

# DAHL DOCKING STATION

## MAINTENANCE MANUAL

### Installation and User Guide



# 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.

Dahl Engineering's Docking System has been tested in accordance with, and satisfies the requirements of, ISO 10542-1:2012 and 7176-19:2008. The docking system has been crash tested in frontal collisions at 48 km/h, 20g in connection with a wheelchair weight of 150 kg and a test dummy weight of 76.4 kg, where the lap belt was integrated in the chair (226.4 kg total weight). A test with a wheel chair, where the lap belt was anchored to the floor of the vehicle, with a mass of 200 kg + test dummy 76,4 kg (276,4 kg total weight), was also carried out.

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## Documentation at handover to customer

Vehicle specifications: \_\_\_\_\_

Make & Model: \_\_\_\_\_

Vehicle Identification Number: \_\_\_\_\_

Year: \_\_\_\_\_

Information about the docking station: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Article Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Production Date: \_\_\_\_\_

### VEHICLES 1<sup>ST</sup> OWNER

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_

Telephone: \_\_\_\_\_

Stamp of maintenance partner

Telephone: \_\_\_\_\_

### VEHICLES 3<sup>TH</sup> OWNER

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_

Telephone: \_\_\_\_\_

Stamp of maintenance partner

Telephone: \_\_\_\_\_

### VEHICLES 2<sup>ND</sup> OWNER

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_

Telephone: \_\_\_\_\_

Stamp of maintenance partner

Telephone: \_\_\_\_\_

### VEHICLES 4<sup>TH</sup> OWNER

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_

Telephone: \_\_\_\_\_

Stamp of maintenance partner

Telephone: \_\_\_\_\_

## User Guide – Operation of the docking station

Please refer to the description of the docking station on pages 2-3. 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 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 module, 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-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.

## Maintenance interval and documentation

Date: \_\_\_\_\_ Km: \_\_\_\_\_

### Once a year or as required you must:

- Carefully remove the top section of the docking station (remove the two bolts on each side).
- Clean the docking station.
- Clean the locking cylinder and locking pin and lubricate with light oil.
- Remove the locking pin if there are any signs of corrosion or damage (art. no. 502465).
- Adjust the steel wire to the locking pin, art. no. 502400, if necessary.
- All steel wires must be examined for signs of wear or evidence of breaks. Replace if necessary.
- Replace the steel wire, reel and compression spring at least every second year or every 4000 operations. Order service kit with art.no. 502010 (for docking stations produced until 05/2017) or art.no. 502493 (for docking stations produced from 06/2017), which include these parts.
- Test whether the manual emergency release and the manual operating lever, no. 500680, if fitted, function properly.
- Check whether the wires are loose in the terminals and whether they are intact and insulated. Replace if necessary.
- Test whether the electromagnet/solenoid functions correctly.
- Test whether the micro switch, art. no. 500690, functions correctly. Can be found on spare parts list.
- Test whether the warning tone (high-pitched howl) is activated and functions correctly.
- Test whether the light diodes in the control panel function correctly along with the warning tone.
- Check whether any nuts, bolts or screws are loose or damaged. Tighten/replace if necessary. This also applies to the lock plate and its fitting under the wheelchair.

### Maintenance carried out:

Stamp
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### Replaced parts:

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### Next maintenance:

Dato: \_\_\_\_\_

## Maintenance interval and documentation

Date: \_\_\_\_\_ Km: \_\_\_\_\_

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Replaced parts:

Next maintenance:

Dato: \_\_\_\_\_

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Next maintenance:

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Maintenance carried out:

Stamp

Replaced parts:

Next maintenance:

Dato: \_\_\_\_\_

## Dahl Engineering

Dahl Engineering's objective is to provide products for wheelchair users which satisfy 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 tried and tested installation kits for different vehicles. These installation kits are tested according to EU regulation 214/2014/ECE R14&R17, concerning seats and safety belt anchorages in vehicles.

### The Docking System and wheelchairs are tested according to the following:

- ISO 10542-1 SWM and ISO 7176-19, as well as EU Regulation 214/2014/ECE R14 & R17 in many different vehicles.
- 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
- See our current range of tested installation kits in our product catalogue which can be downloaded from our website: [www.wtors.com](http://www.wtors.com)

Please do not hesitate to enquire whether 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

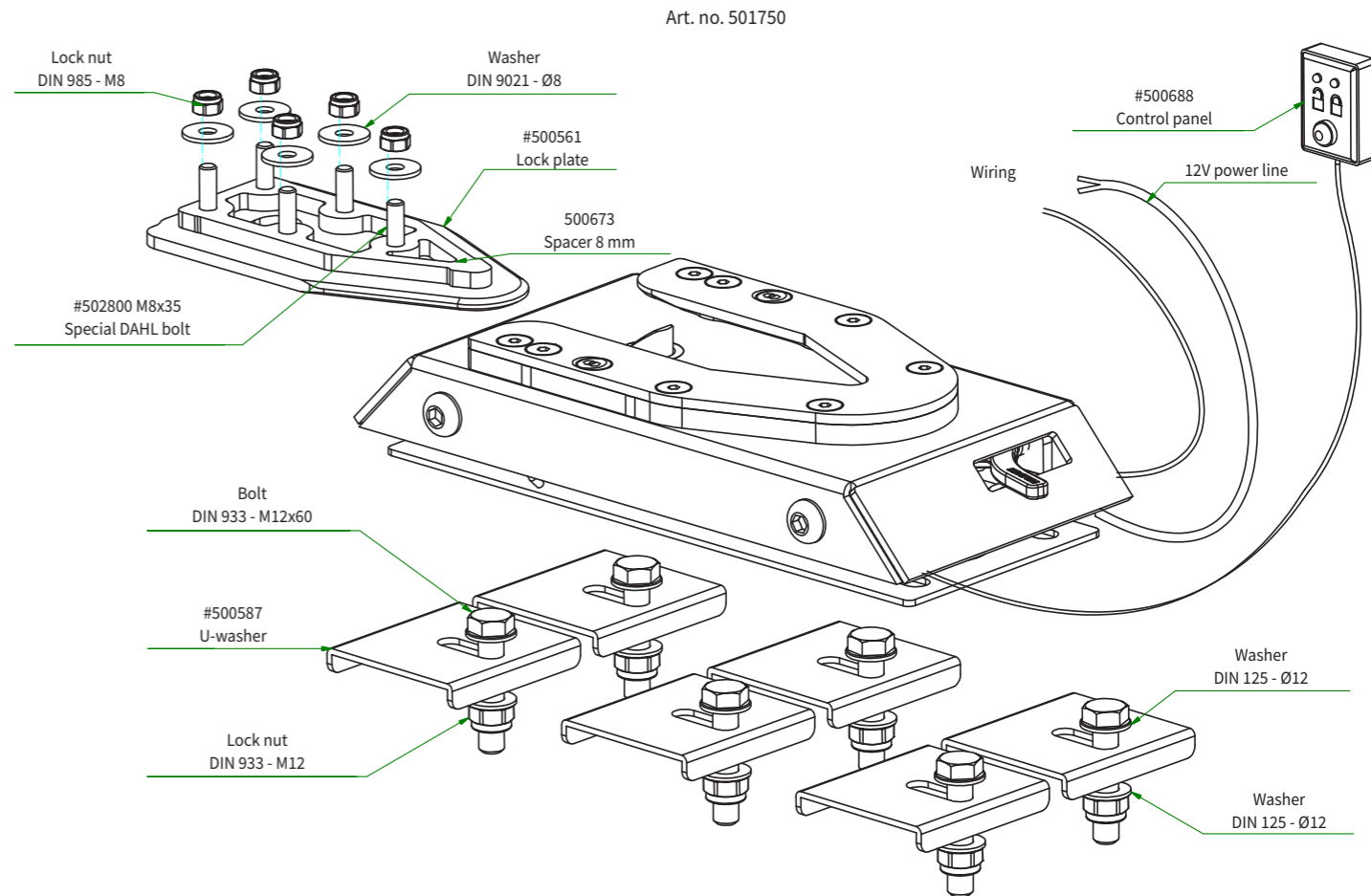
Inspection of the components delivered:

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! Drawing no. 501729 (page 21) contains accessories and drawing no. 501720 (page 35) a list of spare parts.

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.

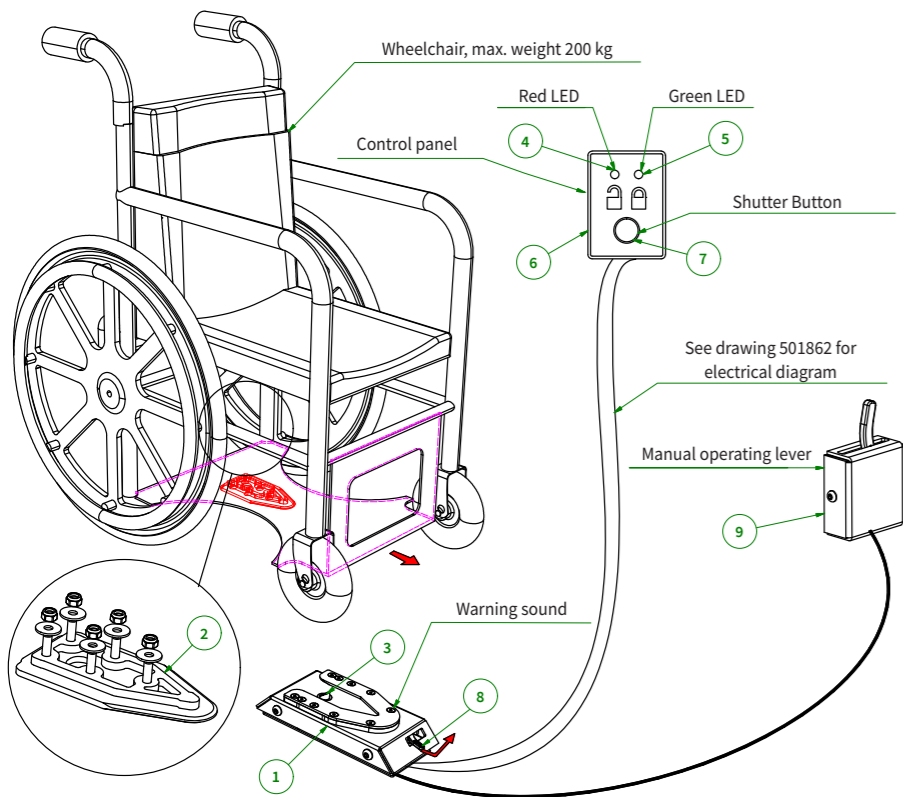
Amount	Name	#	Type	Supplier
1	Control panel	500688		Dahl
1	Docking Station	501720		Dahl
6	U-Washer	500587		Dahl
1	Lock plate	500561		Dahl
1	Spacer	500673		Dahl
5	Bolt	502800	Special DAHL bolt - M8x35	Dahl
5	Washer		DIN 9021 - Ø8	Dahl
5	Lock nut		DIN 985 - M8	Dahl
12	Washer		DIN 125 - Ø12	Dahl
6	Lock nut		DIN 985 - M12	Dahl
6	Bolt		DIN 933 - M12x60	Dahl





## 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 **control module** is fitted in the docking station. The control module 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 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. If the bolts are not long enough, they may only be replaced by longer bolts of the same type and strength class.

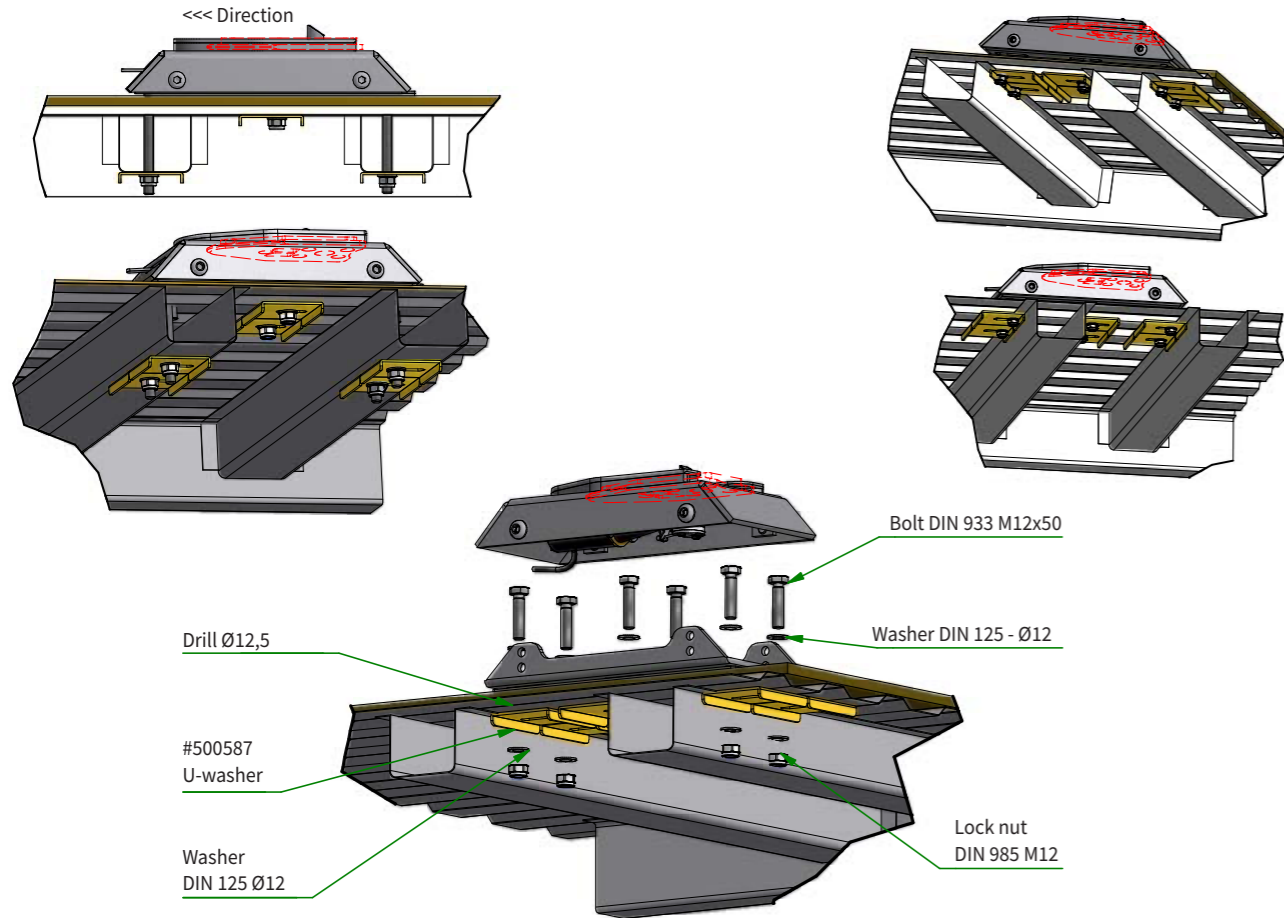
## Installation of the Docking Station

Installation must be carried out by a qualified and experienced technician/fitter.

In the area where the wheelchair is to be locked into the docking system, the floor must be flat along the full length and width of the wheelchair. The length of the flat floor must be in a way that it is possible to maneuver the wheelchair into the docking system without problems. It is essential that there is no difference in the height of the floor from one side to the other at the location where the docking station is to be installed. It is also important that the lock plate is fitted straight/horizontally under the wheelchair. If the above is not carried out carefully, there is a risk that the wheelchair may not be able to be maneuvered properly into place in the docking station.

1. The lock plate and spacer should be fitted under the wheelchair in accordance with the wheelchair manufacturers instructions, as well as the instructions on **drawing no. 501733 (page 16)** and the **drawing on page 15**. Before the lock plate and spacer are fitted, the following should be carried out:
  5. Place the docking station under the wheelchair and place any necessary spacers under the docking station. The docking station may be chocked up using Dahl's spacers – up to a maximum of 25 mm.
2. The fitter must ensure that the wheelchair onto which the lock plate is to be attached has a solid construction that can withstand the forces it will be subjected to during a collision. It is also important that the fitter checks that the length of the bolts is correct. If bolts are too short the thread is not reaching through the nuts. If bolts are too long the batteries or other wheel chair components can be damaged. If necessary replace with longer bolts of same quality or shorten them, if necessary.
  6. Mark the position of the docking station on the floor and the lock plate's position under the wheelchair.
  7. Ask the wheelchair user to leave the vehicle so that installation work can begin.
3. Place the wheelchair, with the user sitting in it, facing forward in the vehicle at the desired installation location. If the user is the driver of the vehicle, make sure that the user can reach and operate all necessary driving functions in a proper and safe manner from this position.
  8. Carefully remove the top section of the docking station – (electronic components are installed in the top section!). Mark the location of the bolts on the floor of the vehicle and drill holes through the floor at these locations. Care must be taken when marking and drilling through the floor so as to avoid damaging brake pipes, cables, fuel tank, etc. Never drill any holes until you are certain that the holes match the location of the installation components.
4. In order to be able to adapt the lock plate to the wheelchair, measure the clearance with the user sitting in the wheelchair. Spacers of different thickness can be purchased as accessories - See accessories for docking station, **drawing 501729 on page 21**.
  9. Secure the docking station with the accompanying bolts, nuts, etc. See illustrations on page 18.
  10. If the cable-activated operating lever is to be fitted, the cable must be installed before the docking station's top section is carefully fitted again. Remember electrical connection before the top section is fitted.

## Fitting examples



## Tightening torque

Tightening torque for bolts and nuts		
Thread size	Minimum Nm	Maximum Nm
M5	4,5	5,9
M6	8	10
M8	20	25
M10	39,2	49
7/16" UNF	50	75
#502800	18	18

When tightening nuts and bolts, they must not be tightened so hard that the floor profiles are compressed or deformed. Carefully tighten the screws until the profiles in the floor of the vehicle begin to give, though never more than the specified maximum tightening torque for the bolt concerned.

## Corrosion protection

All holes and installation elements under the floor of the vehicle should be treated with an anti-corrosion agent. Please also be aware of the vehicle manufacturer's guidelines, if available, for corrosion protection. To avoid water penetrating the holes in the floor of the vehicle, sealant must be applied to the holes.

## Warning

In countries where the legislation demands meeting EU regulation 214-2014 appendix 3 – about vehicles fitted for wheelchairs, a fitting kit **MUST** be used, which has been tested in the position and the specific vehicle the wheelchair will be used in, for fitting the docking system and safety belts for the wheelchair user.

Please enquire with regard to the current range of vehicle specific fitting kits with corresponding fitting instructions.

If a vehicle specific fitting instruction does exist it must be requested from Dahl Engineering, and followed when fitting safety belts, floor pockets, floor rails and docking station.

The following fitting examples for fitting the Dahl docking station can only be used in countries, where no legal requirements to tests of docking system in the specific vehicle and mounting position are to be found.

**We always recommend to use a fitting kit, which has been tested in the specific vehicle.**

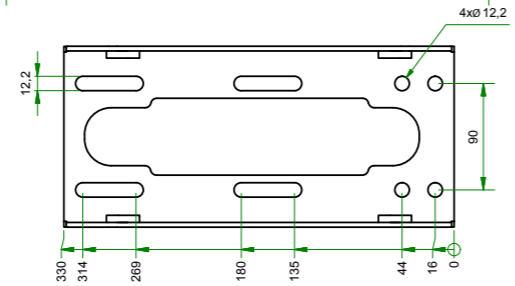
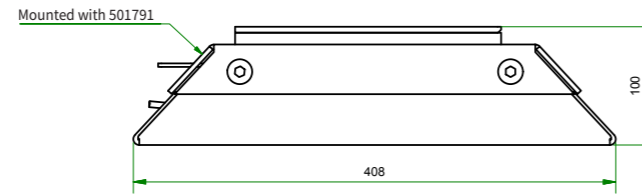
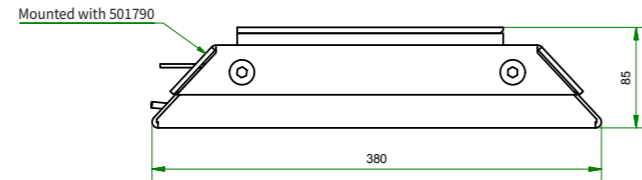
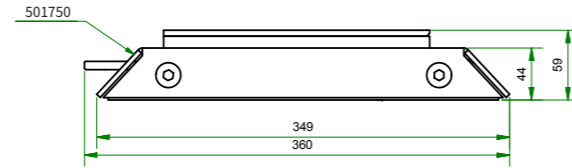
## Accessories for fitting the Dahl Docking Station

We provide a range of accessories, including spacers, for adjustment of the height, a manual operating lever, tested fitting kits and seat base frames that fit the docking station. The seat base frames, art. no. 500650, 502270 and 503245 ensure that the docking station can be used for both a wheelchair and a car seat. The seat base frames have undergone extensive testing in accordance with ECE reg. R14 & R17 in many different vehicles.

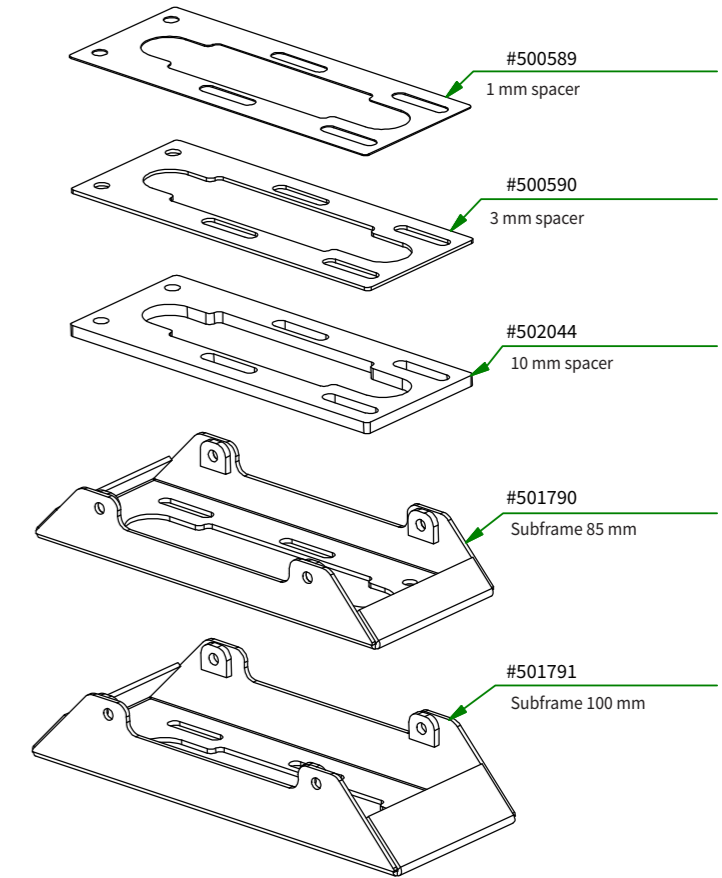
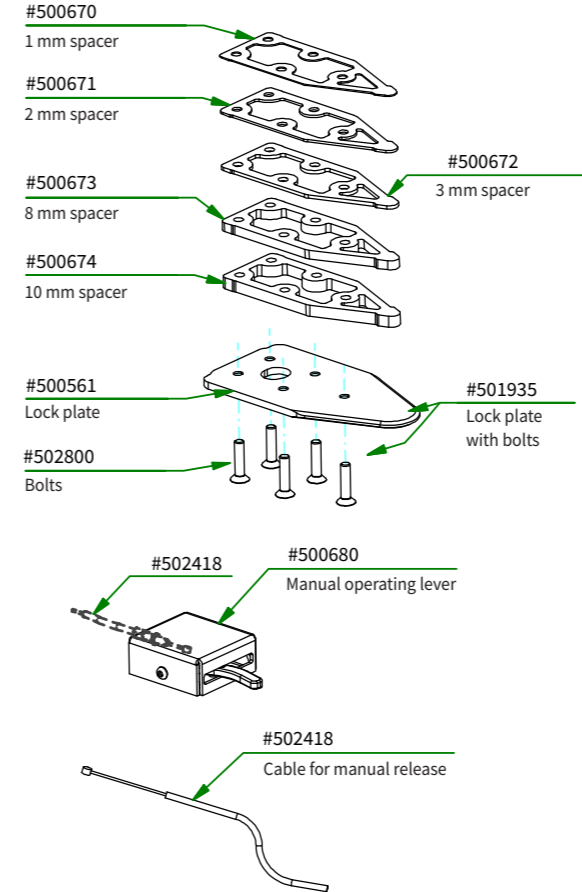
See our current range of tested fitting kits in our product catalogue which can be downloaded from our website: [www.wtors.com](http://www.wtors.com)

Please enquire for separate material regarding our range of safety belts.

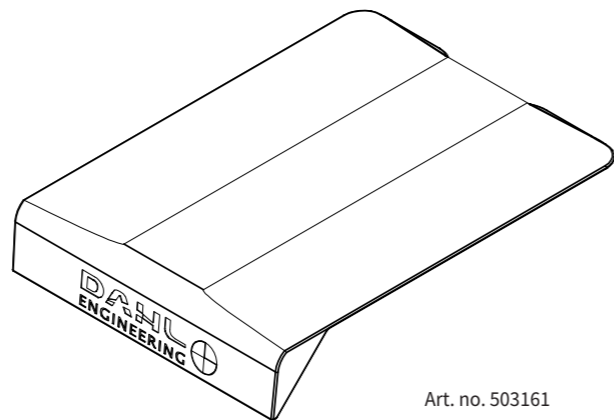
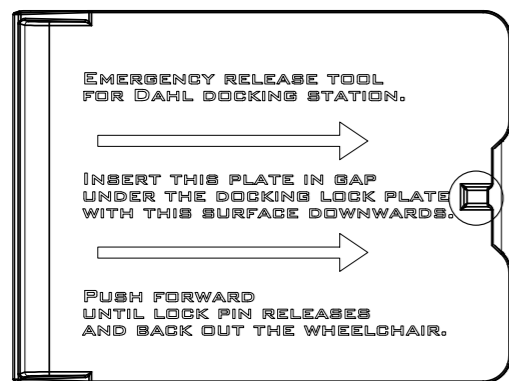
## Available heights for subframes



## Accessories



## Emergency release tool



## Seat base frames

Our seat base frames allow the docking station to be used for either wheelchairs or car seats depending on what is required.

It is easy to install the vehicle's original seat on the base frame, and it is easy to remove if the driver and passenger need to swap seats.

The base frame is equipped with holes for the installation of seats such as an original driver's seat in Nissan NV 400, Opel Movano, Renault Master, VW T5, MB Sprinter, VW Crafter, MB Vito/Viano and Dahl Sport.

Our seat base frames have been tested in accordance with ECE regulation 14 and 17.

**Art. no. 503245**  
Height 134-202 mm

**Art. no. 500650**  
Height 180-222 mm

**Art. no. 502270**  
Height 237-279 mm



## 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

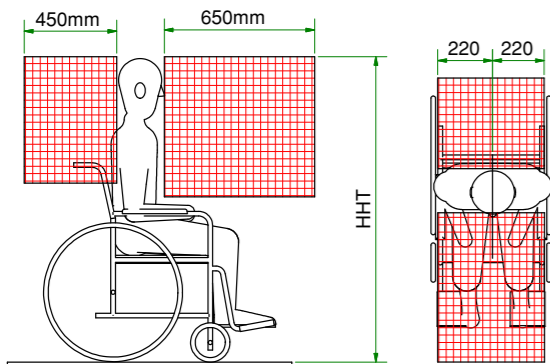
650 mm. when both lap belts and diagonal belts are used.

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.

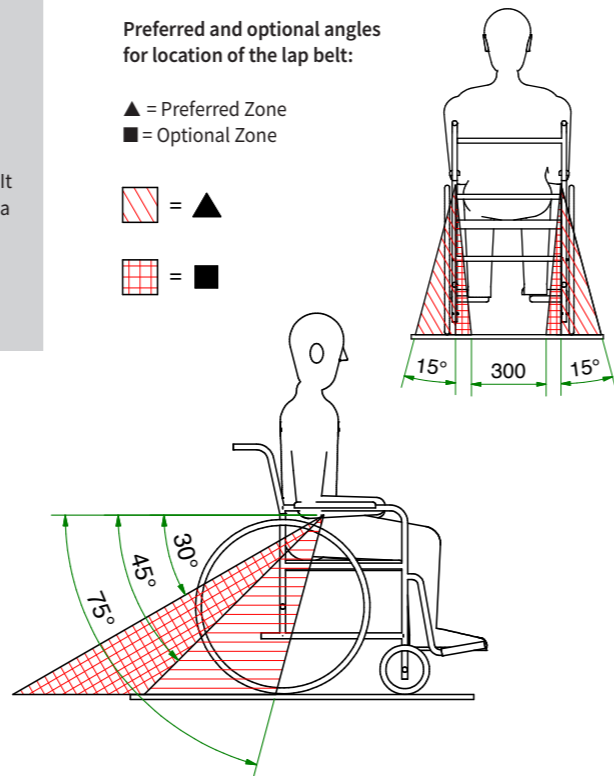
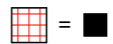
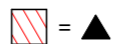


## Safety belts

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.

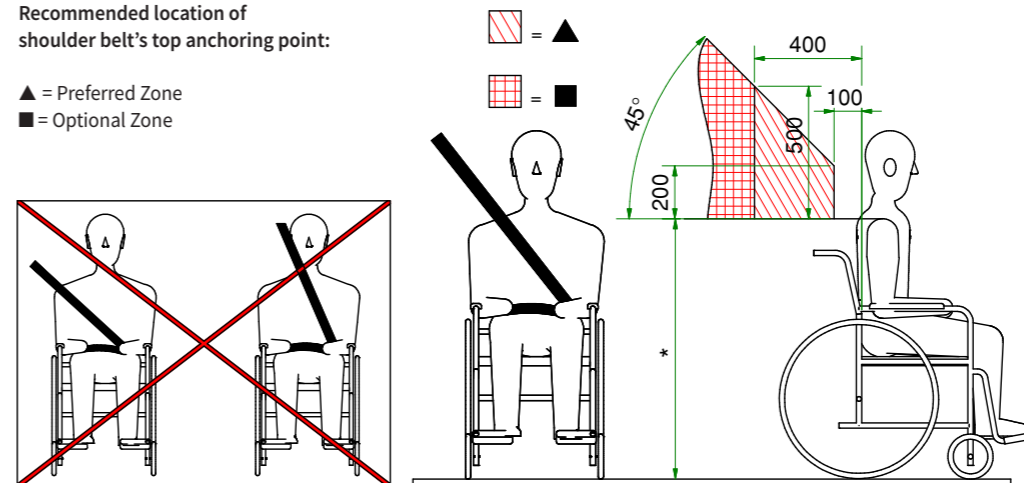
Preferred and optional angles for location of the lap belt:

▲ = Preferred Zone  
■ = Optional Zone

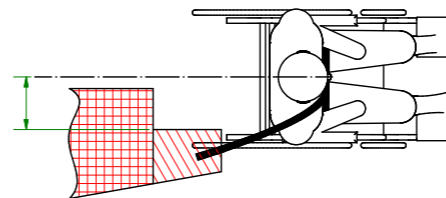


Recommended location of shoulder belt's top anchoring point:

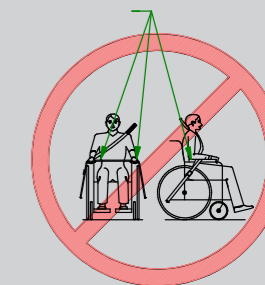
▲ = Preferred Zone  
■ = Optional Zone



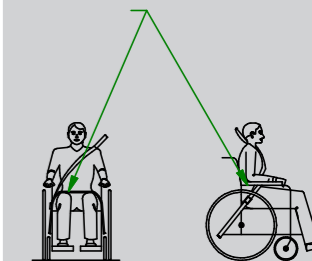
The lap belt should make full contact with the front of the body in the area where the pelvis and thighbone meet.



\*= 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.



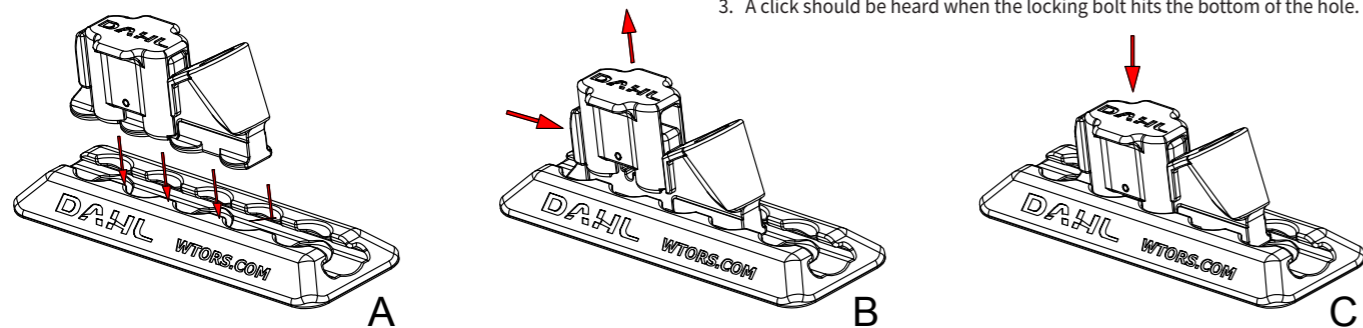
Safety belts must not be held away from the body by wheelchair components or parts such as armrests or wheels.



## Installation of universal fitting in floor pocket and floor rail with airline hole pattern

Make sure that the floor pocket or floor rail is free of small stones or other dirt. If necessary, clean prior to installation of the universal fitting. If the floor pocket or the floor rail is not free of dirt, there is a risk that the fitting cannot be installed or that it will not be fitted correctly.

1. Place the universal fitting over the holes.
2. Press downwards on the universal fitting so that the spring-action locking bolt moves upwards. Whilst the fitting is being pressed downwards, push the fitting backwards or forwards until the spring-action locking bolt slides down into one of the holes.
3. A click should be heard when the locking bolt hits the bottom of the hole.



### Warning

In countries where the legislation demands meeting EU regulation 214-2014 appendix 3 – about vehicles fitted for wheelchairs, a fitting kit **MUST** be used, which has been tested in the position and the specific vehicle the wheelchair will be used in, for fitting the docking system and safety belts for the wheelchair user.

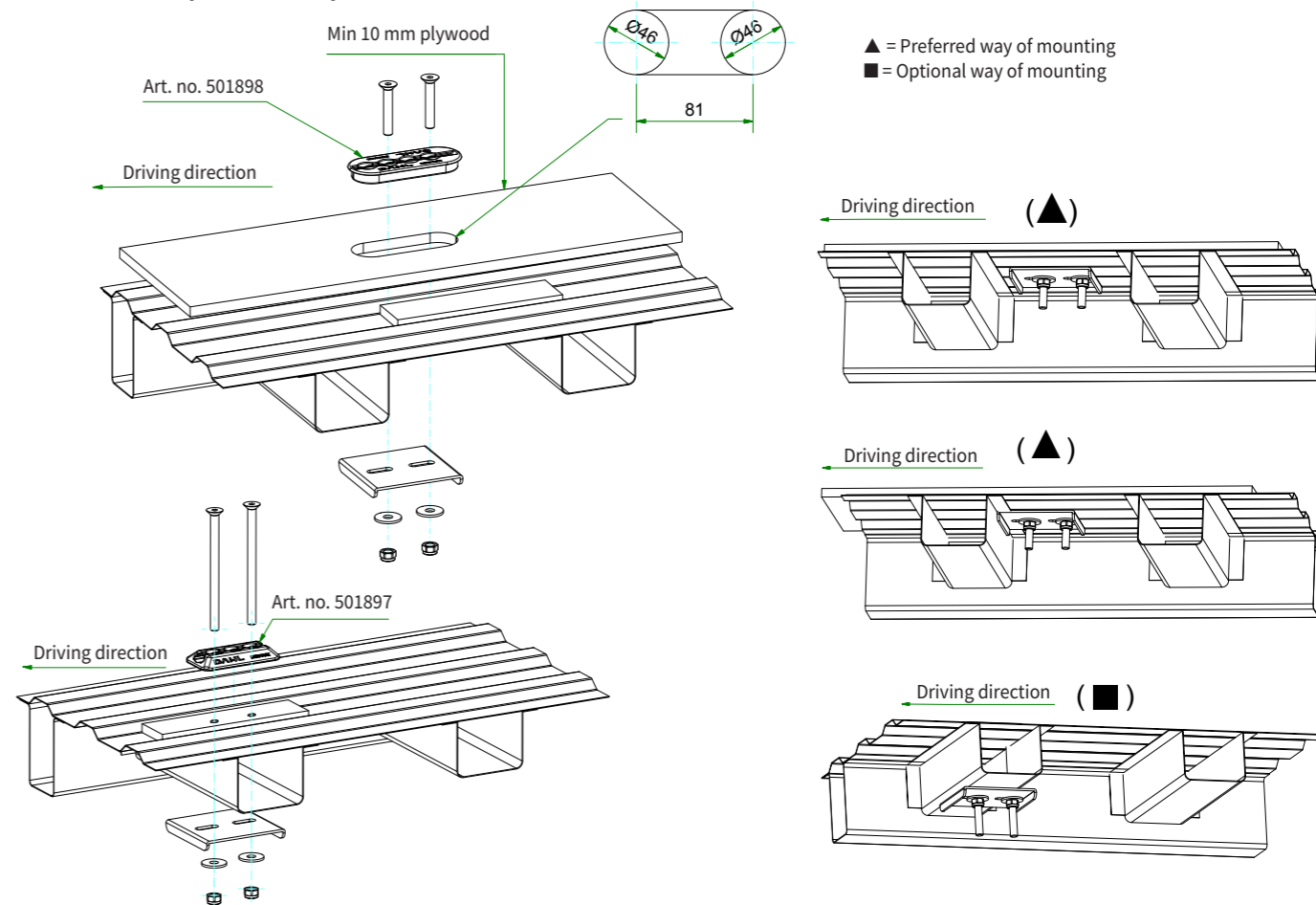
Please enquire with regard to the current range of vehicle specific fitting kits with corresponding fitting instructions.

If a vehicle specific fitting instruction does exist it must be requested from Dahl Engineering, and followed when fitting safety belts, floor pockets, floor rails and docking station.

The following fitting examples for fitting the Dahl docking station can only be used in countries, where no legal requirements to tests of docking system in the specific vehicle and mounting position, are to be found.

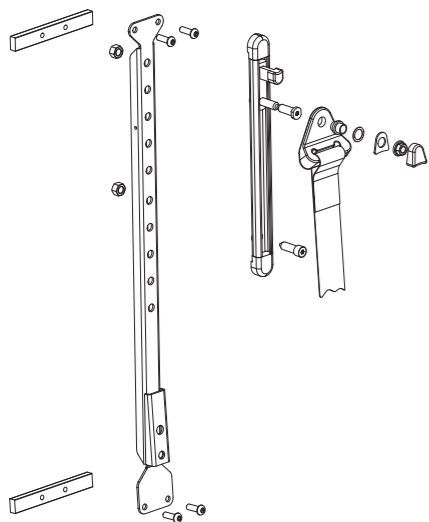
**We always recommend to use a fitting kit, which has been tested in the specific vehicle.**

## Installation examples of floor pocket

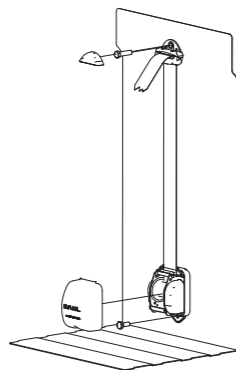


## Examples of installation of retractor and bracket (D-loop) for anchoring of shoulder belt

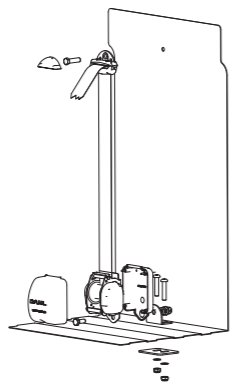
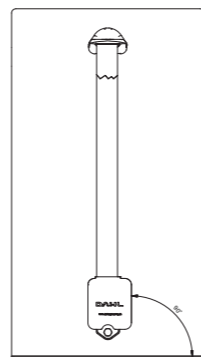
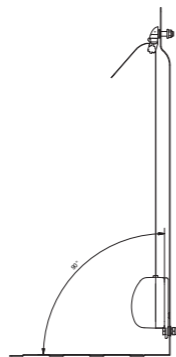
Please see separate installation guide for mounting of anchoring kit for shoulder belt for each vehicle.



Example with 178 mm height adjustment  
Art. no. 500945.



Example with the retractor installed on the wall.



Example with the retractor installed in the vehicle floor.

Here, examples are shown of the proper orientation (90°/90°) of the D-loop and retractor for both floor and wall mounted retractors.

It must be possible to rotate the D-loop for the shoulder belt when the bolt is tightened.

## Installation of safety belts

Please also refer to separate installation instructions for the safety belt concerned. We have safety belt anchorage kits available that have been tested in accordance with ECE regulation 14.

Please enquire about our current range of kits.



Safety belts must generally **always** be anchored to the floor of the vehicle.

Wheelchairs tested with the Dahl Docking Station **can**, however, be approved with integrated safety belts, i.e. the safety belt is anchored directly to the wheelchair instead of the floor of the vehicle. Installation of the safety belt anchored directly to the wheelchair may **only** take place if permission to do so has been granted by the wheelchair manufacturer.

In the event that a wheelchair is approved with integrated safety belt anchoring points, the wheelchair

manufacturer must specify where and how the safety belt should be fitted and used. If the wheelchair has not been approved with integrated safety belts, and the required documentation from the manufacturer is therefore not available, safety belts must always be anchored to the floor of the vehicle.

**Warning!** If the safety belt is anchored to a wheelchair that is not approved for such use, you risk death or serious injury to the wheelchair user and the other passengers in the event of an accident.

## Examples of seat belt components



500984  
Seat belt



501768  
Removeable safety belt buckle with fitting



501762  
Safety belt buckle for permanent mount

Safety belt buckle can be ordered in different lengths. Please ask about the current range.

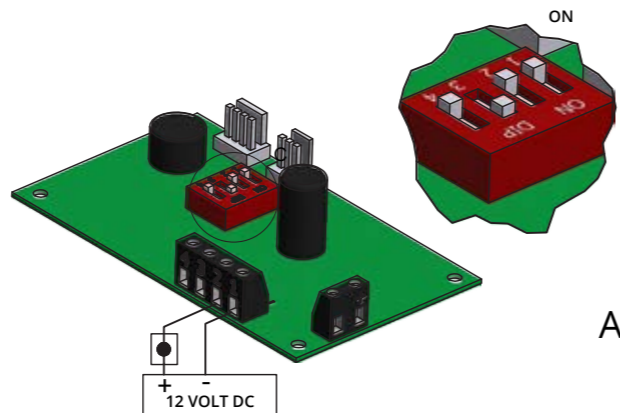
## Electrical connection

1. Disconnect the cable on the battery's negative terminal.
2. Find a suitable installation site for the control panel.  
**If the docking station is used by a person driving the vehicle himself** – At an easily accessible and visible location when the wheelchair is secured in the docking station and the driver is looking forward from the driving position.  
**If the docking station is for a passenger** – At a location which is visible when the driver of the vehicle is sitting in the driver's seat and looking forward.
3. Wiring must be installed so that it is not exposed to mechanical loads such as wear, vibrations, kinks and sharp edges which can cause breaks and result in malfunctions or in the worst case a short-circuit.
4. See the wiring diagram on page 32 for correct connection. The power supply must be fused with a 30A fuse (not included.)

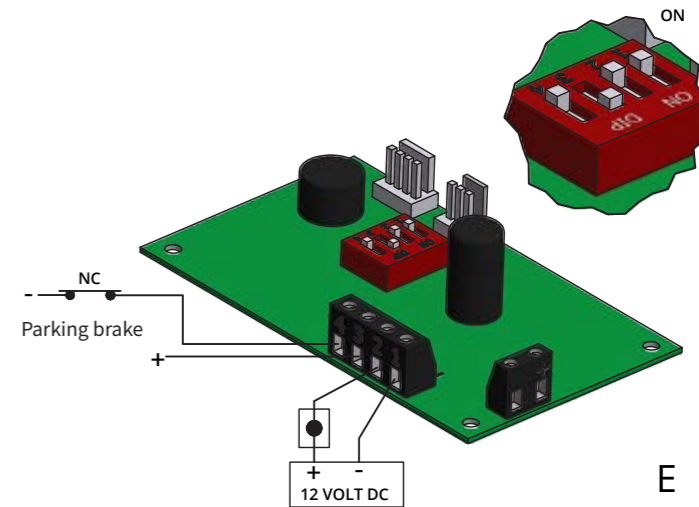
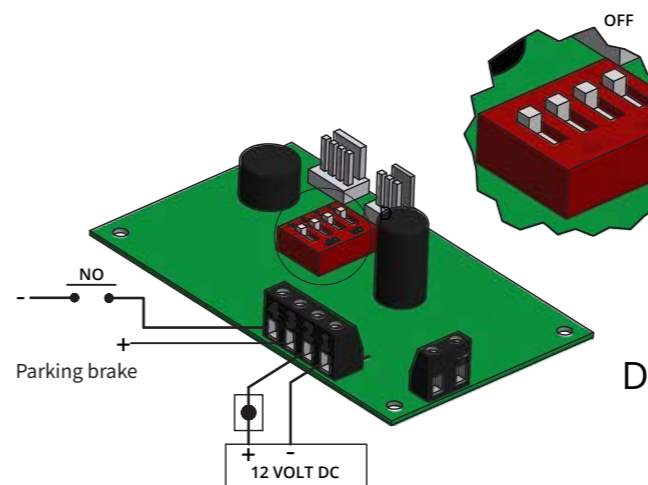
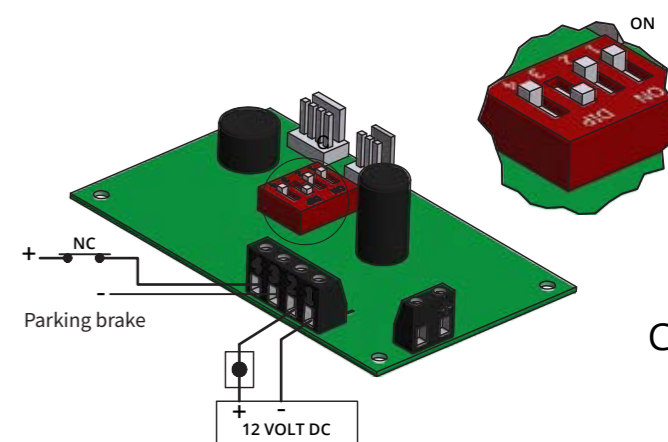
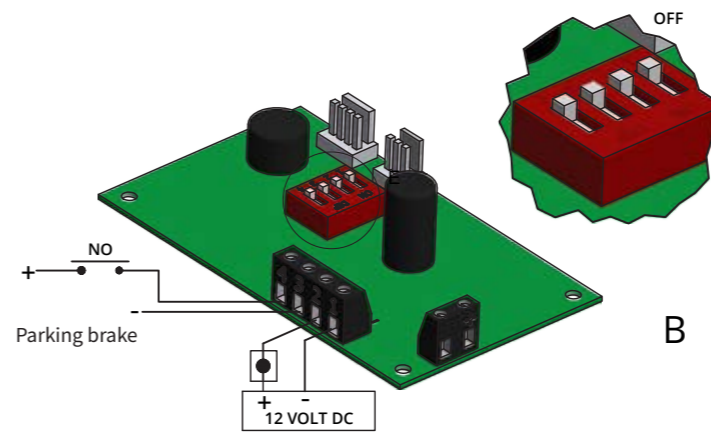
### 5. Connection of control unit

The docking station's control module has a built-in function which can render the electric release system redundant if the vehicle's parking brake is not activated.

- a. If this system is not required, connect the wires as **shown on fig. A** – all the DIP switches should be set as shown.  
**If the electric release system shall only be operable when the parking brake is activated, the wires and DIP switches should be connected/positioned in one of the following four ways:**  
 The correct solution for the vehicle concerned depends on how the switch for the parking brake functions, e.g. whether the switch is of the type normally open (NO) or normally closed (NC), and whether it is connected to (+) or (-) ground.
- b. If a supply voltage (+) is **switched on** when activating the parking brake, the wires must be connected, and the DIP switch positioned as **shown on fig. B**.

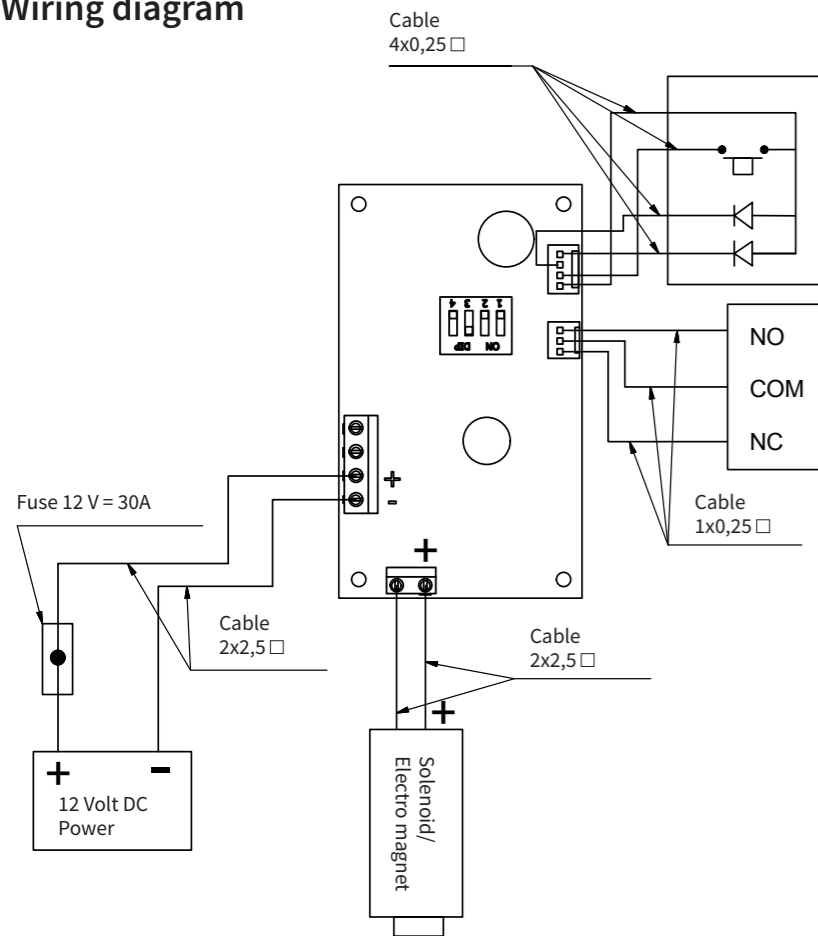


- c. If a supply voltage (+) is **cut off** when activating the parking brake, the wires must be connected, and the DIP switch positioned, **as shown on fig. C**.
  - d. If a signal from ground (-) is **switched on** when activating the parking brake, the wires must be connected, and the DIP switch positioned, **as shown on fig. D**.
  - e. If a signal from ground (-) is **cut off** when activating the parking brake, the wires must be connected, and the DIP switch positioned, **as shown on fig. E**.
6. Carefully fit the docking station's top section. Be careful when placing wires and cables so that they do not touch the moving parts.
  7. Fit the cable onto the battery's negative terminal.





## Wiring diagram



## Adjustment and final check

1. Check the function, operation and location of the docking station, control panel and safety belt with the user sitting in the wheelchair.
2. Check if the lock plate and wheelchair scrape against the docking station. Adjust using Dahl spacers if necessary.
3. Check if all nuts and bolts are properly tightened.
4. Check if all wires and cables are free of the moving parts of the docking station and wheelchair.
5. Check if the manual emergency release mechanism functions correctly.
6. Check if the cable-activated manual operating lever functions correctly – if fitted.
7. Instruct the user in the correct use of the docking station and go through all warnings contained in these instructions.
8. Inform the user of maintenance and inspection as stated in the maintenance interval and documentation.

You can find videos and more information about maintenance and installation of DAHL docking station on our homepage:

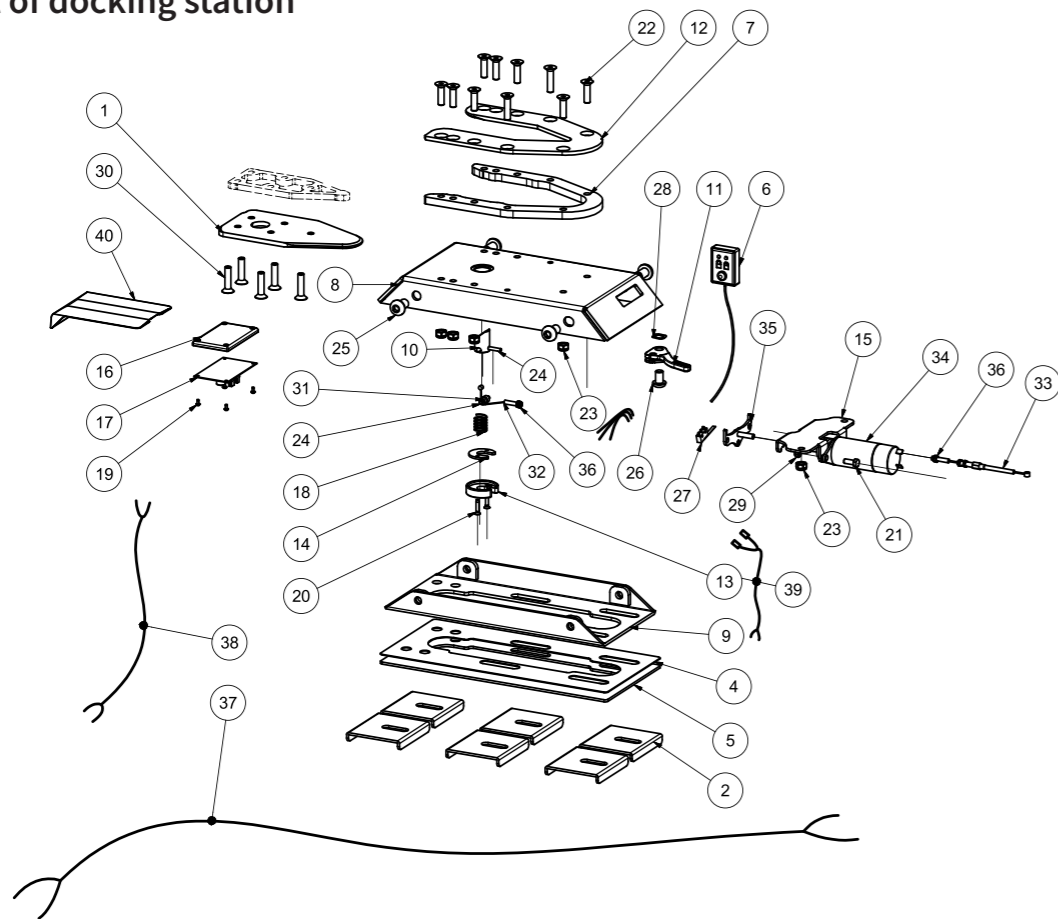
<https://dahleengineering.dk/en/products/dahl-docking-station/installation-and-maintenance/>

## Warnings

1. Installation must be carried out by an experienced technician/fitter.
2. 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.
3. 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.
4. WTORS may only be used for forward-facing wheelchairs.
5. 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.
6. Users in wheelchairs should never be transported in the vehicle if certified WTORS are not used.
7. 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.
8. 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.
9. The user should never try to repair, adjust or modify the docking station's/WTORS components.  
Alterations and modifications to the system or replacement with non-original Dahl components are not recommended. In the event that there are questions concerning this matter and the installation of the docking station in the vehicle, it is recommended that Dahl Engineering be contacted for more advice. Any alterations carried out without prior agreement with Dahl Engineering are entirely the responsibility of the fitter and/or the user.
10. Do not attach components to weak/non-solid components or materials.
11. 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.
12. Incorrect installation of safety belts and the docking station can cause malfunctions which can result in death or serious injury to the user.
13. Belt webbing must be protected against contact with sharp edges and corners.
14. Belt webbing must be protected against contact with solvents, polishing agents, oil, and caustic/corrosive fluids or materials, in particular battery acid.
15. Belt webbing and components that are damaged, worn, have tears or are contaminated must be replaced. This should be checked daily.
16. 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 dismount the airbag, one shall, before fitting the docking system, check if the vehicle manufacturer can offer a safety belt, which is approved to be fitted without an airbag.
17. A docking station which has been involved in a collision from which the vehicle has had to be towed away, must be sent to DAHL Engineering for inspection and possible repair. Safety belts and components must be replaced, without separating the components, because they can have obtained invisible damages.
18. 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.

## Spare parts list of docking station

#501750



No	Amount	Description	#
1	1	Lock plate	500561
2	6	U-washer	500587
3	1	Spacer 8 mm	500673
4	1	Spacer 1 mm	500589
5	1	Spacer 3 mm	500590
6	1	Control panel	500688
7	1	Intermediate plate	501722
8	1	Outer shield	501740
9	1	Bottom plate	501748
10	1	Lock pin	502465
11	1	Release handle	501727
12	1	Top plate	501728
13	1	Disc	501731
14	1	Spacer for lock cylinder	501808
15	1	Mounting plate for electromagnet	502456
16	1	Holder for Docking circuit board	501787
17	1	Circuit board	501863
18	1	Compression spring	500588
19	4	Screw	3184810 - 2,5x6
20	2	Bolt	Forming screw - M4x20

No	Amount	Description	#
21	1	Bolt	Bolt DIN 933 - M6x16
22	8	Bolt	DIN 7991 - M8x30
23	10	Lock nut	DIN 985
24	2	Steel pin	ISO 2338 - 4 H8x26
25	4	Bolt	ISO 7380 - M12x25
26	1	Bolt	ISO 7380 - M10x16
27	1	Switch	500690
28	1	Washer	W0618-008
29	1	Nut	M6
30	5	Bolt for Docking lock plate	502800
31	1	Roll for locking cylinder	502464
32	1	Release wire	502400
33	1	Cable for quick release	502421
34	1	Solenoid	502350
35	1	Anchoring plate for steelwire on solenoid	502455
36	2	Nut	DIN 985 - M5
37	1	Power cable	500703
38	1	Cable for hand brake	500702
39	1	Cable for solenoid	500704
40	1	Emergency release tool	503161

# WHERE SAFETY STARTS



01.2019

**DAHL**  
ENGINEERING

Development and crash-test centre  
Where safety starts

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