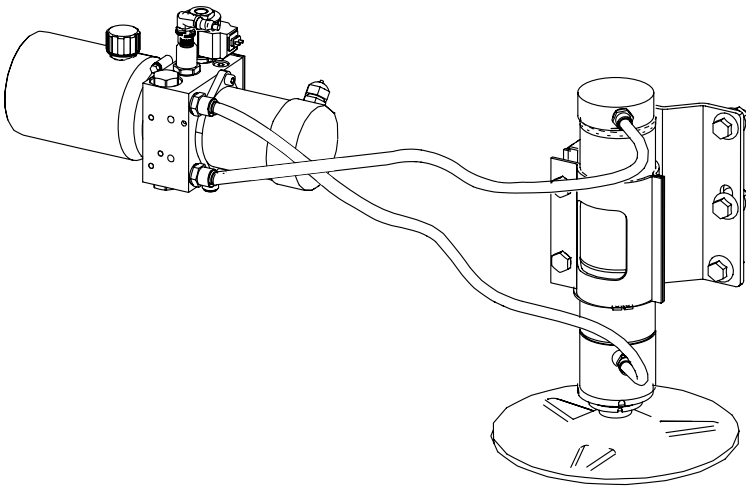


OPERATING INSTRUCTIONS

AL-KO HY4 levelling support system

EN



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ALOIS KOBER GMBH, Germany

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TRANSLATION OF ORIGINAL OPERATING MANUAL

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ABOUT THIS DOCUMENTATION

- Read this documentation prior to commissioning/operation. This is a prerequisite for safe work and problem-free handling.
- Please observe the safety and warning notices in this documentation and on the product.
- This documentation is a permanent part of the product described and should be handed over to the buyer if sold.
- Illustrations in this document are for reference purposes and may actually deviate from the product in terms of the details.

Danger levels of warning notices

The following danger levels alert you to potential dangerous situations:

DANGER!



Indicates a dangerous situation which, if not avoided, will result in death or serious injury.

WARNING!



Indicates a dangerous situation which, if not avoided, may result in death or serious injury.

CAUTION!



Indicates a dangerous situation, which if not avoided, may result in minor or moderate injuries.

NOTICE!

Material damage: The product or an object in its environment may be damaged.

Symbols



Special notes to improve comprehension and handling.

Single step:



Numbered instruction:

- 1.
- 2.
- 3.

Outcome of the instruction:



SAFETY INSTRUCTIONS

- Do not use the HY4 levelling support system for:
 - Tyre changes
 - Fitting snow chains
 - Maintenance work
- Before driving, check:
 - to ensure that all supports are properly retracted
 - that the system is switched off
 - that all hoses are undamaged
- During operation:
 - Check the entire danger area around the vehicle. If necessary, call on a second person.
 - Before extending the supports, check to ensure that the area under the supports is free.
 - Make sure that there is sufficient clearance from persons, animals and objects.
 - No persons or animals may be in the vehicle.
 - No objects, persons or animals may be located beneath the vehicle before, during or after levelling.
- Hands and other body parts may not come into contact with any leaking liquids (oil). Oil escaping under high pressure can cause skin injuries.
 - Seek medical attention immediately in case of contact!
- Never raise the vehicle completely.
 - If the wheels no longer have contact with the ground, this can lead to instability and dangerous situations.
- When using snow chains, maintain an appropriate distance from the components of the support system.
- The vehicle must be placed on firm, level and non-slip ground.
- If the ground is soft, a suitable support must be used under each support to improve weight distribution!
- If the ground is soft, make sure that the supports are extended uniformly in manual operation.
 - If a support slips too much, the chassis can warp. This can lead to vehicle damage.
 - If a support sinks into the ground, the vehicle should be moved immediately.
- No loose objects should be under the supports:
 - Branches, stones, bottles, etc.
- Have maintenance work carried out cyclically.
- The levelling support system is operated with a specially adapted hydraulic oil.
 - Have the oil checked and changed by an authorised AL-KO service partner only!
- After raising the vehicle, ensure that all steady supports are standing firmly!
- During a storm (branches break from trees, minor damage to houses), the vehicle can be damaged. Immediately retract the supports.
- Children and persons unfamiliar with these instructions for use may not use the levelling support system nor may they perform any maintenance or cleaning.
- Persons with diminished physical, sensory or mental capabilities, or persons with insufficient knowledge or experience may not use the device unless they are supervised or instructed by a person who is responsible for their safety.

PRODUCT DESCRIPTION

The AL-KO HY4 levelling support system is an electro-hydraulically driven system for levelling motorhomes. The levelling support system can be operated automatically or manually via a hand-held operating device (remote control).

The system is sent commands via a control unit mounted under the vehicle. The supports are completely integrated in the chassis of the vehicle. Each support has a Ø 230 mm base plate. This ensures the best possible stability on any surface.

Performance features

- Automatic support extension and retraction
- Automatic and manual levelling of the vehicle
- Programming of optional positions
- No TÜV (German Association for Technical Inspection) entry in the vehicle documents

Proper use

The AL-KO HY4 levelling support system is used:

- to control vehicle levelling
- to provide support for a stable position
- to set comfort positions

Possible misuse

WARNING!



The levelling support system may not be used as a jack!

TECHNICAL DATA

Net weight	Approx. 69 kg, depending on the vehicle version
Ground clearance	Min. 80 mm (in GER) Recommendation: min. 100 mm
Supply voltage	12 VDC, via vehicle battery
One-hand operation	Wired manual operation
Lengthwise gradient	Approx. 1.5° to 2.5° (depending on the wheel base)
Crosswise gradient	Approx. 2° to 4° (depending on the version / gauge)
Levelling	Levelling time approx. 1 min. (automatic mode)
Manual levelling	Supports can be adjusted in pairs
Emergency stop	yes
Emergency actuation	Jack, safety stand, jack-up tool
Hydraulic assembly	Accessory cover available as stone chip protection
TÜV entry in the vehicle registration certificate	not required
Engine rating	0.3 kW per assembly
Engine speed	2500 rpm
Max. operating pressure	250 bar
Set operating pressure	190 bar
Oil volume per assembly	Approx. 0.7 l
Max. stroke per support	280 mm or 360 mm (depending on cylinder type)
Max. perm. gross vehicle weight	6,000 kg
Max. perm. gross support weight	2,000 kg
Perm. temperature range	- 30°C to + 80°C
Automatic system shut-off	after 10 minutes

INSTALLATION

- See separate installation instructions

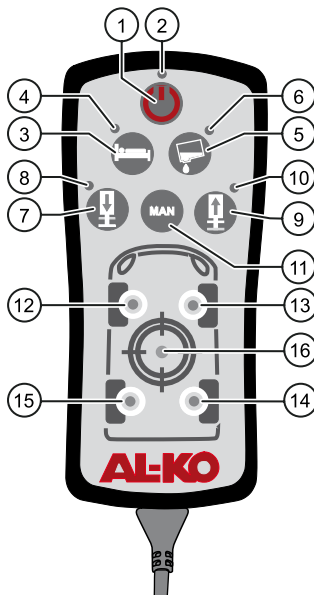


All installation work may only be carried out by expert workshops or AL-KO service centres.

Comply with the safety and warning notices in the installation instructions.

OPERATION

Manual operation overview



1	"ON/OFF" button/ Emergency stop
2	"ON/OFF" control LED (warning, fault, error)
3	"Comfort position" button
4	"Comfort position status" control LED
5	"Tank emptying position" button (without function on HY2)
6	"Tank emptying position" control LED (without function on HY2)
7	"Extend supports" button
8	"Extend supports" control LED
9	"Retract supports" button
10	"Retract supports status" control LED
11	"Select supports for manual movement" ("MAN") button
12	"Front left support" control LED
13	"Front right support" control LED
14	"Rear right support" control LED
15	"Rear left support" control LED
16	"Level" control LED

Switching on the system

WARNING!



Danger of tipping over!

The trailer may not be attached when using the support system.

NOTICE!

Damage due to driving off when supports are still extended!

If the supports are still extended when the ignition is started or the engine is started, a warning signal will sound. The supports can then only be retracted. Turn off the engine or the ignition or retract the supports.

- Check the system for damage before commissioning!
- Before driving, check to ensure that all supports are properly retracted.
- During operation:
 - No persons or animals may be in the vehicle.
 - Make sure that there is sufficient clearance from persons, animals and objects.
- Park the vehicle on ground that is as even as possible.
- Secure vehicle to prevent it from rolling away:
 - Apply handbrake.
 - With manual gearbox: 1st gear or reverse gear.
 - With automatic gearbox: Set selector lever to position "P".
- Turn off the system after the desired action is completed or before you start driving

1. Press the "ON/OFF" (1) button for at least 4 seconds.
 - All control LEDs light up briefly.
 - With manual gearbox: 1st gear or reverse gear.
 - The control LEDs (12-16) light up green.



Switching off the system

1. Press the "ON/OFF" (1) button for at least 4 seconds.
 - All control LEDs go out.



Switch off (cancel) the acoustic warning sound

The acoustic warning sound can be switched off if it is absolutely necessary for the vehicle engine to run when the support is extended.

1. Press the "ON/OFF" (1) button.
 - ✓ The optical warning remains active.
 - ✓ Support function with exception of "Retract" blocked.



Cancelling a running function (emergency stop)

Retraction and extension of the supports can be cancelled at any time.

1. Press the "ON/OFF" button (1) or any other function button (3, 5, 7, 9, 11).



The "ON/OFF" button lights red after any emergency stop/cancelling of any action.

1. Press the "ON/OFF" once to acknowledge this.
- ✓ All functions are available again.
2. Select the desired function again.



Operation with automatic air suspension

NOTICE!

Damage to the vehicle and components!

When operating with air suspension, damage can occur when the air suspension and support system re-adjust simultaneously.

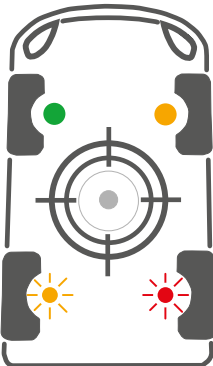
- Before operating the support system, lower the air suspension to the lowest ride height and switch off the air springs.
- Before switching on the air springs, retract the support system.

LED display on the manual operation device

- ON/OFF control LED (2) displays the status:

	green	System active.	
	flashing orange	Fault, see Troubleshooting plan	
	red flashing rapidly	Ignition on	
	red flashing slowly	Fault, see Troubleshooting plan	

■ Support control LEDs (12-15) indicate the status of the supports:

	green	Supports retracted; Supports in secure position	
	orange	System active; Supports not moving; Supports extended and pressurised on the floor; One or more supports at end stop	
	orange flashing rapidly	System active; Support moving	
	orange flashing slowly	System active; supports not moving; support in undefined position;	
	red flashing	Ignition on with extended supports	
	red	Emergency stop has been triggered; output of an error function	

■ "Level" control LED (16) indicates the current level:

	green	Vehicle levelled; desired position reached	
	orange	Vehicle can be levelled; Vehicle levelled; target level not reached because one or more support(s) at the end stop	
	Flashing red	Vehicle cannot be levelled	

NOTICE!

Damage due to driving off when supports are still extended!

- Check to ensure that supports are fully retracted before driving off, even if all supports indicate green on the manual operating device.



If a control LED does not light up, the operating device or the LED is defective.

After each switch-off and on, the system performs a self-test and displays the current operating status. The system position is indicated by means of LEDs (4, 6, 8, 10). The current level is compared to the stored position and represented by the LED (16).

Automatic levelling

The automatic levelling position is a freely programmable position that can be resaved at any time.

- The system is active, control LED (2) lights green.
- Control LED (16) lights orange or green, the system can be levelled.

CAUTION!



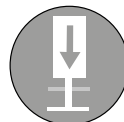
Risk of injury!

To avoid crushing body parts of third parties during levelling:

- ▶ Monitor the danger area, if necessary call on a second person.
- ▶ Keep the operating device in your hand so that the emergency stop can be activated at any time until the levelling process is complete.

Automatic extension

1. Press the "Extend supports" button (7).
- ✓ All supports extend completely.
 - Control LEDs (8, 12-15) flash orange.
 - Control LED (16) lights up orange.
 - ✓ Vehicle aligns itself automatically.
 - Control LEDs (8, 12-15) light up orange.
 - Control LED (16) lights green or orange.



If the "Extend supports" button (7) is pressed again on completion of the levelling process, the system performs a self-test and automatically adjusts the level again if necessary.

This also occurs if the system is switched off and on again in extended state and the "Extend supports" button (7) is then pressed.

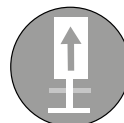


If control LED (16) lights orange, the target level cannot be reached. One or more supports have reached the end stop. The terrain is too uneven.

Pressing the "Extend supports" key again (7) does not lead to any improvement. Check the secure condition of the vehicle, or repeat the process at another parking position.

Automatic retraction

1. Press the "Retract supports" button (9).
- ✓ All supports retract completely.
 - Control LEDs (10, 12-15) flash orange.
 - Control LED (16) lights up orange.
 - ✓ The retraction is over.
 - Control LEDs (12-16) light up green.
 - Control LED (10) lights up orange.



Cancelling automatic extension/retraction (emergency stop)

1. Press the "ON/OFF" button (1) or any other function button (3, 5, 7, 9, 11).



The "ON/OFF" button (2) lights red after any emergency stop/cancelling of any action.

1. Press the "ON/OFF" once to acknowledge this.
- ✓ All functions are available.
2. Select the desired functions again.



Special functions



If the vehicle is in levelled condition and a special function is selected, the control system again retracts a support pair to achieve the desired position more effectively.

A support pair may temporarily lose ground contact in this case.

Special function "Comfort position"

The comfort position is a freely programmable position that can be resaved at any time.

Moving to the comfort position

1. Press the "Comfort position" (3) button.
- ✓ The supports move to the programmed position.
 - Control LEDs (4, 12-15) flash orange.
 - Control LED (16) lights up orange
 - ✓ When the comfort position is reached,
 - the control LEDs (4, 12-15) light up orange continually.
 - control LED (16) lights continually green or orange.



If the "Comfort position" button (3) is pressed again after the levelling process is completed, the system performs a self-test and automatically adjusts the level again if necessary.

This also occurs if the system is switched off and on again in extended state and the "Comfort position" button (3) is then pressed again.

Cancel the "Comfort position" function

1. Press the "ON/OFF" button (1) or any other function button (3, 5, 7, 9, 11).



The "ON/OFF" button (2) lights red after any emergency stop/cancelling of any action.

1. Press the "ON/OFF" once to acknowledge this.
- ✓ All functions are available.
2. Select the desired functions again.



Special "Tank emptying position" function

The tank emptying position is a freely programmable position that can be re-saved at any time.

Reaching the tank emptying position

1. Press the "Tank emptying position" button (5).
- ✓ The supports move to the programmed position.
 - The control LEDs (6, 12-15) flash orange.
 - Control LED (16) lights up orange.
- ✓ If the tank emptying position has been reached,
 - the control LEDs (6, 12-15) light up continually orange.
 - control LED (16) lights continually green or orange.



If the "tank emptying position" button (5) is pressed again on completion of the levelling process, the system performs a self-test and automatically adjusts the level again if necessary.

This also occurs if the system is switched off and on again in extended state and the "tank emptying position" button (3) is then pressed again.

Cancelling the "Tank emptying position" function

1. Press the "ON/OFF" button (1) or any other function button (3, 5, 7, 9, 11).



The "ON/OFF" button (2) lights red after any emergency stop/cancelling of any action.

1. Press the "ON/OFF" once to acknowledge this.
- ✓ All functions are available.
2. Select the desired functions again.



Manual operation

"Manual operation" is used to select a support pair for extension or retraction. This is required to reach the freely programmable positions.

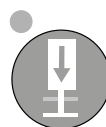
Extending/retracting support pair

1. Keep pressing the "MAN" button (11) until the control LEDs of the desired support pair light green.
 - 1x press: Front support pair selected
 - 2x press: Right support pair selected
 - 3x press: Rear support pair selected
 - 4x press: Left support pair selected



In manual operation, the control LED (16) does not light.

2. Keep pressing the "Extend supports" button (7) and the "Retract supports" button (9) until the desired position is reached.



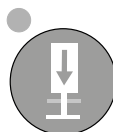
System calibration



All four supports must make contact with the ground to enable proper system calibration.

Saving the automatic levelling position

1. Reach the desired position, see *"Manual operation"*.
 2. Press and hold the "MAN" button (11).
 3. At the same time, press the "Extend supports" button (7) and hold for approx. 5 seconds until a beep sounds.
- ✓ The control LED (8) flashes quickly for 5 seconds, the position is saved.



Save comfort position

1. Reach the desired position, see *"Manual operation"*.
 2. Press and hold the "MAN" button (11).
 3. At the same time, press the "Comfort position" button (3) and hold for approx. 5 seconds until a beep sounds.
- ✓ The control LED (4) flashes quickly for 5 seconds, the position is saved.



Saving the tank emptying position

1. Reach the desired position, see *"Manual operation"*.
 2. Press and hold the "MAN" button (11).
 3. At the same time, press the "Tank emptying position" button (5) and hold for approx. 5 seconds until a beep sounds.
- ✓ The control LED (6) flashes quickly for 5 seconds, the position is saved.



Exiting manual operation

1. Press the "MAN" (11) button for at least 4 seconds.
- ✓ The control LEDs (12, 13, 16) to (14-16) light up again and indicate the current status.



Emergency actuation

Emergency actuation should be used in case of:

- Control system failure
- Hydraulics failure
- Interruption of the power supply to one or more assemblies

Tools:

- Jack
- Jack stand
- Wood blocks
- Allen key sizes 10 and 13
- Rubber mats (only required for hall floors)
- Allen key size 6

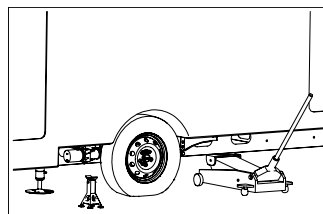
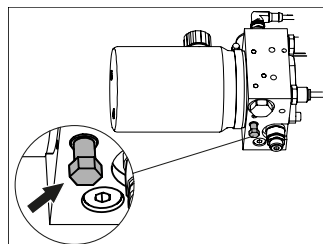
Lifting the support

1. Retract the supports that are not affected.
2. Remove 150 A main fuse.
3. Lift the vehicle using the jack and also secure with the jack stand.



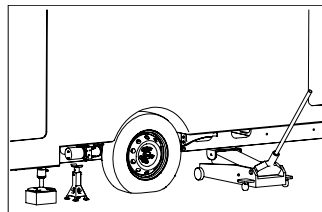
If one of the rear steady legs fails, dismantle the cover panel.

4. Loosen the emergency lowering screw 2.5 turns using the Allen key.
 5. Gently lift the jack.
- ✓ The jack stand is relieved.
6. Pull out the jack stand.
 7. Lower the jack slowly.
- ✓ The support retracts automatically due to the weight of the vehicle.
8. Lift the vehicle using the jack and secure with the jack stand ..



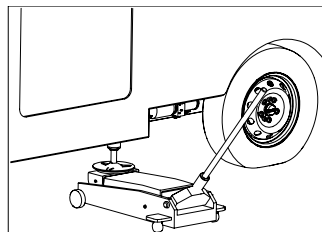
Inserting the support

1. Support the support using the wooden blocks.
2. Gently lift the jack.
- ✓ The jack stand is relieved.
3. Pull out the jack stand.
4. Lower the jack slowly.
- ✓ The support retracts to the maximum state.
5. Lift the vehicle with the jack.
6. Remove the wooden blocks.
7. Lower the jack.
- ✓ The vehicle now stands on all tyres.
- ✓ The support is only extended slightly.



Fully inserting the support

1. Place the jack under the support.
2. Lift the jack slowly.
3. Push the support up to the stop.
4. Tighten the emergency lowering screw by hand.
5. Check whether all supports are retracted.



NOTICE!

Immediately go to a specialist workshop.

Do not restart the system until the specialist workshop has rectified the fault!

TROUBLESHOOTING

- Perform a reset.

Reset

1. Press and hold the "ON/OFF" button (1) for 4 seconds.
2. Release the "ON/OFF" (1) button.
3. Press and hold the "ON/OFF" button (1) for 4 seconds.

- When malfunctions occur, please visit the nearest AL-KO-authorized specialist workshop.
- Information regarding authorized workshops as well as any required spare parts can be obtained from AL-KO Customer Service. We are there for you.
- All errors can be handled during a workshop visit.

The control of the HY4 system has an integrated error analysis tool. The error is output automatically, by means of a flashing code, continually in cycles:

Fault code - Pause - Fault code - Pause

The output of an error type is carried out via the "ON/OFF" control LED (2).

The LED of the affected support flashes.



Display (LED 2)		Status	Explanation
Orange		Warning	Continued operation is possible; Perform a reset
Red		Fault	Cat. 1: Support can only be retracted. ■ Retract and go to a specialist workshop. Cat. 2: Support can no longer be retracted. ■ Insert supports (see " <u>Emergency actuation</u> ") and go to a specialist workshop.

Troubleshooting plan



The following flash codes are signalled by the "ON/OFF" control LED (2) button.

Flash code		Fault	Possible cause	Solution
2x		Control electronics undervoltage	Battery too weak	Charge the battery.
3x		Motor control undervoltage	Battery too weak Loose battery connection Fuse missing/defective Fuse too small	Charge the battery. Check the motor cable connection. Check the fuse and replace if necessary.
4x		Timeout autom. levelling Autom. levelling failed	Ground not suitable	Retract supports. Change the parking position. Try again.
5x		Left/right control electronics temperature warning	External heat exposure	Check the vehicle for external heat exposure. Allow the vehicle to cool down.
2x		Control electronics undervoltage Motor control undervoltage	Battery too weak Loose battery connection	Charge the battery. Check the motor cable connection.
3x		No load at the output driver	Cable break or short-circuit	Go to a specialist workshop.
4x		Motor driver overcurrent Motor cannot be activated	External heat exposure Oil too cold Motor temperature too high IC defective Fuse too large	Check the motor temperature: ■ If extremely cold, reset the system and retry until the oil temperature rises. ■ If the motor temperature is too high, do not use, reset the system and allow the system to cool down. ■ Check the fuse and replace if necessary. If the error occurs again, go to a specialist workshop.
5x		Control electronics overvoltage Motor control overvoltage Total current exceeded at the main drive	Voltage influence via external sources External heat exposure	Check for external sources and remove, if necessary. Reset the system. Check the vehicle for external heat exposure. Allow the vehicle to cool down. If the error occurs again, go to a specialist workshop.

Flash code		Fault	Possible cause	Solution
6x		Left/right control electronics overheating Faulty sensor value Control electronics overvoltage Motor control overvoltage	Voltage influence via external sources External heat exposure Vehicle at an extreme inclined angle	Check for external sources and remove, if necessary. Reset the system. Check the vehicle for external heat exposure. Allow the vehicle to cool down. Change the parking position. If the error occurs again, go to a specialist workshop.

Extreme minus temperatures

At extreme minus temperatures, an error message of the supports may occur.

In order to prevent any repeat error message:

1. Cancel error.
2. Retract and extend the supports several times manually.

If the system cannot be switched on at all:

1. Check the fuses.

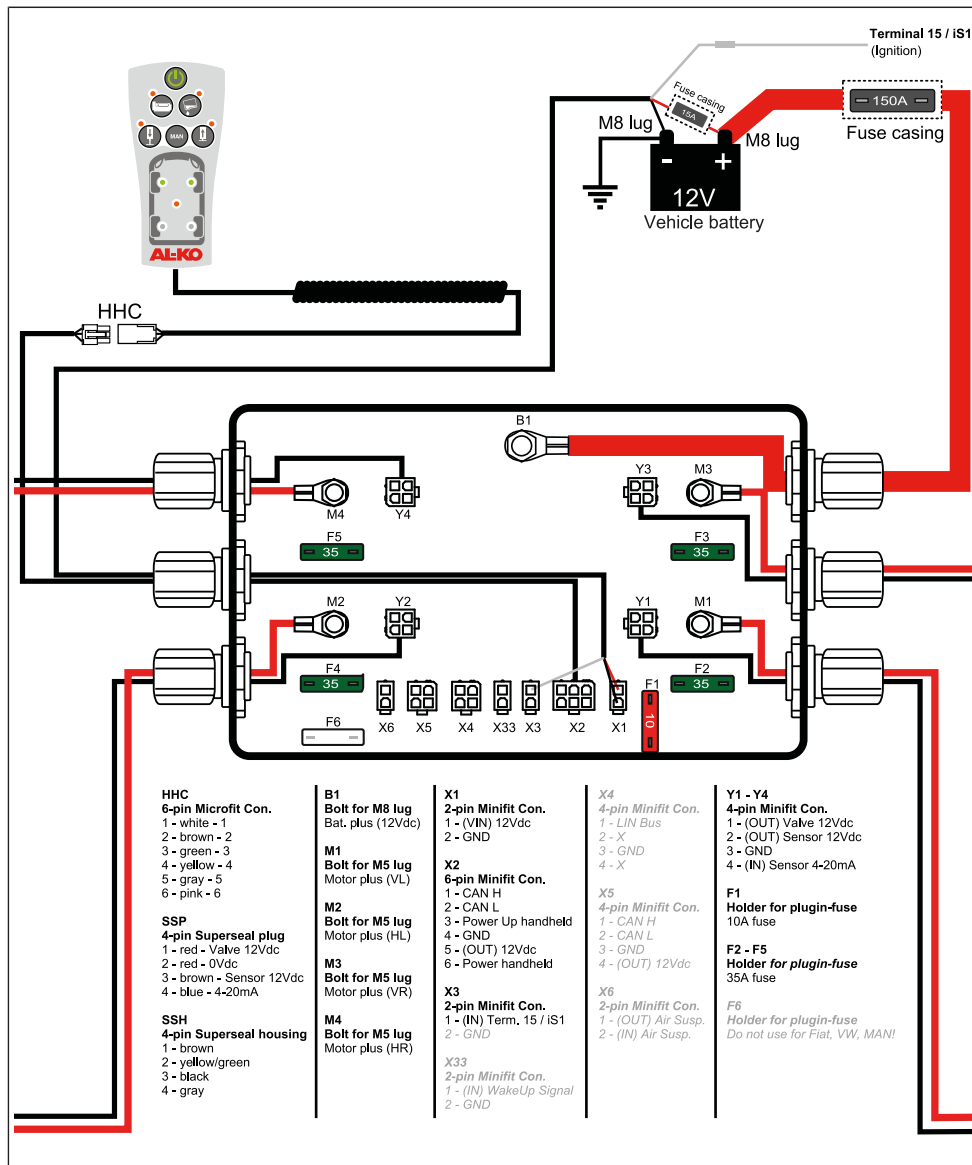
Position of the fuses

The main fuse of the overall system is located in the area of the starter battery.

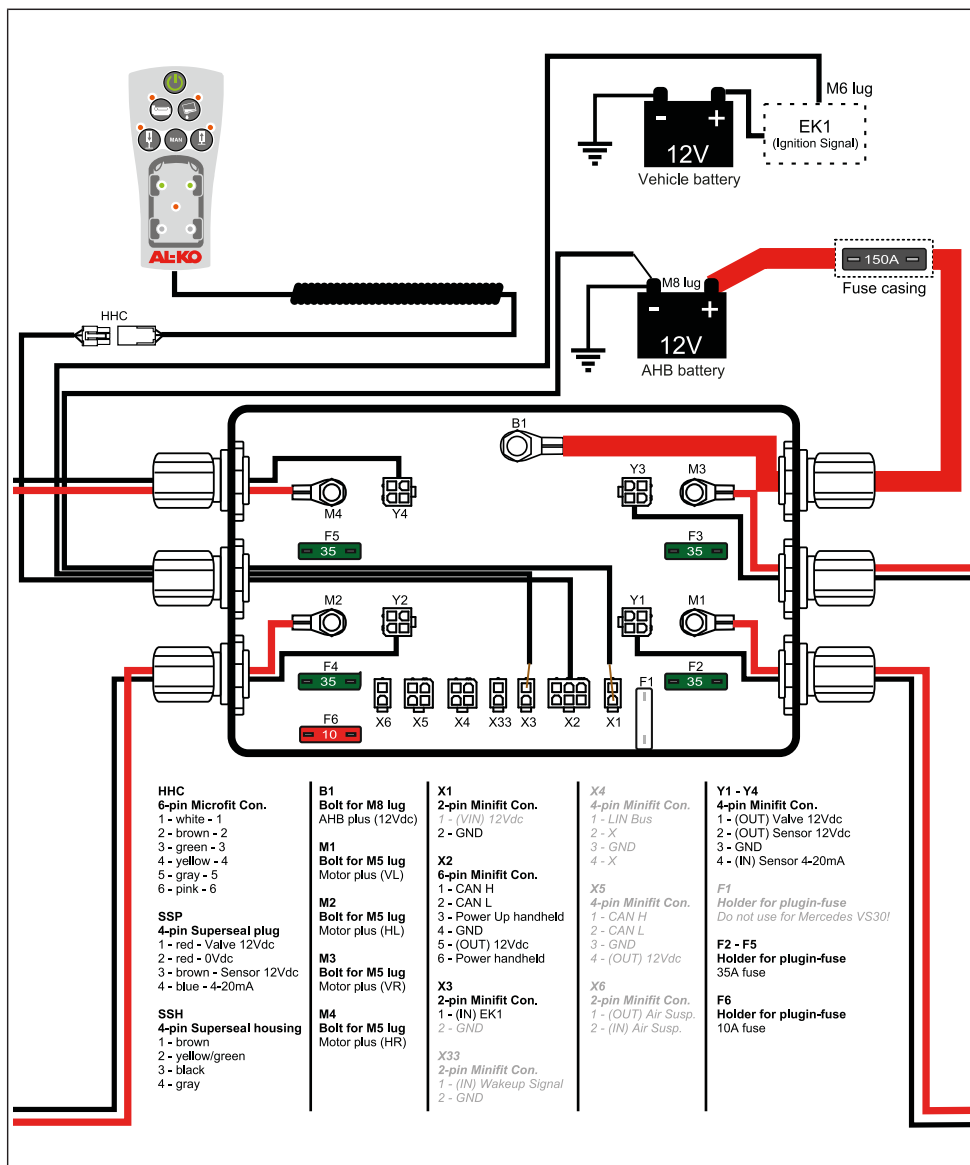
The fuses of the 4 hydraulic units are located in the control unit.

The control unit is usually located on the vehicle chassis. The exact position can vary depending on the vehicle type and installation conditions.

FIAT circuit diagram



Mercedes Benz circuit diagram



MAINTENANCE AND SERVICING

The levelling support system is maintenance-free.

Regular visual and function checks as well as cleaning help to counteract natural wear.

The following parts should be checked for cleanliness, wear, corrosion, oil leakage, damage and secure fitting:

- Cylinder working surfaces and seals
- Connection components
- Assemblies and hose fittings
- Supports and support plates
- Screws, hoses and cables
- Tank bleeder
- Unit covers

NOTICE!

The levelling support system should not be exposed to a direct water jet, e.g. high-pressure cleaner.

Permitted cleaning agents

- Soapy water
- Commercially available tenside cleaning agent

SERVICE

Repair



Repair and maintenance work may only be carried out by AL-KO service centres or authorised specialist workshops.

- A region-wide network of AL-KO service centres is available to our customers for repairs.
- A list of AL-KO service centres is available directly from us at:
www.alko-tech.com

Spare parts are safety parts!

- For the use of spare parts in our products, we recommend the use of original AL-KO parts, or parts that we have expressly approved for installation.
- For the clear identification of spare parts, our service centres require the spare part identification number (ETI).

EC DECLARATION OF CONFORMITY

We hereby declare that this product, in the version placed on the market by us, complies with the requirements of the harmonised EU Directives, EU safety standards and the product-specific standards.

Product

AL-KO hydraulic levelling support system

Type

HY4

Serial number

F360688002

Manufacturer

ALOIS KOBER GmbH
Ichenhauser Str. 14
89359 Kötzt, Germany

Harmonised standards

DIN 12100
EN 50498
ISO 11452-2
ISO 7637-2

Duly authorised person

ALOIS KOBER GmbH
Tech. Head of Development
Standardisation / Data management
Ichenhauser Str. 14
89359 Kötzt, Germany

26.06.2019 Kötzt, Germany



Dr Frank Sager
Senior Vice President
EU development
R&D Vehicle Technology

OVERVIEW OF YOUR MAINTENANCE AND INSPECTION SERVICES

Your dealer should fill out this list after each inspection.

Handover inspection

Date / Dealer stamp

After 2 years

Date / Dealer stamp

After 4 years

Date / Dealer stamp

After 6 years

Date / Dealer stamp

After 8 years

Date / Dealer stamp

After 10 years (possibly an oil change)

Date / Dealer stamp

After 12 years

Date / Dealer stamp

After 14 years

Date / Dealer stamp

Member of **DEXKO**
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