.5 (F) (90°) to-DK, M24*1,5 (M)-120 cm

On the Figure 12 shows the connection diagram for the MTZ 892 hydraulic steering system.

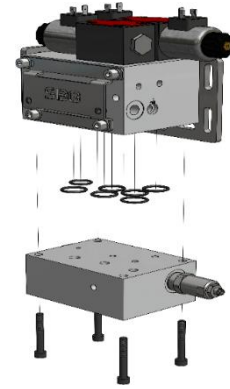


FIGURE 10 ADD-ON PART OF THE OPEN CENTER MANIFOLD

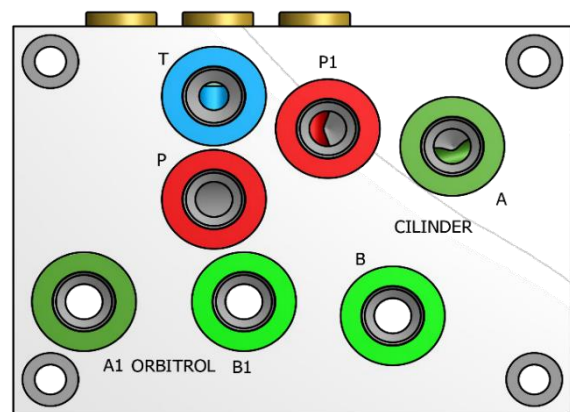


FIGURE 11 MANIFOLD VALVE PORTS

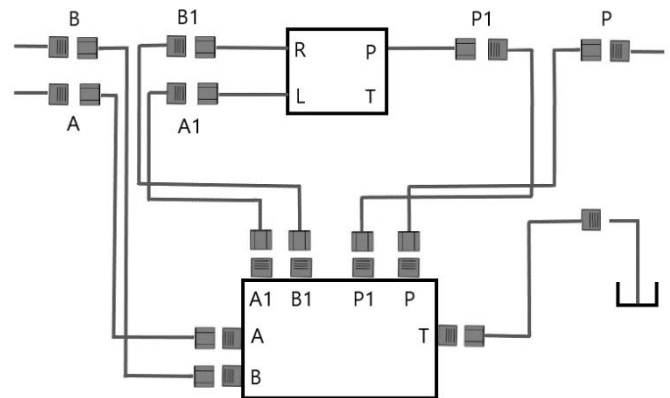


FIGURE 12 CONNECTION DIAGRAM TO THE MTZ 892 HYDRAULIC STEERING SYSTEM

INSTALL THE LEFT, RIGHT AND PRESSURE STEERING HOSES

On Figure 13 showed location the machine's left and right steering hoses on the top of the engine.

- Disconnect the **left** steering hose from the steel line.
- Install steering hose **DKOL, M18*1.5 (F) (90°) to -DK, M20*1,5 (F) (90°)-120 cm** between **A** port on the Manifold valve and left steel line.
- Install steering hose **DKOL, M18*1.5 (F) (90°) to-DK, M20*1,5 (M)-120 cm** between **A1** port on the Manifold valve and left rubber line.
- Disconnect the **right** steering hose from the steel line.
- Install steering hose **DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (F) (90°)-120 cm** between **B** port on the Manifold valve and right steel line.
- Install steering hose **DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (M)-120 cm** between **B1** port on the Manifold valve and right rubber line.
- Disconnect the pressure steering hose from the steel line.
- Install steering hose **DKOL, M18*1.5 (F) (45°) to-DK, M20*1,5 (F) (90°)-120 cm** between **P** port on the Manifold valve and pressure steel line.
- Install steering hose **DKOL, M18*1.5 (F) (90°) to-DK, M20*1,5 (M)-120 cm** between **P1** port on the Manifold valve and pressure rubber line.

INSTALL THE TANK HOSE

- Remove the **tank** port plug.
- Install tank hose **DKOL, M18*1.5 (F) (90°) to-DK, M24*1,5 (M)-120 cm** between **T** port on the Manifold valve and the open tank port Figure 14.



FIGURE 13 LEFT, RIGHT AND PREASURE STEERING HOSES LOCATION

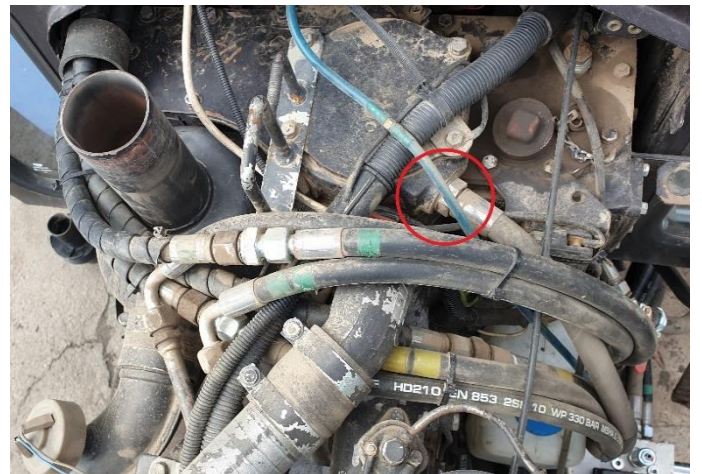


FIGURE 14 TANK PORT LOCATIONS

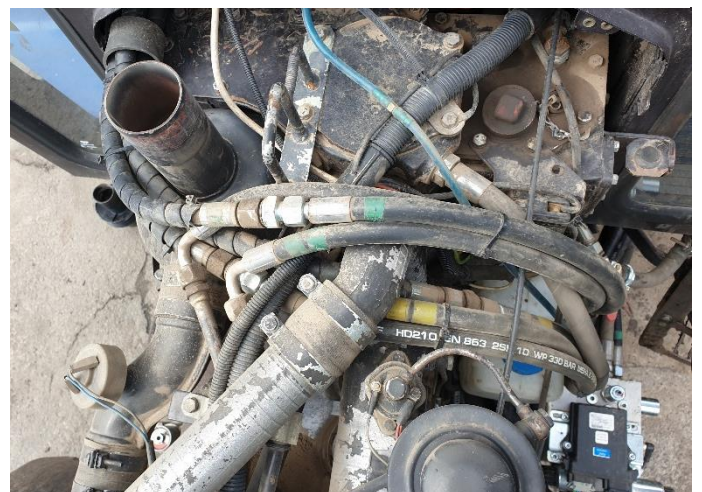


FIGURE 15 LEFT, RIGHT AND PREASURE STEERING HOSES INSTALLED

1.3.4 MOUNTING AND CONNECTING THE HYDRAULIC DRIVE UNIT, DIN CONNECTOR AND PRESSURE SENSOR

The Hydraulic Drive Unit bracket can be mounted to the manifold (Figure 16). The Hydraulic Drive Unit can then be fitted to the manifold bracket (Figure 17).

Important notes when mounting the Unit:

- Mount the Hydraulic Drive Unit with connectors directed downwards to prevent the ingress of water.
- Do not mount the Hydraulic Drive Unit too close to parts which have a high temperature (for example, the exhaust system of the tractor).

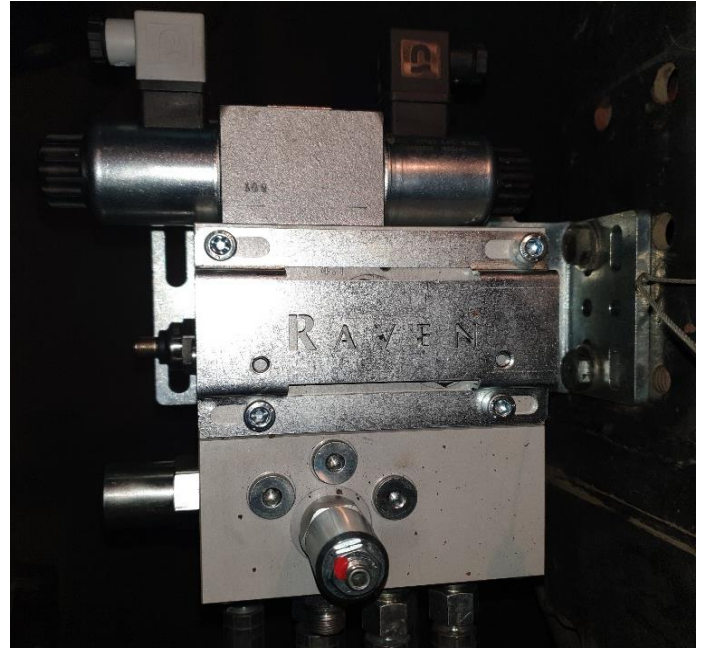


FIGURE 16 THE HYDRAULIC DRIVE UNIT BRACKET MOUNTED TO THE MANIFOLD

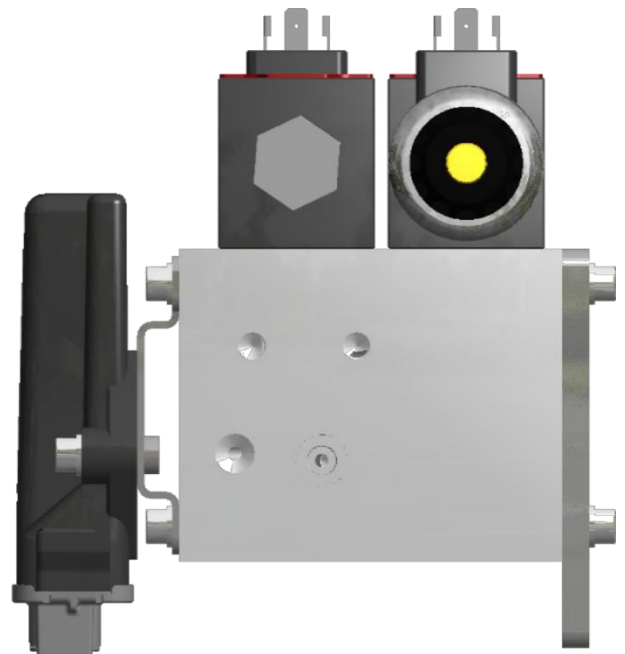


FIGURE 17 SIDE VIEW OF THE HYDRAULIC DRIVE UNIT TO THE MANIFOLD

Connect the DIN connectors marked "Left" and "Right" to the proportional valve. Connect the DIN connector marked "Lock" to the shut-off valve (Figure 18). Connect the 4-pin Phoenix M12 connector to the pressure sensor of the manifold (Figure 19).

i **Please note!**

The torque of the pressure sensor in the manifold V3 is 30 Nm. It is not necessary to check this at delivery of an assembled manifold. However, make sure, when replacing the pressure sensor, that it is tightened with the correct torque.



FIGURE 18 DIN CONNECTOR CONNECTION

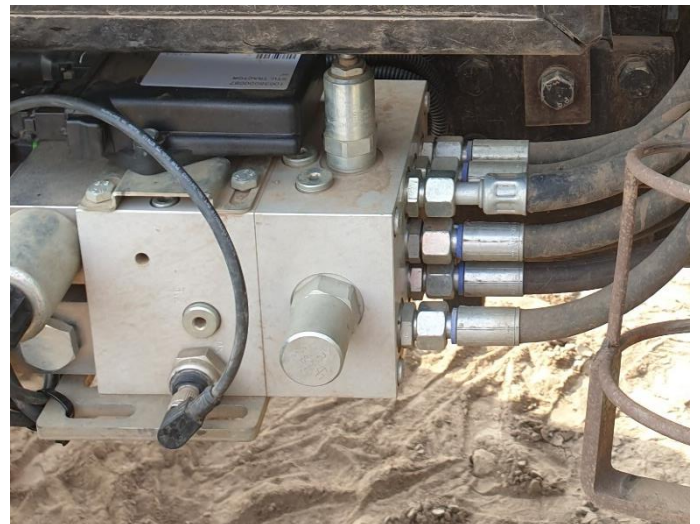


FIGURE 19 CONNECTION TO THE PRESSURE SENSOR

1.3.5 WHEEL ANGLE SENSOR INSTALATION

Axle Type:

On MTZ tractors, 2 types of the axles are most common, with back cylinder and front cylinder (Figure 20, Figure 21).

The most convenient place to install WAS located on Front Left Axle. Turn the machines front wheels to the right to access the left front axle.



FIGURE 20 AXCEL WITH FRONT CYLINDER

TABLET 2: PARTS FOR WAS INSTALLATION

P/N	Description
063-8000-168	WAS ASY, BRCKT, 12V 180°, 35CM, LONG (Figure 22)
117-8000-546	KIT, WAS LINK, M8 300, RAD-RAD
331-9000-022	EXHAUST CLAMP, M8, 38MM
107-0172-715	BRACKET, PLATE, U-BOLT, M8
107-8000-066	Hoeksensor bracket recht



FIGURE 21 AXCEL WITH BACK CYLINDER

i Please note!

At all times the triangles on the sensor housing and sensor disc must be pointing in the same direction!

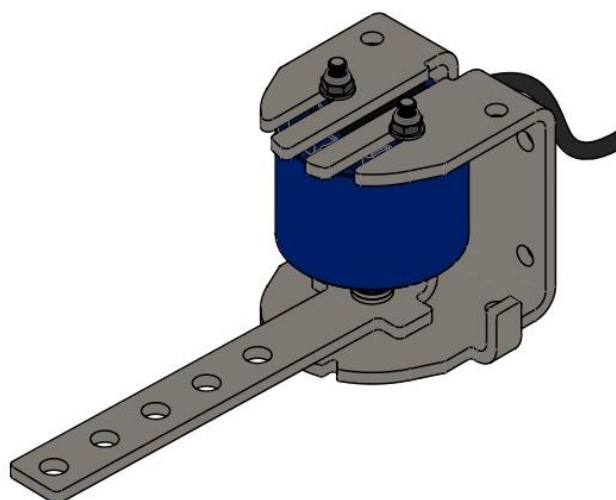


FIGURE 22 WAS ASSEMBLY, BRACKET, 12V 180°, 35CM, M12 CONNECTOR

Plate for WAS mounting:

Pre-prepare the generic flat bracket plate 107-8000-066 with holes for installing the WAS with part number 063-8000-168 on the tractor axle. The plate will be different on 2 types of the axle (Figure 23, Figure 24).

Plate for mounting the wheel angle sensor is installing:

- on front cylinder axle - from the back side of the axle on a holes, showed on Figure 25.
- on back cylinder axle - on the top of the axle on the holes of the cover for adjusting the track gauge showed on Figure 26.



FIGURE 23 WAS MOUNTED ON FRONT CYLINDER AXLE



FIGURE 24 WAS MOUNTED ON BACK CYLINDER AXLE



FIGURE 25 PLACE FOR PLATE INSTALLATION-FRONT CYLINDER AXLE



FIGURE 26 PLACE FOR PLATE INSTALLATION- BACK CYLINDER AXLE

Method of mounting:

- Install the wheel angle sensor to the plate.
- Mount the plate with WAS to the front axle (Figure 23, Figure 24).
- Ball Linear Sensor Mounts Installation, (p/n 117-8000-546):
 - Cut the threaded rod to measure.
 - Install one hex nut, nylock, din985 (p/n 312-6001-001) and one angle joint, m8, radial (p/n 321-8000-001) on each end of the was threaded rod, m8x210 (p/n 311-8000-004) (Figure 27).
- Insert the bolt of the angle joint (p/n 321-8000-001) through the center hole in the WAS rod mounting bracket. Install one hex nut, nylock, din985 (p/n 312-6001-001) on bolt of the angle joint.
- Insert the second bolt of the angle joint (p/n 321-8000-001) through the center hole in the bracket, plate, U-bolt (p/n 107-0172-715) (Figure 28).
- Remove the nuts and clamp from the U-bolt muffler clamp (P/N 311-9000-022) and install the U-bolt around the tie rod with the legs of the U-bolt pointing up.
- Reinstall the clamp on the legs of the U-bolt (Figure 29).
- Insert the legs of the installed U-bolt through the holes in the bracket, plate, U-bolt (P/N 107-0172-715).
- Secure the bracket, plate, U-bolt (P/N 107-0172-715) to the exhaust clamp using two nylon insert lock nuts.
- After mounting check the mechanism by steering fully left and right.

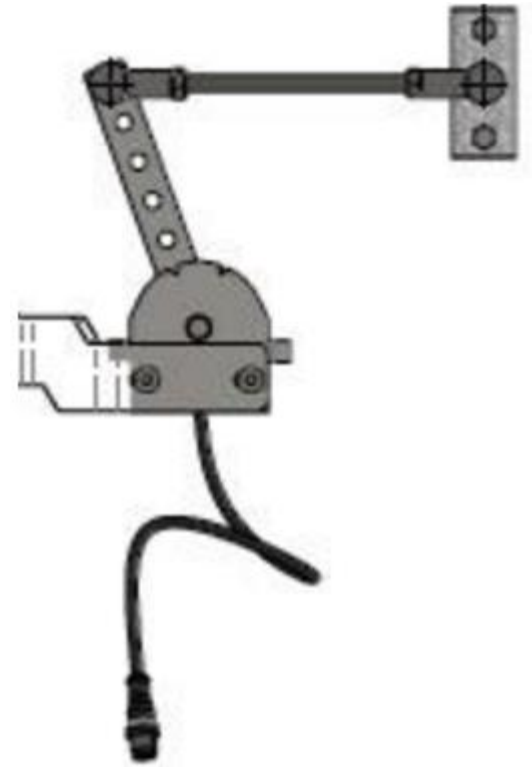


FIGURE 27 . SENSOR WITH BRACKETS

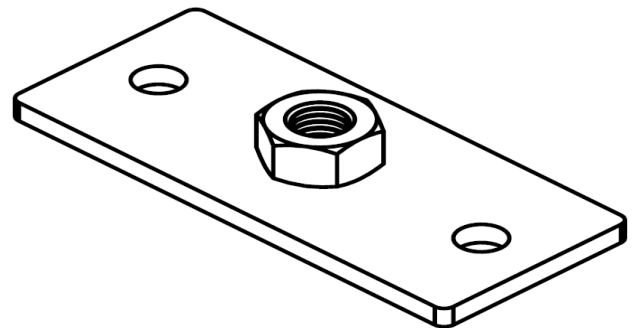


FIGURE 29 BRACKET, PLATE, U-BOLT



FIGURE 28 EXHAUST CLAMP INSTALLED

2 SAFTEY HOMOLOGATION KIT INSTALLATION

To comply with the rules of homologation on the European continent installation kits and software have been developed.

The Raven RS1/SC1 system is an approved steering system per the requirements of 2009/66/EC, § 38 StVZO (EU) 2015/208 IV and V incl. all amendments up to (EU) 2015/208. By GTÜ No. GTÜ 2015/208/ V-19002.00.

For using homologation terms, the appropriate kit must be used.

TABLE 2 KIT, SAFETY HOMOLOGATION, CRX, GENERIC.

Part	Description
115-8000-157	HRNS HDU TO MASTER ENGAGE SEAT
115-8000-428	CBL, OPS, W/ HDU, GENERIC
115-8000-411	CABLE 6P TO DT MASTER SWITCH
063-8000-149	MASTER SWITCH AUTO PILOT
013-9000-003	TECH REPORT RS1/SC1 2009/66EC

Connect the 8-pin connector of HARNESS, HDU TO MASTER ENGAGE SWITCH (115-8000-157) to CABLE, CHASSIS, HYDRAULICS, HDU (115-8000-377) (Figure 30).

On the 115-8000-157 cable three connectors are available:

- Engage - push button or foot switch.
- Master switch – Switch on/off high current power to the valve.
- Seat switch – Detects if the driver is on the seat or not.

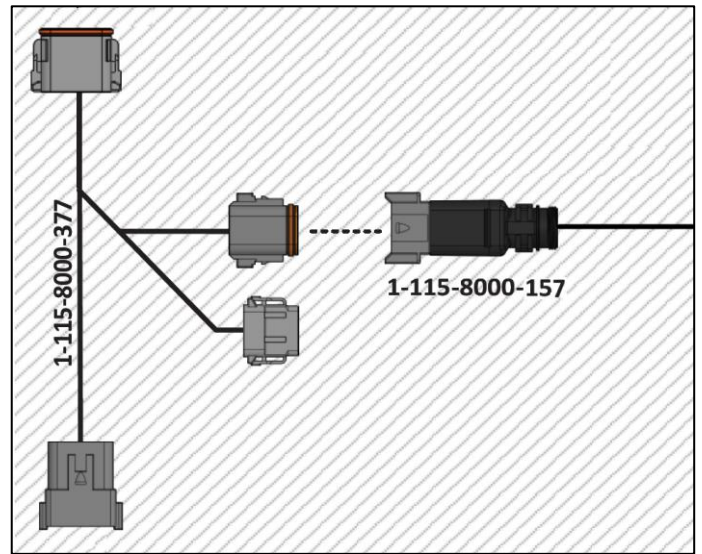
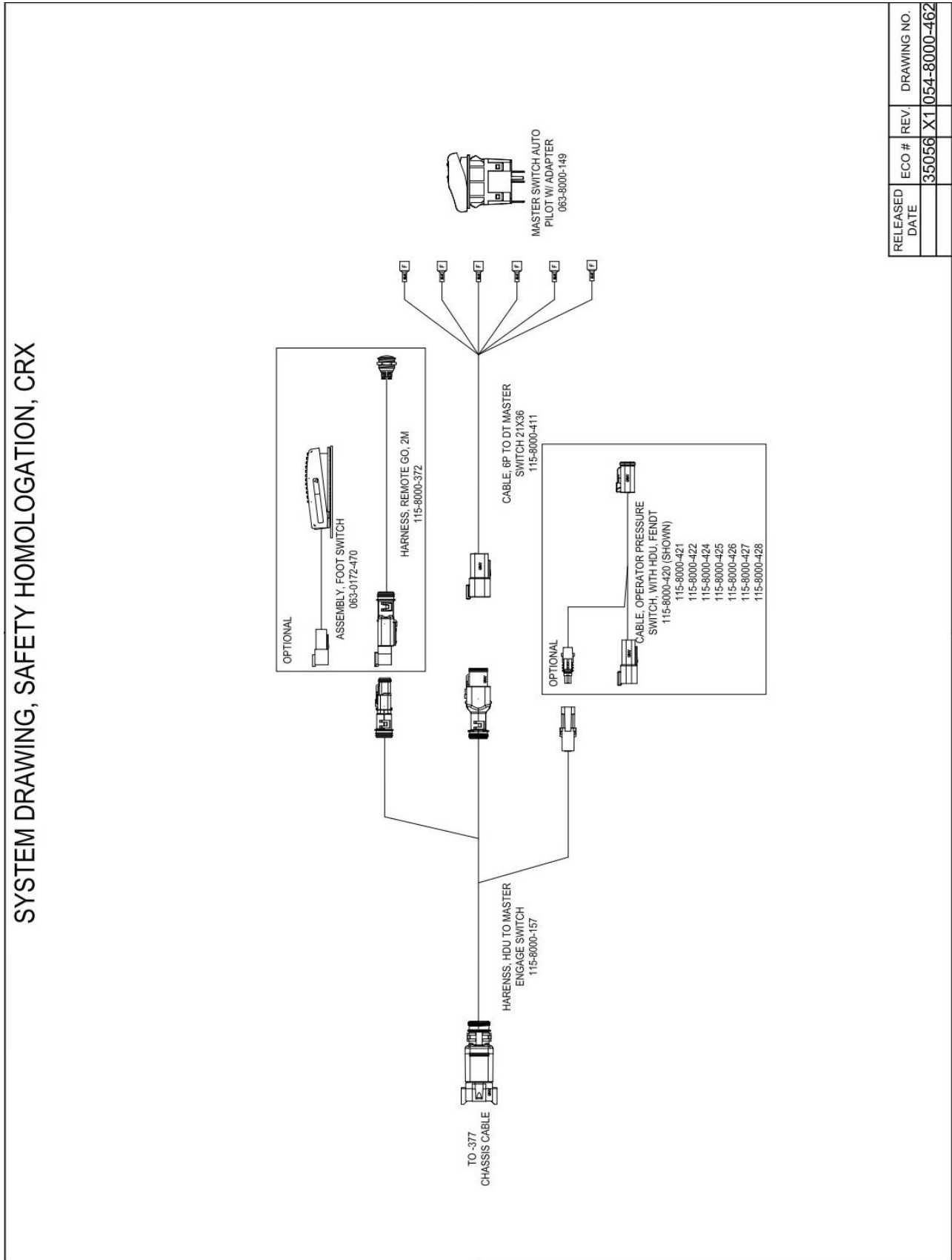


FIGURE 30 CONNECTED 115-8000-157 TO THE 115-8000-377

2.1 SAFETY HOMOLOGATION KIT DRAWINGS



2.2 MASTER SWITCH

The master switch can be used to switch high current power off during road transport.

Connect the 6-pin connector of the CABLE, 6P TO DT MASTER SWITCH 21X36 (115-8000-411) to the 115-8000-157 cable.

Install the MASTER SWITCH AUTO PILOT switch (063-8000-149) in the armrest or dashboard in a convenient position for the tractor driver (Figure 31).

Connect the 115-8000-411 cable to the 063-8000-149 master switch.

2.3 ENGAGE

Select a suitable location to install the push button or foot switch.

Note: the push button or foot switch should be installed in a location where the operator has easy access to it and is able to fully press the button or switch.

Using the holes in the foot switch as a template, drill holes in the floor of the cab. Secure the foot switch to the floor by installing the screws in each of the mounting holes.

In the case of a push button, drill a hole in the panel or armrest and mount the push button (Figure 32).

Route the push button or foot switch connector to the engage connector of the 115-8000-157 cable (Figure 33).



FIGURE 31 MASTER SWITCH AUTO PILOT BUTTON



FIGURE 32 PUSH BUTTON MOUNTING



FIGURE 33 RESUME FOOT SWITCH CONNECTION

2.4 SEAT SWITCH

Note: an operator presence switch cable connects the seat switch of the tractor to the HDU. A few seconds after the driver has left the seat, the automatic steering will be deactivated.

Disconnect the connectors from the existing seat switch cable of the tractor (Figure 34). Connect the Raven operator presence cable (for Claas use the 115-8000-428 for example) between the connectors of the existing seat switch (Figure 35). Cables for various types of tractors are available on request.

Connect the 1-pin operator presence switch connector of the 115-8000-428 cable to the 1-pin seat switch connector of the 115-8000-157 cable.



FIGURE 34 EXISTING TRACTOR OPERATOR PRESENC SWITCH CONNECTOR



FIGURE 35 OPERATOR PRESENC SWITCH T-CABLE (115-8000-428) CONNECTION

3 GPS RECEIVER INSTALLATION

When the combination of CRx/Viper4 ROS with SC1/TC1 is chosen 2 GPS receivers can be used. The 500S or 700S

3.1 INSTALLATION 500S OR 700S

For mounting Raven receiver on MTZ are 2 plce: on the top of the roof (Figure 36) and under the sunroof (Figure 37).

For the installation you should do next steps:

1. Unscrew the 2 bolts that support the roof lining.
2. Make the hole-Ø 20 mm in a metal roof.
3. Open the sunroof.
4. Slide one side of the cable 115-8000-349 with protective cap in made hole.
5. Install mounting plate. For both antennas a mounting plate is available. (Figure 36 & Figure 38)
6. Connect the receiver to adapter cable. For connecting a 500S antenna use this adapter cable: 1-115-0172-588. For connecting a 700S use this adapter cable: 1-115-0172-589. Look at the correct system overview of the CRx/Viper4 ROS to know which cable should be connected with the adapter cable. If the antenna is not connected make sure that the connectors on the roof are provided with a protective cap (Figure 40). With this protective cap no dust and water can enter the connector.

Furthermore, the following guidelines must be observed when installing the GPS antenna:

- Mount the GPS-antenna with the connectors pointing to the backside.
- Mount the GPS-antenna in front of the rear axle.



Hint!:

When the customer disconnects the antenna the adapter cable should stay with the antenna.



FIGURE 36 MOUNTING PLATE 500S



FIGURE 37 500S ANTENNA



FIGURE 38 700S ANTENNA ON MOUNTING PLATE



FIGURE 39 600S ANTENNA UNDER SUNROOF



FIGURE 40 PROTECTIVE CAP

3.2 SLINGSHOT INSTALLATION

If a SlingShot modem is used, in addition to the GPS-antenna, two GPRS / UMTS antennas and a GPS patch should be mounted.

The GPRS / UMTS-antennas should be mounted at least 100 cm of each other (like the CNH antenna-bracket in Figure 41). If a standard GPS-antenna bracket is mounted, one of the GPRS / UMTS-antennas should be mounted on this bracket (Figure 41). The second GPRS / UMTS-antenna should be mounted on a metal bracket on the cabin (Figure 43).

It is important that the following conditions are met at all times:

- The GPRS/UMTS antenna is equipped with a magnetic base and must be placed on top of the cabin.
- The antenna should have a clear reception all round.
- Label the antenna cables inside the cabin with labels 'Cellular' and 'Diversity' (Figure 44).
- Mount a grey SMA grip on both connectors (Figure 44).

When using a SlingShot modem also a GPS Patch antenna should be mounted (Figure 43). The GPS Patch antenna is magnetic. Mount the GPS Patch antenna always on the roof of the cabin. Be careful with mounting the GPS patch antenna; the GPS patch antenna cable is quite thin and fragile. Label the GPS Patch antenna cable inside the cabin with label 'GPS' and mount a blue SMA grip to the connector (Figure 44).

Connect the power cable to the connector with label "Slingshot PWR" and connect the RTK IN/GPS OUT connectors with each other. Connect the Serial RTK IN with the SlingShot and connect the Ethernet cable between the SlingShot and the CR7.



FIGURE 41 GPS ANTENNA BRACKET WITH A LAIRD UMTS ANTENNA



FIGURE 42 CASE NEW HOLLAND WITH GPS-ANTENNA, GPS PATCH ANTENNA AND TWO GPRS/UMTS ANTENNA'S

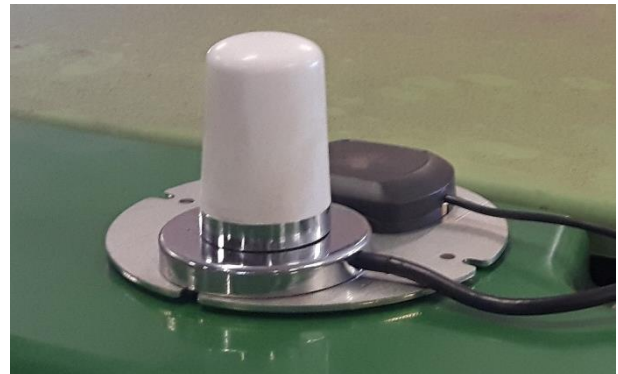


FIGURE 43 GPRS/UMTS-ANTENNA AND GPS PATCH ANTENNA ON A METAL BRACKET



FIGURE 44 ANTENNA CABLES WITH LABELS AND SMA-GRIP SET

4 CRX/VIPER4+ ROS INSTALLATION

4.1 MOUNTING THE CR7

The following guidelines have been established for mounting the terminal (Figure 45):

1. Unscrew the rearview mirror.
2. Screw a RAM-C ball attachment (Figure 46).
3. Mount the terminal free of vibrations with a solid bracket. A variety of mounting brackets are available for this purpose.
4. Make a hole in the roof trim near the right speaker (speaker hole).
5. Slide one side of the field computer cable in made hole.
6. Connect connectors to field computer (Figure 47).
7. Secure all cables on the roof.
8. Mount in such a way that the display is directed straight towards the driver.
9. Mount in such a way that driver has a clear view all around.



Hint!:

Mount the terminal in such a way that it does not obstruct the view of the driver over the top of the right-hand fender, but also so that the inside of the front wheel on the ground is still clearly visible.



FIGURE 45 MOUNTED CR7



FIGURE 46 RAM-C BALL ATTACHEMENT



FIGURE 47 CONNECTED CONNECTORS TO CR7

4.2 MOUNTING THE CR12/VIPER4+ ROS

The following guidelines have been established for mounting the terminal.

- Always contact the customer about the terminal position in the cabin.
- Always use a RAM-C or RAM-B ball attachment. (Figure 46 & Figure 49)
- Mount the terminal free of vibrations with a solid bracket. A variety of mounting brackets are available for this purpose.
- Secure all cables in the cabin.
- Mount in such a way that the display is directed straight towards the driver (Figure 49).
- Mount in such a way that driver has a clear view all around.



Hint!:

Mount the terminal in such a way that it does not obstruct the view of the driver over the top of the right-hand fender, but also so that the inside of the front wheel on the ground is still clearly visible.



FIGURE 48 CR12/VIPER4+ ROS ON A PILLAR

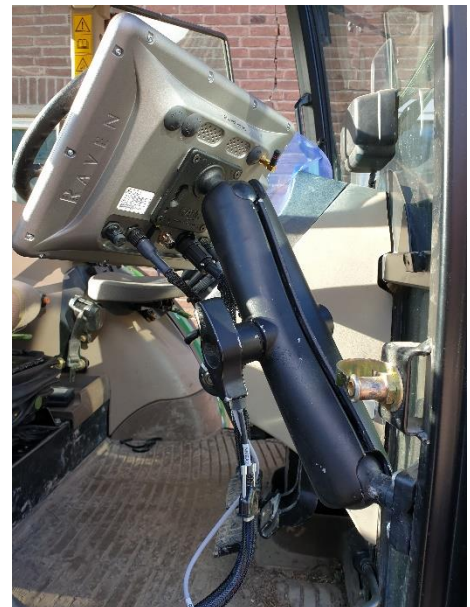


FIGURE 49 RAM B BALL ATTACHMENT ON PILAR

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R A V E N