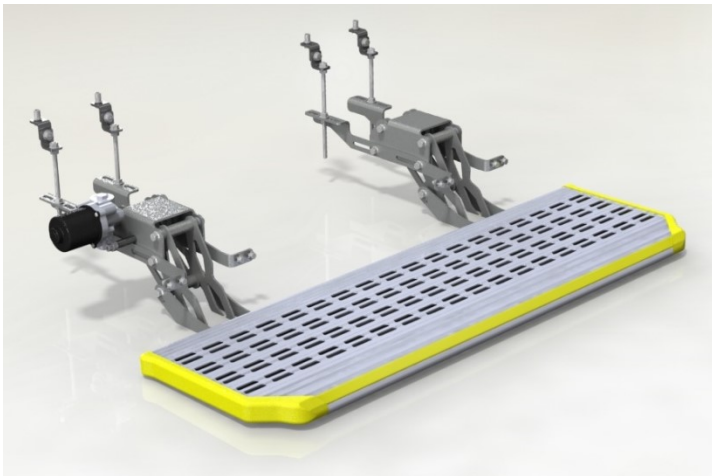


Condensed Manual



ACDEOS BV
Touwbaan 1A
2352 CZ Leiderdorp
Netherlands
WWW.ACDEOS.COM

Date: Jan 2022
ver. 3

1 Technical specifications

Product description	Electrically operated step for mounting externally under the vehicle floor
Installation	Externally under the vehicle floor below the front, middle or rear door
Dimensions	Step depth 310 mm, Step width 1000 or 1200 mm depending on model Please refer to the installation drawings for detailed dimensions
Weight	16-18 Kg depending on the model
Load	Maximum load 250 Kg (2500 N).
Materials	Frame; steel plate work, High temp zinc corrosion protected Step: Aluminum profile and ABS corner covers
Life cycle	Tested life cycle of the step is 250.000 cycles
Electrical connection	Waterproof 4 pin connector (IP65)
Drive	Electric motor 12V 100W
Electric signals	Electric signals are available via dashboard light: Step moving / open
Safety functions	Motor switched off by ECU control.
Cycle time	Time required for opening or closing the step is approx 1,5 Sec
Legislation	The product fulfils R107 UN Bus directive and 98/37 EC Machine directive. R13 anti-slip according DIN 51130

2 Safety instructions

These Safety instructions should always be kept with the step. The operator must be made aware of these instructions before operating the Step. Read and follow these safety instructions carefully.

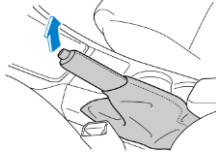
The step is intended to be an extra step to enter a vehicle. It should be used appropriately by passengers to enter or exit a minibus, taxi camper or other vehicle, and the maximum load should not be exceeded.

- 1. Before operating the step the vehicle must be stationary and the hand brake or parking brake must be applied.**
- 2. Before operating the step, ensure that there is nothing obstructing it. Look out for people moving outside the vehicle near the step.**
- 3. It is recommended that the step is only operated by the driver or other qualified operators.**
- 4. The driver or operator must have a clear view of the step when they are operating it.**
- 5. It is recommended that the middle of the platform is used when stepping onto the step.**
- 6. NEVER drive away when the RED dashboard LED light is still on, this means that the step is not properly stowed.**
- 7. The step platform must be kept clean and free of oil and other greasy materials.**
- 8. If there is any doubt about the safety of a passenger when using the step, ensure they are assisted.**
- 9. If you have any questions about the safe operation of the step, contact the person responsible directly.**
- 10. Never use the step for any other use than described here.**
- 11. Never overload the step.**
- 12. The step should always be operated until it is fully in or out.**
- 13. Repair and maintenance must be done by qualified and trained staff only.**
- 14. If any parts need replacing, ensure only original Acdeos Parts are used.**
- 15. If the anti slip profile on the step becomes worn, the step platform must be replaced.**
- 16. Always use the recommended cleaning materials.**
- 17. Report any unsafe aspects of the step to the step supplier.**

3 Operation

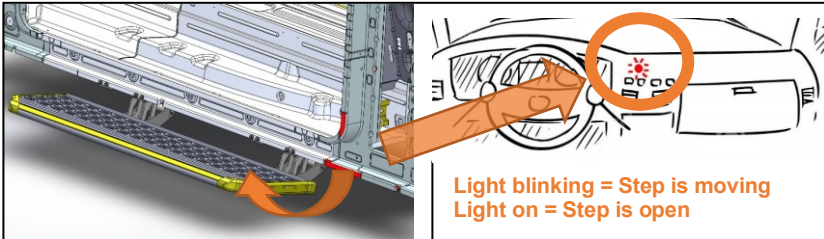
3.1 Deploy Operation procedure

The vehicle should have the parking brake on before the step can be safely operated.



- The electronics receive a signal from the door switch or the driver switch.
- If a door switch is installed the step will move out automatically once the door is opened.
- Time needed for, either full deploy or stow cycle, is approximately 1,5 seconds.
- When the step is moving, the red LED on the dashboard will flash until the step is completely out.

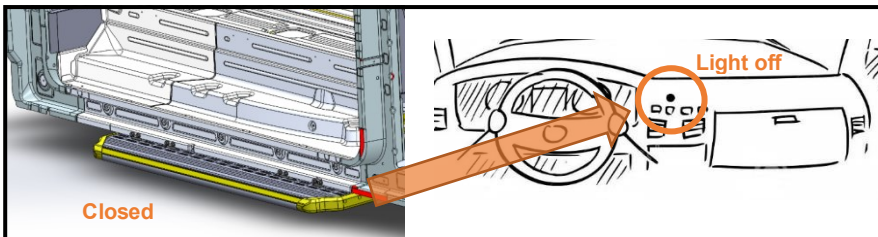
When the step encounters an obstacle it automatically stops and moves back in. The dashboard LED and buzzer change from slow blinking mode in fast blinking mode indicating step is not out



3.2 Stow operation procedure

To stow the step the door should be closed or the driver has to give a signal that the step should stow. The same rules apply as for moving out.

When the step is closed, the Red LED light at the dashboard will go off. It is safe to drive away when the red LED is off.



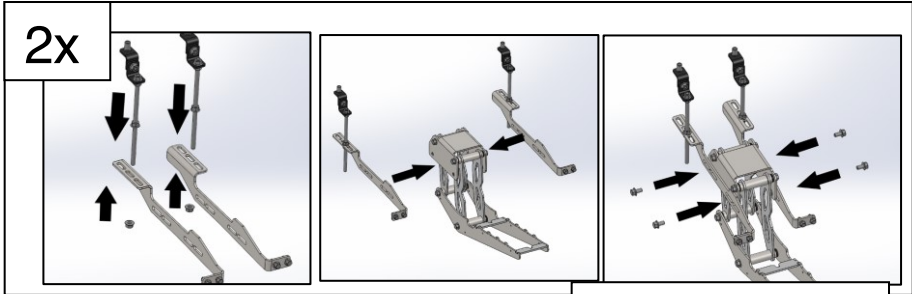
When the step encounters an obstacle it automatically stops and moves back out. Than it tries to close again. It tries this 3 times. After 3 times it stops in outer position. The dashboard LED and buzzer change from slow blinking mode in fast blinking mode indicating step is not closed



4 Installation

The installation must only be done by a company that is familiar with bodybuilding or modifying vehicles, and that have the trained technical staff.

4.1 Mechanical Installation



Note: It is needed to open and close the step during the installation, therefore you should either first install the electrical system as described under 7.2 or you can open and close the step by putting direct 12V power on the 2 pin AMP super seal connector coming from the motor orange and yellow cables as shown below. Reverse polarity for reversing the direction of rotation. See also: schedule at section 10.

If you decide to hotwire the electric motor to open or close the step: make sure you disconnect it immediately after the step reaches the most inward or outward position.

The burning of the electric motor due to hotwiring doesn't fall under warranty!



Step 1: Create a safe working environment. Raise the vehicle to an convenient working height.



Make sure that the step is not too close to hot parts such as the exhaust system. This can damage the step. Recommended min distance = 5 cm

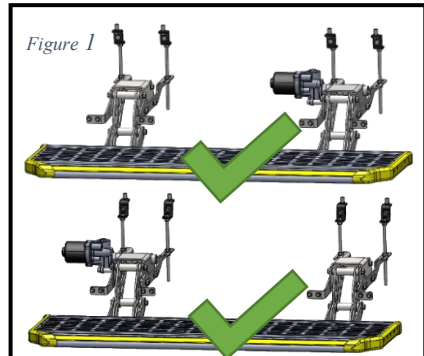


Fig 1 shows the basic principles for affixing the step. Note that the motor swing assembly can be placed in the front or in the rear (Fig 2). This has no influence at the function of the step.

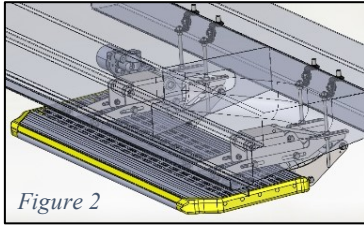
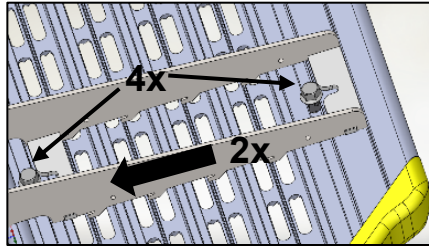


Figure 2

Step 2: Identify the location underneath the vehicle where the step will be positioned. Ensure the step can be installed in the required position without being obstructed by the chassis or other vehicle parts. Use tape on the lower edge of the frame to indicate where the door is to know where to place the step when working under the car.

Size 13 

Figure 3



Step 3: Assemble the step by attaching the two swing assemblies to the platform. (Fig 3) Slide the platform in the hooks and fix the M8 bolts.

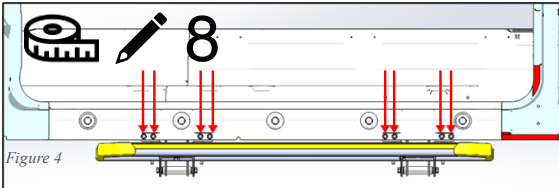


Figure 4

Step 4: Mark the location for the 8 front fastening bolts. (Fig 6) The holes for this attachment should be located on the lower flange of the outer chassis bar of the vehicle.

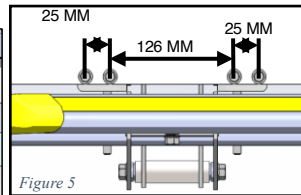


Figure 5

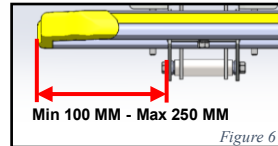


Figure 6

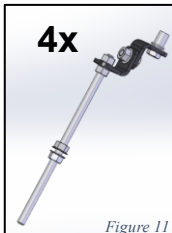


Figure 11

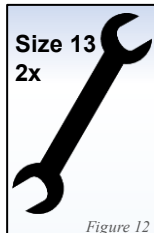


Figure 12

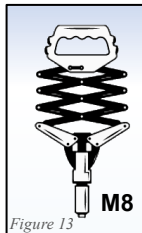


Figure 13

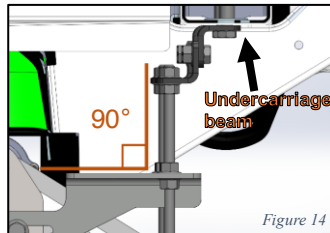


Figure 14

Step 7: Take the 4 flexible mounting brackets supplied with the step (Fig. 11-14). These brackets can be attached in several ways.

- The brackets should be used to fix the rear side of the step to the bottom of the vehicle. It is recommended that a sturdy section of the vehicle floor / chassis is used.
- Install the brackets so that they bridge the gap between step and vehicle floor / chassis.
- The M8 studs should be placed as vertical as possible. This fixing requires some technical knowledge and own interpretation.
- Always try to go as vertically as possible straight up from the fixing point on the rear of the step to the fixing points on the vehicles floor

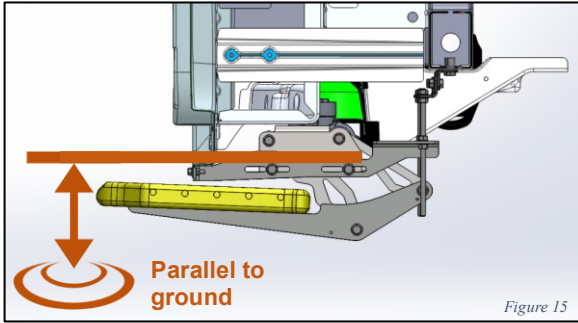


Figure 15

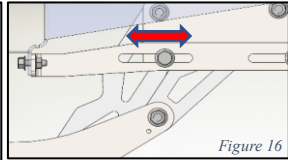


Figure 16

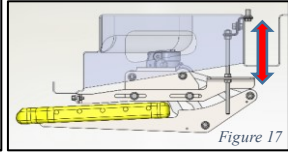
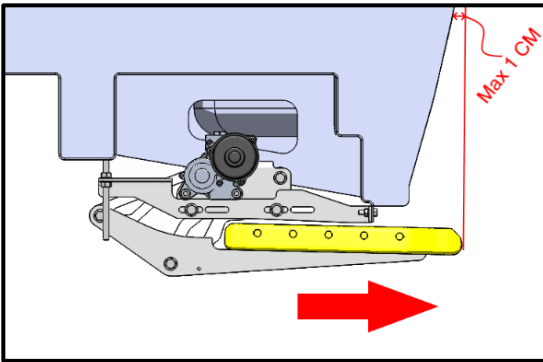
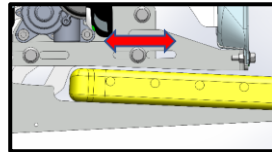


Figure 17

Step 8: Adjust the step so that it is horizontal under the vehicle (Fig. 15 – 17).



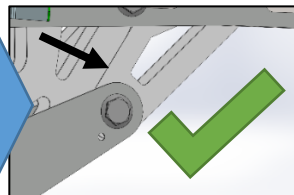
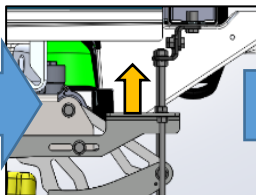
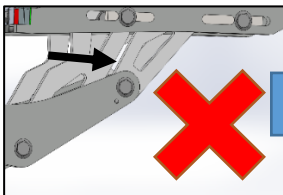
Step 9: adjust the step in the inward position forwards or backwards so that it sticks out as far as possible **not exceeding 1 cm outward** of the footprint of the vehicle.



Step 10: Electrically install the step (See section 7.2)

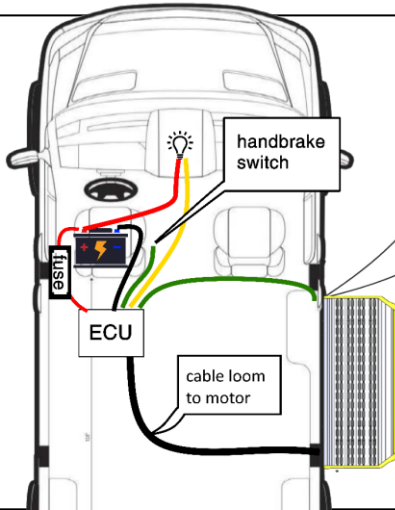
Step 11: Electrically open the step and check if both swing arms lock in final position. If one swing arm shows a gap you need to adjust the height at the rear.

Step 12: Tighten all bolts and nuts to complete the installation of the step.



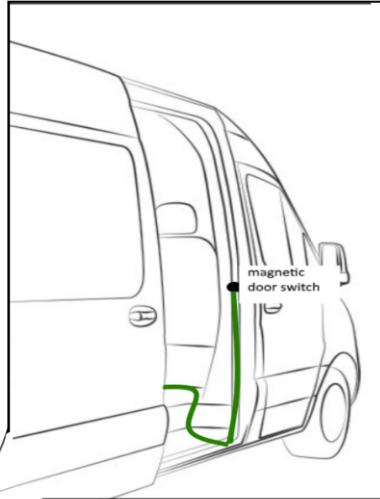
4.2 Electrical Installation

Find a good route for the cable to the front of the vehicle or to the area where it will be connected to the vehicles electrical system. The principal idea for the routing of the cable loom is as follows: cables should run under the vehicle up to a place where it can enter the vehicle. The ecu and connector should preferably be placed in a protected and dry location, this is usually near the car battery or under the dashboard. The cable to the door switch should run directly to the door pillar where the door switch is mounted



Cable colours:

Black: Ground
 Red: Power (Use a 20 Amp fuse)
 Green: Switching signal for operating the step
 Yellow: LED signal



Please refer to the electrical diagrams in the rear of the manual appendix I.

There are two possible operations of the step.

1 - Door switch: The step moves out automatically when the door opens

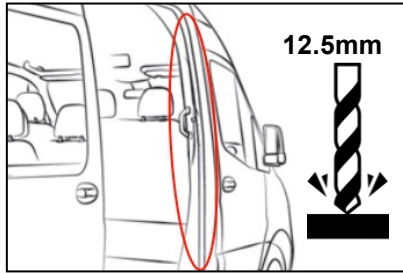
2 - Driver operated switch on the dashboard which the driver operates the step with. In this case, it is still recommended that the door switch is installed. Without the door switch the driver could forget to close the step when the door is closed, and drive away with an open step.

Connect the green wire at the handbrake switch or other signal indicating that the vehicle is stationary. The handbrake switch is not supplied with the step. For safety reasons we recommend this signal is used.

If you decide not to use this signal Acdeos cannot take any responsibility for any unsafe operation of the step.

Mechanical Installation of door switch:

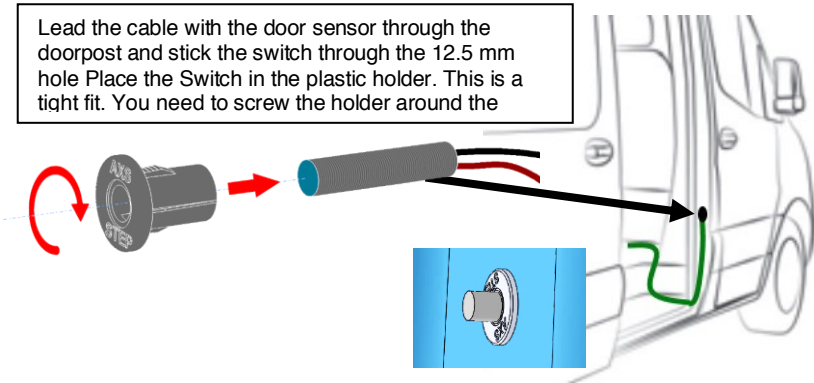
1. Find the right place on the door to install the door switch, preferably around the area in the doorpost where you find the original door switch.
Make sure there is minimum around **10-12 mm free space between the door and the door post when the door is closed** at the place of installation.



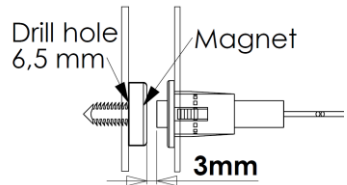
2. Drill a hole of 12.5 mm at the selected place.

3.

Lead the cable with the door sensor through the doorpost and stick the switch through the 12.5 mm hole. Place the Switch in the plastic holder. This is a tight fit. You need to screw the holder around the



4. Close the door. Measure the gap between the door and the door post. Adjust the switch so, when installed, there is **8.5 mm of space between the switch and the door** or 3 mm between switch and magnet.
5. Push the switch + plastic holder in the drilled hole and fix / seal with a bit of PU glue.
6. Place the magnet on the opposite position on the door. Drill a hole of 6,5 mm and push in the black magnet holder with magnet.

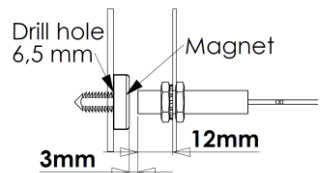


Check that magnet does not touch the switch when door is closed with high speed and force (slammed)

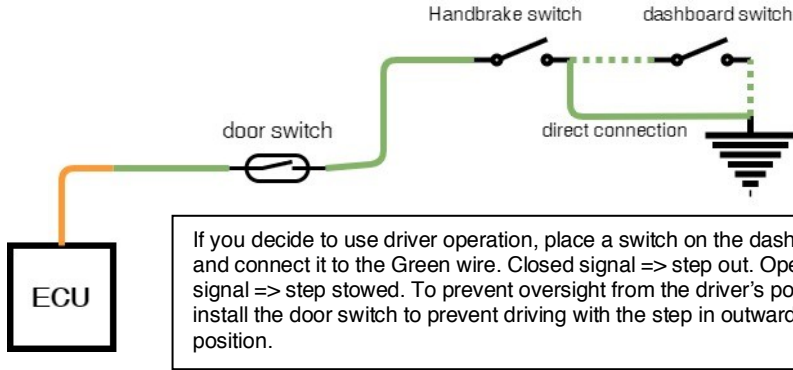


We recommend using the plastic holder but you can choose to fix with the nuts

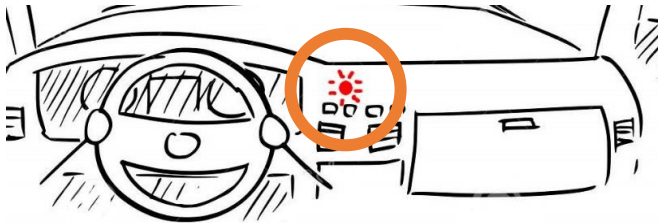
7. When installing the switch using the nuts, the switch must stick out at least 12 mm because of the need for magnetic flow around the switch.
8. When installing the switch using the nuts, the switch should stick out at least 12 mm because of the need for magnetic flow around the switch.



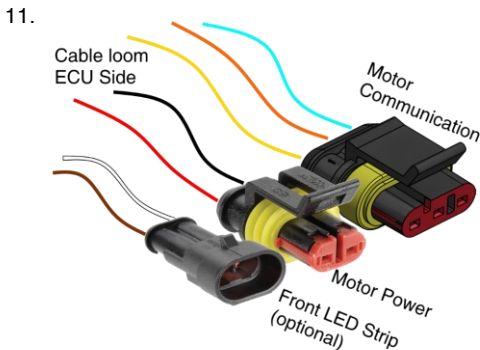
The distance between the end of the switch and the door should still be 8.5 mm. **IMPORTANT: Max torque to fit the switch is 5 Nm (This is light hand tight)** If you use higher torque, the switch will break / crack, which will lead to unreliable door signals.



- Place the red LED in the dashboard in the direct view of the driver. Connect the red wire coming from the LED to the 12 V power. The LED should light up red when the step is in outward and flashes when the step is moving in or out.



- Connect the black wire to ground. Connect the red wire to 12V power. **You have to add a fuse of 20 Amp** between the battery and the power cable. Decide whether to connect the step to constant power or to power behind the main switch. We recommend placing the step behind the main switch. The step ECU has a sleep mode using less than 1 mAmp in standby mode.



Connect the cable loom to the step with the connectors.

4.3 Using the Step:

You should test the step after installation. Follow these instructions:

1. **MOUNTING** – Check that all the mounting bolts are in place and tightened.
2. **MOUNTING** – Bring the step out and have 2 people (Max 250kgs) step on it. Check whether the mounting of the step is strong enough for this weight. The construction of the step means that with a weight of 250 Kg the step will give slightly - this is normal !!
3. **ELECTRICAL INSTALLATION** – Move the step in and out electrically.
Check for unusual noises or uneven movement whilst the step is moving.
Check that the step stops automatically at the end of the stroke.
Check that the red LED on the dashboard turns red when the step is out.
Check that the buzzer works while the step is moving in or out. (If not disconnected)
4. **SAFETY FUNCTION** – Move the step out and try to stop it with your hand. The step should stop. It should go back in after closing the door.
5. **INTERLOCK VEHICLE** –Release the vehicle handbrake, then try to operate the step. It should not be possible to operate it. (unless the handbrake interlock is not installed)

If this small test procedure is successful, the step is ready to be used. If one of the tests fails the problem should be resolved before putting the step in to use.

5 Periodic maintenance / Inspection

5.1 Cleaning

To prevent severe damage to the step, the step must be cleaned thoroughly in the normal cleaning schedule of the vehicle, depending on the use of the vehicle and the filthiness of the operation. Therefore, especially in wintery situations when salt is being sprinkled on the road, it should be cleaned more regularly. Normal non-aggressive cleaning materials, as used for cleaning the other parts of the vehicle, should be used.

It is not recommended to use high-pressure water cleaners.

Do not use aggressive solvents; these could affect the paint, rubber and glue used on the step.

5.2 Periodic maintenance / Inspection

5.2.1 Small maintenance

This product is very low maintenance. This means that it is not necessary to grease any of the moving parts on a monthly basis, apart from the yearly maintenance.

5.2.2 Regular inspection

Following the vehicle inspection schedule, check following points:

1. **MOUNTING** – Check that all the mounting bolts are in place and tightened.
2. **MOUNTING** – Bring the step out and have 2 people (Max 250kgs) step on it. Check whether the mounting of the step is strong enough for this weight. The construction of the step means that with a weight of 250 Kg the step will give slightly - this is normal !!
3. **ELECTRICAL INSTALLATION** – Move the step in and out electrically.
Check for unusual noises or uneven movement whilst the step is moving.
Check that the step stops automatically at the end of the stroke.
Check that the red LED on the dashboard turns red when the step is out.
Check that the buzzer works while the step is moving in or out.
4. **SAFETY FUNCTION** – Move the step out and try to stop it with your hand. The step should stop. It should go back in after closing the door.
5. **INTERLOCK VEHICLE** –Release the vehicle handbrake, then try to operate the step. It should not be possible to operate it. (unless the handbrake interlock is not installed)

5.2.3 Yearly maintenance / normal maintenance

A thorough maintenance check should be done once every year or at least every 10.000 cycles.

We recommend reduce the maintenance period to 6 months when the step is used in hard conditions with much snow / ice / mud / gravel etc,

Normal maintenance:

- Bring the step in the out position.
- Check all moving, arms / bearings for excessive play.
- Check the seals at the turning points being intact.
- Check wires and electrical connections for possible failures.
- Clean all parts
- In Principle the PTFE bearings are maintenance free. If there is some moving noise Grease moving parts with MOTIP White PTFE grease.

We strongly recommend MOTIP White PTFE grease part nr 090204 for all parts in the step, **do not** use WD40 or silicon sprays
Other similar PTFE grease sprays can also be used.

This spray is also available at Acdeos under part number S150 310

<https://www.motip.com/products/motip/industry/professional-technical-solutions/white-grease/>



6 Certification

Product	Product description VERSA SL Swing Side Step
Type	VERSA SL 1000 VERSA SL 1200
Company	Production under responsibility of Acdeos BV
Address	Touwbaan 1A
City	2352 CZ Leiderdorp
Country	Netherlands
Website	WWW.ACDEOS.COM
Legal represented by	Mr. A de Moes

Conformity

Product is designed, tested and produced conform:
The loading recommendations in the Machine directive 98/37/EG
step is tested for a maximum weight of 250 Kg

On behalf of producer:

Name / Function

A de Moes / Engineering

Date

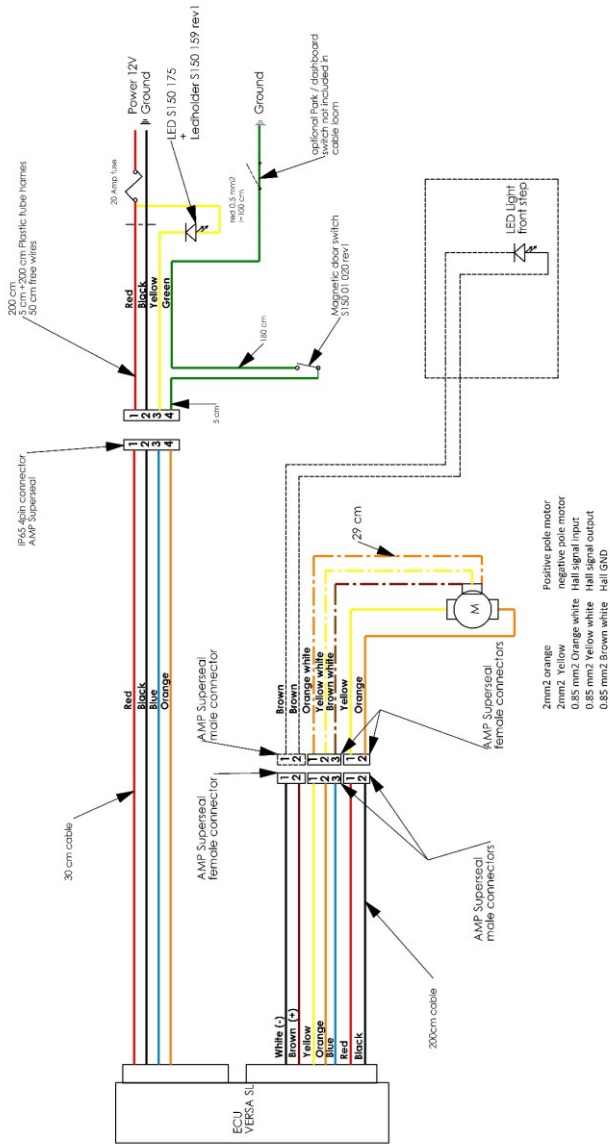
17 April 2019

Place

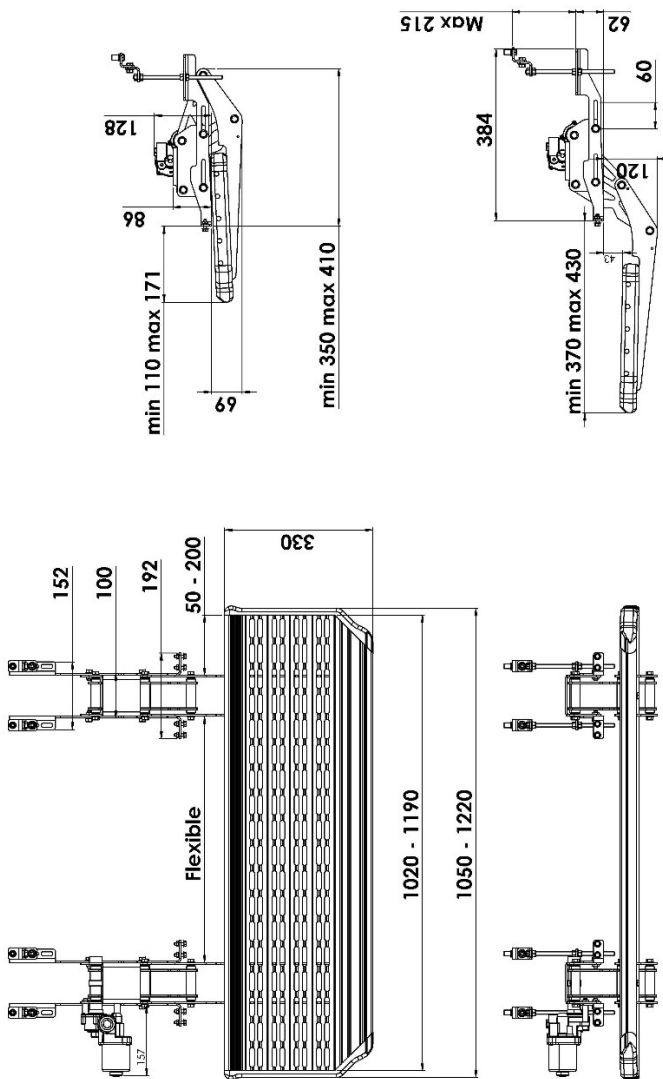
Leiderdorp, Netherlands



7 Appendix 1; electric schedule



8 Appendix 2; Installation drawings: AXS SWSS 1000 / 1200



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