



CRX/VIPER 4(+) ROS + SC1/TC1 RAVEN EUROPE GENERIC

016-8000-014EN REV. B

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.

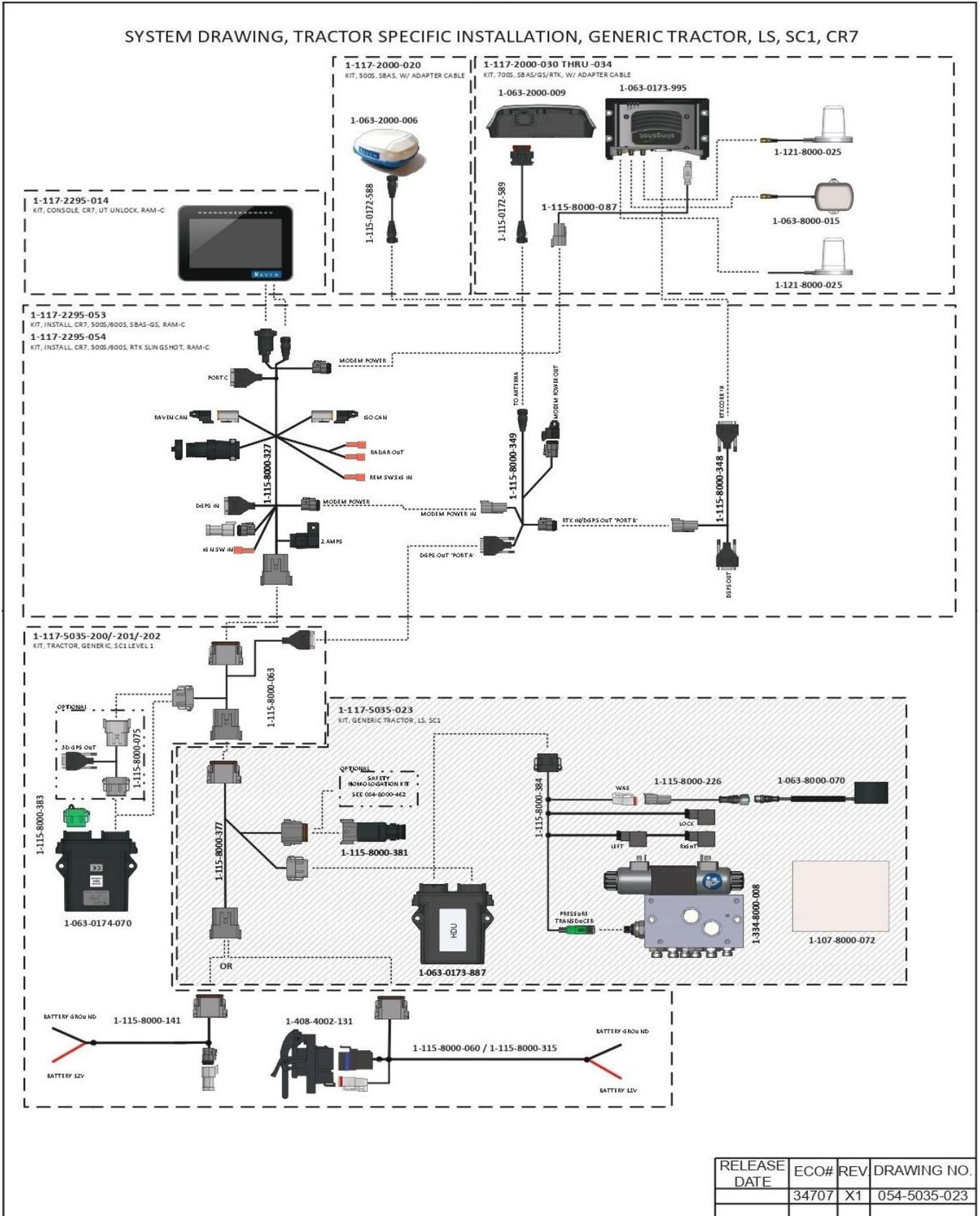
PAY ATTENTION!

- 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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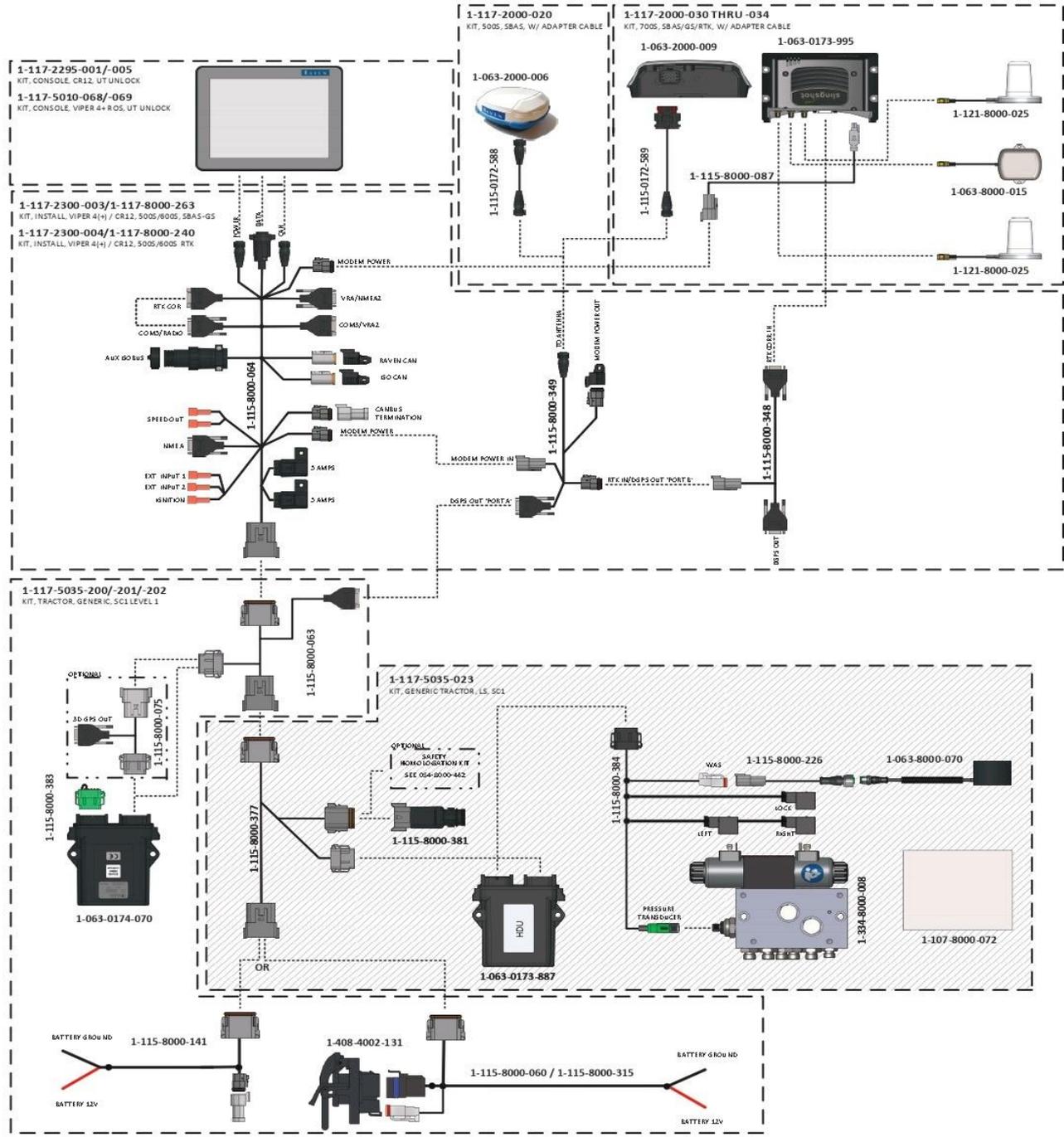
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RAVEN EUROPE GENERIC KITS CR7



RAVEN EUROPE GENERIC KITS CR12 / VIPER4+ ROS

SYSTEM DRAWING, TRACTOR SPECIFIC INSTALLATION, GENERIC TRACTOR, LS, SC1, CR12 / VIPER 4+ ROS



RELEASE DATE	ECO#	REV	DRAWING NO.
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1 STEERING SYSTEM INSTALLATION

This chapter describes the installation of all the different steering systems, hydraulic, SmarTrax MD and steer ready tractors. 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/TC1

The following guidelines have been established for mounting the SC1/TC1:

- Preferably, place the SC1/TC1 next to and to the right of the seat (Figure 3). Use the standard SC1/TC1 mounting bracket.
- If it is not possible to attach the SC1/TC1 to the seat bolts, the SC1/TC1 should be attached in an appropriate place in the cabin that is free from vibrations.
- A SC1/TC1 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/TC1 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!



FIGURE 3 A SC1/TC1 MOUNTED NEXT TO THE SEAT

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 HYDRAULIC VALVE

Figure 4 shows the manifold mounted onto a manifold bracket with four M8 bolts. The manifold bracket is preferably mounted at the right-hand side of the tractor (Figure 5) because this is usually the side of the tractor with the most space.

i **Please note!**

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

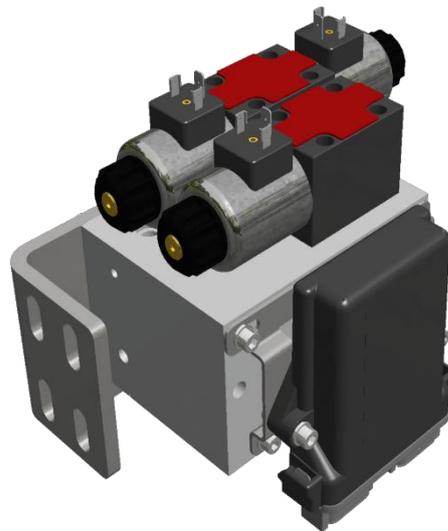


FIGURE 4 MANIFOLD BRACKET WITH A MANIFOLD AND HYDRAULIC DRIVE UNIT MOUNTED



FIGURE 5 MOUNTED MANIFOLD AND STEERING CONTROLLER

1.3.2 HYDRAULIC INSTALLATION LOAD SENSE

The manifold should be connected between the hoses leading from the steering orbitrol to the steering cylinder(s). To do so, the hoses must be disconnected, preferably on an existing connection between a pipe line and a hose.

Connect the hoses from the steering orbitrol to **A1** and **B1** on the manifold. Connect the hoses to the steering cylinders to **A** and **B** on the manifold (Figure 6 and Figure 7).

Connect the pressure line, return line and the LS line of the hydraulic pump to the **P**, **T** and **LS** of the manifold. When needed refer to the hydraulic drawing of the tractor to find the correct connections on the tractor.

Caution!

If there are separate hydraulic systems with separate oil tanks on the tractor, the manifold must be connected to the system in which the steering orbitrol and steering cylinder are included in.

Hint!

Mark the lines twice with 'A' and 'B', before disconnecting them.

1.3.3 CONNECTING THE SHUTTLE VALVE

A shuttle valve must be installed in the load sense line. See Figure 8 for proper mounting and orientation of the shuttle valve. This way, when in rest, the ball floats inside the valve, which will benefit the response for the load sense signal. In addition, it is important that the shuttle valve is installed as close to the pump as possible.

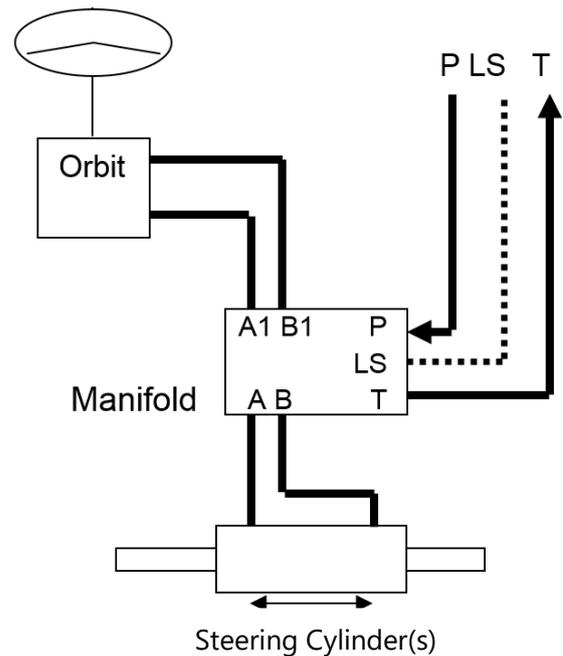


FIGURE 6 LOAD SENSE CONNECTING CIRCUIT

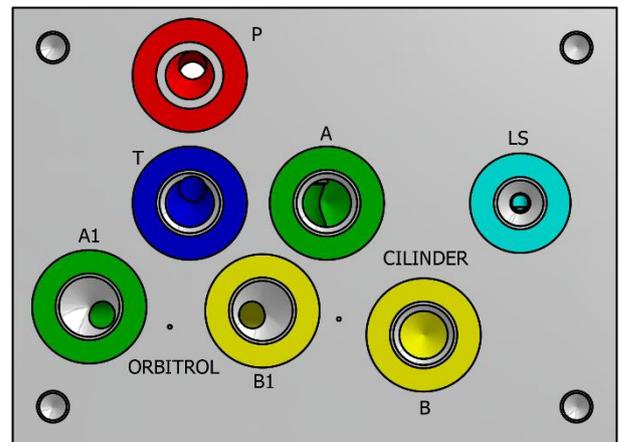


FIGURE 7 CONNECTIONS FOR THE HYDRAULIC LOAD SENSE MANIFOLD



FIGURE 8 TOP VIEW OF SHUTTLE VALVE FOR MOUNTING IN THE LOAD SENSE LINE.

i Hint!:

In case the wheels of the tractor are steering when the hydraulics of the tractor are operated; a non-return valve should be mounted in the load sense line from the manifold. The non-return valve should let oil pass from the manifold to the check valve/pump and should block in opposite direction.

i Hint!:

A shuttle valve for CNH tractors can be provided by Raven Europe (order no. 13348001014) or the local CNH dealer (order no. 82018814).

1.3.4 PRESSURE RELIEF VALVE

A pressure relief valve is mounted to the add-on part of the open center manifold (Figure 9). 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 counterclockwise.

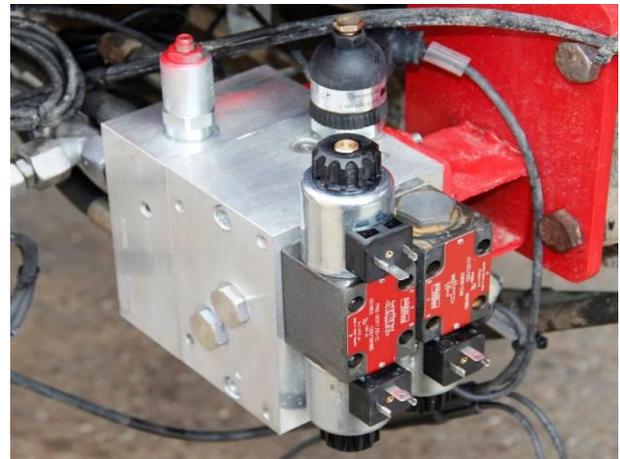


FIGURE 9 OPEN CENTER MANIFOLD

- 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.

1.3.5 HYDRAULIC INSTALLATION OPEN CENTER

The manifold open center consists of the standard load sense manifold with an add-on open center part (Figure 10).

The pressure line that normally runs from the hydraulic pump to the steering orbitrol, should be connected to the **P** of the add-on open center part. Then connect a line between **P1** of the manifold and the pressure line of the orbitrol. Connect the **T** of the manifold to a tank inlet (Figure 11 and Figure 12).

Connect the hoses leading from the orbitrol to **A1** and **B1** on the manifold. Connect the hoses to the steering cylinders to **A** and **B** of the manifold (Figure 11 and Figure 12).



FIGURE 10 ADD-ON PART OF THE OPEN CENTER MANIFOLD

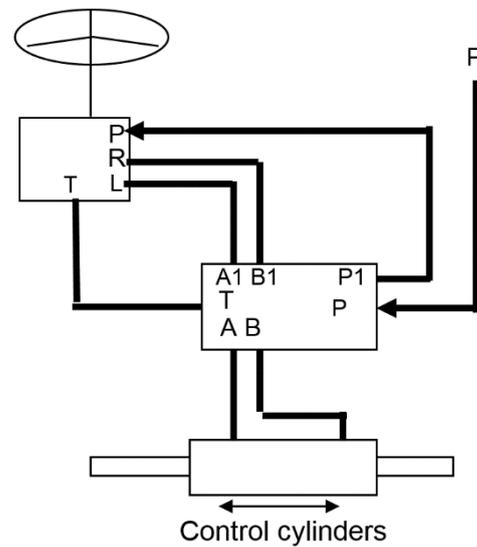


FIGURE 11 OPEN CENTER CONNECTION CIRCUIT

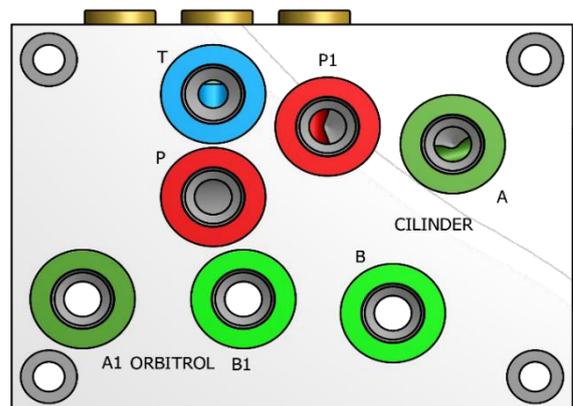


FIGURE 12 CONNECTIONS OF THE HYDRAULIC OPEN CENTER MANIFOLD

1.3.6 HYDRAULIC SYSTEM ON TRACTORS WITH GEAR PUMP AND LOAD SENSE ORBITROL CONNECTION

Tractors with a gear-type pump and equipped with an orbitrol with load sense connection fitted with a load sense priority valve. This concerns most Valtra models (Advanced, Versu and Direct) and some Deutz-Fahr models.

This enables the use of a standard load sense manifold with a shuttle valve. Because the maximum pressure is normally limited by the steering orbitrol, an additional pressure relief valve needs to be installed in the pressure line to the manifold.

The load sense signal should be connected to the existing load sense line from the steering orbitrol by using the shuttle valve supplied. Preferably mount the shuttle valve horizontally. Connect the hydraulics hoses as indicated in (Figure 13).

Determine the maximum pressure of the steering system before mounting the manifold. The maximum pressure of the additional pressure relief valve should be set equal to the maximum pressure of the steering system, before mounting the manifold (Figure 13).

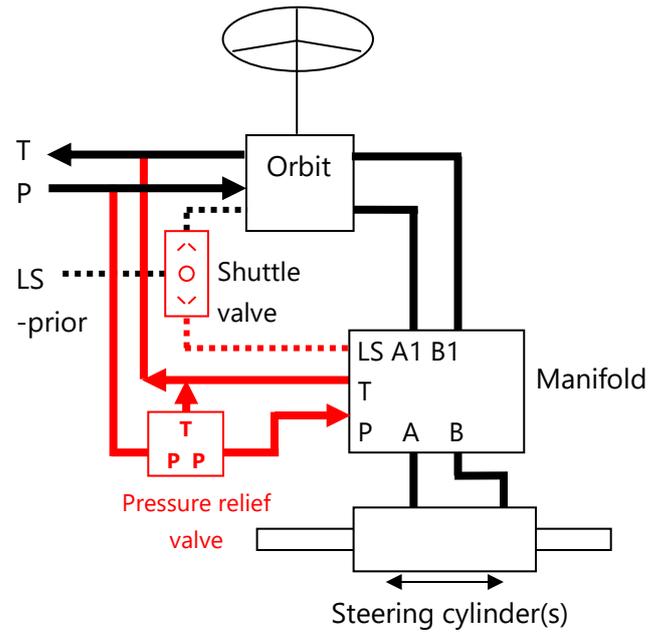


FIGURE 13 PRESSURE RELIEF VALVE CONNECTION.

1.3.7 MOUNTING AND CONNECTING THE HYDRAULIC DRIVE UNIT

The Hydraulic Drive Unit bracket can be mounted to the manifold. The Hydraulic Drive Unit can then be fitted to the manifold bracket (Figure 14).

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).

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

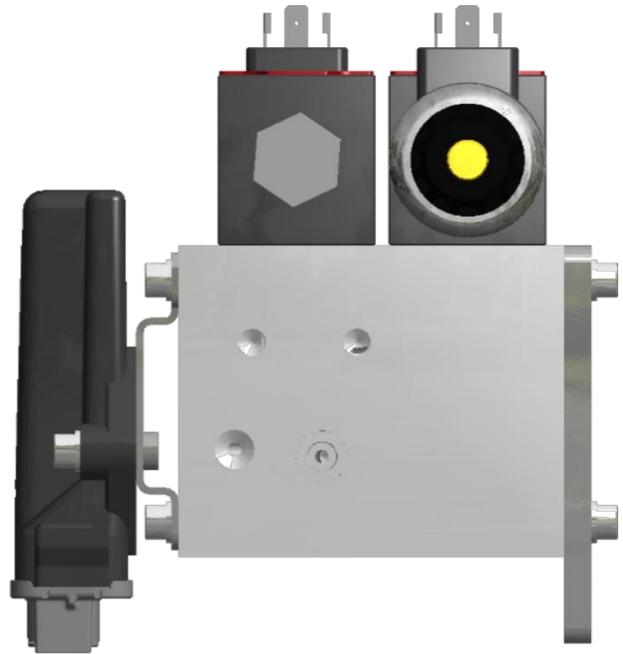


FIGURE 14 SIDE VIEW OF THE HYDRAULIC DRIVE UNIT TO THE MANIFOLD

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.

1.3.8 WHEEL ANGLE SENSOR

For a correct operation of the Raven system a wheel angle sensor is necessary. In various tractor types, a factory fitted wheel angle sensor is already mounted on the front axle. For these tractor types a 'spy cable' is available at Raven to use the factory fitted wheel angle sensor for the Raven system. In this case it is not necessary to install a Raven wheel angle sensor. Ask Raven for more information about the availability for a specific tractor brand or type.

1.3.9 MOUNTING SPY-CABLE

Take the following steps to mount a wheel angle sensor spy-cable:

1. Follow the cable from the wheel angle sensor on the front axle of the tractor to the first connection in this cable.
2. Disconnect the connectors.
3. Connect the spy-cable in between the connectors.
4. Connect the wheel angle sensor 5M cable to the M12 connector of the spy-cable.
5. Mount the spy-cable in a clean and dry position (Figure 15).



FIGURE 15 SPY CABLE MOUNTED ON A CNH TRACTOR

1.3.10 MOUNTING THE WHEEL ANGLE SENSOR

Figure 16 and Figure 17 show a detailed view of the structure of a wheel angle sensor assembly. Table 1 also lists the components shown in Figure 16.

TABLE 1 WHEEL ANGLE SENSOR COMPONENTS.

Symbol	Description
1	Sensor housing
2	Sensor disc
3	Mounting bracket 3mm
4	Mounting strip 20x 3mm
5	2 x M5 x 16mm (countersunk head)
6	2 x M5 x 30mm

1. When the front wheels are in straight position, the screws of the sensor housing and sensor disc should be aligned with the front axle. It is also important that the sensor disc is rotated in such a way that the triangles in the disc and the sensor housing (Figure 18) are properly aligned. Only then will the wheel angle sensor produce a voltage reading.
2. The sensor housing and sensor disc should be aligned EXACTLY on the pivot point of the stub axle. The centre-to-centre distance of the mounting holes is 28 mm.

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

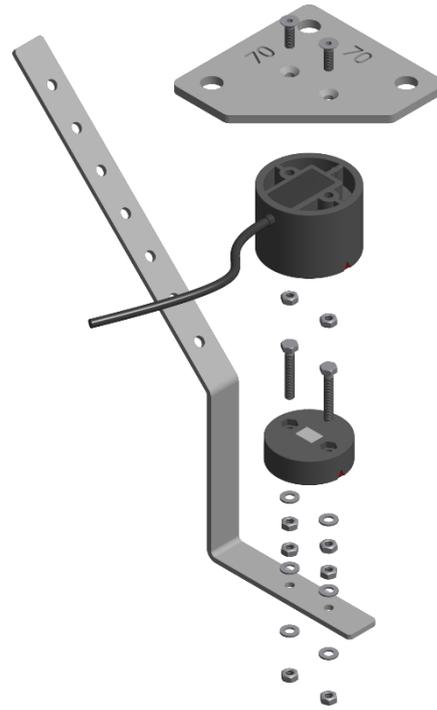


FIGURE 16 SCHEMATIC OVERVIEW OF WHEEL ANGLE SENSOR WITH MOUNTING BRACKET AND STRIP

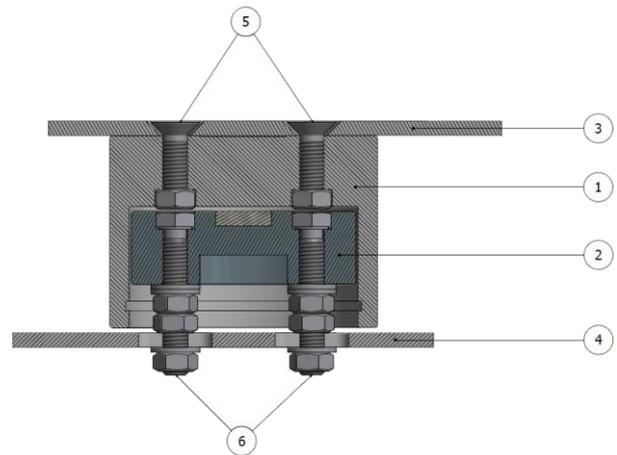


FIGURE 17 SCHEMATIC DRAWING OF WHEEL ANGLE SENSOR WHEN MOUNTED

1. In case the grease nipple at the bottom of the stub axle (stub axle with triangle), then a special U-shaped bracket is to be used for the wheel angle sensor housing (Figure 19 and Figure 20).
2. It is recommended to assemble the sensor housing on the bottom side of the axle stub. Install the sensor housing with the wire pointing backwards.

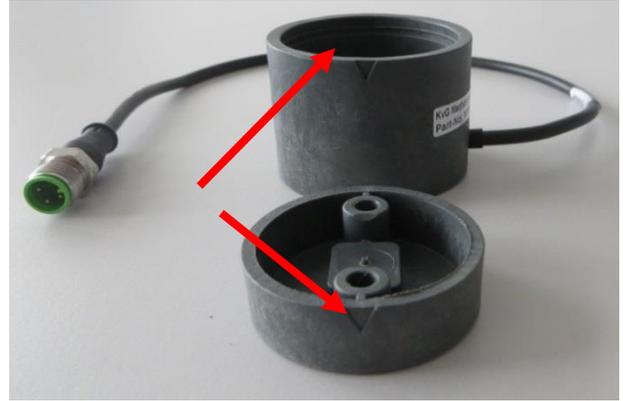


FIGURE 18 TRIANGULAR MARKINGS ON THE 12V WHEEL SENSOR.



Caution!

Sensor housing should always be mounted above the disk to prevent the accumulation of dirt.

3. Mount the sensor housing with the M5X16 bolts (allen bolt, countersunk head). Countersink the drill holes in the wheel angle sensor mounting bracket beforehand, so the heads of the M5 bolts are fully countersunk in the mounting bracket when tightened (Figure 19) To prevent damage to the inside of the the sensor housing, make sure the M5 bolts are not too long.
4. The connecting cable can be provided with a protective sleeve for longer life. Feed the cable via the stub axle and direct it over the top (stub axle/pivot point) of the front axle so that the wire is not pinched or constricted.



FIGURE 19 STEERING ANGLE SENSOR ON NEW HOLLAND.



FIGURE 20 STUB AXLE WITH GREASE NIPPLE.

1.3.11 MOUNTING THE SENSOR DISC

1. Mount the sensor disc without spacers on the provided 20x3 strip (Figure 21).
2. Mount the sensor disc in the sensor housing and mark where the first bend should be made (about 10 cm from the beginning). The first bend should be as close as possible to the sensor disc and be positioned as tight as possible against the stub axle housing to prevent damage by crops or soil (Figure 21 and Figure 22). The most extreme wheel position is usually the tightest position of the strip. Do not bend the strip too sharply.
3. Mark the position of the second bend in the strip until the sensor disc fits nice and flat in the sensor housing. On the other side, the strip must rest just underneath and against the front axle. The strip should rest on the sensor housing. Cut the strip to the correct length.
4. The wheel angle sensor strip should now be mounted to the bottom of the front axle (Figure 22). Mark the location of the holes on the strip and drill two 5 mm holes in the strip at approximately 30 mm apart.
5. Hold the strip with disc in the correct position and drill the first hole in the front axle with a 5 mm drill bit (about 10-15 mm deep). Drill into the thickest part of the front axle on a thickness equal to the length of the bolt used for fastening.



Caution!

Ensure that the hole does not wear out when drilling (drill clean and straight). When drilling, ensure that the strip is under tension when positioned against the sensor housing to prevent the strip from vibrating.



FIGURE 21 DISC ON THE STRIP WITHOUT SPACERS



FIGURE 22 STRIP WITH SECOND BEND AND SHORTENED

6. Tap the first thread in the hole drilled into the front axle using a M6 screw-thread tapping attachment. Now fasten the strip with one M6 bolt (Figure 23).
7. Drill the second hole in the front axle with a 5 mm drill bit. Remove the strip again and tap the second screw thread in the hole in the front axle.
8. Drill the second hole in the wheel angle sensor strip with 6 mm drill bit. Fasten the strip with two M6 bolts.
9. Make sure the sensor disc falls nice and flat into the sensor housing and the strip also lies flat and under tension on both sides of the disc positioned against the sensor housing. Press with your thumb against the end of the strip and check if the strip bounces back easily without friction (Figure 29). The sensor disc may only have a little bit of friction in the sensor housing.
10. If necessary, bend the strip a little bit. Two Adjustable wrenches are useful tools to do this (Figure 24).
11. Remove the strip again and mount the sensor disc on the bottom of the strip (Figure 25).
12. Mount the strip again with two M6 bolts on the front axle.
13. Check if the sensor disc is properly centered with the sensor housing. The strip has to lie flat under slight pretention against the sensor housing (Figure 25). Also turn the wheels to make sure the sensor housing remains properly centered in various wheel positions.

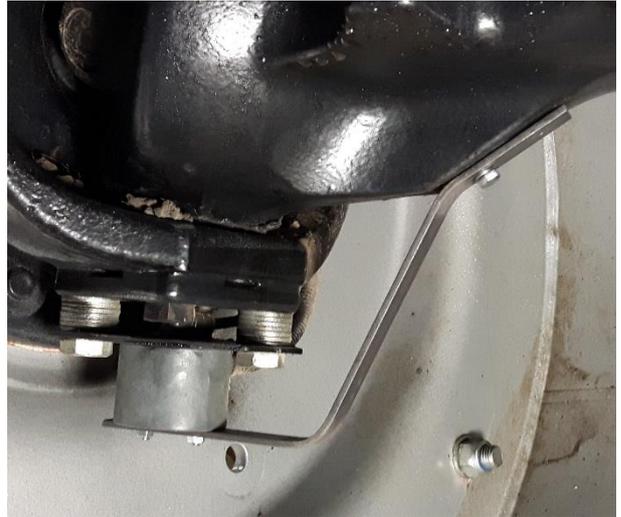


FIGURE 23 STRIP ON THE FRONT AXLE WITH ONE BOLT



FIGURE 24 BEND THE STRIP WITH THE HELP OF TWO AJUSTABLE WRENCHES.

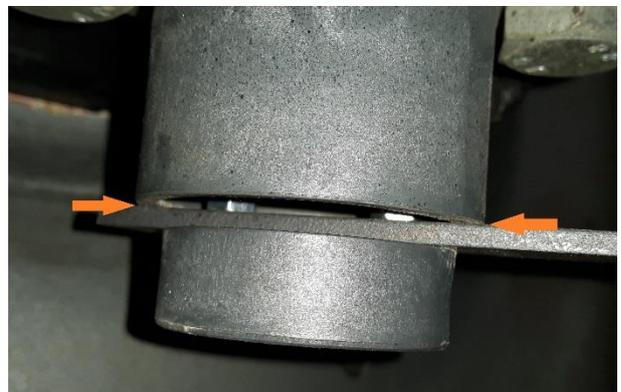


FIGURE 25 DISC AT THE OTHER SIDE OF THE STRIP

14. Remove the sensor disc from the strip. Then mount the sensor disc again to the strip with the aid of M5 X 30 bolts, raised with two nuts and two washers on each side. Mount on the correct side of the strip (Figure 26) and pay attention to the orientation of the disc (Figure 18). The triangular marker must be on the correct side. **Make sure the the two nuts and washer are installed underneath the disc.**

15. Make sure the sensor magnet (Figure 27) in the sensor disc is completely clean (no iron fillings) before being mounted. Clean the sensor magnet with compressed air if necessary (Figure 28). Mount the strip back on the front axle.

16. Check again if the sensor disc lies under slight pretention against the sensor housing (Figure 29). Push with your thumb to the end of the wheel angle sensor strip to check this. The sensor disc may only have a little bit of friction in the sensor housing. The sensor disc should bounce back easily and without friction (Figure 29 and Figure 30).



Caution!

The sensor disc should be in a fully centered position within the sensor housing. The strip should be able to flex in a downward direction.



FIGURE 26 WHEEL ANGLE SENSOR DISC MOUNTED WITH SPACERS.

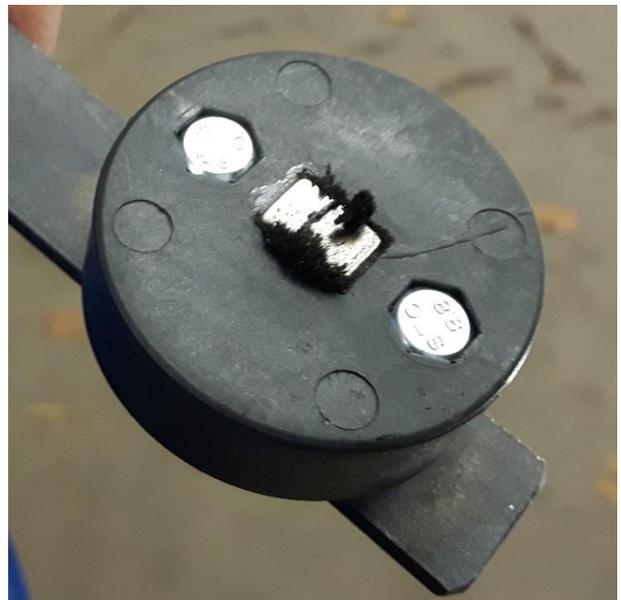


FIGURE 27 DIRTY WHEEL ANGLE SENSOR MAGNET.



FIGURE 28 CLEANING WHEEL ANGLE SENSOR.



Hint!

It is often useful to drill bigger holes (slots) in the wheel angle sensor strip for the sensor disc. Allow the nuts to be loose-fit when mounting the strip. The disc then centers itself automatically. Do not forget to tighten the nuts again.



Caution!

Make sure the magnet of the wheel angle sensor is completely clean (no iron fillings) before mounting it. Cleaning the wheel angle sensor magnet with compressed air can prevent problems.

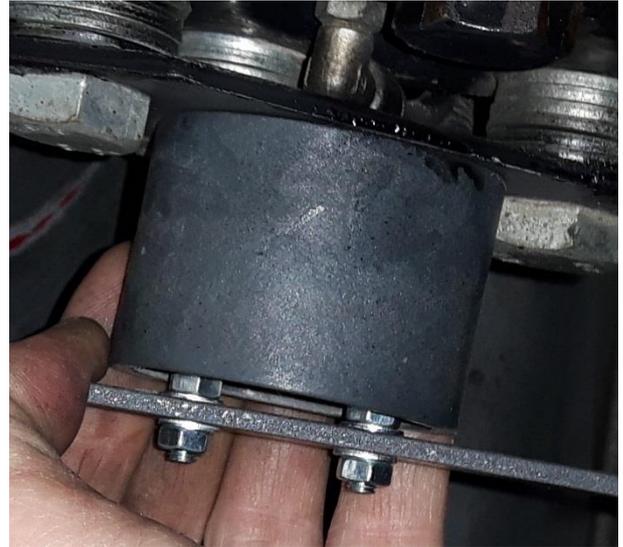


FIGURE 29 CENTRE AND FRICTION CHECK OF WHEEL ANGLE SENSOR.



FIGURE 30 CORRECT MOUNTED WHEEL ANGLE SENSOR

1.3.12 HEAVY-DUTY CARRARO FRONT AXLE WITH INDEPENDENT SUSPENSION

Tractors with independent suspension (e.g. Carraro front axle) a special wheel angle sensor bracket must be fitted (Figure 32). This assembly requires a wheel angle sensor with a much wider range (180°) in connection with the larger wheel turn (blue coloured wheel angle sensor). The wheel angle sensor should be mounted at the right side behind the front axle of the tractor (Figure 31)

Required parts:

- 180°-wheel angle sensor
- Wheel angle sensor bracket
- M8 threaded stub with nuts
- 2x M8 ball joint
- Carraro front axle wheel angle sensor bracket
- Carraro front axle tie rod bracket

Method of mounting:

- Install the wheel angle sensor to the bracket.
- Mount the bracket to the front axle.
- Set the arm of the sensor approximately 20 degrees off center (Figure 32). This means that the ball and socket joint of the wheel angle sensor are flush with the ball joint of the control rod. This in order to prevent, when fully to the left, the arm of the sensor and the threaded rod with the ball joints scissors with each other.
- Cut the threaded rod to measure. The ball joints are center to center 180mm long. Fit the clamp to the tie rod and the threaded rod with ball joints.
- After mounting check the mechanism by steering fully left and right.



FIGURE 31 CARRARO FRONT AXLE.

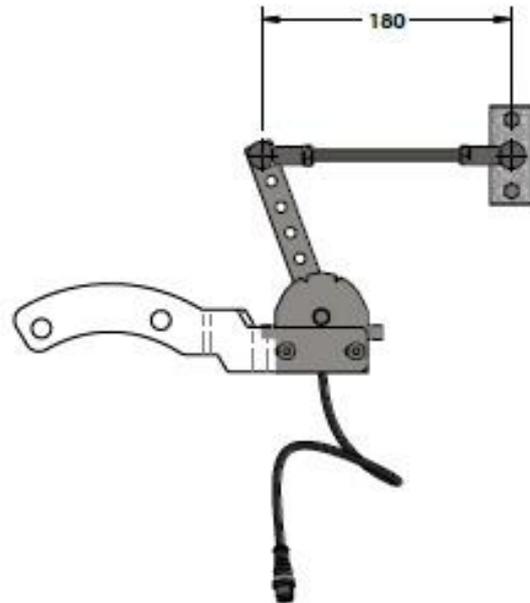


FIGURE 32 SENSOR WITH BRACKETS.

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2 ROADWAY HOMOLOGATION KIT INSTALLATION

To comply with the rules of the roadway homologation (TÜV) on some of the European countries (Germany, Austria) 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, ROADWAY 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 33).

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

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

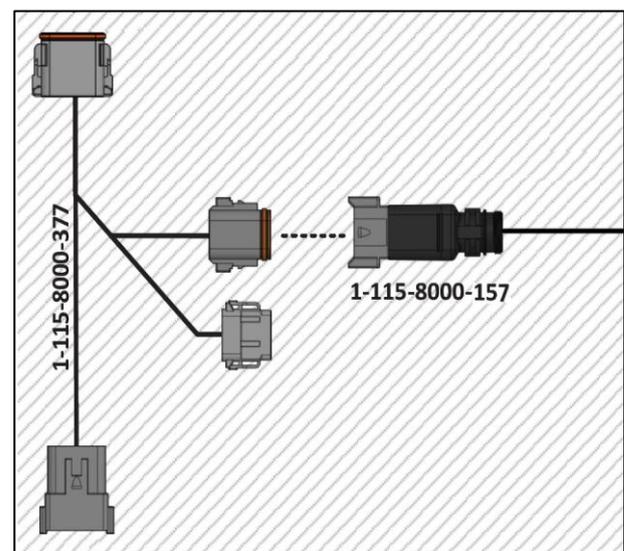
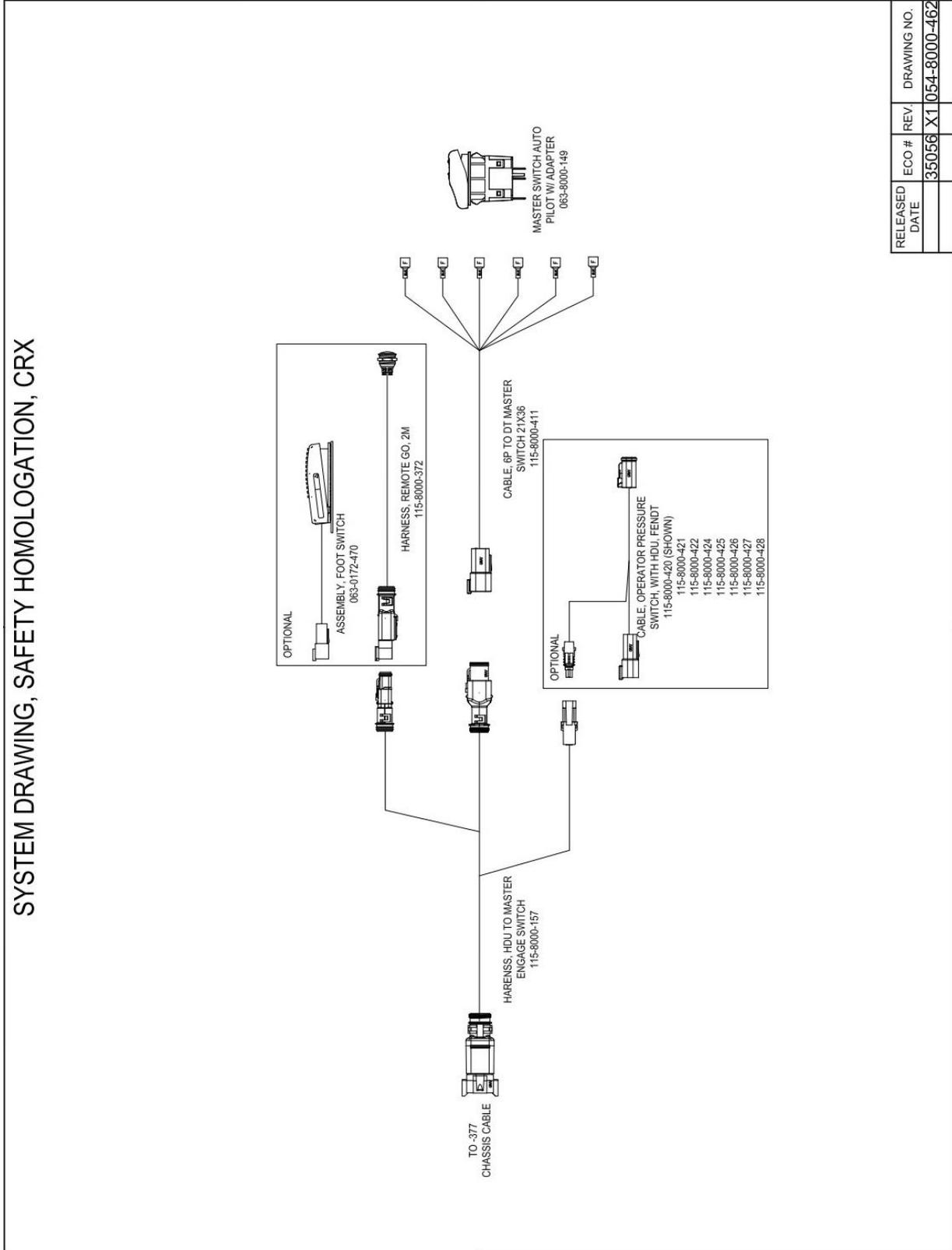


FIGURE 33 CONNECTED 115-8000-157 TO THE 115-8000-377

2.1 ROADWAY HOMOLOGATION APPLICATION DRAWINGS

SYSTEM DRAWING, SAFETY HOMOLOGATION, CRX



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 34).

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 35).

Route the push button or foot switch connector to the engage connector of the 115-8000-157 cable (Figure 36).



FIGURE 34 CONNECTED 115-8000-157 TO THE 115-8000-377



FIGURE 35 PUSH BUTTON MOUNTING



FIGURE 36 RESUME FOOT SWITCH CONNECTION

2.4 SEAT SWITCH



Please 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 37). Connect the Raven operator presence cable (for Claas use the 115-8000-428 for example) between the connectors of the existing seat switch (Figure 38). Cables and safety homologation kits for various types of tractors are available in the pricebook.

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 37 EXISTING TRACTOR OPERATOR PRESENCE SWITCH CONNECTOR



FIGURE 38 OPERATOR PRESENCE SWITCH T-CABLE (115-8000-428) CONNECTION

3 GPS RECEIVER INSTALLATION

When the combination of CRx with SC1/TC1 is chosen, two different GPS receivers can be used. The 500S or 700S

3.1 INSTALLATION 500S OR 700S

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 to know which cable should be connected with the adapter cable. If the antenna is disconnected, make sure that the connectors on the roof are provided with a protective cap (Figure 43). With this protective cap no dust and water can enter the connector.

For both antennas a specific mounting plate is available (Figure 39 & Figure 42Figure 41).

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 39 MOUNTING PLATE 500S



FIGURE 40 500S ANTENNA



FIGURE 41 MOUNTING PLATE 700S



FIGURE 42 700S ANTENNA



FIGURE 43 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 45). If a standard GPS-antenna bracket is mounted, one of the GPRS / UMTS-antennas should be mounted on this bracket (Figure 44). The second GPRS / UMTS-antenna should be mounted on a metal bracket on the cabin (Figure 46).

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 47).
- Mount a grey SMA grip on both connectors (Figure 47).

When using a SlingShot modem also a GPS Patch antenna should be mounted (Figure 46). 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 47).

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 44 GPS ANTENNA BRACKET WITH A LAIRD UMTS ANTENNA.



FIGURE 45 CASE NEW HOLLAND WITH GPS-ANTENNA, GPS PATCH ANTENNA AND TWO GPRS/UMTS ANTENNA'S



FIGURE 46 GPRS/UMTS-ANTENNA AND GPS PATCH ANTENNA ON A METAL BRACKET.



FIGURE 47 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 48):

- Always contact the customer about the terminal position in the cabin.
- Always use a RAM-C ball attachment (Figure 49 & Figure 50).
- 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.
- 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 CR7 ON A-PILLAR



FIGURE 49 RAM-C BALL ATTACHEMENT



FIGURE 50 CR7 MOUNTED

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-D ball attachment (Figure 52).
- 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 51).
- Mount in such a way that driver has a clear view all around.



FIGURE 51 CR12/VIPER4+ ROS ON A PILLAR



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.

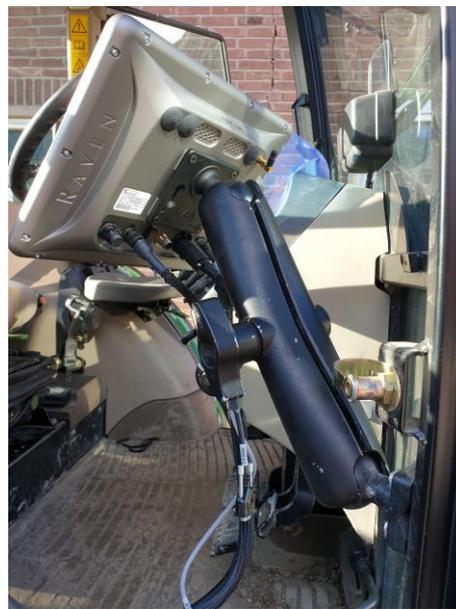


FIGURE 52 RAM D BALL ATTACHMENT ON PILLAR

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