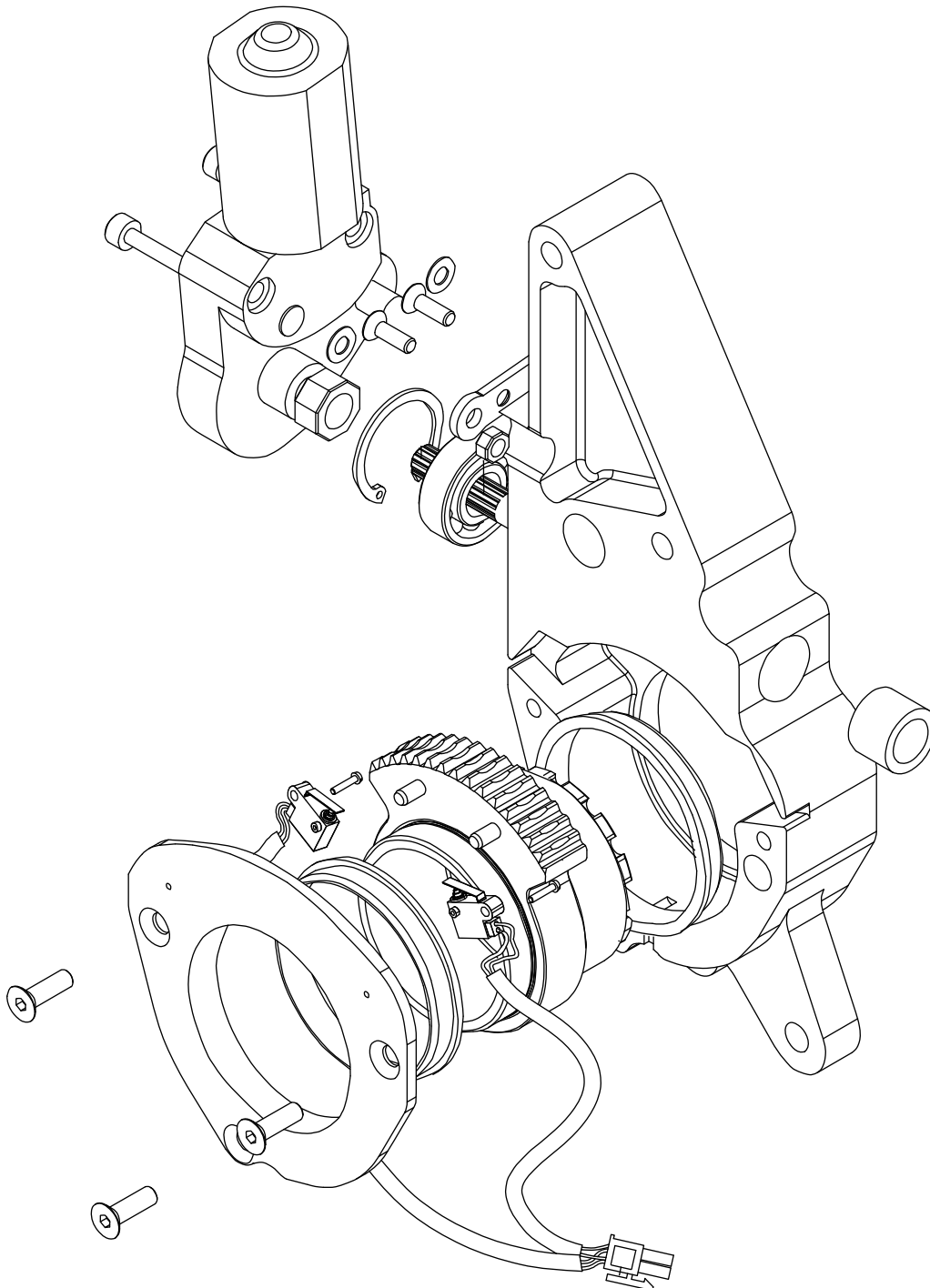


Carendo



For internal use only!

NOTE

Before using this manual you must have taken part of and understood the *Safety Precautions 09.NE.01*. Blue text indicates changes compared to previous manual.

Index

Service Procedures.....	4
Lubrication, Sealants, Lockings and Torques.....	24
Tools	30
Trouble shooting.....	31

Service Procedures

Preventive Maintenance Schedule

NOTE

All caregiver obligations according to *Instructions for Use (IFU)* are to be checked when performing the Qualified personnel Service

WARNING

The points on this checklist are the minimum the manufacturer recommends. In some cases due to heavy use of the product and exposure to aggressive environment, more frequent inspections should be carried out. Continuing to use this product without conducting regular inspections or continuing to use this product when a fault is found will seriously compromise the user and residents safety. Local regulations and standards may be higher than the manufacturers. Preventive maintenance specified in this manual can prevent accidents.

Caregiver obligations

PMS Carendo

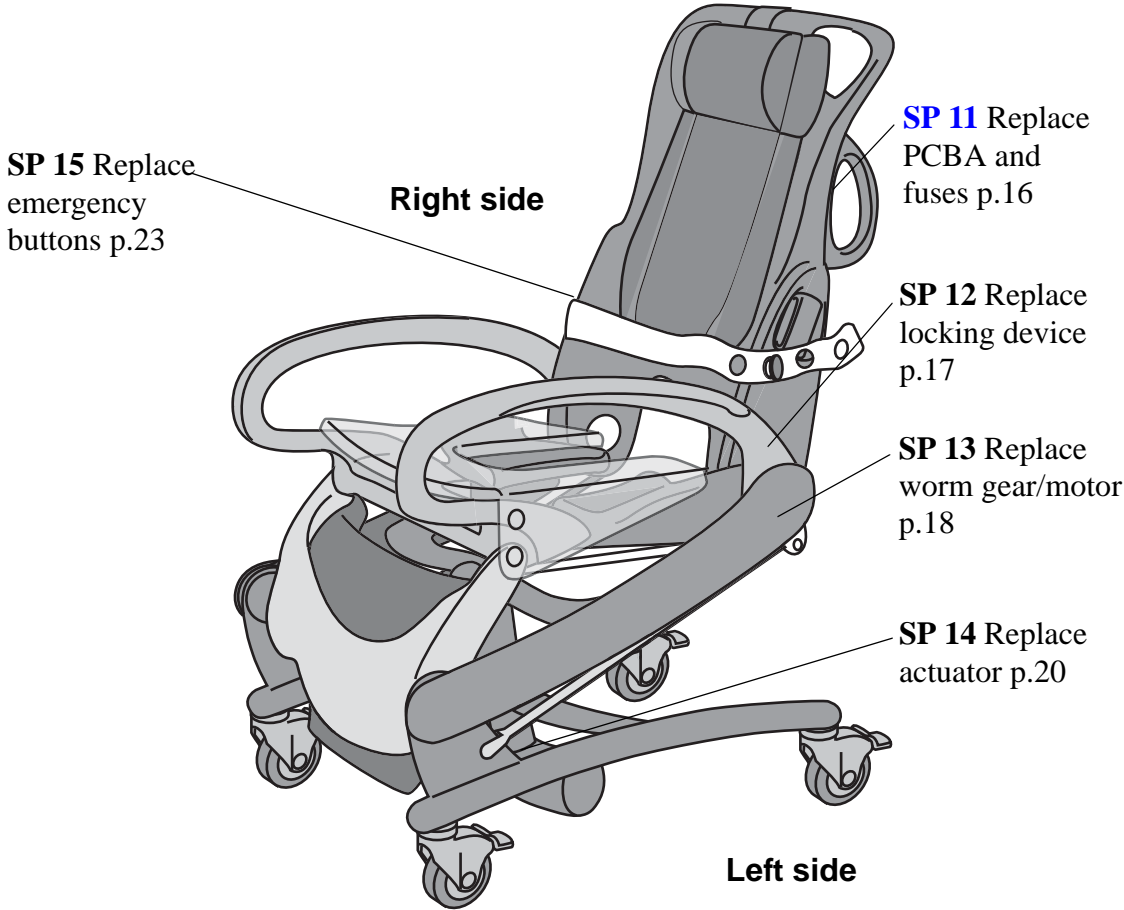
Action/check	Every day	Every week	Every 6 months	Every 2:d year
Cleaning/Disinfection	x			
Visually check safety strap		x		
Visually check all exposed parts		x		
Visually check mechanical attachments		x		
Check handset and cable		x		
Check/clean castors		x		
Check cushions/pillows		x		
Visually check battery charger and battery		x		
Lubricate locking pins			x	
Replace safety belt				x

Qualified personnel actions

PMS Carendo

Action/check	Every year	Every 2:nd year	Service procedure	Page
Check that the latest updates have been implemented	x		1	5
Check battery	x		2	6
Check all vital parts for corrosion/damage	x		3	7
Check mechanical attachments	x		4	8
Lubricate bearings	x		5	9
Perform a safe working load test	x		6	10
Check the safety stop function	x		7	11
Check function of emergency lowering	x		8	12
Perform full feature functionality test	x		9	13
Inspect castors	x		10	14

Service procedures not included in PMS



SP 1. Check that the Latest Updates have been Implemented


Check if there are any *Field Safety Notices or Technical Advisory Notices* (FSN:s and TAN:s) that have been published since the last service.

Field Safety Notice: information notice informing of what actions must be taken in a Field Safety Corrective Action.

Technical Advisory Notices are divided in three classes:

- **A: Field Safety Corrective Action (FSCA)**
Information about what technical interventions to be made in order to remedy **safety** related issues described by the *Field Safety Notice (FSN)*
- **B:** Information about **non-safety** related changes
- **C:** Information about administrative issues

The check must be done to keep the product up to date according to safety and product improvements.



TECHNICAL ADVISORY NOTICE
TAN_C/2015/POZ/061_01

Markets affected:	Worldwide
Update type:	C – for information only
Reason for Update:	<input type="checkbox"/> Safety <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Other
Title:	Control box initialization procedure.
Products/ Systems affected:	Contoura
Issue date:	2015/09/21
Completion date:	N/A
Material required:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <small>Applicable for TAN A&B only; If yes, please refer to section 2.0 and 3.0</small>
Material free of charge:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Return of parts (RMA):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <small>If yes, please refer to section 5.0</small>
Number of technicians:	1
Customer information required:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <small>If yes, please refer to section 6.0</small>

Example of a published Technical Advisory Notice C

SP 2. Check battery

Check the battery

The battery condition tester will load the battery with a high current for a short time and this will show the battery condition on a meter.

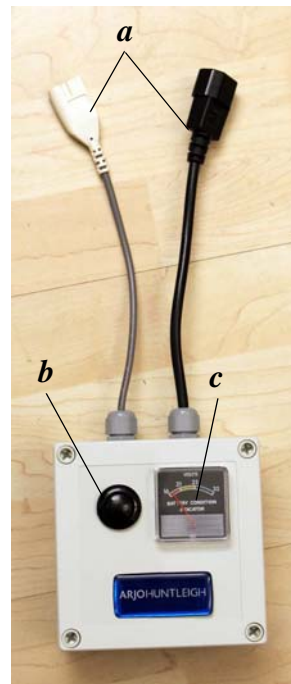
The battery power tester will load the battery with up to 10 A depending on battery condition.

WARNING

- The battery power tester will become hot and there is a potential risk of fire.
- Make sure the battery power tester is kept away from inflammable material during tests and for several minutes following the test.

Battery test

1. The battery to be tested must be charged for at least 12 hours before test!
2. Connect the tester to the battery with suitable connector (*a*)
3. Press and hold button (*b*) for 1-2 seconds
4. The meter (*c*) will show the battery condition.
5. Green indication = PASS
Yellow indication = PASS
Red indication = FAIL
6. If the battery is OK, put the tested battery back in the charger after the test. If not replace the battery.



Battery condition tester



c

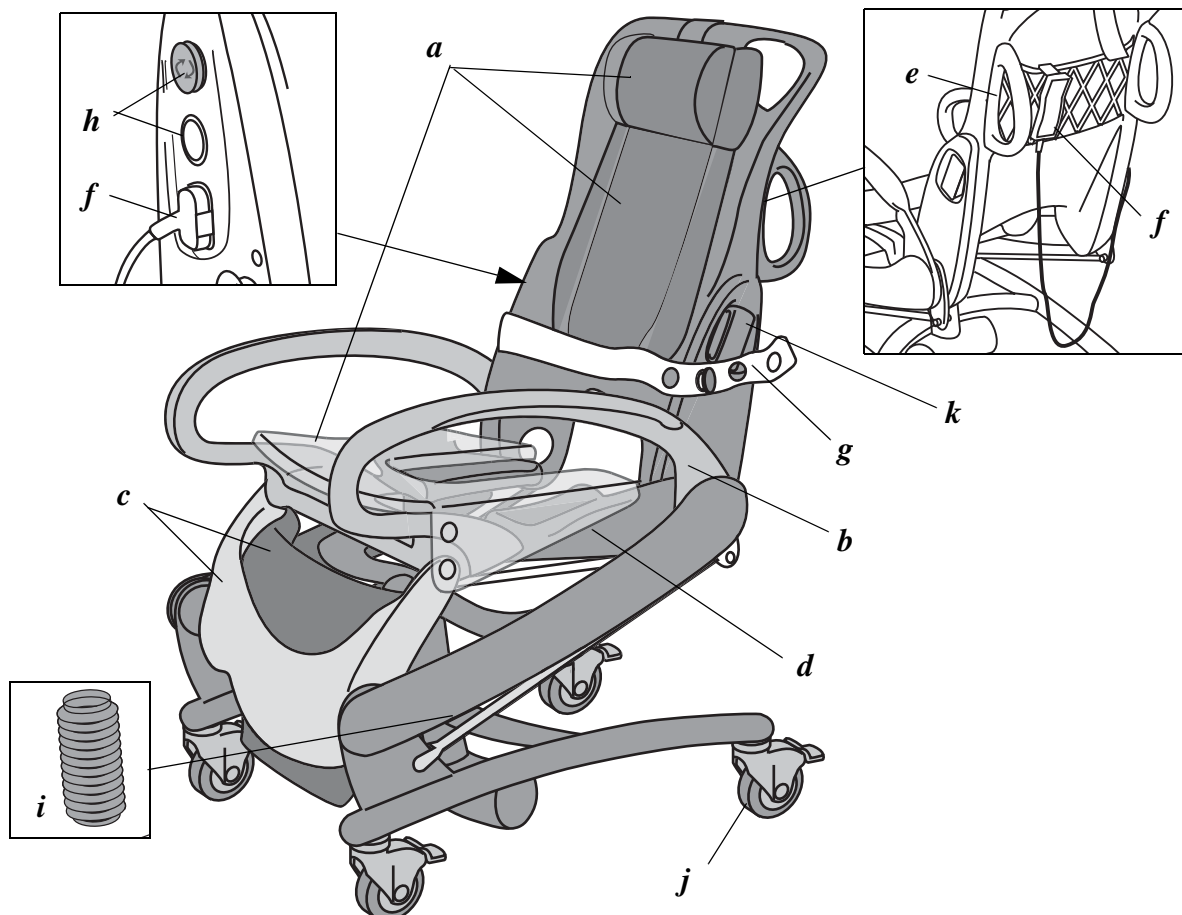
SP 3. Check all vital parts for corrosion/damage

This check is to preserve the safety and performance of the product.

Check:

- a.** Pillow, seat- and back cushion
- b.** Care raiser, lubrication of locking pins see page 28
- c.** Leg support and raiser
- d.** Seat
- e.** Back rest with storage net
- f.** Handset and cable
- g.** Safety strap
- h.** Buttons
- i.** Bellows
- j.** Castors:
See page “SP 10. Inspect Castors” on page 14
- k.** Battery: See *Operating and Product Care Instructions*

(All check points **a-k** are also included in *PMS Caregiver Obligations* on page 3)



SP 4. Check Mechanical Attachments

This check is to preserve the safety and performance of the product.

Check attachment of:

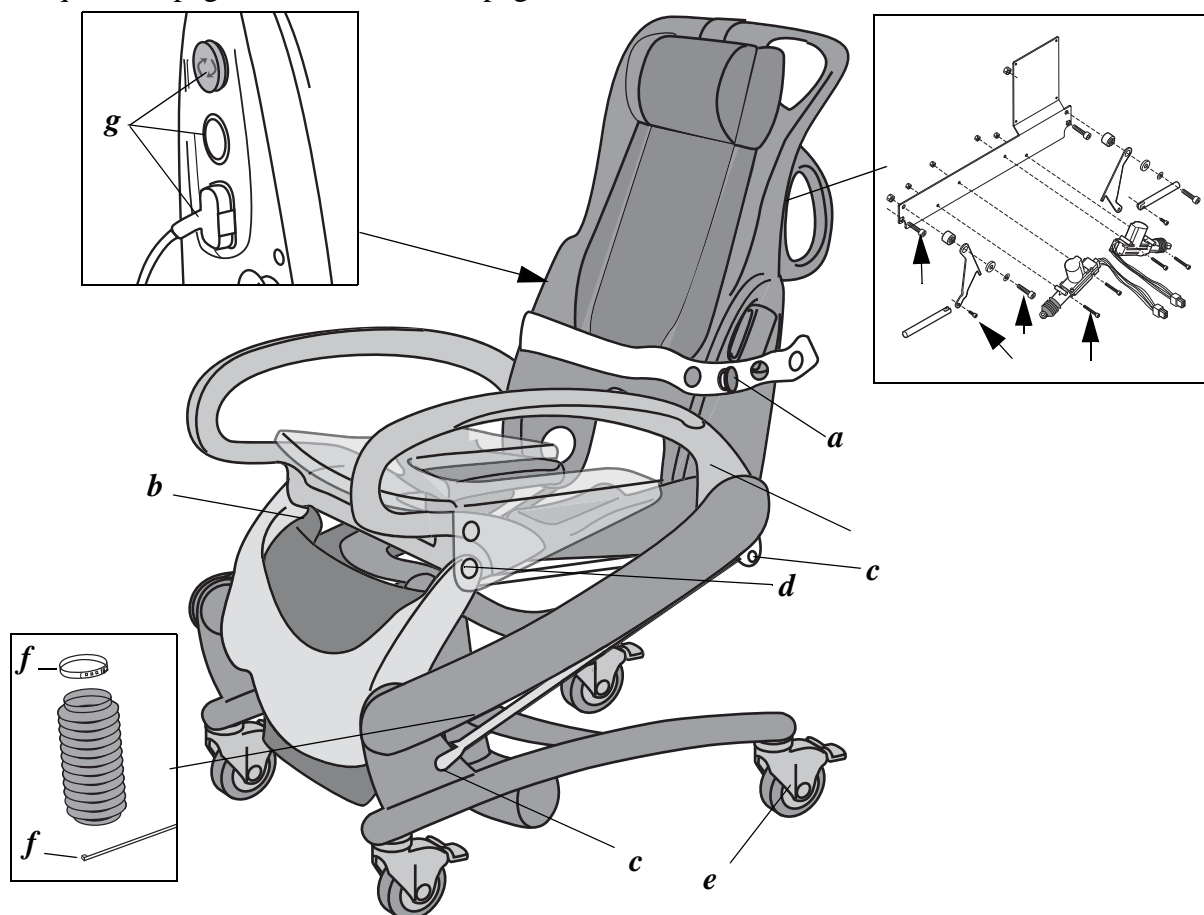
- a. Safety strap knob
- b. Raiser
- c. Tie rods
- d. Care raiser and leg support
- e. Castors: see page “SP 10. Inspect Castors” on page 14
- f. Bellows, (strap or clamp)
- g. Buttons and handset cable
- h. Locking device

NOTE

Screws and bolts attached with Loctite should not be checked by tools but manually to test if the jointing/component is securely fitted.

If tightening is needed and Loctite is previously used new Loctite must be applied. Proceed according to the Loctite manufactures instructions.

See also “Lubrication, Sealants, Lockings and Torques” on page 24 and “Tools” on page 30

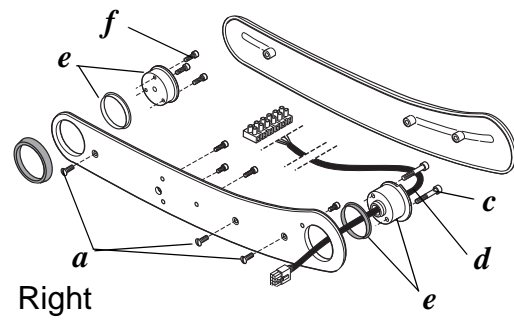
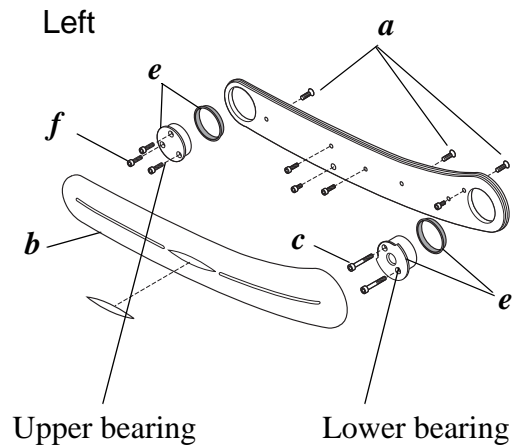


SP 5. Lubricate Bearings

1. Rise the Carendo partially but not all the way, locking pins shall not be out.
2. Remove the battery
3. Loosen the three screws (*a*) for the cover on the inside.
4. Pull off the cover (*b*) gripping the cover from below, trying to get grip with your fingertips in the slit and gently pulling up- and outwards.
5. Loosen the two screws (*c*) on the lower bearing
6. Be careful about the cable protection (*d*) on the right lower bearing.
7. You can use the loose screws to pull out the bearing.
8. Lubricate the bearing (*e*), see page 24.
9. Repeat procedure 5-7 for the upper bearing three screws (*f*)

Reassembling

10. Use *Loctite* and torque on the screws.
See page 24 and 30.
11. Repeat procedure 1-10 for the opposite side.



SP 6. Perform a Safe Working Load Test

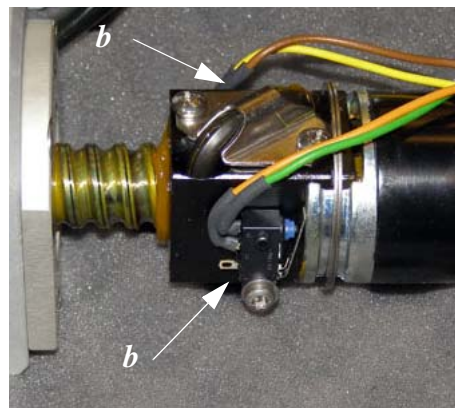
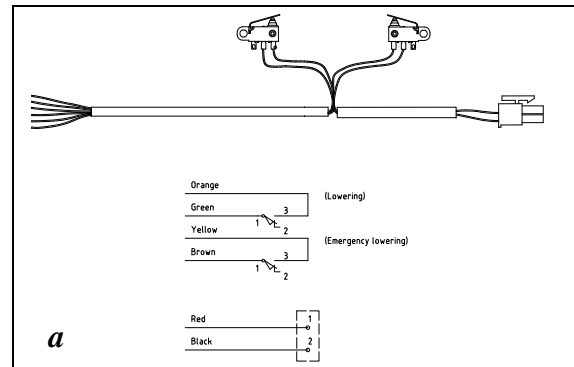
Applicable load test:

- **Model:** *Carendo*
- **SWL:** 136 kg (300 lb.)
- **Test load:** 136 kg (300 lb.)

General load test procedure is not ready. Please refer to local requirements.

SP 7. Check the Safety Stop Function

1. Lower the seat using both the handset and the emergency lowering at the same time holding an armrest to stop the motion.
2. The lift shall stop
3. If not check
 - cabling (**a**) from actuator to PCBA
 - orange+ green (lowering)
 - Yellow+brown (emergency lowering)
 - connection **J2** on PCBA
 - microswitches (**b**) on actuator



SP 8. Check Function of Emergency Lowering

1. Press the button
2. Carendo shall lower
3. If not check:
 - button
 - cabling to PCBA connection **J7**
 - fuse F3before replacing PCBA



SP 9. Perform Full Feature Functionality Test

Full feature functionality test

Function	Activation	Demands for approval
Castors	-	See SP 9
Reclining of seat	Handcontrol button	Seat is reclining
Reclining of seat + care raiser	Handcontrol button	Seat is reclining, care raiser locked
Raising of seat	Handcontrol button	Seat is raising
Raising of seat +care raiser	Handcontrol button	Seat is raising, care raiser locked
Lift up	Handcontrol button	Chair is raising
Lift down	Handcontrol button	Chair is lowering
Emergency down	Green button	Chair is lowering
Emergency stop	Red button	All functions stop, button can be released

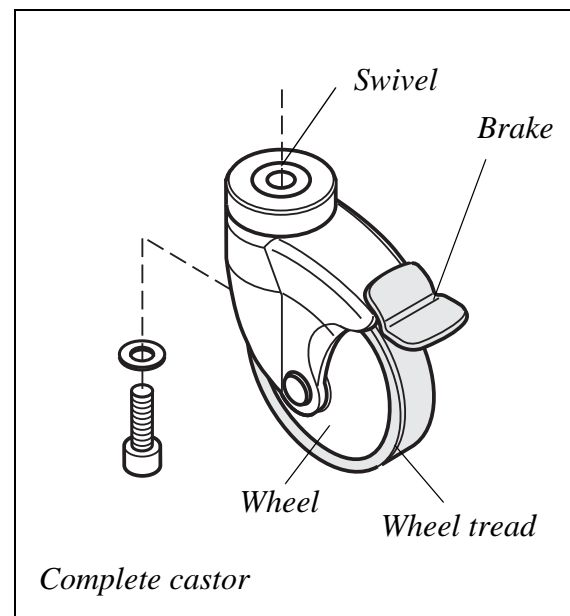
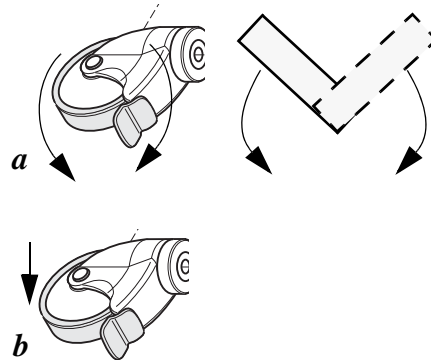
SP 10. Inspect Castors

Do a validation concerning wear, movement of every swivel/ wheel and appearance as follows.

NOTE

The castors must be properly cleaned according to the customer obligations before starting.

1. Lay the product down
2. Check ease of motion of swivel by rotating the castor upwards (*a*) and let it fall by gravity from both sides: **There must be no resistance and the end position must be down.**
3. Check ease of motion of wheel by slightly rotating the wheel: **The wheel must continue to rotate when released and must not be noisy. (*b*)**
4. Check the wheel tread for roundness: **No flat tear, cuts in the tread or ovality is acceptable**
5. Raise the product
6. Check function of brakes (if applicable) by applying the brakes and push the product forward: **The brakes must lock the wheels and the brake lever must function on/off**
7. Apply load to the product (approx. 80 kg) and do a test drive: **It must be possible to drive straight forward and to turn without effort.**
8. If any of these criteria are not fulfilled the complete castor must be replaced.
9. The service technician must also state, if not all wheels are replaced, that the old wheels will last another year. This including the general appearance (damages and, corrosion).

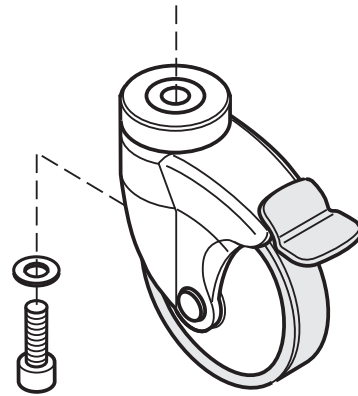


NOTE

All castors must be of the same brand. It's not permitted to use different versions of castors on the same product.

Replacement

1. Lay the *Carendo* down.
2. Loosen and remove the castor from the chassis.
3. Clean the threads in the hole. (Refer to *Loctite* instructions)
4. Apply Loctite. (see page 24 for quality)
5. Assemble the new castor with new bolt and washer. (torque see page 30)
6. Check function of the new castor.

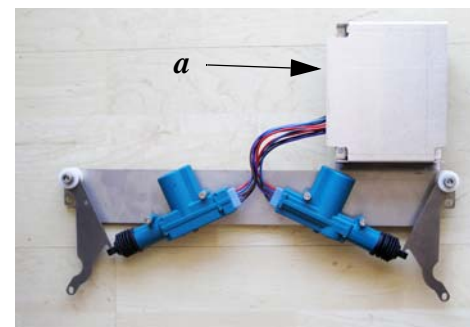


SP 11. Replace PCBA and fuses

1. Remove the battery (Old version PCBA up to November 2018)
2. Loosen the three (old model)/ ten (new model) screws on the service cover.
3. Remove the cover and the membrane seal (old model) /seal (new model).
4. (From June 2012) Snap off metal cover (*a*) using the white plastic tool (*b*)
5. (Old version PCBA, up to P0519013):
Locate and replace the fuses if needed. Go to 8 if you will not replace the PCBA.

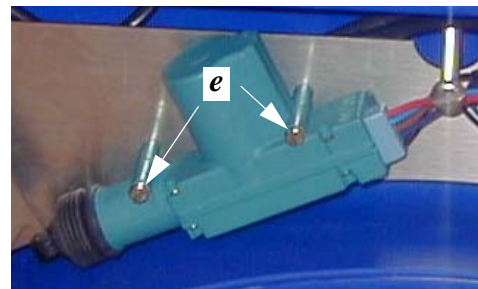
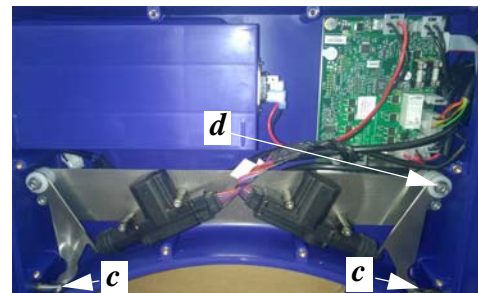
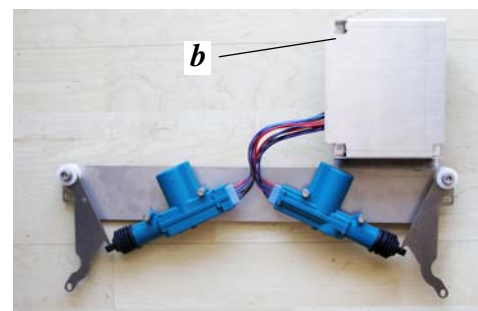
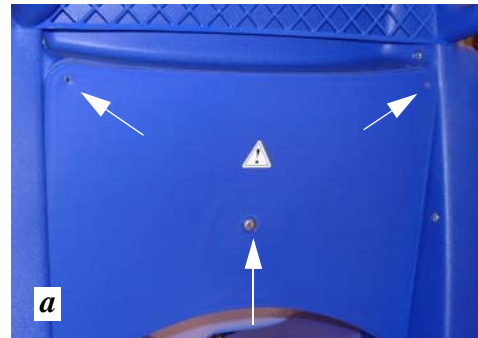
(New version PCBA, from P0519014):

- Push "UP" on the hand control. If not in lowest position also push the emergency lowering button
 - If LED1 (*c*) on PCBA turn ON, it indicates that fuse F1 or F3 needs to be replaced
 - Remove the battery
 - Go to 8 if you will not replace the PCBA.
6. Disconnect the cables and remove the PCBA using the special white plastic tool (*b*) (no. 8453102).
 7. Insert the new PCBA and connect the cables. (see *Technical Manual* if necessary)
 8. Reassemble:
Attach metal cover and service cover.
If the membrane seal is difficult to assemble, some soap might help (Old model only).
 9. Insert the battery.



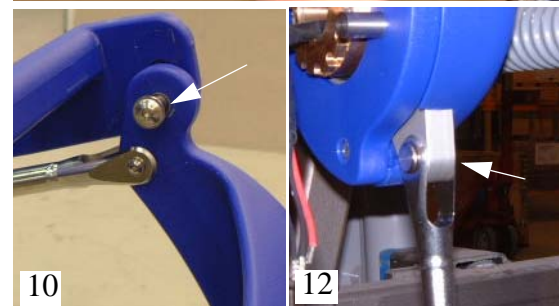
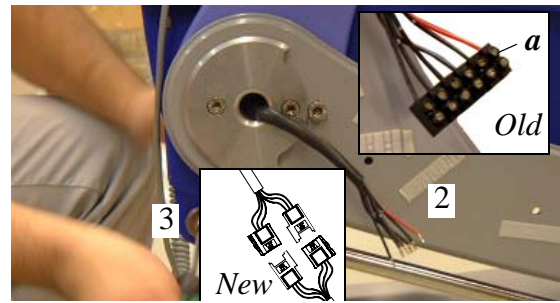
SP 12. Replace locking device

1. Remove the battery.
2. Loosen the three (old model)/ ten (new model) screws (*a*) for the service cover.
3. Remove the cover and the membrane seal (old model) /seal (new model)
4. (From June 2012) Snap off metal cover (*b*)
5. Disconnect the cables on the PCBA J3 (left) and J4 (right).
6. Remove the locking pins with screws (*c*).
7. Remove the four Allen screws (*d*).
8. Lift out the complete mounting plate with the locking devices.
9. Unscrew the two screws with nuts (*e*) on the locking device.
10. Replace the locking device.
11. When reassembling, use new locking nuts for the locking device and correct torques according to page 30. Use Loctite on the screws for the locking pins (according to page 28).
12. When tightening the screws for the mounting plate check that the locking pins move freely.
13. Wiring Diagram for the PCBA can be found in the *Technical Manual*.
14. Reassemble seal, cover for PCBA (from June 2012) and service cover.

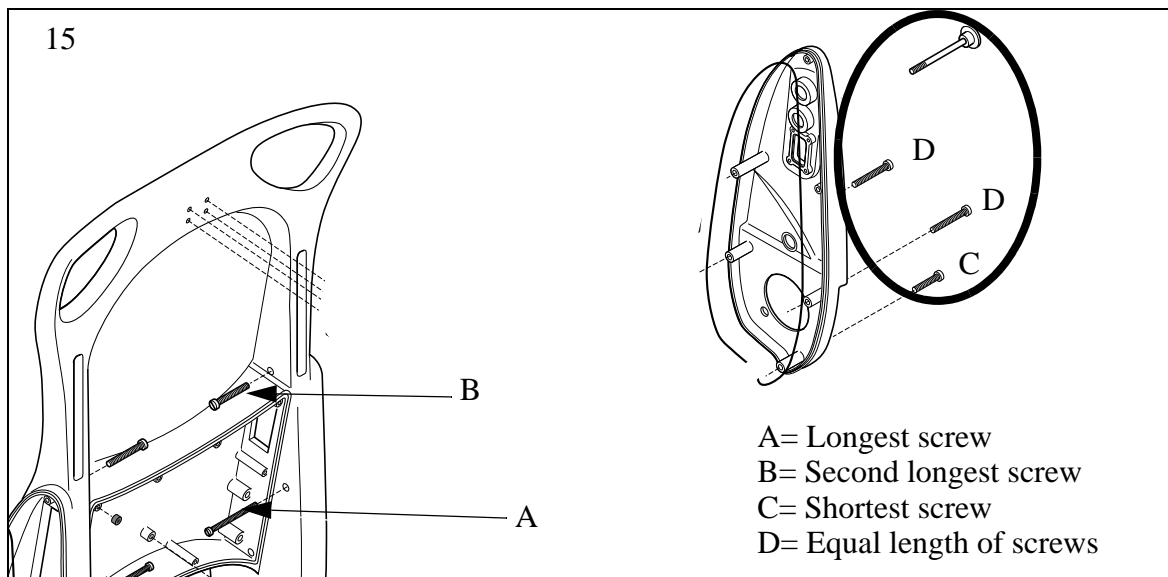


SP 13. Replace worm gear/ motor

1. Proceed according to page 20 items 1-5. Remove covers on both sides.
2. When reconnecting with connection block (a) see page 23. (Difference old/new cabling)
3. Loosen the lower rod (Allen screws) on both sides.
4. Loosen two bolts on the bearing on both sides.
5. Loosen the service cover on the backrest according to **page 17** item 2-3.
6. Support the backrest from below to prevent it from falling down.
7. Use the loose screws on the bearing to pull out the bearings on both sides.
8. Remove the care raiser with leg supports forwards.
9. Bend slightly with a big, wide screwdriver or similar to loosen the seat attachment. Be careful not to damage the plastics!
10. Loosen the screws for the leg support
11. Remove the seat.
12. Loosen the screws for the upper rod attachment to the motor.
13. Remove the backrest.
14. Lay the backrest down.



15. Remove the blue button, two screws inside and three screws outside.



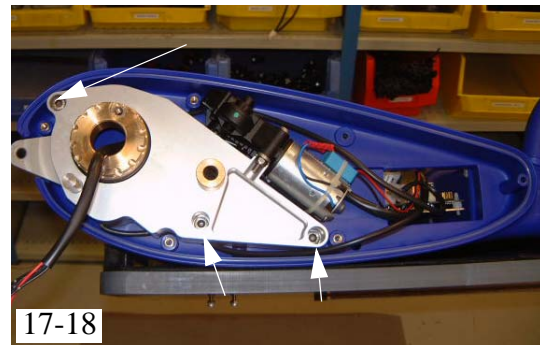
16. Disconnect the motor connections J8, J9 on the PCBA.

17. Remove the cover.

18. Loosen the three bolts for the worm gear unit.

To replace only the motor:

19. Loosen the two bolts and pull off the motor from the splines.

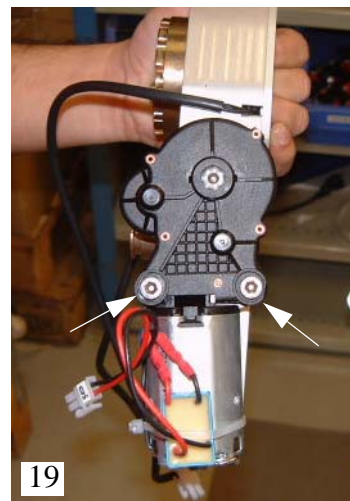


Reassembling:

1. When reassembling notice the position of the cable.



2. Use Loctite according to page 24 and correct torques according to page 30.

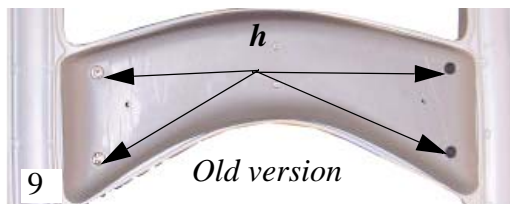
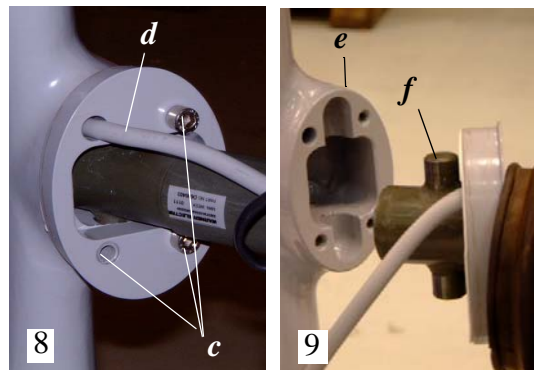
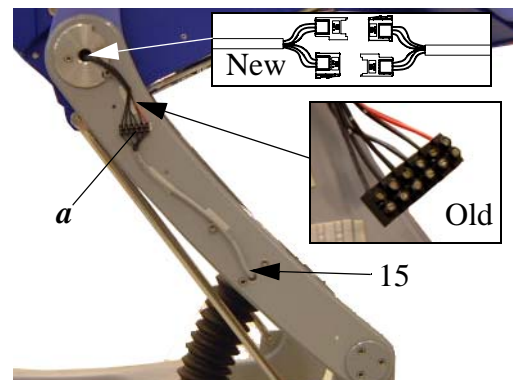
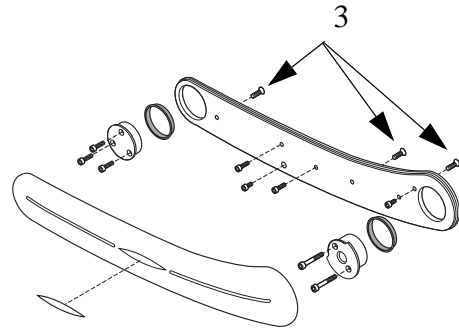


3. Be careful about the cable protection.



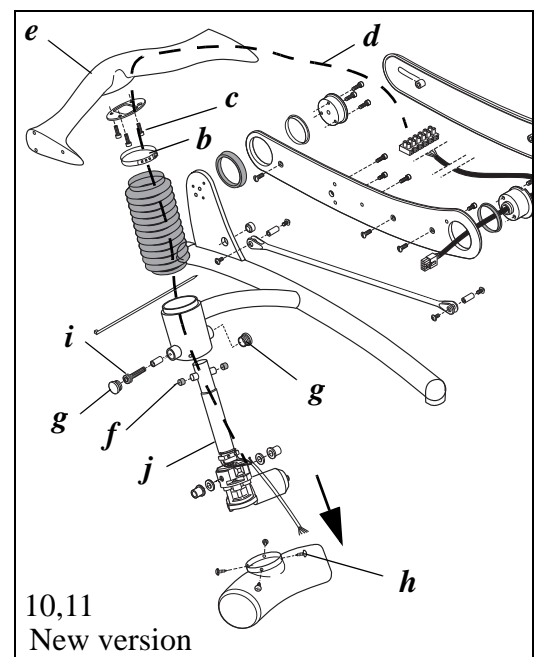
SP 14. Replace actuator

1. Rise the Carendo partially but not all the way, as the actuator then cannot be removed.
2. Remove the battery
3. Loosen the three screws for the right cover on the inside.
4. Pull off the cover gripping the cover from below, trying to get grip with your fingertips in the slit and gently pulling up- and outwards.
5. Loosen the cables (*a*) Old version: connection block, New version: two quick couplings - push couplings through hole of bearing.
6. Turn the Carendo carefully on the side.
7. Cut the top strap/loosen the clamp (*b*) holding the bellows.
8. Loosen the three Allen bolts (*c*) and pull out the cable (*d*). (Old thick bracket illustrated)
9. Pull out the actuator from the yoke (*e*). Watch the two plastic bushings (*f*).
10. Loosen the four screws (*h*) for the bottom cover.



(New version) Remove plugs (*g*)

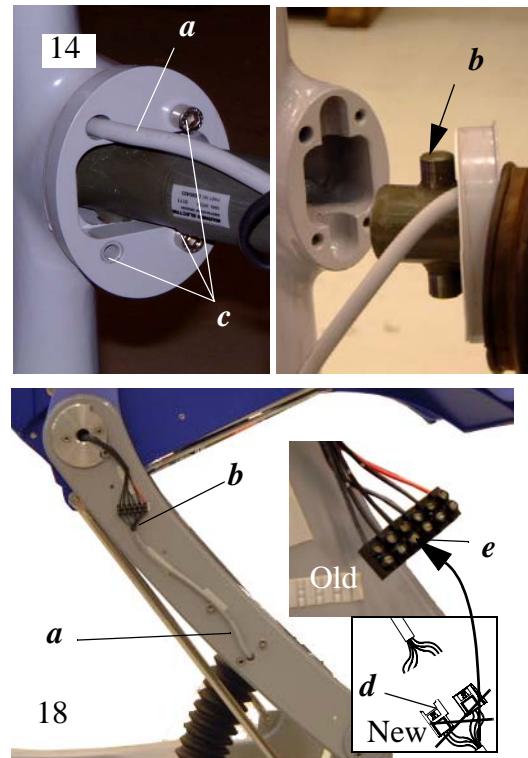
11. Loosen the two bolts (*i*) for the actuator (note different length old/new). Use a joint coupling for the wrench on old version see photo below.



12. Pull out the actuator (*j*) downwards.

Reassembling

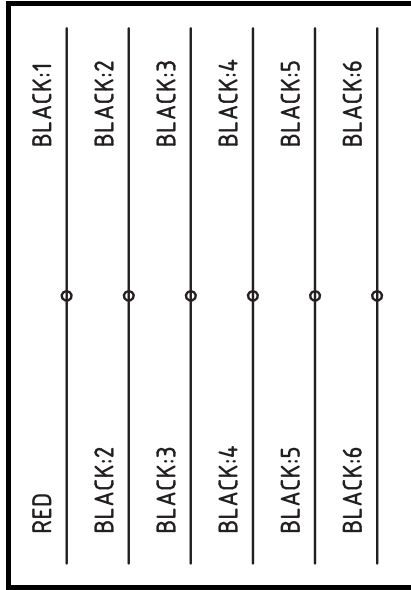
13. Attach the new actuator (use Loctite according to page 24).
14. Push the cable (*a*) through the hole (use some soap if it is difficult) and position the actuator (do not forget the two plastic bushings (*b*) on top of the actuator pins. (Old thick bracket illustrated)
15. Stretch the cable (*a*) from outside.
16. Attach the three Allen bolts (*c*) (use Loctite according to page 24).
17. Attach the bellow with a new clamp.
18. If new cabling with quick connectors: cut off quick connectors (*d*)
19. Connect the cables to the connection block (*e*) See page 23 for difference in connections between old and new cabling.
20. Reassemble cover and battery
21. Check function



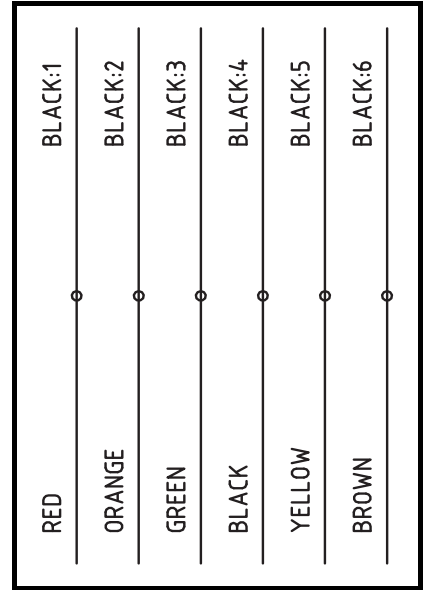
Cable connection from actuator

OLD Actuator with black cables

**Old Cable 8451430-Old Actuator
Use Connection Block**

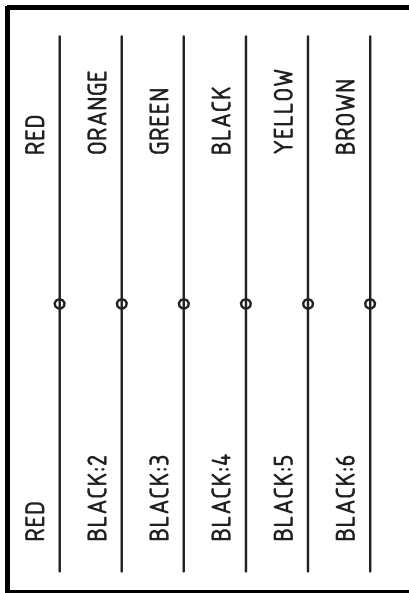


**NEW Cable 8451430 (coloured cables)-Old Actuator
Use Connection Block**

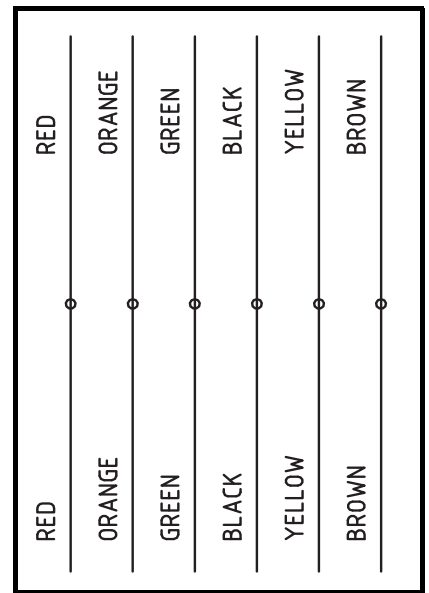


NEW Actuator with coloured cables

**Old Cable 8451430-NEW Actuator
Use Connection Block**



**NEW Cable 8451430 (coloured cables)-NEW Actuator
Use Connectors**



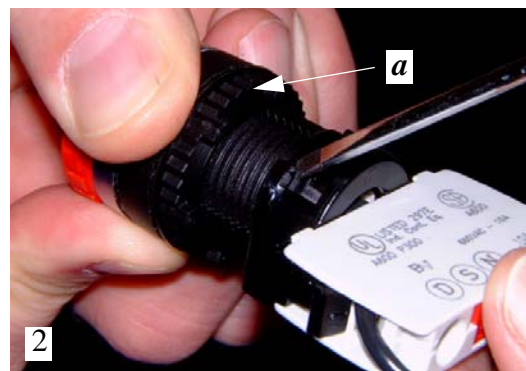
SP 15. Replace emergency buttons

1. Proceed according to page 17; item 1-7.
2. Study a button with cabling to find out the best way to separate the button from the connector using a small screwdriver and lifting the latch at the same time rotating the connector.
3. When the cable with connector is loose, unscrew the locking ring (**a**) for the button turning it counter-clockwise



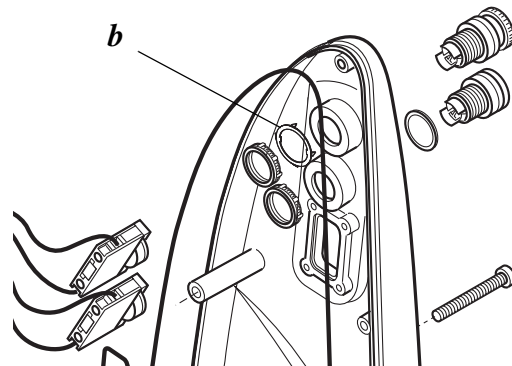
Reassembling

4. When reassembling note that the peg in the button and in the connector shall be placed crosswise.
5. Inside the cover a rotation stop (**b**) has been added 2013 for the emergency stop button. Add if missing. Teeth against cover
6. Proceed according to page 17; item 11-14



NOTE

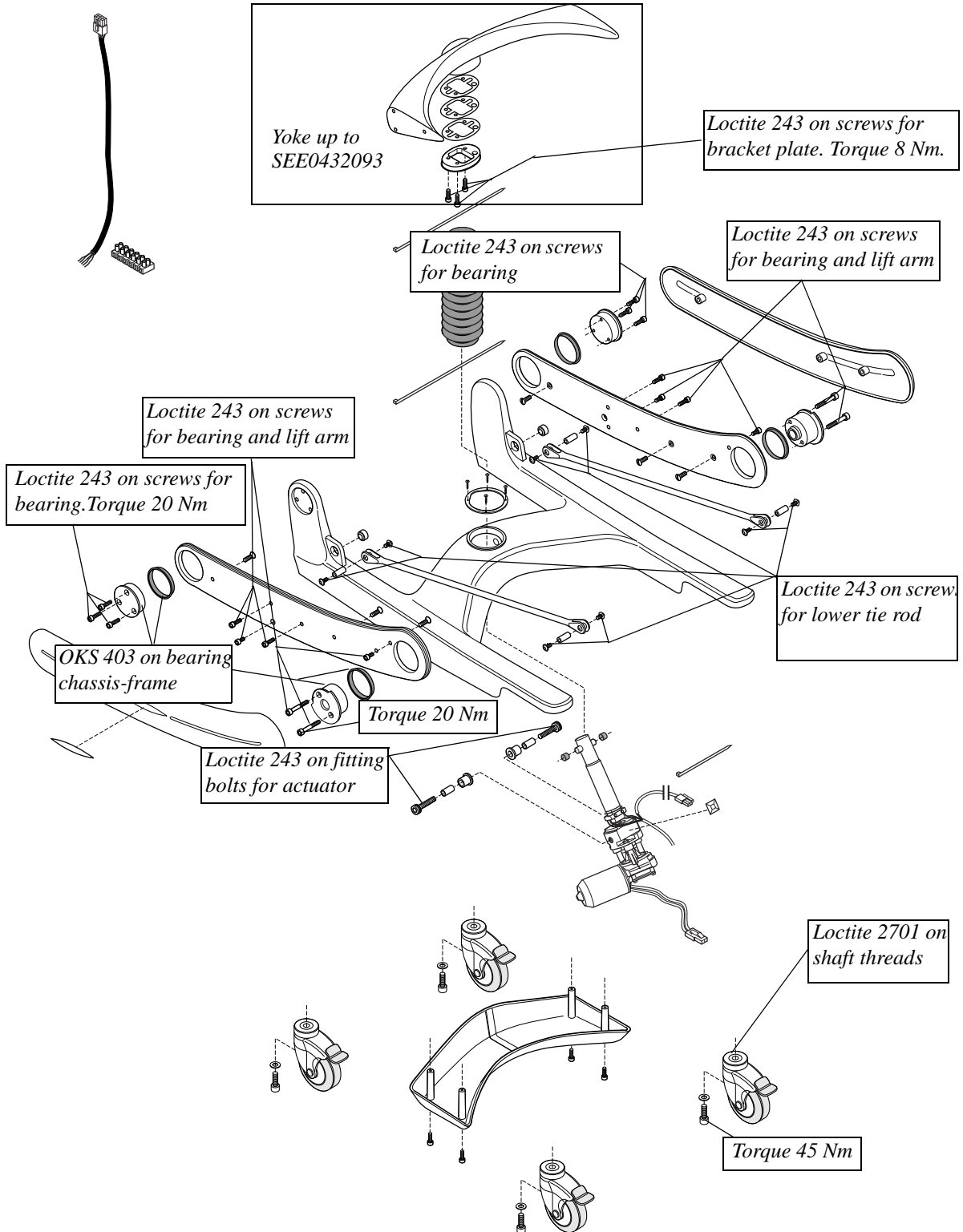
If you are unable to remove the button according to this procedure, proceed according to page 18.



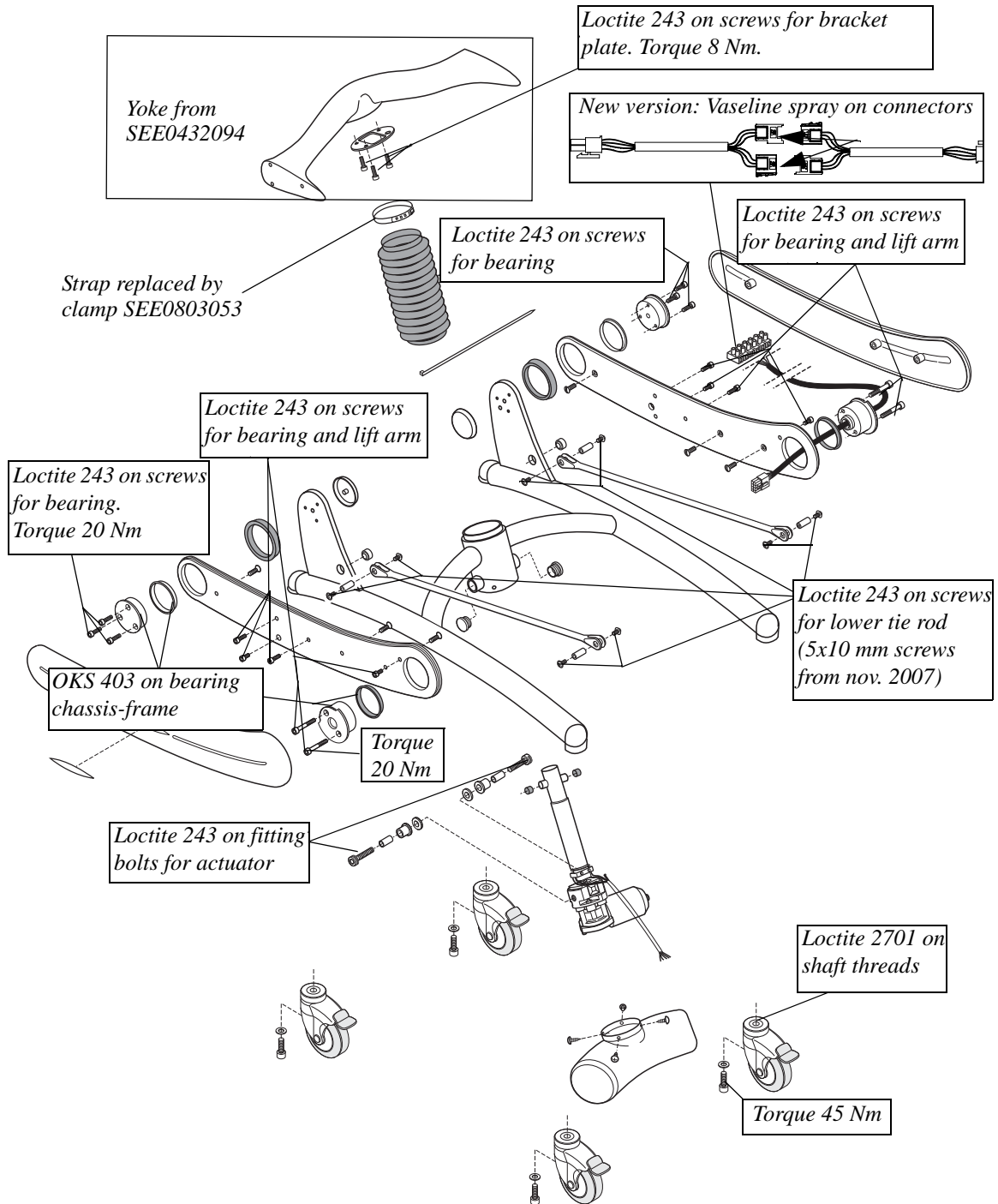
Lubrication, Sealants, Lockings and Torques

For a more detailed description of lubrication, sealants and lockings please refer to the *Parts List*.

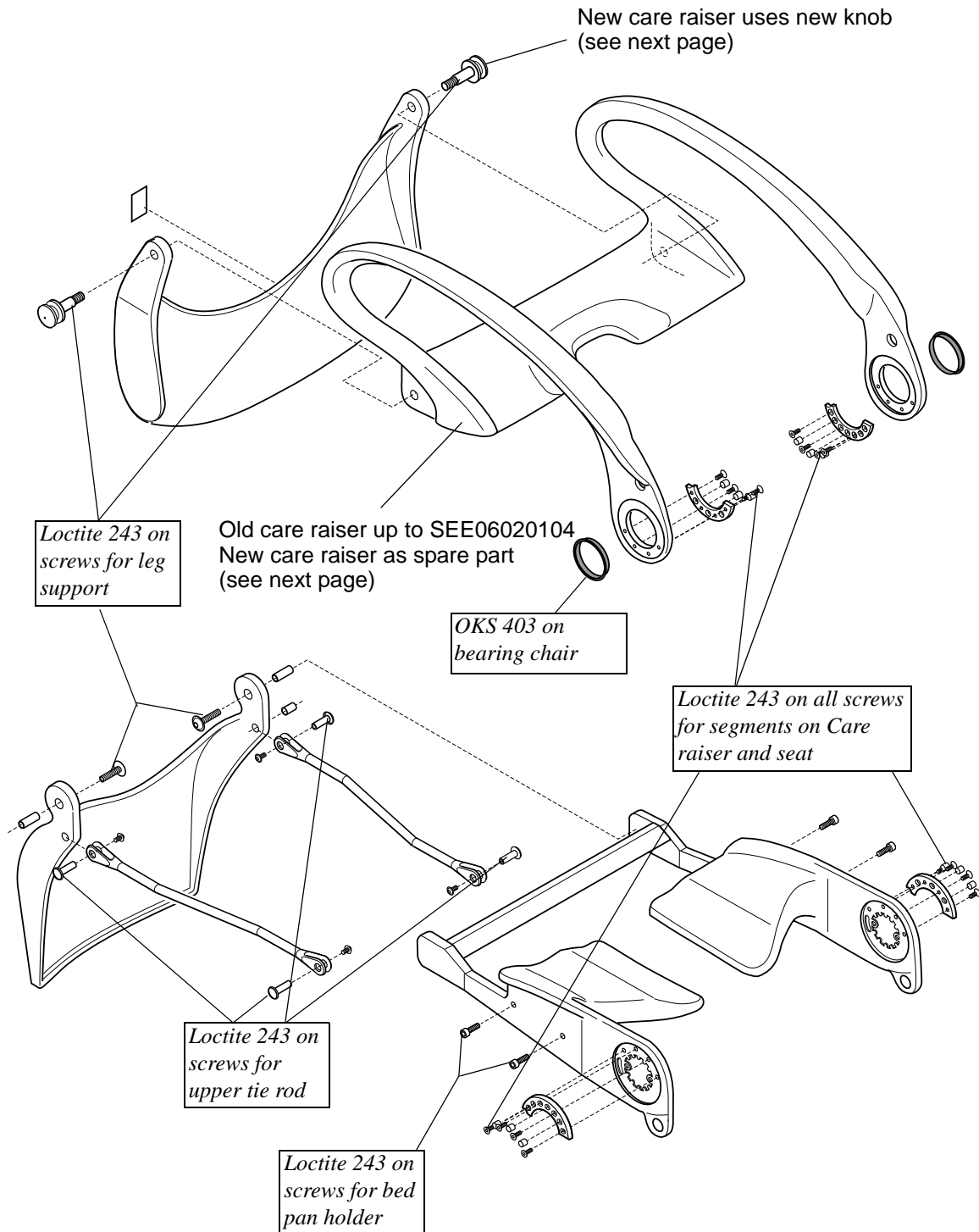
Chassis and raiser (up to SEE 0448433)



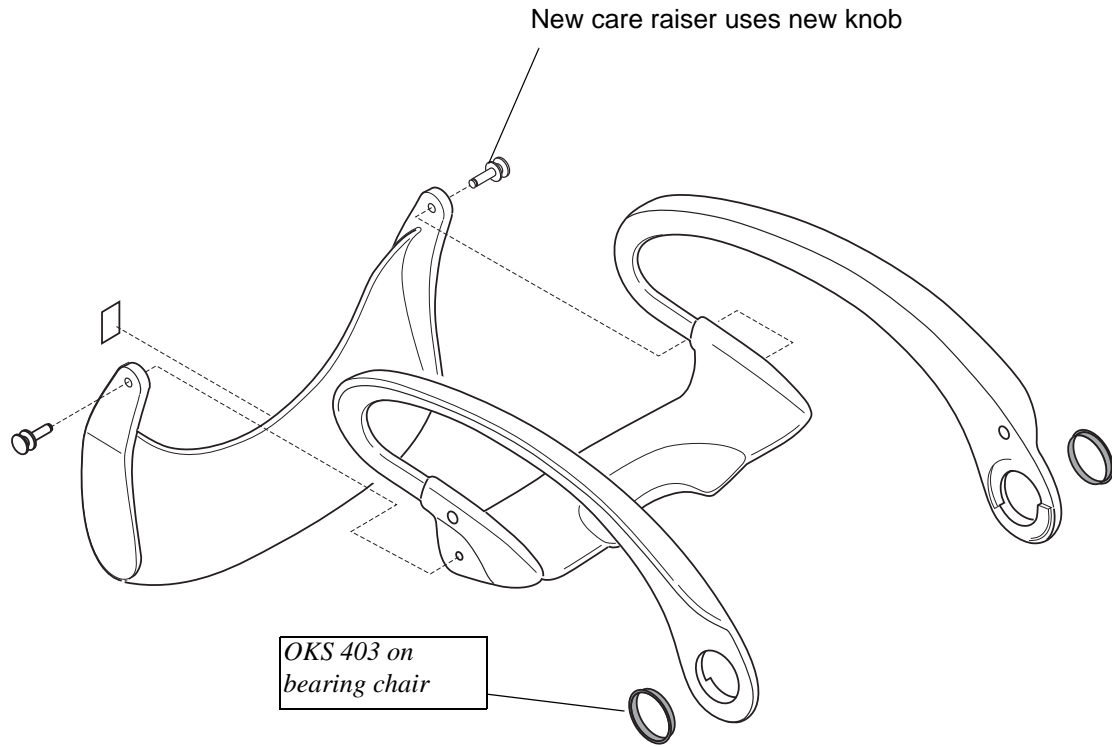
Chassis and raiser (from SEE 0448434)



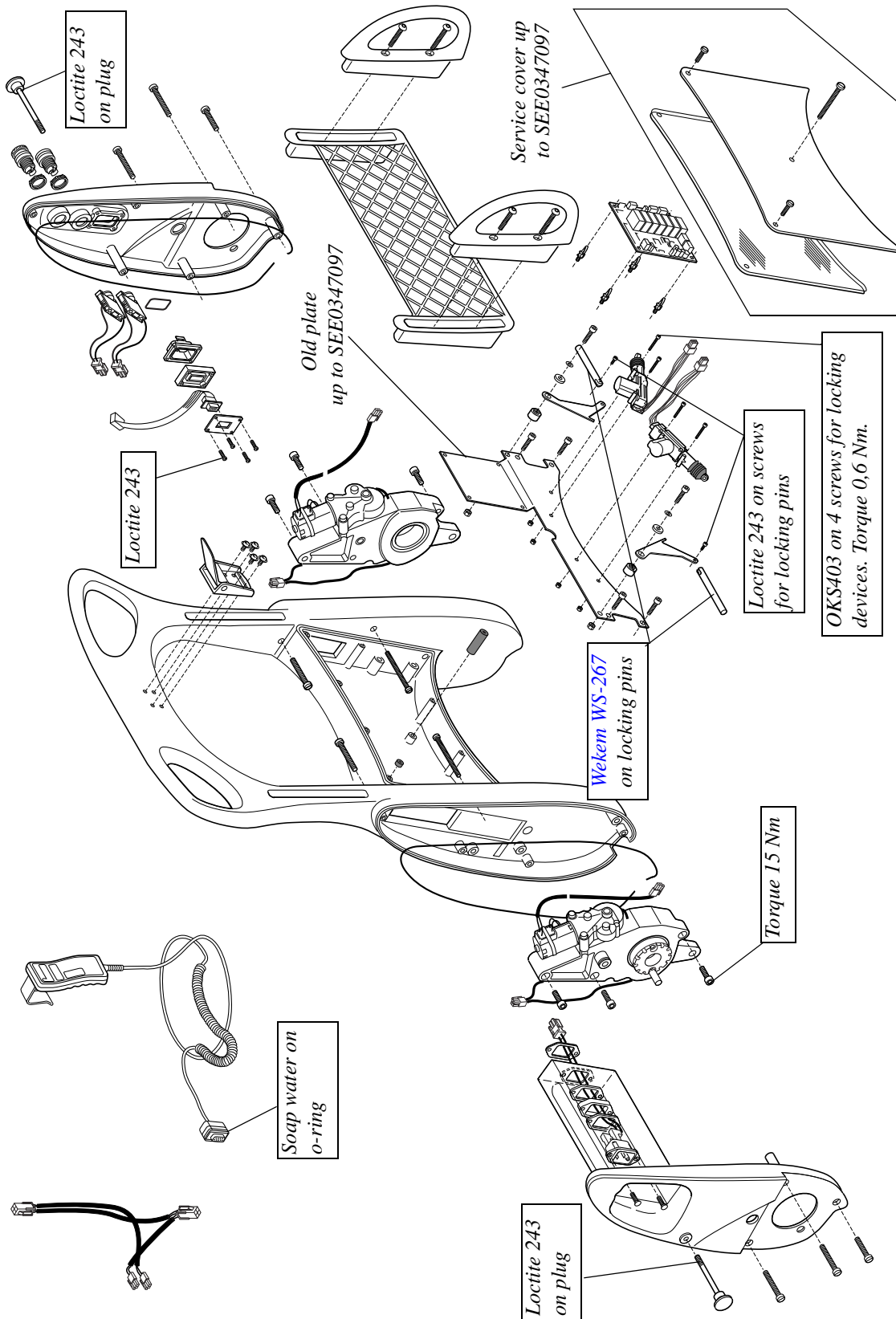
Seat and old care raiser



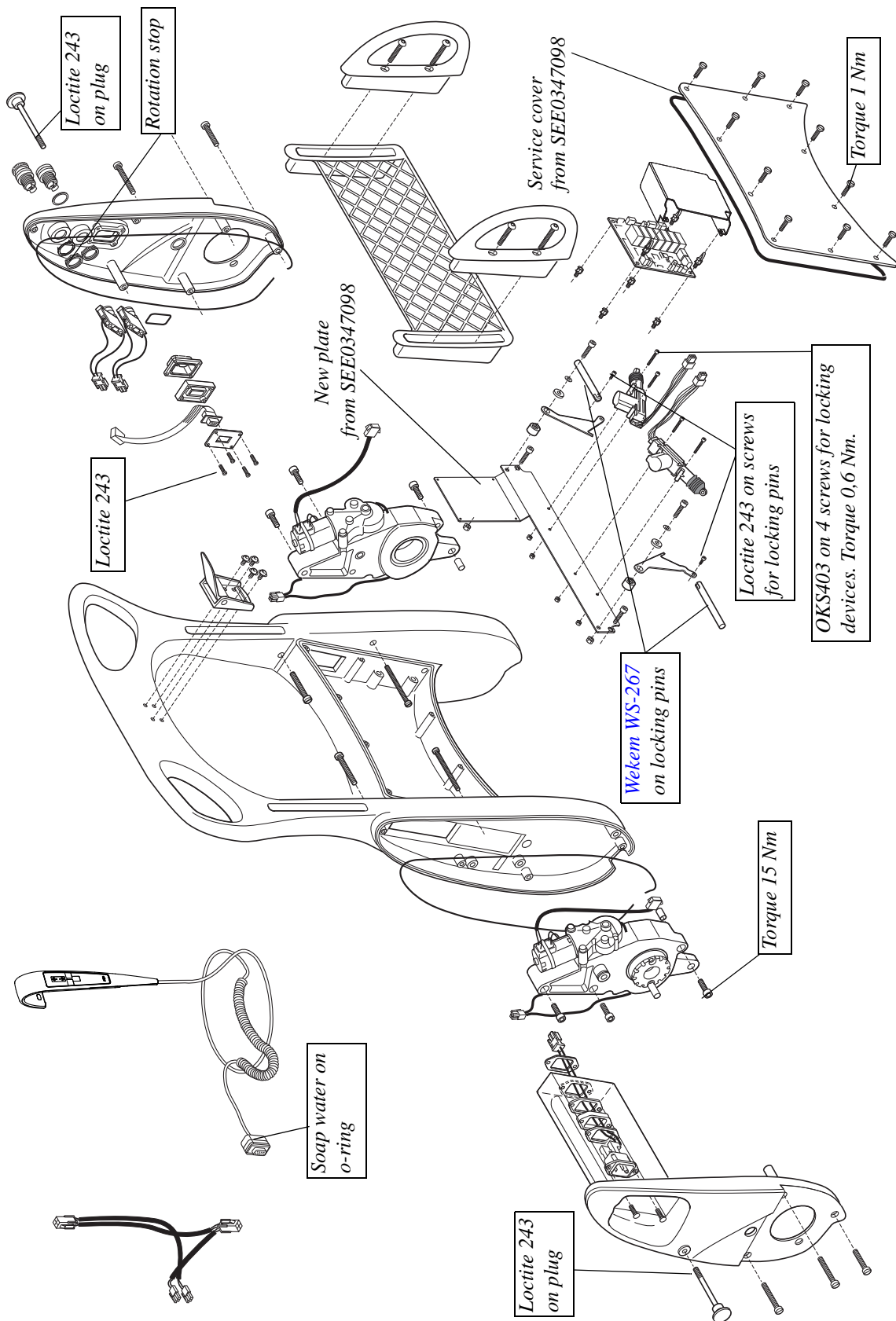
New care raiser (replaces old)



Back rest (old)



Back rest (new)



Tools

For specification of tools please refer to the ***Parts List: Service Articles and Special Tools***

Trouble shooting

NOTE

Before any further actions are taken: Check that the battery is OK and fully charged. **(SP2)**

Part	Problem	Cause	Action	Service procedure
Castors	Bad rolling	Dirt/wear	Replace castors	10
	Bad swivelling	Dirt/wear	Replace castors	10
Seat	Seat will not recline	Fuse bad	Check fuse F1	11
		Contacts in wrong position	Check contacts on PCBA	PCBA J7, J9, J10, J11
		Bad connection	Check hand set and cables	PCBA J:1
		Motor fault	Check worm gear unit; motor	13
		Microswitch fault	Check microswitch lying	PCBA J11:1,2
		Electronic fault	Check PCBA	11
	Seat will not rise	Fuse bad	Check fuse F1	11
		Contacts in wrong position	Check contacts on PCBA	J7, J9, J10, J11
		Bad connection	Check hand set and cables	PCBA J:1
		Motor fault	Check worm gear unit; motor	13
		Microswitch fault	Check microswitch sitting	PCBA J10:1,2
		Electronic fault	Check PCBA	11
	Seat will recline/rise but makes noises	Bad attachment, wear	Check upper tie rod	4
		Bad lubrication/attachment, wear	Check/replace bearings seat	5
		Bad lubrication/attachment, wear	Check/replace worm gear unit	13

Part	Problem	Cause	Action	Service procedure
Seat + care raiser	Seat reclines, lock for care raiser will not activate	Fuse bad	Check fuse F2	11
		Locking pins maladjusted or dirty	Adjust and grease pins	12
		Bad connection	Check hand set and cables	PCBA J:1
		Motor fault	Check/replace locking device	12
		Microswitch fault	Check microswitch sitting	PCBA J10:1,2
		Electronic fault	Check PCBA	11
	Seat rises but lock for care raiser is not deactivated	Microswitch fault	Check microswitch sitting	PCBA J10:1,2
		Locking pins maladjusted or dirty	Adjust and grease pins	12
		Bad connection	Check cables	-
		Motor fault	Check/replace locking device	12
		Electronic fault	Check PCBA	11

Part	Problem	Cause	Action	Service procedure
Chair	Chair will not lift	Fuse bad	Check/replace fuse F1	11
		Bad connection	Check hand set and cables	PCBA J:1
		Connection fault	Check connection under right cover	13
		Actuator fault	Check/replace actuator	13
		Electronic fault	Check/replace PCBA	11
	Chair will not lower	Fuse bad	Check/replace fuse F1	11
		Bad connection	Check hand set and cables	-
		Connection fault	Check connection under right cover	13
		Microswitch fault	Check microswitch down	PCBA J2:2,3
		Actuator fault	Check/replace actuator	13
		Electronic fault	Check/replace PCBA	11
	Chair will lift/lower but makes noises	Bad lubrication/ attachment, wear	Check bearings chassis: lubricate/replace	4
		Bad attachment, wear	Check rods; attachment, wear	3
		Bad lubrication/ attachment, wear	Check bearings actuator: lubricate/ replace	13
Bad attachment		Check yoke attachment	3	
Emergency down	Emergency down does not work	Fuse bad	Check/replace fuse F3	11
		Malfunction, bad connection	Check/replace button and cables to PCBA	14
		Microswitch fault	Check microswitch, emergency down	PCBA: J2:6,7
		Electronic fault	Check/replace PCBA	11
Emergency stop	Emergency stop does not work	Malfunction, bad connection	Check/replace button and cables to PCBA	11,14
		Electronic fault	Check/replace PCBA	11

At Arjo, we are committed to improving the everyday lives of people affected by reduced mobility and age-related health challenges. With products and solutions that ensure ergonomic patient handling, personal hygiene, disinfection, diagnostics, and the effective prevention of pressure ulcers and venous thromboembolism, we help professionals across care environments to continually raise the standard of safe and dignified care. Everything we do, we do with people in mind.



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