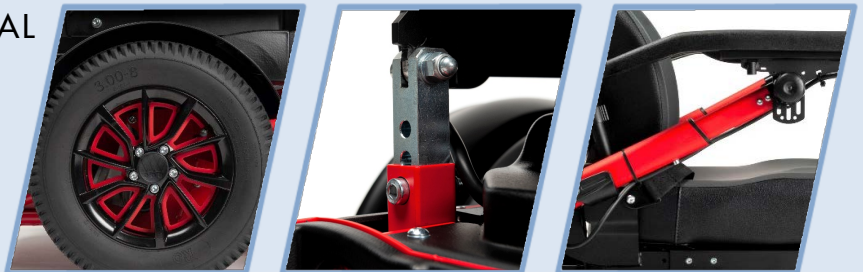


# VERMEIREN

## Sigma Sigma 230

INSTALLATION MANUAL





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## Preface

To support you on the installation and repairs of this electric wheelchair, we provide you with this installation manual. Please read it carefully. If you still have questions after reading this manual, do not hesitate to contact Vermeiren.

The information in this manual applies to the following wheelchair(s):

- Sigma, with manual adjustments
  - SE30 manual seat adjustment
  - SE34 manual backrest adjustment
  - SE39 manual seat and backrest adjustment
- Sigma, with electrical adjustments
  - SE40 electrical seat adjustment
  - SE41 electrical backrest adjustment
  - SE43 electrical seat and backrest adjustment
- Sigma, with vertical lift and electrical adjustments
  - SE42 in combination with SE 39 or SE40

### **Important note**

Pictures of the product are used to clarify the instructions. Details of the shown product may deviate from your product.

### **Available information**

**On our website <http://www.vermeiren.com/> you will always find the most recent version of the information described in this manual. Please consult this website regularly for possible updates.**

Visually impaired people can download the electronic version of this manual and have it read out by means of a text-to-speech software application.



User manual  
For user and specialist dealer



Manuals of options SE39, SE40, SE41, SE42  
For user and specialist dealer



User manual of applied operating console and battery charger.  
For user and specialist dealer



Installation instructions (Instructions for detail adjustments and (dis)assembly)  
For specialist dealer



Service manual for wheelchairs  
For specialist dealer

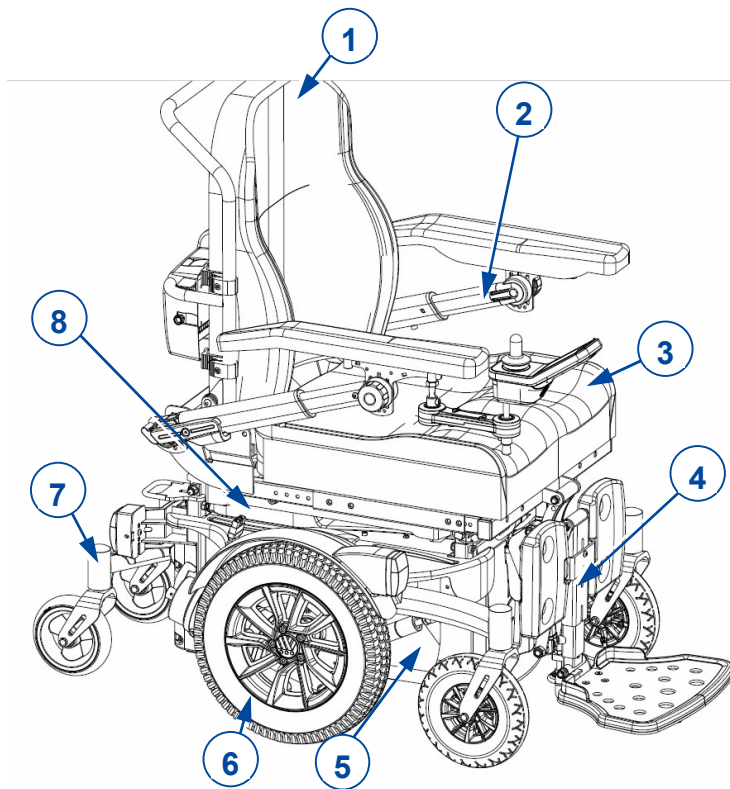


Drawings of (spare) parts  
For specialist dealer



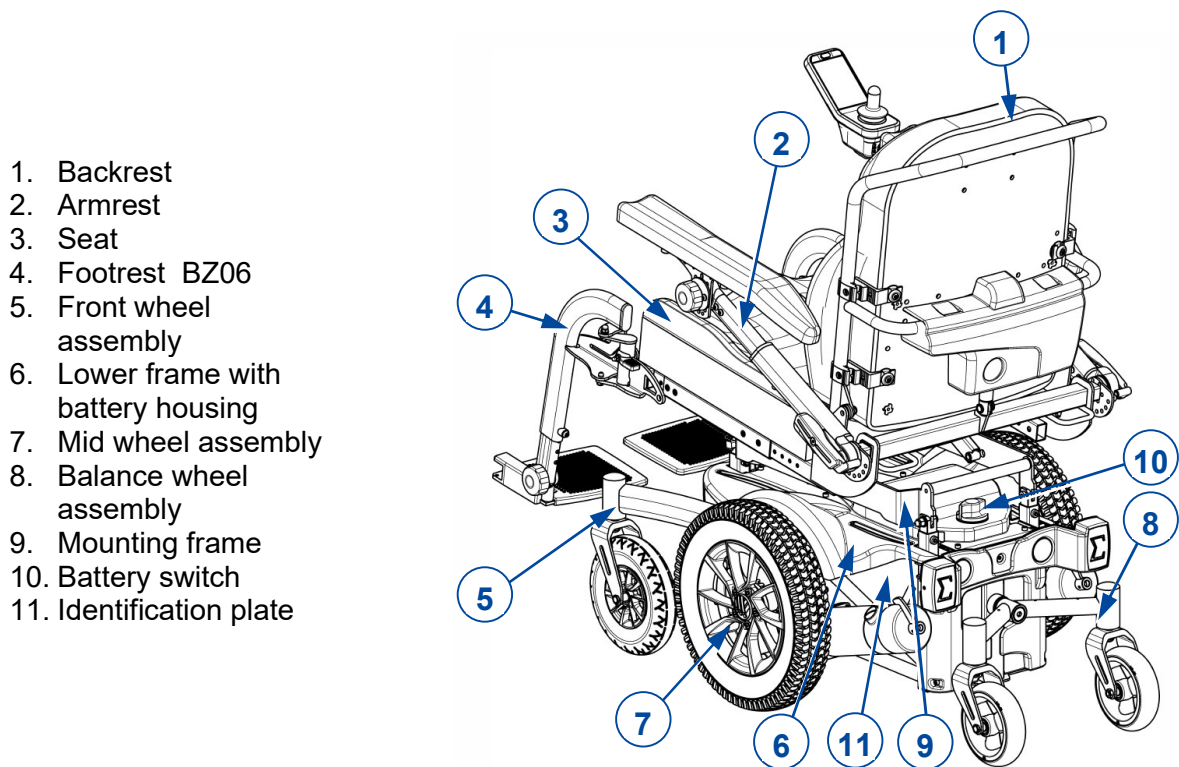
EC declaration of conformity

# 1 This product



1. Backrest
2. Armrest
3. Seat
4. Footrest BZ10E
5. Lower frame with battery housing
6. Mid wheel assembly
7. Balance wheel assembly
8. Mounting frame

**Figure 1** *Sigma, fully electrical with central footrest BZ10E*



1. Backrest
2. Armrest
3. Seat
4. Footrest BZ06
5. Front wheel assembly
6. Lower frame with battery housing
7. Mid wheel assembly
8. Balance wheel assembly
9. Mounting frame
10. Battery switch
11. Identification plate

**Figure 2** *Sigma, manually adjustable with footrest BZ06*



## 2 Scope of delivery

The following items are part of the delivery:

- Framework with armrests, operator control, rear and front wheels, seat and backrest (optional: electrically adjustable seat, backrest, electrical lift)
- Footrests (\*)
- Batteries
- Battery charger in pocket
- Tools
- User manual of:
  - wheelchair
  - operating console
  - battery charger
- Accessories (if applicable)

Before use, check if everything is included and that no products are damaged.

Please note that the basic configuration may differ in different countries. Contact your specialist dealer.

(\*) Type of footrest/leg rest depends on model.

## 3 Assembly and adjustments

**CAUTION**

Risk of injuries or damage

- The wheelchair needs to be (dis)assembled and adjusted by a specialist dealer according to the instructions in this chapter.
- Only use parts and tools described in this manual.
- Prevent bystanders from accessing the (dis)assembling area.
- Keep the (dis)assembling area clean and tidy, to prevent falling.
- Collect all small parts in a box or bag.
- While (dis)assembling and operating the wheelchair, make sure no objects or body parts get caught between moving parts. In particular, pay attention to the position of the cables.
- Turn the wheelchair off before you perform any mechanical adjustments and make sure that the free-wheel lever is in braking position.
- Make sure all screws are firmly secured before driving.
- Software changes are only allowed if executed by skilled personnel, taking into account the user and environment (stability, acceleration, indoor/outdoor, etc.).

**Important remarks**

- The Sigma, Sigma 230 wheelchair has multiple configuration options and optional parts.
- Read the user manual of this wheelchair.
- Be aware of the technical details and limits of intended use; see the user manual.
- For more information, contact Vermeiren.

### 3.1 Tools

To (dis)assemble and adjust the wheelchair, the following tools are needed:

- Wrench set no. 10 to no. 17
- Allen keyset n° 5, 6 and 7
- Screwdriver

## 3.2 Adjusting the wheelchair to the user


**CAUTION**

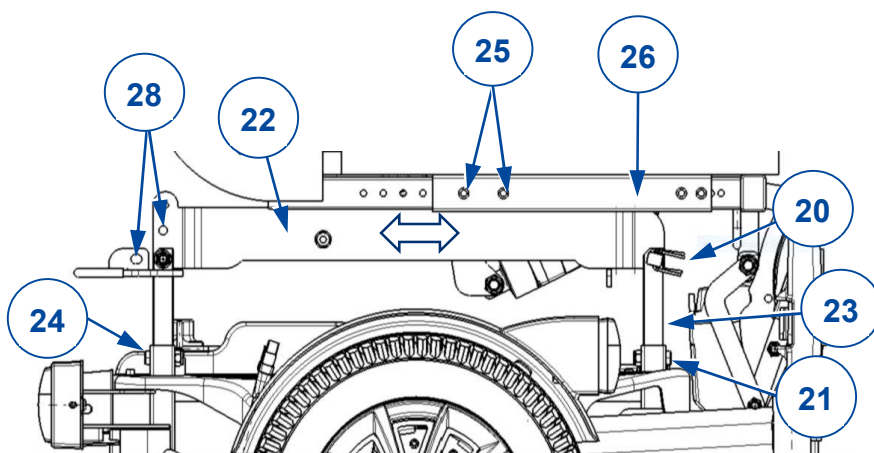
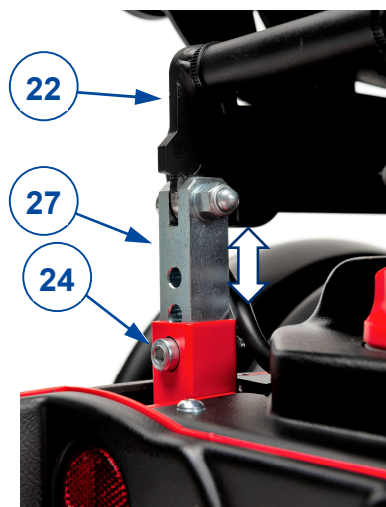
Risk of injuries or damage

- The frame with seat are heavy to handle. Ask help of an assistant.

### 3.2.1 Seat height (not applicable to Sigma with lift SE42)

The seat can be manually raised or lowered by height adjustments to the lower frame (4x). Five height positions are available.

1. Open the braces and remove both fastener pins (20) at the front side.
2. Tilt the mounting frame with seat (22) backwards with help of an assistant. Secure the frame by placing the fastener pins (20) in the overlapping holes (28).
3. Loosen the two front square rods (23) by removing the M8 socket screws and nuts (21). Slide both square rods (23) up/down in the frame supports until the desired height. Tighten each adjustment firmly by screw and nut.
4. Lower the mounting frame with seat back to the front until it rests on the square rods.
5. Insert the fastener pins (20) at the front side and close their braces.
6. Hold the mounting frame with seat (22) at the rear side with help of an assistant. Remove the M8 socket screws and nuts (24) to loosen both square rods at the rear side.
7. Slide both square rods (27) up/down in the frame supports by lifting/lowering the mounting frame and seat. Tighten each adjustment firmly by screw and nut.
8. Make sure that all 4 square rods are adjusted to the same height.



### 3.2.2 Seat depth

The seat is adjustable in 6 different seat depth settings, see picture above:

1. Loosen the two M6 socket screws (25) on either side of the frame.
2. Slide seat frame (26) backwards or forwards to get the desired position. Make sure that inner and outer tube holes are in line.
3. Insert the 4 socket screws (25) and tighten the nuts firmly.



### 3.2.3 Seat inclination (manual adjustment of SE30)

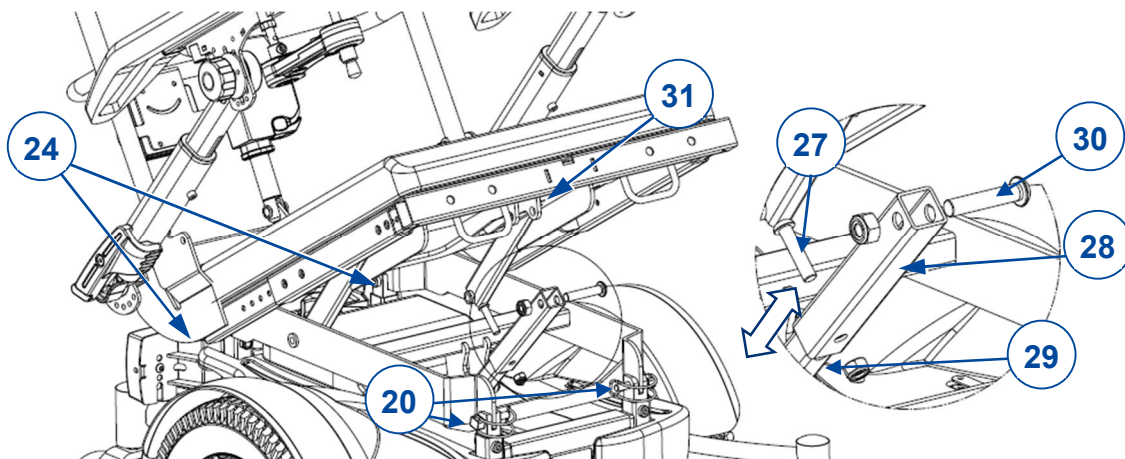
CAUTION
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Risk of damage

Ask assistance to prevent the mounting frame with seat from falling during adjustment.

To adjust the seat inclination manually (3 positions):

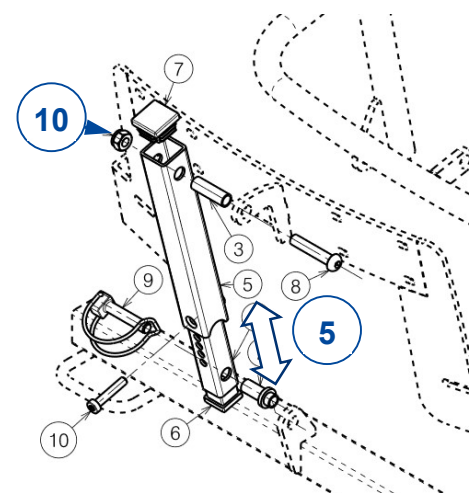
1. Fold the footplate up or if possible remove the footrests.
2. Open the braces and remove both fastener pins (20) at the front side.
3. Push the subframe chair open by tilting it backwards on the hinging points (24).
4. Remove M10 socket bolt (30) and nut, which connect the mounting frame with the lower frame.
5. Fold the mounting frame backwards/open. Make sure that the mounting frame stays in position. If necessary, ask someone to hold it during adjustment.
6. Remove M8 socket bolt (27) and nut.
7. Slide inner square tube (29) in/out of the tilt lever (28) until the desired angle is reached. Mount socket bolt (27) and tighten it firmly with the nut.
8. Turn mounting frame with seat down until the square tube (29) fits in the frame support (31).
9. Mount socket bolt (30) in frame support (31) and tighten it firmly with nut.
10. Turn the footplate in place or install the footrests.



### 3.2.4 Backrest inclination (manual adjustment of SE34)

To adjust the backrest inclination manually act as follows:  
 (6 positions, range 30°)

1. Remove the M6 socket screw (10).
1. Slide the inner square tube (5) in/out to the desired backrest angle.
2. Retighten the socket screw (10).
3. Check that the backrest frame is firmly secured.



### 3.2.5 Width between armrests

 CAUTION Risk of injuries

The maximum width is indicated by two triangles on each side of the seat, see picture. The outer triangles may not be covered by the frame tube.



To adjust the width of the armrests:

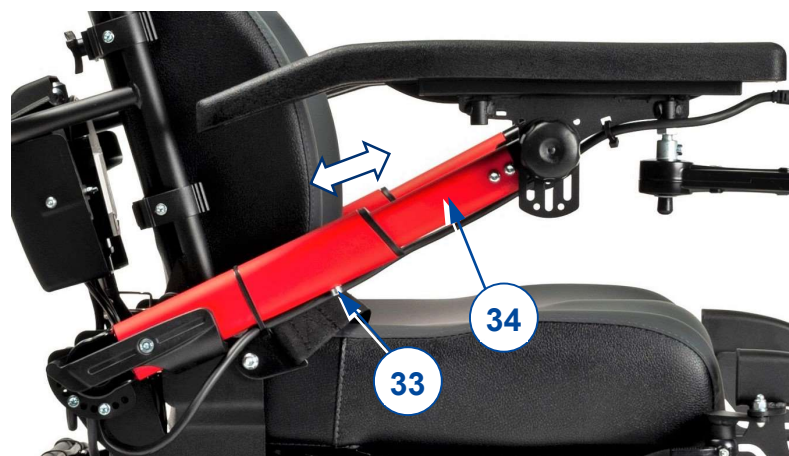
1. Loosen the two M8 socket screws (32) at the bottom of the seat frame, behind the securing hooks.
2. Adjust the armrest to a comfortable width.
3. Tighten the socket screws (32) firmly.
4. Repeat this at the other side of the wheelchair.
5. Make sure the armrests are positioned identically on both sides of the seat.



### 3.2.6 Armrest length

The telescopic armrest can be adjusted in 6 positions as follows:

1. If necessary, cut the cable ties that hold the power cable of the console.
2. Loosen the socket screw (33).
3. Slide the inner tube (34) in/out to the desired length.
4. Insert socket screw (33) and tighten properly.
5. Repeat this for the second armrest.
6. Make sure both armrests have the same length.
7. Make sure that both armrests are firmly secured.
8. Tighten the cable with cable ties.



### 3.2.7 Armrest lowest and highest angular position

 **CAUTION** Risk of injuries

Always use two socket bolts and two adjustment holes to tighten the armrest. Never exceed the maximum angular adjustment (holes).

To change the end position of the turning angle:

1. Hold the armrest and remove the two socket screws (35).
2. Turn the armrest support at the toothed clamp (36).
3. Make sure that the holes of inner and outer clamp part match.
4. Insert the two socket bolts again and tighten.
5. Repeat this for the second armrest.
6. Make sure both armrests have the same end positions.
7. Make sure that both toothed clamps (36) are firmly secured.



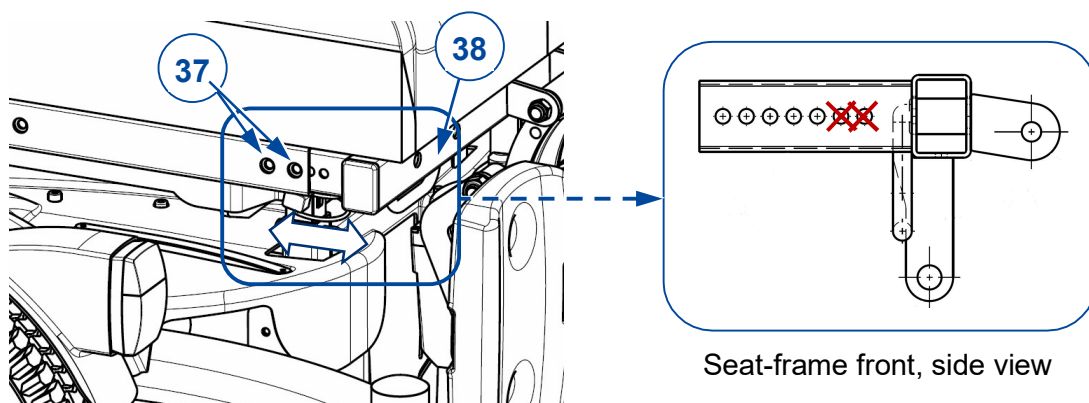
### 3.2.8 Footrest depth (Seat frame adjustment)

The distance between footrest(s) and seat can be adjusted over 30 mm by adjusting the front of seat frame (43).

**Note:**

**Each footrest support has 5 adjustment holes with 10 mm inbetween. Since there is less spacing between the footrest and the seat frame/front wheel, the first two adjustment positions should not be used in this configuration.**

1. Fold the footplate up or if possible remove the footrests.
2. Remove the two M6 socket screws (37) on either side of the seat frame, near the front.
3. Slide the front of the seat frame (38) backwards or forwards to get the desired position. Make sure that inner and outer tube holes are in line, see note above.
4. Insert the 4 socket screws (37) and tighten the nuts firmly.
5. Reinstall the footrests/footplate.

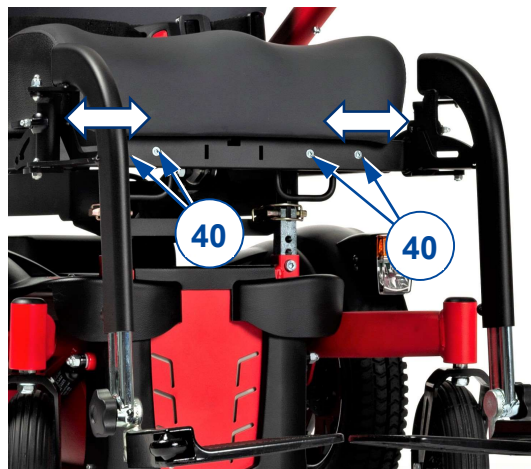


Seat-frame front, side view

### 3.2.9 Footrest width (Footrest B06 or BZ7EF)

The width between the footrests can be adjusted in 3 positions, over 30 mm by adjusting the front of seat frame.

1. Remove the footrests.
2. Remove the two M6 socket screws (40) on either side of the seat-frame front.
3. Slide the footrest supports in/out of the seat-frame front to get the desired position. Make sure that inner and outer tube holes are in line.
4. Insert the 2x2 socket screws (40) and tighten the nuts firmly.
5. Make sure the footrest supports are positioned identically on both sides of the seat.
6. Reinstall the footrests/footplate.



### 3.2.10 Footrest length B06

CAUTION

Risk of damage

- Avoid that the footrests make any contact with the ground. Keep a minimum distance of 50 mm above the ground.

1. Remove the screw (39).
2. Adjust the length of the footrest to a comfortable length (range: 120 mm, steps 20 mm).
3. Tighten the screw (39) properly.

Check that the footrests are positioned identically on both sides.



### 3.2.11 Leg rests BZ7/BZ8 adjustments

#### Leg rest length

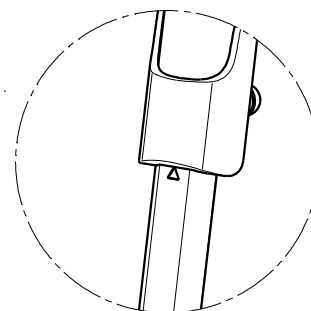


CAUTION

Risk of injuries or damage

The maximum length of the footrest is limited to the length indicated by a triangle on the front of the footrest tube, see picture. This maximum length adjustment is not possible in sitting position; the footplates will touch the ground.

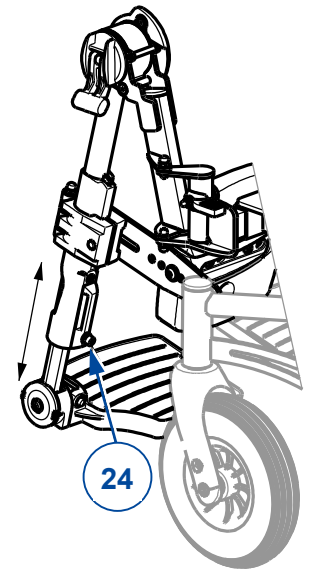
Make sure that the distance to the ground in sitting position is minimal 60 mm to avoid touching small obstacles and to prevent damage to the footrest.





To adjust the length of the legrests:

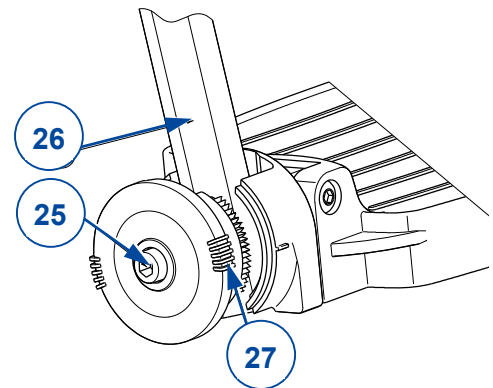
1. Remove the socket screw (24) on the back of the footrest.
2. Adjust the footrest to a comfortable length.
3. Retighten the socket screw firmly.
4. Repeat for the second footrest. Make sure that the footrests are positioned identically.



### Footplate angle

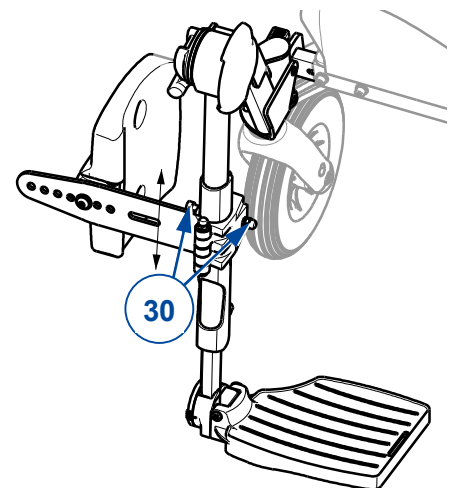
To adjust the angle of the footplate at its toothed clamp:

1. Loosen the socket screw (25) on the footrest (26).
2. Turn the footplate in the desired angle (80°- 100°). The dashes (27) on the toothed clamp indicate the angular positions.
3. Retighten the socket screw (25).
4. Repeat for the second footrest.



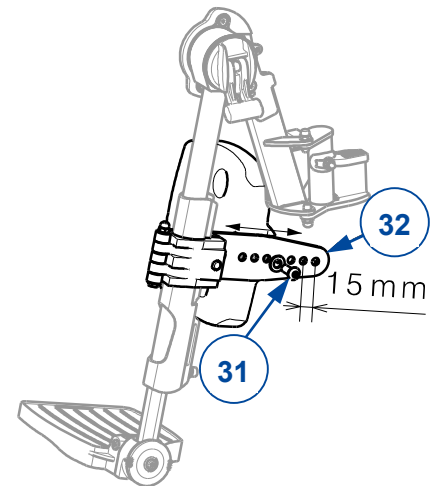
### Calfrest height

1. Turn the calfrest outwards.
2. Loosen the socket screw (30) that clamps the calfrest support on the footrest.
3. Slide the calfrest up/down to a comfortable position (step less).
4. Retighten the socket screw (30) with nut.
5. Repeat this for the second calf rest. Make sure that the calf rests are positioned identically.



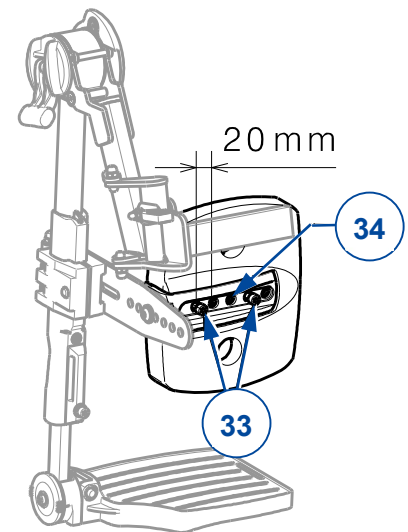
### Calfrest depth

1. Loosen the socket screw (31) on the calfrest support (32).
2. Adjust the depth of the calfrest to a comfortable position (7 positions available).
3. Retighten the socket screw (31).
4. Repeat for the second calfrest. Make sure that the calfrests are positioned identically.



### Width between calfrests

1. Loosen the two socket screws (33) on the back of the calf rest.
2. Adjust the width to a comfortable position (2 positions available). Do not use the hole (34) in the middle!
3. Retighten the two socket screws (33).
4. Repeat for the second calfrest. Make sure that the calf rests are positioned symmetrically.



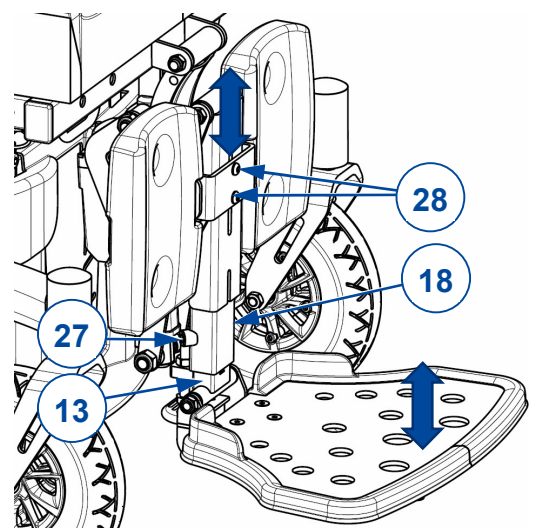
## 3.2.12 Footrest BZ10E adjustments

### Footplate height

1. Loosen the M8 set screw (27) a few turns.
2. Slide the footrest (13) up/down in footrest support (18) to the desired position.
3. Retighten set screws (27) firmly.

### Calf rest height

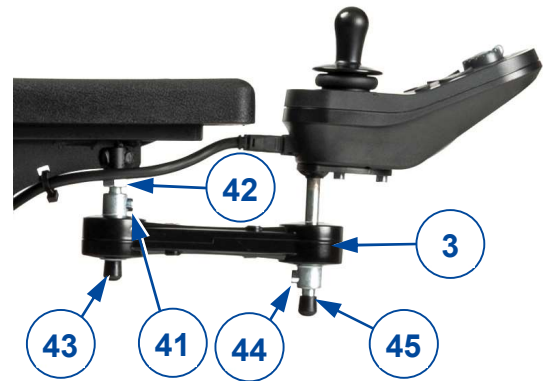
1. Remove the calfrest cushion.
2. Loosen both M6 socket screws (28).
3. Slide the calfrest support up/down on the footrest support (18) to the desired position.
4. Retighten both socket screws (28) firmly.
5. Reinstall the calf rest cushion.



### 3.2.13 Operating console

#### Mounting position left or right

1. Cut the cable ties and unplug the power cable from the operating console.
2. Hold the control with its support (3) while removing M6 socket screw (41).
3. Loosen hex nut (42) and demount shaft (43) from the armrest.
4. Mount shaft (43) in the other armrest and lock it with hex nut (42).
5. Mount the control support (3) with socket screw (41) on the shaft (43).
6. Make sure all connections are well secured.
7. Guide the cable and plug the cable in the operating console.
8. Tie the cable to the back of the wheelchair subframe and on the armrest with cable ties. Make sure that the cable is long enough to make the adjustment of armrest and console possible.



#### Operating console - height

The height of the operating console can be adjusted in 2+4 positions, or 6+4 positions depending on the type of shaft:

1. Hold the control while removing M6 socket screw (41).
2. Move the control support (3) up/down on shaft (43) and mount the socket screw (41).
3. If necessary adjust the height of the console on shaft (45) in the same way and lock it with socket screw (44).
4. Make sure all connections are well secured.
5. Guide the cable and plug the cable in the operating console.

## 3.3 Changing the battery

 **CAUTION** Risk of injuries and damage

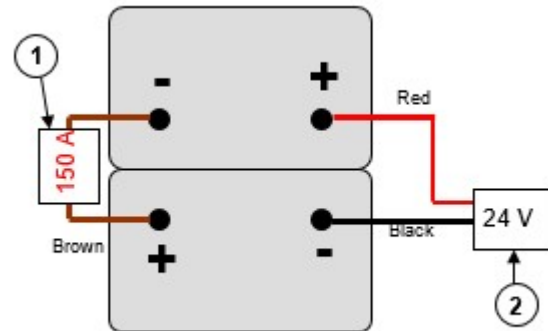
- The batteries must only be replaced by trained personnel
  - Do not come into contact with the acid from the batteries.
  - Replace the batteries in a well-ventilated room.
  - Make sure that the ventilation holes of the battery housing are free from any contaminations.
  - First read the charging instructions in the user manual before charging the batteries.
1. Disconnect the battery, turn the battery switch to "0", see user manual.
  2. Remove both fastener pins (20) at the front of the lower frame.
  3. Tilt the mounting frame with seat backwards with help of an assistant.
  4. Remove all socket screws of the lower-frame cover (47).



Replace both batteries at the same time and with the same type as the ones used in the wheelchair. If this is not possible, contact the nearest Vermeiren facility.

Battery connections:

- 1) Blow fuse
- 2) Plug (electronic system)



### 3.4 Changing wheels or tyres



CAUTION

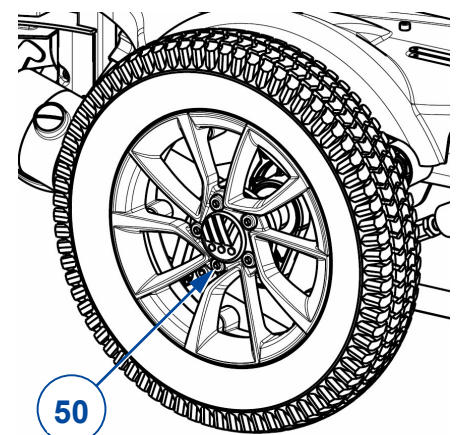
Risk of injuries and damage

- Make sure that all air is released from the tyre, before removing it.
  - Use a wooden block and jack to lift the wheelchair. Always place the jack under the lower frame, never under any other parts.
  - Make sure that no body parts, the inner tube nor any other objects are pinched between tyre and rim.
  - Handle carefully to prevent damage to the rim.
  - Make sure all screws are firmly secured by hand before driving with the wheelchair.
1. Replace the innertube, and if necessary also the tyre.
  2. Inflate the tyre using inflating equipment which complies to regulations and with a pressure indication in “bar”.
  3. Make sure that the pressure is correct, see the pressure indication on the tyres.

#### 3.4.1 Driving wheels (Mid wheels)

**i** If a tyre needs to be replaced, first check the type of tyre that has been fitted. In case of a tyre with line profile, do not switch left and right tyre.

1. Lift the driving wheel from the ground using a jack.
2. Remove the socket screws (50) and take the wheel from the flange.
3. Open tyre valve and push it gently to release the air.
4. Loosen the 5 screws that connect both rim halves (on the inner rim half).
5. Separate the rim halves and remove the inner tube from the tyre.
6. Inflate the new or repaired inner tube partly.
7. Insert the inner tube into the tyre.
8. Place the two rim halves back on the tyre. Make sure that the tube valve pops out of the opening in the rim.
9. Connect the rim halves with the 5 socket screws. Tighten by hand.
10. Inflate the tyre at the correct pressure, see the indication on the tyre.
11. Remove grease and other contamination from the thread of the 5 flange socket screws (48). Apply screw adhesive (ex. Loctite) to these screws.
12. Mount the wheel on the flange.
13. Lower the jack.
14. Make sure the socket bolts are firmly secured.













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### **Instructions for specialist dealer**

This instruction manual is part and parcel of the product and must accompany every product sold.

Version: C, 2020-10

Basic UDI: 5415174 122127Sigma 6B  
5415174 122127Sigma 230 5X

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