

ECO Assist

Service Manual (EN)



Attention: This manual is to be used in conjunction with “ECO Assist User Manual” and does not exclude maintenance and service information contained therein.

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1. Maintenance Parts and Schedule

Parts name	Control type	Control frequency
	Device	
Battery and Charger	Ensure contact points are clean on the battery and its housing by wiping with a dry cloth. Also check that the plug and battery socket for charging are clear of any dirt or metal particles.	Whenever recharging the battery.
Brake Levers	Brake cables may stretch over time. These can be adjusted by loosening the lock nut and turning the adjustor next to the brake lever housing. Retighten after adjusting.	As indicated through use.
Handlebars	Check tightness of all fasteners on the handles bars to ensure stability of parts. Only use the tools supplied.	Depending on use, and/or monthly.
Lights and Horn	Normal function check.	Before driving each time.
Disc Brake Assembly	Clean dirt off the Brake Disc and check for excessive wear such as gouging or deep grooves.	Whenever the braking performance feels diminished or monthly.
Clamping Mechanism to Chair Frame	Check adjustments if slipping or excessive markings on the tube are noticed or manual clamping becomes harder or easier than when first delivered.	As indicated.
Clamping Mechanism to Device Frame	Check the tension and adjust to ensure a firm grip on the Width Adjusting Rods.	As indicated, especially when changing to different chairs.
	Common to both Chair and Device	
Pneumatic Tyres	Tyre pressure (check manufacturers specifications), condition of tread and tyres. One should take care, to keep the pressure in all tyres on the same level. Harder tyres provide better maneuverability and easiness of driving but reduce comfort on bumpy surfaces.	At least once a week; see manufacturers "Specifications".
Spokes	Loose spokes can cause deformation of the rear wheels. Contact your dealer or local bicycle service to manage the problem of loose spokes.	If the problem occurs.

Figure 1.

No.	Name	Specification	Qty.
1	Open end wrench	13 mm	1 pc
2	Open end wrench	14 mm	1 pc
3	Open end wrench	21 mm	1 pc
4	Tyre Spoon	200 mm	2 pcs
5	Socket head wrench	1 mm to 10 mm	1 set
6	Feeler gauge	for brake adjustment	1 pc
7	Loctite 243	for reassembly	--/--
8	Heat gun	for loosening Loctite's fasteners	1 pc
9	Lubricant	Waterproofing gel or spray. Grease for high friction joints	--/--

Figure 2. Tool List Overview

2. Programmed Service

2.1. User maintenance and problem solving

Please refer to user manual.

2.2. Dealer maintenance and problem solving

- The maintenance of medical products is regulated in each country, for example, Germany by law in the Medical Device Directive (MPBetreibV), Section 7. According to this, maintenance measures, especially inspections and servicing, are required in order to continuous safe and proper operation of medical products.
- General advice on using Loctite 243 glue
 - Loctite 243 glue is added protection against unwanted loosening of nuts and bolts;
 - Gently preheat the fastener with a heat gun to loosen glue – prevents damaging the fastener and makes larger types easier to undo;
 - Clean off old glue before reattaching with fresh glue;
 - Apply a small quantity to the bolt before retightening.
- Based on our market observations, an interval of two years has proven reasonable for maintenance of our products when used under normal operating conditions.
- This guideline value of two years may vary with the product's respective degree of utilization and the behavior of the user.

Exploded Drawing:

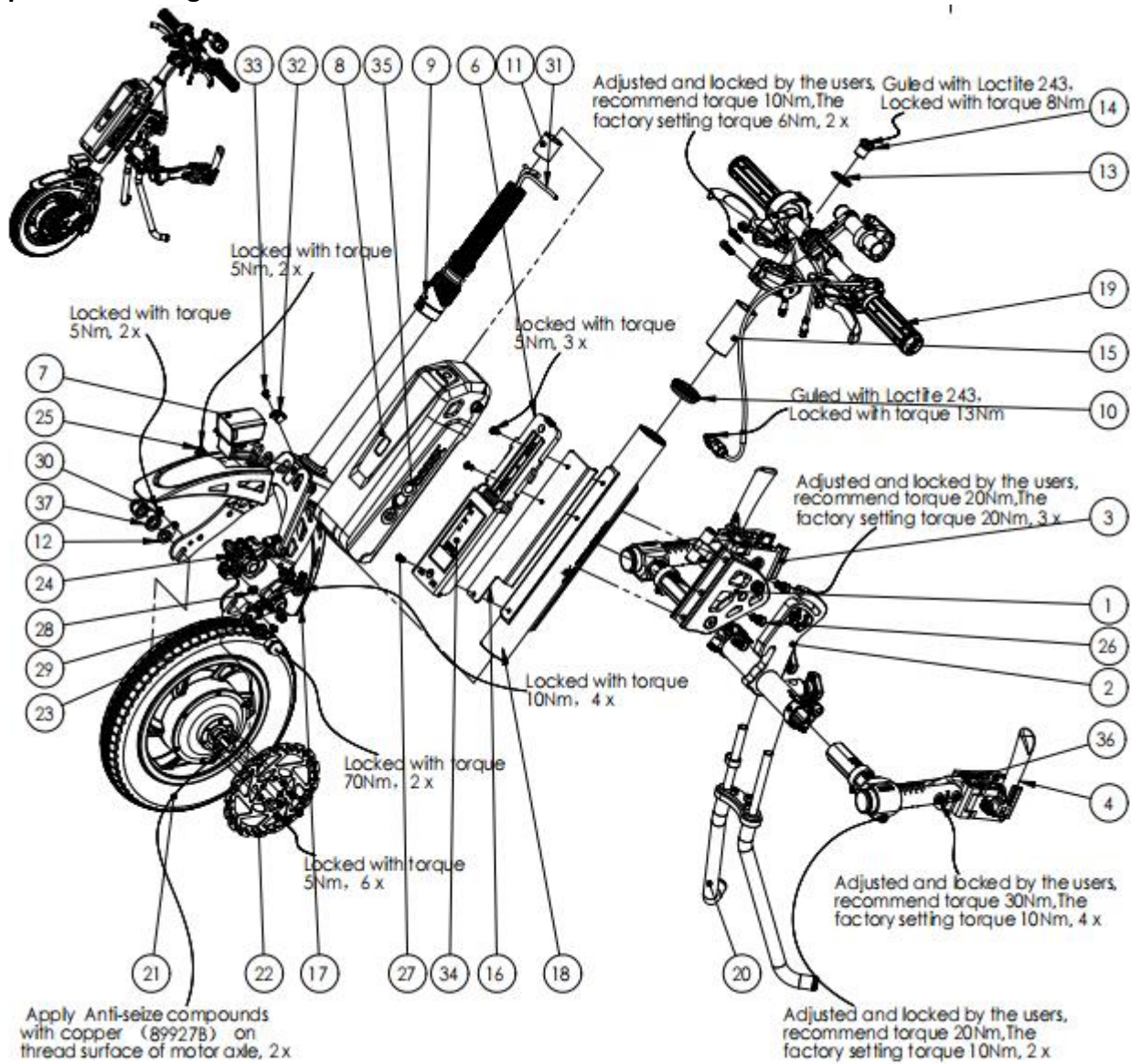


Figure 3. Exploded Drawing

Part List:

INDEX	ITEM NO.	DESCRIPTION	Qty.
1	EBA200	Lifting unit holder assembly	1
2	EBA202	Swing beam assembly	1
3	EBC200	Clamp assembly for ECO assist, A side	1
4	EBC201	Clamp assembly for ECO assist, B side	1
6	EBE005E	Battery base SSE-149-G40C include DM controller	1
5	EBE00B-7	Integrated waterproof cable	1
7	EBE008	Head lamp - KING KONG X5-A, 48VDC	1
8	EBB0048T	Battery, 48V-8.7AH, Dongchi 2900 cell, SSE-149-G40C box	1
9	EBF00G	Front fork assembly	1
10	EBF021	Headset top bearing, VP, A01ACG, 1-1/8"	1
11	EBF022	D28 copper adapter	1
12	EBF032	Safety washer	2
13	EBF035	Brake cable spacer	1
14	EBF036	T-Nut, for passing through brake cable	1
15	EBF053	Extended bushing for steering column	1
16	EBF068	Lead cable plate	1
17	EBF102	Mud guard	2
18	EBF054	Steering column	1
19	EBH00Q	Handle bar assembly, for E-Bike ECO	1
20	EBL200	Support leg assembly	1
21	EBT00A	12 In motor wheel	1
22	69D00K	Disc rotor, D160	1
23	69D00H	Brake caliper, ZOOM DB-330, black	1
24	69D00J	Brake caliper, ZOOM DB-331, black	1
25	1910BG	Bolt BN11252-M6x12, grade 8.8, black	1
26	191343	Bolt DIN912-M8x16, with tuflock, 10.9G, black	3
27	1910Z7	Bolt ISO7380-M5x12, 10.9G, black	3
28	194034	Flat washer DIN125-A6.4, D6.4xD12x1.6, black	5
29	1910N0-C	Bolt DIN912-M6x16, 10.9G, black	4
30	1910DW	Bolt ISO7380-M6x8, stainless steel	3
31	69103W	Brake cable	2
32	EBH111	Plastic cable clamp	2
33	19111B	Bolt, ISO7380 - M5x8, grade 10.9	2
34	5410PQ	Technical information label	1
35	5410PN	Name label ECO assist for battery	2
36	5410IG	Label "Pat. Pending"	2
37	EBF071	Nord-lock washer, M14	2

Figure 4. Part List

3. Electrical System

3.1 Description

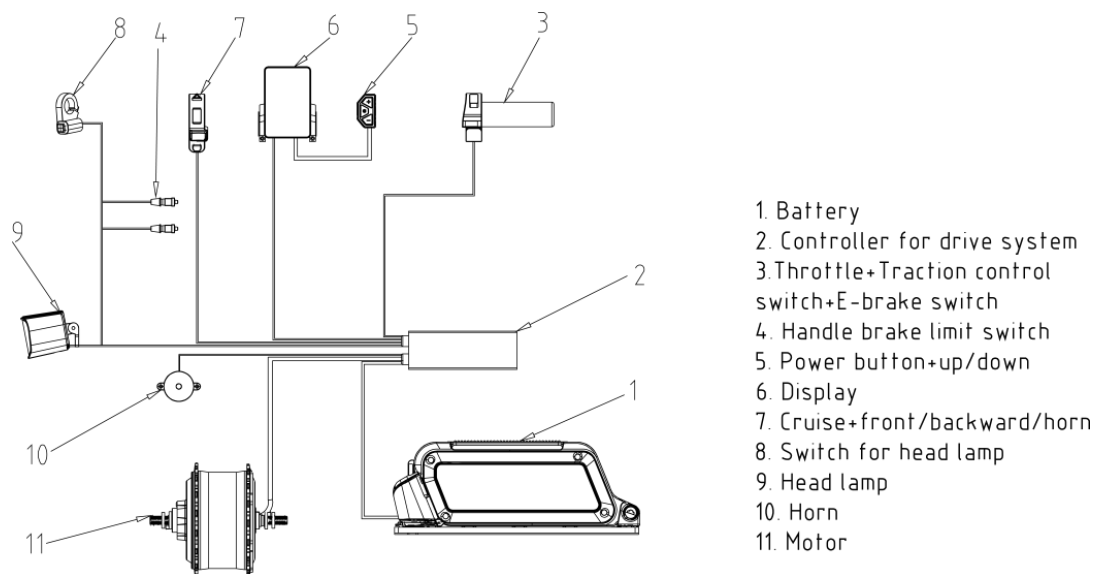


Figure 5. ECO Assist electrical schematic diagram

Electrical Control System

- Repair / Exchange

No.	Item no.	Name
1	EBT00A	BRUSHLESS DC MOTOR FOR 12" WHEEL
2	EBE000E	DISPLAY FOR ECO Assist
3	EBE005E	DM CONTROLLER FOR 12" WHEEL
4	EBB0048T	LITHIUM BATTERY PACK
5	EBBC046	CHARGER FOR LITHIUM BATTERY
6	EBE002	LAMPER, Albertx, CABLE L=450MM..
7	EBE002-12	LAMPER, Albertx, CABLE L=150MM.
8	EBE00B-4	INTEGRATED WATERPROOF CABLE
9	EBE00Z	Switch with bar shape
10	EBE00W	HORN 48VDC
11	EBE00H	Throttle+3 switch
12	EBE004-A	Left 4 switch bus
13	EBE011	Switch for lamp
14	EBE00F	Brake handle

Figure 6. Part list for Electric Control System

- Annual checking and maintenance

Check every function!

- Attention!!!

Please power off the battery before plugging out any waterproof plug!!

3.2 Battery

- **Repair / Exchange**

Exchange to new battery if any problem, repair is not suggested.

- **Annual checking and maintenance**

If the battery consumes much faster than expectation, please change to new one.

- **Attention!!!**

Make sure the battery is power off when disconnect/connect wires.

3.3 Display

- **Repair / Exchange**

Turn off the battery then restart the display if any problem, exchange to new display if this doesn't work, repair is not suggested.

- **Annual checking and maintenance**

Check every function to see if all parameters can be set up.

- **Attention!!!**

Make sure the relevant cables are well connected.

4. Drive Wheels

4.1. Tyres and Tubes

- **Repair / Exchange**

Disconnect the waterproof plug between controller and motor.



Remove the fastening clip of waterproof motor wire.



Remove the nut and bolt, then remove motor & wheel from fork.



Exchange tire or tube.
 Put back motor wheel.
 Adjust the disc brake to make sure the tire won't touch the disc plate.
 Put back the fastening clip of waterproof motor wire, make sure to straighten it.
 Connect the waterproof plug between controller and motor.

- **Annual checking and maintenance**

Check tread depth, and air pressure!

- **Attention!!!**

Change tire when tread depth <0.5mm!

4.2. Drive Motor

- **Repair /Exchange**

1	EBT00A	BRUSHLESS DC MOTOR FOR 12" WHEEL
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Figure 7. Overview list for Drive Motors

- **Annual checking and maintenance**

Check function!

- **Error and solution**

If motor broken, please change it!

- **Attention**

Please take off the battery before plugging out any waterproof plug!!

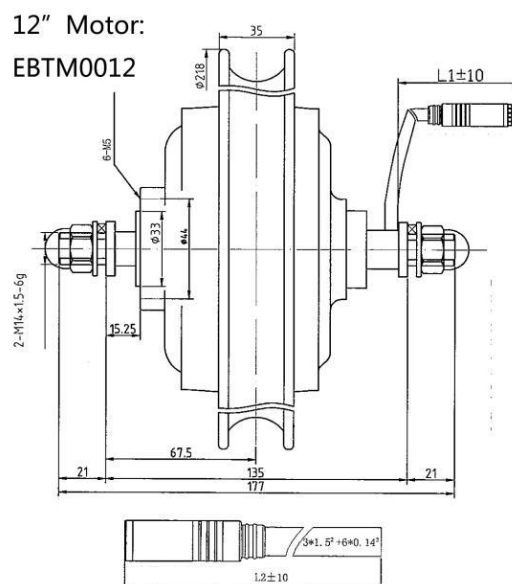
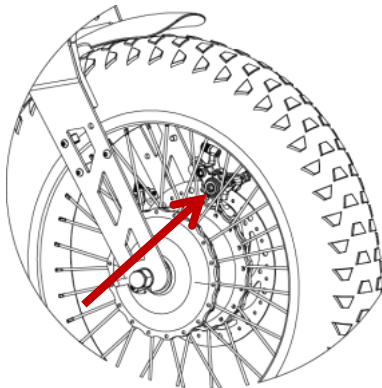


Figure 8. Drawings for Drive Motors

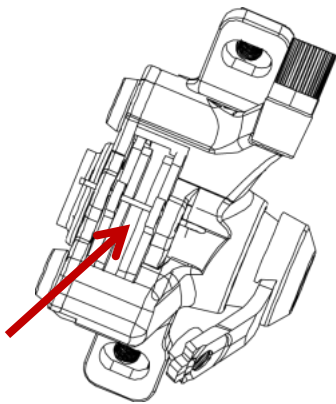
5. Brakes System

- **Repair /Exchange**

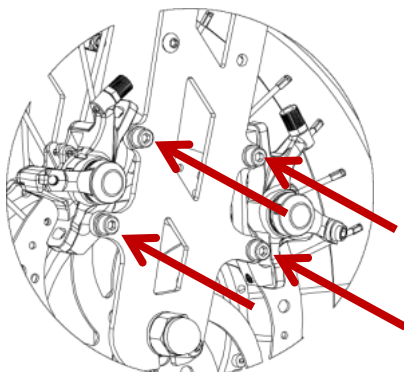
Please check the brake assembly and adjustment instructions



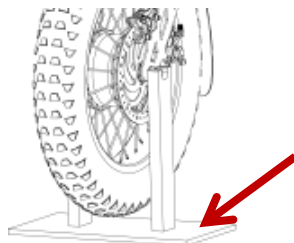
1. Fine adjust this bolt to change the distance between brake pad and disc plate.



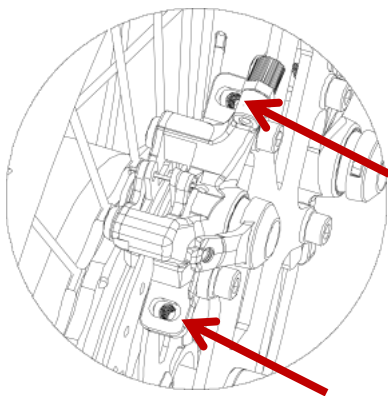
2. Use the 2.2-2.3mm feeler gauge to check and adjust the distance between two brake pads, try to make is as parallel as possible.



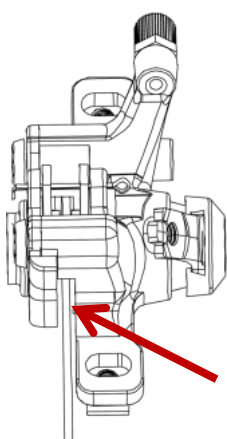
3. Assemble the caliper to fork, fix the bolt with Loctite 243, torque at 13Nm.



4. Mount the ECO Assist on the fixing base
12": 21895,



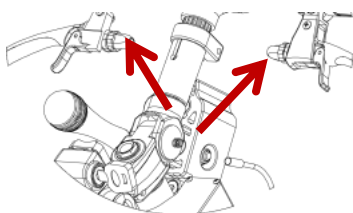
5. Assemble caliper, adjust the bolt shown to make sure the disc plate is right in the middle.



6. Firstly, pull the brake cable to the bottom, screw tightly the nut. Engage the brake cable to make sure disc plate is braked by both pads, at the same time use wrench to screw tightly the bottom bolt.



7. Assemble brake cable.



8. Adjust the adjuster on handle.



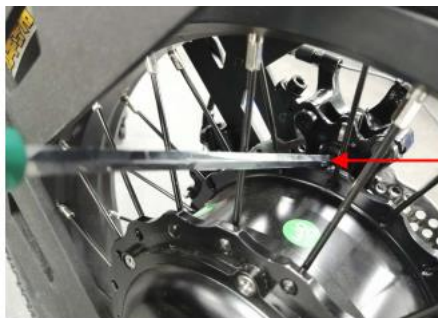
9. Firstly, pull the brake cable to the bottom, screw tightly the nut. Engage the brake cable to make sure disc plate is braked by both pads, at the same time use wrench to screw tightly the bottom bolt.



10. Put an end cable cap and use pliers to clamp tightly.

At the end: Put it on a 10% slope with 120KG load, check whether it can be parked with the brake engaged.

Check whether the clamping force is appropriate, adjust tightness nut ⑦19106B.



A



B

Figure 9. Brake force checking

Check the brake function at regular intervals, if response become slower, please adjust.

- **Attention!!!**

Ensure no lubricants touch the brake pad surfaces – this will reduce braking efficiency.

6. Clamping Mechanisms

6.1 Manual

- **Repair /Exchange**

Any repair is not suggested, please change to new part if any problem.

- **Annual checking and maintenance**

Check whether the clamp hinge ⑩EBC022 works smoothly, if not then add lubricant on ⑩EBC022.

Add lubricant at position A, B, C if you feel it can't move smoothly.

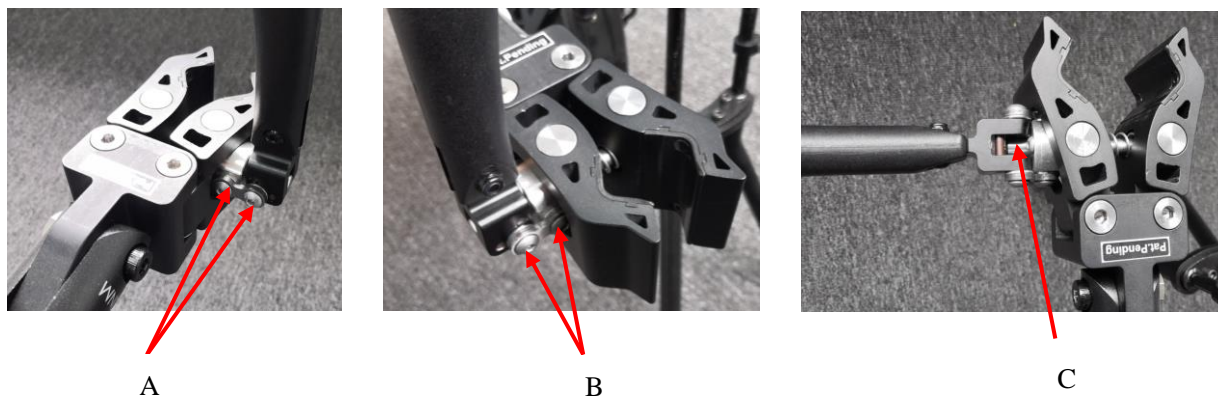


Figure 10. Manual clamping mechanism

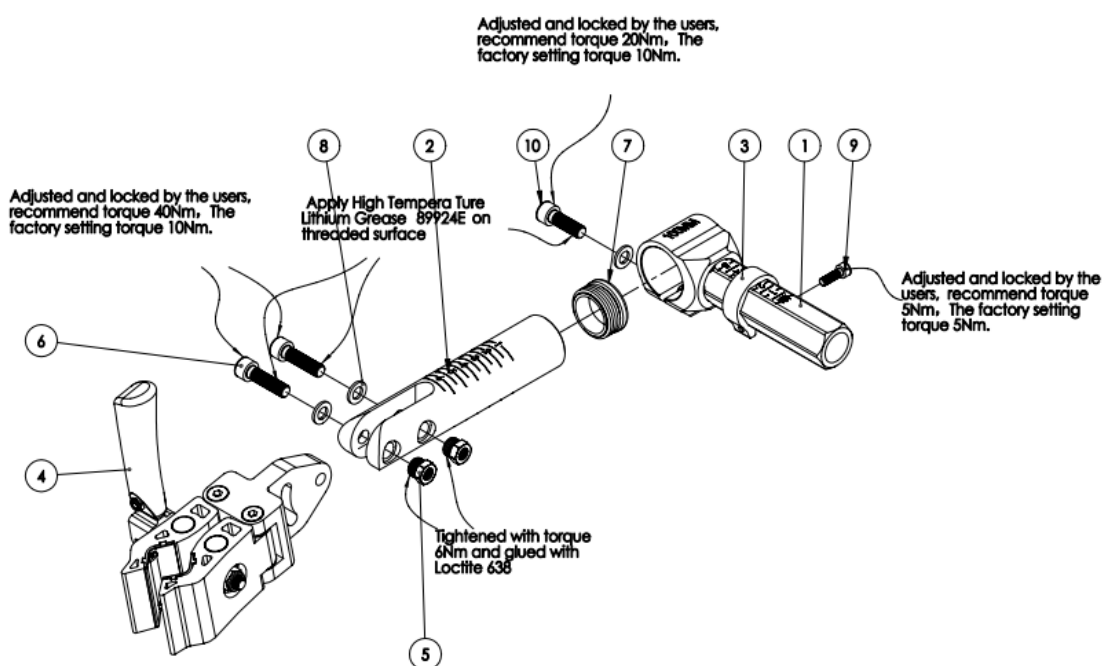


Figure 11. Exploded drawing for left side manual clamp – EBC201

INDEX	ITEM NO.	DESCRIPTION	Qty.
1	EBC209A	Clamp arm weldment, Hex. arm L=100	1
2	EBC203	Clamp arm extensible tube	1
3	EBC206	Limit ring	1
4	EBX036	Manual clamp of best wheel, right	1
5	EBX062L	Insert nut, M8	2
6	1910RL	Bolt DIN912-M8x30, 10.9G, black	2
7	193070	Plastic cap ø35 x 11.5, MOSS code: 111065	1
8	19256U	Flat washer D15xd8.2xT1.5, black	3
9	1925BN	Bolt, DIN912-M5x16, black	1
10	1910R0	Bolt DIN912-M8x25, 10.9G, black	1

Figure 12. Part list for left side manual clamp – EBC201

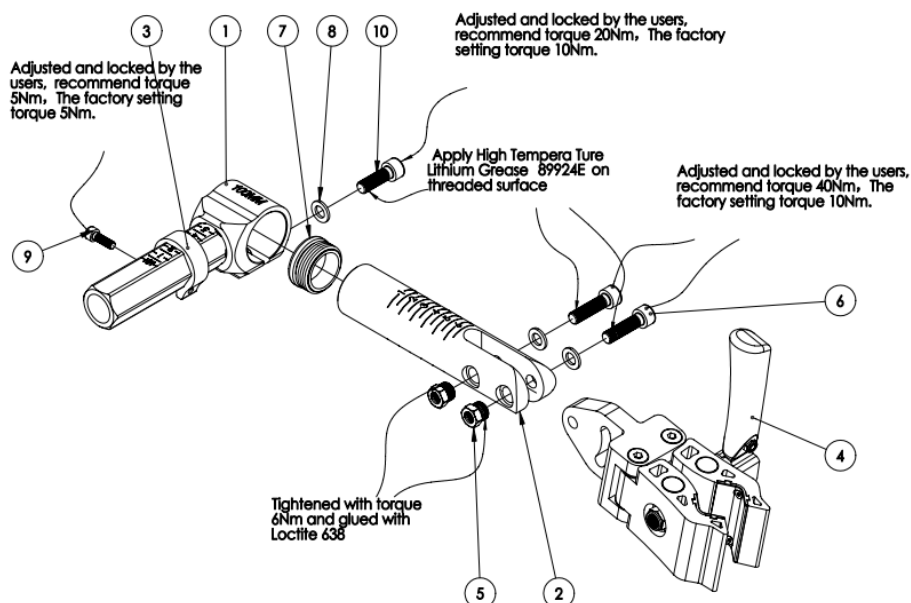


Figure 13. Exploded drawing for right side manual clamp – EBC200

INDEX	ITEM NO.	DESCRIPTION	Qty.
1	EBC209A	Clamp arm weldment, Hex. arm L=100	1
2	EBC203	Clamp arm extensible tube	1
3	EBC206	Limit ring	1
4	EBX035	Manual clamp of best wheel, left	1
5	EBX062L	Insert nut, M8	2
6	1910RL	Bolt DIN912-M8x30, 10.9G, black	2
7	193070	Plastic cap ø35 x 11.5, MOSS code: 111065	1
8	19256U	Flat washer D15xd8.2xT1.5, black	3
9	1925BN	Bolt, DIN912-M5x16, black	1
10	1910R0	Bolt DIN912-M8x25, 10.9G, black	1

Figure 14. Part list for right side manual clamp – EBC200

7. Lifting Mechanisms

7.1 Manual

- **Repair /Exchange**

Repair is not suggested, please change complete part if any problem.

- **Annual checking and maintenance**

Add lubricant at position A and B.

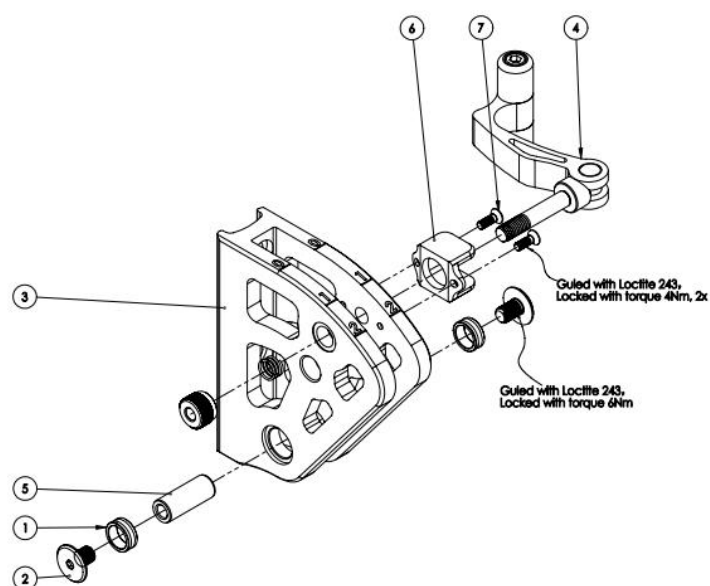
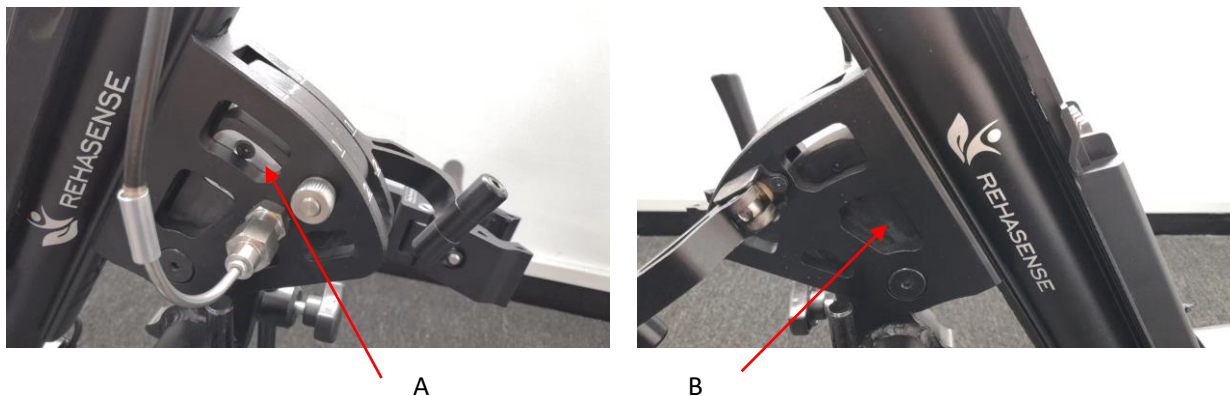


Figure 15. Exploded drawing of manual lifting mechanism – EBA200

INDEX	ITEM NO.	DESCRIPTION	Qty.
1	EBA108	Bushing	2
2	EBA162	Flange head bolt M8x12, black	2
3	EBA201	Lifting unit holder	1
4	EBA203	Quick release cam	1
5	EBA207	Pivot pin , $\varnothing 12 \times 29.5$	1
6	EBA212	Guider of QR	1
7	1910MX	Bolt DIN7991-M4x12, 10.9G, black	2

Figure 16. Part list of manual lifting mechanism – EBA200

8. Handlebar Controls

8.1. Horn / Cruiser Control / Lights / Anti-Slip Control

- **Repair /Exchange**

Repair is not suggested, please change complete part if any problem.

- **Annual checking and maintenance**

Check function!

- **Error and solution**

If these don't work, please change it!

- **Attention**

Please make sure that the battery is on when checking the functions!!

8.2. Standard Control

- **Repair /Exchange**

Check the torque of bolt.

- **Annual checking and maintenance**

Handle position adjustment

Fastening bolt's check, fasten the bolt which become loose.

Check whether parking function works well.

Add lubricant from time to time, to reduce brake force resistance.

Controller and meter daily maintenance and failure process.

Check whether communication between controller and meter works well

Check whether all icons on meter shows up in good condition

Check whether functions like (Walk、cruise、e-brake etc.) works well.

Steering handle daily maintenance and failure process

Check whether parts are loose, and fasten it timely

Check whether buttons work well

Exchange the stickers on the button.

- **Error and solution**

If button lose efficacy, please change the unit!

- **Attention!!!**

Please take off the battery before plugging out any waterproof plug!!

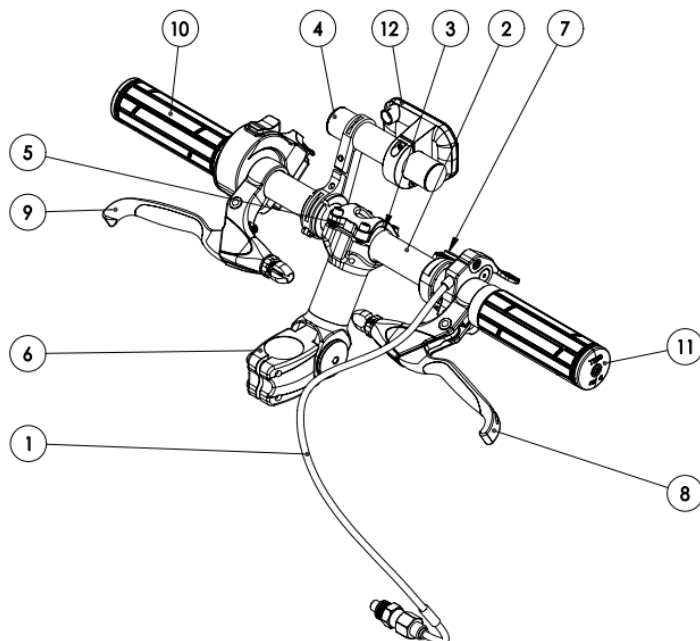


Figure 17. Exploded drawings of handlebar – EBH00Q

INDEX	ITEM NO.	DESCRIPTION	QTY.
1	EBA205	Release cable assembly	1
2	EBH002	Handle bar tube	1
3	EBH003	Plastic bushing	1
4	EBH205	Extended holder for display	1
5	EBH206	Half bushing	2
6	EBH00G-A	Adjustable stem bar, FMFXTR, EXT=110	1
7	EBE017	Button for lamp + horn	1
8	EBE00F-L	Brake handle with locking mechanism	1
9	EBE00F-R	Brake handle with locking mechanism	1
10	EBE00H	Hall sensor throttle, WuXing S4301+HT390	1
11	EBE00L-1	Handle grip, WuXing - T390, TPR 45°, L=117	1
12	EBE000E	Display for E-BIKE ECO, DongMei, TC618 , 48VDC	1

Figure 18. Part list of handlebar – EBH00Q

9. Accessories

Head Lamp, Basket, Mud Guard etc.

It is suggested to change to new one if any problem.

10. Trouble Shooting

No.	Error code	Function (Grouping)	Error description	Solution
1	Error 03	No throttle response	Brakes are locked on - power circuit interrupted	Release the brake to re-open power circuit.
2	Error 05		Throttle broken	1. Check the throttle cable
				2. Change throttle
				3. Contact dealer
3	Error 04	Cannot change gear to "0" setting	Throttle partly engaged.	Ensure the throttle is fully released. Clean and lubricant if dirty.
4	Error 08	Motor issue	Motor hall sensor broken	1. Check motor cable to see if it is well connected. 2. Disconnect the motor cable, find a new device in same model, reconnect the cable with motor wheel in new device. If error still exist, then the error comes from controller. Change the controller. If not, then change the motor Wheel. 3. Contact dealer
5	Error 11		Motor temperature protection value	
6	Error 10	Controller issue	Controller temperature protection value	1. Allow controller to cool down
				2. Still not work, change the controller
				2. Contact the dealer
7	Error 21	Speed Sensor issue	Speed sensor broken	Contact dealer

Figure 19. Error messages

11.FAQ's

N/A

Contact details of the distributor, manufacturer.

In case of any technical questions contact your local distributor or directly with The Manufacturer.

Distributor:

Rehasense Sverige / Senses by Wihlbacka AB
Flottiljvägen 19
39241 Kalmar
Sverige
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