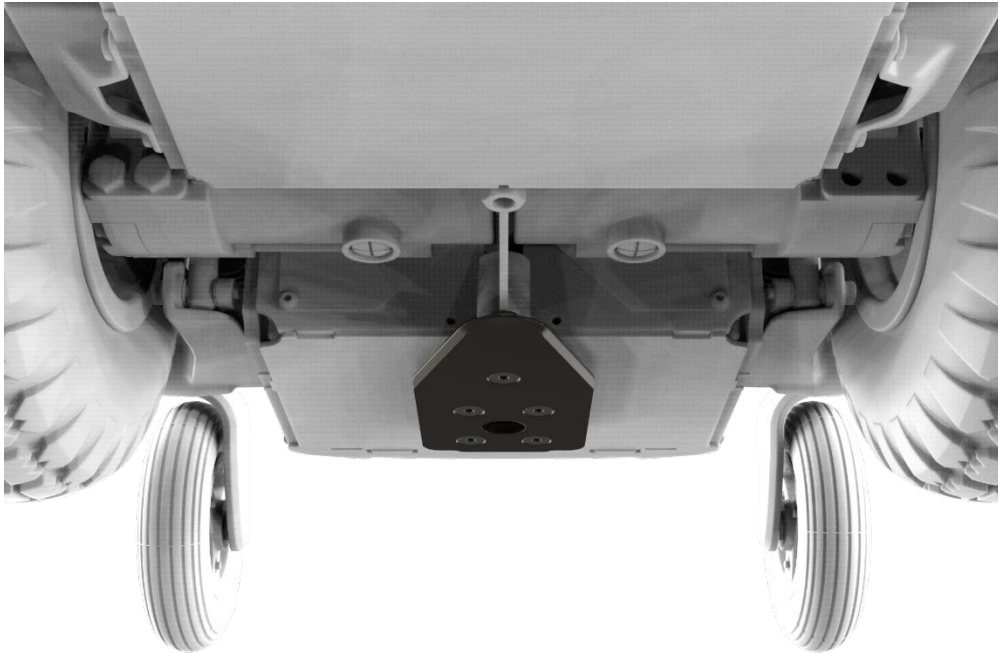


DAHL DOCKING SYSTEM USER GUIDE



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About this manual



Figure 1 - Powerchair Owner's Manual

This User Guide should be read in conjunction with your Powerchair Owner's Manual.

The Powerchair Owner's Manual contains information for using a strap restraint system along with positioning belts and harnesses.

The Magic 360 has been successfully tested with the Dahl docking system according to ISO 7176-19.

The maximum user weight limit for the Magic 360 with Dahl docking system is 136kg

Dahl Engineering offer two docking stations. The Dahl Docking Mk II. and the new power height adjustable Dahl VarioDock™. The lock plate and wheelchair adaptation kits are identical for both docking stations and both are suitable for securing the Magic 360 powerchair. Ensure the VarioDock, which is 54 mm wider and 1 mm higher than the Mk II, will fit under the chair.

To fit the Dahl Lock plate to the Magic 360 base, an additional wheelchair adaptation kit is required – kit number 501798. The lock plate and adaptation kit used is identical for both Dahl Docking Mk II and Dahl VarioDock™.

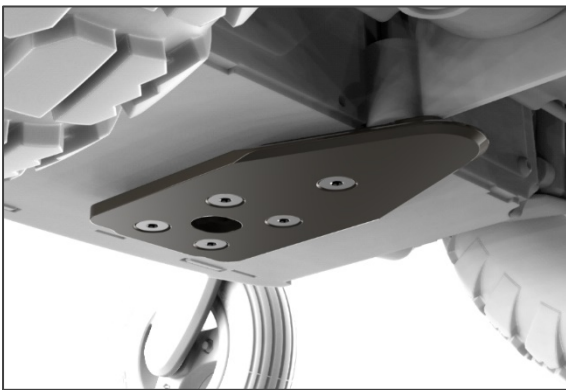


Figure 2 - Dahl Lock plate fitted to Magic 360 base

Magic Mobility is not responsible for any sales, support or installation of Dahl docking systems. Dahl docking systems are sold by Dahl Engineering and distributed directly to car adaptation workshops, who will be responsible for installing the system according to instructions from Dahl Engineering and Magic Mobility.

For installation of the Dahl Lock plate on the Magic 360 refer to the **PCP 6566 Dahl Docking Plate on Magic 360**. Installation should be performed by an authorised technician.



- Ensure that the vehicle is suitably equipped to transport a passenger in a wheelchair and access is suitable for your wheelchair type
- The vehicle should have the floor strength to take the combined weight of the occupant, the wheelchair and its accessories.

1 Travelling in a vehicle while seated in your powerchair

Magic Mobility powerchairs comply with the requirements of ISO 7176-19 and as such have been designed and tested for use only as a forward-facing seat in motor vehicles. The powerchair has not been tested in other positions.

The Dahl Docking System should only be used with powerchair tie down and occupant restraint systems suitable for the powerchair weight including options that have been installed in accordance with the manufacturer's instructions. The restraint system must conform to SAE J2249 (USA) or ISO10542 (International).



Powerchairs secured in a vehicle don't provide the same safety and security as vehicle seating. Magic Mobility recommends that users transfer to the vehicle seat and use the vehicle-installed restraint system whenever possible. The unoccupied powerchair should then be stored as cargo or secured in the vehicle as described in Section 5.1 of your Powerchair Owner's Manual.

When seat positioning options are fitted the following should be followed whenever feasible:

Seat elevator - fully DOWN with the seat at its lowest level

Seat tilt - fully DOWN with the seat parallel to the ground

Legrest - fully DOWN with feet close to the floor and knees bent to 90°

Backrest - upright, at or as close to 90° to the seat.

1.1 Securing the wheelchair in the Docking Station

Manoeuvre 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.

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.

As an indication that the wheelchair is properly secured, the warning tone will cease, the red lamp (LED) in the control panel will go out and the green lamp (LED) will light up.

Do not forget to fit the occupant restraint system.



Do not move the vehicle:

- Whilst the wheelchair is being manoeuvred into position in the docking station
- If the wheelchair and user are not correctly secured
- If the warning tone sounds and/or the red warning lamp (LED) in the control panel flashes or is lit!



Always check if the lock plate is properly engaged in the docking station by trying to reverse the wheelchair out of the docking station before moving the vehicle. (It must not be possible to reverse out of the docking station without pressing the red release button in the control panel).

1.2 Releasing the wheelchair from the Docking Station

When the vehicle has been brought to a halt, remove the occupant restraint.

To unlock, commence by driving the wheelchair forward to release pressure on the lock pin.

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.

Move the wheelchair away from the docking station within this 5-second period. 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.



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

1.3 Manual release in case of electric failure

A manual emergency release is located at the front edge of the docking station.

Move the wheelchair forward to remove the pressure on the lock pin and push the red release arm to one side and hold it there while the wheelchair moves away.

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.

1.4 Emergency release tool

If the described manual release procedure fails; an emergency release tool made from red plastic comes with each docking station.

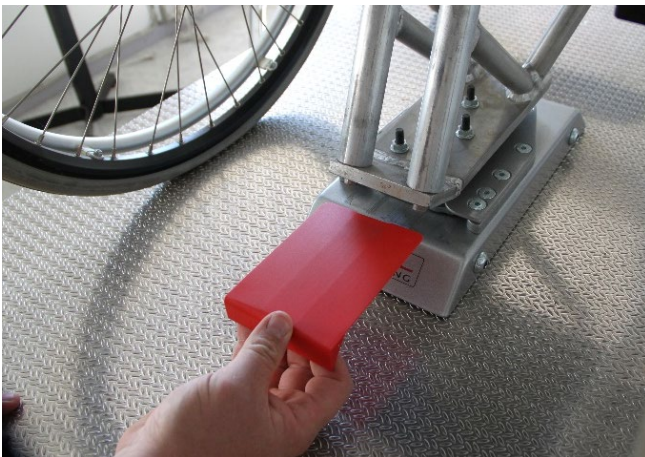


Figure 3 - Emergency release tool



Figure 4 - Push the release tool until the Docking Pin is forced down.

Drive wheelchair forward to remove the pressure on the lock pin.

Place the emergency release tool in the gap between the locking plate and the docking station.

Push the release tool and wheelchair forward until the locking pin has been forced down - after which the wheelchair can be reversed out of the docking station.

1.5 Restraint and Positioning Instructions



Occupant restraint instructions

- Powerchair mounted lap belts or lap straps (postural or otherwise) should not be used as or relied upon for occupant restraint in a moving vehicle
- Always use a three-point occupant restraint system to secure the occupant
- Both pelvic and upper torso restraint belts must be used to restrain the occupant and to reduce the possibility of head and chest impacts with the vehicle components
- Restraints should be mounted to the appropriate vehicle pillar and should not be held away from the body by powerchair components such as armrest or wheels (Figure 6)
- Use a suitable positioned headrest when being transported in a powerchair.

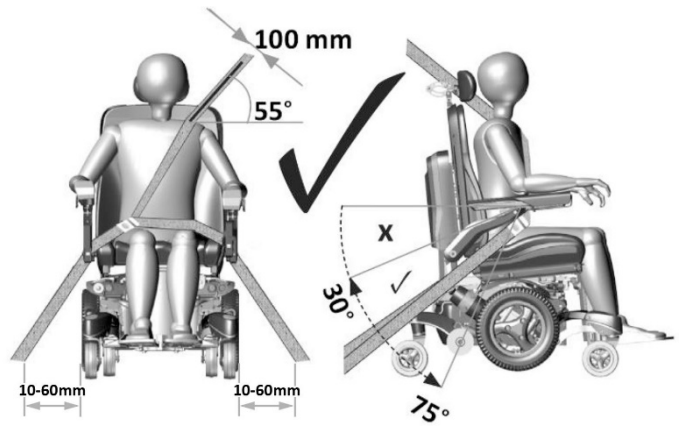


Figure 5 - Correct positioning of three-point occupant restraint



Positioning the occupant restraint

- The floor anchorage points for the occupant restraint system shall be located 10-60 mm outside wheels, on each side
- A pelvic belt should be worn low across the front of the pelvis so that the pelvic belt restraint angle is between 30° - 75° relative to the horizontal (Figure 5)
- A steeper (greater) angle within the preferred zone is desirable
- The upper torso restraint belt must fit over the shoulder and across the chest as illustrated (Figure 5). Do not fit restraint belt as shown in Figure 6
- Belt restraints should be adjusted as tightly as possible, consistent with user comfort
- Belt restraints should not be twisted when in use.

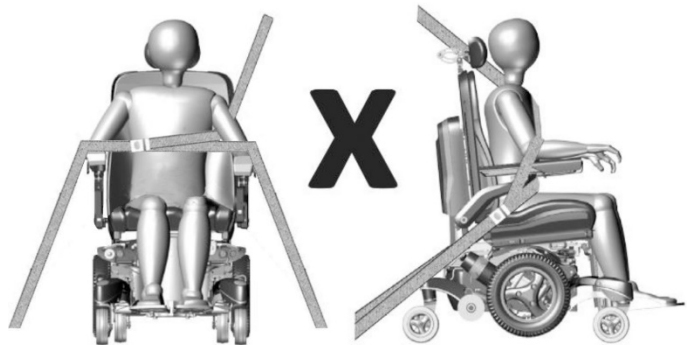


Figure 6 - Incorrect positioning of three-point occupant restraint

The Dahl Docking System tests were conducted with a 76kg crash test dummy. Occupants with a higher weight are at increased risk during an accident.

Magic Mobility recognises that it is not always practical for users to be transferred. In this circumstance, where the user must be transported while in the powerchair, the following advice must be followed:

- User safety during transportation depends upon the diligence of the person securing the tie down restraints. They should have received appropriate instructions and/or training in their use
- Attach occupant restraints according to manufacturer's instructions and SAE J2249 or ISO 10542
- Don't use WTORS designed to rely on the powerchair structure to transfer occupant restraint loads to the vehicle
- Magic Mobility powerchairs comply with the requirements of ISO 7176-19 and, as such, have been designed and tested for use only as a forward-facing seat in a motor vehicle
- **Note** - compliance to this standard does not preclude using the powerchair rearward in large accessible vehicles equipped with rear facing passenger stations
- The powerchair has been dynamically tested in a forward-facing orientation with the crash test dummy restrained by both pelvic and shoulder belts (e.g. a shoulder belt as part of a three-point belt restraint)
- Both pelvic and shoulder belt restraints should be used to reduce the possibility of head and chest impacts with vehicle components
- To reduce the potential of injury to vehicle occupants, powerchair mounted trays not specifically designed for crash safety should:
 - i) be removed and secured separately in the vehicle, or
 - ii) be secured to the powerchair but positioned away from the occupant with energy absorbing padding placed between the tray and the occupant
- When possible, other auxiliary powerchair equipment should either be secured to the powerchair or removed and secured in the vehicle during travel. This will ensure that it doesn't break free and cause injury to vehicle occupants in the event of a collision
- Any wheelchair anchored occupant restraint i.e. 3-point belt, harness or postural supports (lap straps, lap belts) should not be used or relied on for occupant restraint in a moving vehicle, regardless if labeled ISO 7176-19, SAE J2249 or any other. Use a vehicle anchored and certified occupant restraint system instead
- The powerchair should be inspected by a manufacturer's representative before reuse following involvement in any type of vehicle collision
- Alterations or substitutions should not be made to the powerchair securement points or to structural and frame parts or components without consulting the powerchair manufacturer
- Spill proof sealed batteries such as "gelled electrolyte" should be installed on powerchairs when used in a motor vehicle
- Care should be taken when fixing the occupant restraint to position the seat buckle. This will ensure that the release button is not contacted by powerchair components during a crash.

After a vehicle collision



If you have been involved in a vehicle collision, it's important that a Magic Mobility authorised agent inspects your powerchair before you use it again. If the damage is questionable or there is concern about its condition, then Magic Mobility recommends that the chair is replaced.

Attention powerchair users – your powerchair warranty is void if it has been involved in a collision.

Contact Magic Mobility if you require further information

3 International Court, Scoresby Vic 3179

Tel +61 3 8791 5600 Email sales@magicmobility.com.au

<http://www.magicmobility.com.au>

Dahl Docking Plate on Magic 360



Category:	Accessories	Doc. No:	6566	Auth'd	CD	Rel. Date	08/02/21	Issue	A
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Item	Description	Picture	Quantity
6571	501798 Adaptation Kit for Dahl Docking Station <ul style="list-style-type: none"> 6572 500759 Nut x 5 6573 501758 Spacer x 2 		1
6574	503125 Lock Plate with bolts and 8 mm spacer <ul style="list-style-type: none"> 6575 500561 Lock Plate x 1 6576 500673 Spacer x 1 6577 502800 Countersunk Screw x 5 		1
6566	Fit Dahl Docking Plate to 360 (these installation instructions – printed copy)		1
6567	Dahl Docking System User Guide (on USB supplied with new wheelchair)		1
6568	Sticker, Dahl User Weight	Dahl Docking System fitted. Docking System max. user weight 136kg	1

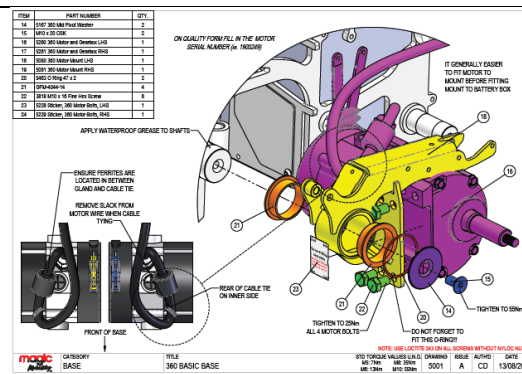
Read all instructions carefully before proceeding with the installation.

Fitting Docking Plate During New Chair Build

1. Following fitment of motor mounts and motors on both sides:

Cut the #501758 spacer plate in half to create 2 x 160mm long plates, then fit them on either side of the Battery Box.

Place nuts in Ø13.2mm holes in the



Dahl Docking Plate on Magic 360



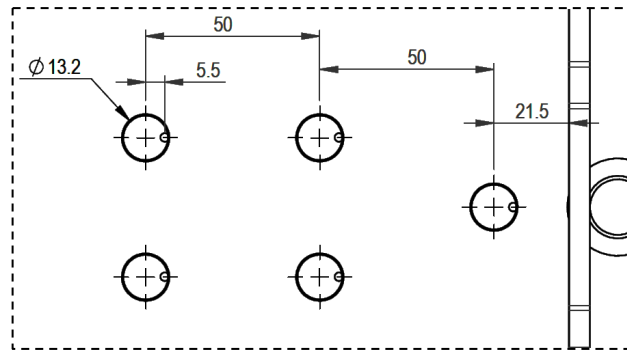
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Battery Box with the recess down.

For Magic 360 models sold from September 2020 to May 2021 the holes have not been pre-cut, therefore they must be drilled in place.

The hole position is 5.5mm behind the M4 holes in the base.

See image on right for dimensions.

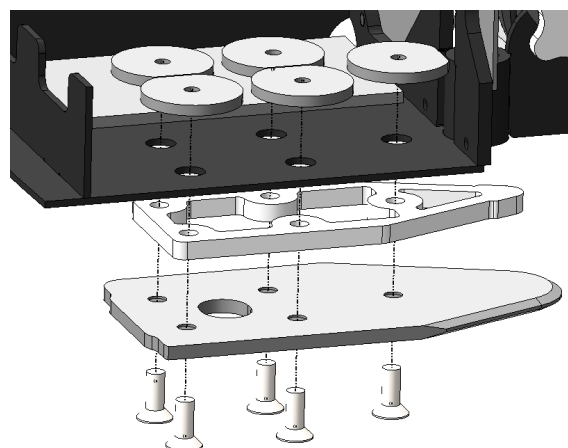
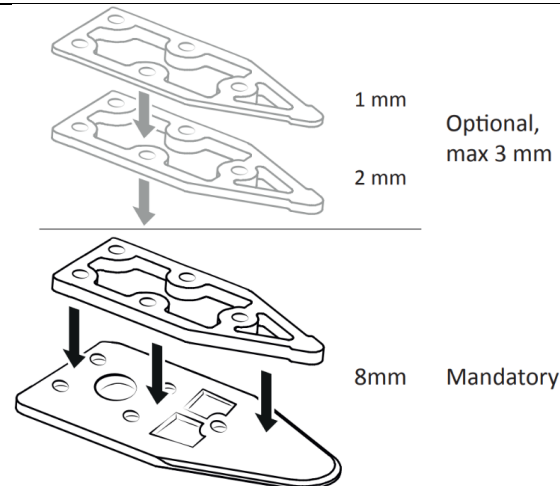


- Fit the 8 mm spacer (and optional thin spacers if required – as shown on right) onto the Lock Plate and pass the five bolts (Dahl #502800) through the lock plate and 8 mm spacer.

Mount the bolts in the nuts and tighten to a torque of 16-18 Nm.

WARNING!
Do not use any bolts other than those supplied from Dahl Engineering - #502800 (14.9 Grade)

Only fit optional spacers if specifically requested on order form.



Dahl Docking Plate on Magic 360

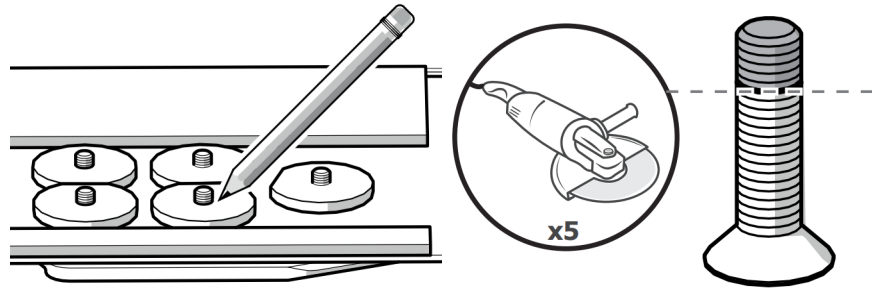


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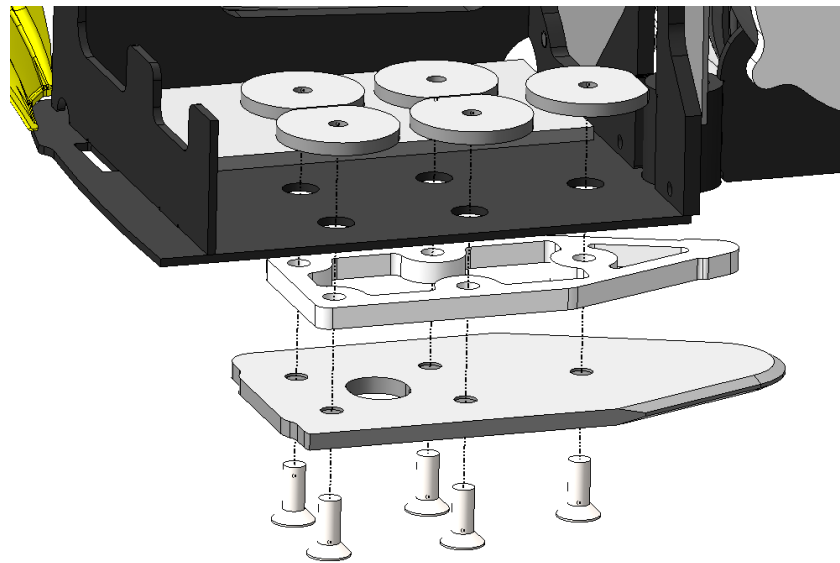
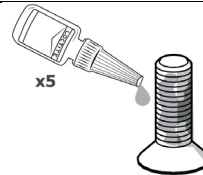
3. Mark where to cut the bolts, then Remove bolts and cut off excess thread.

WARNING!

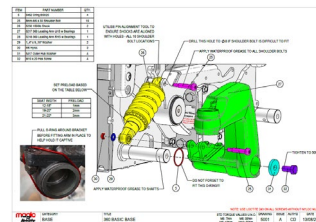
It is vital that the length of the bolts are correct. If bolts are made too short to reach through all threads in the nuts – they will not have the strength to carry the load required. If bolts are made too long the batteries can be damaged. If bolts are cut too short replace them with original Dahl bolts #502800 only



4. Apply Purple Loctite 222 (or an equivalent product) onto threads on all bolts, then re-fit bolts and tighten to 16-18Nm of torque.



5. Continue base build. When fitting the Battery Box Cover apply the 6568 Dahl User Weight sticker to the right side of the Serial Card as shown on right.



Dahl Docking Plate on Magic 360



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Fitting Docking Plate to Existing Chair

1. Loosen thumb screws and remove rear Power Module cover



2. Disconnect Lights cable, then disconnect all the cables from the Power Module – 1 x Bus cable, 2 x motor connectors, 1 x battery connector.

Unhook the cables from the side clips



3. Remove the 8 x hex screws that secure the seating system to the base.

Use an angled power wrench to make this process quicker.



Dahl Docking Plate on Magic 360



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4. Flip armrests up then carefully flip seat unit backwards.

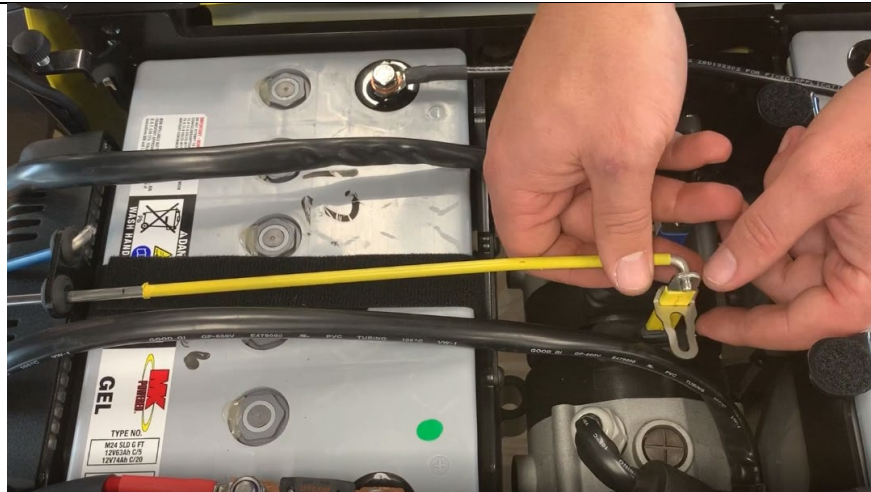
Ensure bus and lights cables are not pulled tight.



5. Remove battery box cover, then release negative wire and remove terminal cover



6. Lift motor brake lever clips to release brake lever rods, then slide rods out the rear holes



Dahl Docking Plate on Magic 360



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7. Unscrews all battery terminals, starting with the 0V terminal



8. Remove battery link, fuse link, and tuck the motor cables into the central opening

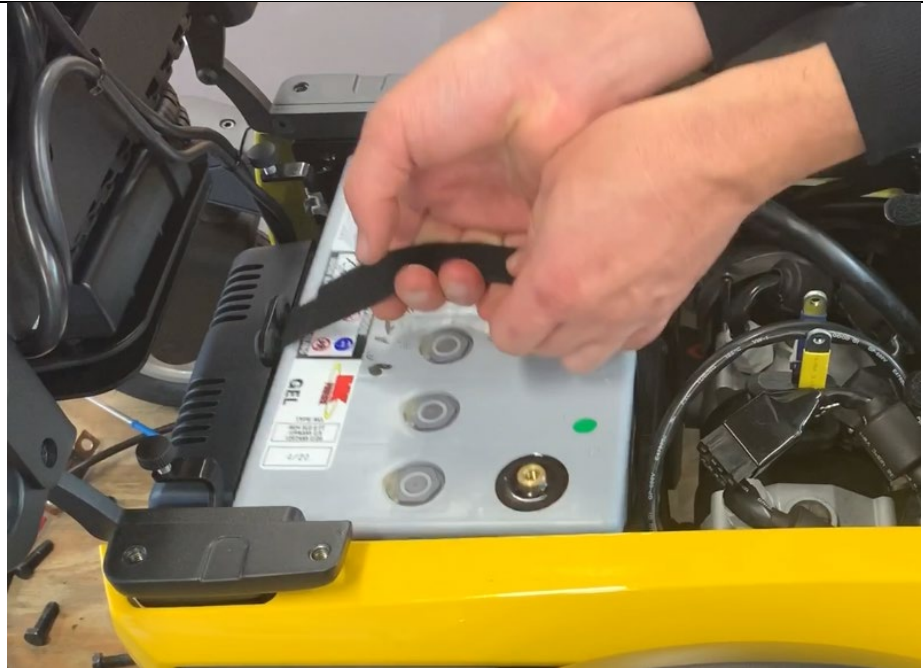


Dahl Docking Plate on Magic 360

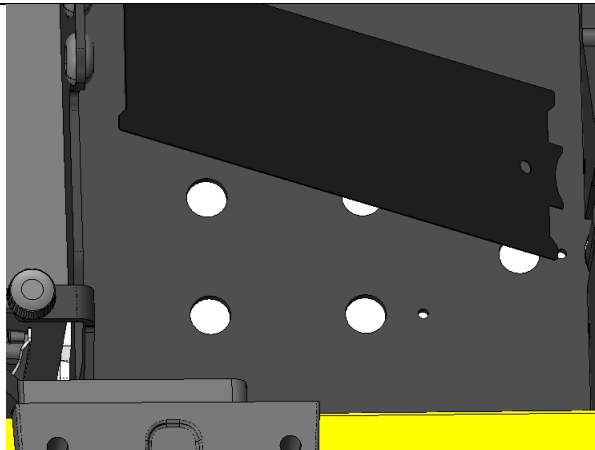


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9. Carefully lift out the rear battery

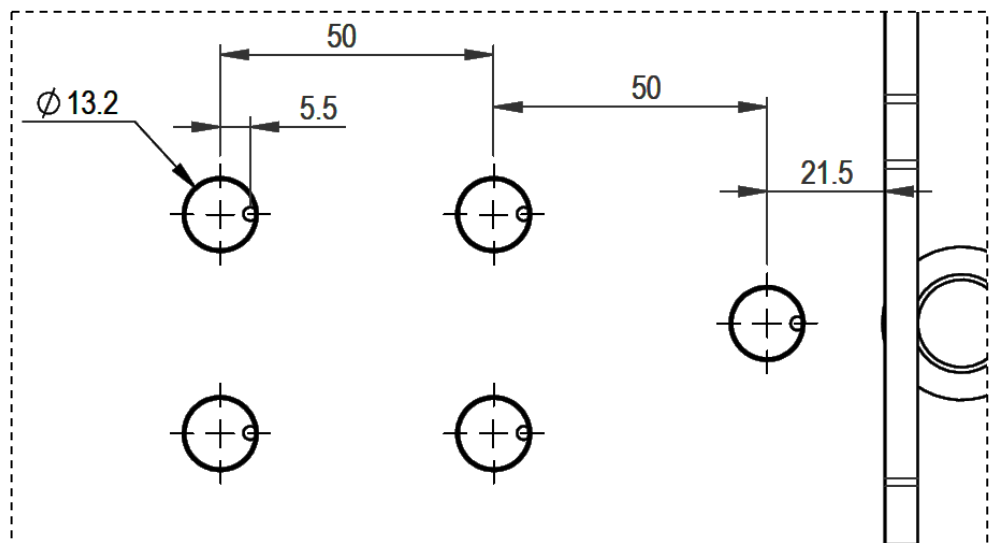


10. Remove thin cover plate to access pre-cut $\text{\O}13.2\text{mm}$ mounting holes. Cover can be disposed of.



For Magic 360 models sold from September 2020 to May 2021 the holes have not been pre-cut, therefore they must be drilled in place. The hole position is 5.5mm behind the M4 holes in the base.

See image on right for dimensions.

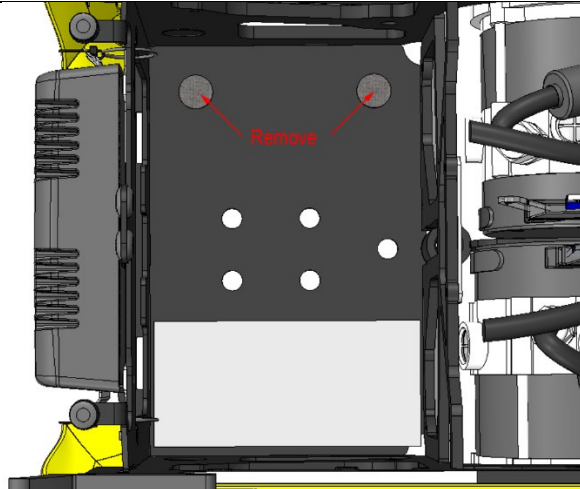


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11. Remove the 4 x Velcro dots from the base of the Battery Box
12. Cut the #501758 spacer plate in half to create 2 x 160mm long plates, then fit them on either side of the Battery Box. Dispose of the spare spacer plate from the #501798 kit.

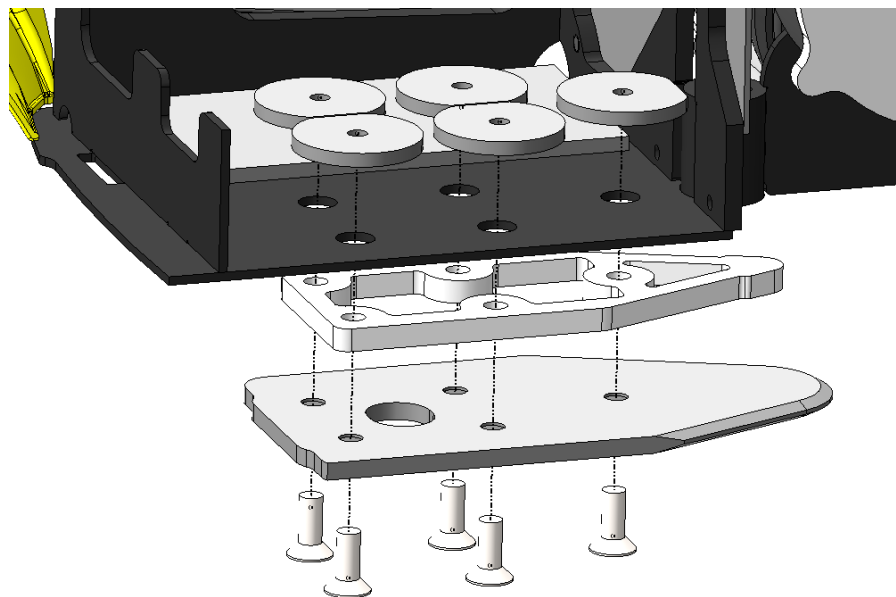
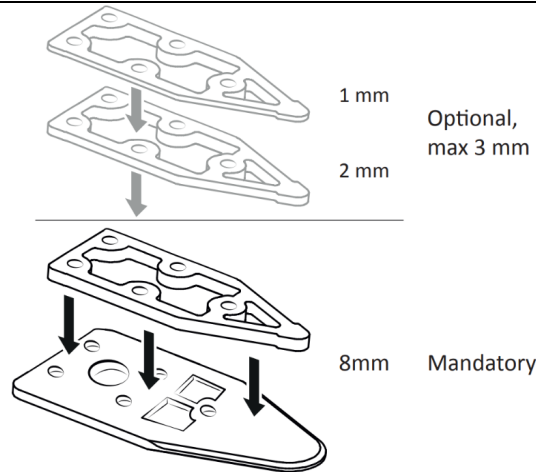


13. Place nuts in Ø13.2mm holes in the Battery Box with the recess down.

Fit the 8 mm spacer (and optional thin spacers if required – as shown on right) onto the Lock Plate and pass the five bolts (Dahl #502800) through the lock plate and 8 mm spacer.

Mount the bolts in the nuts and tighten to a torque of 16-18 Nm.

WARNING!
Do not use any bolts other than those supplied from Dahl Engineering - #502800 (14.9 Grade)



Dahl Docking Plate on Magic 360

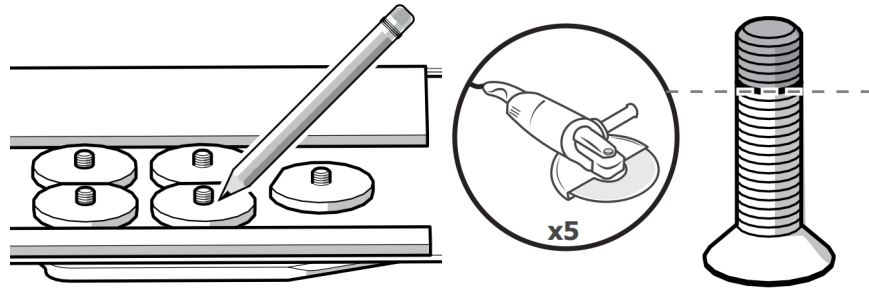


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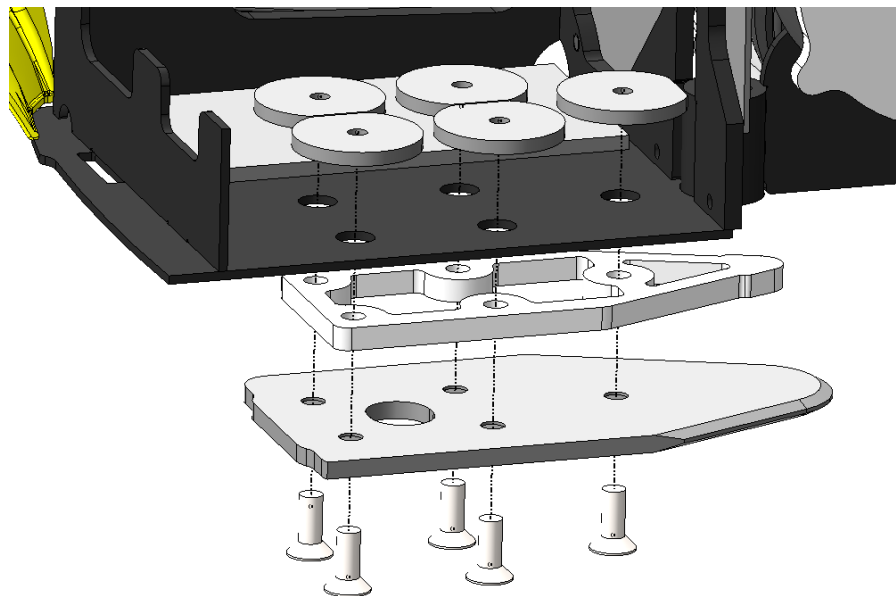
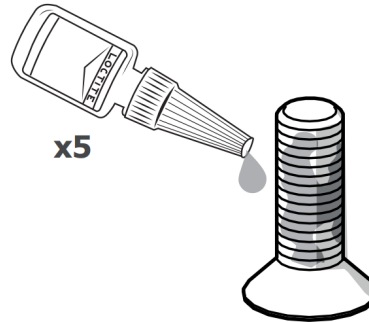
14. Mark where to cut the bolts, then Remove bolts and cut off excess thread.

WARNING!

It is vital that the length of the bolts are correct. If bolts are made too short to reach through all threads in the nuts – they will not have the strength to carry the load required. If bolts are made too long the batteries can be damaged. If bolts are cut too short replace them with original Dahl bolts #502800 only



15. Apply Purple Loctite 222 (or an equivalent product) onto threads on all bolts, then re-fit bolts and tighten to 16-18Nm of torque.

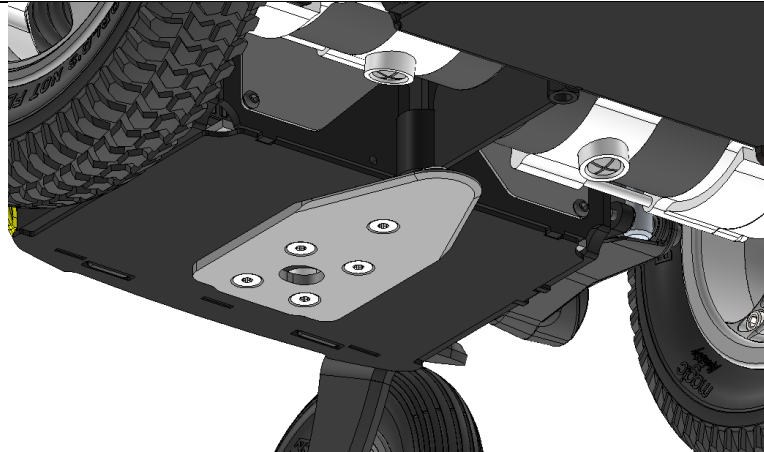


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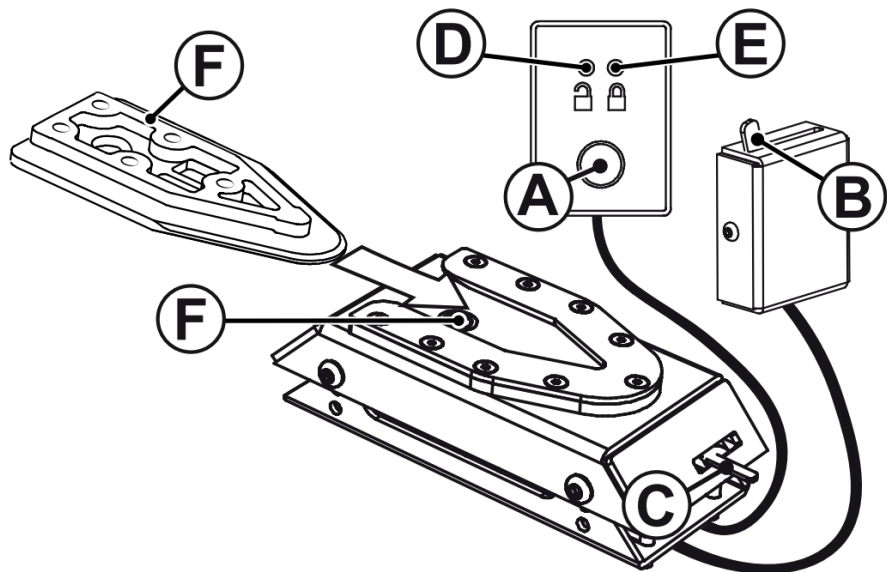
16. Repeat steps 1-9 in reverse to re-assemble the wheelchair.



17. Apply the 6568 Dahl User Weight sticker to the right front side of the Battery Box cover as shown on right.



18. If possible, perform final check by connecting the wheelchair to the docking station. Make sure that lock plate is securely locked and that all release methods work as intended. A warning tone will sound if Lock Plate is not properly engaged. (A) Release button. (B) Manual operating lever. (C) Emergency release. (D) Red LED. (E) Green LED. (F) Lock Plate. (G) Lock Pin.



19. Provide User Guide to end user.



Dahl Docking Plate on Magic 360



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Version	Description of Change	DCR No	Author:	Reviewed By:	Date
A	Initial Release	1381	LD	CD	08/02/21