

Steer Ready(Non-CANBUS) Installation Manual

LEGAL DISCLAIMER

Please take special note of the following warnings:

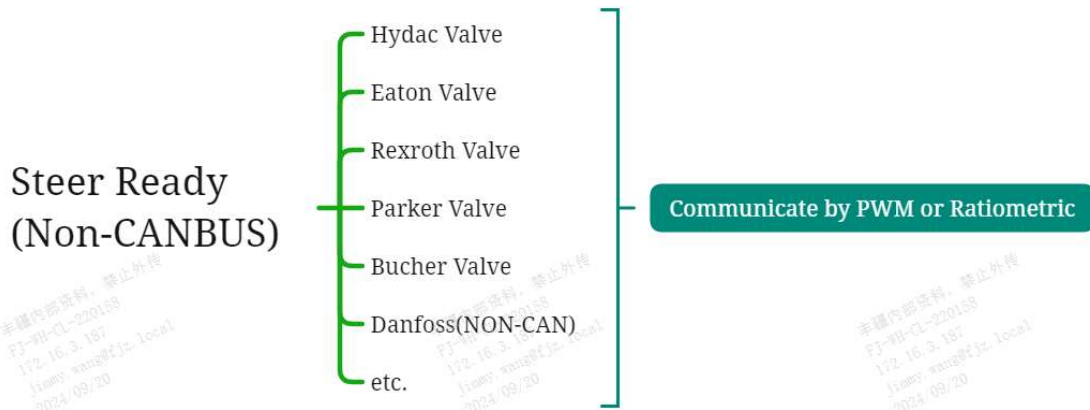
- This component must be installed and commissioned by specialized personnel.
- This component has been designed to allow the manufacturers, installers, or users the mixt use of the steering system on their machine, whether it is the manual or automatic one. This component must be controlled by a system that ensure the users safety. The driver must be able, at any time, to detect a danger or a failure and stop the machine if need be in order to protect against any problem before resuming the drive.
- Use of this Auto-steering is not permitted while the vehicle is on public roads or in public areas. Ensure that the system is turned OFF while driving on public roads or in public areas.

Index

1. Recognize Steer Ready Non-CANBUS Machine.....	3
2. CNH(Case IH, NewHolland, Steyr) Non-CANBUS with Eaton Valve	4
3. John Deere Non-CANBUS with FEMA Valve	7
4. CNH combine Non-CANBUS with Rexroth Valve	10
5. John Deere and Class Non-CANBUS with Danfoss PVE Valve.....	12
6. Versatile Non-CANBUS with Danfoss PVG32 Valve	13
7. Manual Intervention for CNH combine, Claas, John Deere and Versatile	14
Solution 1: Re-use original SASA Sensor.....	14
Solution 2: Install FJD pressure sensor	16
Solution 3: Use Easy Switch.....	16
8. For all other proportional valves	17

1. Recognize Steer Ready Non-CANBUS Machine

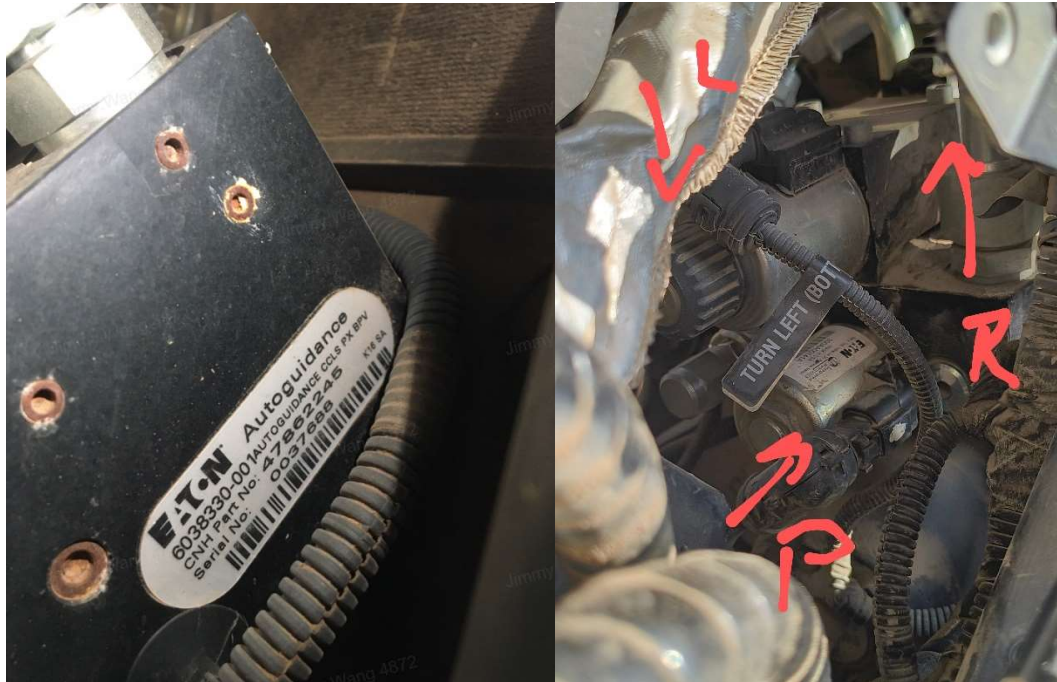
Steer Ready Non-CANBUS means the machine has pre-equipped with one steering valve specially for Auto-steering, the steering valve can only support analog signal, normally by PWM signal. General Non-CANBUS steering valves as follows:



- 1) For CNH(Case IH, Newholland, Steyr), most pre-equipped steering valve is Eaton valve
- 2) For John Deere, most pre-equipped steering valve is FEMA valve
- 3) For CNH combine, most pre-equipped steering valve is Rexroth valve
- 4) For old John Deere & Claas, most pre-equipped steering valve is Danfoss PVE valve
- 5) For Versatile, most pre-equipped steering valve is Danfoss PVG32 valve

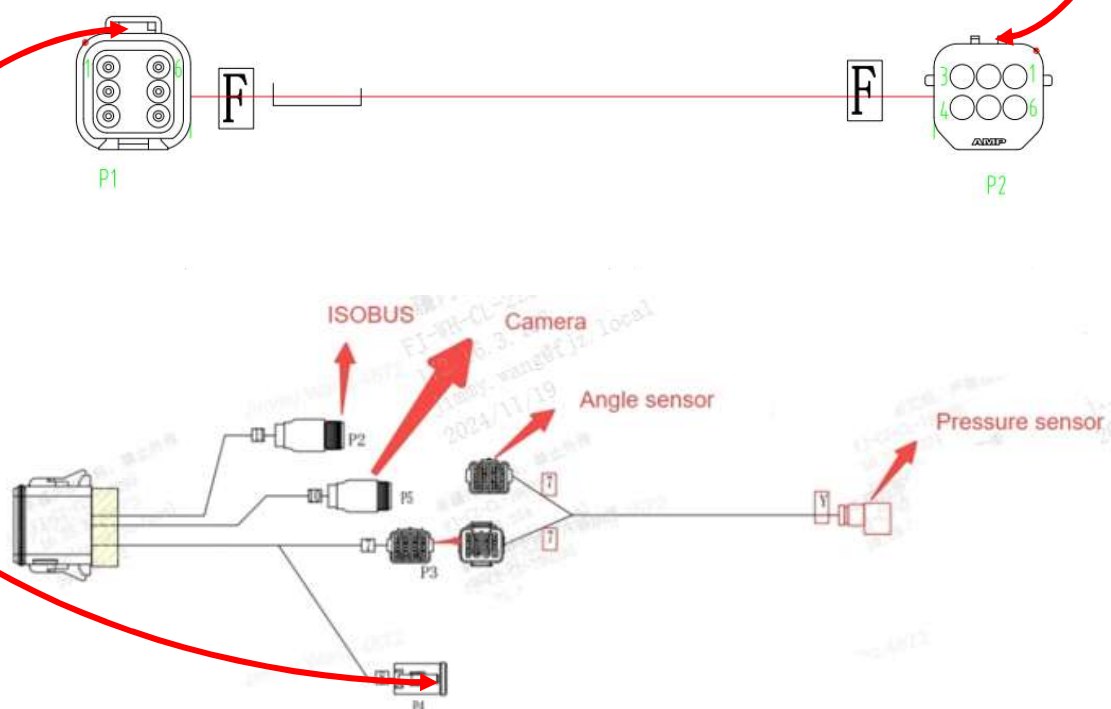
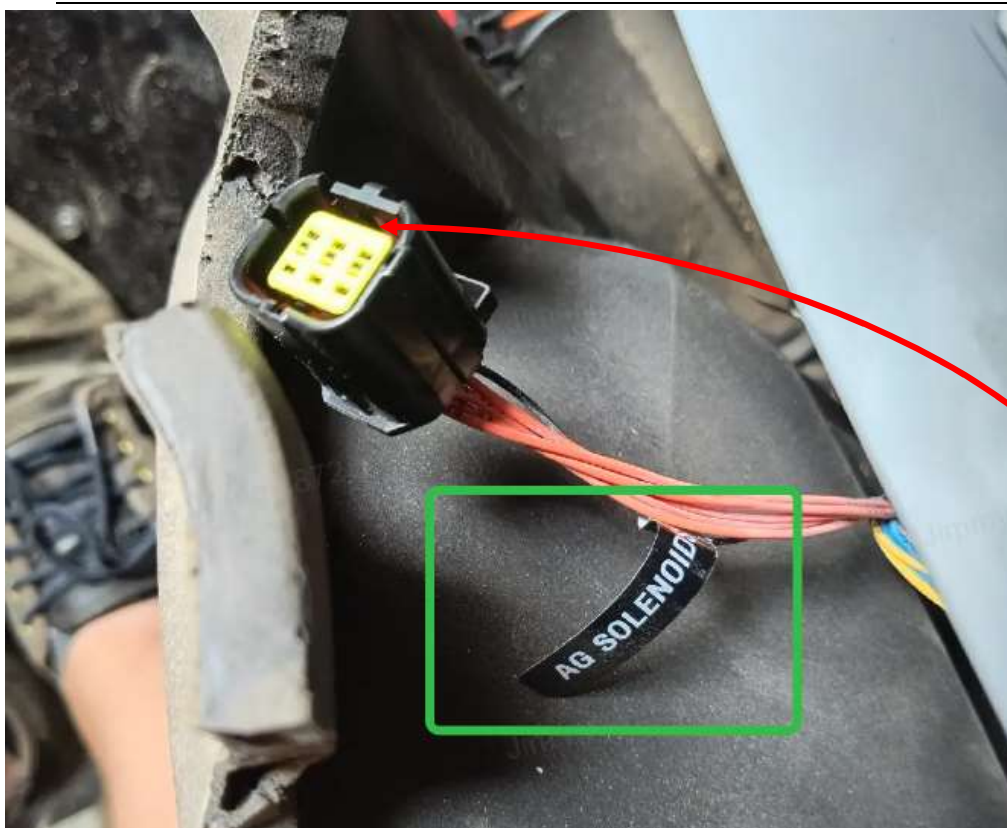
2. CNH(Case IH, NewHolland, Steyr) Non-CANBUS with Eaton Valve

The pre-equipped steering valve is Eaton valve as picture below:



In the cab as arrow points below, there is one reserved 6 pin connector which can be used to control the steering valve

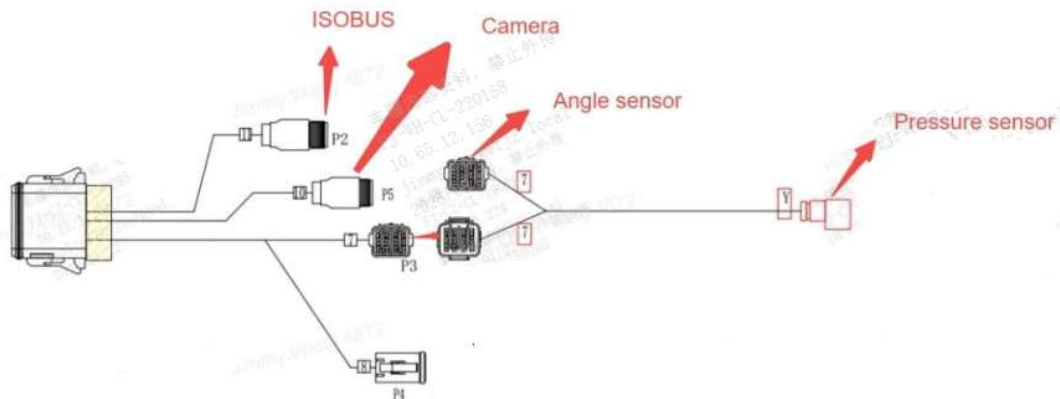




Manual Intervention

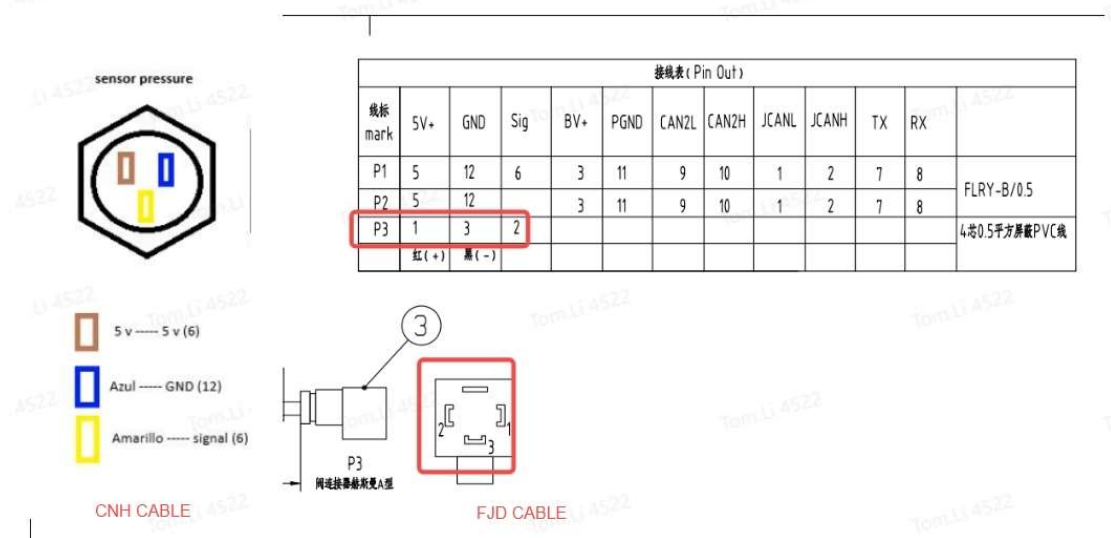
Solution 1: Install FJD pressure sensor

- A. If tractor is Open center, install pressure sensor on the hose of **Valve EF to Orbitrol P**
 B. If tractor is Closed center, install pressure sensor on the hose of **Valve LSO to Orbitrol LS**



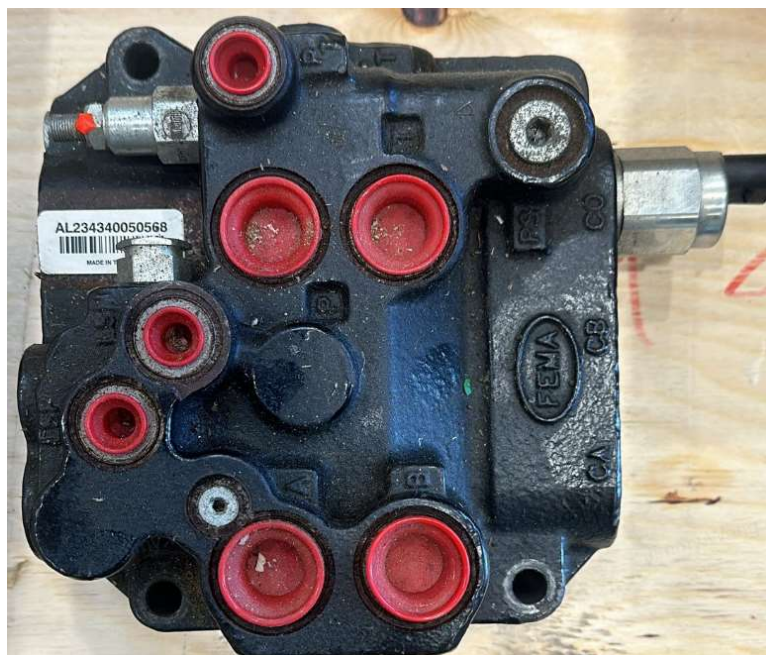
Solution 2: Re-use original pressure sensor

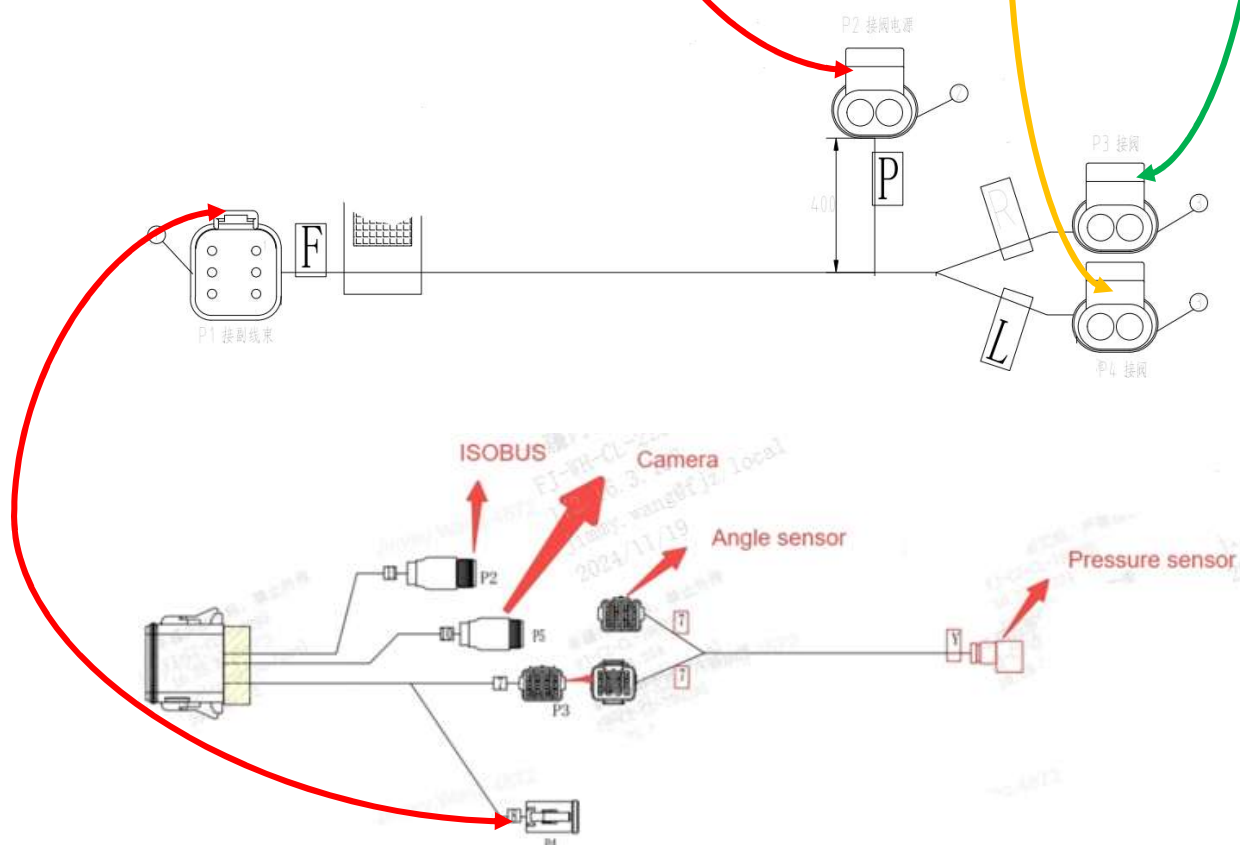
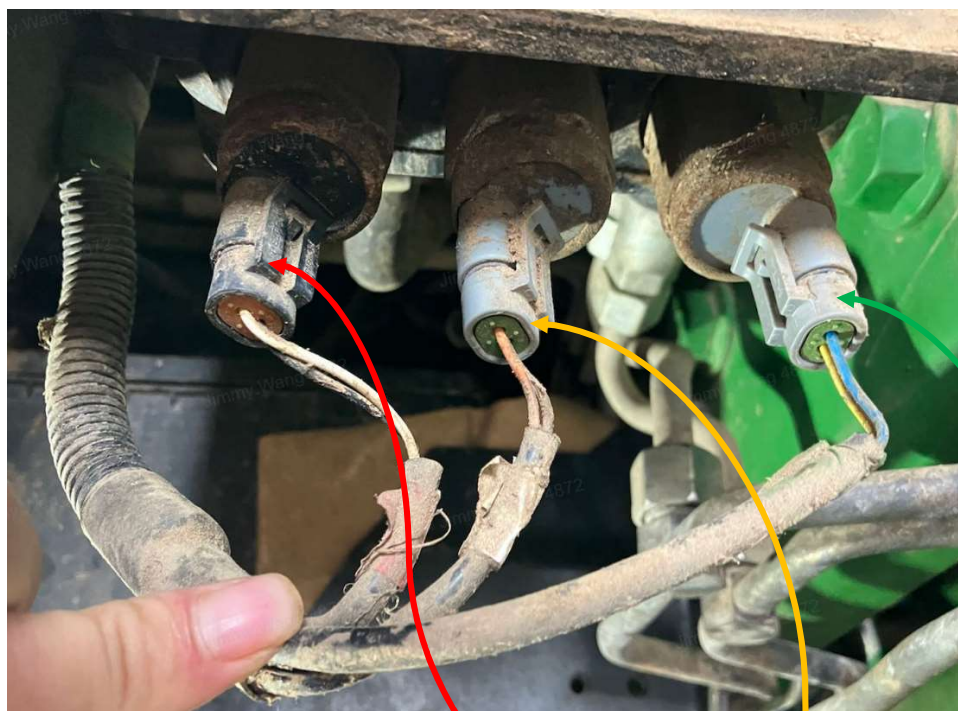
There is one pressure sensor installed on Eaton valve, the cable label is "**Steering Pressure Sender**", cut this cable and connect it with FJD pressure sensor cable, pin to pin connection as scheme below

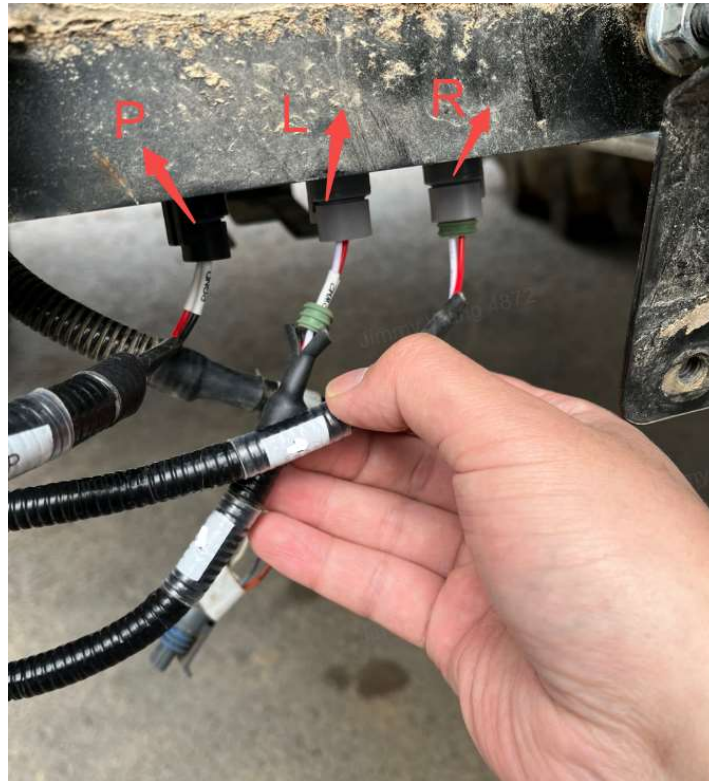


3. John Deere Non-CANBUS with FEMA Valve

For John Deere tractors, most are pre-equipped with FEMA valve as picture below:

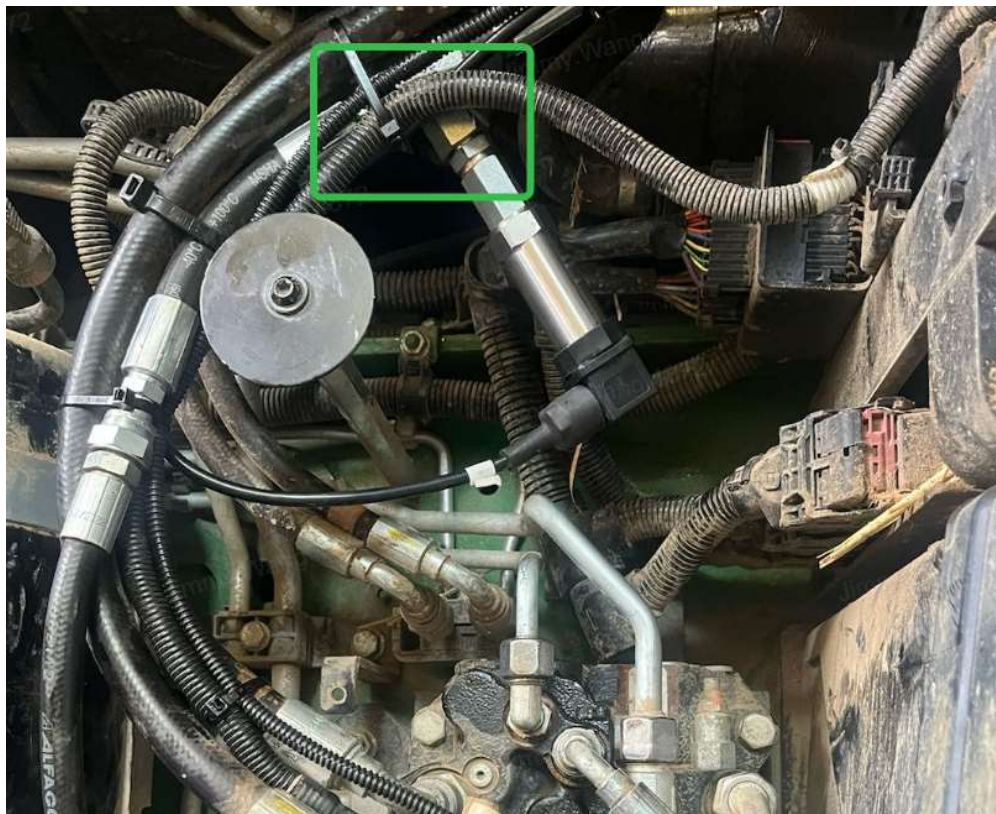






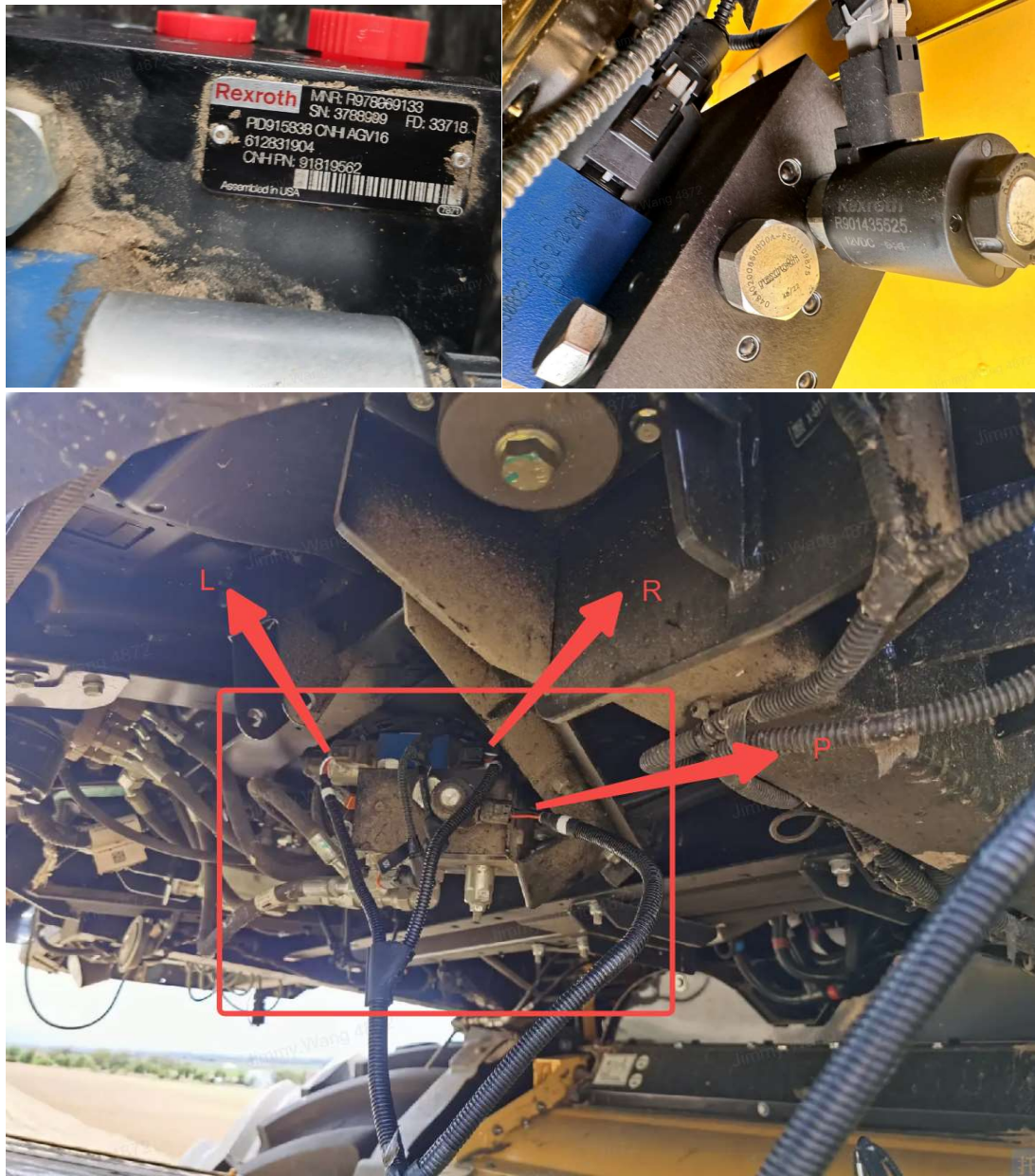
Connect wire harness **P** with FEMA valve **CO**(**black connector**), connect wire harness **L&R** with FEMA valve **CB&CA** (gray connectors)

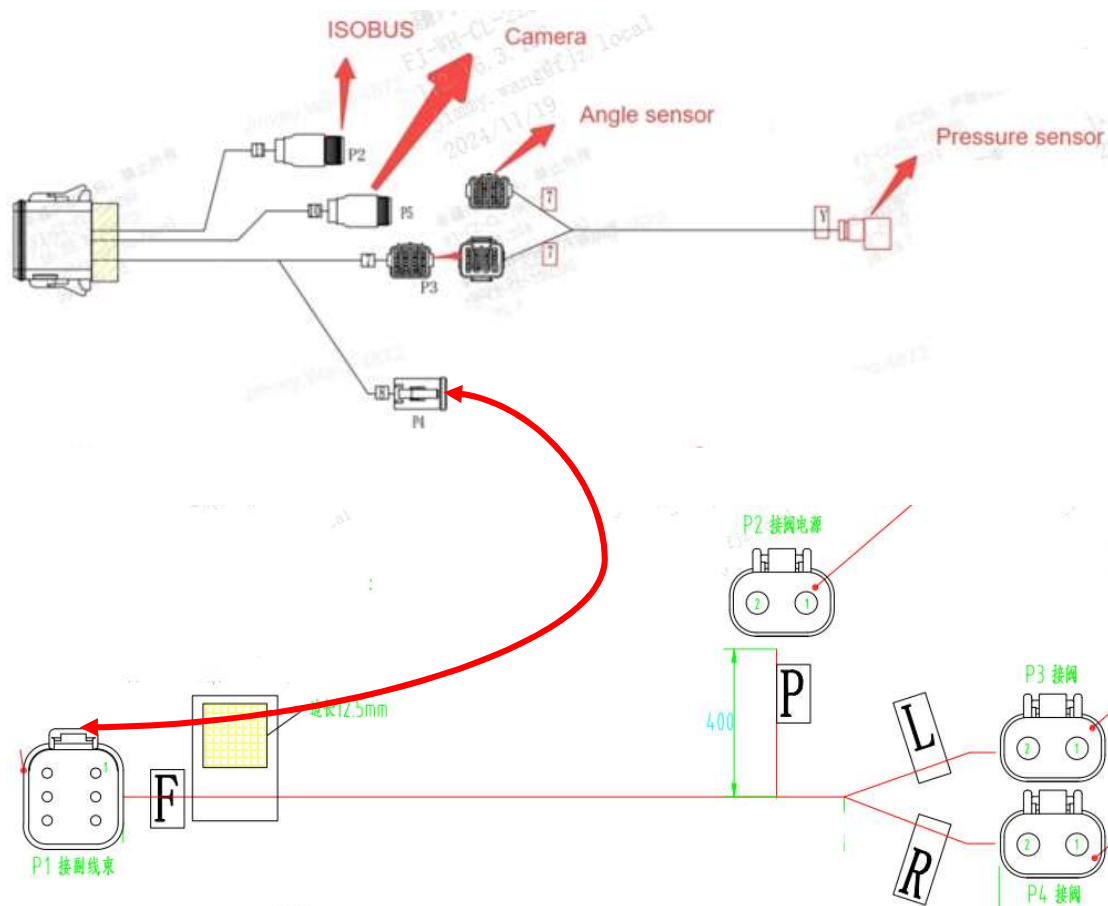
Pressure sensor is installed on the LSM hose (the LS line from the steering orbitrol to FEMA valve is marked LSM on the John Deere)



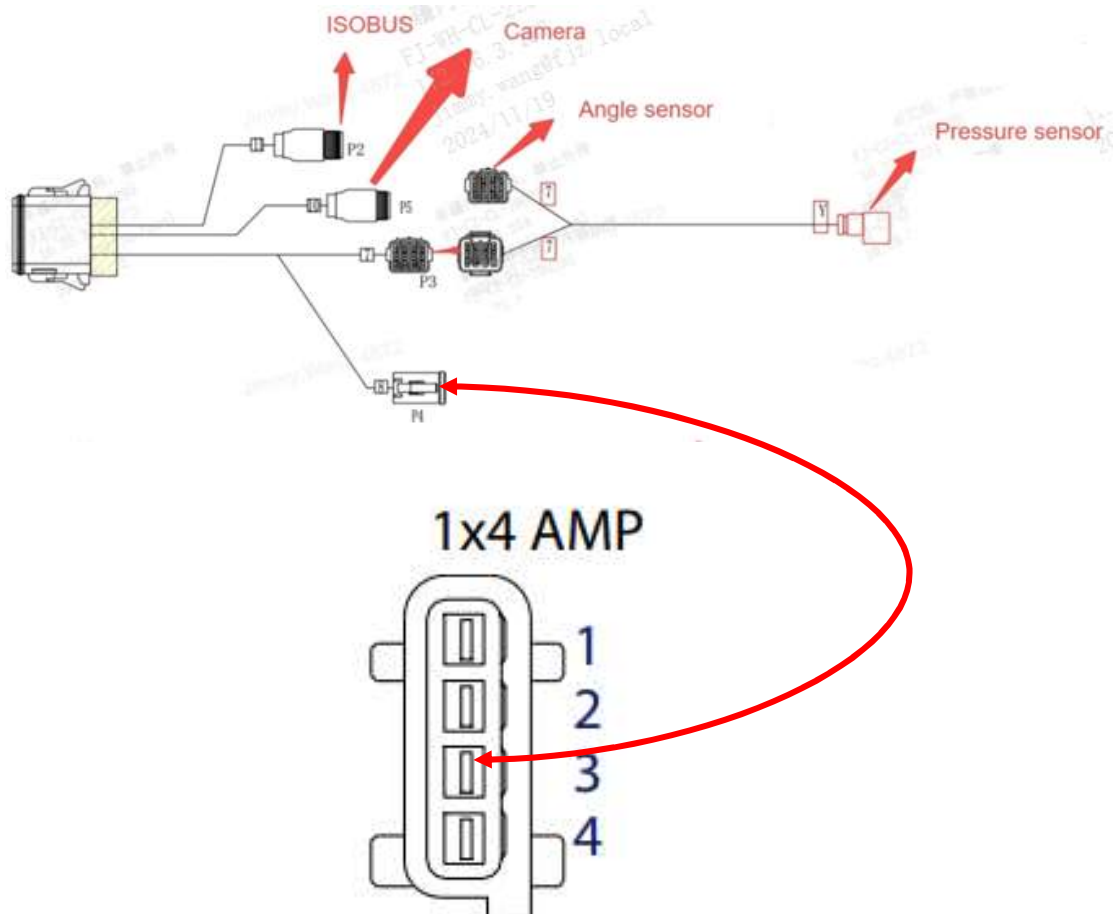
4. CNH combine Non-CANBUS with Rexroth Valve

For CNH combine, most are pre-equipped with Rexroth valve as picture below:

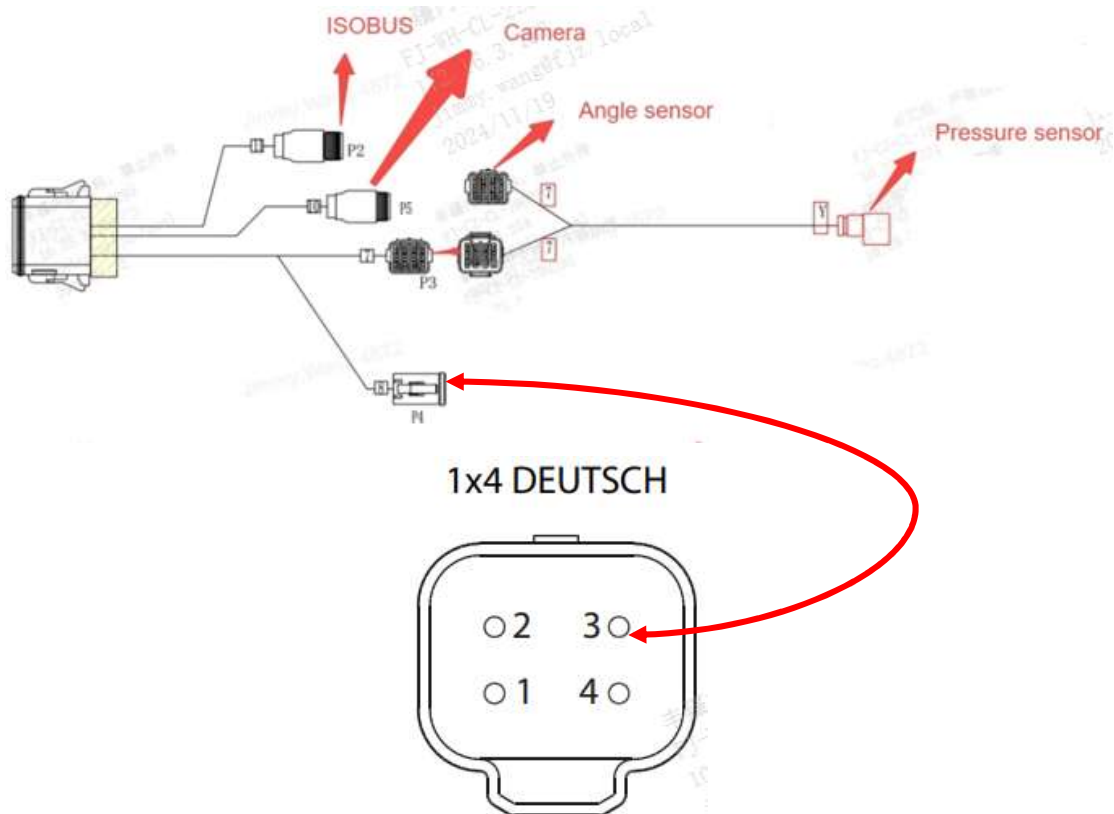
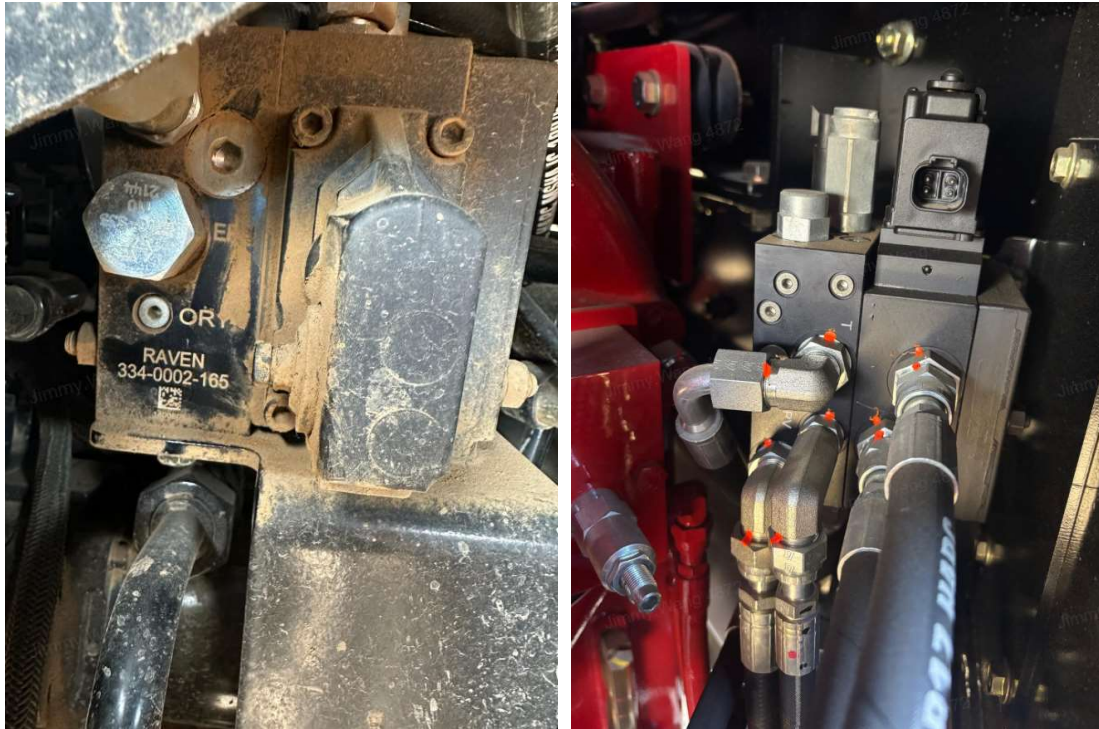




5. John Deere and Class Non-CANBUS with Danfoss PVE Valve



6. Versatile Non-CANBUS with Danfoss PVG32/Raven Valve



7. Manual Intervention for CNH combine, Claas, John Deere and Versatile

Solution 1: Re-use original SASA Sensor

For those Non-CANBUS machines, there is one **analog SASA**(Steering Angle Sensor Absolute) detects the **absolute position and speed of the steering wheel**, which is used for Manual Intervention

The SASA locates under the steering wheel column, see pictures below:



Open the protection cover, there is one cable which has 3 pins:

Pin Brown-----+5V

Pin Blue-----Ground

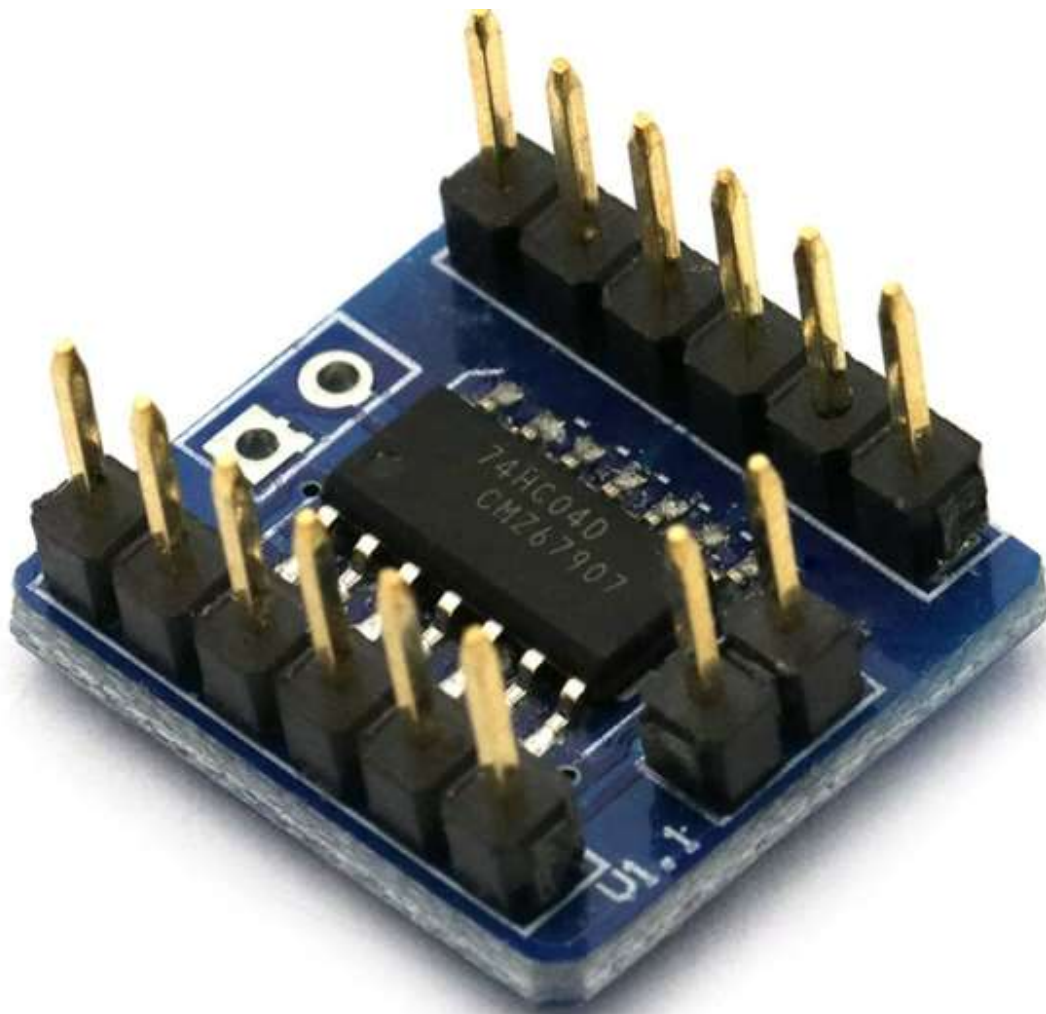
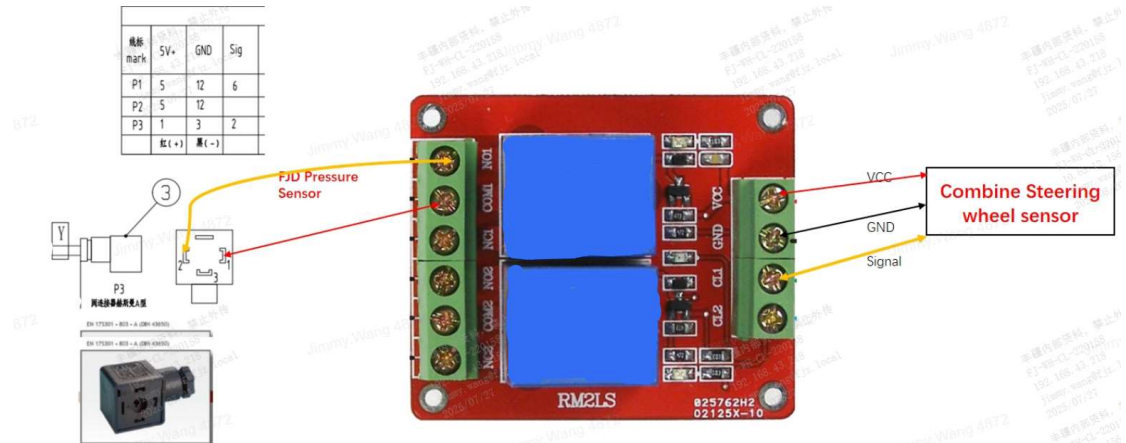
Pin Yellow-----Signal



The working logic is as below, which is opposite as FJD software

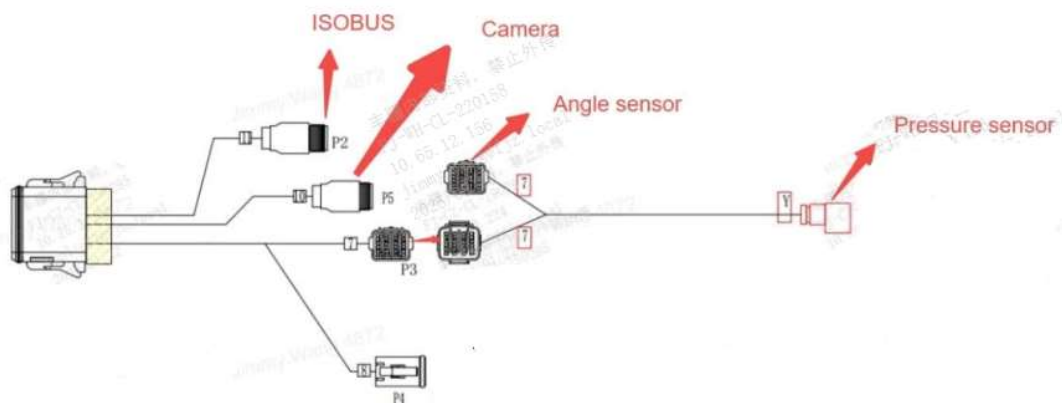
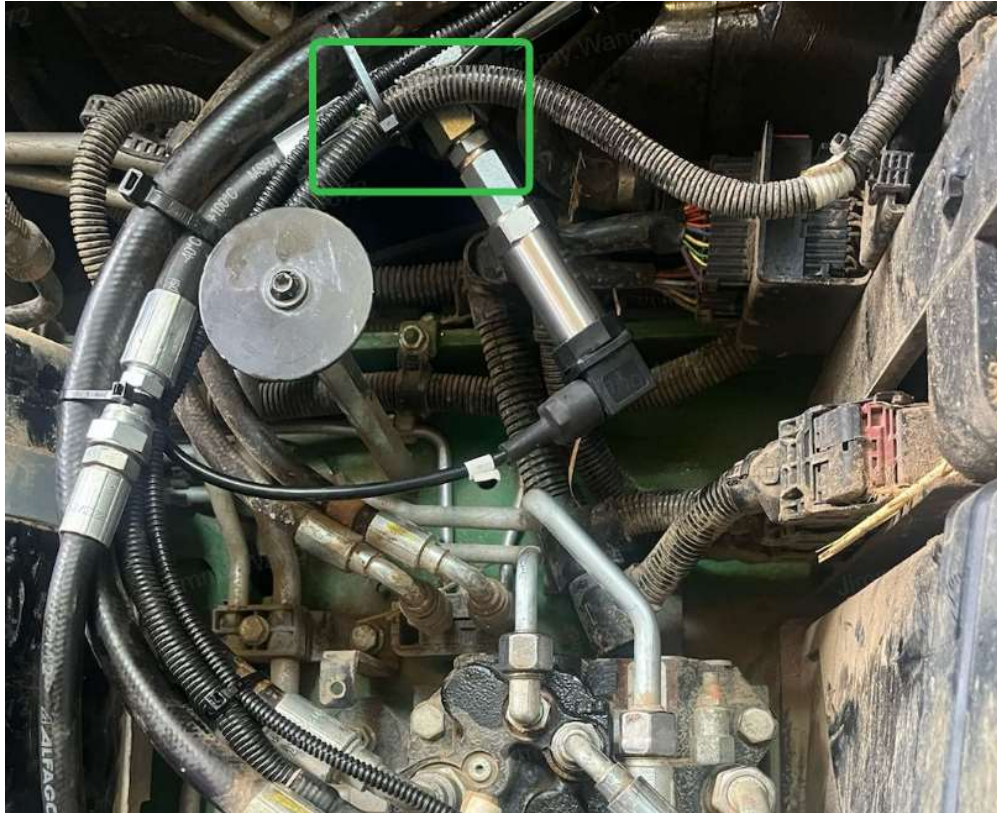
- 1) When **NO** touch the steering wheel, the signal output is 4,5 v
- 2) When touch the steering wheel, the signal output is 400mv

Hence, need one inverter to convert the signal comply with FJD software



Solution 2: Install FJD pressure sensor

Make one Tee fitting, install pressure sensor on the hose of **Valve LSO to Orbitrol LS**



Solution 3: Use Easy Switch

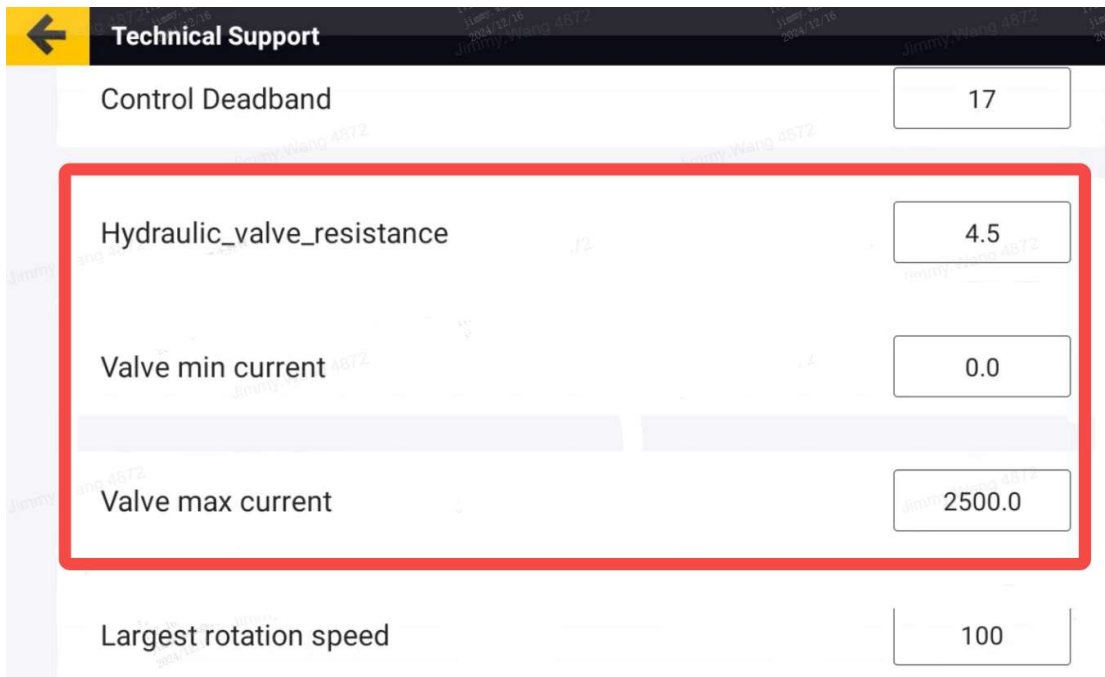
Can use Easy Switch to activate/deactivate Auto steering, but turning Steering Wheel won't quit Auto steering

8. For all other proportional valve

For all other proportional valves which are controlled by current, AS2 Non-CANBUS are workable, need to adjust control parameters according to actual valve type as following:

“Settings” ---> “Driver Debugging”, scroll down, there are three parameters:

- 1) **Hydraulic_valve_resistance**: Proportional valve coil resistance
- 2) **Valve min current**: Minimum control current to valve
- 2) **Valve max current**: Maximum control current to valve



The screenshot shows a 'Technical Support' settings interface. It contains several parameters with input fields. A red box highlights three specific parameters:

Parameter	Value
Control Deadband	17
Hydraulic_valve_resistance	4.5
Valve min current	0.0
Valve max current	2500.0
Largest rotation speed	100

- 1) For all current controlled proportional valve, there are two L&R coils, measure the coil resistance by Multimeter
- 2) For Max current, normally can get it on valve body and valve specification
- 3) For Min current, normally set it as 0

Note: Need to be very careful for **Valve max current**, if input value is too big, may damage the valve coils