

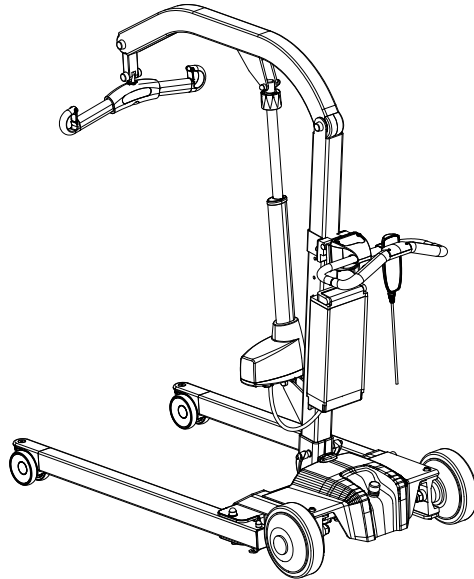
EvaDrive450/600

SystemRoMedic™

Service manual - English



SWL: 205 kg/450 lbs
270 kg/600 lbs



REF

60900002

60900003



Safety information

Visual inspection

Inspect lift functions regularly. Check to ensure that material is free from damage.

Before use

Make certain the lift is properly assembled.

Check lifting function and base-width adjustment.

Check driving function in all directions.

Check to ensure that the quick-connecting locking pin for the actuator is correctly installed.

Check sling bar connection and safety latch function.

Check that the accessory (EvaDrive) is properly mounted on the lift.



Always read the user manual

Always read the user manuals for all assistive devices used during a transfer.

Keep the user manual where it is accessible to users of the product.

Always make sure that you have the right version of the user manual.

The most recent editions of user manuals are available for downloading from our website, www.handicare.com.

Under no circumstances may a lift with EvaDrive be used by persons who have not received instruction in the operation of a lift with the accessory mounted.

It is strongly prohibited to modify the original product.



handicare

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Final inspection

- Check to ensure that no components are left in the packaging.
- Inspect the product for signs of damage.
- Inspect wheels and brakes.
- Check mechanical brake function by activating the brakes and, without activating EvaDrive, try to move the lift forward. If the lift does not move, the brakes function as they should.
- Check all connections, screws and bolts.
- Check emergency-stop function by activating EvaDrive; press the emergency-stop button, and then press the up or down button. If nothing happens, the emergency stop is functioning as it should, since it stops all electrical functions.
- Using the hand control, activate EvaDrive, press the up button and run the lift boom all the way up. Then, press the down button and run the boom all the way down.
- Test base-width adjustment. Activate the system, press the button for base-width adjustment, open the undercarriage to maximum width, and then press the other button to reduce the width.
- If the lift is functioning as it should, connect the charger and check to ensure that the charging indicator light on the control panel lights up.
- Activate EvaDrive and grasp the handlebar with both hands, hold the safety switch in, and then run the lift forward, backward and in a turning motion. Check that the lift moves easily, to both the right and to the left.
- Test the rear wheels by turning them a bit; turn the lift back and forth. Turn the wheels all the way and run the lift sideways. Check that the yellow light lights up when the wheels turn and are turned, and that the light goes out when the wheels are returned to the normal position.
- Test lift function by lifting a person (not a user) using an approved sling. At the same time, check the emergency lowering function with someone on the lift. See section on Emergency lowering.

NOTE!

The lift must be charged for at least 10 hours before it is used for the first time. See section on battery charging. Keep the manual where it is easily accessible for users of the product.

Using the product



Important information

- The lift must be assembled according to the assembly instructions included with the product.
- The lift may only be operated indoors on a dry and level surface.
- Never leave a user unattended during a transfer.
- Maximum load may under no circumstances be exceeded. See section on maximum load.
- The lift must not be lowered into water or used in the shower.
- The lift must not be left or stored in a damp or humid environment.
- The lift must not be charged in a wet room.
- For optimal function, inspect the lift regularly. See section on Maintenance.
- Warranty applies only if repairs or alterations are made by personnel who are authorized by Handicare.
- Never move the lift by pulling on the actuator!
- Using lifting accessories other than those approved can entail a risk.
- Verify that all lifting accessories hang vertically and can move freely.
- Never attempt to lift the mobile lift unit by the handlebar.
- Ensure that there are no obstacles or people in the way of the lift.
- Never stand on the lift during operation. Always walk behind the lift.
- Low speed is recommended when a user is seated in a sling attached to the lift.
- The lift must not be used in oxygen-enriched environments.
- Handle the battery with care. Do not drop.
- Use only batteries, cables and chargers intended for EvaDrive.
- If a lift is attempted at an angle, a safety function will temporarily pause the lifting motion. Ensure that the EvaDrive is correctly positioned over the user, or let the EvaDrive position itself with the brakes unlocked. Once the lift is in its correct position, the lifting motion will automatically be resumed.
- When lifting from the floor the rear wheels must always be locked to prevent the lift from rolling and colliding with the user. Otherwise, the wheels should not be locked, so that the lift can align itself with the user's centre of gravity.
- Lifting accessories must be properly fitted and tested in relation to the user's needs and functional ability.

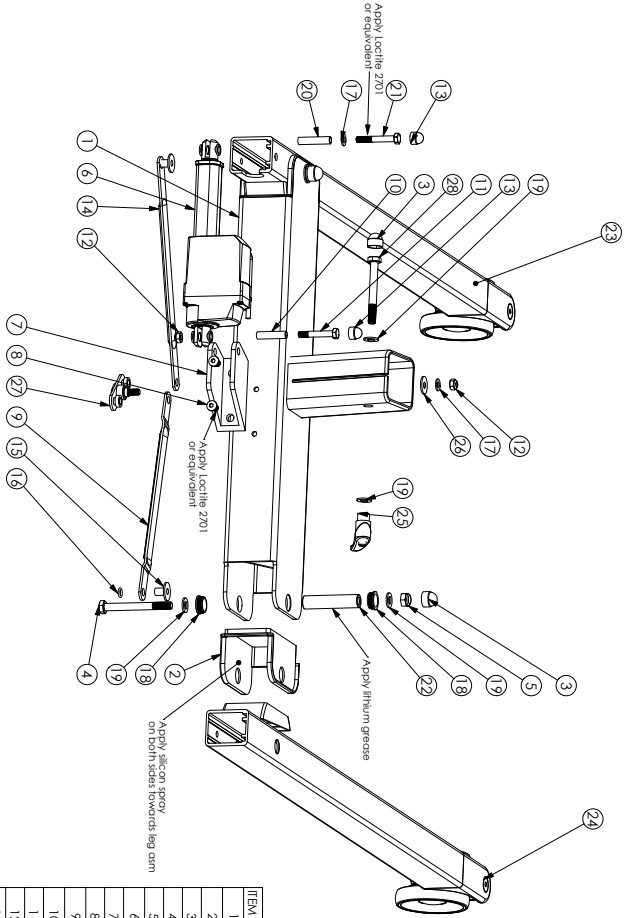
Troubleshooting

The green light blinks, but stops after a while.	Automatic calibration complete
The green light blinks.	<ul style="list-style-type: none">- Manual calibration is required, see section on manual calibration.- Check to ensure that no load was applied to the handlebar when the lift was started e.g., that nothing was hanging on the handlebar. In that case, remove it and the green light will stop blinking.
All or parts of the battery scale blink quickly.	Something is wrong with the lift's electrical system. Restart EvaDrive. If there is still a problem, contact Handicare.
Red light + battery scale blink	<ul style="list-style-type: none">- Restart- Contact Handicare
If unusual sounds are heard:	<ul style="list-style-type: none">- Try to locate the source of the sound.- Take the lift unit out of service and contact Handicare.
The lift cannot be started	<ul style="list-style-type: none">- Check the battery switch.- Check battery connection.- Connect charger and charge for at least 2 hours.- Contact Handicare.
The lift or base-width adjustment cannot be activated	<ul style="list-style-type: none">- Check that the emergency stop button is not pressed in.- Check that all cables are properly and securely connected. Pull out the contact and plug it in again firmly.- Check that battery charging is not in progress.- Check that the battery is charged. <p>If the lift is not working properly, contact your dealer.</p>

Resetting service indicator

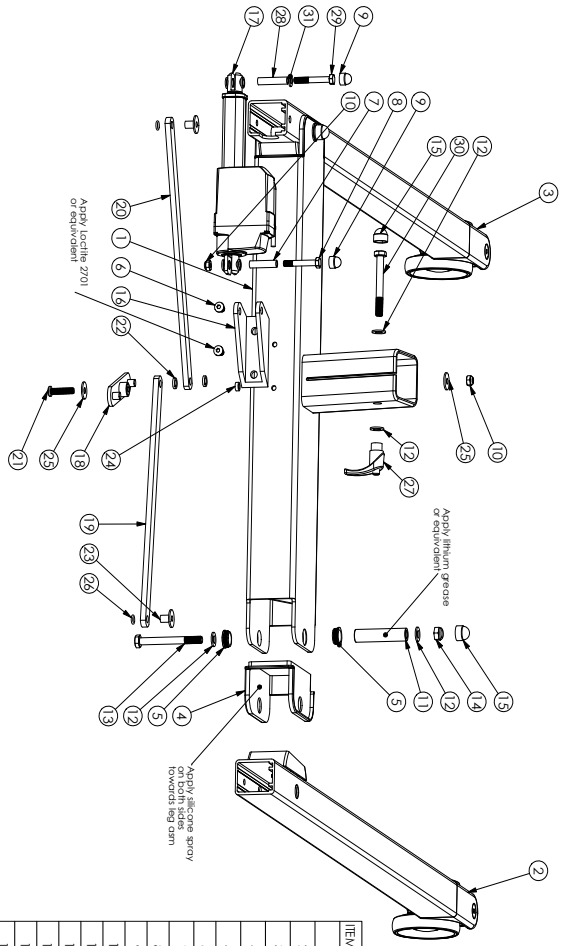
- The handle should be ON.
- Press and hold the start button until the service indicator starts flashing (approx 2 sec.)
- Without releasing the start button, press down both of the manouver buttons for the rear wheels and hold until the service indicator is turned off (approx. 5 sec).

Exploded view and components - Chassis EvaDrive450



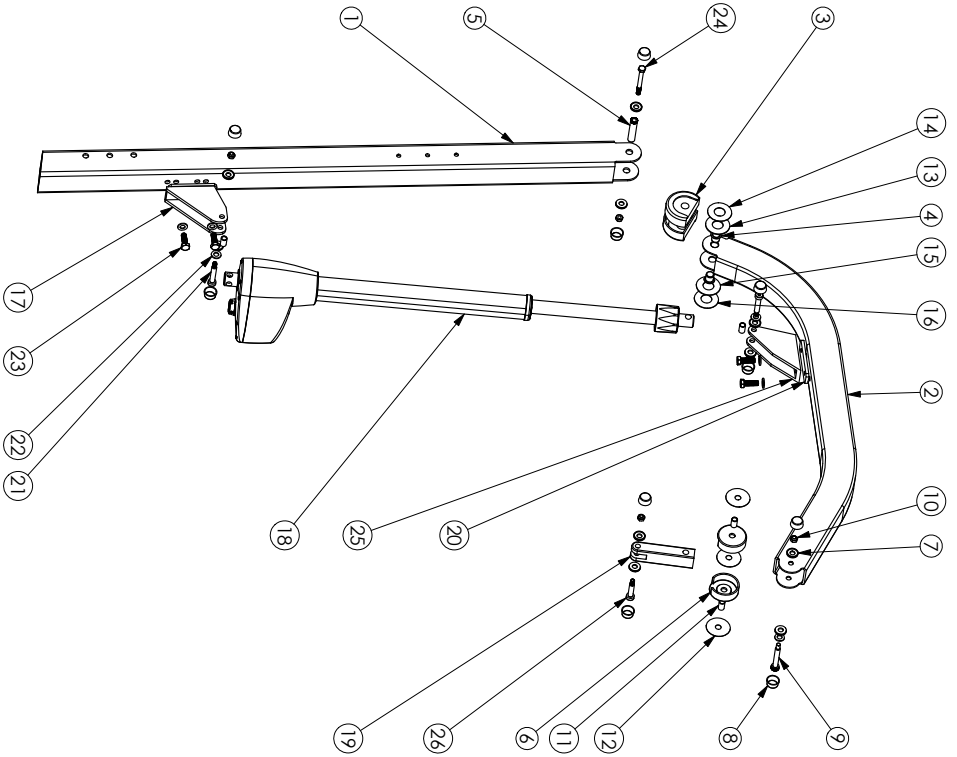
ITEM NO.	DOCUMENT NO.	TITLE	QTY.
1	90000633	Evo400/450EE Center Support	1
2	90000285	Leg shim	2
3	90000660	Nut cover M5M10	3
4	90000150	Screw M65 DIN931 8.8 M10x95 f7d	2
5	90000559	Lock nut DIN 985 CL6 M10 F7B	2
6	90001146	Leg spread actuator LA23-230006-03	1
7	90000629	Base bracket LINAK	1
8	90000664	Screw K65 ISO7380 8.8 M8x16 f7d	2
9	90000660	Shut leg spread #FZ	1
10	90000387	Pivot sleeve actuator	1
11	90000038	Screw M65 DIN931 8.8 M8x50 f7d	1
12	90000226	Lock nut DIN985 M8 f7d	2
13	90000380	Nut cover M5M8G	2
14	90000461	Shut leg spread #H3	1
15	90000227	Sleeve 8x10x25L17	2
16	90000740	O-ring 9x1.5	2
17	90000345	Washer DIN125 8.4x16x1.6 f7d	2
18	90004440	Washer Flange 18x22x7 Rnut	4
19	90000601	Washer DIN125 10.5x20x2 f7d	6
20	90000663	Sleeve 10x8x45	1
21	90000147	Screw M65 DIN931 8.8 M8x55 f7d	1
22	90000657	Pivot sleeve out 78.5x181.5x10	2
23	90001566	Evo 450 Drive leg arm left	1
24	90001567	Evo 450 Drive leg arm right	1
25	90000329	Locking handle USS64M10S	1
26	90000823	Washer BRB 8.4x24x2 F7d	1
27	90001003	Wash link EvoEE	1
28	90000516	M65 DIN931 8.8 M10x85 f7d	1

Exploded view and components - Chassis EvaDrive600



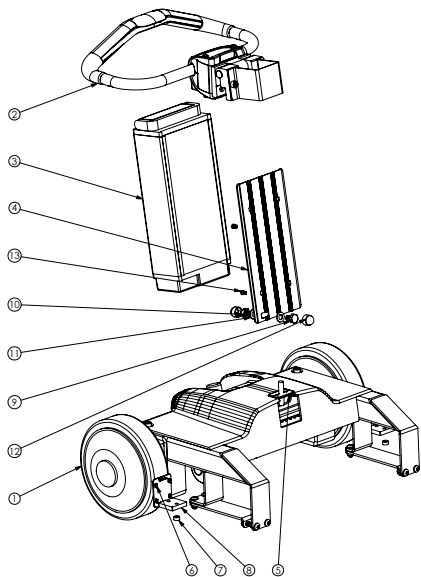
ITEM NO.	DOCUMENT NO.	TITLE	QTY.
1	90000325	Eva600 Center Support	1
2	90000169	Eva 600 Drive leg arm right	1
3	90000168	Eva 600 Drive leg arm left	1
4	90000285	Leg Shim	2
5	90000440	Washer Hange 18x22x7 knurl	4
6	90000644	Screw K65 ISO780.8 8 M8x16 Fb	1
7	90000307	Pivot sleeve excitor	2
8	90000098	Screw M65 DIN931 8.8 M6x50 Fb	1
9	90000330	Nut cover M5M8G	2
10	90000606	LOCK NUT DIN 985 CLASS 6 M8 FZB	2
11	90000657	Pivot sleeve out 78.5x18.15x10	2
12	90000601	Washer DIN125 10.5x20x2 Fb	6
13	90000190	Screw M65 DIN931 8.8 M10x65 Fb	2
14	90000559	Lock nut DIN 985 Cl6 M10 FZB	2
15	90000660	Nut cover M5M10	3
16	90000629	Base bracket Eva Link	1
17	90001146	Leg spread actuator LA23-230006-03	1
18	90001699	Wght link EVA600	1
19	90001700	Strut leg spread 7"	1
20	90001701	Strut leg spread 8"	1
21	90001133	Screw K65 ISO780.8 8 M8x35 Fb	1
22	90001704	Spacer 10.3x15x3 PA-66 SflHy	2
23	90000207	Sleeve 8x10x25x17	2
24	90001705	Sleeve 8x12x4.5	1
25	90000823	Washer B88.8x24x2 Fb	2
26	90000740	O-ring 9x1.5	2
27	90000329	Locking handle LSS4M10S	1
28	90000663	Sleeve 10x8x45	1
29	90000147	Screw M65 DIN931 8.8 M8x55 Fb	1
30	90000516	M65 DIN931 8.8 M10x85 Fb	1
31	90000345	Washer DIN125 8.4x16x1.6 Fb	1

Exploded view and components - Mast and boom EvaDrive



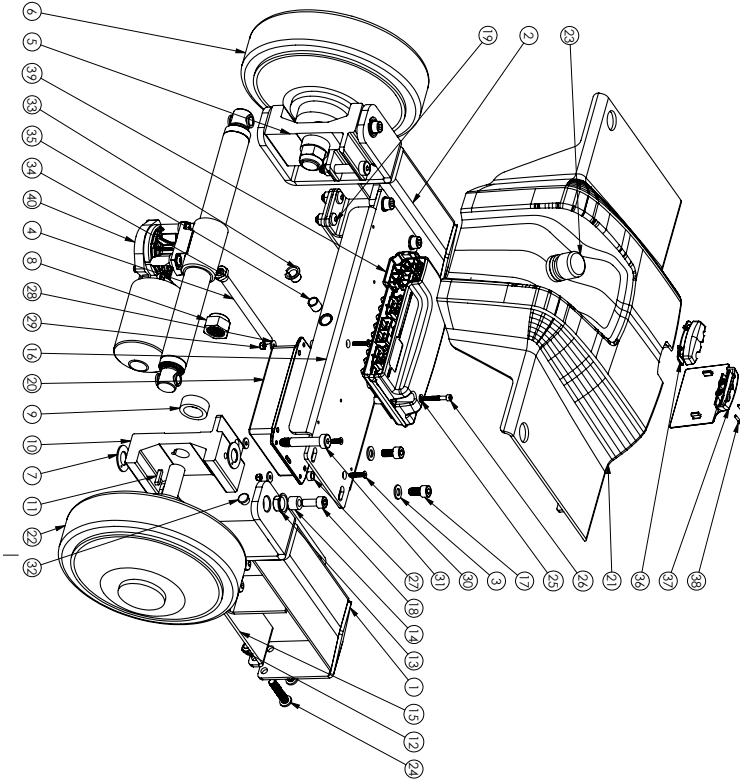
ITEM NO.	DOCUMENT NO.	TITLE	QTY.
1	90000634	Mast Evo	1
2	90000164	Boom Evo	1
3	90000290	Mast Pivot Casting	2
4	90002653	Bearing COB010F14I70 PTFE	2
5	90002589	Bushing 14x8x62	1
6	90000291	Spreader Bar Casting	2
7	90000012	Washer M10 for nut cup	10
8	90000014	Nut cap M10 grey	10
9	90002664	Shoulder Bolt ISO7379 10xM8x55	1
10	90000026	Lock nut DIN985 M8 fzb	5
11	90002654	Bearing COB010I020 PTFE	4
12	90000297	Washer PE 50x12x0,5	3
13	90004439	Washer PE 22,5x50x2	1
14	90002661	Washer PE 22,5x50x0,5	1
15	90004438	Washer PE 22,5x50x1,5	1
16	90002660	Washer PE 22,5x50x1	1
17	90000293	Actuator Bottom Bracket	1
18	90005743	Actuator LA44 12KN 4409030100EF4	1
19	90000294	Spreader Bar Pivot	1
20	90005182	Threaded plate nut bar	2
21	90001422	Shoulder bolt ISO7379 12,9 10xM8x45	2
22	90000601	Washer DIN125 10,5x20x2 fzb	7
23	90000046	Screw M65 DIN931 8,8 M10x30H fzb	4
24	90000040	Screw M65 DIN931 8,8 M8x7,5 fzb	1
25	90000628	Top Bracket Evo Link	1
26	90000153	Shoulder bolt ISO7379 (DIN610) 12,9 10xM8x35	1

Exploded view and components - EvaDrive



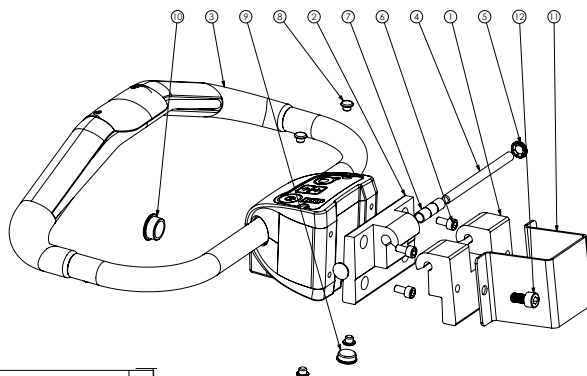
ITEM NO.	TITLE	QTY.
1	Eva Drive 450 base assy	1
2	EvaDrive Hinge assembly	1
3	Battery EvaDrive	1
4	Battery Plate EvaDrive	1
5	ED cables	1
6	Cover leg	2
7	Spacer 8x12x6	2
8	Converter Nut EvaDrive	2
9	Screw M6S DIN931 8.8 M10x16H fzb	1
10	Lock nut DIN 985 Cl6 M10 FZB	1
11	Washer DIN125 10.5x20x2 fzb	2
12	Nut cover MSM10	2
13	Screw MLC6S DIN7984 8.8 M5x8	2

Exploded view and components - EvaDrive, base



ITEM NO.	ITEM	QTY.
1	End Drive leg (right) welded	1
2	End Drive leg (left) welded	1
3	Washer DN1.25 8.4x16x1.6	4
4	End drive actuator 280779191	1
5	End drive wheel bracket (left)	1
6	Hub motor end wheel (left)	1
7	Sliding bearing COB810.20816	4
8	Lock nut DN985 M16 20	2
9	End drive wheel distance	2
10	End drive wheel bracket (right)	1
11	Pinion key DN1.6885 A KR19 4x20	2
12	Lock nut DN985 M8 20	10
13	Sliding with tongue (left) COB101F 1000 1000	4
14	End drive sleeve	4
15	End drive tension bracket	2
16	End drive support welded	1
17	Screw M3x8 DN912 8.8 M40x20 20	4
18	Screw M3x8 DN912 8.8 M40x20 20	4
19	Screw M3x12 DN120 10.9 M40x20 20	6
20	Flanged lid (bottom - horizontal) 109101010	1
21	End Drive cover	1
22	Hub motor end wheel (right)	1
23	Emergency stop button CB11108.11 (A.881)	1
24	Screw M3x12 DN120 10.9 M40x20 20	2
25	Washer DN1.25 4.3x6.0 8 20	2
26	Screw M3x8 DN912 8.8 M40x20 20	2
27	Spacer 4.2x10x16 P4.6 SMI1001.400.000.02	4
28	Washer DN1.25 4.3x12x1.6 20	4
29	Lock nut DN985 M4 20	4
30	Screw M3x6 DN1091 8.8 M40x20 20	4
31	Shoulder bolt ISO1209 12.9 10x16x40	2
32	Ring Acuator part 1397 G	2
33	Flange bearing COB810 - 10120 (horizontal)	1
34	Nut M4x4 DN4390.40x35 M10 10	1
35	Sliding Nylon COB810-1012	1
36	End Drive Cable entry top	1
37	End Drive Cable entry front	1
38	Screw for horizontal part 25x12120 (BU) 4x1	2
39	Central box VZ	1
40	Acuator Lx30 2x99 355mm	1

Exploded view and components - EvaDrive, handle



ITEM NO.	TITLE	QTY.
1	Hinge outer	1
2	Hinge inner	1
3	Handle EvaDrive	1
4	Hinge axis	1
5	Washer starlock dome 8x5,7x16	2
6	MC6S DIN 912 8,8 M6x12 FZB	4
7	Hinge bushing 8x10x12	3
8	Cover 7mm grey	4
9	Cover 16mm grey	1
10	Cover 20mm grey	1
11	Handle Bracket Eva Drive	1
12	Screw MC6S DIN912 8,8 M8x16 fzb	2

Exploded view and components - VR2 and cables

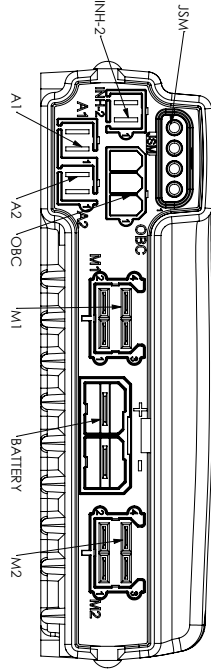
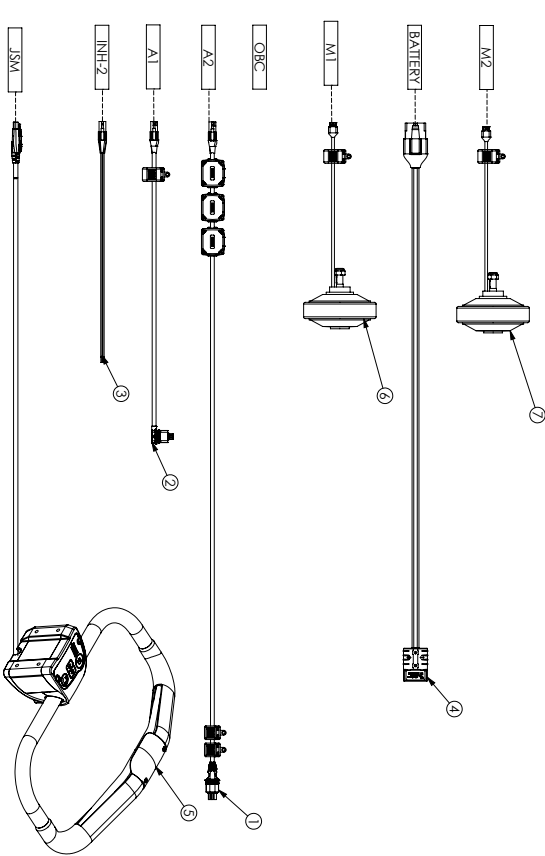
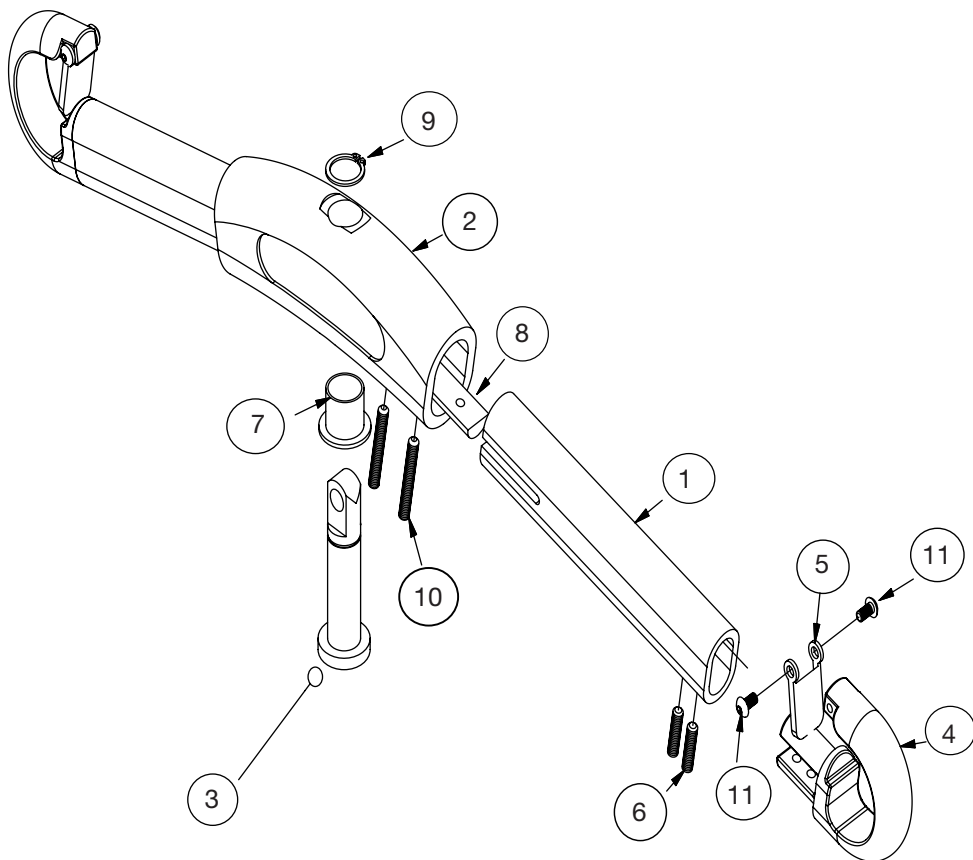


FIG DRIVES VR2 POWER MODULE CONNECTIONS

ITEM NO.	TITLE	QTY.
1	ExDrive actuator cables long straight multi-tilt	1
2	ExDrive actuator cables short angled micro-tilt	1
3	ExDrive Emergency/Stop Cable	1
4	ExDrive battery cable	1
5	ExDrive Handle	1
6	Hubmotor with connector right	1
7	Hubmotor with connector left	1


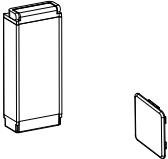

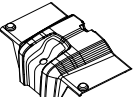
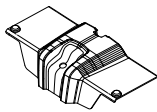

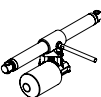
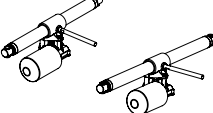
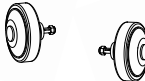
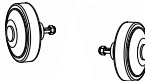
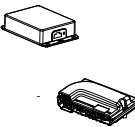


Exploded view - Slingbar

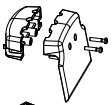
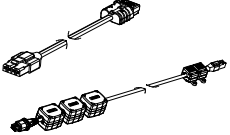
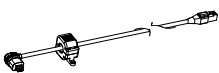
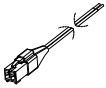
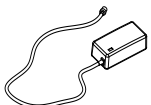
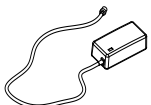

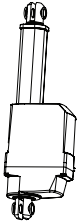
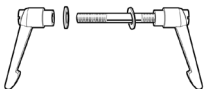


Components-SlingBar


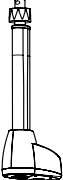

Pos.	Product	Unit
1	Tube	2
2	Centercasting	1
3	Supportpin	1
4	Slinghook	2
5	Hangerstraplock	2
6	Screw for slinghook and tube	4
7	Plasticbushing for supportpin	1
8	Nutbar	2
9	Retainingring	1
10	Screw for tube and center casting	4
11	Screw for hangerstraplock	4

Spare part list

Art no.	Product	Unit	Components	Parts
80100172	Handle EvaDrive	1 pce	1 x Drive handle incl. hinge assembly 2 x Screws	
60900022	Battery EvaDrive	1 pce	1 x Battery 1 x Charger 4 x Charger cable EU, AU, US/JP, UK	
80100174	Cover leg EvaDrive	2 pce	2 x Cover leg EvaDrive	
80100175	Cover Eva450Drive	1 set	1 x Cover 1 x Cabel entry 1 x Velcro 100 mm	
80100176	Cover Eva600Drive	1 set	1 x Cover 1 x Cabel entry 1 x Velcro 100 mm	
80100196	Emergency stop button EvaDrive	1 pce	1 x Emergency stop button	
80100177	Actuator LA30 2-way 335mm Eva450Drive	1 pce	1 x Actuator 4 x Cable ties 2 x M8 lock nut	
80100178	Actuator LA30 2-way 478mm Eva600Drive	1 pce	1 x Actuator 4 x Cable ties 2 x M8 lock nut	
80100179	Hub motor wheel, right EvaDrive	1 pce	1 x Wheel 2 x Cable ties	
80100180	Hub motor wheel, left EvaDrive	1 pce	1 x Wheel 2 x Cable ties	
80100181	ADM - box EvaDrive	1 pce	4 x Spacer 4,2 x 8 x 15 4 x Screw MF6S 4 x M4 Lock nut 4 x Washer DIN125	
80100182	Control box VR2 Eva450Drive	1 pce	1 x Control box VR2 2 x Screw MC6S 2 x Washer DIN125	
80100197	Control box VR2 Eva600Drive	1 pce	1 x Control box VR2 2 x Screw MC6S 2 x Washer DIN125	

Art no.	Product	Unit	Components	Parts
80100184	Cable entry EvaDrive	1 set	1 x EvaDrive cable entry top 1 x EvaDrive cable entry front 2 x Screws	
80100185	Cable Battery EvaDrive	1 pce	1 x Cable Battery	
80100186	Cable actuator LA44 EvaDrive	1 pce	1 x Cable actuator LA44	
80100187	Cable actuator LA23 EvaDrive	1 pce	1 x Cable actuator LA23	
80100189	Cable Emergency stop EvaDrive	1 pce	1 x Cable Emergency stop	
80100190	Charger Li-Ion EvaDrive	1 pce	1 x Charger Li-Ion EvaDrive Note: Charger cabel not included.	
80100191	Cable Charger EU EvaDrive	1 pce	1 x Cable Charger EU	
80100192	Cable Charger AU/NZ EvaDrive	1 pce	1 x Cable Charger AU/NZ	
80100193	Cable Charger US/JP EvaDrive	1 pce	1 x Cable Charger US/JP	
80100194	Cable Charger UK EvaDrive	1 pce	1 x Cable Charger UK	
80100001	Front castor 100 mm	1 pce	1 x Front castor 1 x Locking nut M10	
80100056	Actuator legspreading	1 set	1 x Actuator 1 x Linak LA23 phone cable 2 x Locking nut M8 0,25 x Cardboard	
80100032	Lever	1 set	2 x Lever 1 x Threaded rod M10x95 2 x Washer 10,5x20x2	

Spare part list

Art no.	Product	Unit	Components	Parts
80100044	Hand control 4-buttons	1 pce	1 x Hand control	
80190030	Actuator mast	1 set	1 x Actuator LA44 2 x Locking nut 0,5 x Cardboard	
80100058	Sling bar lock for alu sling bar	1 set	10 x Cargo barrier 20 x Screw M5x12	

Changing of spare parts

80100172 Handle EvaDrive

Set battery switch OFF. Disconnect battery cable. Remove battery. Detach cover. The cover is secured by pads of velcro. Remove Cable entry. Separate cable entry. Detach connectors from control boxes (VR2 box AND ADM-box) Remove cable from cover. **Note:** routing of cables. Remove 2 screws from handle bracket.

Replace Handle including hinge assembly. Replace 2x Screws (K6S M8x16). Adjust handle height. Tighten screws. Thread cable through cover and routing them to control boxes. Attach connectors to VR2 and ADM-box (see p. 9). Assemble cable entry and adjust cable positions and length. **Note:** Cable length adjustment is important in relation to mast and handle position. Fit cable entry in cover. Reposition the cover and press it into place. Reattach battery and battery cable. Important! If a new handle is fitted, an initial calibration must be performed as follows:

- Make sure the handle is not physically loaded in any way (e.g. handset must not be hanging on the handle)
- Start the system by pressing the ON button
- The Snail light starts blinking with double beats
- Allow the system to initiate until the Snail light stops blinking. This may take up to 10 minutes
- Test all basic functions of the drive system. Make sure approximately the same force is needed to initiate forwards and backwards motion. If not, perform a manual calibration of the system (see page 10 in the user manual).

60900022 Battery Eva Drive

Set battery switch OFF. Detach battery cable. Slide the old battery upwards. If necessary adjust handle position.

Replace with new battery. Gently slide battery back into place. Reattach battery cable and switch ON. Readjust handle position.

80100174 Cover leg EvaDrive

Replace cover leg by pressing it into back of leg profile, use LocTite715 glue to fasten the profile.

80100175/176 Cover Eva450Drive/ Cover Eva600Drive

Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Remove the velcro from base. Cut the new velcro into eight pieces. Attach the bits of velcro to the same place on the base as the old ones. Keep them together with their "twins". Detach Cable entry. Remove the emergency stop button by unscrewing the plastic retainer on the inside of the cover. **Note** routing of cables. Remove and replace cover.

Route cables and fit cable entry into cover. Re-connect cables to control boxes, 4x to VR2 and 1x to ADM-box (see p. 9). Remove the glue cover from the velcro. Secure the cover by pressing it into place. Re attach battery cable and switch ON.

80100196 Emergency stop button EvaDrive

Set battery switch to OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Detach Cable entry. Remove the emergency stop button by unscrewing the plastic retainer on the inside of the cover. Note routing of cables. Detach emergency stop cable connector from control box VR2. Disconnect cables from emergency stop button by unscrewing the cable clamp screws. **NOTE!** numbers of connection points (no 21, 22). Remove and replace emergency stop button with the new one, re-attach Emergency stop cables to the emergency stop button. Route cables and fit cable entry into cover. Re-connect cables to control boxes, 4x to VR2 and 1x to ADM-box (see p. 9). Secure the cover by pressing it into place. Re attach battery cable and switch ON.

Changing of spare parts

80100177/178 Actuator LA30 2-way 335mm Eva450Drive/ Actuator LA30 2-way 478mm Eva600Drive

Position the wheels in forward position. Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Disconnect the connectors to the actuator. **Note:** routing of cables. Cut 4x cable ties securing the HUB-motor cables. Unscrew the 2 shoulder bolts holding the actuator ends. Slide the actuator out backwards. Loosen the nut, securing the Actuator steering pin. Slide the new actuator in place. Before reattaching the 2 shoulder bolts to the actuator ends, make sure that the actuator pistons are in its most inward position by turning the pistons clock-wise. Reattach shoulder bolts with new M8 lock nuts. Secure HUB-motor cables with 4x cable ties.

Note: cable tension. Route the actuator cable and reconnect the connectors. Reattach cover. Secure the cover by pressing it into place. Re attach battery and battery cable and switch ON. Test wheel turning function. Check that the wheels are straight forward and parallel in forward drive mode. If not follow the instructions in chapter Adjusting Toe-in/ Toe-out (see p. 15).

80100179/180 Hub motor wheel, right EvaDrive/ Hub motor wheel, left EvaDrive

Position the wheels in forward position. Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Disconnect the connectors to the HUB motor. **Note:** routing of cables. Cut the cable ties securing the HUB-motor cable. Unscrew the M18 lock nut. Remove the spacer. Tap the wheel shaft to remove the HUB-motor wheel. Replace the HUB motor wheel **Note:** Replace and reposition the parallel key in the keyway. Fit the spacer and tighten a new lock nut firmly. Rout the cable and reattach the connector to the HUB-motor. Secure HUB-motor cable with cable ties. **Note:** cable tension. Reattach cover. Secure the cover by pressing it into place. Re-attach battery and battery cable and switch ON. Test the drive function by maneuvering the lift.

80100181 ADM - box EvaDrive

Position the wheels in forward position. Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Disconnect the connectors to the wheel-actuator LA30. **Note:** routing of cables. For easier access, tilt the lift on its side. Disconnect the connector from the ADM-box to the handle. Loosen the VR2-control box by loosening one screw on one side and removing the other. Remove and replace the ADM-box. Using the new components. Reattach the VR2-control box. Reconnect the handle connector to the ADM-box. Tilt the lift back on its wheels. Reconnect the wheel-actuator LA30. **Note:** routing of cables. Reattach cover. Secure the cover by pressing it into place. Re attach battery and battery cable and switch ON. Test the drive function by turning the back wheels.

80100182/ 80100197 Control box VR2 Eva450Drive/ Control box VR2 Eva600Drive

Position the wheels in forward position. Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Disconnect all of the connectors to the VR2 Control box. **Note:** connector positions. Remove and replace the VR2 control box. Using the new components. Re-connect all of the cables to control box (see p. 9). Secure the cover by pressing it into place. Re attach battery and battery cable and switch ON.

80100184 Cable entry EvaDrive

Detach cover. The cover is secured by pads of velcro. Remove Cable entry. Separate cable entry top and front and replace with new ones. Fit cable entry in cover. Reposition the cover and press it into place.

Changing of spare parts

80100185 Cable Battery EvaDrive

Set battery switch OFF. Disconnect battery cable. Detach cover. The cover is secured by pads of velcro. Remove Cable entry. Separate cable entry. Detach battery connector from control box VR2. Remove VR2 Control box. Remove cable from cover and replace with new one. **Note:** routing of cable.

Assemble cable entry and adjust cable positions and length. **Note:** Cable length adjustment is important in relation to mast position. Fit cable entry in cover. Reposition the cover and press it into place. Re attach battery cable and switch ON. Check cable length adjustment.

80100186 Cable actuator LA44 EvaDrive

Set battery switch OFF. Disconnect battery. Disconnect LA44 actuator cable from actuator. Detach cover. The cover is secured by pads of velcro. Remove Cable entry. Separate cable entry. Detach LA44 actuator cable connector from control box VR2. Remove cable from cover and replace with new one. **Note:** routing of cable.

Assemble cable entry and adjust cable positions and length. **Note:** Cable length adjustment is important in relation to mast position. Fit cable entry in cover. Reposition the cover and press it into place. Re attach battery cable and switch ON. Check cable length adjustment.



80100187 Cable actuator LA23 EvaDrive

Set battery switch OFF. Disconnect battery. Detach cover. The cover is secured by pads of velcro. Detach LA23 actuator cable connector from control box VR2. For easier access, tilt the lift on its side and detach the LA23 actuator in one end. Disconnect LA23 actuator cable from actuator and reconnect new cable. Reattach the actuator and tilt the lift back on its wheels. Connect the LA23 actuator cable to the control box VR2 (see p. 9). Reposition the cover and press it into place.

Reattach battery cable and switch ON.

80100189 Cable Emergency stop EvaDrive

Set battery switch OFF. Disconnect battery. Detach cover. The cover is secured by pads of velcro. Detach emergency stop cable connector from control box VR2 and disconnect from emergency stop button. Remove and replace emergency stop cable (in connection points 21, 22). Reposition the cover and press it into place. Re attach battery cable and switch ON.

80100190 Charger Li-Ion EvaDrive

Choose the correct charger plug to fit the wall socket. Connect the cable to the battery and plug the charger into a wall socket.

80100191/192/193/194 Cable Charger EU EvaDrive/ AU/NZ EvaDrive/ US/JP EvaDrive/ UK EvaDrive

Connect the charger cable to the charger.

80100001 Front castor 100 mm

Using an Allen key, remove the screw that holds the castor in place. Replace the castor, apply Loctite 2701 or similar, and then secure the castor with the screw.

Changing of spare parts

80100056 Actuator leg legspreading

Connect the motor cable to the actuator.

Run the actuator until the legs are drawn in fully. Activate emergency stop. Disconnect the actuator from the control box. Loosen and remove the screw that holds the actuator to the leg. Remove the screw covers and loosen the screw and nut. Remove the actuator.

Install the new actuator; start by securing the end that is secured to the leg. Use the accompanying lock nut, and then secure the end that is connected to the base of the mobile lift. Use the accompanying lock nut. Replace the screw covers. Connect the actuator to the control box.

80100032 Lever

Unscrew the old lever and install the new one.

80100044 Hand control

Activate the emergency stop, and then disconnect the hand control. Connect the new hand control.

80190030 Actuator mast

Lower the mast to the lowest position. Activate emergency stop. Disconnect the actuator from the control box. Free the upper end of the actuator by first removing the screw covers, and then removing the screws and nuts. Then, free the lower end in the same way. Lift the mast and remove the actuator. Install the new actuator. Start by fitting the lower end, and then lift the mast and fit the upper end. Secure the actuator with the existing screws and the new, accompanying lock nuts. Replace the screw covers and connect the actuator to the control box.

80100058 Slingbar lock for slingbar alu

Remove the screws on either side of the safety latch and remove it. Install the new safety latch and secure it with the two accompanying M5x12 screws. Position the safety latch, so that the bevelled side is facing in towards the lift hook.

Adjusting Toe-in/Toe-out

1. Remove the cover by gently pulling it at the four Velcro points



2. Loosen all four screws securing ONE of the brackets to the center beam, but



3. Loosen all four screws connecting the center plate with the brackets, but do not remove them



4. Straighten one of the wheels by hand. Note that the loose bracket moves relative to the center beam.



5. With the wheel straight, tighten the two center plate screws.
6. Straighten the other wheel by hand.
7. Tighten the two remaining center plate screws.
8. Tighten all four screws loosened in (2).

Periodic inspection - protocol

Inside the unit

Cables

Wear and damage

Noise

Test of safe working load

Safe working load test mast

Safe working load test base

Mechanical emergency lowering

Accessories:

Documentation:

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Instructions /User manuals

Control box:

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Reset the control box service counter

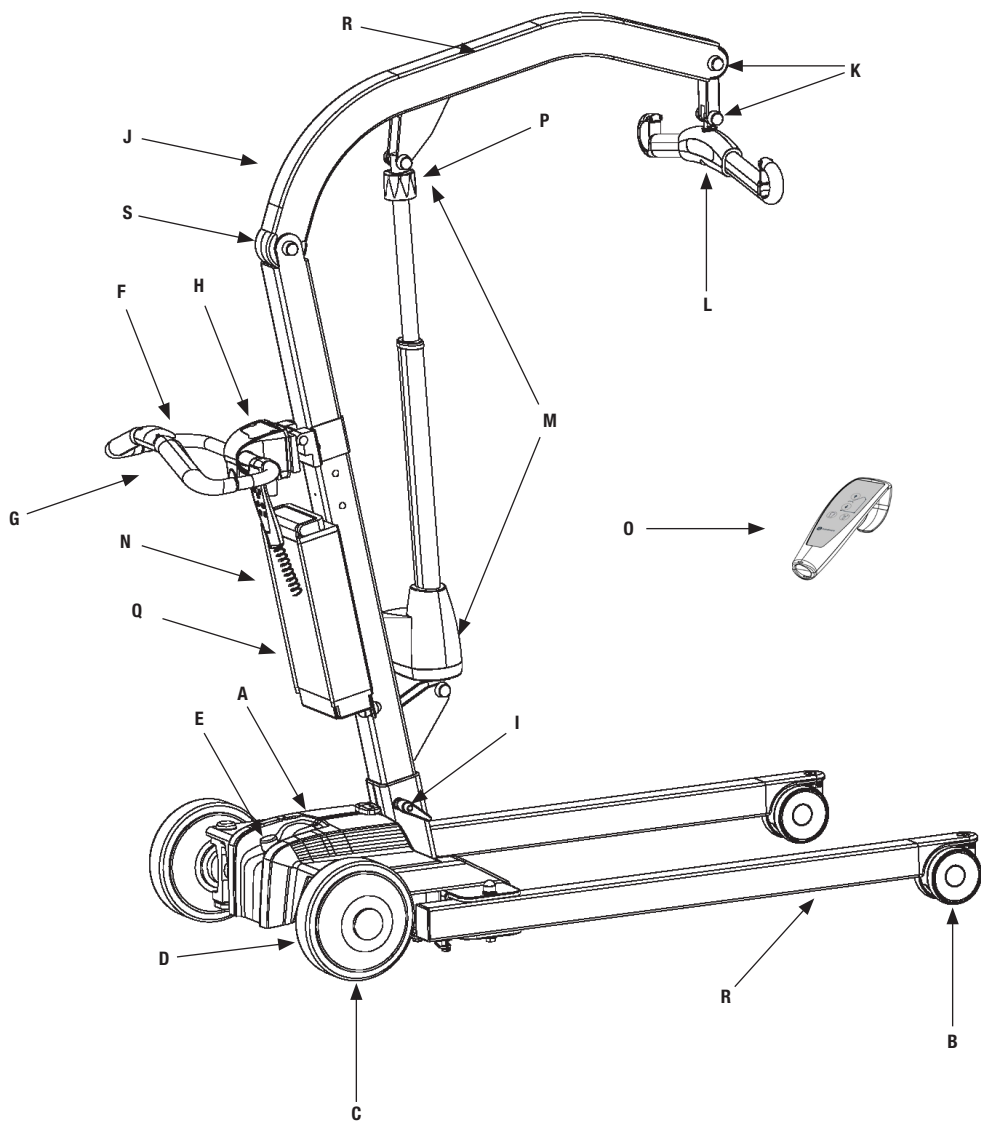
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Date:

Load test weight:

Serviced by:

Description of periodic inspection



Periodic inspection - instruction

Check the Drive unit

- Check the drive unit for visible damage to the surfaces, finish, etc.
- Check the drive unit for loose bolts and nuts. tighten if necessary.

Castors

- Roll the lift unloaded on the floor, check that the castors roll and turn freely.
- Check that the castor fasteners are tight.

Rear Wheels

- On a flat surface, check that the wheels are in contact with the surface when the legs are together and fully spread.
- Check for abnormal wear, dirt and hair. Clean if necessary.

Brakes

- Check the brake function by engaging the brakes and pushing the lift manually without touching the handle. The lift should not move.
- Check the automatic brake release by engaging the brakes and drive the unit forwards and backwards using the handle. a click sound will be heard. The lift should move.

Emergency stop

- Check emergency stop function by pressing the emergency stop button and then try to drive backwards and forwards. Nothing should happen. then press the up and down button. If nothing happens the emergency stop button functions properly.

Inspect the handle

- Check screws, nuts, bolts etc.
- Check for damage and wear.

Grip

- Drive the unit forward, regular speed, 10 meters.
- Drive the unit backwards, regular speed, 10 meters.
- Check the steering, drive the unit forward and back and verify that it turns right and left when pushing the handle.

Buttons

- Check the buttons by pressing them in turn and observing respective function.
- Turn the wheels to 45 degrees and drive left and right
- Turn the wheels 90 degrees and drive sideways. Check that the light on the handle is lit.
- Turn the wheels to starting position. Check that the light is turned off.

Check the mast

- Check the mast for visible damage or deformities on the joints, surfaces, finish etc.
- Check screws, nuts, bolts etc.

Locking handles

- Check the locking handles. Verify that threads are not damaged or binding.

Periodic inspection - instruction

Liftarm, hardware

- Check the liftarm for visible damage to the surfaces, finish etc.
- Check screws, nuts, bolts etc.

Link

- Check the link, slingbar to mast, hardware and covers.
- Check screws, bolts and links etc.

Slingbar and safety latch function

- Check to ensure that there is no visible wear or damage.

Check the mast actuator

- Verify that the upper and lower actuator fasteners to the mast are tight.
- Visual inspection.
- Check of abnormal noise level.

Check battery and electrical cable.

- Verify that all cables are properly inserted.

Controlbox

- Verify that all functions on the control panel are working

Handcontrol

- Verify that all functions on the handcontrol are working.

Emergency stop

- Verify that the lift does not operate when emergency stop is pressed in.

Emergency lowering

- Verify the function of emergency lowering.

Charging

- Verify that charging is operating. Yellow lamp on the controllbox should light up when charging.

Product label

- Check the serial number so that the label is there and readable. Note the serial number on the protocol.

Lift arm joint

- Check the joint for cracks or wear.

Cables

- Check for weares and damages.

Inside the unit

- Check for weares and damages.
- Check for dirt and dust.
- Listen for abnormal noise while operating the unit.

Periodic inspection - instruction

Max. load test

Mast max. load

-Run the lift with maximum load, all the way up and down, listen for peculiar noises and vibrations.

Base max. load

-Widen the base with maximum load, listen for peculiar noises and vibrations.

Accessories

-Check the accessories to the lift.

Documentation

-Instruction / Manual

Maintenance

The lift must undergo thorough inspection at least once per year or when the service indicator light is turned on after 2000 lifts (Whichever comes first). Inspection must be performed by authorized personnel and in accordance with Handicare's service manual.

Repairs and maintenance may only be done by authorized personnel using original spare parts.



Used batteries are to be left at the nearest recycling station. Used batteries can also be returned to Handicare or a Handicare dealer for recycling.

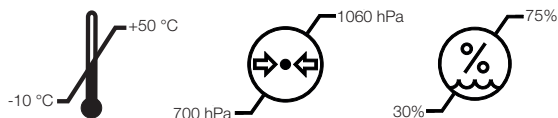
Cleaning/disinfection

If necessary, clean the lift with warm water or a soap solution and check that the castors are free from dirt and hair. Do not use cleaning agents containing phenol or chlorine, as this could damage the aluminium and the plastic materials.

If disinfection is needed, 70 % ethanol, 45 % isopropanol or similar should be used. Disinfect the parts that come in contact with a user before the lift is used for the next user.

Storage and transportation

If the lift is not to be used for some time or e.g., during transport, we recommend that the emergency stop button be pressed in. The lift should be transported and stored in -10°C to $+50^{\circ}\text{C}$ and in normal humidity, 30% -75 %. The air pressure should be between 700 and 1060 hPa. Let the lift reach room temperature before the batteries are charged or the lift is used.



Service agreements

Handicare offers service agreements for maintenance and regular testing of your lift unit. Contact your local Handicare representative.










Technical information

Lifting speed	27,2 mm/s without load.
Maximum speed (normal)	Forward: 4.3 mph / 7 km/h, Backwards: 2.1 mph / 3,5 km/h
Maximum speed (low speed)	2.1 mph / 3,5 km/h
Batteries	24V, 17,6 Ah Li-Ion
Charger	Modiary MDA10129402000. Output: DC 29, 40 V, 2.0 A
AC power input cable	HD3VV-F 3G0,75mm ² . TCA090812EA. Length 59 inch, 1500 mm
Motor (mast)	DC 24 V, 10 A. IP X4. Operationtime: 10% at maximum continous operation of 2 minutes, maximum 5.5 cycles per minute. Push: 12 000N.
Motor (base)	24 V, 3 A, IP X4. Operationtime: 10% at maximum continous operation of 2 minutes, maximum 5.5 cycles per minute. Push: 3000N.
Motor (EvaDrive)	24 V, 16 A, IP X0. Operationtime: 10% at maximum continous operation of 2 minutes, maximum 5.5 cycles per minute. Push: 900N.
Motor cover	Flame-resistant ABS plastic
Sound level	With load: upwards: 74.7 dB(A) downwards: 52.6 dB(A).
Intermittent operation	Op 10/90, active op. max. 2 min. Out of a time of 100, active time must be less than 10, though not more than 2 min.
Nav motor	24V DC Mono Shaft, 180 W
Material	Aluminium/steel
Emergency lowering	Manual
Castors	Rear: 8 inch, 203 mm, Front: 4 inch, 100 mm
IP class	IP X4*
Weight	Eva450Drive: 127.87 lbs, 58 kg Eva600Drive: 141.1 lbs, 64 kg
Weight (heaviest part)	Eva450Drive: 97 lbs, 44 kg Eva600Drive: 110.2 lbs, 50 kg
Max. load	EvaDrive450: 450 lbs, 205 kg, EvaDrive600: 600 lbs, 270 kg
Turning radius	Eva450Drive: 1207 mm/ 47,5 inch Eva600Drive: 1307 mm/ 57,5 inch
Expected service life	10 years
Pressure control panel	4 N
Clearance	1.1 inch, 28 mm

*IP X4: Splashing of water, Water splashing against the enclosure from any direction shall have no harmful effect.
(Test duration: 5 minutes Water volume: 10 litres per minute Pressure: 50–150 kPa)

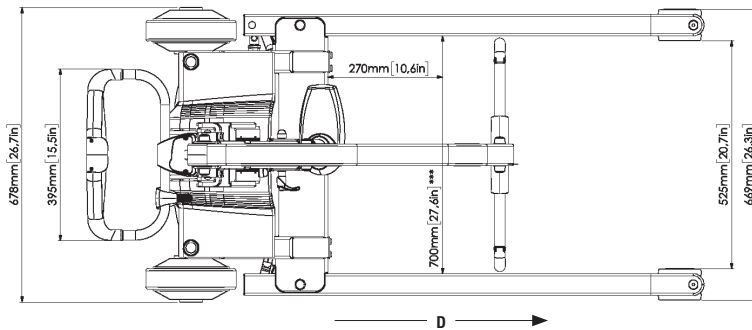
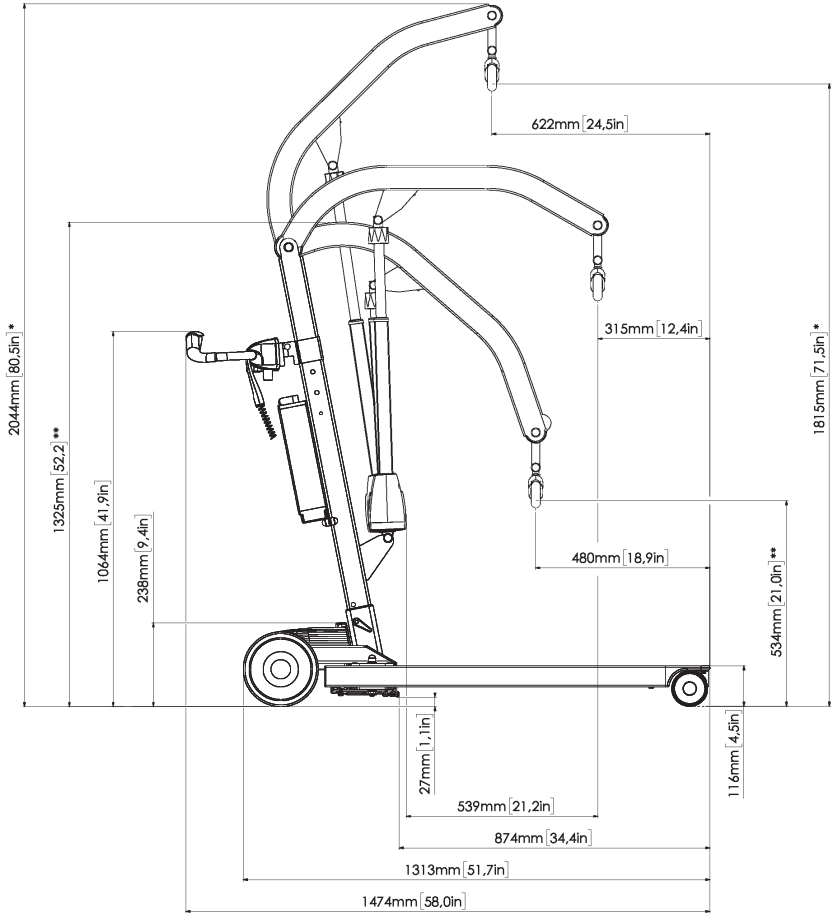
Medical Device Class I. The product complies with the requirements of the Medical Devices Directive 93/42/EEC.

Symbols

	<p>Blue/white Read user manual</p>		<p>May not be discarded in domestic waste</p>
	<p>Medical Device Class I. The product complies with the requirements of the Medical Devices Directive 93/42/EEC.</p>		<p>Type B, according to the degree of protection against electric shock.</p>
	<p>The device is intended for indoor use.</p>		<p>Class II equipment</p>
	<p>Tested according to: ANSI/AAMI HA60601-1-11:2011, ANSI/AAMI ES60601-1-1:2005/(R)2012, CAN/CSA-C22.2 no. 60601-1:14</p>		<p>Yellow/Black International General Warning Symbol</p>
	<p>Yellow/Black Warning. Pinch point</p>		

Dimensions Eva450Drive

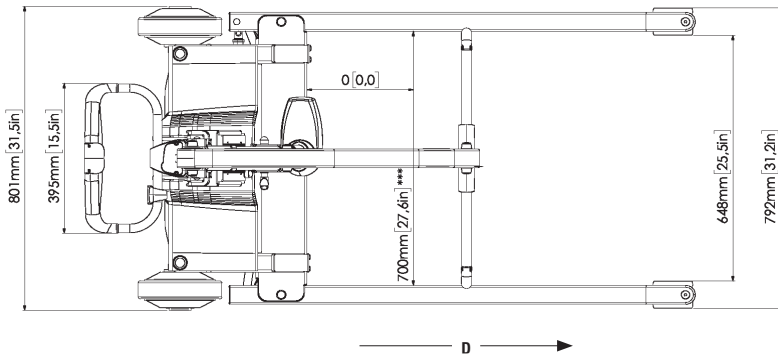
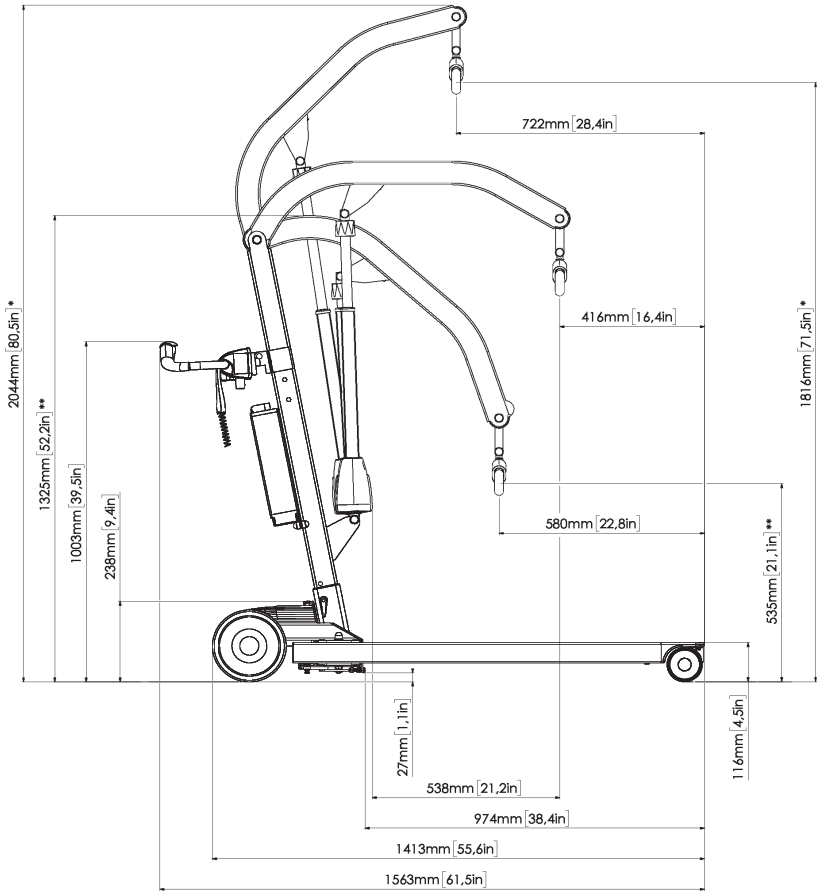
All measurement are in mm/inch
Tolerance +/- 5 mm/ 0.2"



D is movement in forward direction
* can be 50 or 100 mm lower depending on the placement of the mast in the base socket
** can be 50 or 100 mm higher depending on the placement of the mast in the base socket
*** is reference measure 700 mm with max legs spreading

Dimensions Eva600Drive

All measurement are in mm/inch
Tolerance +/- 5 mm/ 0.2"



D is movement in forward direction
* can be 50 or 100 mm lower depending on the placement of the mast in the base socket
** can be 50 or 100 mm higher depending on the placement of the mast in the base socket
*** is reference measure 700 mm with max legspreading

Appendix 1: Error codes

Trip Types and Their Possible Causes

Once the trip type has been established, refer to the relevant section below for further information.

No of battery LEDES flashing	ServiceLight flashing?	Type		Code	Description
4	Y	9		1505	Left Solenoid Brake Trip (1.9)
4		-		1320	Refer to section (1.16)
	Y	9		1506	Right Solenoid Brake Trip (1.9)
5	N	10		1600	High Battery Voltage (1.10)
		Charging		1000	Refer to section (1.6)
3	N	6		10000	Refer to section (1.13)
		Charging		100000	Refer to section (1.14)
0	Y	1		2C00	Low Battery Voltage (1.1)
		-		2C02	Low Battery Lockout (1.1)
		User		2F00	Refer to sections (1.7 & 1.11)
1	N	2		3B00	Left Motor Disconnected (1.2)
2	N	4		3C00	Right Motor Disconnected (1.4)
1	Y	3		3D00 -01	Left Motor Wiring Trip (1.3)
2	Y	5		3E00 -01	Right Motor Wiring Trip (1.5)
3	Y	7 + S		5400	Communications Trip (1.12)
4	N	8		4401	Control System Trip (1.8)
		A Only		7A03	Actuator Motor Wiring Trip (1.15)
3	Y	7		7100	Control handle Trip (1.7)
		User		7147	Dual Joystick Displaced Refer to section (1.11)
4	N	7 or 8		Other	Possible Control System Trip (1.7 & 1.8)
3	Y	8 or 8		Other	Possible Control System Trip (1.7 & 1.8)

1.1 Trip Type 1 - Low Battery Voltage

This occurs when the control system detects that the battery voltage has fallen below 16V. Check the condition of the batteries and the connections to the control system. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective. In the case of 2C02 the Control System is making a log of the times that the Low Battery Lockout has been initiated.

1.2 Trip Type 2 – Left Motor Disconnected

This occurs when the control system detects that the left motor has become disconnected. Check the left motor, motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. The VR2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the right motor. Consult Handicare for more details.

1.3 Trip Type 3 – Left Motor Wiring Trip

This occurs when the control system detects a fault in the wiring to the left motor, in particular if a motor connection has short-circuited to a battery connection. Check the left motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. The VR2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the right motor. Consult Handicare for more details.

1.4 Trip Type 4 – Right Motor Disconnected

This occurs when the control system detects that the right motor has become disconnected. Check the right motor, motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. The VR2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the left motor. Consult Handicare for more details.

1.5 Trip Type 5 - Right Motor Wiring Trip

This occurs when the control system detects a fault in the wiring to the right motor, in particular if a motor connection has short-circuited to a battery connection. Check the right motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective. The VR2 control system may be programmed to exchange the left and right motor outputs. In this instance, this section will refer to the left motor. Consult Handicare for more details.

1.6 Trip Type 6 – Charger Connected

This occurs when the control system detects that an off-board charger is connected. Check that the battery charger is disconnected. If the trip is still present after the charger has been disconnected then the Control handle Module may be defective.

1.7 Trip Type 7 – Possible Control handle Trip

This occurs if the control system (PM) detects a problem within its own Force sensing control handle, or there is a communications error between the Control handle Module and Power Module. The control handle can only be replaced by a person authorized by Handicare.

7100 Loss of communications to the control handle, check the control handle cable.

7103 Internal trip, if you have authorization check the control handle internal connections and mating sockets. Ensure the cable is connected correctly to the PCB. If the trip is still present after the appropriate checks have been made then the Control handle Module may be defective.

1.8 Trip Type 8 - Possible Control System Trip

This occurs if the control system detects a problem within itself. The control system can only be repaired by an authorized person.

1.9 Trip Type 9 - Solenoid Brake Trip

This occurs when the control system detects a problem in the solenoid brakes or the connections to them.

1505 - Left Brake Trip

1506 - Right Brake Trip

Check these connections and the solenoid brakes. If the trip is still present after the above checks have been made, then the Power Module may be defective.

1.10 Trip Type 10 - High Battery Voltage

This occurs when the control system detects that the battery voltage has risen above 35V. The most common reasons for this are overcharging of the battery or bad connections between the control system and the batteries. Check the batteries and the connections to them. If the trip is still present after the batteries and connections have been checked, then the Power Module may be defective.

1.11 Control handlebar or DMS bar touched at Power-up

The most common cause of this trip is if the control handle is affected by a force when the control system is being switched on. When the control system is switched on, the battery gauge will blink for a short time. Check that the user is not touching the control handle before the blink finishes. If the problem persists, refer to section 1.7.

1.12 Communications Error

The most likely cause of a communications error is a defective cable between the Power Module and the Control handle Module. The cable should be checked for damage, and the entire handle replaced if found to have a fault. If the problem persists then the VR2 Power Module could be defective.

1.13 Inhibit 2 Active

This occurs when the Inhibit 2 input is active. The Inhibit 2 input is via the INH-2 way connector and is normally associated with speed limit or actuator functions. The operation of Inhibit 2 will depend upon the programmed settings and the vehicle on which it is being used. Check all wiring and switches connected to Inhibit 2. If these appear to be in working order, then the Power Module may be defective.

1.14 Inhibit 3 Active

This occurs when the Inhibit 3 input is active. The Inhibit 3 input is via the 3 way onboard charger (OBC) and is normally associated with this function. The operation of Inhibit 3 will depend upon the programmed settings and the vehicle on which it is being used. Check all wiring, switches and OBC (if fitted) connected to Inhibit 3. If these appear to be in working order, then the Power Module may be defective.

1.15 Actuator Motor Wiring Trip

This occurs when the control system detects a fault in the wiring to either actuator motor. Check the motor connectors and wiring. If the trip is still present after the above checks have been made, then the Power Module may be defective.

1.16 Current Limit Active

This occurs when the control system operates above the Current Limit Threshold for a period of time greater than the Current Limit Time. It has been designed to notify the Healthcare Technician that the control system has operated outside of its programmed range.

1.17 High Temperature

This occurs when the control system reaches its Temperature Threshold and thus becomes too hot. The controller will not allow drive until the controller has cooled down. An entry is made in the system log each time the controller gets too hot and goes out of drive.

SystemRoMedic™

Simple solutions for great results

SystemRoMedic™ is the name of Handicare's unique easy transfer concept, the market's widest and most comprehensive range of clever, easy-to-use and safe transfer and lifting aids designed to make life easier, both for the user and for the caregiver. SystemRoMedic™ is a complete solution that provides for the majority of patient transfer or manual handling requirements. From the simplest to the most complex scenarios, from the lightest to the heaviest. The concept encompasses assistive devices for four different categories of transfers:

- Transfer, assistive devices for manual transfers of users between two locations.
- Positioning, assistive devices for manual repositioning of users within the same location.
- Support, assistive devices for mobility support e.g., during sit-to-stand or gait training.
- Lifting, assistive devices for manual and mechanical lifting of users.

Improved work environment, improved quality of care and cost savings

The philosophy behind SystemRoMedic™ is focused on the prevention and reduction of occupational injuries while allowing users to experience a greater sense of independence and dignity. Through a unique combination of training and a complete range of efficient transfer aids, SystemRoMedic™ offers improvement of both work environment and quality of care and, at the same time, achieves significant cost savings.

Always make sure that you have the correct version of the manual

The most recent version of all manuals are available for downloading from our website; www.handicare.com.

For questions about the product and its use

Please contact your local Handicare and SystemRoMedic™ representative. A complete list of all our partners with their contact details can be found on our website; www.handicare.com.

Handicare offers solutions and support to increase the independence of disabled or elderly people as well as to improve the convenience of those who are caring for them.

The Handicare Group is one of the leading healthcare companies in Europe with its own manufacturing organizations and sales companies in Norway, Sweden, Denmark, Germany, the Netherlands, Great Britain, France, China, Canada and the USA. Handicare's products are also distributed by partners in more than 40 countries worldwide. Our wide range of high-quality products includes a complete easy transfer system and other patient handling aids, stairlifts, car adaptations and bathing and toileting products.



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