



# DEALERMANUAL

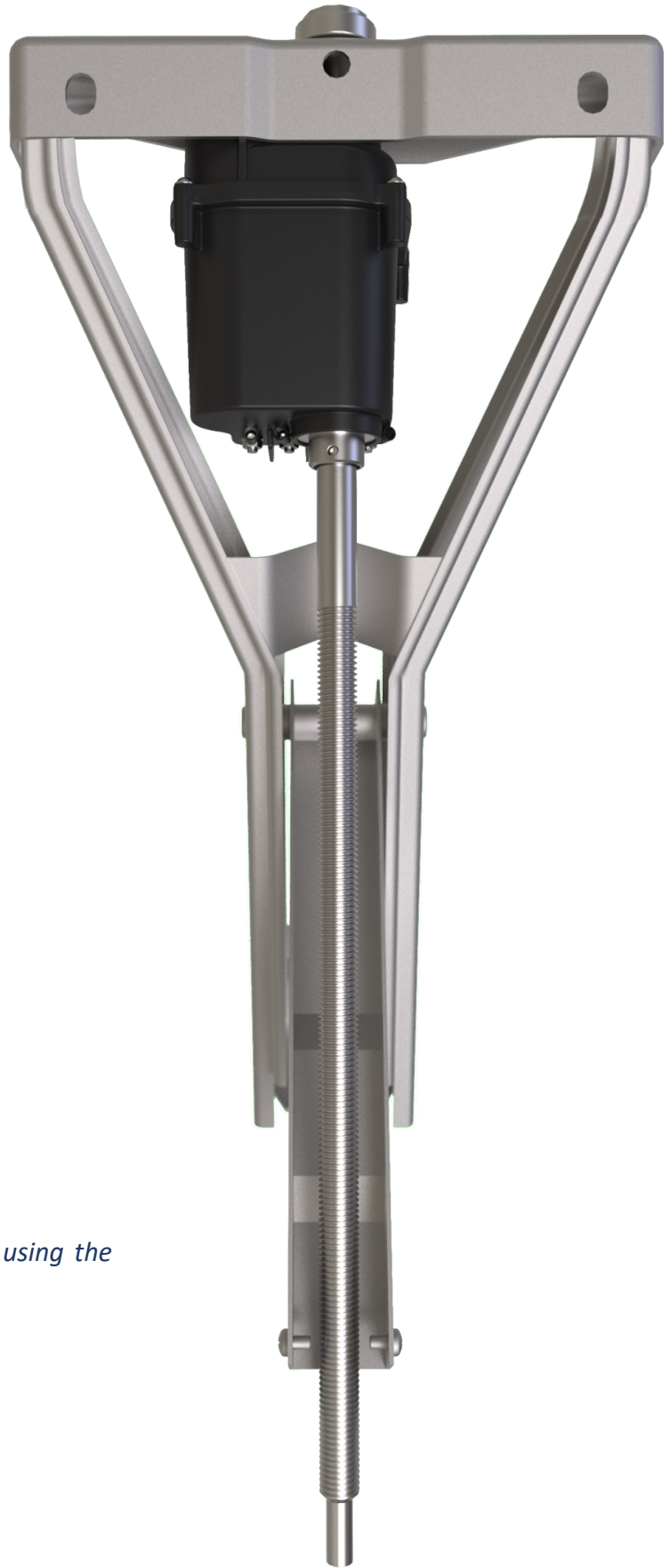
## HPC C System

Version: 0.12.3 ENG

Date: 01-01-2024

*Please read this manually carefully before using the system and keep it safe for future reference.*

[www.hpc-hydraulic.com](http://www.hpc-hydraulic.com)



## INDEX

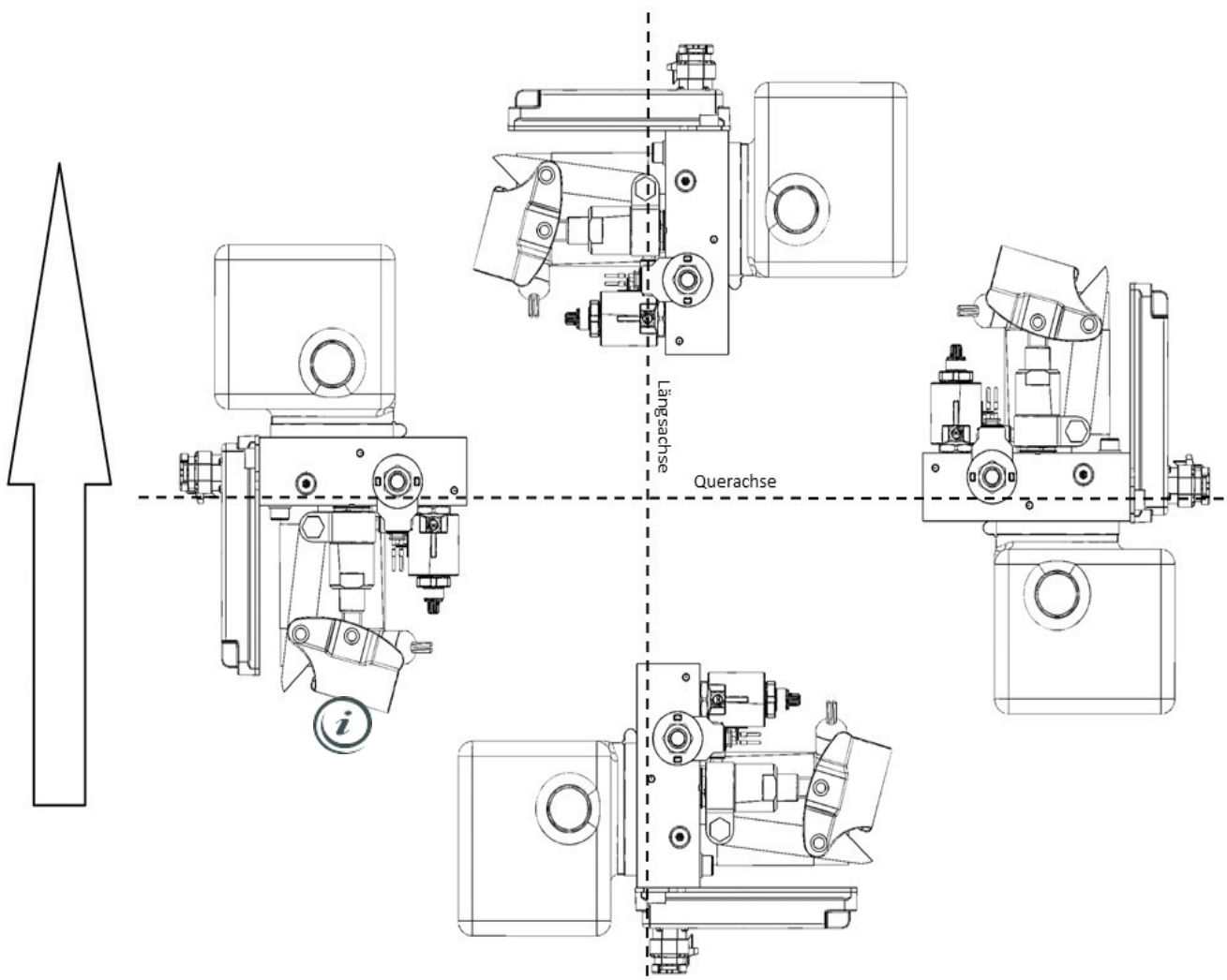
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## Installing the hydraulic unit

### Hydraulic unit mounting orientation.

The hydraulic unit must be aligned at a right angle to the lateral axis or longitudinal axis. Note that the more precisely the unit is fitted to align with the respective axis, the more level the caravan or van will be positioned in automatic mode! The illustration below shows the four possible installation orientations. The arrow shows the vehicle's direction of travel.

*Fig : The hydraulic unit's permitted installation positions*



### Note:

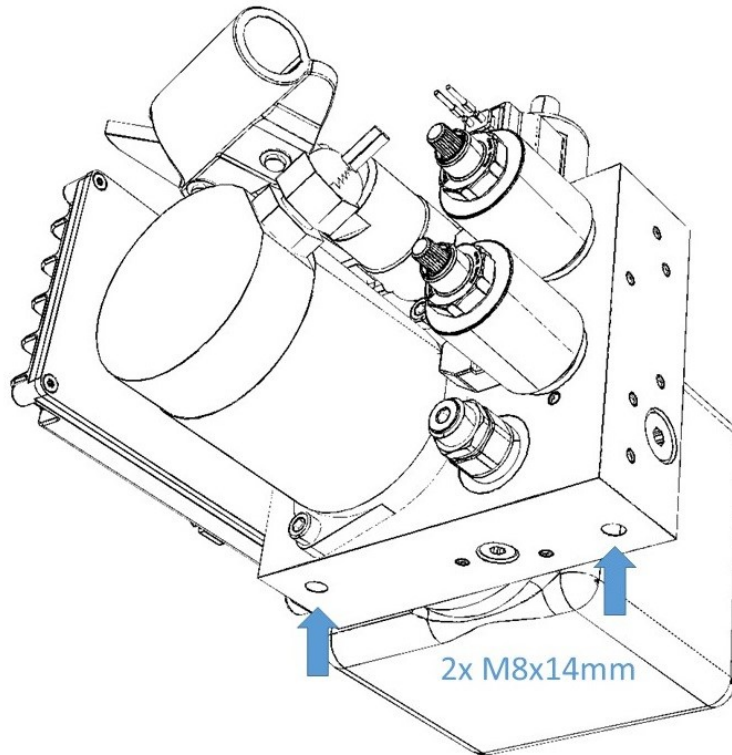
If the installation position is changed, the new position must be saved in the system.

Saving the hydraulic unit's installation position see further in this manual.

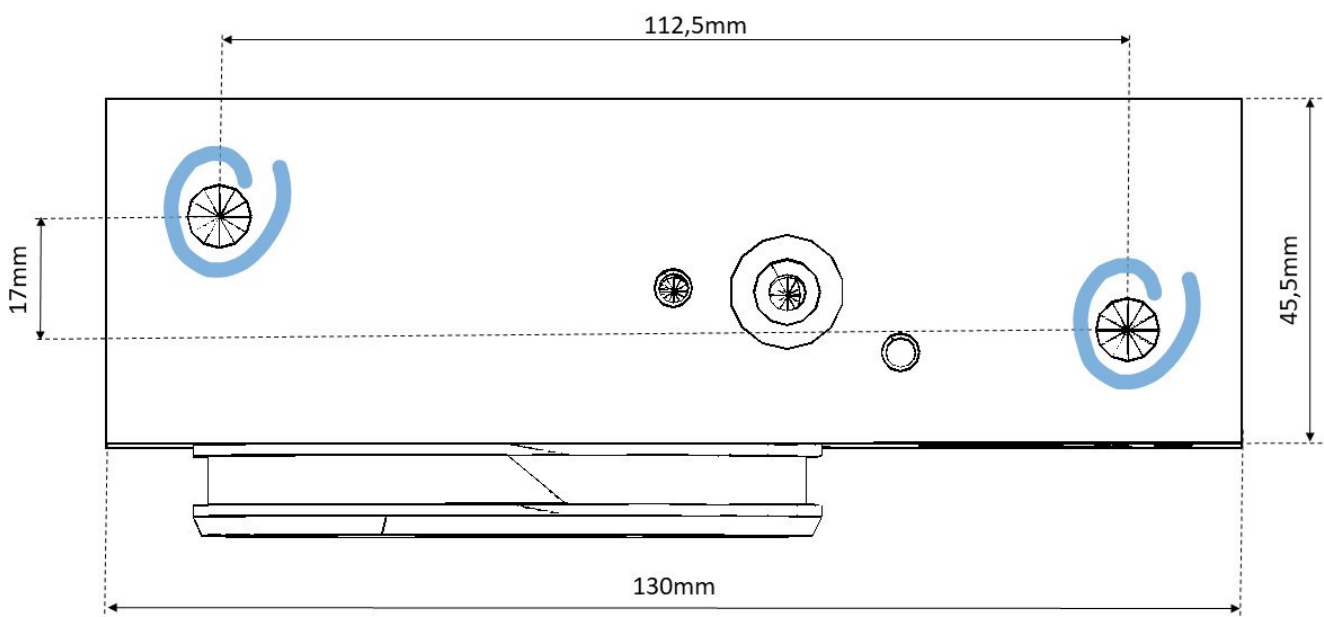
## Installing the hydraulic unit

### Fixing points on the hydraulic unit.

The underside of the hydraulic unit features two threaded boreholes (M8 x 14mm). These holes can be used as attachment points.



### Drilling aid

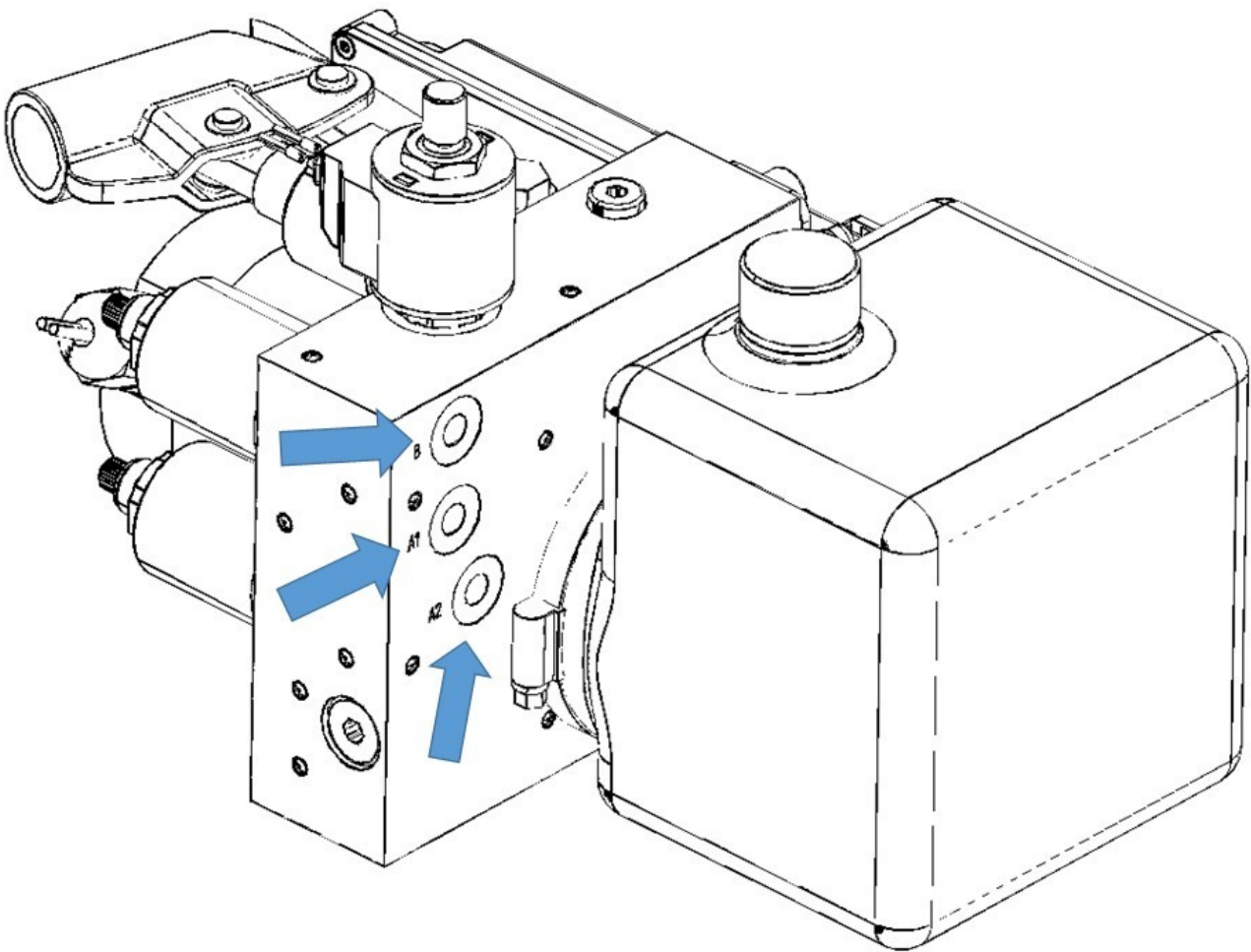


## Installing the hydraulic unit

### Hydraulic unit connection.

The hydraulic unit has three hydraulic connections. Please connect the cylinders according to the list

- A1    à    Left cylinder
- A2    à    Right cylinder
- B     à    Return both cylinders



## Installing the hydraulic unit

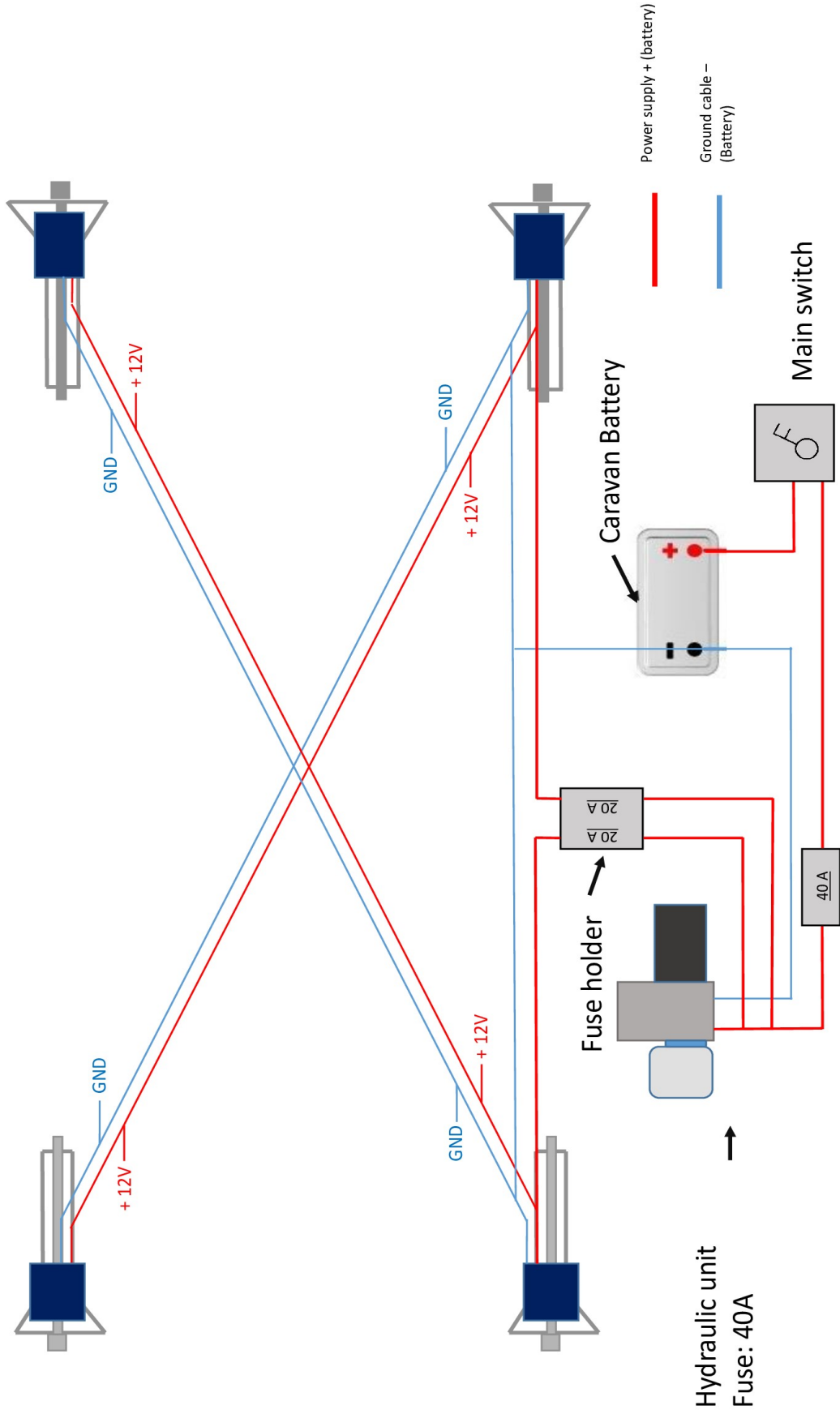


HPC hydraulics supplies caravan supports that you can fit under Knott chassis and ALKO chassis.

HPC Hydraulics has pre-assembled the electric motors whit delivery, the motors are already adjusted and have a sticker with the correct position of placement under the caravan, so make sure that the right jacks are mounted in the right place LV - RV- BL- BR

If you have not fitted the jacks in the correct position , you will need to re-learn the system.

# Electrical and hydraulic connection





## System settings and commissioning

HPC hydraulics has already pre-programmed the set at the factory and taught the motors and hydraulics. And you can then go to the next page number 13.

When an engine is replaced or the system is reset, you will have to teach the set again.

During initial operation/after a complete reset or if replacing a device in the system, the following steps must be followed in their precise order. This is the only way to guarantee correct, safe functioning of the system. Please carry out the steps shown below, adjusted to your type of system (2-/4-/6-jack system). **Please proceed as follows:**



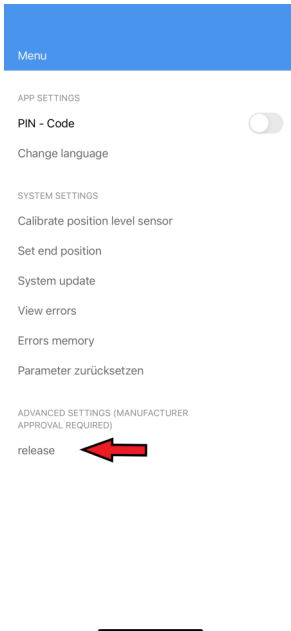
First, open the HPC caravan App on your phone and the start-up screen will appear first



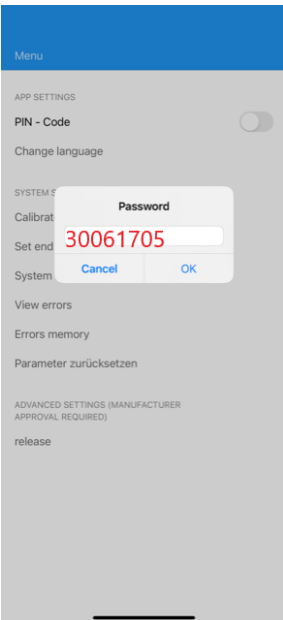
Then press the settings button.



## System settings and commissioning

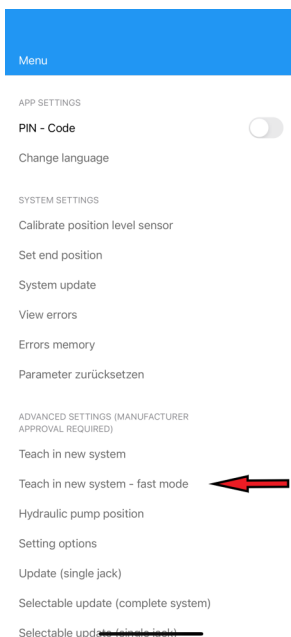


You will now press release.



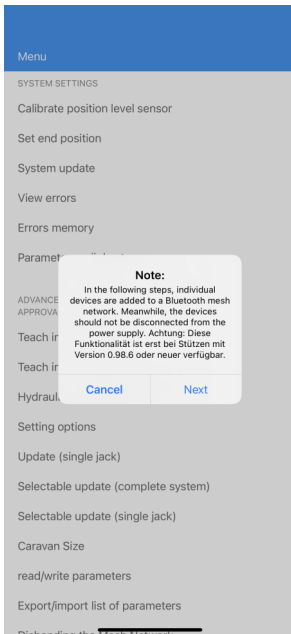
After you press release , a pop-up appears in which you have to activate the dealer code.

The Dealer code is 30061705



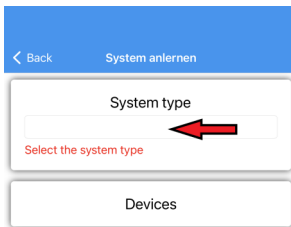
When you have entered the dealer code correctly and pressed ok, more options appear, and then press teach in new system - fast mode.

## System settings and commissioning

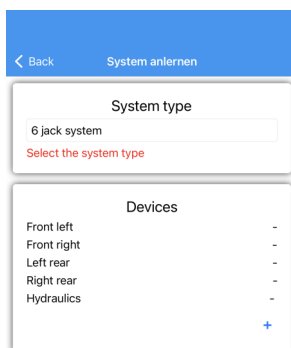


After you have press the Teach in new system - fast mode a message pops up that you should read carefully first.

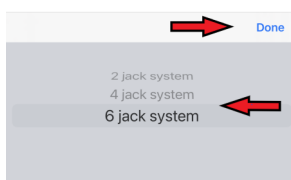
When you have read it, press Next.



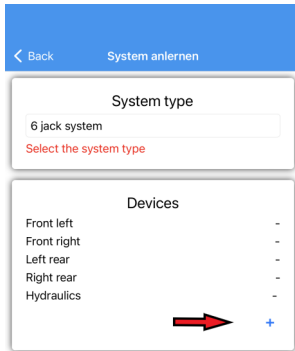
In this screen, press the spot of the arrow.



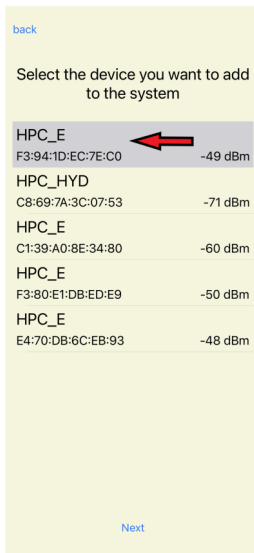
You can now select the system built under the caravan here and then press Done.



## System settings and commissioning



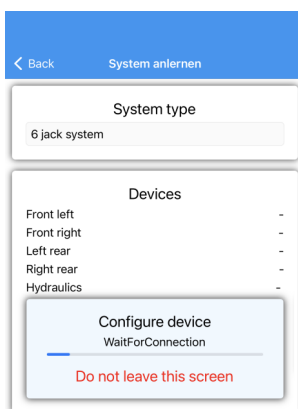
You must now press the plus sign indicated by the arrow



In this screen, all 4 jacks and the hydraulic pump are now loaded , all 5 positions should be visible.

If not all 5 positions are visible, first check all cabling.

You push now on one off the 5 devices and in the next screen the system configure a position , you hear that devices then running , and select then the position



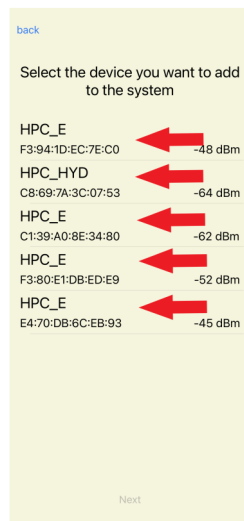
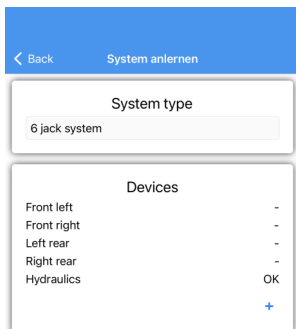
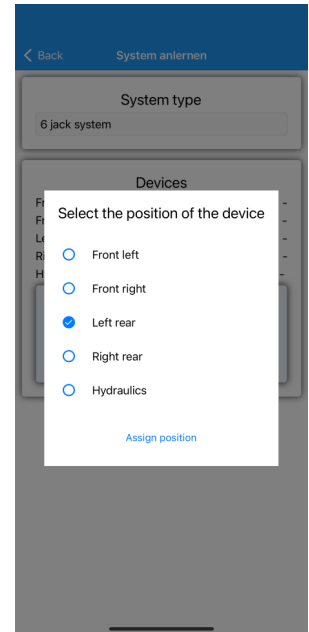
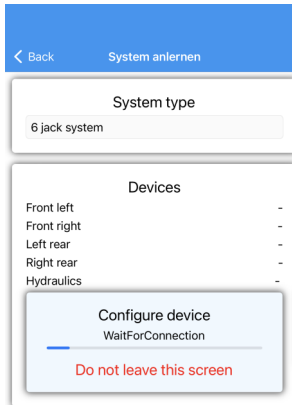
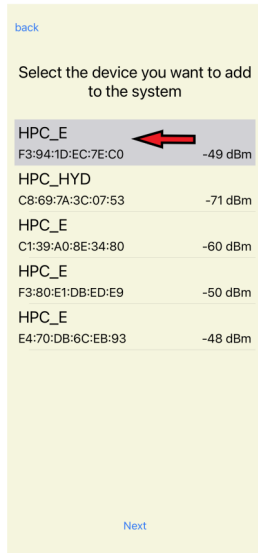
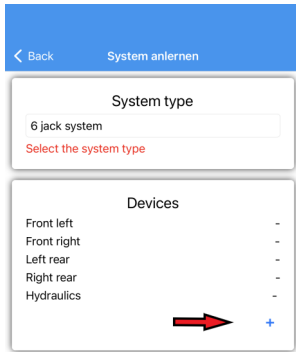
Now all 5 devices will be 1 by 1 learnt.

In the next step, you need to teach the 5 devices at the correct positions.

## System settings and commissioning

In the page before you have now one devices learnt

You push now again on one off the 4 other devices and in the next screen the system configure a position , you hear that devices then running , and select then the position , that you do still all devices are in postion .



## System settings and commissioning

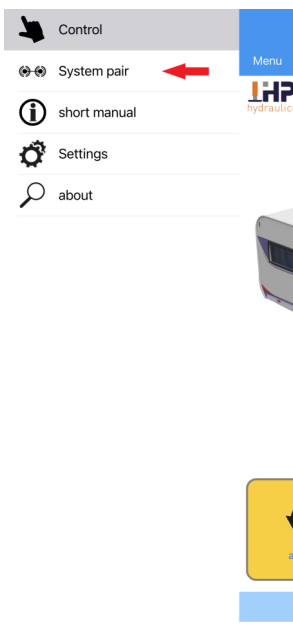


We are now going to pair the system , the steps for this paring already installed by the factory by default and you as a dealer only need to perform the previous steps if a the system gets a new part or fails.

You start the app ,and read the disclaimer and confirm.

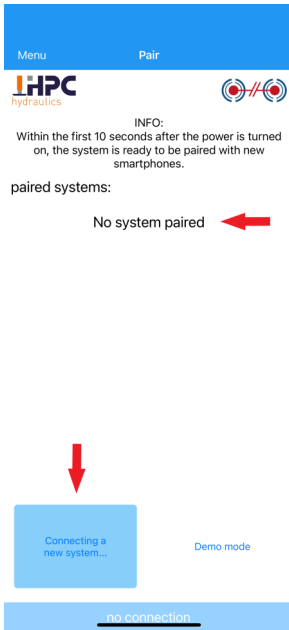


After confirm you see this screen and press menu .



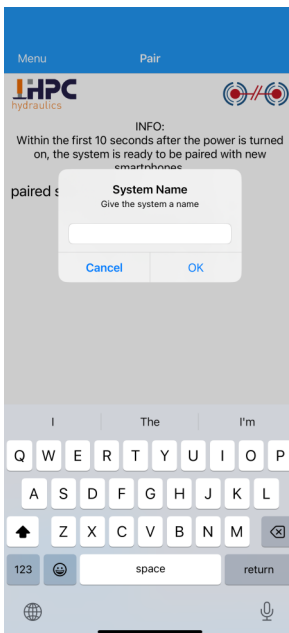
You now press System pair ( see red arrow )

## System settings and commissioning

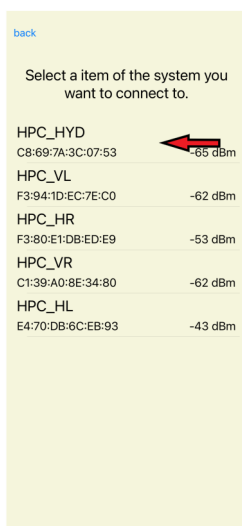


After we have press the bottom system pair , you get the screen , where we can connect a new system.

You push now the bottom connecting a new system.

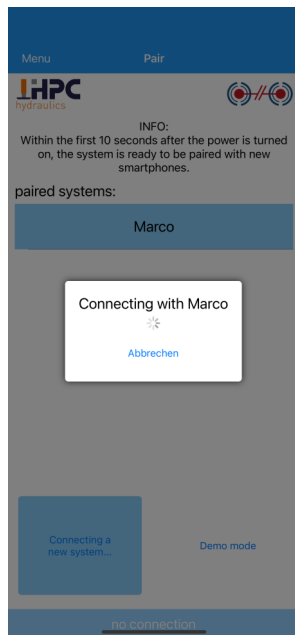


When you have press connecting a new system , there pup up a screen where you fill in a name , you can enter a name , that you can decide for yourself , name of yourself or caravan is all possible .

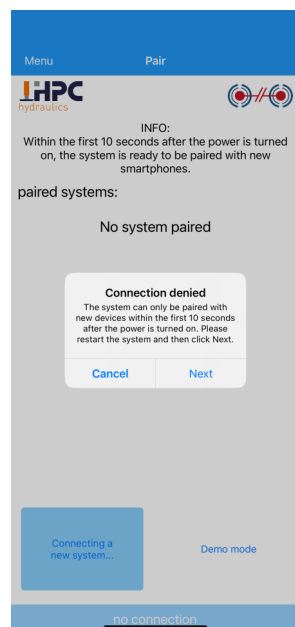


when you have entered the name, the screen with the 5 devices appears, and you can press on one off them , for example the first one.

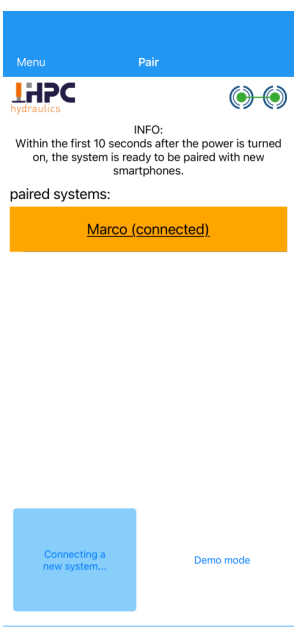
## System settings and commissioning



When you have press 1 off the devices , the system try to connect , then you get first a pop up screen that you must first disconnect the power for 10 seconds and restart the system.



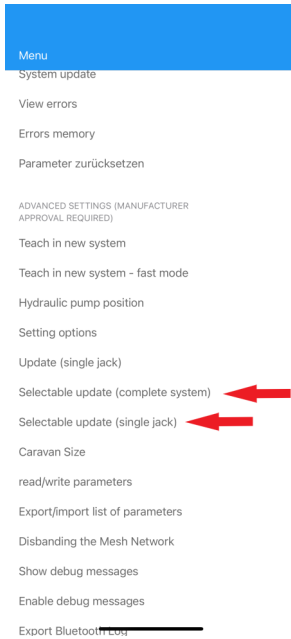
Here you see the screen that you first disconnect the power for 10 seconds and restart the system ,and press on next.



Your are now connected whit the caravan system and the pairing symbol in the right corner must be now green .



## System settings and commissioning

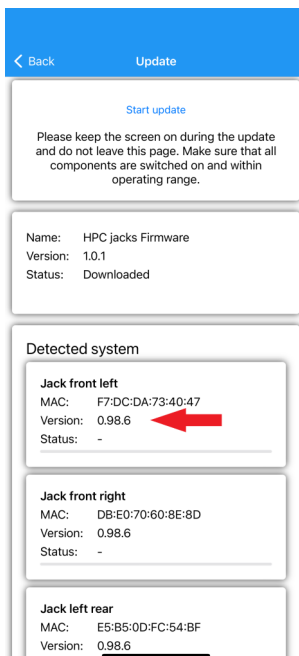


### SYSTEM SOFTWARE UPDATE

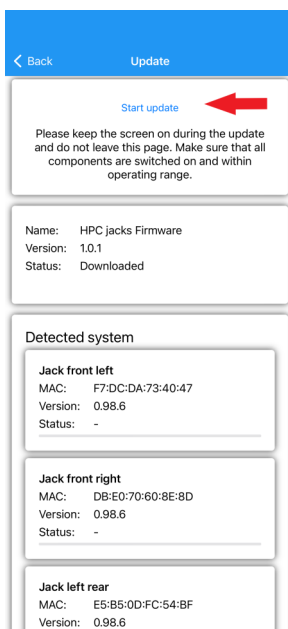
Now that you are logged into the system, you can check whether the correct software has been programmed onto the system.

**ATTENTION!** This has already been checked by HPC and done on delivery, the Update only applies if it has to be done afterwards.

You have the option of updating the entire system or per device.



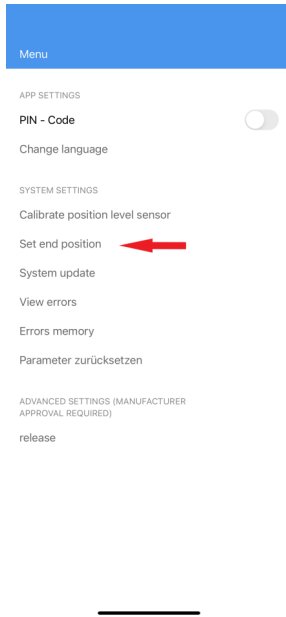
You can enquire at HPC Hydraulics what the latest update is , and check with version if it overlaps.



When the update does not come across , press start update , and the update will be upload.

**ATTENTION! Read the Noto.s : the update can only start up wen all jacks are fully retract.**

## System settings and commissioning

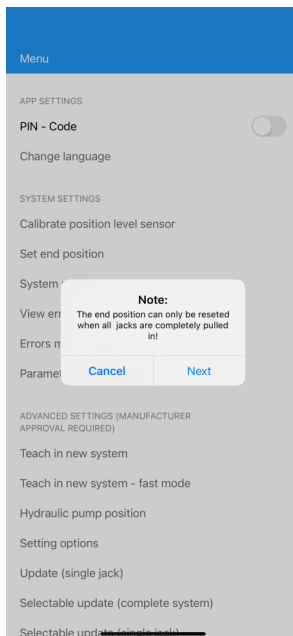


### SET END POSITION

Important is now to set the end position from the system. And that you follow the Richt steps.

1- All 4 jacks must be retract manual.

2- then extend the jacks all 4 a quarter turn again out



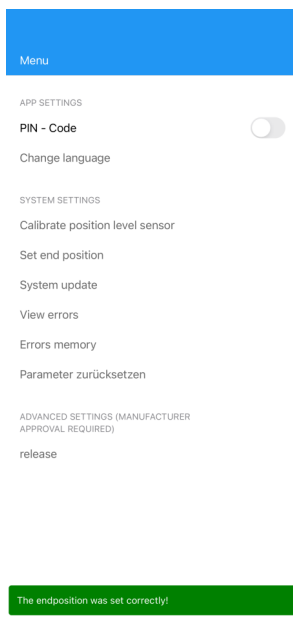
### SET END POSITION

After you have press bottom set end position , you get this screen whit the note that only can be set end position wen all jacks are pulled up , and that are the steps what you did here before.

1- All 4 jacks must be retract manual.

2- then extend the jacks all 4 a quarter turn again out

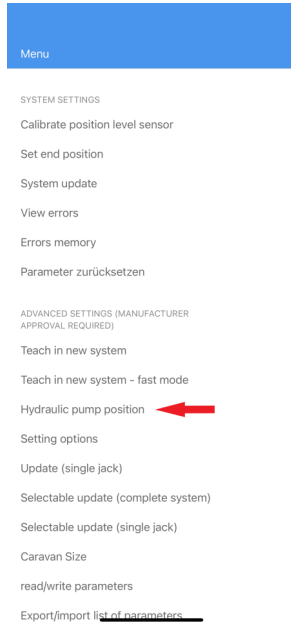
Then you can push Next.



### SET END POSITION

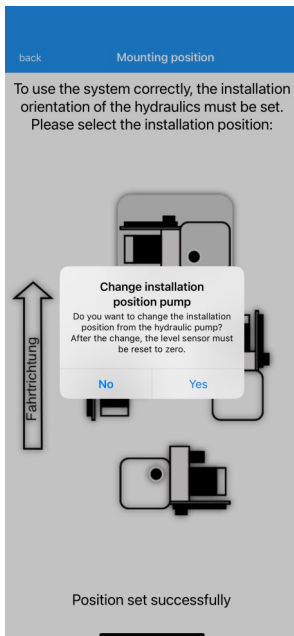
When you have push next , then you see in the screen under in the green bar , that the end position was set correctly.

# System settings and commissioning



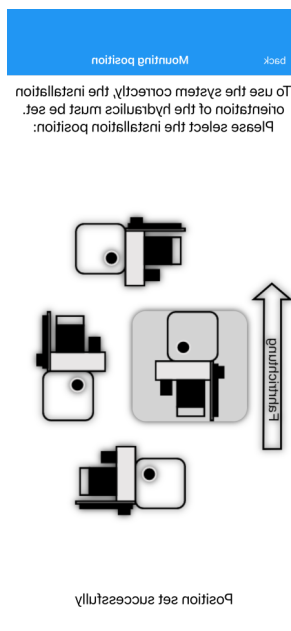
**PUMP POSITION**

Saving the hydraulic unit's installation position, so that the system can correctly measure the caravan tilt angle, the hydraulic unit's actual installation position must be notified in the system.



**PUMP POSITION**

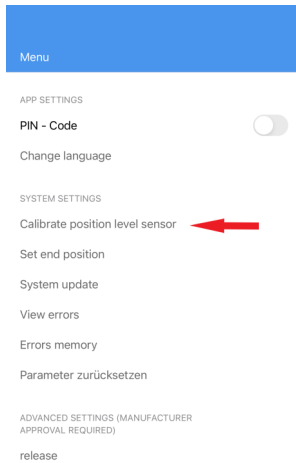
You select in this screen the position how you have build in the pump in the caravan . You get then the message do you want to change then the position , and wen you are sure you press yes.



**PUMP POSITION**

Then in this screen you can read that the new position from the pump is successfully.

## System settings and commissioning



### CALIBRATE POSITION LEVEL SENSOR

We going now calibrate the position level sensor.

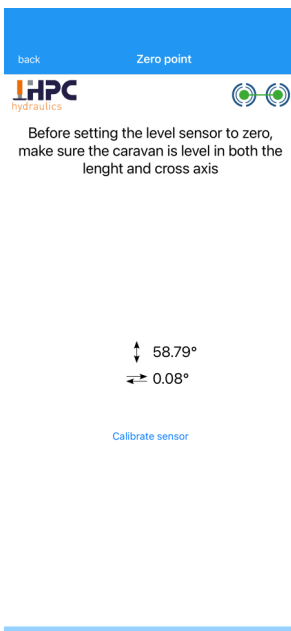
Page 21 you find also how to set the caravan manual level , before you Calibrate the sensor.

1-Send out hydraulic jacks , turns dark blue when ground and pressure is reached.

2-Now you are going to level this transverse axis

3-Then send out both front supports

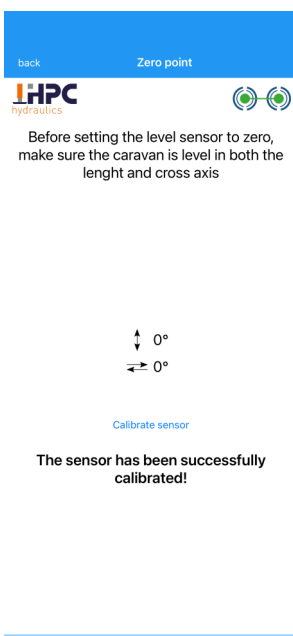
4-Now you are going to level the caravan across the front



### CALIBRATE POSITION LEVEL SENSOR

After you have push calibrate the position level sensor you see this screen where standing that caravan must be level in both length and cross Axis.

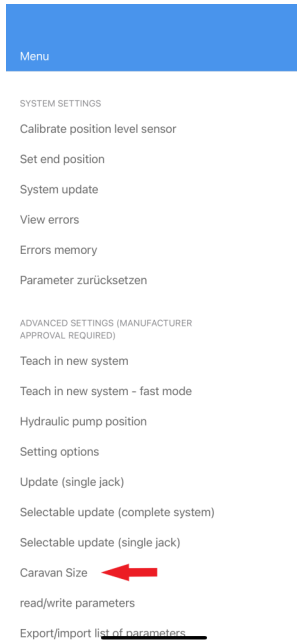
Then you press Calibrate sensor.



### CALIBRATE POSITION LEVEL SENSOR

After you have press Calibrate sensor , in this screen you can read that the sensor has been successfully calibrated.

# System settings and commissioning

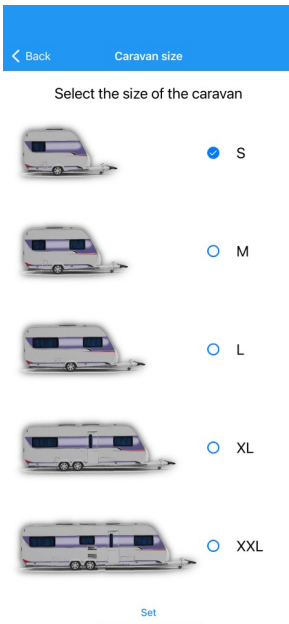


## SELECT THE SIZE OF THE CARAVAN

To offer the best possible settings for your caravan , there is a selection off different Caravan sizes , the parameters behind this selection ensure you can operate the system as effectively as possible .

**NOT YET FUNCTIONAL !**

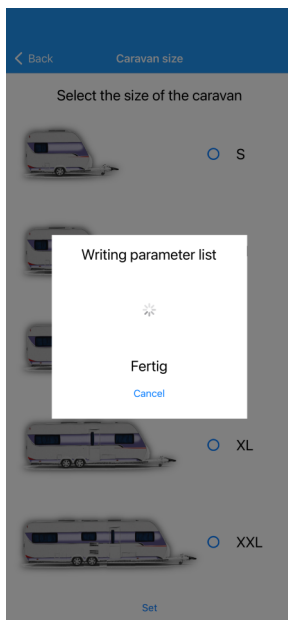
At the moment all setting are for caravan still 2000 kilo ,and when that will be chance you get a message about that



## SELECT THE SIZE OF THE CARAVAN

**NOT YET FUNCTIONAL !**

At the moment all setting are for caravan still 2000 kilo ,and when that will be chance you get a message about that

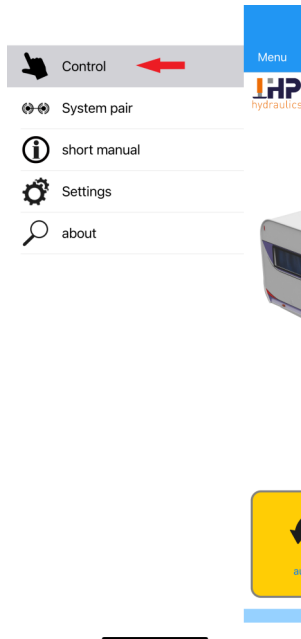


## SELECT THE SIZE OF THE CARAVAN

**NOT YET FUNCTIONAL !**

At the moment all setting are for caravan still 2000 kilo ,and when that will be chance you get a message about that

## System settings and commissioning



### AUTOMATIC AND MANUAL FUNKTIONS

We now enter the control menu where you can operate the caravan automatically and manually .

**Before proceeding, read carefully short Manual !!!!**

**This contains important information !!!!**



### AUTOMATIC AND MANUAL FUNKTIONS

After pressing control you will see this screen, to operate this menu you must still be connected, you will see in the top right corner the pair symbol , it should be green , red means you need to reconnect.

You will see at the bottom of this screen the 2 yellow blocks , with automatic and manual.

You now press the right yellow block **manually**

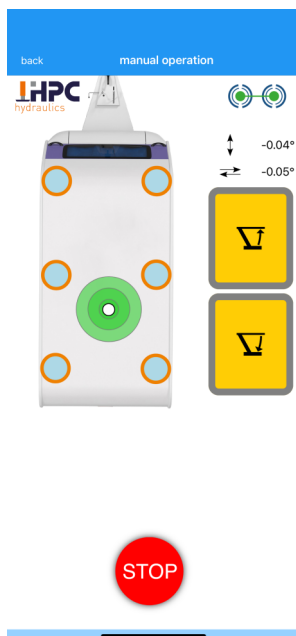


### AUTOMATIC AND MANUAL FUNKTIONS

You can now manually operate all jacks here , to send in and out.

You first see the blue dots , you first have to activate them by pressing them , then an Orange ring appears around the blue dot, when you now press send in or send out, only the 2 hydraulic jacks in the middle will be operated as indicated in this screen.

## System settings and commissioning



### AUTOMATIC AND MANUAL FUNKTIONS

In this screen, all 6 jacks are now ticked and you can see the Orange ring around all blue dots. when you now press send in or send out, all 6 jacks go to the ground.

We advise you to do this only per 2 jacks.

- 1- First the two middle hydraulic jacks
- 2- then the two rear jacks
- 3- then the two front jacks



### AUTOMATIC AND MANUAL FUNKTIONS

When you have pressed **back** in the previous screen , you are back in the automatic and manual menu .

If you now press the left yellow bar **automatic** we go to menu automatic.



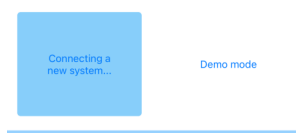
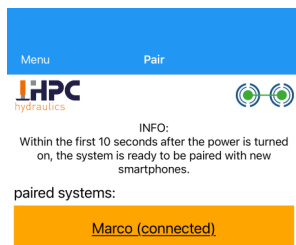
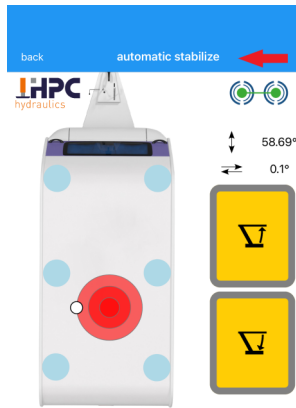
### AUTOMATIC AND MANUAL FUNKTIONS

We are now in the automatic menu where we can choose between automatic leveling or automatic stabilisation.

Now press the straight yellow block stabilise.



## System settings and commissioning



### AUTOMATIC AND MANUAL FUNKTIONS

When you have pressed the yellow Stabilise button , you will now see this **Automatic Stabilise** screen , and the system will automatically deploy and pressurise all jacks.

**Attention !** Here only all jacks are on the ground and the caravan is stable and not level. And the dots are ten dark blue.

### AUTOMATIC AND MANUAL FUNKTIONS

When you have pressed the yellow Automatic button , you will now see this **Auto leveling** screen , and the system will automatically send out all jacks and pressurise them.

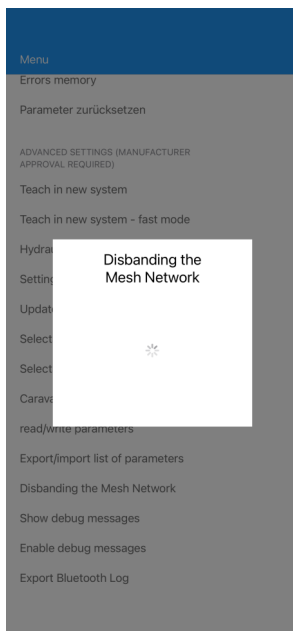
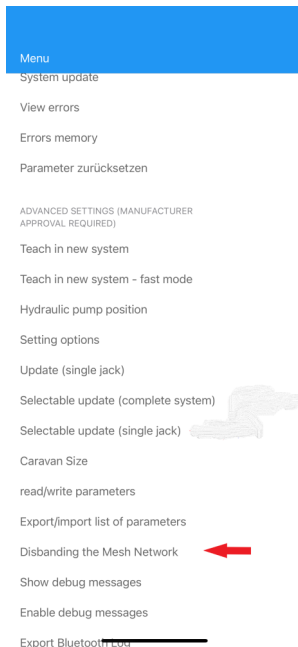
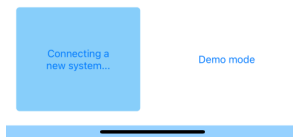
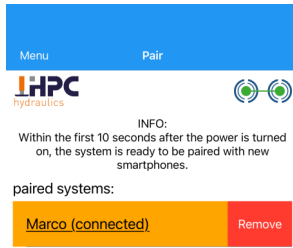
**Note !** The caravan's nose wheel should be turned down a little so that the caravan is slightly forward

**Note !** Now the system will level the caravan, and you may need to put blocks under the hydraulic jacks. to level the caravan on the transverse axis when the surface is crooked.

### DELETE A PAIRED SYSTEM

To remove a user from a system, select the user.

## System settings and commissioning



### DELETE A PAIRED SYSTEM

You then stand on the orange bar and slide it to the left, a red button with delete on it will appear on the right-hand side, when you press it the user will be deleted.

### DELETE A MESH NETWORK

You can delete a system completely if necessary, but you will have to re-register a system completely after this. select the disbanding the mesh network function

### AUTOMATIC AND MANUAL FUNKTIONEN

The disbanding the mesh network function will be now done .

## Notifications

No:	App short text	App text	System behaviour in event of warnings and errors	Delete warning
<b>Warnings:</b>				
W1	Maximum travel reached	<i>Max travel reached. Please retract jack. Set panels below it. See manual.</i>	1) The respective jack stops 2) Jack shown in yellow in the app 3) Jack can only be retracted	Reaching top position dismisses the warning
W2	Maximum travel time out	<i>Warning! The jack has reached its maximum travel time. Please check the jack!</i>	1) Jack stops and is locked 2) Respective jack shown in yellow in the app	Selecting it again deletes the error
W3	Thermal protection	<i>The jack has been stopped, to protect against overload. The jack has been locked for a short time!</i>	1) Jack stops and is locked 2) Respective jack shown in yellow in the app	As long as a device has an i <sup>2</sup> t error:  Manual: respective jack locked Automatic: automatic process not possible/stops
W4	Max current with ground check	<i>Maximum jack current reached.</i>	1) Respective jack stops 2) Info to app	Info can be 'confirmed' by the user
W5	Stop by user	<i>Stop button pressed.</i>	1) Respective process aborted	Information deleted after 3 seconds.
<b>Errors:</b>				
F1	Improper current rise – manual mode	<i>Warning! Current too high during manual movement. The system was stopped. Please check the jacks.</i>	1) System stops 2) Only manual movement now possible 3) Respective jack shown in red in the app	Reselecting and moving the respective jack deletes the error
F2	Temperature error	<i>Warning! The system is too hot! Cooling phase initiated. Please wait...</i>	1) Respective jack stops and is locked 2) Respective jack shown in red in the app	After the temperature falls below a certain value, the respective jack is reenabled

F3	Jack cannot move	<i>Warning! Jack jammed. The system was stopped. Please check the jack to ensure it can move freely.</i>	1) System locked 2) Only manual movement possible 3) Respective jack shown in red in the app	Reselecting and moving the respective jack deletes the error
F5	Wrong power supply	<i>Warning! Wrong power supply detected! Please connect correct power supply!</i>	1) System locked 2) Condition no longer possible	Error is only reset when correct power supply is connected
F6	Low battery	<i>Warning! Battery is low! Please charge battery!</i>	1) System stops 2) Only possible to retract the jacks	Error is only reset when battery provides enough power
F7	Wrong number of jacks	<i>Warning! Connection to device lost! System operability restricted!</i>	1) System stops 2) Only manual movement of remaining devices possible	Error is only reset when the correct number of devices are present
F8	Towing safety error	<i>Warning! Towing vehicle detected. System locked. All extended jacks are retracted. See manual.</i>	1) System locked 2) All extended jacks are automatically retracted 2) Condition no longer possible	Error is only reset when towing vehicle disconnected
F9	Improper current rise during retraction	<i>Warning! Unexpected current rise! See manual.</i>	1) System stops 2) Jack is deselected	Open to suggestions

Overview of warnings and errors – hydraulic drive

No:	App short text	App text	System behaviour in event of warnings and errors	Delete warning
WH1	Tilt too high	<i>Side tilt too high. Levelling not possible! See manual.</i>	1) Levelling cannot be started 2) Side angle information flashes yellow in the app	Warning remains for as long as tilt is too high when automatic levelling active
WH2	Active tilt too high	<i>Side tilt too high. Levelling aborted! See manual.</i>	1) Levelling procedure aborted 2) Jacks can only be retracted (auto/manual) 3) Side angle information flashes yellow in the app	Warning is deleted when all jacks reach top position
WH3	Manual tilt too high	<i>Side tilt too high! Risk of tipping over! See manual.</i>	3) Lateral axis information flashes yellow in the app	Warning remains for as long as tilt is too high and user is in manual menu item

WH4	Max travel reached without levelling	<i>Hydraulic cylinder's maximum travel reached. Please retract the cylinder. See manual.</i>	1) Levelling procedure aborted 2) Jacks can only be retracted (auto/manual)	Warning is deleted when all jacks reach top position
WH5	Max travel without ground check	<i>Hydraulic cylinder's maximum travel reached. Please retract the cylinder. Observe operating instructions.</i>	1) Levelling procedure aborted 2) Jacks can only be retracted (auto/manual)	Warning is deleted when all jacks reach top position
WH6	Max travel with ground check	<i>Hydraulic cylinder's maximum travel reached. See manual.</i>	1) Jacks can only be retracted (auto/manual) 2) Respective jack shown in yellow in the app	Warning deleted after 5 seconds
WH7	i²t error	<i>The jack is stopped, to protect against overload. The jack is locked! See manual.</i>	1) Jack stops and is locked 2) Respective jack shown in yellow in the app	When i²t recovery period elapsed, the jack is enabled and warning is deleted
WH9	Stop by user	<i>Stop button pressed.</i>	1) Respective process aborted	Warning deleted after 5 seconds
WH10	Max Travel without levelling	<i>Max travel reached without successful caravan levelling. See manual.</i>	1) Levelling procedure aborted 2) Front jacks shown in yellow in the app 3) Jacks can only be retracted	Warning is dismissed when both front jacks reach top position
WH11	Drawbar high error	<i>Levelling procedure cannot be performed. Drawbar must be lowered. See manual.</i>	Levelling cannot be started	Warning remains for as long as drawbar not at lowest point and automatic levelling is active

## **General information about the system**

### **The system's safety features**

The system features numerous hardware and software-based monitoring systems, which protect the system from incorrect use and overloading.

#### **Protection against system takeover:**

Protection against takeover is implemented in firmware versions 0.97.5 and above. Smartphones unknown to the system can only pair with the system during the first 10 seconds. There are two important points that must be noted in this respect: Firstly, systems with the new firmware version can no longer be controlled by older app versions. However, the app is backwards compatible, and so should still be able to communicate with older systems. When pairing a smartphone with the system for the first time, the phone must authenticate itself with the jacks. It must attempt to connect to the system within 10 seconds of system startup. (If this time is exceeded, the app informs the user of this.)

#### **Temperature monitoring:**

Every circuit board in the HPC system features a temperature sensor, which is intended to prevent the circuit boards overheating. If circuit boards exceed a threshold value, the respective jack is temporarily locked, in order to initiate cooling.

#### **Voltage monitoring:**

Every circuit board in the HPC system is fitted with a voltage control, which continuously monitors the system voltage in all system statuses.

If the system voltage is too low/too high, system operation is restricted. It is only possible to manually retract all jacks! Automatic movement of the jacks is blocked until the battery's voltage is once again the correct value 12V.

#### **Load monitoring by pressing into the ground:**

Each electromechanical jack can continue to be extended even after it has detected the ground. To protect the jacks' drives from overload, their maximum load is calculated on the basis of their power consumption. This prevents mechanical overloading of the jacks.

#### **Electric motor temperature calculation:**

As the motors do not have temperature sensors, the motor temperature is calculated on the basis of a load/current ratio, preventing the motors from overheating.

#### **Load monitoring when moving the electromechanical jacks:**

When moving the electromechanical jacks, the load is continuously monitored, and adjusted depending on the position and operating mode.

#### **The system's current monitoring:**

Every circuit board in the system features a current sensor. Among other things, this sensor calculates the retraction status, the ground contact and the load. The sensor prevents current consumption becoming too high. If increased current is measured, the respective device is immediately stopped.

#### **Checking the current value for plausibility:**

To ensure the measured value is plausible, the measured values during movement and system standstill are counterchecked. If there is a discrepancy, the system stops and the operator is informed of the error.

#### **Power reduction when retracting the jacks:**

To prevent the jacks becoming jammed in the caravan/van's underbody, power consumption is continuously reduced in the jacks' top area (around 5cm). The nearer the jack's bar approaches the '0' point, the more sensitive the jack becomes, in order to detect the retraction status as quickly and safely as possible.

### **Safe retraction out of the top area**

To ensure that the drive has enough power to move the jacks out of the top area, power consumption is maximised and the speed is reduced. The jack moves until it has left the top area (around 5cm).

### **Position monitoring**

When moving the electromechanical jacks, the position is calculated by means of the electric motor's incremental encoder. The position is required for setting the motor's respective currents and speeds, depending on position and operating mode.

### **Maximum travel**

To prevent jacks being able to extend too far, a maximum travel position is defined. This prevents mechanical defects on the drive and jacks.

### **Safe retraction out of the ground**

To ensure the electromechanical jack can always retract out of the widest variety of types of ground, power consumption is maximised and the speed reduced until the jack completely loses contact with the ground.

For this purpose, the position of the jack's ground contact at this moment is stored. If the jack is extended again, this travel distance is stored for safely retracting out of the ground.

### **Time monitoring**

During system movement, time is monitored. Appropriate time monitoring is configured, depending on the operating mode. If this time is exceeded, the user is informed of the error.

### **Towing vehicle detection**

If a towing vehicle is connected to a caravan, or if the van's ignition is switched on (or parking brake released), the system detects this status and the system is locked. If some of the system's jacks are not completely retracted, these are then automatically fully retracted.

### **Warning:**

For this to occur, a digital input with the appropriate signal must be connected to one of the devices.

### **Safety position during automatic levelling**

When levelling the caravan's longitudinal axis, the rear jacks are extended to a safety position. This prevents the rear bumper becoming damaged when the caravan is tilted.

### **Maximum caravan tilting angle**

The caravan/van's maximum tilting angle is continuously monitored. If the system exceeds this angle, the system stops and the user is informed of this.



## **Troubleshooting**

### **Errors and error rectification**

This chapter lists errors and their possible causes. Possible solutions are also described in as much detail as possible. You do not have to consider all the listed causes and solutions – only one of the solutions may possibly be enough to rectify the error. Please act with particular care when changing any parameters. Incorrect parameter settings can lead to the system or vehicle being damaged.

#### **Incorrect number of devices in the network (wrong number of jacks)**

The number of devices is determined when teaching the mesh network (2/4/6 devices). If a device is missing, error F7: 'Wrong number of jacks' is shown).

##### **Possible causes:**

Bluetooth connection to device lost

A device's software has frozen

Device's fuse blown

Power supply to device interrupted (cable breakage/screw on drive worked loose)

Device's circuit board defective

##### **Possible solutions:**

Restart smartphone

Restart the app

Restart the system (if necessary, multiple times)

Check fuse

Check device's power

Delete paired system from the app and re-pair

Rebuild the system network

Replace circuit board

#### **App crashes during the update**

##### **Possible causes:**

Latest version of app installed?

Latest version of Android/iOS installed?

Smartphone has too many apps open

##### **Possible solutions:**

Restart the system (if necessary, multiple times)

Restart smartphone

Install latest version of app

Bring smartphone operating system up to date

#### **App unable to pair with a system that has already been paired**

##### **Possible solutions:**

Restart the system (if necessary, multiple times)

Restart smartphone

Delete paired system from the app and re-pair

### **App unable to pair with a new system**

#### **Possible solutions:**

- Restart the system (if necessary, multiple times)
- Restart smartphone
- Rebuild the system network

### **App crashes during normal operation**

#### **Possible solutions:**

- Restart the system (if necessary, multiple times)
- Restart smartphone
- Latest version of app installed?
- Latest version of Android/iOS installed?
- Uninstall and reinstall app

### **Problems when creating a network (Bluetooth mesh)**

#### **Devices missing from the Bluetooth list**

##### **Possible causes:**

- Software has frozen
- Device's fuse blown
- Power supply to device interrupted (cable breakage/screw on drive worked loose)
- Device's circuit board defective

##### **Possible solutions:**

- Restart smartphone
- Restart the app
- Restart the system (if necessary, multiple times)
- Check fuse
- Check device's power
- Delete paired system from the app and re-pair
- Replace circuit board

#### **An incorrect position assigned to a device**

If, when setting up a new system network (Bluetooth mesh), a device is assigned to an incorrect position, the system network (Bluetooth mesh) must be completely rebuilt.

#### **App crashes when setting up a network**

##### **Possible solutions:**

- Restart the system (if necessary, multiple times)
- Restart smartphone
- Latest version of app installed?
- Latest version of Android/iOS installed?

## Functional problems

### Electromechanically powered jacks

#### The jacks do not reach the ground (ground detected too early)

The current is increased in order to detect the ground.

##### Possible causes:

The jack cannot move freely (hardened grease on the spindle, thick dirt on the spindle, rusty spindle, bent spindle, defective jack)

Incorrect installation of the electromechanical drive (drive is in contact with the underside of the vehicle)

Electrical defect on circuit board

Mechanical defect in the electromechanical drive

##### Possible solutions:

Free the jack from all soiling and old grease, then relubricate.

Free the spindle/jack from rust (wire brush) and relubricate; if heavily rusted replace jack

Bent spindles must be replaced by a new one

Ensure that the electromagnetic drive has enough space below the vehicle's underbody. It must not be allowed to touch the vehicle's underbody in any position.

Replace circuit board

#### The jacks do not extend (jacks become jammed in vehicle underbody)

##### Possible causes:

The jacks were retracted into the caravan underbody too firmly

Jack foot jammed in vehicle underbody/chassis

The jack cannot move freely (hardened grease on the spindle, thick dirt on the spindle, rusty spindle, bent spindle, defective jack)

Incorrect installation of the mechanical drive

(drive is in contact with the underside of the vehicle)

##### Possible solutions:

Manually extend the jack a little from top position using the crank handle (2–3 turns). Then, using the app move the jack to the ground and then retract it again.

Ensure the jack foot has snapped into place and that it cannot get stuck/jammed anywhere.

Free the jack from all soiling and old grease, then relubricate.

Free the spindle/jack from rust (wire brush) and relubricate; if heavily rusted replace jack

Bent spindles must be replaced by a new one

Ensure that the electromagnetic drive has enough space below the vehicle's underbody. It must not be allowed to touch the vehicle's underbody in any position.

#### The jacks do not reach top position, although they are shown as retracted in the app (green)

##### Possible causes:

Parameters were set incorrectly or have been changed

The jack cannot move freely at the top (hardened grease on the spindle, thick dirt on the spindle, rusty spindle, bent spindle, defective jack)

Incorrect installation of the mechanical drive

(drive is in contact with the underside of the vehicle)

**Possible solutions:**

- Manually retract the jack using the crank handle. Teach in the new top position
- Free the jack from all soiling and old grease, then relubricate.
- Free the spindle/jack from rust (wire brush) and relubricate; if heavily rusted replace jack
- Bent spindles must be replaced by a new one
- Ensure that the electromagnetic drive has enough space below the vehicle’s underbody. It must not be allowed to touch the vehicle’s underbody in any position.

**Unusual noises coming from the electromechanical drive**

**Possible causes:**

- The jack cannot move freely (hardened grease on the spindle, thick dirt on the spindle, rusty spindle, bent spindle, defective jack)
- Incorrect installation of the mechanical drive (drive is in contact with the underside of the vehicle)
- Gear damage in the drive

**Possible solutions:**

- Free the jack from all soiling and old grease, then relubricate.
- Free the spindle/jack from rust (wire brush) and relubricate; if heavily rusted replace jack
- Bent spindles must be replaced by a new one
- Ensure that the electromagnetic drive has enough space below the vehicle’s underbody. It must not be allowed to touch the vehicle’s underbody in any position.
- Drive must be replaced

**Wrong jack is controlled**

A jack has been selected in the app, but a different jack moves.

**Possible cause:**

- The position was incorrectly assigned when setting up the system network

**Possible solutions:**

- Rebuild the system network (Teaching a new system)

**Hydraulically powered jacks**

**The jacks do not reach the ground (ground detected too early)**

The current is increased in order to detect the ground.

**Possible causes:**

- The cylinder does not move freely (thick dirt on the cylinder’s running surface, damage to the cylinder’s running surface)
- Electrical defect on circuit board
- Air in the system

**Possible solutions:**

- Free the cylinder of dirt.
- Defective cylinders must be replaced.
- Replace circuit board
- Correctly vent the system