

DAHL DOCKING STATION MK II

MAINTENANCE MANUAL

Installation and User Guide



ENG

503744 · 03.2023

DAHL
ENGINEERING



For wheelchair and user facing forward in the vehicle

IMPORTANT:

Please read these instructions in full before commencing installation. Users must also read the instructions in full before using the product. These instructions must be submitted to the user on delivery of the docking station and should be kept at an easily accessible location in the vehicle.

The securing system for the wheelchair and safety belts for the user may be designated with the abbreviation WTORS (Wheelchair Tiedown & Occupant Restraint Systems) in these instructions.

Table of contents:

Warnings	3
Declaration of Conformity	4
Product Overview	5
Documentation at handover	6
Maintenance interval	7-14
User guide	15-16
Installation of the Docking Station	17-19
Electrical connection	20-22
Tightening torque	23
Accessories	24-27
Safety Belts	28-33
Spare parts	34-35

Warnings

1. In the event that the instructions and warnings in this guide are not followed, there is a risk of death or serious injury to the wheelchair user and the other passengers in the vehicle.
2. Please contact the wheelchair manufacturer regarding approved equipment and ground clearance to ensure compatibility with our Dahl Docking Systems.
3. Installation must be carried out by an experienced technician/fitter.
4. The docking station must be serviced and parts replaced with original Dahl parts according to the instructions of the service manual. Failure to comply with the instructions of the service manual may render the product partially or completely inoperative or cause damage to the product, which can result in serious or lethal injury to the user and/or other passengers of the vehicle in the event of fatal injury.
5. Never begin driving the vehicle whilst a wheelchair is being docked in the docking station or if the user's safety belt is not secured.
6. Never begin driving the vehicle if the warning tone sounds and/or the red warning lamp (LED) in the control panel flashes or lights up.
7. WTORS may only be used for forward-facing wheelchairs.
8. Contact Dahl Engineering or your dealer immediately if there is any doubt concerning the use of the product or if the product has faults or non-conformities.
9. Users in wheelchairs should never be transported in the vehicle if certified WTORS are not used.
10. The user should not be a passenger or driver of the vehicle if both lap belts and shoulder belts are not used. This is to reduce the risk of the user's head or chest hitting interior vehicle elements and other passengers.
11. The docking system, seat belts and components shall be subjected to a check and maintenance inspection at least once a year in accordance with maintenance interval and documentation.
12. The user should never try to repair, adjust or modify the WTORS components. Alterations or modifications to the system are strongly discouraged. Any alterations carried out without prior agreement with Dahl Engineering are entirely the responsibility of the fitter and/or the user.
13. It is forbidden to combine Dahl WTORS components with those of other manufacturers. Some belt fittings/components will be very obviously incompatible, while others may appear to engage correctly, but might not withstand crash loadings or perform satisfactorily.
14. Do not attach components to weak/non-solid components or materials.
15. The fitter is responsible for ensuring that the installed unit satisfies all statutory requirements. Contact local/national authorities if there is any doubt in this regard.
16. Incorrect installation of safety belts and the docking station can cause malfunctions which can result in death or serious injury to the user.
17. Belt webbing must be protected against contact with sharp edges and corners, contact with solvents, polishing agents, oil and caustic/corrosive fluids or materials (in particular battery acid). Damaged, worn, torn or contaminated belt webbing and components must be replaced. This should be checked daily.
18. An airbag should be deactivated if the user is situated less than 300 mm from the airbag, or as recommended by the vehicle manufacturer. An airbag should also be deactivated if retrofitted parts block or have an effect on its inflation/expansion. If it is necessary to deactivate or remove the airbag, it is imperative, before fitting the docking system, to check if the vehicle manufacturer can offer a safety belt which is approved to be fitted without an airbag.
19. A docking station which has been involved in a collision from which the vehicle has had to be towed away or where the airbag has been deployed, must be sent to DAHL Engineering for inspection and possible repair. Safety belts and components must be replaced without separating the components, because they may have suffered damage that is not visible to the naked eye.
20. Be sure to check national regulations with regard to minimum clear space requirements and access to emergency exists for seats and wheelchairs for the vehicle concerned.
21. It is essential, that wheelchair manufacturers' instructions, references and warnings are followed when installing and using Dahl Docking Systems. The EU medical device directive states that a CE-marked medical device which has been customized outside the manufacturer's specifications thereby becomes a customized medical device and that the CE-marking must be removed. Anyone who customizes a CE-marked medical device outside the manufacturer's specifications is responsible for quality, safety and performance of the device and becomes the responsible manufacturer of the customized device.

Complying with the wheelchair manufacturer's user and installation guide when installing the Dahl Docking System will ensure that the wheelchair manufacturer's CE-marking will remain intact. Manufacturer manuals for all CE-marked wheelchairs can be downloaded from our website.

Declaration of conformity

Dahl Engineering's objective is to provide products for wheelchair users which meet the strict EU M1 safety requirements for cars, when it is possible, and to the extent it is possible, with due consideration of the design and function of the aid and appliance concerned. We are therefore continuing our efforts to develop a range of tested and approved installation kits for different vehicles. These installation kits are tested according to EU regulation 2018/858, ECE R14 & R17, concerning seats and safety belt anchorages in vehicles.

The docking system, part number 501750, has been crash tested in frontal collisions at 48 km/h, 20g in connection with a **surrogate** wheelchair weighing 200 kg+ test dummies with a mass of 76,4 kg and 102 kg, where the lap belt was anchored to the floor of the vehicle (276,4 kg and 302 kg total weight).

As manufacturer, we hereby declare that the docking system's country of origin is Denmark and that the docking system, and the wheelchairs listed on our website are successfully tested according to the following:

- ISO 10542-1:2012 with ISO surrogate wheelchair
- ISO 7176-19:2008, with specific wheelchairs, see list of tested and approved wheelchairs on our website
- EU Regulation 2018/858, ECE R14 & R17 in many different vehicles, see product catalogue
- ECE R10 (Electromagnetic compatibility in vehicles)
- A seat base which fits the Docking Station has also been tested to meet ECE R14 and ECE R17



Claus Dahl Pedersen, CEO
Dahl Engineering ApS

Visit our homepage for more information

All successfully tested wheelchairs as well as wheelchair manufacturers user and installation instructions can be found on our homepage - under products - dahl docking systems: www.wtors.com



All tested and approved installation kits can be found in our product catalogue which can be downloaded from our homepage - under support: www.wtors.com



Please do not hesitate to enquire whether a wheelchair or an installation kit that has been tested in accordance with the above directives, is available for the vehicle concerned. In this case, separate installation instructions are available, which **must** be followed when installing the docking station.

Product overview

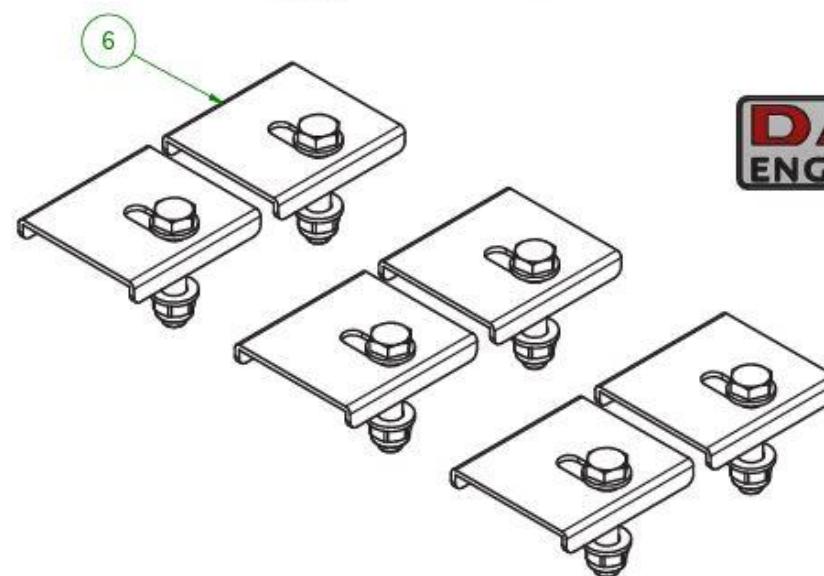
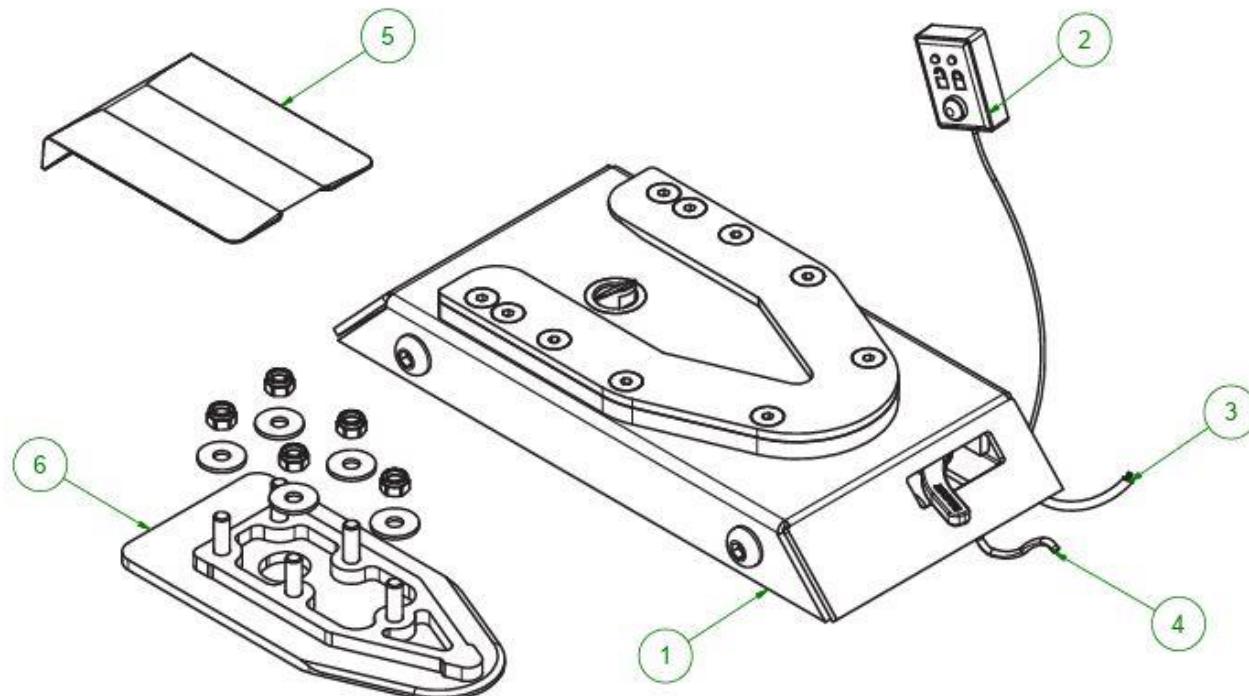
Inspection of the components delivered:

Start by checking if all of the components have been delivered correctly. Please contact us immediately if any parts are missing.

The contents of a standard kit with Dahl Docking Station, art. no. 501750, is shown on the next page. Safety belts for securing the user are not included in a standard kit and must be ordered separately! Please find accessories and spare parts in the respective chapters.

Position	Name	Art. no.	Quantity
1	Dahl Docking Station MK II	501720	1
2	Control panel	500688	1
3	Power cable	500703	1
4	Cable for parking brake	500702	1
5	Emergency release tool	503161	1
6	Mounting kit for Docking Station MK II	501813	1

Art.no. 501750



User Guide – Operation of the docking station

Please refer to the functional description of the docking station on the next page. The user must read these instructions in full prior to using the equipment.

Securing the wheelchair in the docking station

1. To use the system, maneuver the wheelchair slowly and in a uniform direction over the docking station. The lock plate under the wheelchair helps to guide the wheelchair into place in the docking station. When the lock plate is fully engaged in the docking station, a spring-action locking pin automatically secures the lock plate.
2. The docking station is equipped with a control switch that indicates whether the lock plate is correctly secured in the docking station. As soon as the lock plate comes into contact with the locking pin, a warning tone will sound (a high-pitched howl), and the red diode/lamp (LED) in the control panel will light up until the lock plate is either fully engaged or else the wheelchair is removed from the docking station.
3. As an indication that the wheelchair is properly secured, the warning tone will cease, the red diode in the control panel will go out and the green diode lamp (LED) will light up.
4. When the wheelchair is correctly secured, the safety belt should be fitted and adjusted so that it fits the user.

Do not drive the vehicle whilst a wheelchair is being maneuvered into position in the docking station. In general, do not use the vehicle if the wheelchair is not correctly secured, the warning tone sounds and/or the red warning lamp (LED) in the control panel flashes or is lit! Therefore, always check if the lock plate is properly engaged in the docking station by trying to back the wheel chair out of the

docking station before moving the vehicle. (It must not be possible to back out of the docking station without pressing the red button in the control panel).

Release from the docking station

1. When the vehicle has been brought to a halt, remove the safety belt.
2. To unlock commence by driving the wheelchair forward to release pressure on the lock pin and then press the red release button in the control panel. The locking pin will be triggered/ released for approx. 5 or 8 seconds, after which the locking pin is automatically locked/activated again. Do not attempt to reverse out of the docking station until the red LED on the control panel, which indicates the unlock position, has been illuminated.

Warning!

Attempting to reverse the wheelchair before the red LED has been illuminated will result in blocking the docking stations lock mechanism which makes it impossible to reverse. If this happens repeat above unlocking procedure.

3. Move the wheelchair away from the docking station within this 5 or 8 second period.

If the locking pin is not released when you press the red button in the control panel

1. In the event of electrical failure, a manual emergency release is located at the front edge of the docking station. Push the red release arm to one side and hold it there while the wheelchair moves away.

2. A cable-activated manual operating lever can also be fitted (accessory). The red release arm is also pushed to one side and should be held there whilst the wheelchair moves away.
3. An emergency release tool in red is delivered with each docking station. This has to be pushed into the docking station, between the lock plate of the wheelchair and the docking station to release the wheelchair.

The docking station, belts and components should be inspected at least once a year in accordance with the maintenance interval and -documentation.

Safety belts (Accessory for docking station)

Safety belts must be inspected and cleaned regularly. Replace belts or straps that have faded in the sun, are worn at the edges, have tears or show clear signs of wear. Components that are damaged or worn must also be replaced. Avoid soiling the belts with chemicals, polishing agents, oil or, in particular, battery acid.

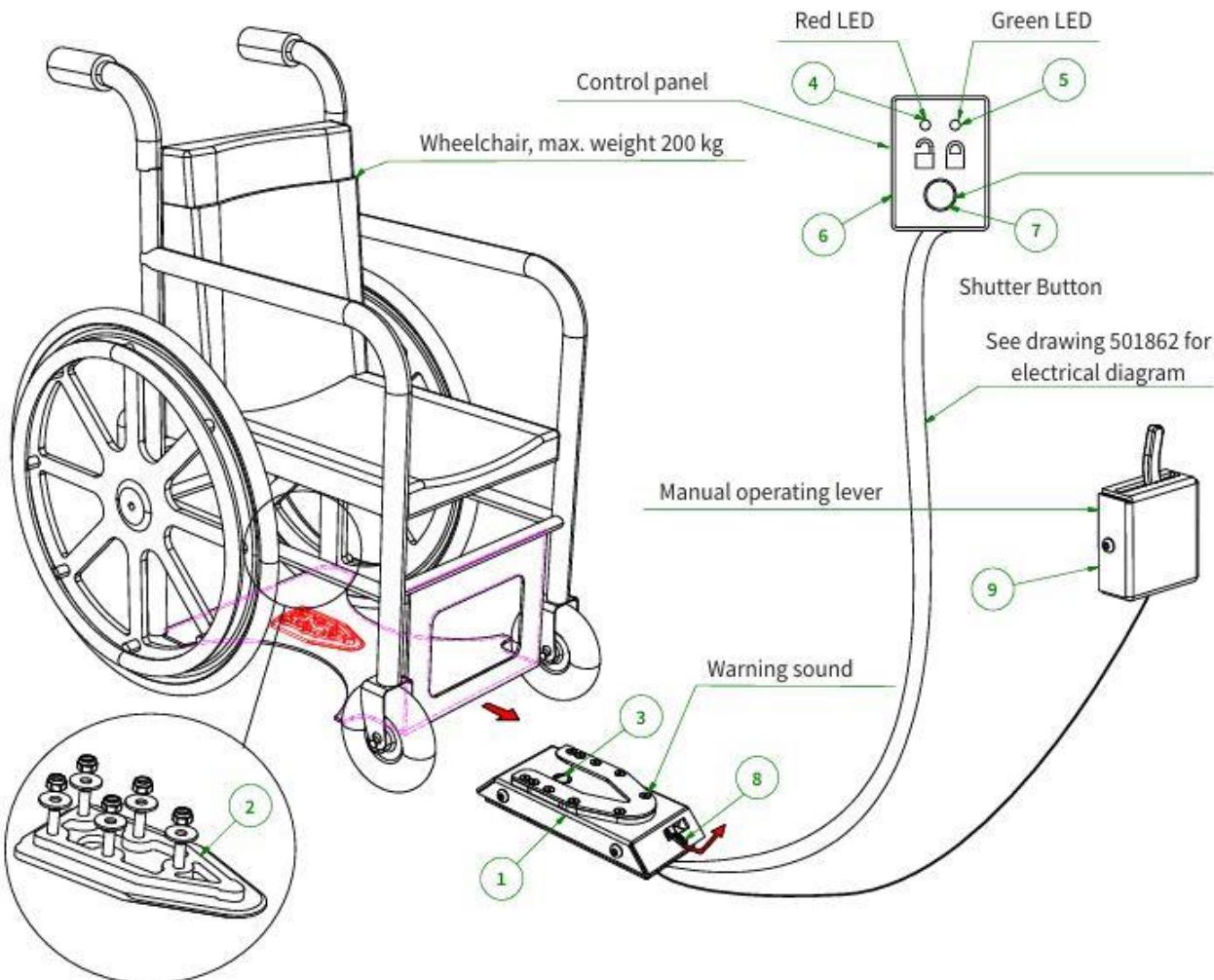
Cleaning the belts:

Wash by hand with hot water and mild soap. Rinse thoroughly with water and allow to dry in the shade. Do not expose the belts to direct sunlight and never use powerful cleaning agents.

Only moving metal parts that are not in contact with belt webbing should be lubricated with light oil when necessary and if so very carefully. Never lubricate inertia reels or other components that are part of the safety belt. Never let the belt webbing come into contact with oil or grease.

Functional Description

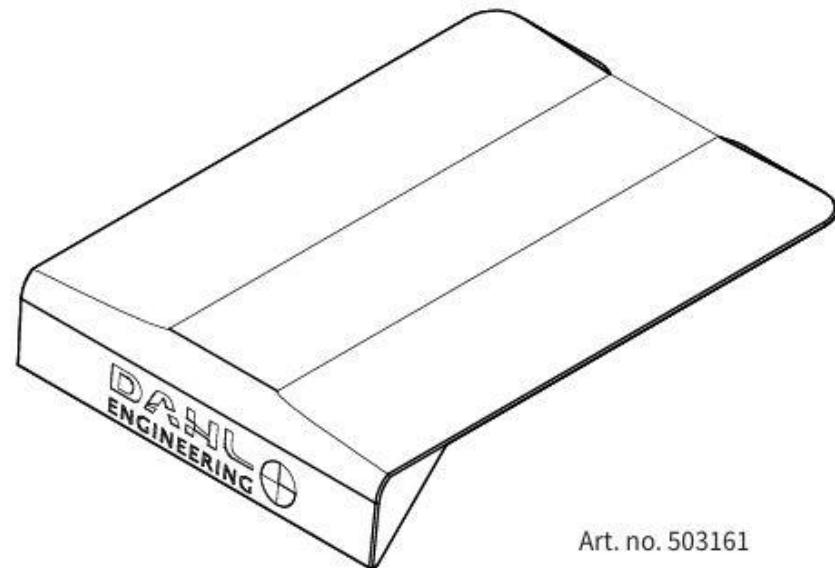
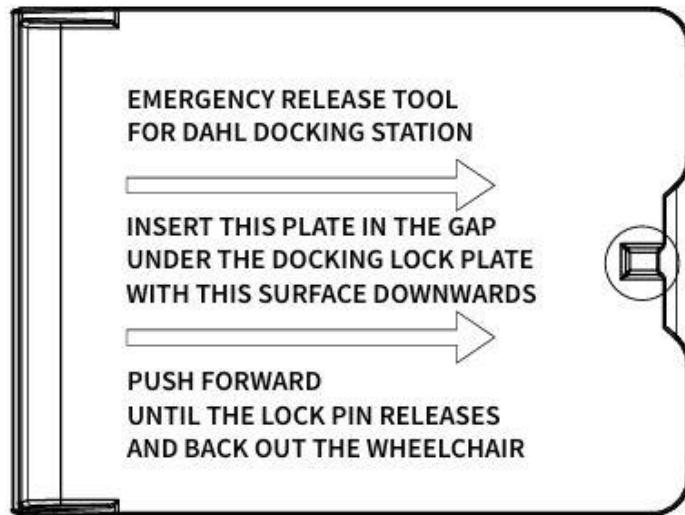
See drawing no. 501733



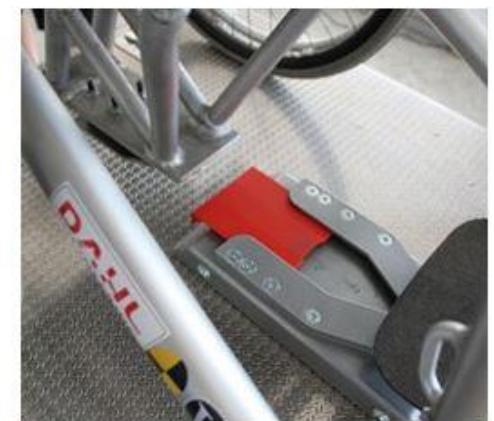
The Dahl Docking Station (1) is designed to retain the seat bracket, manual and electric wheelchairs on the floor of the vehicle. A circuit board is fitted in the docking station, which controls and monitors the docking station's functions, distributes power to the various components and sends and receives signals to and from the control panel. A wiring harness is included. Do not carry out any modifications to the supplied wiring harness or other components. A **lock plate** and a **spacer** (2) must be fitted under the wheelchair. When the wheelchair is maneuvered towards the docking station, the wheelchair is guided into place by means of the lock plate. When the lock plate is fully engaged in the docking station, a spring-loaded **locking pin** (3) automatically secures the lock plate. The docking station is equipped with a built-in control switch that indicates whether the lock plate is correctly secured in the docking station. As soon as the lock plate comes into contact with the locking pin, a warning tone will sound (a high-pitched howl), and the **red diode/lamp - LED** (4) in the control panel will light up until the lock plate is either fully engaged or else the wheelchair is removed from the docking station. With the wheelchair correctly secured, the warning tone stops and the **green diode/lamp - LED** (5) in the control panel will light up to indicate that the wheelchair is properly secured. The **control panel** (6) is equipped with a **pushbutton** (7) which is connected to an electromagnet which triggers/releases the locking pin for approx. 5 or 8 seconds, after which it is automatically locked once more.

In case of an electrical fault, there is a **manual emergency release** (8) on the front edge of the docking station. The release arm should be pushed sideways and held in order to release the wheelchair. A cable-activated **manual operating lever** (9) can be ordered as an extra accessory. Fixing parts in the form of bolts, nuts, washers, etc., are included.

Emergency release tool



Art. no. 503161



Recommendations for Clear Zones

Clear zones are recommended areas in which hard or sharp installation components or objects should not be placed. The clear zone recommendations in ISO 10542 are based on the way in which an occupant moves during a crash/collision. To reduce the risk of injuries to the head and chest, hard vehicle components and parts for WTORS which lie within the clear zones should be covered with padding that meets the requirements with regard to the hardness of materials as specified in FMVSS 201, ECE regulation no. 21 or EU directive 74/60.

The wheelchair and user must be placed facing forward in the vehicle.

FCZ = Frontal Clear Zone

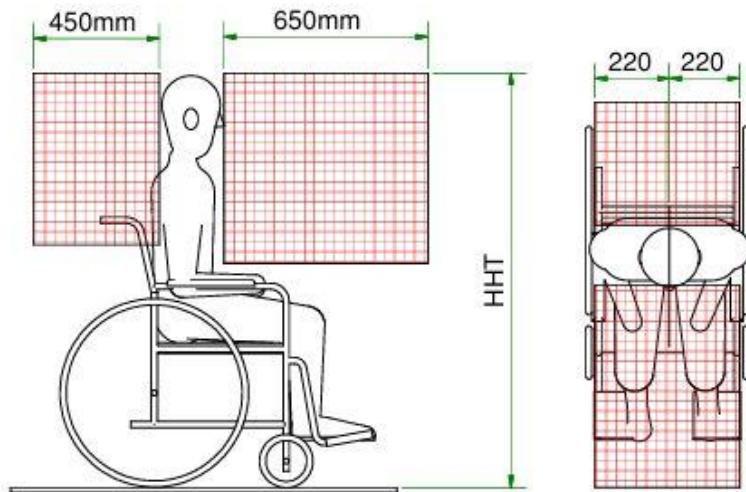
650 mm. when both lap belts and diagonal belts are used.

950 mm. when only lap belts are used.

The use of both lap belts and diagonal belts is recommended to reduce the risk of head and chest impact. The majority of countries require the use of both lap belts and diagonal belts. It may be impossible to comply with the recommendation for FCZ if the wheelchair is used by a person driving the vehicle themselves.

HHT = Seated head height

Approx. 1200 mm. for a small adult female. Approx. 1550 for a tall adult male.

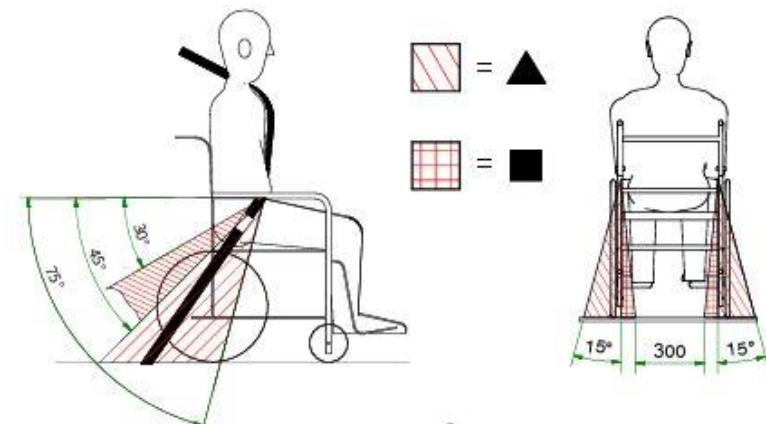


Safety belts

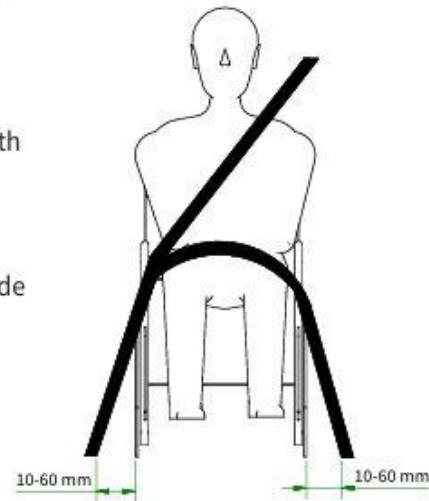
Only use Dahl WTORS or e-(ECE), E-(EU) or ISO 10542 certified safety belts for securing occupants of the vehicle. Please refer to Dahl Engineering's product catalogue containing WTORS and certified safety belts.

Preferred and optional angles for location of the lap belt:

▲ = Preferred Zone / ■ = Optional Zone

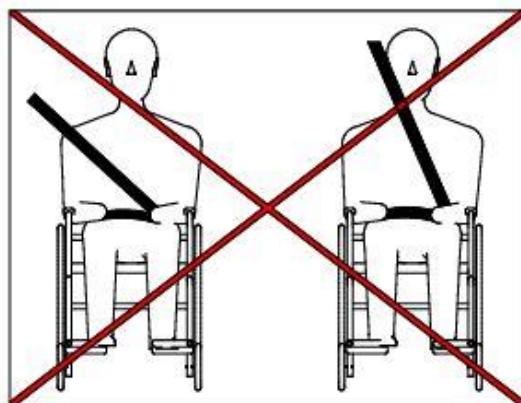


When using wheelchair with Dahl Docking system, the floor anchorage points for occupant restraint should be located 10-60mm outside wheels, on each side.

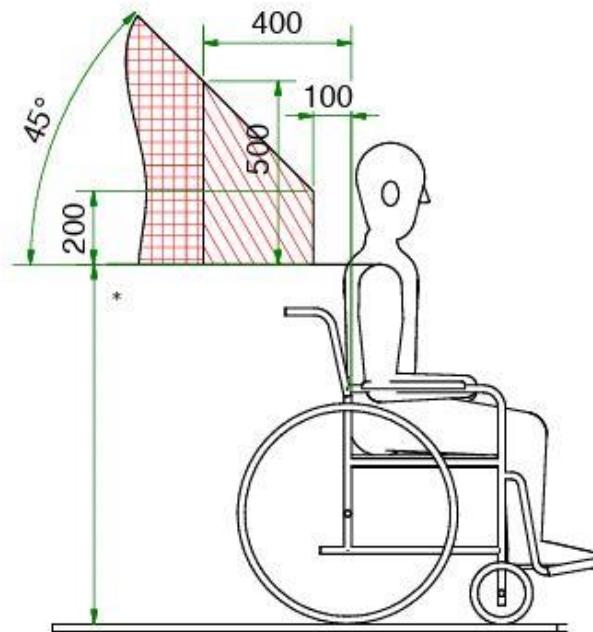


Recommended location of shoulder belt's top anchoring point:

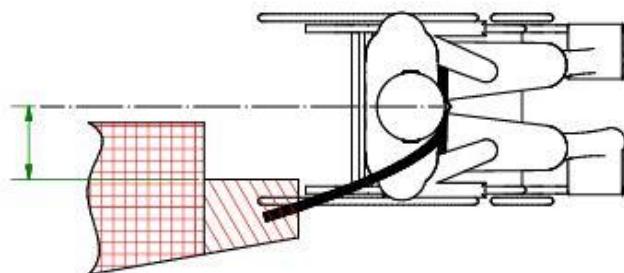
▲ = Preferred Zone
■ = Optional Zone



▲ = ▲
■ = ■



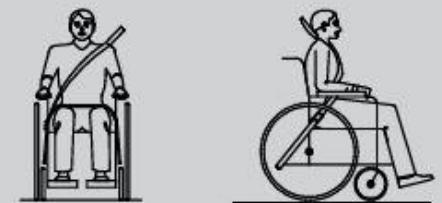
The lap belt should make full contact with the front of the body in the area where the pelvis and thighbone meet.



*= Installation height from the floor and up to the shoulder and the shoulder belt's top anchoring point depends on the height of both the user and the wheelchair. The shoulder belt's anchoring point must be located in such manner, that the belt runs over the mid-point of the shoulder.

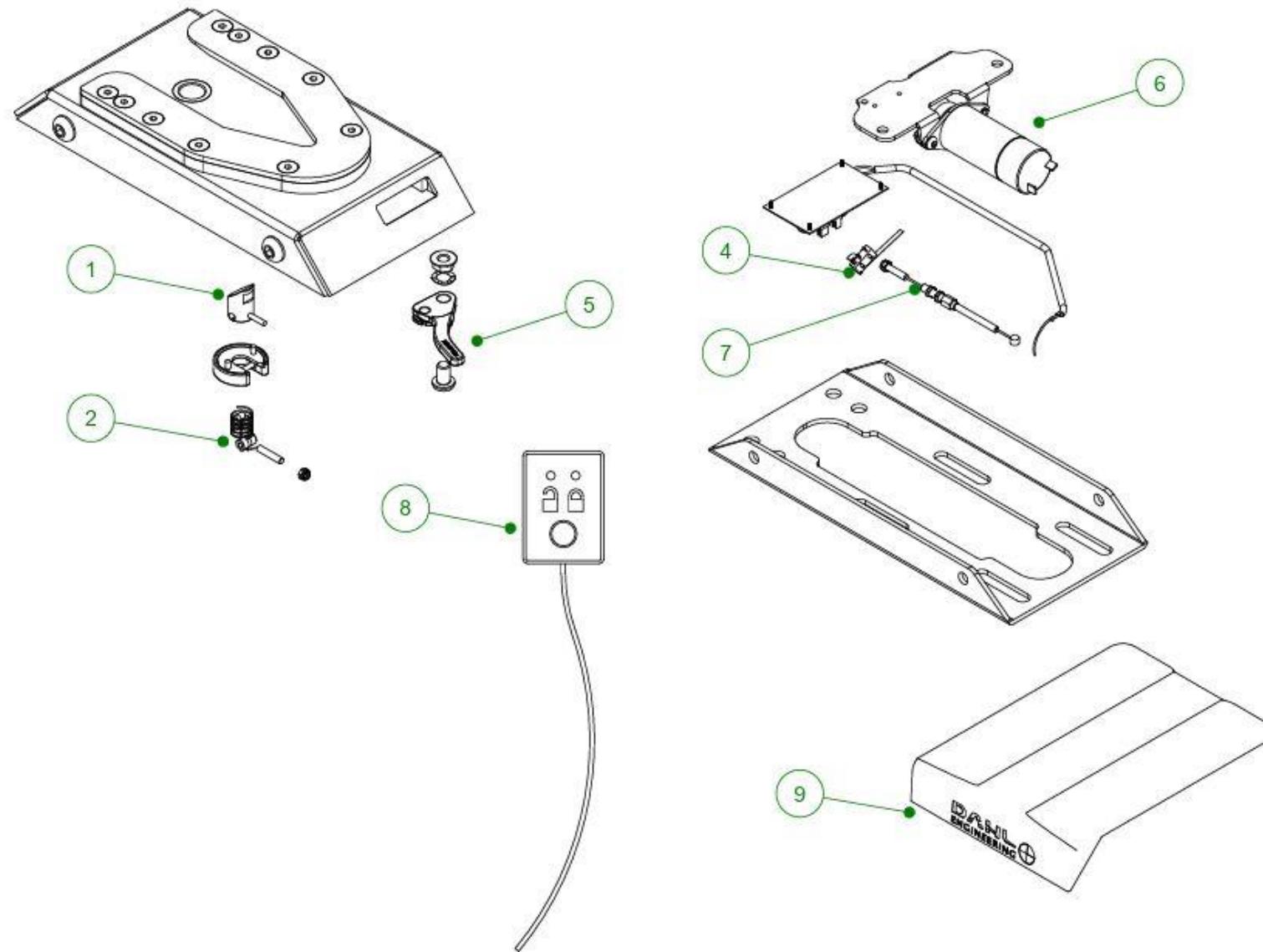


Safety belts must not be held away from the body by wheelchair components or parts such as armrests or wheels.

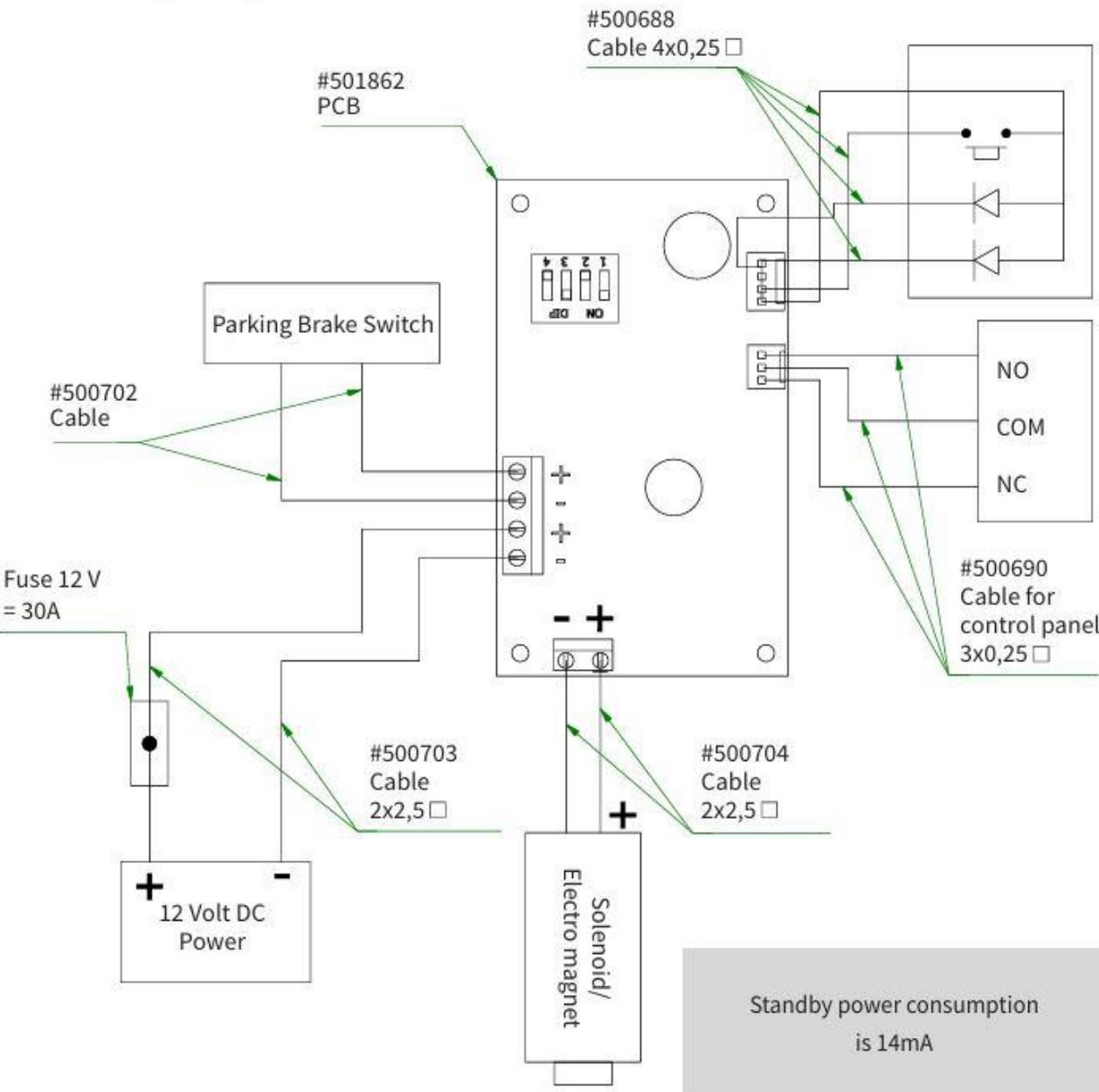


Spare parts list of docking station

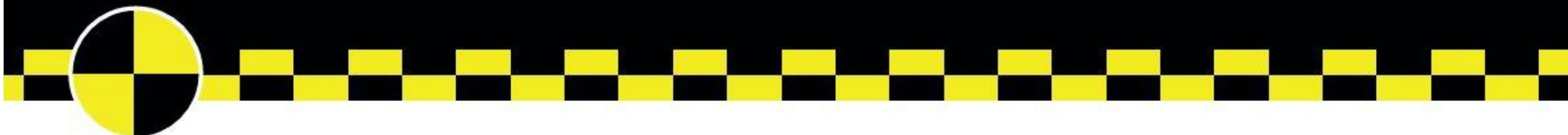
#501750



Wiring diagram



WHERE SAFETY STARTS



Development and crash-test centre
Where safety starts

Dahl Engineering ApS | Løvevej 3 | DK-7700 Thisted | Denmark | Telephone: +45 9618 0077
e: sales@dahlengineering.dk | w: wtors.com