



Instruction Manual

For

e-Shear Mace Electric Handpiece <BQS-1(H)>

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1. Please read this manual carefully before operating.

Thank you for choosing BEIYUAN e-Shear Mace electric handpiece, we hope you will find full satisfaction with its shearing performance. Although every individual handpiece is rigorously tested before leaving our factory, in order to ensure safety during operation, and to maintain good working condition and extend its service life, please read this manual carefully before use.

II. Overview

2.1 Product features

The e-Shear Mace BQS-1(H) electric handpiece consists of the electric handpiece assembly and handpiece power supply. Its main features are:

1. a 48V DC power supply with power saving provides 2 speeds 2900 and 3200rpm.
2. ergonomically designed barrel for more comfort and flexibility during operation.
3. smooth running, low vibration and low noise.
4. small size, light weight, compact, easy to operation, easy to carry.
5. driven by a powerful and durable brushless electric motor, it is suitable for general and professional shearing.

2.2 Technical parameters

Item	Parameter
Supply voltage	90 – 260 V AC
Output voltage	48 V DC
Motor power output	350 W
Cutting speed	2900/3200rpm

III. Installation

3.1 Installing combs and cutters

3.1.1 Combs

Place the comb on the cutting head of the handpiece, make sure the comb and the cutting head is properly aligned and symmetrical. At this stage do not tighten the comb screw, apply limited pressure just enough to hold the comb in place.

3.1.2 Cutters

Insert cutter then tighten the tension nut, until the tips of the chickenfeet fit firmly into the two holes on both sides of the cutter.

3.1.3 Adjusting and securing comb

Adjust the relative positions of the comb and cutter, ensure the point at which the bevel of the comb begins is 1.5 to 2 mm from the tip of the middle tooth of the cutter (see fig.1). Also ensure that the comb and cutter is symmetrically positioned, then secure the comb firmly using the provided spanner.

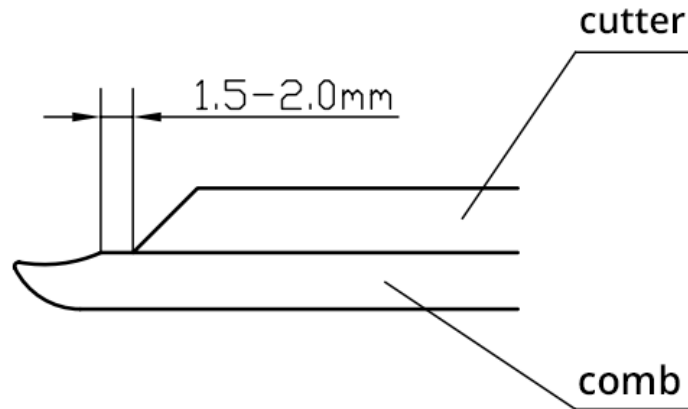


Fig. 1

3.2 Comb selection

Choosing the right comb for the job is a vital part of preparation for shearing. Selection of comb should consider shape of the tip, bevel and width. (see fig. 2)

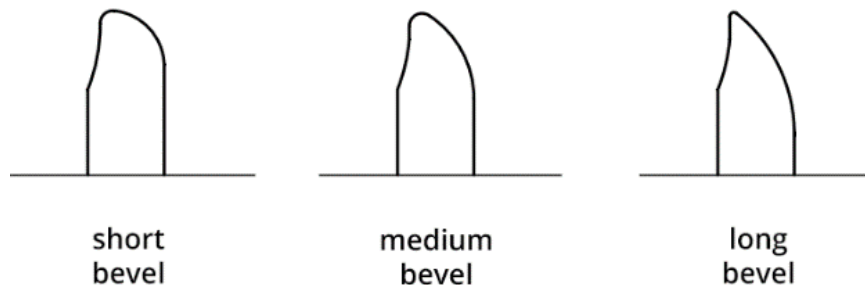


Fig. 2

In general:

- Short bevel is principally used when shearing is at its best and the stock are in top condition.
- Medium bevel is the most widely used comb and suitable for the majority of crossbred shearing.
- Long bevel is particularly suitable for fine wool sheep when the wool is dense and sticky.

Width selection should take into account the user's level of experience with shearing. For more information on comb and cutter selection, please visit:

www.beiyuanshearing.com.au

3.3 Chickenfeet

Before mounting chickenfeet, apply a small amount of grease to the two mounting holes on the forkbody, then insert the left and right chickenfeet into the left and right holes respectively, make sure the safety spring falls into the groove of the chickenfeet.

To take out the chickenfeet, twist the chickenfeet 180° then pull outward.

The chickenfeet is secured onto the forkbody by a safety spring, ensure the screw holding the safety spring in place is not loose.

3.4 Remove and replace the fork body assembly and the roller

3.4.1 Method of removal

The fork body assembly can be removed without removing the center post. First unscrew the tension nut, then remove the tension pin and tension sleeve. Remove the safety screw behind the tension nut and remove the fork body with the roller attached.

3.4.2 Replacing fork body

Remove the oil hole cap on the top of the handpiece. Place a small amount of grease onto the roller (ball) and ball race of the fork body. Place the ball onto the crankshaft using a pen, screwdriver or other suitable method (make sure that the flat side of the roller is facing the crank spindle). Place the crank and roller in the bottom position in the handpiece. Insert the fork body from the front of the handpiece and over the ball. After it is confirmed that the center post cup is sitting onto the center post correctly, replace and tighten the safety screw.

3.5 Adjusting center post

The center post has been adjusted to the correct position when leaving the factory, it can suit cutters of different thicknesses. Do not re-adjust the center post unless necessary.

If adjustment is necessary, first, use a worn cutter (approx.. 3.5mm in thickness), and a comb of any thickness, set the comb in place (see adjusting and securing comb above), then adjust the roller on the crank spindle to the highest position.

3.5.1 Adjusting roller to the highest position

(1) first remove the cover cap on top of the handpiece, check to see if the roller is positioned at the top of the groove of the fork body. If its position is at the top, go to step (3).

(2) If the roller is not positioned at the top of the groove on the fork body, then start and stop the handpiece, until the roller is positioned at the top of the groove.

Caution: before starting the machine, ensure the comb and cutter are fitted and tension applied.

(3) With the roller positioned at the top, turn off the power supply, disconnect the cord between the handpiece and power supply.

Caution: before carrying out repair work, ensure power is disconnected!

(4) Loosen tension, hold the front of the fork body and move horizontally back and forth, until the roller is at its highest position. (Note: use care when adjusting the

forkbody, excessive movement may cause the roller to slide down, if this happens, repeat step (2).

3.5.2 Adjusting center post

Loosen the center post nut and insert the post gauge as per illustration, keeping it at 90 degrees to the handpiece. Turn the center post until the center of the gauge is level with the gauge top. Retighten the center post nut (Fig).

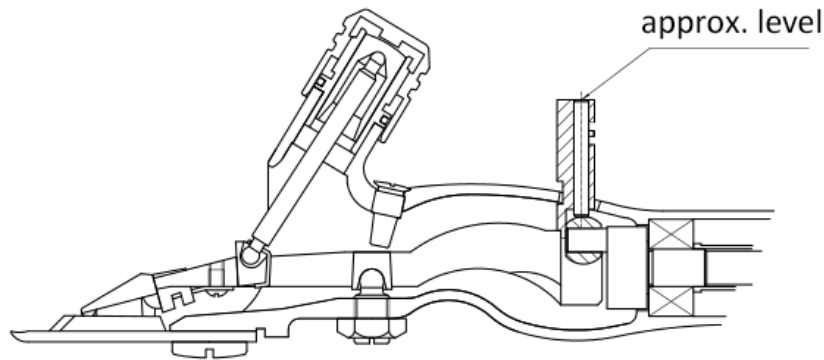


Fig.3

3.6 Adjusting tension

3.6.1 Installing tension retaining spring

When installing, first make sure that the larger curved tip of the spring points to the clockwise direction (viewed from the top) as it is inserted into the thread bush, then insert the smaller curved tip into the small hole. Apply force to press the retaining spring into the grooves of the thread bush.

Caution: not installing the tension retaining spring could cause loss of tension capacity, resulting in damage to the handpiece!

3.6.2 Tension problems

Be aware that the size of each end of the tensioning pin is different, ensure the larger end sits in the tension pin cup. Also ensure that the downward tips of the chickenfeet are pressed firmly into the holes on the cutter. To apply tension, smoothly rotate and tighten the tension nut. Do not apply too much pressure as it may cause overheating and accelerate blade wear. When cutting is not smooth, first check the sharpness of the blades.

Caution: the downward tips of the chickenfeet must be pressed firmly into the holes on the cutter, otherwise tension cannot be applied properly.

IV. Operation

4.1 Pre-work inspection and preparation

- (1) Check that the comb and cutter are properly installed, and tension is correct.
- (2) Check if the gearbox has been greased as required, other lubricated parts have been greased as required.
- (3) Check if the voltage of the main power supply and the special power supply (Controller) for the handpiece is correct.

4.2 Pre-use and in-use safety and precautions

- (1) The power outlet must be reliably grounded.
- (2) Before turning on the power, the switch on the handpiece must be set to OFF.
- (3) After the power is connected, with the handpiece in hand, turn on the switch at the back of the handpiece.
- (4) During shearing, the cutting head of the handpiece should always maintain a safe distance from the operator.
- (5) During shearing, the lead of the handpiece should be kept free and unobstructed to avoid tangling with sheep.
- (6) While on break, the handpiece should be turned off to prolong its service life.
- (7) Keep the vents of the handpiece motor free from blockage, any wool or debris blocking the vents should be promptly removed.
- (8) If a problem occurs during shearing, first shut off the handpiece and cut off the power supply, then proceed to perform inspection and maintenance.
- (9) Ensure the handpiece is turned off and the power is cut off before loosening the tension nut.
- (10) Do not turn on the handpiece without first installing the comb and cutter.

Caution: power must be completely unplugged before performing maintenance on the handpiece!

4.3 Using the handpiece

- (1) Plug in the power cord into the power supply and ensure it is secure.
- (2) Hang or fix the control box at a height of approximately 1.4 – 1.7 meters above ground.
- (3) Connect the control box to the main power supply with its 3 points plug.
- (4) To start or halt operation, use the switch located at the back of the handpiece.

Caution: the handpiece must be started under zero load before every operation.

Caution: in the event that an emergency stop is required (e.g. sheep tangling), press the button and pull out the plug at the bottom of power supply.

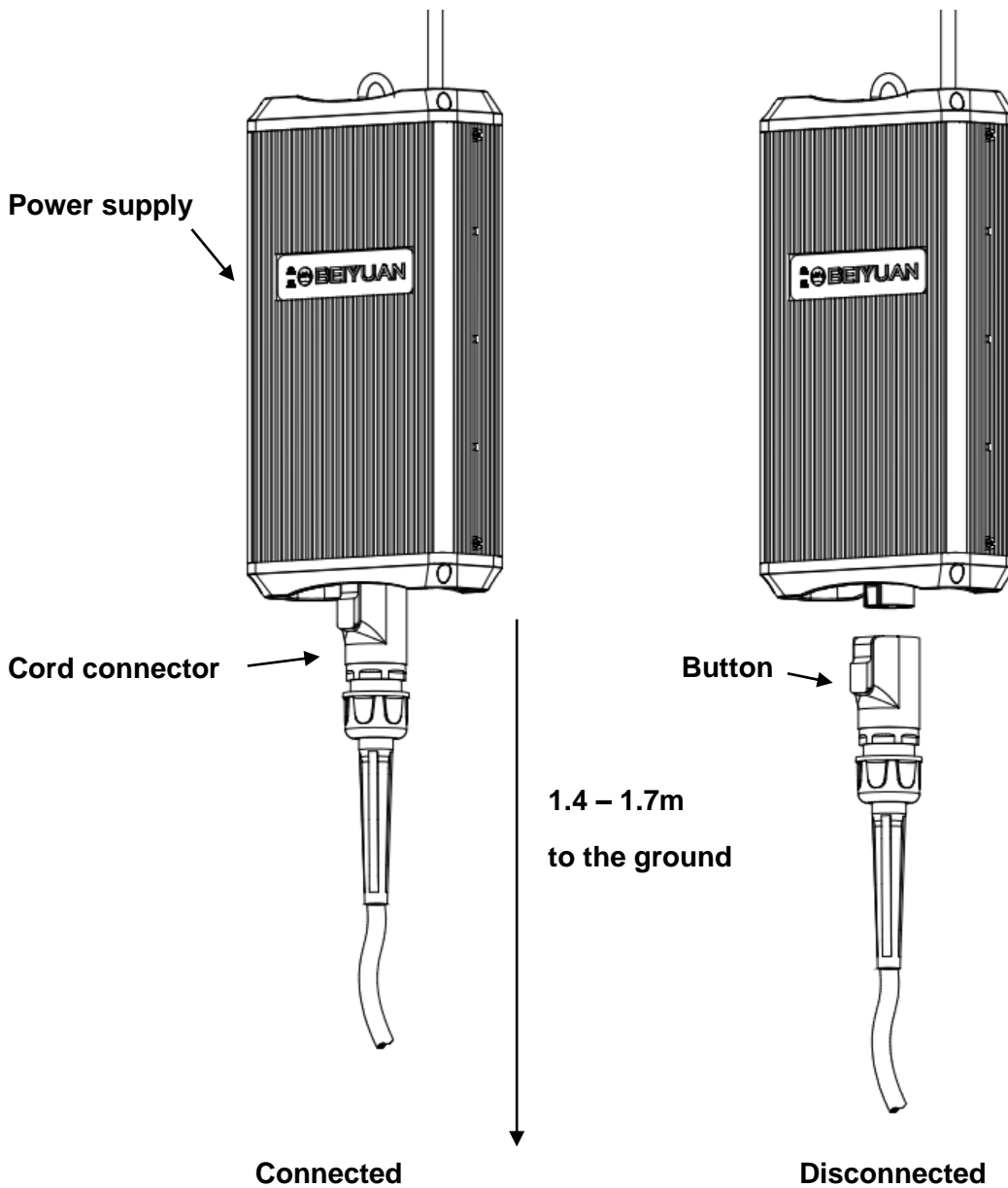


Fig. 4

(5) Toggling the switch under the control box by a screwdriver, available speed 2900 or 3200 rpm (See fig. 5 showing the position).

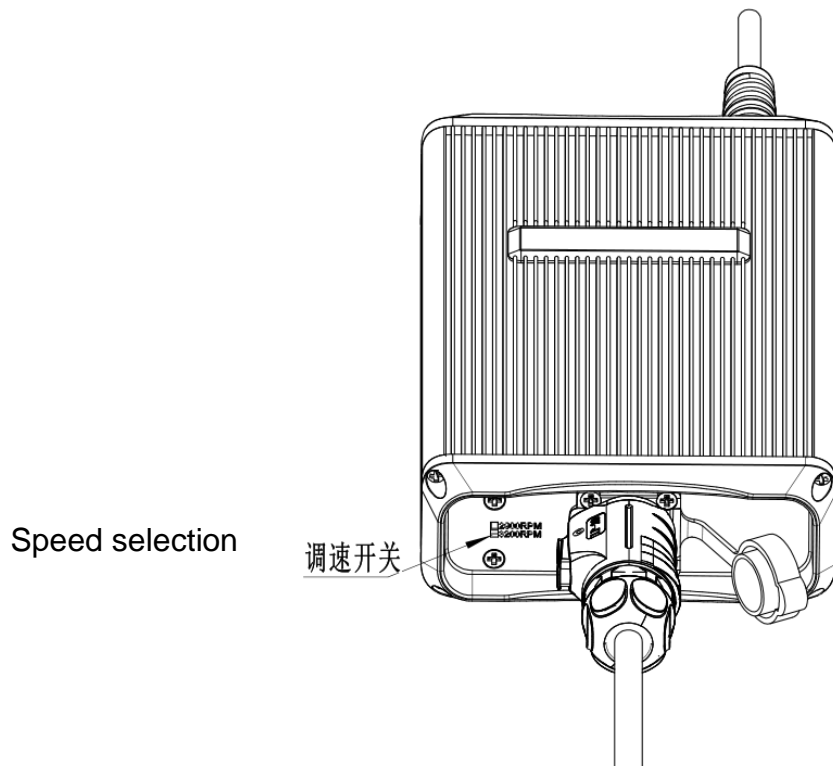


Fig. 5

V. Maintenance and Repair

5.1 Regular checks

5.1.1 Lubrication of cutting parts

(1) add oil every half hour

Add #32 mechanical lubricant between the comb and cutter, tension pin cup and the roller (by opening cover cap on top of the handpiece). Loosen the tension nut, place the handpiece in a near upright position, then drip oil onto tension sleeve. Lift the forkbody, then drip oil to the inner side of the forkbody until oil reaches the center post cup.

(2) add grease once a day

Take out the tension sleeve and apply a suitable amount of grease.

(3) add grease once a week

Take out both chickenfeet, apply grease into the chickenfeet holes on the forkbody.

Caution: make sure grease is not trapped between the thread bush and tension nut. This may affect the proper functioning of the tensioning system.

5.1.2 lubricating gear box

(1) Only use special quality synthetic grease for lubricating the gearbox.

(2) The amount of grease inside the gear box should be between 2 to 3.5 ml.

Insufficient lubrication could negatively affect the operation of the gearbox and may cause damage. Over-application could lead to leakage and overheating.

(3) It's suggestion that adding grease into gear box in 30 running hours (or shorn 600 sheep) .

(4) if the rear section of the handpiece overheats, check whether there is a problem with gearbox lubrication, add or replace grease if necessary.

(5)It's required to refill grease after having stored for more than 6 months prior to use.

5.1.3 Check for worn parts

After shearing 3000-4000 sheep, it is recommended to inspect the handpiece thoroughly to see if there is noticeable wear on any small parts. Small parts should be replaced after being worn out. This could help prolong the service life of major parts.

5.1.4 Storage

For longer term storage, the parts that need to be replaced should be replaced, various parts of the handpiece should be re-filled with lubricating oil. Put the

handpiece and control box into its bag and store in a dry place for reuse in the coming year.

5.2 Repair and maintenance

This machine is a precision power tool, it is not advised to disassemble any part of the drive and electrical components. Please read this manual carefully and follow procedures to disassemble and re-assemble this machine for ordinary maintenance.

When carrying out maintenance work, the handpiece should be placed on a dry, clean wooden board or held tightly in the hand. Do not use a vise or clamp mechanism to hold the handpiece. Use special tools for disassembly.

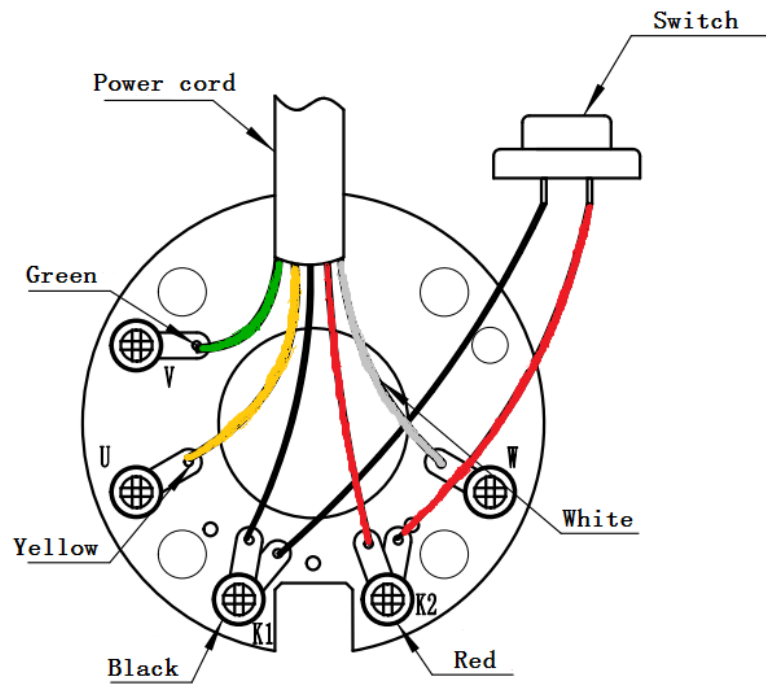
In the event of a fault, the following methods can be used to determine and eliminate it. If you cannot resolve it by yourself, please contact us or your local distributor.

Troubleshooting Guide		
Issue description	Troubleshooting	Suggested solution
Handpiece does not start	Power cord is disconnected	Reconnect and ensure the cord is secure
	Switch is not responsive	Replace switch
	Wire broken to the switch	Reconnect
	Control board issue	Replacement
Handpiece overheating	First, find out accurately which part of the handpiece is overheating. Do this by restarting the handpiece after letting it cool down.	
Front portion overheating	May be due to build-up of dust or debris in the front portion of the handpiece.	Start the handpiece whilst pressing and sealing the oil hole with your thumb, fill in oil from the front of the handpiece into the body, then flip the handpiece and drain thoroughly.
	Check to see if the comb and cutter are sharp, and proper tension was applied	Re-grind the comb and cutter, lessen tension pressure
Thumb and index finger portion overheating	Check the center post and center post nut, ensure there is no foreign object in-between	Lift the crank spindle, flush out the foreign object with lubricant
	Check for signs of wear on the center post or center post nut	Replace with new parts
Tension nut overheating	Check the tension pin and tension pin cup, ensure there is no foreign object in-between	Remove dust and debris, apply new grease
	Check for signs of wear on the tension pin or tension pin cup	Replace with new parts
Middle finger or ring finger portion overheating	Check to see if the roller is installed correctly (make sure the flat side is facing the crank spindle)	Reinstall the roller
	May be due to wool getting caught in the roller	Remove the wool
	A lack of lubrication for cogs in gearbox	Apply lubrication

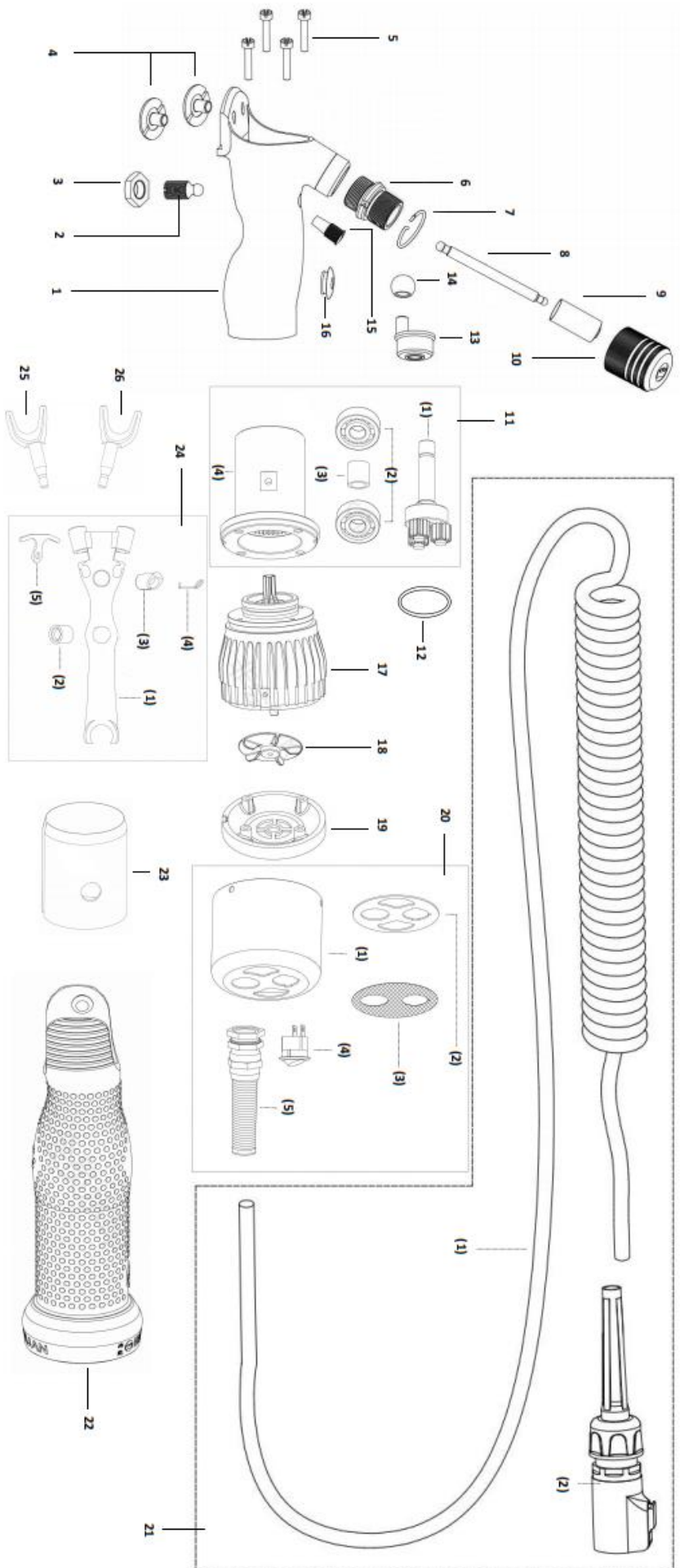
Rear portion overheating	Use of unsuitable or dirty grease	Replace grease
	Excessive grease in gearbox	Remove excessive grease
	Check for signs of wear in the gearbox	Replace parts
	Check to see if the comb and cutter are sharp, and proper tension was applied	Re-grind the comb and cutter, lessen tension pressure
	Blockage in ventilation holes	Remove blockage
Cannot apply tension to comb and cutter	Check to see if there is grease in between the thread bush and tension nut	Clean thoroughly to remove grease from this area
	Check to see if there is a retaining circlip installed, and for any signs of wear	Replace with new retaining circlip, ensure correct direction when replacing
	Check for signs of wear on the tension pin, tension pin cup or tension sleeve	Replace with new parts
	The thread inside the tension nut is slipping	Replace with new parts
Cutting issues	Check to see if the comb and cutter are sharp	Re-grind the comb and cutter
	Check to see if the tips of the cutter display any irregularities	
	Check to see if the comb is too thin which causes the chickenfeet to be in contact with the comb screws.	Replace comb or grind off a part of the thread on the comb screw
	Has there been a change of center post?	Readjust the center post according to instructions above
	Check for signs of wear on the tension pin, tension pin cup or tension sleeve	Replace with new parts
	Damaged comb screw	Replace comb screw
	Check to see if the cutter is too thin which causes the tips of the chickenfeet to be in direct contact with the comb	Replace cutter
Abnormal vibration and	First determine in which portion of the handpiece the issue occurs.	

operational issues		
Occurs in the front portion	Check to see if the chickenfeet are fitted properly onto the fork body	Replace chickenfeet
	Check if the comb is set securely	Tighten comb screws
	Check to see if the centre post is loose	Readjust and tighten according to instruction above
	Check if the comb is too thin which causes the fork body to be in contact with the comb screws	Replace the thread portion on the comb screw
	Check for signs of lockups in the comb, and see if there is any crack on the fork body	If there is crack, immediately replace fork body
	Check for damages on the comb screw	Replace comb screw
	Check for excessive wear at the tips of the chickenfeet	Replace chicken feet
Occurs in the middle portion	Check to see if the roller and the pin on the crank spindle are working properly	Replace roller
	Check to see if the roller is able to move freely within the groove on the fork body	Replace fork body
	Check to see if readjustment to centre post was made incorrectly which causes the fork body to be in contact with the crank spindle	Re-adjust centre post according to instruction above
Occurs in the rear portion	Excessive wear in the gearbox, which emits an abnormal noise when operating	
	Motor not running properly	Wire breakage
		Switch issues
Motor malfunction	Check wirings and reconnecting	
	Replace motor	

Diagram of connections at back of motor



BQS-1.1 E-SHEAR MACE ELECTRIC HANDPIECE



No.	Code	name	No.	Code	name	No.	Code	name	No.	Code	name	No.	Code	name	
1	BEH-1-01	handle head	8	BYH-1B-09	tension pin	18	BQS-1-01-01	gearbox cover	5	R99	cord protector	1	BHM-1B-18	fork body	
2	BYH-3C-16	center post	9	BYH-3C-12	tension sleeve	(4)	BQS-1-01-01	O' seal	(4)	BQS-1-08	cord assembly	(2)	BWH-4C-06	center post cup	
3	BYH-1B-17	tension nut	10	BYH-4C-01	tension nut	12	Q24 X 1.9	crank shaft	20	BQS-1-06	rear assembly	(1)	BQS-1-0B-01	cord	
4	BYH-1B-06	comb screw	11	BQS-1-01	gearbox	13	BEH-1-02	roller	(1)	BQS-1-06-01	back cover	(2)	LP-20-C	cord connector	
5	BEH-1-2Q	retaining screw	(1)	BQS-1-01-02	gear shaft	14	BYH-1B-20	safety screw	(2)	BQS-1-06-02	retainer	22	BQS-1-07	rear guard	
6	BYH-4C-26B	thread bush	(2)	D608ZZ	bearing	15	BYH-4C-03B	cover cap	(3)	BQS-1-06-03	filter	23	BQS-1-12	insulator	
7	BYH-4C-02	retaining ring	(3)	BQS-1-01-03	spacer	16	BYH-1B-19	motor	(4)	KD05	switch	24	BQS-1-12	chickenfeet (L)	
						17	BQS-1-02	motor	(4)					BQS-1-01-03	chickenfeet (R)