



Instruction Book and Parts List





Warning

If the handpiece is not adequately tensioned, the cutter can fly off.
Adjust the tension nut correctly before starting the motor of your shearing machine.

CONTENTS

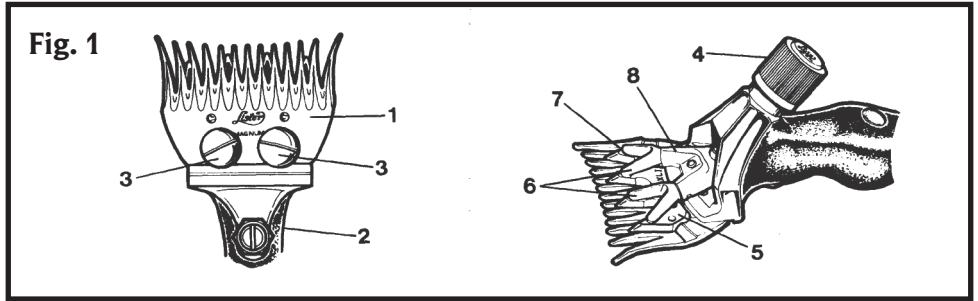
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SETTING COMB & CUTTER (Fig. 1-3)

FITTING THE COMB & CUTTER TO HANDPIECE (Fig. 1)

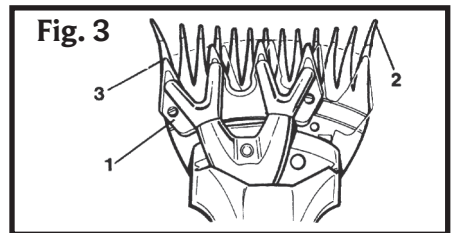
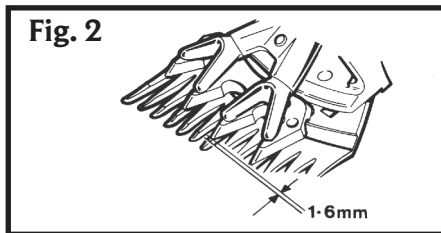
IMPORTANT: ENSURE HANDPIECE IS DISCONNECTED FROM MACHINE DRIVE

Fit Comb (1) to Handpiece (2) and tighten Comb screws (3) lightly. Slacken Tension Nut (4) and fit Cutter (5) between Comb and Prongs (6). Locate prongs in cutter holes (7). While maintaining pressure on Fork (8) with your thumb, screw down the tension nut until light resistance is felt. This holds the cutter in place until the Lead and Throw are set.



SETTING THE LEAD (Fig 2)

Adjust the comb to ensure there is about 1.6mm between cutter tips and the comb face bevel.



SETTING THE THROW (Fig. 3)

Rotating the backjoint cogs, ensure that the Cutter (1) moves evenly over Comb (2) and that the cutter tips (3) overlap the comb end teeth by an equal amount. Adjust the comb left or right to achieve this, but at the same time maintaining the correct lead and setting (1.6mm). Finally, tighten the comb screws with a shearer's screwdriver.

SETTING THE TENSION

With the comb and cutter in the correct position, screw down the tension nut until the drive cogs can only just be turned with your thumb against the cog face. Tension should not be slackened or removed whilst the machine is in operation.

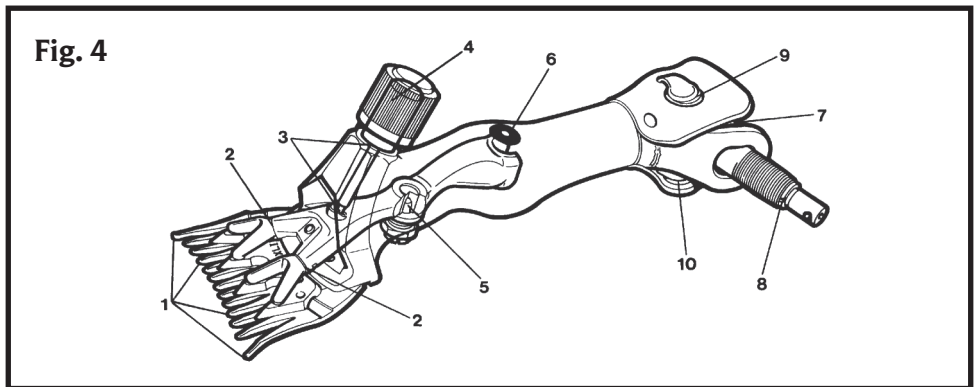
Note:

- Insufficient tension will allow wool to collect under the hollow cutter, which will destroy the cutting edge
- If tension is too heavy, or lubrication is insufficient, the comb and cutter will lose their edges due to overheating. The handpiece will also become hot.
- When the comb and cutter become worn, heavier tension will not help them out. They should be replaced with clean, sharp combs and cutters.
- Oil combs and cutters frequently, and brush them to clear them of dirt and grit.

LUBRICATION (Fig. 4)

USE LISTER R30 OIL OR GOOD QUALITY ENGINE OIL - SAE30 OR MULTIGRADE FREQUENCY - LITTLE AND OFTEN

1. Oil comb and cutter with plenty of oil - frequently
2. Oil fork swivel bearings
3. Oil tension pin both ends - frequently (through mouth of handpiece). Do not pack tension nut with grease as this will cause the tension to diminish when the handpiece is running, and will result in improper cutting
4. Pack sliding sleeve with grease
5. Oil fulcrum post and cup through mouth - frequently
6. Oil crank roller - frequently (through inspection hole on top of body)
7. Oil cogs frequently
8. Oil backjoint and short spindle through slot in short spindle collar - frequently. This is best achieved through ferrule when using a pin drive connection.
9. Oil backjoint pins - frequently
10. At the end of the season, grease the backjoint pins. To gain access, remove the joint spring, pack the caps with fresh grease and then replace the caps and spring.
11. Regularly top-up the oil reservoir in the handpiece with fresh clean oil



CAUTION

1. The handpiece body should NEVER be held in a vice as it may be distorted and the comb face twisted out of square. The handpiece will then not cut properly and the comb face has to be re-levelled at the factory.
2. Do not run or immerse the handpiece in water to clean or cool it. Water wears and rusts the working parts and will wash out the grease and oil which will lead to excessive heat and wear.
3. Do not leave the handpiece or the combs and cutters in a dirty condition, or in a damp place, as they will rust. Clean and oil the handpiece then wrap in a clean dry cloth and store in a dry place. Clean combs and cutters and store them in oil.

MAINTENANCE (Fig. 5)

FORK AND PRONGS

Right and left hand prongs (1 & 2) swivel independently, and must be oiled and cleaned regularly so that they can move freely. They can be removed by rotating through 90 degrees and withdrawing (once the comb and cutter are removed). Alternatively they can be removed by unscrewing the prong retaining spring. Once disassembled, check for wear of the prong cones and pads on the underside, and the prong holes in the fork. Replace if necessary.

1. To remove the fork, follow this procedure;
2. Remove the comb and cutter
3. Remove tension nut and sliding sleeve
4. Remove fork retainer screw
5. Pull tension pin out of fork cup retainer
6. Rotate crank to lowest position. The fork can now be withdrawn over the roller and out through the mouth of the handpiece, leaving the roller in position. If the roller does come off, it can be replaced using a pencil or suitable piece of wire.

IT IS NOT NECESSARY TO ALTER THE FULCRUM POST SETTING.

To replace the fork, reverse the above procedure.

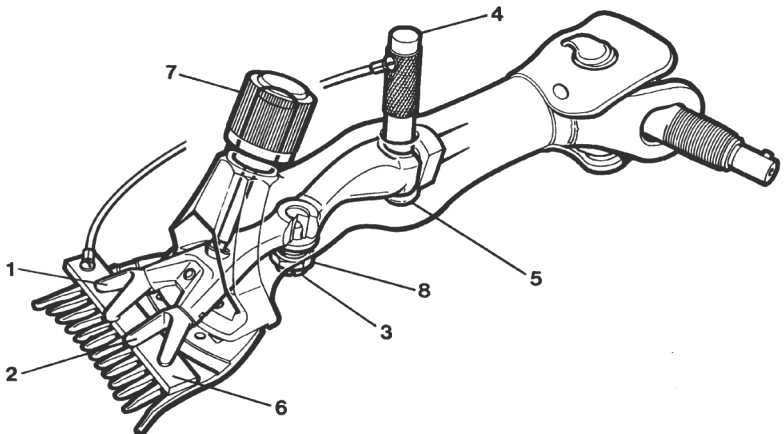
FULCRUM POST

The fulcrum post (3) is correctly set before leaving the factory. However, when wear eventually occurs on the fulcrum post, fulcrum cup and prongs, fit new components and reset the fulcrum post with a setting gauge (4).

FULCRUM POST SETTING PROCEDURE

1. Fit comb to handpiece and turn crank roller (5) to bottom position.
2. Insert gauge block (6) between comb and prongs.
3. Screw down tension nut (7) lightly.
4. Slacken fulcrum post locknut (8).
5. Insert gauge (4) through hole in body to seat on the fork roller hole.
6. Adjust post in or out, maintaining light tension on the tension nut until gauge inner shaft is level with the top of the gauge barrel when the gauge is pressed down onto the fork roller hole.
7. When correctly set, securely tighten locknut (8).

Fig. 5



REMOVING BACKJOINTS TO REPLACE BEARINGS (Fig. 6)

NOTE: Lister recommends that this operation is ONLY to be performed by a competent engineer.

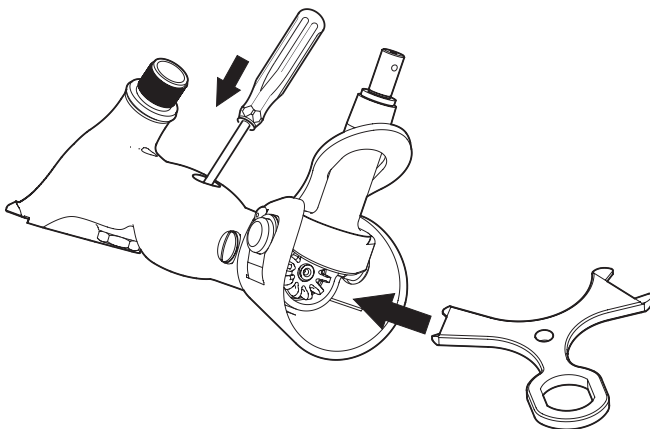
The Backjoint Assembly is removed in the following manner:

Remove the fork assembly as previously described (See Maintenance). Using a screwdriver or similar object, lock the crank through the inspection hole on the top of the body, and unscrew the crank spindle cog using a cog spanner. With the cog removed the backjoint assembly can now be withdrawn from the handpiece body (See Fig.6)

To replace the front bearing, the waved circlip and body seal must be removed. Then, using a screwdriver, tap the slots of the bush to rotate it 90°, in the barrel until slots are vertical. This releases the bearing retainer ring. Using a drift through the body mouth, push the crankspindle, bearing and sleeve out of the back of the handpiece. Unscrew crank head and replace bearing. Using a mandrel carefully align and push back into the body. Replace the bearing retainer, sleeve bush, waved circlip and body seal.

To replace the backjoint bearing, remove the cog and spindle. Take the backjoints apart from each other. Gently tap out the worn bearing using a drift and replace using a mandrel taking care to align the bearing perfectly with the housing.

Fig. 6



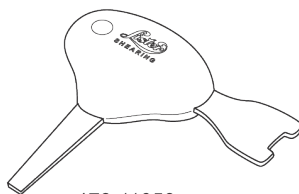
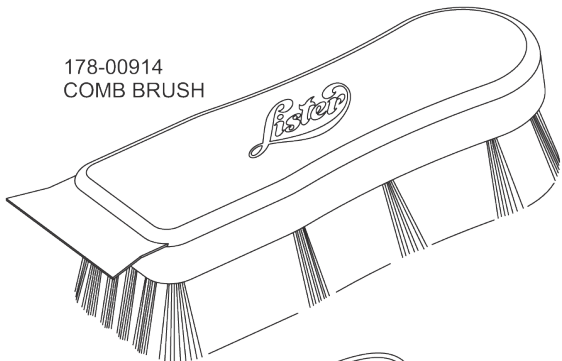
WIDE OR NARROW COMB, CUTTER & FORK

If the Comb, Cutter and Fork are to be changed from Wide to Narrow or vice versa, follow this procedure:

1. Remove the comb and cutter
2. Unscrew the fork retainer screw, remove the tension nut and sliding sleeve
3. Pull the tension pin out of the retaining spring
4. Turn crank to bottom position, and withdraw the fork over the roller, leaving it in position. It is not necessary to alter the fulcrum post setting.
5. If the roller comes off or needs replacing, it can be refitted onto the crank using a pencil or piece of wire. Place the roller on the end of a pencil and feed it through the mouth of the body and transfer it onto the crank pin
6. Keeping the crank at the lowest position, insert the replacement fork and fit over the roller.
7. Replace the fork retainer, tension pin (ball end in retaining spring), sliding sleeve and tension nut.
8. Fit the appropriate comb and cutter.

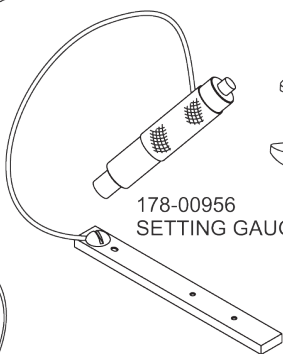
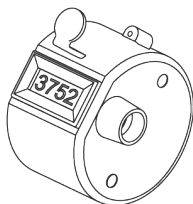
Fig. 7 SERVICE EQUIPMENT & TOOLS

178-00914
COMB BRUSH



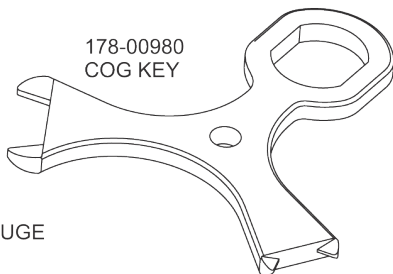
178-11050
SAFETY
SCREWDRIVER

178-10720
TALLY COUNTER

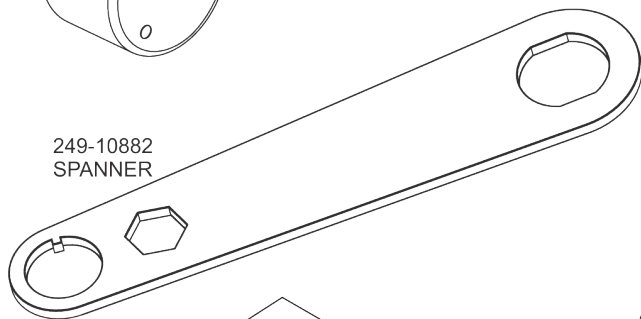


178-00956
SETTING GAUGE

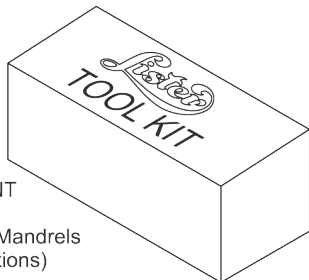
178-00980
COG KEY



249-10882
SPANNER



249-17360
BEARING
REPLACEMENT
TOOL KIT
(Includes Drift/Mandrels
and full Instructions)



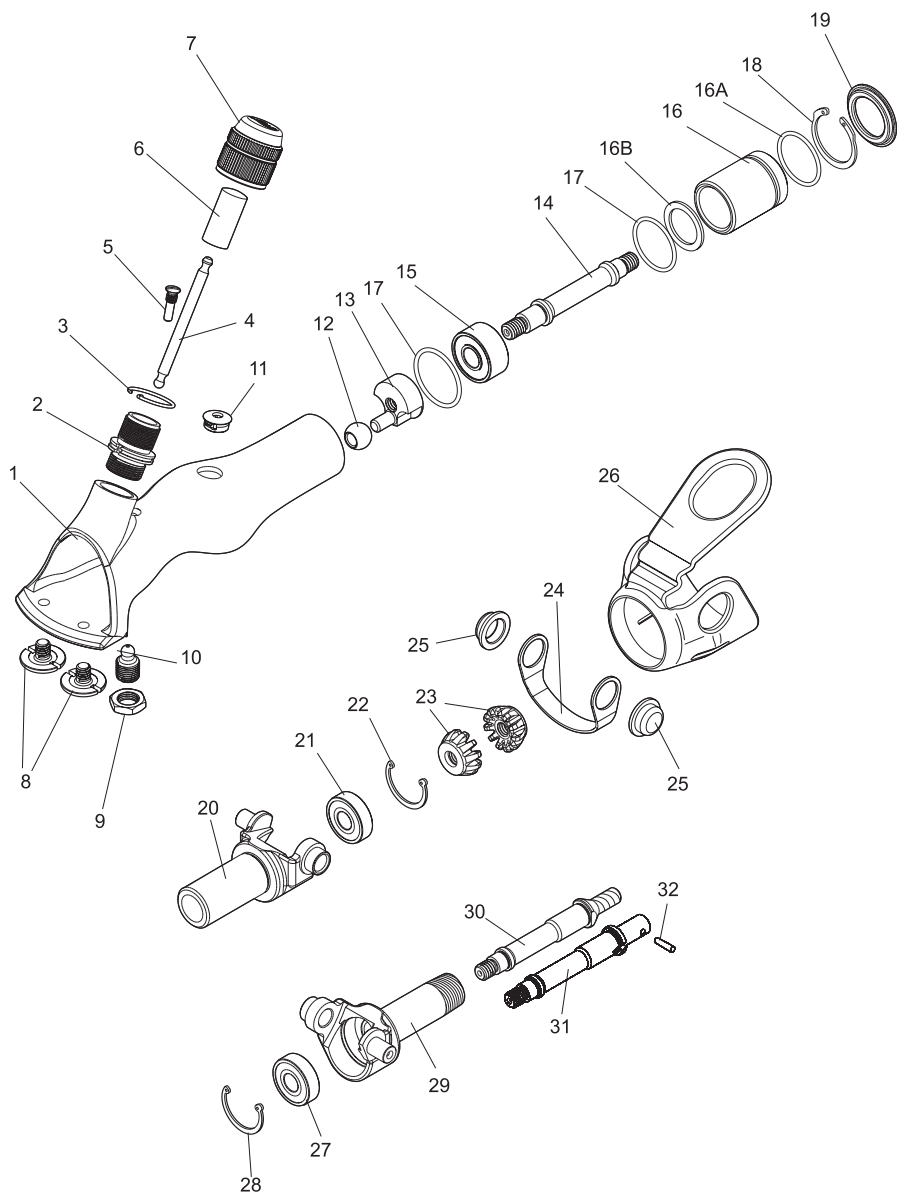
178-10790
OIL BOTTLE



NITRO HANDPIECE (Fig. 8)

Item	Part No	Description	No. Per Set
1.	249-17620	Body/Lid bush assembly (includes item 2)	1
2.	249-15030	Lid Bush	1
3.	249-00020	Tension Lock Ring	1
4.	249-00008	Tension Pin	1
5.	249-17240	Fork Retaining Screw	1
6.	249-00010	Sliding Sleeve	1
7.	249-17290	Tension Nut	1
8.	249-17430	Safety Comb Screw	2
9.	249-10730	Adjusting Locknut	1
10.	249-00161	Fulcrum Post	1
11.	249-17640	Inspection Hole Plug	1
12.	157-00151	Crank Roller	1
13.	249-17080	Crank Head	1
14.	249-17070	Crank Spindle	1
15.	249-17030	Crank Spindle Ball Bearing	1
16.	249-17042	Sleeve Bush	1
16A.	SH27586A	O-Ring for Sleeve Bush	1
16B.	249-17670	Spacer for Sleeve Bush	1
17.	249-17680	O-Ring for Bearing	1
18.	SH37052A	Flat Circlip	1
19.	249-17090	Handpiece Body Seal	1
20.	249-17100	Backjoint Shorthalf Assembly (Includes items 21 & 22)	1
21.	803105	Backjoint Ball Bearing	1
22.	249-17440	Internal Circlip	1
23.	278-00072	11 Tooth Cog	2
24.	249-16210	Joint Spring	1
25.	249-16200	Joint Cap	2
26.	249-17630	Joint Guard	1
27.	803105	Backjoint Ball Bearing	1
28.	249-17440	Internal Circlip	1
29.	249-17130	Backjoint Longhalf Assembly (Includes items 27 & 28)	1
30.	249-17150	Splined Spindle (Worm Drive)	1
31.	249-17170	Short Spindle Assy (Pin Drive) (Includes item 32)	1
32.	154-00034	Short Spindle Pin	1

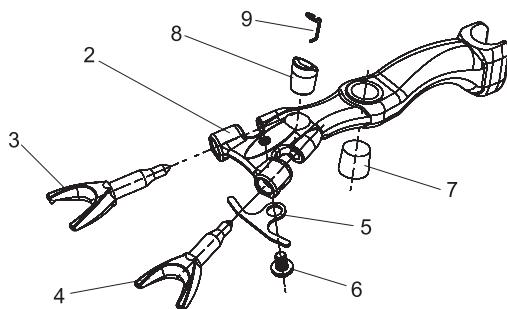
Fig. 8



WIDE FORK PARTS LIST (Fig. 9)

Item	Part No.	Description	Qty
1.	249-17200	Wide fork Assembly (Comprising items 2-9)	1
2.	249-17210	Wide Fork	1
3.	249-17220	Wide Prong RH.	1
4.	249-17230	Wide Prong LH.	1
5.	249-10220	Wide Prong Retainer	1
6.	249-15970	Screw M4	1
7.	249-00006	Fulcrum Cup	1
8.	249-00017	Tension Pin Cup	1
9.	249-00032	Tension Pin Retaining Spring	1

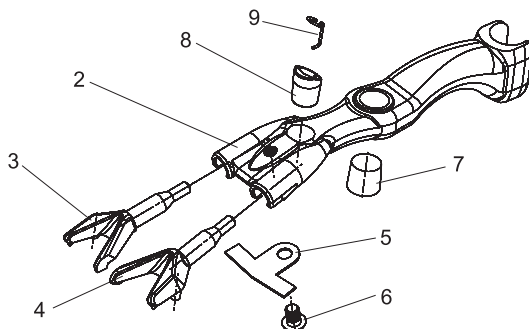
Fig. 9



NARROW FORK PARTS LIST (Fig. 10)

Item	Part No.	Description	Qty
1.	249-10820	Narrow Fork Assembly (Comprising items 2-9)	1
2.	249-10790	Narrow Fork	1
3.	249-00018/002	Narrow Prong RH.	1
4.	249-00019/002	Narrow Prong LH.	1
5.	249-00026	Narrow Prong Retainer	1
6.	249-00014	Screw M4	1
7.	249-00006	Fulcrum Cup	1
8.	249-00017	Tension Pin Cup	1
9.	249-00032	Tension Pin Retaining Spring	1

Fig. 10



ORDERING SPARES

When ordering spare parts, always quote the PART NUMBER and DESCRIPTION to avoid confusion. Whenever possible quote the HANDPIECE SERIAL NUMBER which will be found on the underside of the body.

WARRANTY AND REPAIR

Items requiring repair or attention under warranty should be returned to the dealer from whom it was purchased. In case of difficulty contact the Lister Shearing factory:

Lister Shearing Equipment Limited
Long Street, Dursley, Gloucestershire. GL11 4HR
Tel: +44 (0) 1453 544830
E-mail: sales@lister-shearing.com



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