



# CHCNAV NX510

Installation to CASE tractors (JX90)



Revision 1.0

Precision Agriculture | September 2024

Make your work more efficient



<b>Preface</b> .....	<b>3</b>
Copyright .....	3
Copyright 2023-2024 .....	3
Trademarks .....	3
Safety Warning .....	3
Conformity to National Regulations .....	4
FCC declaration of conformity .....	4
Conformity to Japanese regulations .....	4
EU .....	5
ANATEL .....	5
Introduction .....	6
Technical Support .....	6
Disclaimer .....	6
Your Comments .....	6
<b>1 Product Overview</b> .....	<b>7</b>
1.1 Introduction .....	7
1.2 Main Components .....	9
<b>2 Installation</b> .....	<b>10</b>
2.1 Sleeve selection .....	10
2.2 Motor installation .....	10
2.3 Overview .....	11
<b>3 Equipment Maintenance</b> .....	<b>12</b>



## **Preface**

## **Copyright**

### **Copyright 2023-2024**

CHCNAV | Shanghai Huace Navigation Technology Ltd. All rights reserved. The CHCNAV and CHC Navigation are trademark of Shanghai Huace Navigation Technology Limited. All other trademarks are the property of their respective owners.

## **Trademarks**

All product and brand names mentioned in this publication are trademarks of their respective holders.

## **Safety Warning**

When using the CHCNAV NX510 SE/Pro/Plus GNSS Auto Steering System, please observe the following safety warnings:

Before using the system, carefully read and understand the operating instructions in the user manual to ensure proper use of the system.

During system operation, strictly follow local traffic regulations and safety standards to ensure safe operation in safe environments and conditions.

Regularly check the condition and performance of the system and equipment when using the system to ensure normal operation and high-precision navigation performance.

Maintain concentration and alertness during system operation, avoid fatigue and distraction, and prevent accidents.

Avoid using the system in hazardous areas such as steep or cliff edges, water puddles, or muddy ground to prevent personal injury or equipment damage.

Stop using the system immediately and contact the system manufacturer or supplier for technical support and maintenance services when the system experiences abnormality or failure.

Protect the equipment from physical damage or weather factors when operating the system to ensure long-term stability and reliability.

Observe the relevant maintenance and upkeep requirements of the system and equipment during operation to prolong the life of the equipment and ensure normal operation.



Pay attention to the safety of the surrounding environment and other personnel when using the system to avoid accidents and stop the machine promptly to handle any abnormal situations.

The above is for reference only, and specific safety warning content may vary slightly depending on the device model and local regulations and standards. When using the CHCNAV NX510 SE/Pro/Plus GNSS Auto Steering System, please carefully read and observe the relevant safety warnings and usage instructions to ensure the safety and normal operation of the system.

## **Conformity to National Regulations**

### **FCC declaration of conformity**

FCC Part 15 (applicable in US)

The products electromagnetic emission have been tested to conform to the applicable FCC Rules and Regulations:

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation.



NX510 SE/Pro/Plus Auto Steering System Contains FCC ID:

SY4-A02043

SY4-A02041

XMR201903EG25G

### **Conformity to Japanese regulations**

Japanese Radio Law and Japanese Telecommunications Business Law Compliance.

- This device is granted pursuant to the Japanese Radio Law and the Japanese Telecommunications Business Law .



- This device should not be modified (otherwise the granted designation number will become invalid).

Specified Radio Equipment marking:

Receiver(PA-3 Plus, PA-3 SE, PA-3 Pro)



Tablet (CB-H10)

## EU

Declaration of Conformity:

Hereby, Shanghai Huace Navigation Technology Ltd. declares that this NX510 is Auto Steering System in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. A copy of the Declaration of conformity can be found at [www.chcnav.com](http://www.chcnav.com)



## ANATEL

MODEL: PA-3 SE, PA-3 PRO & PA-3 Plus and CB-H10

Este produto não é apropriado para uso em ambientes domésticos, pois poderá causar interferências eletromagnéticas que obrigam o usuário a tomar medidas necessárias para minimizar estas interferências.

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para mais informações, consulte o site da ANATEL – <https://www.gov.br/anatel/pt-br>



## Introduction

The CHCNAV NX510 user manual describes how to install and use the CHCNAV® NX510 system. In this manual, “the system” refers to the NX510 agricultural system unless otherwise stated. Even if you have used other agricultural products before, CHCNAV recommends that you spend some time reading this manual to learn about the special features of this product.

## Technical Support

If you have a problem and cannot find the information you need in this manual or CHCNAV website [www.chcnav.com](http://www.chcnav.com) or contact your local CHCNAV dealer from which you purchased the system(s).

If you need to contact CHCNAV technical support, please contact us by email [support@chcnav.com](mailto:support@chcnav.com)

## Disclaimer

Before using the system, please make sure that you have read and understood this User Guide, as well as the safety information. CHCNAV holds no responsibility for the wrong operation by users and for the losses incurred by the wrong understanding about this User Guide. However, CHCNAV reserves the rights to update and optimize the contents in this guide regularly. Please contact your local CHCNAV dealer for new information.




## Your Comments

Your feedback about this user guide will help us to improve it in future revision. Please email your comments to [support@chcnav.com](mailto:support@chcnav.com)

## 1 Product Overview

### 1.1 Introduction

The NX510 SE/Pro/Plus is an automated steering system that easily retrofits many types of tractors with a compact, up-to-date and all-in-one solution at a price each farm can afford. It provides significant productivity gains, works in all visibility conditions and reduces operator fatigue.

Device name	Image
PA-3 Receiver	 A white, rectangular electronic device with the CHCN logo on top and several ports on the side.
Console	 A black, ruggedized tablet-style device with a screen and a handle on top.
CES Electric Steering Wheel	 A black, three-spoke steering wheel with a central hub and a small sensor or display on the hub.
GA-Sensor Angle Sensor	 A small, grey electronic sensor mounted on a black metal bracket with mounting holes.
Rear Camera	 A black, rectangular camera unit with a lens in the center and several status LEDs around it.

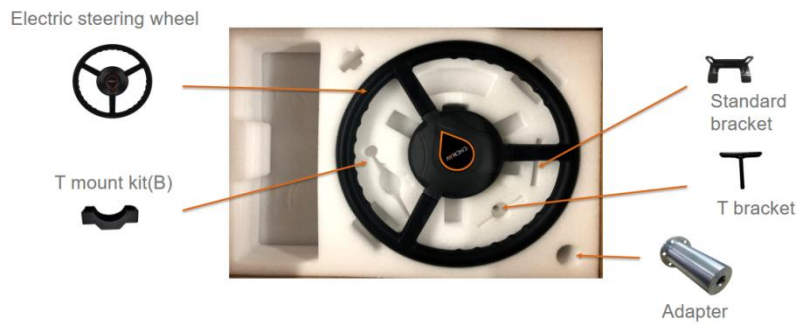


All components are into one box.

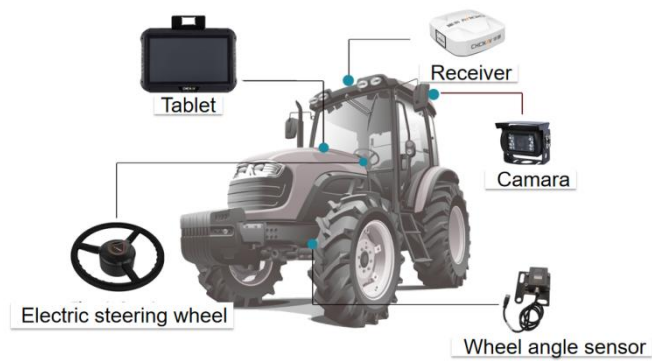
First Layer of NX510:

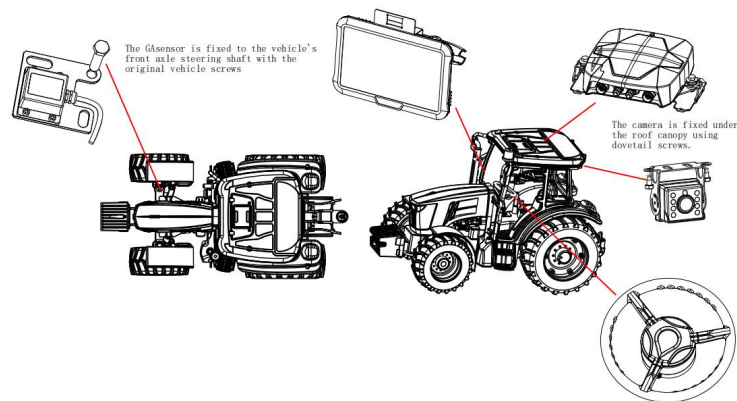


Second Layer of NX510:



List of components:





## 1.2 Main Components

**Receiver:** It is typically a Global Navigation Satellite System (GNSS) receiver, used to receive satellite signals to determine the accurate position, direction, and speed of the vehicle. It forms the foundation for autosteering system by providing precise information about the current location of the vehicle.

**Electric steering wheel:** Consists of a steering motor and a steering wheel. and provides steering control of the vehicle. The motor is primarily used to control the movement of the vehicle with steering. The autonomous driving system utilizes the motor to execute commands generated by path planning and navigation algorithms, ensuring the safe movement of the vehicle along predefined trajectories.

**Tablet:** The tablet serves as the user interface for interacting with the autonomous driving system. Farmers or operators can use the tablet device to set paths, monitor job status, and configure the system. The tablet is also employed for real-time monitoring of the vehicle's operation.

**Wheel angle sensor:** Obtains and provides angular velocity information of steering wheels during vehicle operation. This is crucial for ensuring the vehicle travels accurately along the predefined path. Sensor data helps calibrate the directional control system, maintaining precision in movement.

**Camera:** Placed in the rear of the vehicle to provide real-time images. Cameras have multiple uses in autonomous driving. They can be employed for obstacle detection, helping the machinery avoid collisions or damage to crops.

These components work together to enable the autonomous driving system to perform various tasks in the field, enhancing the efficiency and precision of agricultural production.

## 2 Installation

### 2.1 Sleeve selection

The CASE JX90 tactor fits TT-000013 sleeve (PN: 2804070025) or TT-000045 sleeve(PN: 4102150016).

It is advised to have a proper bearing puller to remove the original steering wheel. Sometimes it is possible to remove the steering wheel with the help of a tool such as a hammer.

---

### 2.2 Motor installation

1. Remove the original steering wheel, then secure the special bracket to the housing and insert the T-bracket.(The special bracket is manufactured by the dealer and is for reference only)



2. Install the motor and fix it.
-

## 2.3 Overview





### 3 Equipment Maintenance

- To ensure the normal operation and service life of the equipment, please maintain the equipment under the instruction of the manual.
- Please do not disassemble the main components of the system. If necessary, please contact the CHCNAV after-sales service support@chcnav.com.
- Please use the device under the instruction of user guide.
- Regularly check each screw, wiring harness and connector of the system, such as controller fixing screws, angle sensor fixing screws, data cable connectors, etc.
- Keep the motor clean.
- Maintain the environment in which the motor is used. Please do not wrap materials such as cotton cloth and dustproof film on the motor.
- Before starting the work, check whether the transmission device is flexible; whether the concentricity of the coupling is standard; the flexibility of the gear transmission.



## **CHC Navigation**

Building C, 577 Songying Road, Qingpu, District,

201702 Shanghai, China

Tel: +86 21 542 60 273 | Fax: +86 21 649 50 963

Email: [sales@chcnav.com](mailto:sales@chcnav.com) | [support@chcnav.com](mailto:support@chcnav.com)

Skype: [chc\\_support](https://www.skype.com/people/chc_support)

Website: [www.chcnav.com](http://www.chcnav.com)

**Make** your work more efficient