molift®

NOMAD

CE

- a patient lifter from

TM15101

molift
designed for life

TECHNICAL MANUAL

Table of Contents

IMPORTANT!

The patient lifter is only meant to be used by qualified personnel.

molift designed for life

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General advice

This technical manual contains important safety instructions and information regarding the repair and maintenance of the lifter. Carefully read the manual before working on the lifter in order to be familiar in the function and use of the lifter.

Explanation of symbols

This symbol is used to point out instructions and information related to work place safety where injury may occur if the information is disregarded or ignored. Follow these instructions, be careful and attentive at all times.

This symbol indicates important information regarding the use of the equipment. If not taken into consideration, it may lead to damage or functional defects to the lifter or other equipment.

This symbol indicates important and useful information. If taken into consideration, it will help the operator of the lifter to work efficiently. It may help simplify routines and to explain complicated facts.

Caution

When repairing the lifter, you will find it necessary to open the lifer. Take care of loose parts, especially screws and washers. When disassembling and assembling the lifter, take care that no cables are squeezed or damaged, and causing malfunction of lifter.

Therefore, use general caution when performing maintenance and repairs.

Read the user manual or operating instructions and safety precautions.

Responsibility

Please read these operating instructions care-fully before putting the product into operation. We assume no liability for damage or malfunctions resulting from failure to comply with the instructions. Warranty claims must be made immediately on detecting the defect. Remember to quote the serial number. Consumable parts are not subject to the warranty.

All technical information, data and instructions for operation contained in these operating instructions were up-to-date at time of print and are compiled on the basis of our experience and to the best of our knowledge. We reserve the right to incorporate technical modifications within the scope of further development of the product described in this manual. No claims can be derived from the information, illustrations or descriptions contained in these instructions. We assume no liability for any damage or malfunction caused by operating errors, non-compliance with these operating instructions or inappropriate maintenance. We expressly point out that only genuine Molift Group AS spare parts and accessories approved by us may be used. For safety reasons, the fitting and use of spare parts or accessories, which have not been approved, and unauthorised modification or conversion of the product, are not permitted. Molift Group AS will accept no liability for damages resulting from such acts.

With the exclusion of product liability, Molift Group AS is liable for faults or omissions on its part within the scope of the warranty obligations stated in the purchase contract. Claims for damages are excluded, irrespective of the legal reason from which such claims are derived. Only documentation belonging to the actual equipment is valid.

Any failure to comply with the safety regulations and precautionary measures stated in these operating instructions renders the declaration of conformity supplied with the system in accordance with Council Directive (93/42/EEC) concerning medical devices invalid.

Technical description

Chassis

The chassis consist of two symmetrical plastic covers **A**①, **A**② with operating buttons, lifting belt and lifting handle. Motor, lifting belt wit belt drum, brake, battery and electronics are placed inside the chassis.

Handle

The handle is mounted in a way to make them a part of the carrying system **B**② of the chassis. The handle with brackets are made of aluminium**.**

Lifting belt with drum

The lifting belt **C**⑪ with drum are mounted inside the chassis. The lifting belt goes on or off the drum depending on if the lifter moves up or down. Special leading sleeves are made to avoid damage on the lifting belt and to ensure correct placing on the drum **C**①**.** Approximity switches **D**⑩ controls the tightness of the belt, and will stop the lifter if the belt gets untight to prevent it from curling.

Motor

Motor with gear **B**② is mounted inside the chassis. The force is transmitted via the gear from the motor to the drum where the lifting belt is running on or off.

The main circuit board **E**⑭ has an overload protection that cuts the power if the load is too heavy. The power will be cut off at 17 A up and 13 A down. This means that the motor stops working if the load is more than Safe Working Load (SWL).

The emergency stop button **E**⑦ cuts the power supply to the motor and is placed on the front side of the lifter. The emergency stop is activated by pressing the button, and deactivated by turning it clockwise until it is released to original position.

Brake

A spring brake is mounted on the cogwheel to the motor. The force from the spring activates the brake in normal position. The brake is deactivated by a solenoid which receives a signal when the motor is running the lifter up or down. The brake prevent the lifter from moving (sag) with static load.

Electronics

The electronics consists of a main circuit board **E**⑭, a DIN-board for the hand control contact **E**⑬, emergency stop **E**⑦, emergency lowering **E**⑥, battery lamp and service lamp. All the functions are dependent on the main circuit board, except the emergency lowering function. On the main circuit board there is a counter which register the number of hours with activity. After a certain time the counter gives a signal to the service lamp that illuminates to show the operator that service is needed. An emergency lowering button is hidden behind the yellow sealing **E**⑪ beside the emergency stop button. Break the sealing and press the emergency lowering button.

Battery

The battery **B**④ is mounted inside the chassis and consists of 20 battery cells in one pack.

Hand control unit

The hand control unit **A**⑦ has 2 buttons for operating the lifter, one ”up” and one ”down” button, and a lamp indicating when the battery needs charging. The hand control/charging contact is placed on the right on the back side of the lifter.

Charger and battery

Molift NOMAD has a battery which consists of a 26 V battery pack **B**④, and a charger **A**⑥ which makes it possible to charge the batteries by placing the hand control unit in the charger.

Trolley and rail system

Molift NOMAD is attached to a trolley mounted in the rail system fixed in the ceiling. The rail system with trolley is only to be mounted by authorised personnel, and is described in a separate manual.

The lifter shall only be mounted on a rail system with the same lifting capacity or SWL as the lifter or higher.

Technical data

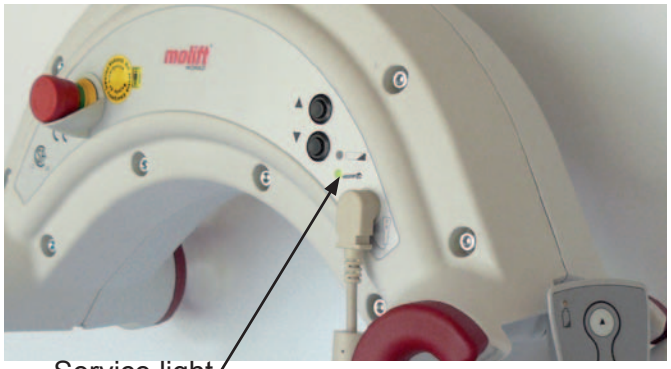
Material:	Fiberarmoured plastic and aluminium.
Motor:	24 V DC
Battery:	26.4 V NiMH 2.2 Ah
Lifting capacity:	max 255 kg/562 lbs (SWL) can be adjusted down to 230 kg, 205 kg or 160 kg
Lifting height:	2000 mm
Lifting speed:	30-35 mm/sec for a normal lift and fully charged battery.
Dimensions:	522x200x330 (LxBxH)
Weight:	6.8 kg (15 lbs)

Technical specifications may change without prior notice.

Service

Service lamp

On the front right side of the lifter there is a service light which will give a signal when the lifter needs service. When there is a green light, the lifter can be used normally. If there is no light, push one of the up/down buttons to activate the electronics, and the service lamp will illuminate.



The electronics measures the operating time of the lifter, and after a specific time the yellow light will illuminate, indicating that the lifter needs service. Take contact with your local Molift service representative/dealer. The lifter can still be operated, but after a while an audible alarm will sound, to remind the operator that the lifter needs service immediately.

Service light codes

Service light	Mode
No light	Power saving
Green	Ready for use
Yellow	Book service
Red	Perform service
Red + sound	Perform service immediately
Flashing yellow	Overheating

The electrical system has a power save function which will turn off the electrical system after ten minutes without activity. All lights will turn off. The system is activated when pushing one of the operating buttons.

Service

Service is to be performed when the service lamp gives a signal or latest after 5 years of use.

- Changing of lifting belt with hook
- Changing of worn and damaged parts

Molift Service tool

To be able to read out the data from the lifter, and to reset the service lamp, it is necessary to use the Molift Service tool. See the manual that comes with the Service tool.

Install the Molift Service tool on your computer. Connect the lifter to the computer with the cable to the hand control contact. Start the Molift Service tool Software. On the left side in the program menu you can find the lifters data.

Troubleshooting

See the Troubleshooting table in the User Manual.

If the troubleshooting procedure does not lead to any diagnosis, judgement and eliminating methods must be used.

Cleaning instructions

The surfaces of the lifter can be cleaned with a damp cloth using an appropriate detergent.

Detergents must be pH-neutral. Do not use solvents or strong liquids - this may damage the surface of the lifter. For disinfection when needed; use isopropyl alcohol. Avoid abrasive cleaning products.

The lifter is splash proof, but direct spraying of the lifter should be avoided. If the lifter should be used in a shower room, use a protective bag on the hand control unit. Do not use the lifter permanently in a shower room, as this can cause corrosion inside the lifter. Use in shower rooms requires extra protection, cleaning and maintenance.

Inspection Diagram after Service and Repair

Molift Nomad:

- ☐ Check the lifter visually for any damage, faults or deformations, check that the plastic housing has no cracks or any other damages. Check that the lifting belt is not torn, cut, frayed or any other damage.
- ☐ Check that the cables and plug for hand control and charger have no damages. Damaged parts must be changed. Clean plug and socket for hand control with alcohol to remove grease and prevent future contact problems.
- ☐ Check all slings and loops - particularly seems - belonging to this lift. Torn, frayed or cut slings must be replaced.
- ☐ Check that the installation/rail system is marked correctly with SWL (Safe Working Load).
- ☐ Test output of the charger with a voltmeter. Output level is printed on the charger. Chargers with lower output must be changed to provide optimal charging of the batteries.
- ☐ Run the lifter fully up and down a couple of times with and without load to check that the lifter works properly and without irregular noise. Check that the end stop is working. Check that the brake i working with max. load.
- ☐ Mark the lifter with the safety label inscribed with month/year and certificate number for performed safety control. The service technician shall sign the label and this diagram.

Service:

- ☐ Check the Service lamp, it gives signal when the lifter needs service.
- ☐ Read the lifters data with the Molift Servicetool and check number of lifts. Service 1 is after maximum 5000 lifts and service 2 after maximum 10 000 lifts.

  Number of lifts (Sum):_____ Service: _____
- ☐ Service performed: - Change the lifting belt and hook.
  Check the motor, cogwheel, frame and cables for any damage. Change worn and damaged parts.
- ☐ After service and/or maintenance the service lamp must be reset by using the Molift Servicetool
- ☐ Perform safety control after service/maintenance. NOTE! Reset the service lamp only when service is performed!

Safety control and service shall only be performend by partners and/or personnel certified by, or on behalf of Molift Group AS. Always fill out below:

Customer:_____ Serialnumber lifter:_____

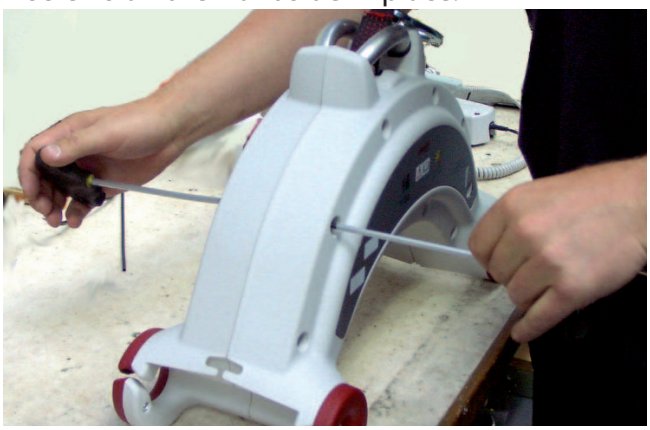
Date : _____ Signature :_____

Replacing of parts

Push the emergency stop before performing maintenance on the lifter, to make sure the lifter does not move unintentionally.

Opening the chassis

- Place the lifter on the table with the backside (with no buttons) against yourself. Unscrew the cap nuts on the backside while holding the screws on the front side in place.



Do not remove the 6 screws in the middle since they keep the washers from falling into the lifter!

- Remove the 4 scews closest the lifting hooks (2 on each side).
- Lay the lifter carefully down on the table with the front side down. Lift the back cover carefully.

Observe how the cables are placed inside the lifter.

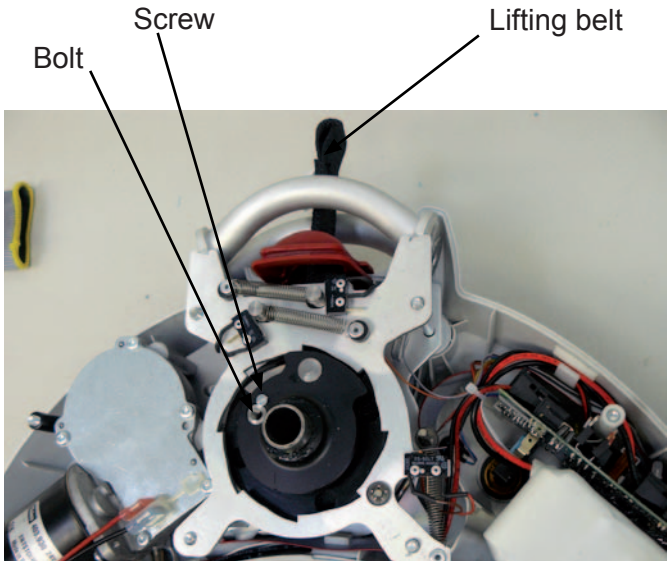
- Mounting is done in the reverse order.

Make sure that no cables are squeezed when replacing the back cover!

Replacing the lifting belt

When changing the lifting belt it has to be run out completely before the lifter is opened.

- Open the lifter as described above. The screw and bolt holding the lifting belt must be on the right side to ensure the best possible availability.
- Loosen the microswitch enough to prevent it from stopping the the belt when running it out.
- Remove the screw locking the bolt for the belt.



- Place a M6 screw in the bolt and remove the bolt.
- The lifting belt is now loose and can be removed completely by pulling it out.
- Thread the new lifting belt in between the guides.
- Fix the belt with the bolt and the lock screw.
- Run the lifing belt slightly in. Fix the microswitch.

When changing the lifting belt, always change the hook too.

- Check that the belt moves in and out correctly.
- Close the lifter as described in previous chapter.

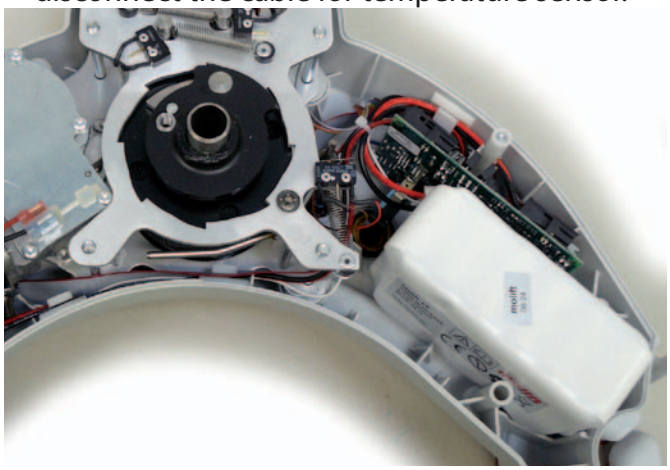
Make sure that no cables are squeezed when replacing the back cover!

Replacing the battery

- Open the chassis.

Observe how the cables are placed inside the lifter before disconnecting.

- Disconnect the battery cable connector (red and black cable) from main circuit board.
- Lift the main circuit board enouch to disconnect the cable for temperature sensor.



- Pull the battery straight out.
- Assembly is done in reverse order.

Make sure that no cables are squeezed between the battery and the ribs/walls of the chassis.

- Fix the cables with cable strips.

Replacing of the main circuit board

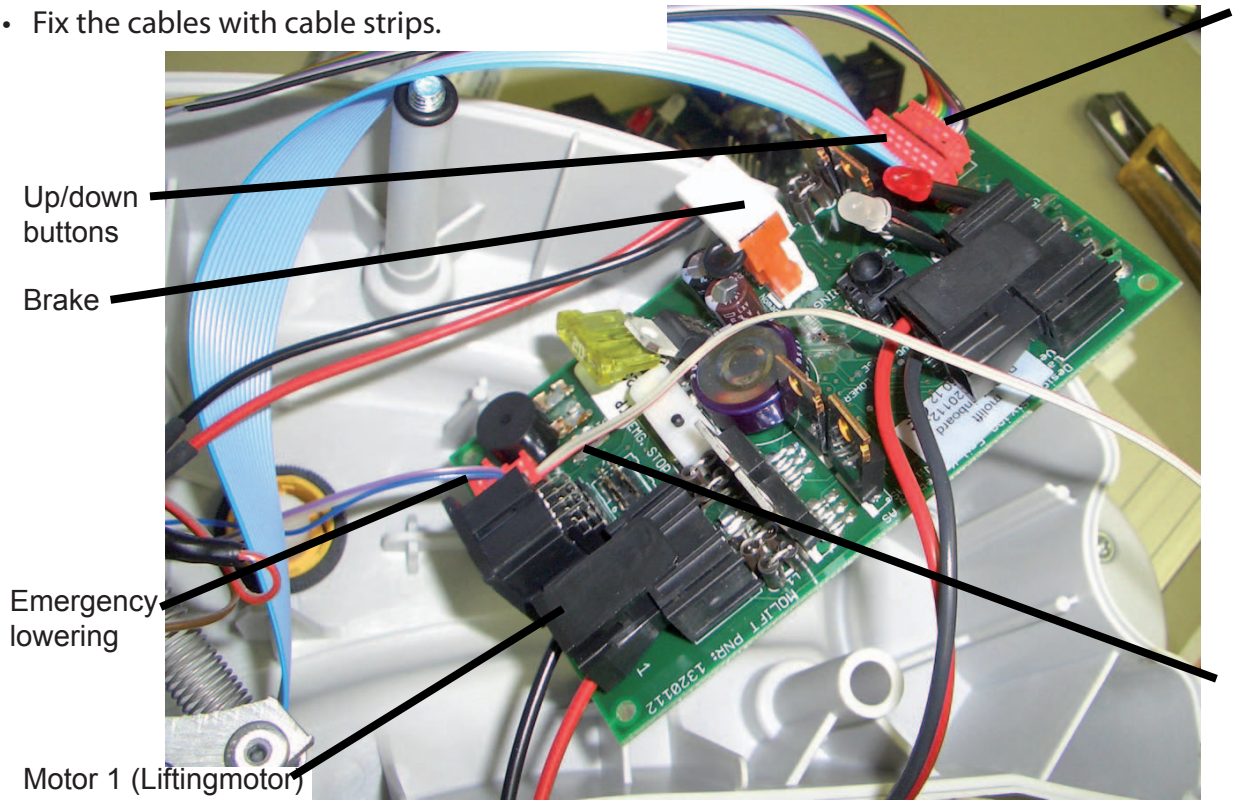
The circuit board can be changed when all settings and data for this lifter is copied from the old circuit board to the new. If there is any trouble when copying the settings, please send the lifter to Molift Group AS or your dealer.

Observe how the cables are placed inside the lifter before disconnecting.

- Use the Molift Servicetool , connect to lifter and copy from the lifter to the PC first. Then connect to the new main circuit board and copy on request.
- Open the chassis and remove the battery.
- Pull the circuit board carefully out and loosen the six cable connectors.
- When mounting a new main circuit board, connect the cables in the following order:

1 Emergency lowering cable
2 Temperature sensor cable
3 Cable to brake (motor 2)
4 Cable for switch up/down buttons.

Push the diodes and fuses on the new board carefully aside to prevent it from colliding with ribs/walls on the chassis.



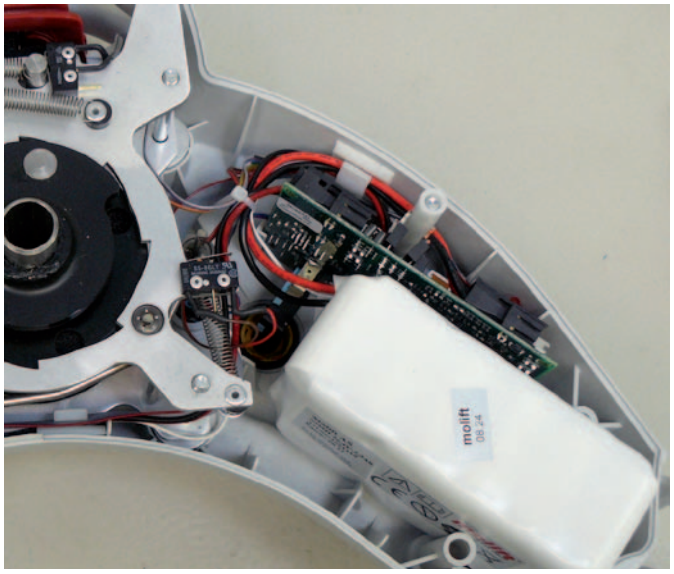
- Put the main circuit board in place. Push it down against the supporting ribs in chassis.

Make sure that no cables are squeezed.

- Place the battery and connect the two remaining cable connectors:

5 Motor cable (motor 1)
6 Battery cable.

- The cables must be tied up and fastened to make sure they are not squeezed while mounting the cover.

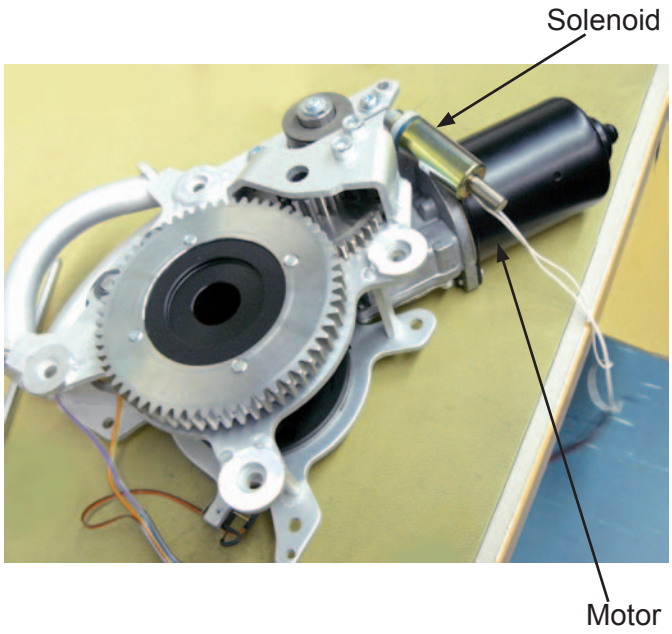


The LED on the main circuit board will not illuminate when connecting the battery. There will be a sund (beep) to confirm that the connection is correct.

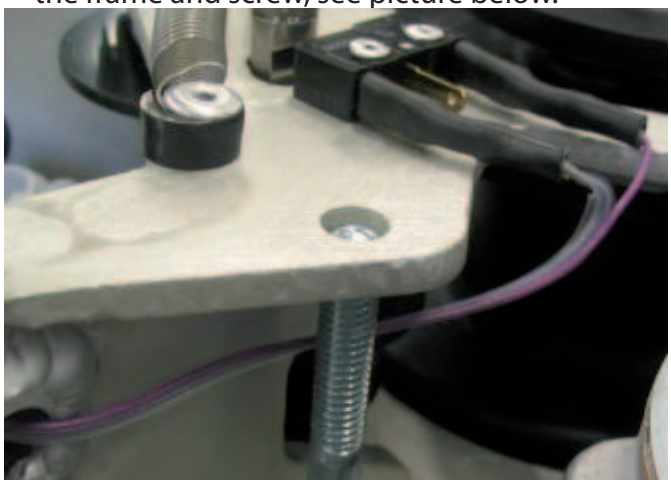
- Close the lifter.
- Test the lifter according to safety control check list.

Removing frame assembly

- When battery, main circuit board and lifting belt are removed, the frame assembly can be lifted out of the cover. It is recommended to use a mounting jig to keep the bolts with washers in place.
- Remove the distance (B6) and O-ring (B9) from the screw beside the motoren.
- Lift the complete frame carefully out of the housing and place it on a working table.



- Place the frame assembly into the housing. Make sure that the bolts are entering correctly.
- IMPORTANT! All wires must be placed between the frame and screw, see picture below.

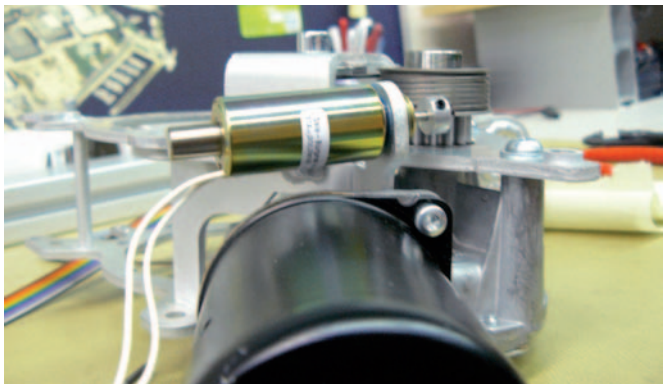


- Put the O-ring (B6) and distance (B9) on the screw besides the motor as shown on the picture below.

- Mount the main circuit board, battery and lifting belt. Check that the lifter is working, and close the lifter. Test according to Inspection Diagram.

Replacing the solenoid

- Open the lifter, remove the battery and main circuit board.
- Lift out the frame assembly. Use a mounting jig to keep the bolts in place.
- The complete solenoid (D27) is loosened with a tong since it is secured with Loctite. Hold on the back on the widest part of the solenoid.
- Loosen the wire to the solenoid from the main circuit card.
- Use a new wire set when mounting a new solenoid. See Appendix F, Electrical diagram. Cut the solenoid PCB wite 15 cm long.
- Solder the wire with the solenoid and use thermo shrinking tube.
- Mount the solenoid on the frame. Note! Add Loctite 243 on the threads.
- IMPORTANT! Make sure that the wires points towards the motor as shown on the picture below.

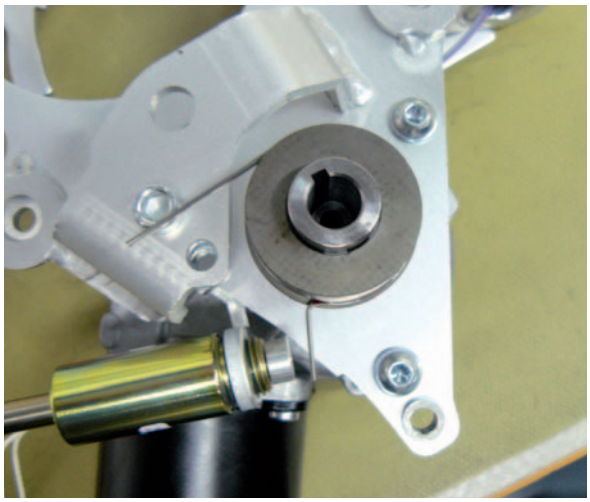


- Mount the frame assebly in the housing.
- Mount the main cicuit board and battery.
- Mount the lifting belt.
- Check that the lifter is working.
- Mount the housing and close the lifter.
- Test the lifter according to Inspection Diagram on page 7.

Adjusting and lubrication of brake

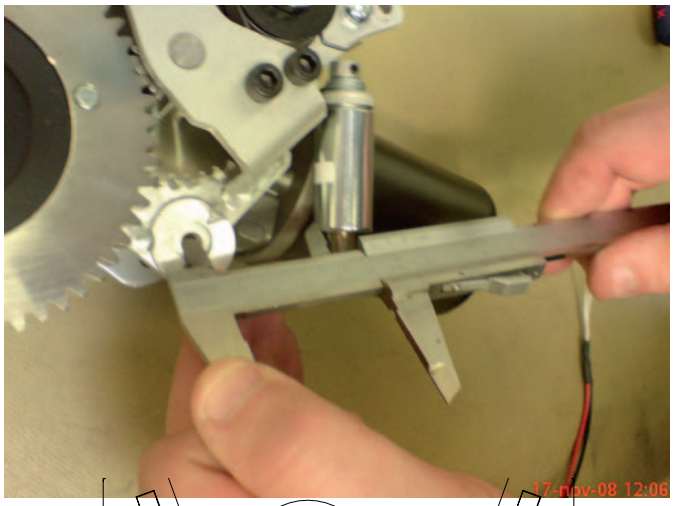
- Open the lifter, remove battery, main circuit board and lifting belt.
- Lift the frame assembly out and place on a working table.
- Loosen the screw and washer holding the torsion spring, and remove the spring.

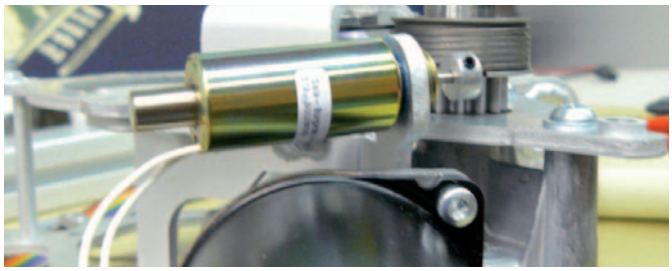
- Add grease (SHC007) on the brake disk, and then assemble the torsion spring and brake disk (check spring if necessary). Add grease (SHC007) on the inside surface of the spring.
- Mount the brake disk with torsion spring on the motor axle as shown on the picture below. Check position of both ends of spring before pressing the unit onto the axle. Watch the key on axle.



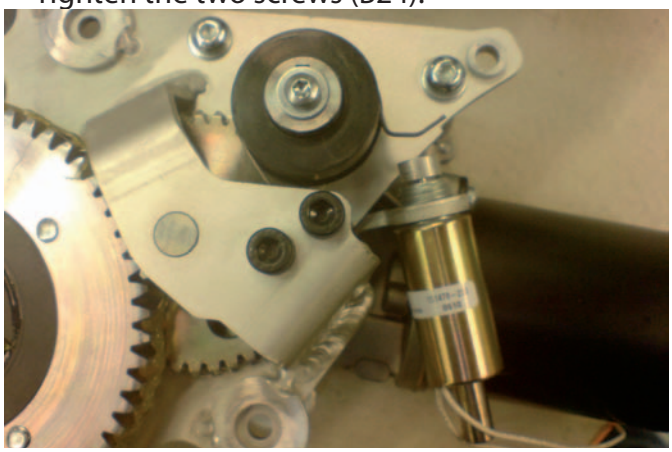
- Mount shims as shown on the picture (B22, 23), use screw (B24). Do not tighten.

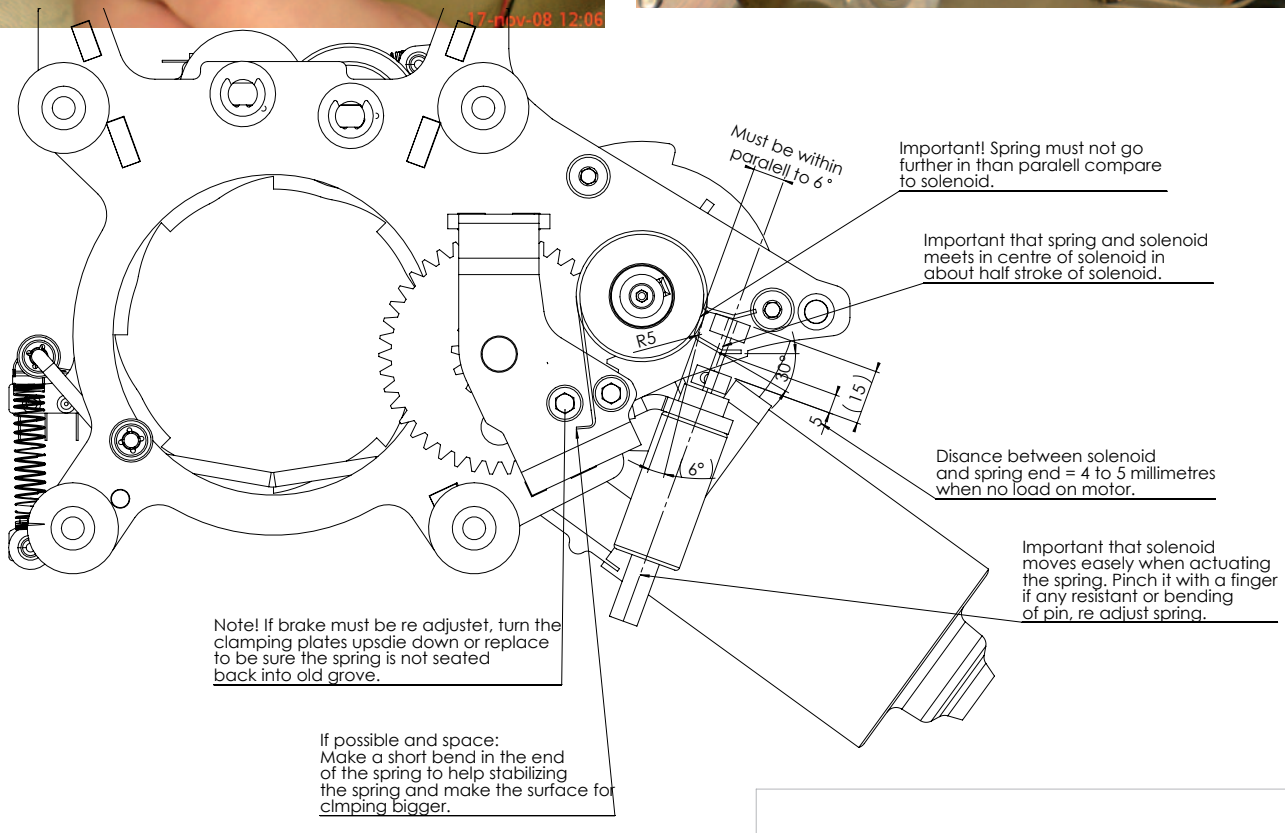
- Make sure that the end of the spring is between the screws and the two shims. Give the end of the spring a little bend as shown in the drawing below. It is the 5 mm distance to the solenoid that decides where the end of the spring will come.
- Before you tighten anything, make sure that the end of the spring is in line with the centre of the solenoid (sideways). Note! If not, the bracket for the solenoid needs to be bended/ adjusted by using a tong, see picture. Check also that the solenoid does not touch anything in opposite housing. If the bracket is bend too much it can come in conflict with the housing. Measure as shown on picture, 44 mm from hole to inside solenoid.



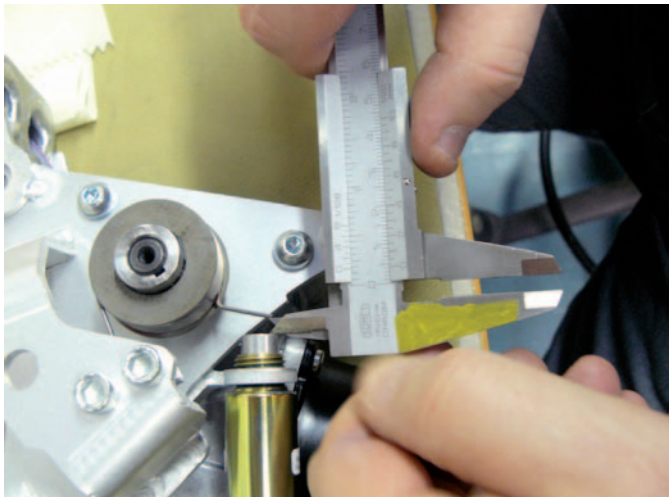


- End of spring must be in line with center of solenoid. Check that the spring returns to the same position after activating, ond do not start climbing on next coil of the spring.
- IMPORTANT! Check spring assembly according to drawing below.
- If te solenoid and the straisht part of the spring are not parallell, the bracket can be adjusted by bending it with a tong
- Tighten the two screws (B24).

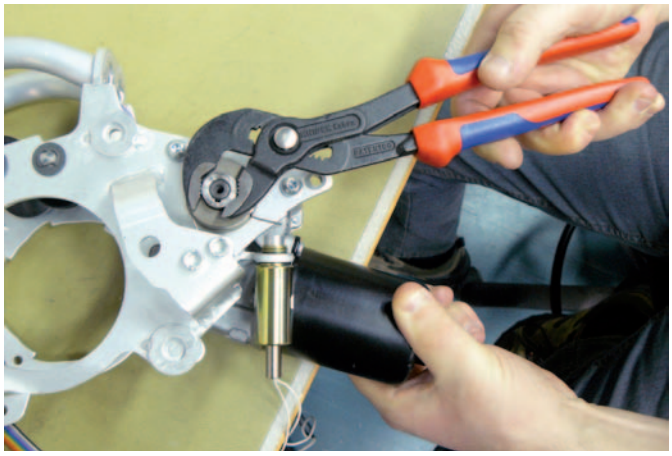


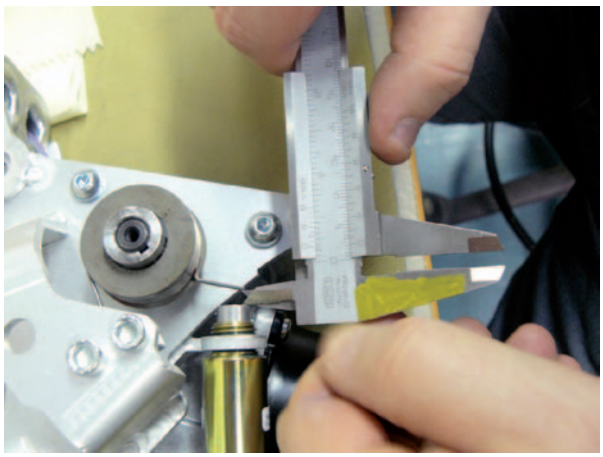


- Make sure that the spring has been adjusted and assembled according to drawing and instructions above.
- IMPORTANT! Run the motor a few rounds by adding electrical power to it. Do this to make the spring "seated". Add grease on spring.



- Check that the spring holds by using a tong, see picture below. It is important to check tha the distance still is 4 to 5 mm. If not, the end of the spring must be adjusted by bending it to correct distance. See figure above. The holding force is maximum about 6 kg.

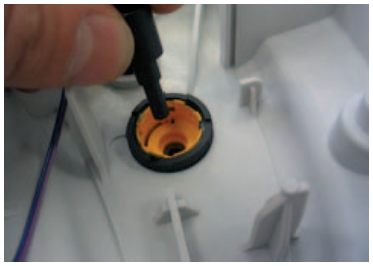




- When the brake is OK, fasten the screw and washer. Remember Loctite 243 on the screw.
- Mount the frame assembly back in housing.
- Mount the main circuit board and battery.
- Mount the lifting belt.
- Check that the lifter is working.
- Mount the housing and close the lifter.
- Test the lifter according to Inspection Diagram on page 7.

Emergency stop switch

- Open the lifter, remove the battery and main circuit board.
- Remove the extension.



- Unscrew the black nut on inside and remove the emergency stop button on outside.

- Unscrew the black nut on the new emergency stop switch.
- Mount the emergency stop switch together with the protecting cover. Put the two parts together into the hole in the cover. Note! Make sure the small knob fits into the slot in the hole.
- Use Loctite 243 on the threads and tighten the nut on inside carefully by hand. Note! Make sure that the cam is on upper side.

- Mount the extension by pressing it down.
- Mount the main circuit board and battery.
- Mount the lifting belt.
- Check that the lifter is working.
- Mount the housing and close the lifter.
- Test the lifter according to Inspection Diagram on page 7.

Labelling

Check the labels - damaged labels are to be replaced.

Notes:

Finishing the job

Logging

The service manual has a table for logging of repair and work done on the lifter. Write down a short description of the incident in the appropriate interval. This will enable the owner and service partner to see previous history for the lifter and in that way maybe making future fault finding and repairs easier.

Safety control

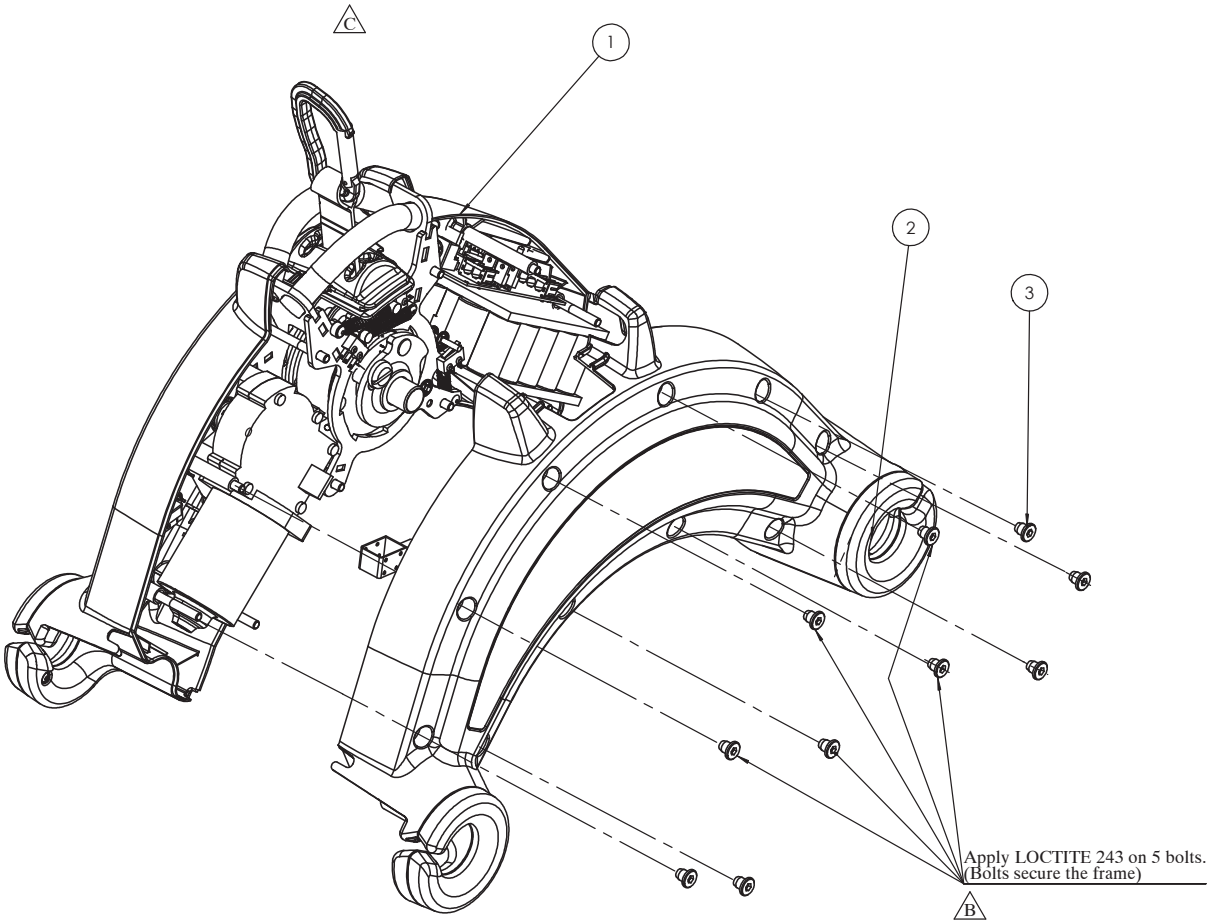
Any repair or replacement of parts requires a safety control afterwards as described in the procedures for service, maintenance and safety control.

Date	*Description of fault*	*Type of repair*	*Date/sign.*

Appendix A

Pos.	Fig/Part. no	Qty.	Description
1	Appendix B	1	Front housing with interior parts
2	Appendix E	1	Back housing assembly
3	1220333	10	Cap nut M6 TP RAMPA 99-025-61-301
4	1100303	1	Decal, security control
5	1100306	1	Decal, calendar
6	1240001	1	Charger, Nomad
7	2017002	1	Hand control, Nomad

Main parts



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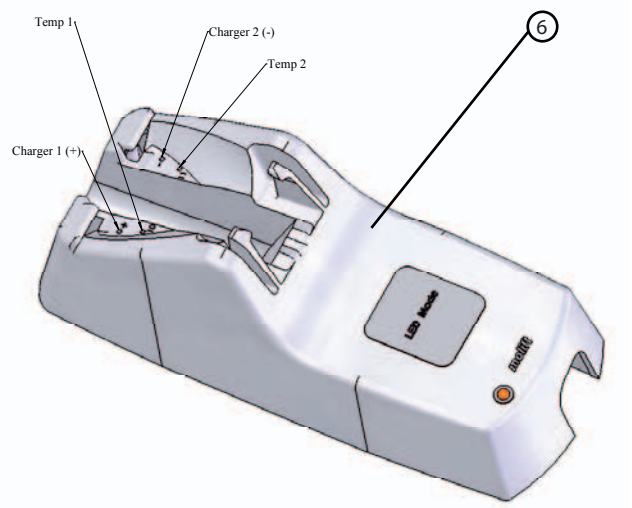
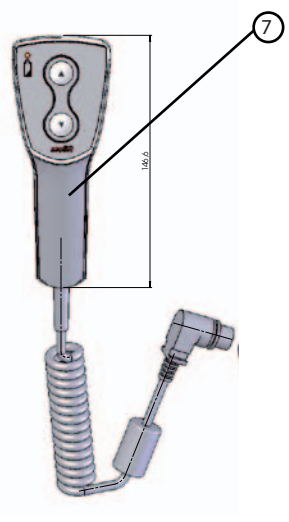
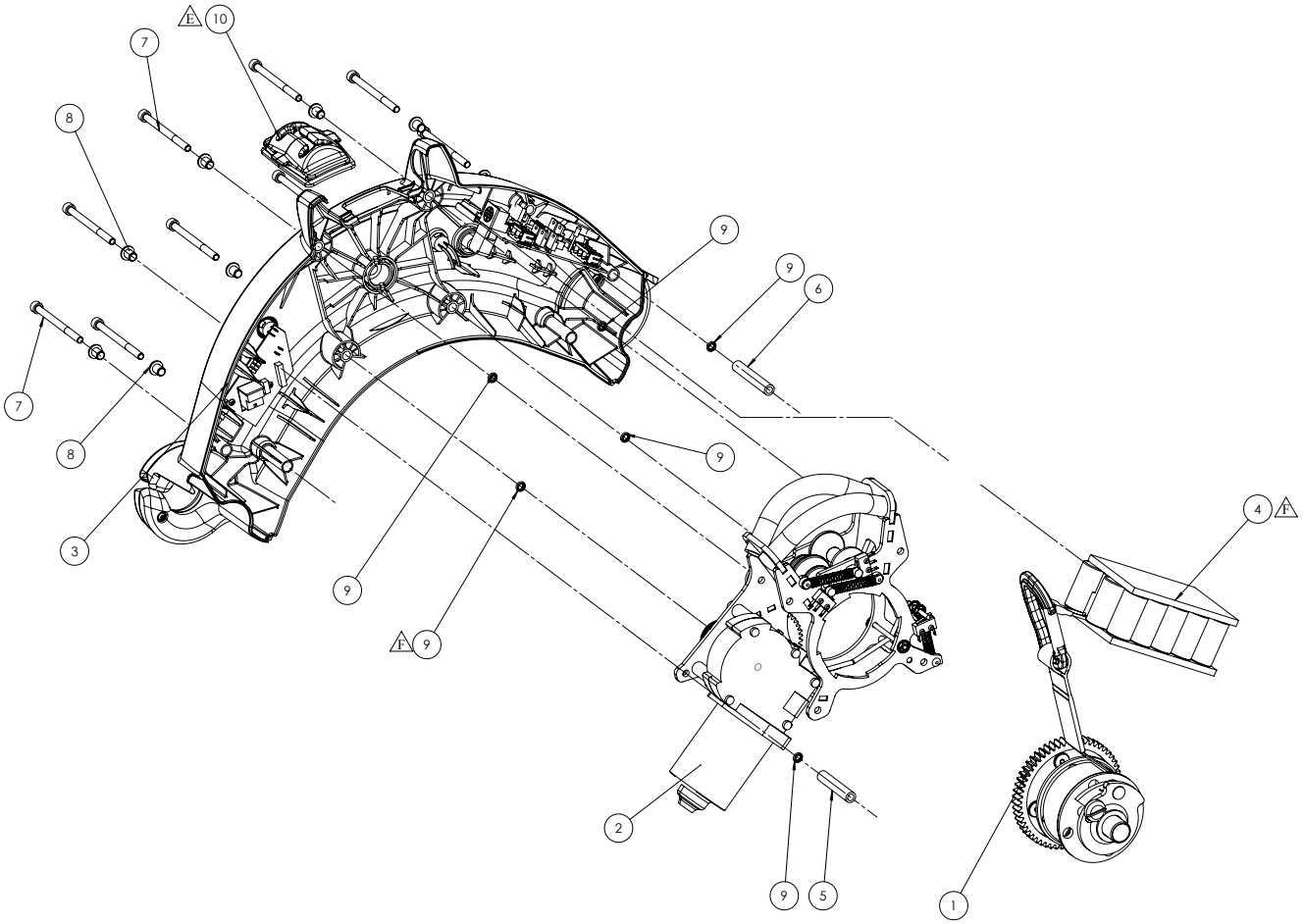




Appendix B

Pos.	Part. no.	Qty	Description
1	App. C	1	Drum assembly
2	App. C	1	Drive line assembly
3	App. D	1	Front cover assembly
4	1221115	1	Battery 26,4 V NiMH
5	1220335	1	Spacer Ø10,0/Ø6,3/48 mm PA6
6	1220334	1	Spacer Ø10,0/Ø6,3/61 mm PA6
7	1220303	10	Screw, cylinder DIN 912 8,8 ElZn, M6x80
8	1220160	10	Bushing Ø6, 3xØ8x11
9	1220340	6	O-ring 5,3x2,4 Nomad
10	1220124	1	Belt Guidance Nomad

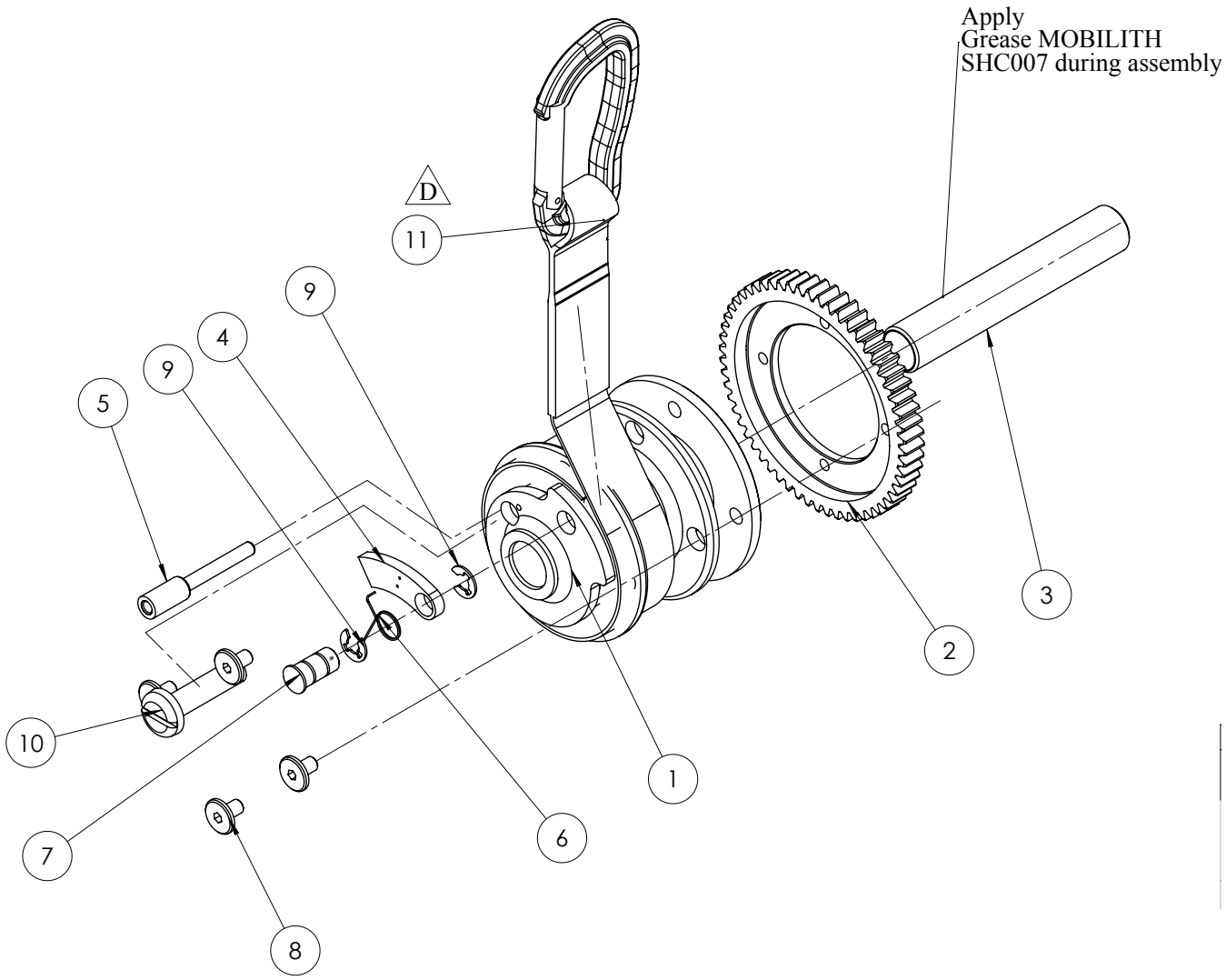
Main assembly, front housing



Appendix C

Pos.	Part. no.	Qty	Description
1	1220150	1	Drum
2	1220180	1	Gear wheel M1,75 Z=58
3	1220151	1	Hollow axle for drum
4	1220103	1	Emergency brake, Nomad
5	1220154	1	Locking bolt for lifting belt
6	1220191	1	Torsion spring R=0,25 NMM/GRAD, Nomad
7	1220152	1	Bolt for emergency brake
8	1220337	1	Screw NF M6x10 Rampa part no 151-610-001
9	1220312	2	Circlip DIN 6799
10	1220341	1	Machine screw M3x120 DIN 7985A
11	1220195	1	Lifting belt complete

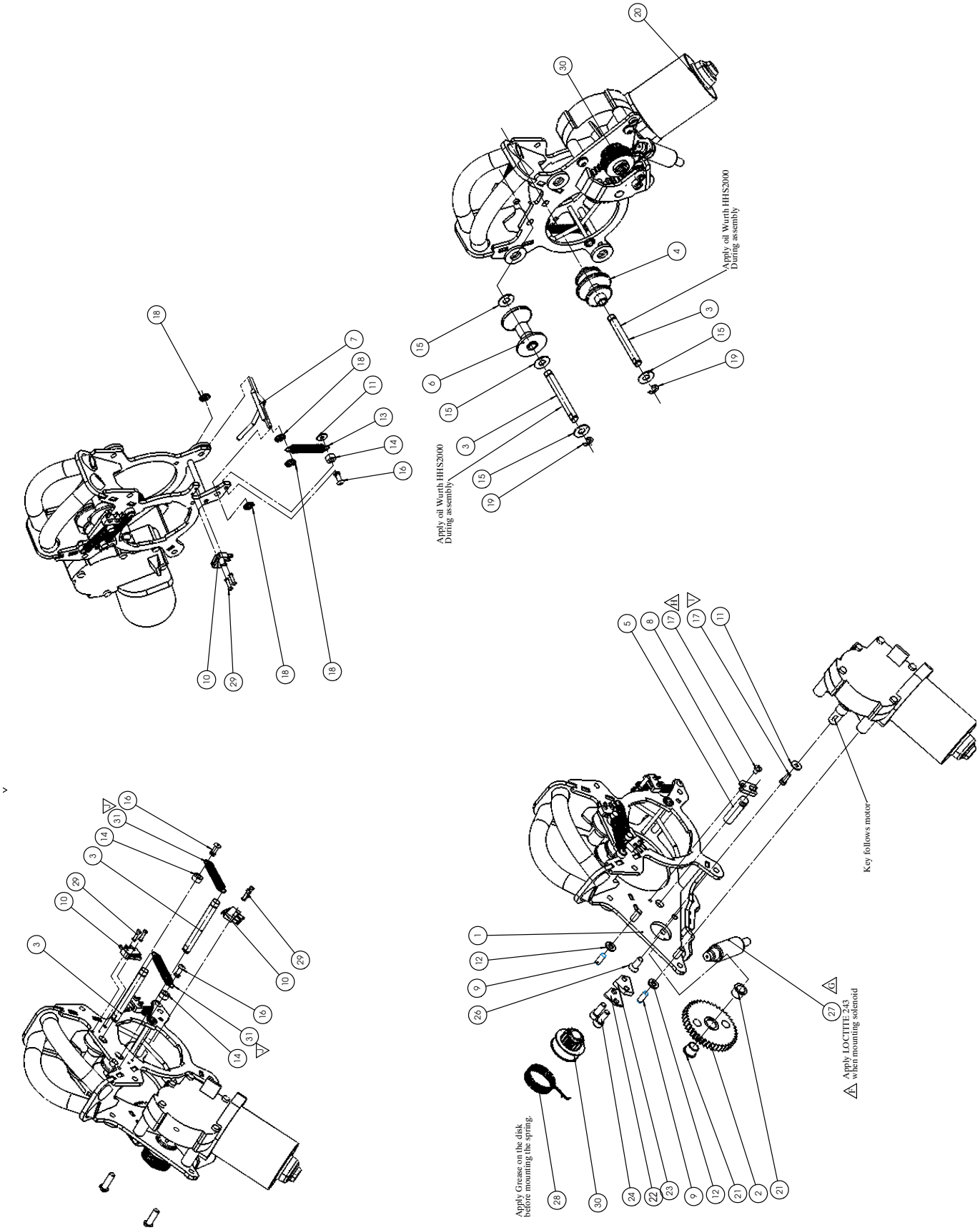
Drum assembly



Appendix D

Pos.	Part. no.	Qty	Description
1	1220101	1	Frame assembly
2	1220181	1	Gear assembly
3	1220155	2	Axle for guiding drum
4	1220157	1	End registration drum
5	1220162	1	Axle for gears
6	1220158	1	Guiding drum
7	1220163	1	Registrator for drum diameter
8	1220102	1	Rotation stopper for axle
9	1220308	2	Screw M6x20 ISO 7380 4.8 Elzn hex.socket
10	1220116	3	Microswitch Omron
11	0310120	2	Washer Ø4 DIN 9021 Elzn
12	1220305	2	Washer Ø6 DIN 125 Elzn
13	1220192	1	Extension spring SS2331-06
14	1101433	3	Spacer Ø5,2xØ10x5
15	1220141	4	Thrustwasher I Glidur G
16	1220339	3	Pop rivet Ø4x16 DIN 7337
17	1101532	2	Screw M4x8 ISO 7045 buttonhead
18	0540509	4	Washer Ø4, Starlock
19	1220313	2	Circlip Ø6 RS DIN 6799
20	1220110	1	Motor Valeo
21	1220140	2	Flange bearing Ø10/Ø12-10
22	1220105	1	Shims
23	1220104	1	Shims
24	1220320	2	Screw M6x16 DIN 912 Elzn cap head
25			
26	1220318	1	Screw M6x16 DIN 7991 Elzn countersunk
27	1220501	1	Solenoid complete
28	1220193	1	Torsion spring
29	1220311	6	Pop rivet DIN 7337 Ø2,5x12 Al
30	1220159	1	Gear wheel with brake disk
31	1220194	2	Extension spring SS2331-06

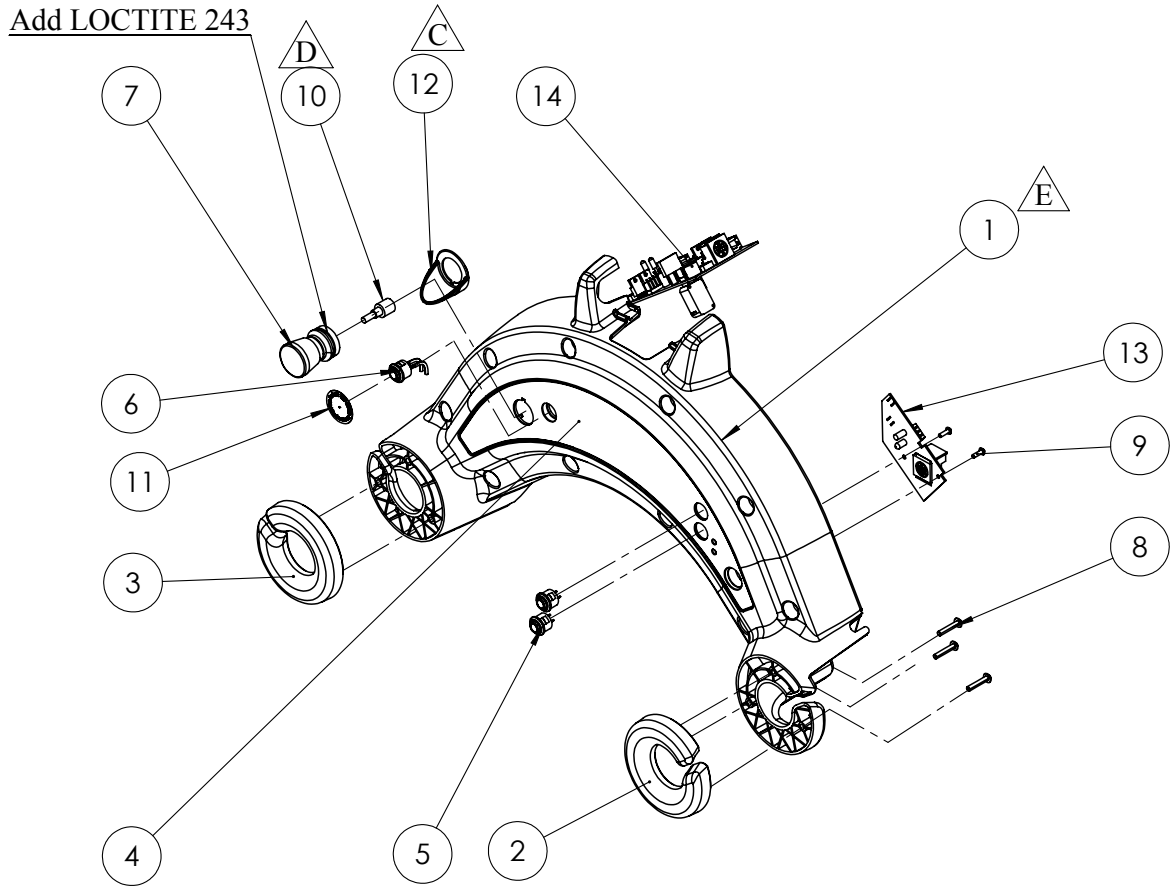
Driveline, assembly



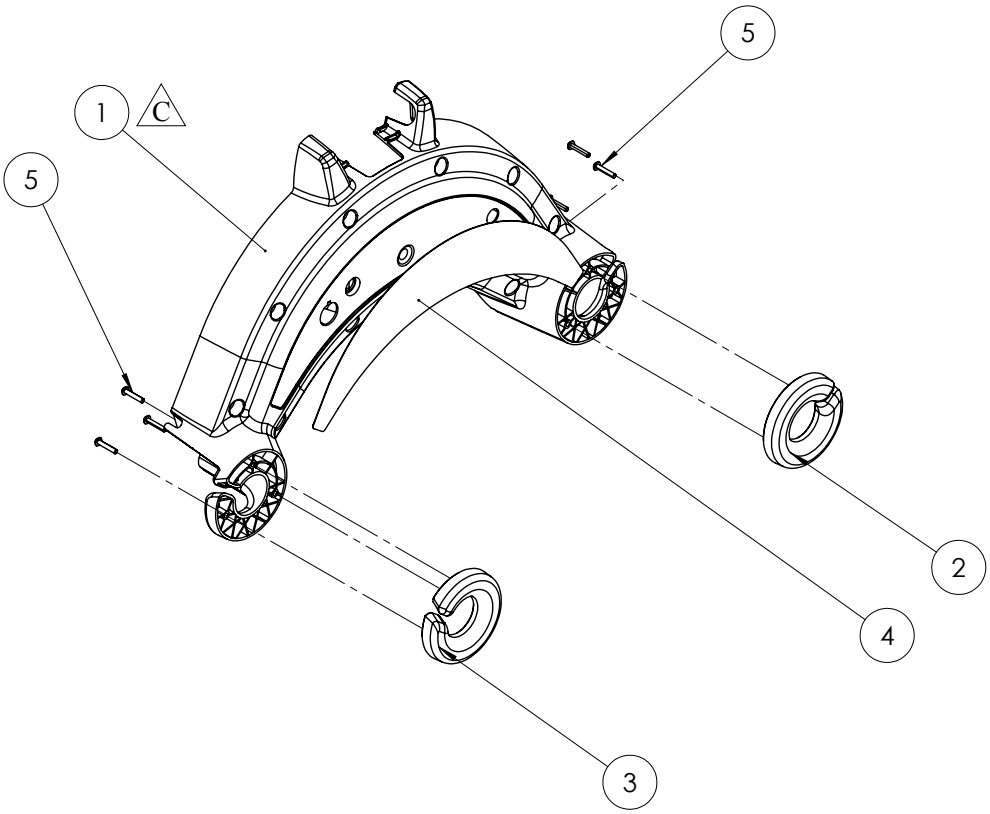
Appendix E

Pos.	Part. no.	Qty	Description
1	1220120	1	Housing
2	1220121	1	Hook, right side
3	1220122	1	Hool, left side
4	1220125	1	Foil, front side
5	1220114	2	Switch, black, ELFA 35-525-02
6	1220118	1	Switch, red, ELFA 35-525-02 emergency lowering
7	0920114	1	Emergency stop button, EFA Elektro
8	1220330	6	Screw, TP, WN1451, K40x22 ElZn
9	1220331	2	Screw, TP, WN1451, K30x10 ElZn
10	1220142	1	Distancer/extension emergency stop button
11	0210307	1	Label Ø30 emergency lowering
12	1220123	1	Cover for emergency stop button
13	1220128	1	LED-DIN PCB
14	1220112	1	PCB main circuit board
1	1220120	1	Housing
2	1220121	1	Hook, right side
3	1220122	1	Hool, left side
4	1220126	1	Foil, back side
5	1220330	6	Screw TP WM1451 K40x22

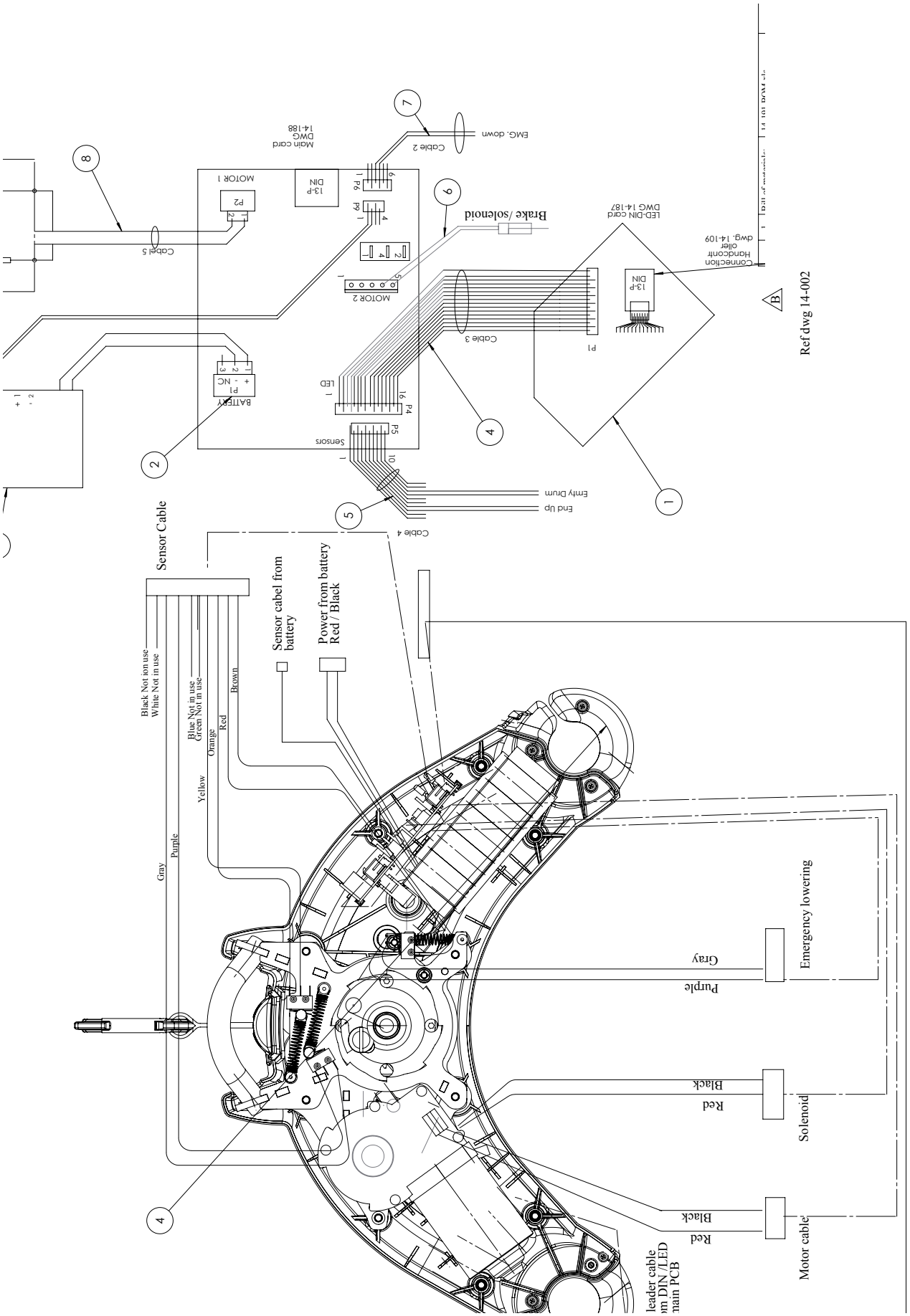
Housing, front side



Housing, back side



Electrical diagram



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