



INSTALLATION MANUAL

(ENGLISH) (TRANSLATED VERSION)

SBGuidance Auto

CNH IntelliSteer (Steer Ready)

016-8000-086EN Rev. A





Preface

This installation manual is intended for persons responsible for installing a SBGuidance Auto set on a CNH Intellisteer (GPS Ready) tractor. The manual contains important instructions that should be complied with when commissioning, operating and servicing the SBGuidance system.

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

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

SBG Precision Farming or any of its suppliers will accept no liability for physical or material damage caused whilst using the SBGuidance system.

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

This user guide uses a number of concepts for extra attention to a few things.



Hint!:

Gives suggestions to make it easier to perform certain tasks



Pay attention!:

Alerts the user for potential problems.



Be careful!:

Indicates that the device may possibly be damaged.



Warning!:

Indicates that there is a danger of personal injury.

SBG precision farming

Hoornseweg 22










NL-1775 RB Middenmeer

E-Mail: info@sbg.nl


Web: www.sbg.nl


Phone: +31 (0)227 54 93 00


Disclaimer


-  **Warning!:**
Always switch off the tractor before installing or repairing hydraulic and electrical components of the SBGuidance system.
-  **Warning!:**
The safety instructions contained in the manuals of the tractor or implements must be complied with at all times.
-  **Warning!:**
It is strictly prohibited to use the SBGuidance system on public roads.
-  **Warning!:**
It is strictly prohibited to leave a driving vehicle unattended when the SBGuidance system is switched on. The driver is always responsible for the direction and course of the vehicle.
-  **Warning!:**
To prevent injury or fire, replace defective fuses only with fuses of the same type and amperage.
-  **Warning!:**
The SBGuidance 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.
-  **Warning!:**
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.
-  **Warning!**
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.
-  **Warning!**
The system contains moving parts! Make sure the immediate environment is clear of people before operating the system.





-  **Warning!**
Always wear personal protective equipment when operating/adjusting/repairing the system outside of the tractor cab.

-  **Caution!**
In order to prevent power surges from occurring, always start the machine first, before initiating the SBGuidance control system.

-  **Caution!**
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.

-  **Caution!**
Always consult your supplier as to which products are best suited first before cleaning the touch-screen with chemicals or alcohol.

-  **Please note!**
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.

-  **Please note!**
To prevent theft, it is better to not let the terminal and GPS-antenna unattended in the tractor on the field.

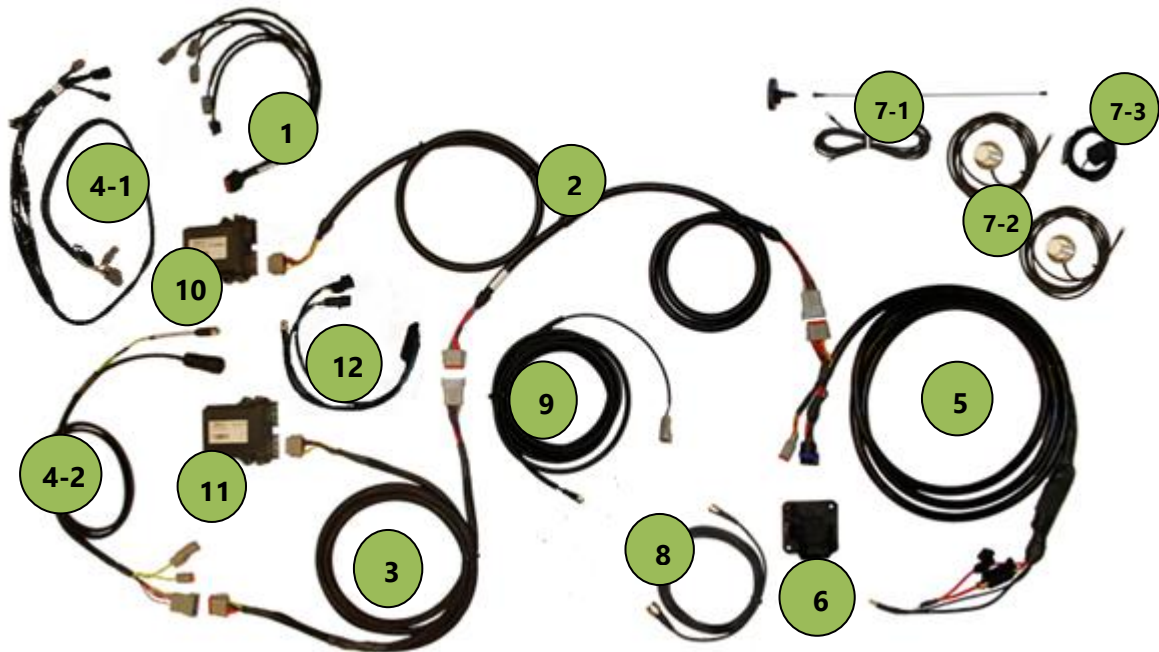


Contents

- Preface.....2
- Disclaimer.....3
- Contents5
- 1. Components overview6
 - 1.1. Overview of electrical components 6
 - 1.2. Overview of mechanical components..... 7
- 2. Tractor kit build up8
- 3. Mounting harness9
 - 3.1. CAN Basic harness..... 9
 - 3.2. CAN Implement Ready (IR) harness 9
 - 3.3. Mount harnesses..... 9
- 4. Mounting GPS- en radio/gsm- antenna 14
 - 4.1. Mount CNH GPS-antenna bracket..... 14
 - 4.2. Mount standard GPS-antenna bracket..... 14
 - 4.3. Montage radio-antenne..... 16
 - 4.4. Montage GSM- en SlingShot GPS-antennes 17
- 5. Mounting DynamIQ..... 18
- 6. Mounting terminal 19
- 7. Setup in CANTool..... 20
- 8. Setup software (SBGuidance)..... 22

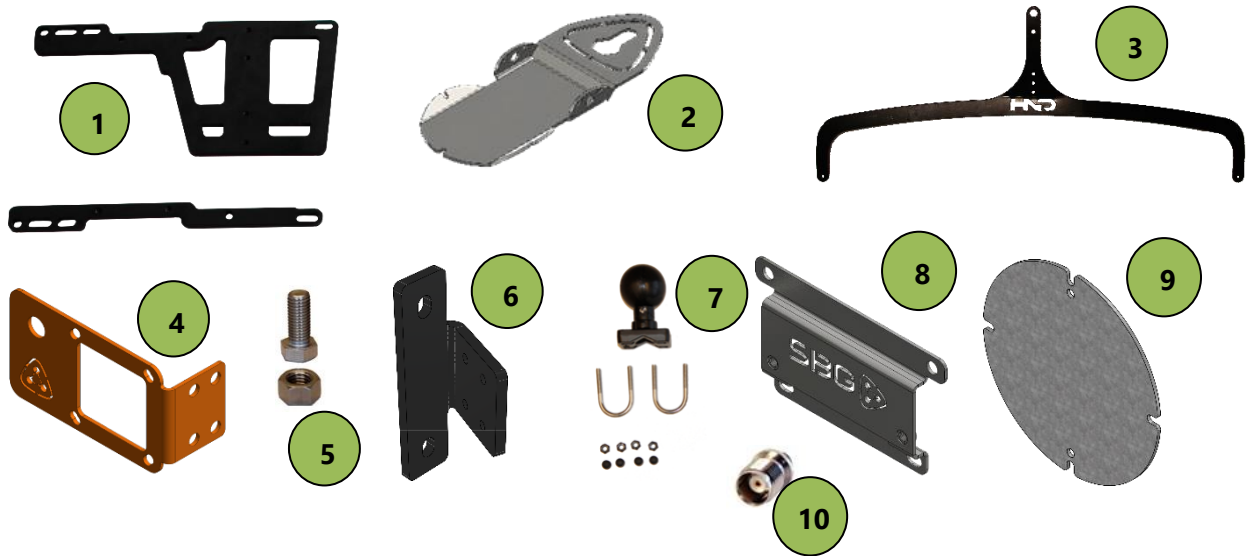
1. Components overview

1.1. Overview of electrical components



#	Type Number:	Description:
1	11158000240	HRNS, STU, NH INTELLISTEER
2	SBG13711	Harness chassis (hydraulics)
3	11158000228	HRNS, IN-CAB, DYNAMIQ
4-1	11158000064	HRNS, IN-CAB, TERMINAL, VIPER4
4-2	11158000129	HRNS, IN-CAB, TERMINAL, GEOSTR
5	11158000141	HRNS, POWER, BASIC
5	11158000060	HRNS, POWER, IMPLEMENT READY
6	14084002131	Implement socket (IBBC)
7-1	11178000313	KIT, RADIO ANTENNA TRC, MAGNET
7-2	11218000003	ANTENNA, 4G/3G UMTS LAIRD 3.5M
7-3	10638000015	ANTENNA, PATCH, 4.5M
8	1115800011(0/1/2)	CBL, ANT. 3 / 4.5 / 6M, TNC-N
9	11158000226	HRNS, WAS, 5M
10	10638000087	STU, TRACTOR
11	10630173862	DynamIQ ISO - Tractor
12	11158000151	HRNS, WAS SPY, NH STR

1.2. Overview of mechanical components



#	Type Number:	Description:
1	11078000125	BRACKET, DYNAMIQ, V4
2	11078000081	BRACKET, GPS/RADIO ANT GENERIC
3	11078000121	BRACKET, GPS ANTENNA, NH
4	11078000006	BRACKET, IBBC, IR
5	11178000311	KIT, BOLT AND NUT UNC, ANTENNA
6	11078000082	BRACKET, RAM, CAB NH/JD – A PO
7	11030001040	MOUNT, 1" RAIL, RAM D
8	11078000006	BRACKET, MANIFOLD V3, STU
9	11078000131	MOUNTINGPLATE, ANTENNA, ROOF
10	14074001024	TNC Dummy
-	11178000341	KIT, MOUNTING, TRACTOR

2. Tractor kit build up

It is recommended to carry out the build up of the tractor in the following order:

1. Mount the entire wire harness from the battery
2. Mount harness on CNH Intellisteer valve.
3. Mount spy cable on CNH steering angle sensor
4. Mount GPS antenna and radio/gsm- antenna(s) + cables
5. Mount DynamIQ in cabin
6. Mount Terminal

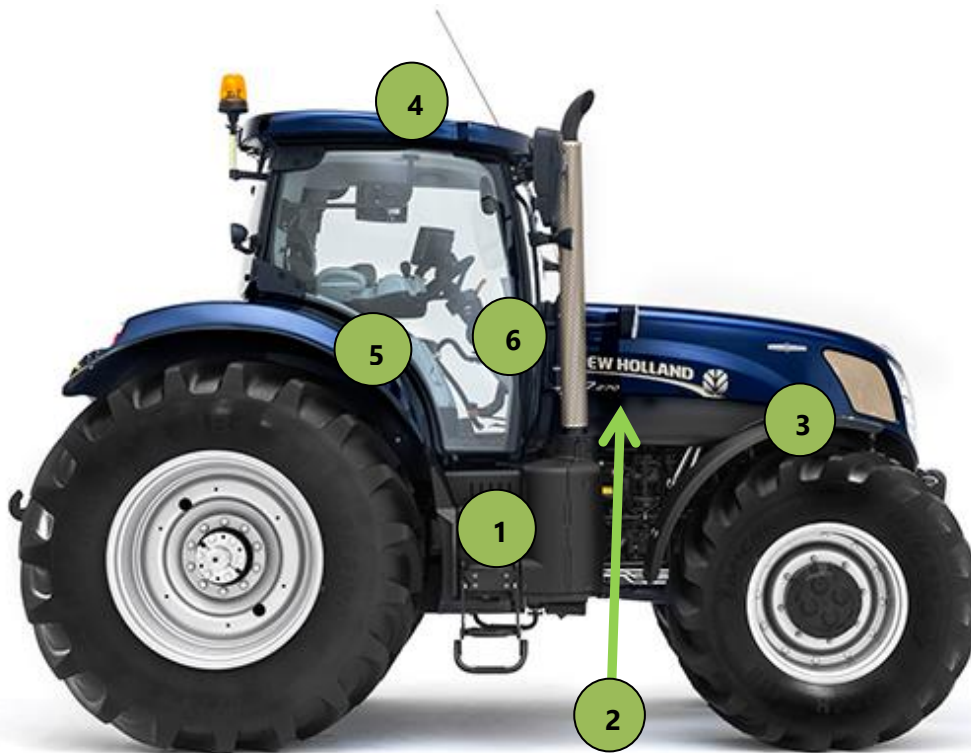


Figure 1 Overview New Holland IntelliSteer components

3. Mounting harness

There is a choice between a CAN Basic harness or a Implement Ready (IR) harness at SBG.

3.1. CAN Basic harness

The Basic harness can only be used for tractor steering. If the tractor is mounted with this harness there is **no** possibility to use the tractor for implement steering (TWIN, plough).

3.2. CAN Implement Ready (IR) harness

The Implement Ready harness ensures that the tractor can be used for tractor and implement steering. Mounting the implement is possible through the IBBC-connector. The harness is mounted from the battery to the IBBC-connector at the back side of the tractor.

3.3. Mount harnesses

The CAN basic harness and the CAN Implement harness are divided in the following harnesses (ranked in order from the battery):

1. Power harness: This harness comes from the battery and goes to the rear axle along the chassis, wrapped in a hard casing. A Basic harness goes from the battery directly to the chassis harness (and not to the rear axle of the tractor)
2. Chassis harness: is a branch to the Steering Controller (STU). Mount the STU somewhere nearby the Case/New Holland steering valve. On top of the motor is the best place, just below the hood. (Figuur 2).



Figuur 2 Locatie van de STU boven op de motor.

3. In-Cab harness (DynamIQ): This harness comes from the chassis harness and goes inside the cabin, wrapped in a braided sleeve casing. A branch is made to the DynamIQ.
4. Harness in-cab (Terminal): This harness comes from the In-Cab harness (DynamIQ) to the terminal.
5. Harness STU – NH IntelliSteer: Find the Case/New Holland steering valve for mounting this harness. The steering valve is just under the hood nearby the cabin and close to the orbitrol. (see red circle in Figure 3) On this steering valve are two Deutsch DT-connectors mounted. Disconnect these connectors and connect the connectors from the STU – NH intellisteer harness with the inscription "left" and "right". (see red circles in Figure 4)

The lockvalve is also located on the steering valve. Disconnect the existing CNH Deutsch DT-connector also and connect the connector from the STU – NH intellisteer harness with the inscription "lock" on the lockvalve. (see the red circle in Figure 5)



Figure 3 Location CNH steering valve

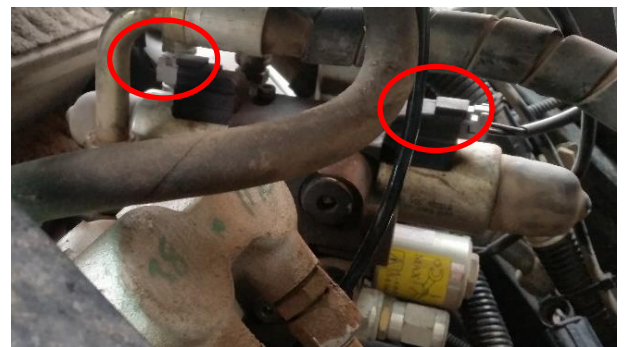


Figure 4 Connection of the STU – NH intellisteer harness on the CNH steering valve



Figure 5 Connection of the STU – NH intellisteer harness on the CNH lock valve



- On the side of the exhaust is a pressure sensor mounted on the CNH steering valve (Figure 6). Connect the 3-pole Delphi connector of the STU – NH Intellisteer harness with inscription “pressure sensor” on the steering valve.
5. Harness CNH STR WHS – Spy: First disconnect the existing connection of the CNH steer angle sensor. This connection is located on the right side of the tractor next to the radiator (Figure 7). Then connect the two connectors of the NH STR WHS – Spy harness between the existing CNH wheel angle sensor. (Figure 7)



Pay attention! Do not connect the connectors of the NH STR WHS – Spy harness on the dummy connector which is also located nearby the radiator. Connect the connectors of the harness between the existing connection.

6. Wheel sensor cable: The next step is to connect the wheel angle sensor cable (5m) (SBG11901-08) to the NH STR WHS – Spy harness with the wheel sensor connector of the STU – NH intellisteer connector.



A schematic overview of the SBG CAN-harness on a CNH Intellisteer Ready tractor is shown in Figure 8.



Figure 6 Connection of the STU – NH intellisteer harness on the CNH pressure sensor

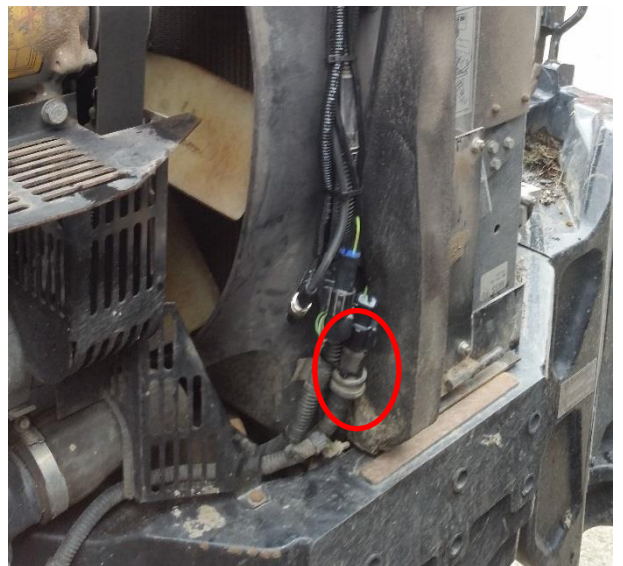




Figure 7 Connection of the STU – NH intellisteer harness to the wheel angle sensor.




Furthermore there are some general instructions for mounting an SBG harness:

- Mount the harness, if there is no battery switch installed, always directly on the battery. That means the positive (red) and the negative (black).
- If a battery switch is used, the harness has to be mounted after the battery switch.
- Mount the terminal harness together with the GPS- and radio/GSM-cable in one jamb.
- Use tie-wraps to mount all the cables vibration and scrape free.

 **Pay attention!** *Important to mount the harness at all times at last on the battery after mounting all the cables and controllers!*

 *Be sure the cables won't damage during the installation!*

 *Push all connectors until they snap to be sure the connectors are properly connected!*

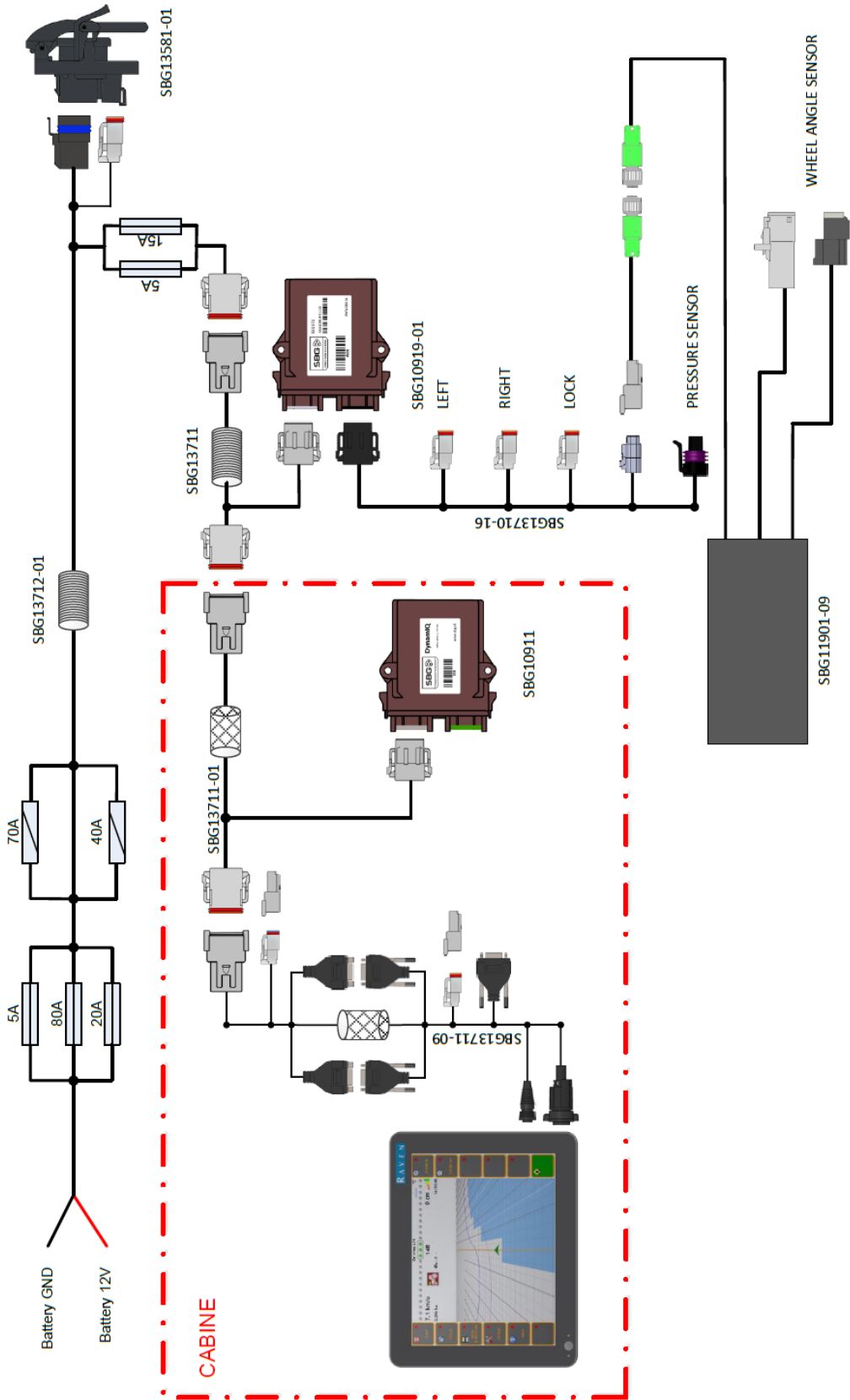
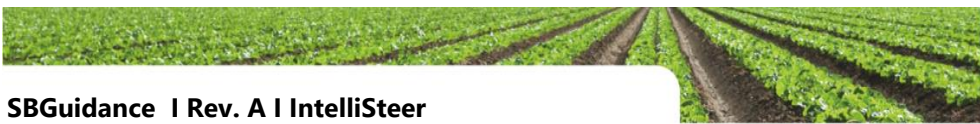


Figure 8 Systemoverview CNH IntelliSteer.



4. Mounting GPS- en radio/gsm-antenna

In many cases a New Holland or Case tractor with IntelliSteer (New Holland TSA, T6 en T7-models and Case CVX, MXU en PUMA-models) a CNH GPS-antenna bracket can be used (Figure 9). Other models can use a standard GPS-antenna bracket (Figure 10).



Figure 9 CNH GPS-antenna bracket.

4.1. Mount CNH GPS-antenna bracket

Figure 9 shows an example of a CNH GPS-antenna (with two Laird antenna's in this case). This kit always include a CNH GPS-antenna bracket, a GPS dummy and a UNC bolt + nut. The CNH GPS-antenna bracket can be mounted on the two existing roof bolts on the cabin of the tractor.

4.2. Mount standard GPS-antenna bracket

Figure 10 shows an example of a standard GPS-antenna (with a radio-antenna in this case) mounted on a standard GPS-antenna bracket. A GPS-dummy and a UNC bolt + nut are also mounted. The standard GPS-antenna bracketed can be mounted with double sided tape on the cabinroof.



Figuur 10 Standaard GPS-antenne bracket + UNC bout en moer.

For mounting a GPS-antenna a few general instructions are applicable:

- Mount the GPS-antenna at least 60 cm in front of the rear axle.
- Mount the GPS-antenna in the middle of the tractor.
- Mount the GPS-antenna on the supplied UNC bolt.
- Mount the TNC-dummy on the GPS-antenna bracket (**Error! Reference source not found.**).
- When a Geostar terminal is used, the side of the biggest connector (N-connector) has to go inside the cabin. At Viper 4 terminals there is no difference between the connectors of the antenna cable.
- Mount the GPS-antennacable properly so it can't be damaged. Hide the cables in the cabin lining.
- Mount the GPS antenna cables in a way water can not flow down into the cabin.



4.3. Montage radio-antenne

Figure 7 shows the standard radio-antenna with magnetic base. Preferably, use the standard antenna. Table 1 shows the components of the standard radio antenna.

Table 1: parts radio antenna

Teken	Omschrijving
1	Radio-antenna
2	Antennacable
3	Connector to terminal
4.1	Magnetic base
4.2	Panel-mount (optional)

The following terms and conditions apply the installation of a radio-antenna:

- Mount the radio-antenna preferably with magnetic base on the standard GPS-antenna bracket. (Figure 10)
- If a steel construction is present on the cabin roof place the radio-antenna on top of the construction in stead of placing it next to the construction.
- Place the magnetic base on a sufficiently large steel surface, at least the size of the standard GPS antenna bracket. Especially with larger distances from the base station, a bigger steel substrate can improve the signal strenght and prevent problems.

Optionally a panelmount antenna (Figure 12) can be used fot mounting. For this antenna are the same terms and conditions applyable as the standard GPS-antenna bracket with magnetic base.



Figure 11 Components radio-antenne.



Figure 12 Mounted radio-antenna with panel mount

4.4. Montage GSM- en SlingShot GPS-antennes

Figure 13 shows an example of a properly mounted SlingShot antenna kit on a CNH GPS-antenna bracket. Mount the two GSM (Laird) antennas preferably a minimum of 1,0 meter from each other. The base of the GPS-antennas are magnetic and can be placed in longitudinal (front/rear on the cabin) or transversal direction (left/right on the cabin). The SlingShot GPS patch antenna is also magnetic and can be mounted easily on the CNH GPS-antenna (for example behind the GPS antenna like in Figure 13). The position of the SlingShot GPS patch is not important as long as the antenna is mounted on the roof and with a clear view.

If a universal GPS-antenna bracket is used one of the GSM-antennas can be mounted behind the GPS-antenna. (Figure 14) Preferably mount the SlingShot GPS patch antenna also on the universal GPS-antenna bracket next to the GSM-antenna. In this way the two GSM antennas have to be mounted also a minimum of 1.0 meter between each other. For mounting the second GSM-antenna an extra metal plate is supplied in a SlingShot tractor kit. (see chapter 1.2)

It is important to meet the following conditions at all times:

- Place the two GSM antennas at least 1.0 meter from each other.
- The GPRS/UMTS-antennas and the SlingShot GPS patch antenna are equipped with a magnetic base and have to be mounted on top of the cabin roof.
- Antennas must have a clear view all around.
- Use a metal plate with double-sided tape if the GPS-antennas and GPRS/UMTS antenna will be mounted separately.



Figuur 13 CNH GPS-antenne bracket samen met een SlingShot antennekit.



Figuur 14 GPS-antenne bracket samen met een GSM-antenne.

5. Mounting DynamiQ

The following orders are presented for mounting the DynamiQ:

- Mount the DynamiQ preferably on the right side of the seat. Use the standard DynamiQ mounting plate (Figure 14). Use M8 connecting nuts to extend the bolts of the seat.
- The DynamiQ may only be mounted lying (with the sticker upwards) The connectors may be oriented in 4 directions (0, 90, 180, 270 degrees)
- The standard installation of a DynamiQ is lying (sticker upwards) and with the connectors to the back of the tractor. (like in Figure 15) A different orientation must be set in the software!



Figure 15 DynamiQ on mountingplate.

6. Mounting terminal

For a CNH tractor is a special terminal bracket available. This bracket can be mounted on the right front side of the cabin with two bolts in the existing holes (Figure 16). If the customer wants another place the terminal can be mounted with an also supplied RAM-D/RAM-C pipe bracket. (and possibly a selfmade bracket)

The following orders are presented for mounting the Terminal:

- Mount the terminal vibration free with a strong bracket. (preferably with a CNH bracket)
- Hide all te cables in one jamb.
- Be sure the terminal is focused on the driver.
- Be sure the driver has got a clear view after installing the terminal.



Tip: fit the terminal in such a way that it doesn't take away the view of the top of the right fender, but also the inside of the front wheel to the ground is still visible.



Figure 16 CNH Terminal bracket.




Figure 17 Terminal mounted on A-jamb

7. Setup in CANTool

The adjustment of the CNH IntelliSteer system is broadly the same as the adjustment of a tractor steering with a SBG manifold. See *Configuration manual – SBGuidance Auto CAN* for instructions about the setup of the steering in the CANTool.

A few specific adjustments for the installation of the SBG system on a CNH IntelliSteer tractor will be discussed below:

1. Open CANTool 1.29 or a newer version
2. Choose the hardware manufacturer. At a Viper 4 choose *VIPER4*. At a GeoStar terminal choose *SBG-CAN*
3. Click on *Initialize* (Figure 18)
4. Go to tab *MyDevice* and select at Pre-selection *Navigation Controller (Tractor)*, at Type select *Navtronics*. Click on *Connect* (Figure 19)
5. Open tab *My Partners* and click *Add* at Steering Controller“SBGuidance”. (Figure 20) A new screen appears.

 See *Configuration manual – SBGuidance Auto CAN* for more instructions about the adjustment of the steering in the CANTool.

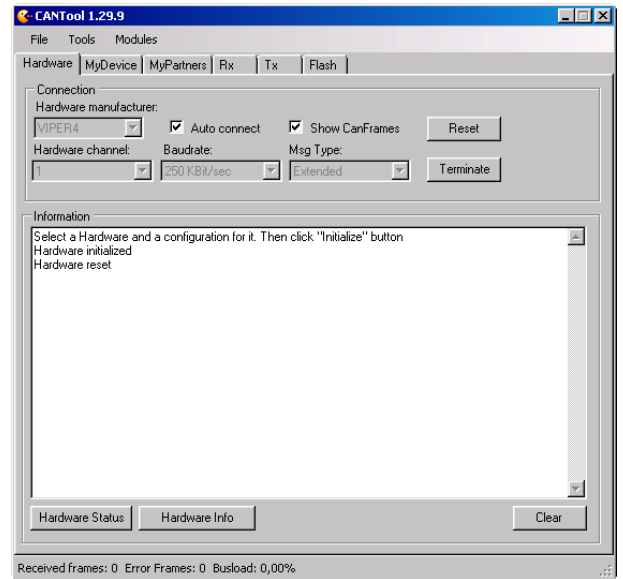


Figure 18 CANTool tab *Hardware*.

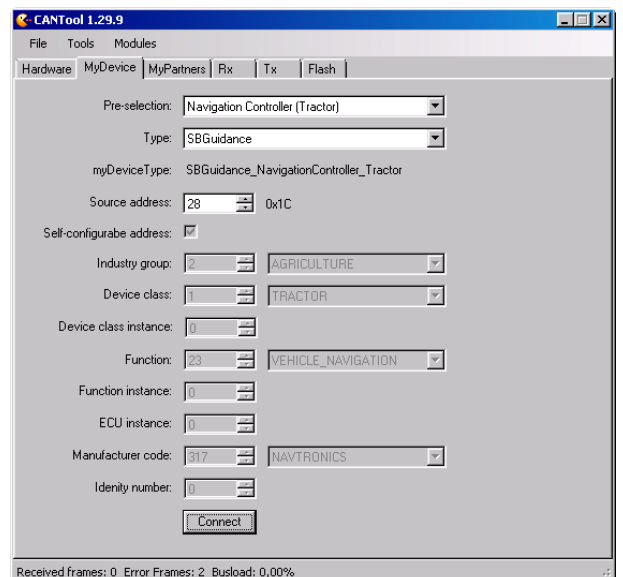
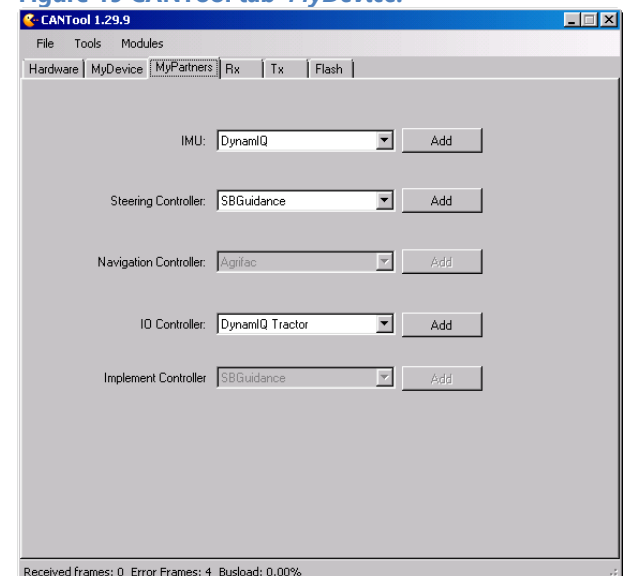


Figure 19 CANTool tab *MyDevice*.



Figur 20 CANTool tab *MyPartners*.



6. Go to tab *Steer Sensor* and select “*SauerDanfoss*” at Type. (Figure 21)
7. Go to tab *Steering* (Figure 22). Select *PWM Lim. Disabled*. A warning message is displayed (Figure23). Click *Yes*. Then, set the maximum steering speed for left and right to 100%. (Figure 22)

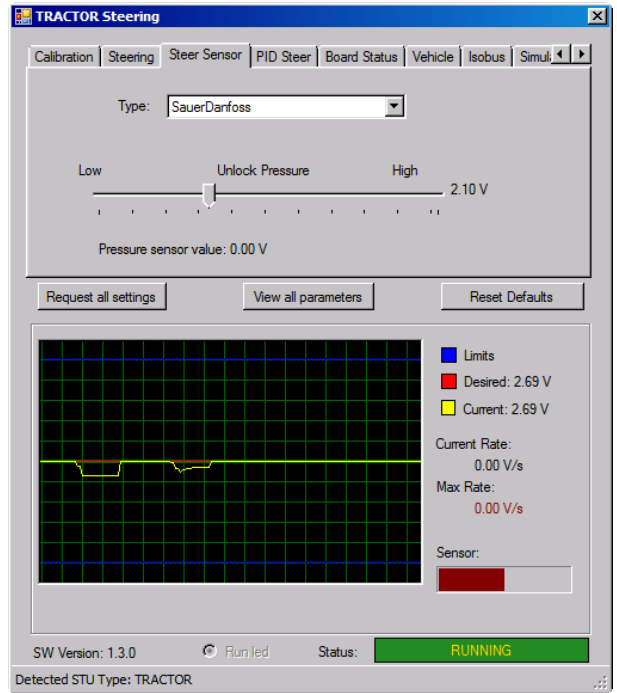


Figure 21 Configure Steer Sensor.

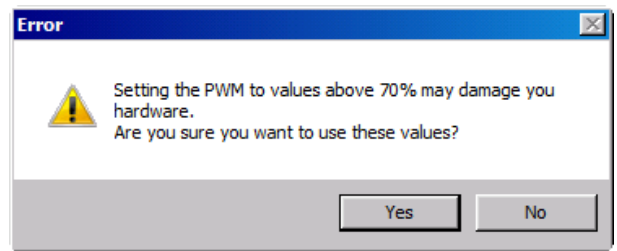


Figure 23 Warning message for set up maximum steering speed.

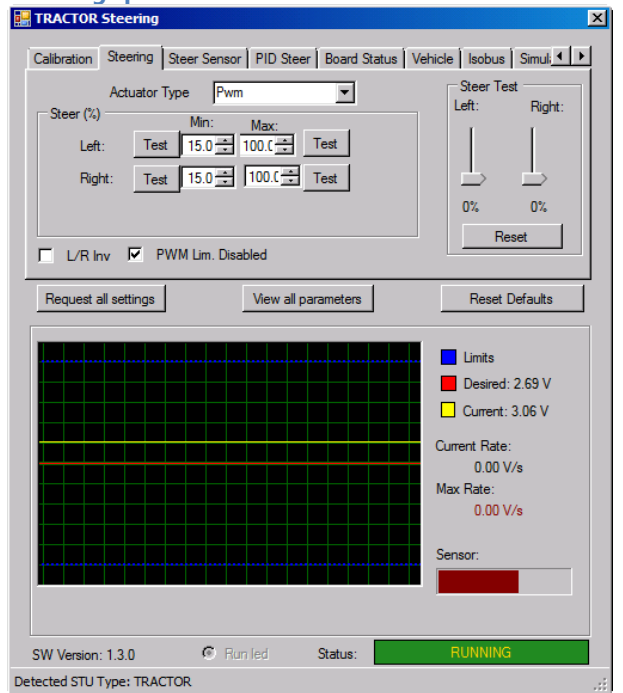


Figure 22 Configure maximale stuursnelheden.



8. Setup software (SBGuidance)

Add a machine profile to the Loader and enter a distinct machine name.



Important: Follow the instructions in *Configurationmanual – SBGuidance Auto CAN to adjust SBGuidance Configurator, creating profiles and calibrating the DynamIQ.*