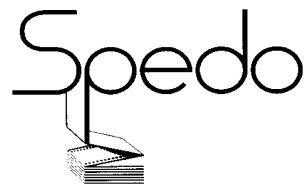


Spedo 2600 Forms Cutter

SERVICE MANUAL

Issue 2

Part Number SP 007 011



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Spedo 2600 Forms Cutter History Sheet

Manual Issue	Date	Changes Incorporated
1	July 2012	First Edition
2	January 2013	Change of Address

Spedo 2600 Forms Cutter

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Unpack

Unpack the equipment and examine it thoroughly to ascertain whether any damage has occurred in transit. Report immediately any such damage to the agent or manufacturer. Retain the packing should further transportation be necessary.

All Goods

All goods manufactured by the Company are guaranteed to the extent hereafter mentioned against defects arising from faulty material or workmanship subject to the goods not having suffered maltreatment or interference. The Company's liability under this guarantee is limited to replacing any part or parts found defective within a period as laid down in Company instructions after the date of delivery or installation.

Other Goods

If goods not of the Company's manufacture are ordered, the guarantee of that company is to be accepted.

Descriptive Matter

Descriptive matter, illustrations, dimensions and weights issued by the Company are typical and shall not be held as binding.

Patterns and Designs

The Company reserves the right to alter patterns and designs without notice.

First Published March 2012

We have taken every care in the preparation of this manual. If there are any inaccuracies, ambiguities or omissions, Spedo UK Limited and its consultants and distributors cannot accept responsibility for any loss or damage these errors may cause.

Safety Measures

This instruction manual contains certain **WARNING** and **CAUTION** notices which must be followed by the user to ensure safe operation and to retain the equipment in a **SAFE** condition.

All users of the equipment described in this manual **MUST** have received adequate training in its use and application in order to ensure **SAFE AND PROPER USE**.

Any adjustment, maintenance or repair of the opened apparatus under voltage shall be carried out only by a skilled person who is **AWARE OF THE HAZARD INVOLVED**.

Spedo 2600 Forms Cutter

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Maintenance Procedures

WARNINGS

Electrical

Before starting any maintenance, ensure that the forms cutter has been disconnected from the main electrical supply.

Clothing & Jewellery

Never operate the forms cutter when wearing items of loose clothing or other decorative jewellery, such as necklaces or bracelets as they could become entrapped in the machinery and cause injury.

Cutting blades

The putting into operation of the machine, especially the actuation of the cross-cut forms cutter blade pre-supposes that the forms cutter has been correctly installed by a Spedo trained technician. The first time that the cross-cutting blade is to be actuated, it must only be carried out manually by a Spedo trained technician.

The angular blades on the edge trimmers, the centre cutter and the cross-cutter are extremely sharp and care should be taken to protect fingers when the protective cover has been opened.

The manufacturer is not liable for damage caused by non-observance of the procedures given in this manual. Never touch the working area of the longitudinal cross-cutting blade. This is applicable especially when standing at the stacker end, when the motor is running. If any malfunction occurs, contact the Customer Services Department of Spedo or their agent for assistance. **DO NOT ATTEMPT** to correct any mechanical malfunction that occurs unless qualified to do so.

Maintenance Intervals

Operator Maintenance procedures

This section must be completed by a competent operator or maintenance engineer

Service Engineer's procedures

This section must only be completed by a fully trained Spedo technician

- Section 1 – Edge Trimmer Units
- Section 2 – Centre Cutter Unit
- Section 3 – Cross Cut Blades
- Section 4 - Drive & Pressure Head Units
- Section 5 – Blade Drive System
- Section 6 – In-feed Section
- Section 7 – Fault Finding

The following table shows which sections of the ‘Service Engineers Tasks’ are to be completed at each 5 million cycle interval. Once 50 million cycles are reached, start again from 5 million

Service Table

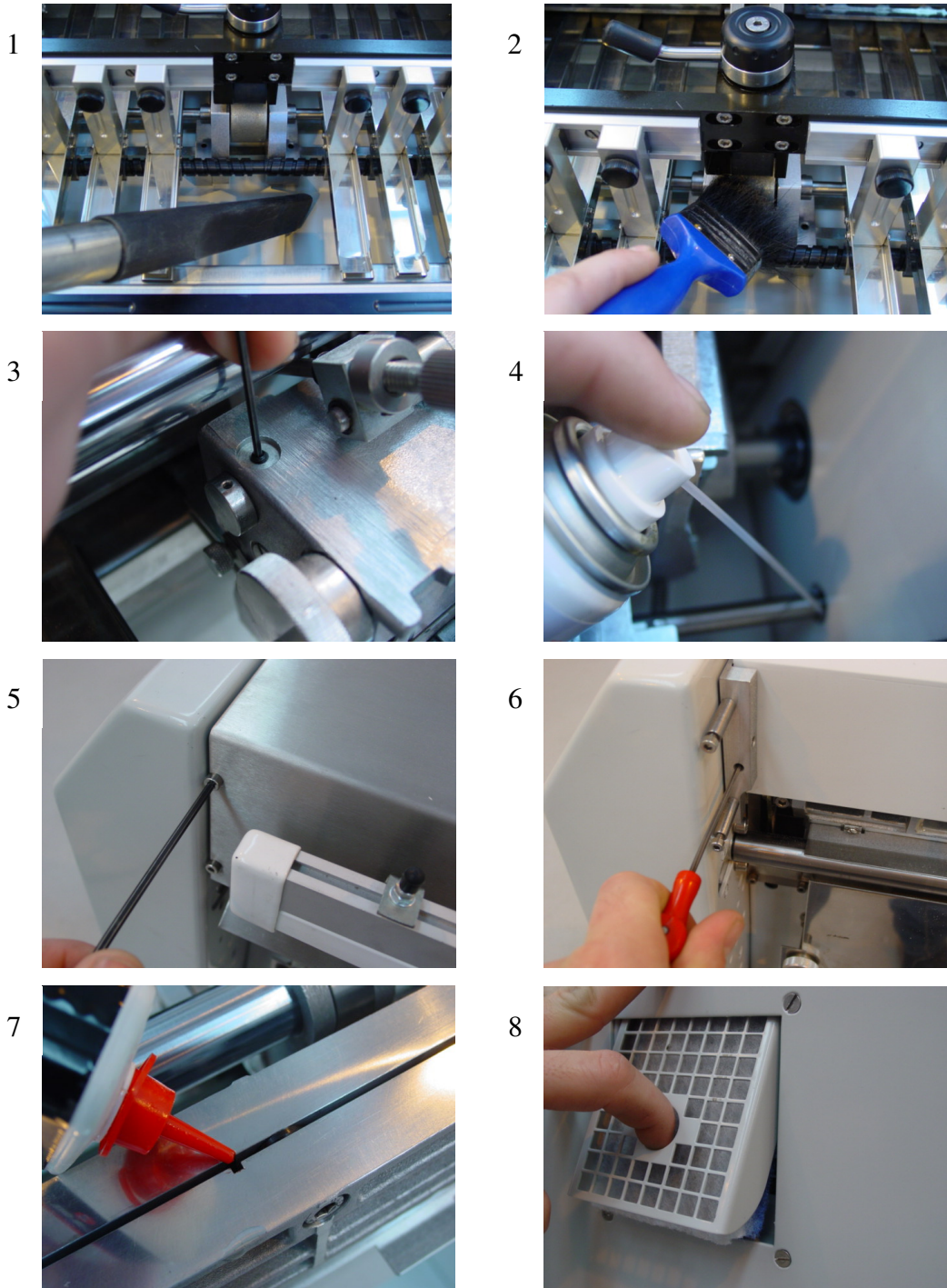
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3	*	*	*	*	*	*	*	*	*	*
4					*					*
5					*					*
6			*			*			*	

Operator Maintenance procedures

To maintain your machines optimum performance the following tasks must be completed daily.

Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure.



1. Open the safety cover to gain access to the paper feed section. Using a vacuum cleaner to remove any build-up of dust. (Fig .1)

Operator Maintenance procedures (continued)

2. With a soft hair brush, remove any compressed paper dust build-up on the drive wheel. (Fig. 2) If the build-up of dust is so compressed that a soft hair brush alone will not remove it, you can use a soft grade brass wire brush. **NOTE: Do not use a steel wire bush or any form of abrasive to clean the drive wheel surface.**
3. Remove, and lubricate the edge trimmer oil wicks (*one per edge trimmer*) with light machine oil. Refit the oil wicks once oil has soaked in. (Fig. 3) **NOTE: Do not over oil the wicks as this may cause marks on the edges of the forms.**
4. Lubricate the drive wheel drive shaft bush. We recommend using light machine oil, in an aerosol form to ease application. (Fig. 4)
5. Remove the blade guard. (Fig. 5) **WARNING Exposed blades proceed with caution.**
6. Loosen the two grub screws which retain the pressure head mount plate, (Fig. 6) and lift the assembly clear of the machine.
7. Apply only one drop of light machine oil into each of the oil channels on the blade guide. (Fig. 7) **NOTE: Do not over oil the guide as this may cause marks on the end of the forms.**
8. Remove the fan filter, (Fig. 8) and clean using a vacuum cleaner. **WARNING Do not immerse the filter in water to clean.**

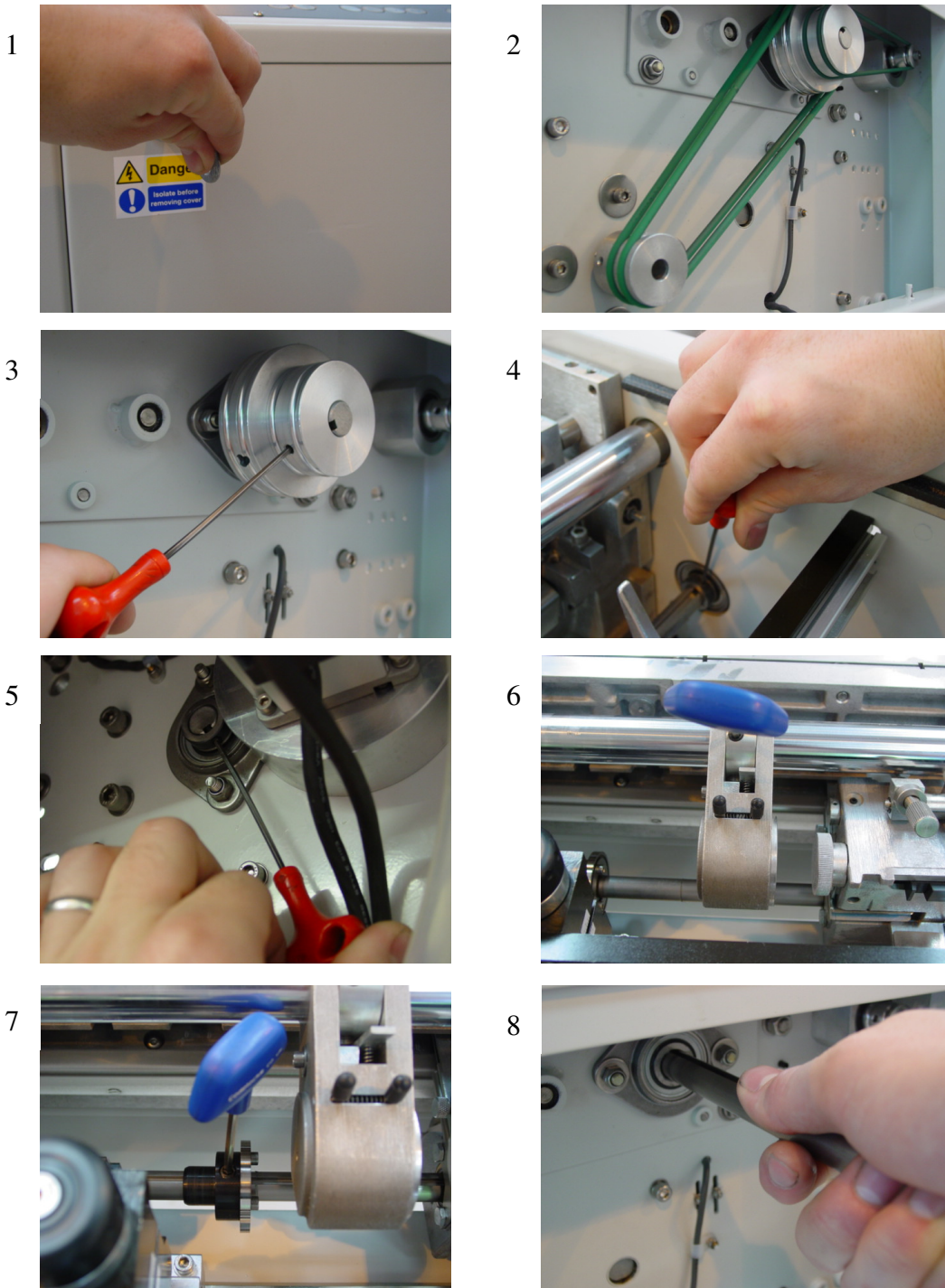
Service Engineer's Procedures

To prevent excess component wear and damage to motors and drivers, the tasks shown in the service table must be completed at each 5,000,000 cycle interval

Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure

Section 1a - Edge Trimmer Unit removal

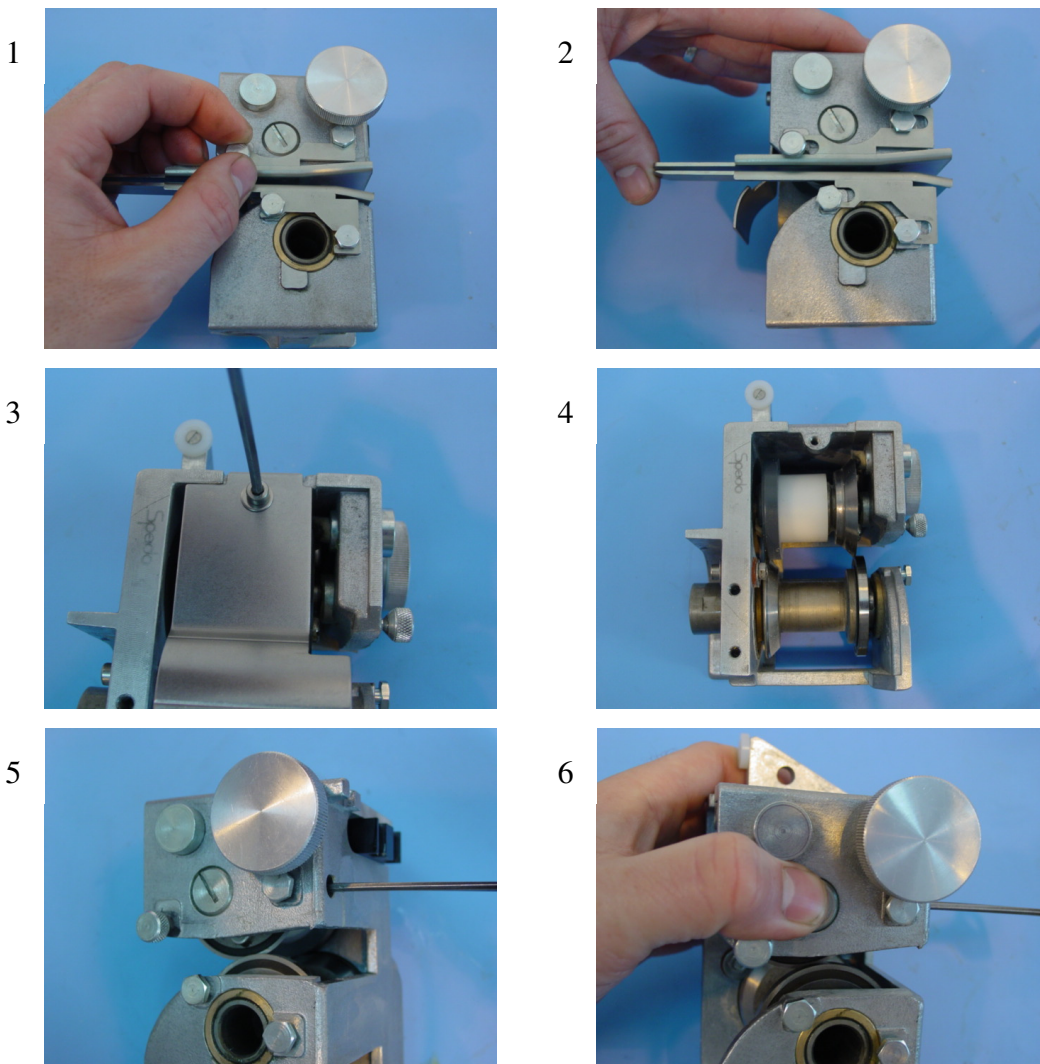


Section 1a - Edge Trimmer Unit removal (continued)

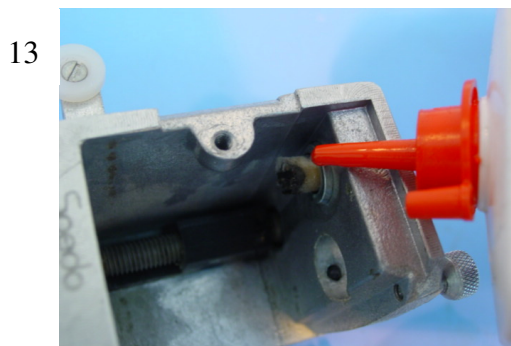
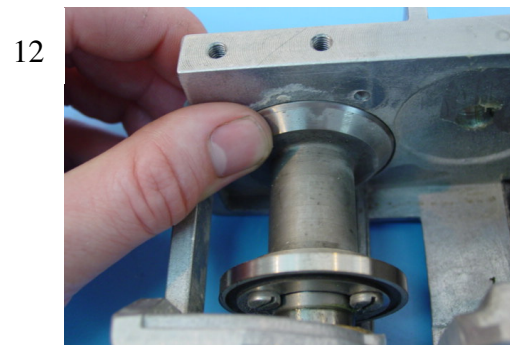
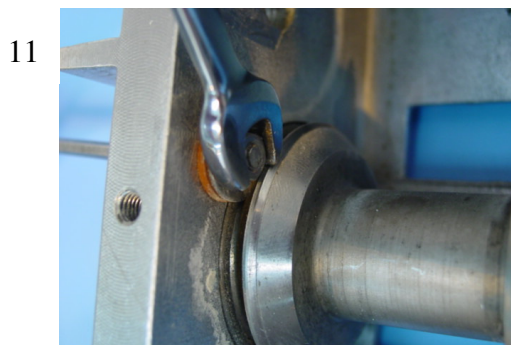
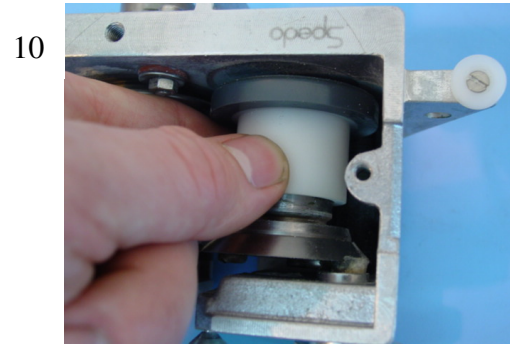
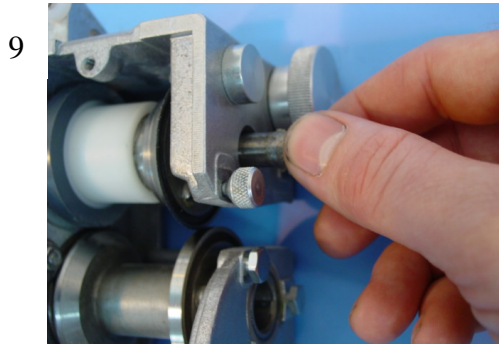
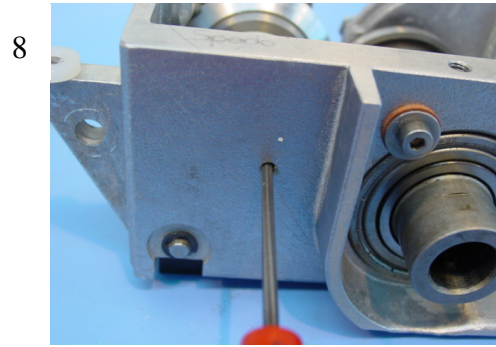
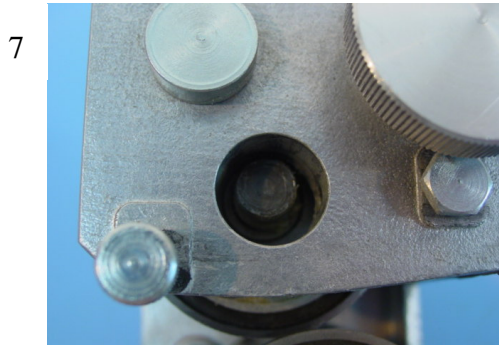
1. Remove the outer service door. (Fig. 1)
2. Remove the edge trimmer and kick-out roller drive belts (Fig. 2) and pulleys. (Fig. 3)
3. Loosen the grub screw that retains the edge trimmer shaft into the bearings, there is one at each end of the shaft. (Fig. 4 & 5)
4. Loosen the grub screw that holds the centre cutter arm, slide the arm to one side allowing clear access to the lower centre cutter hub. (Fig. 6)
5. Loosen the lower centre cutter hub and slide it clear of its support. (Fig. 7)
6. Carefully remove the edge trimmer drive shaft by gently pulling it towards you. The edge trimmer units and centre cutter lower hub will need to be supported during this process. Failure to do so may result in the shaft becoming difficult to remove. (Fig. 8)

WARNING Do not force the drive shaft in either direction. If the shaft is proving difficult to remove, examine the shaft for damage.

Section 1b - Edge Trimmer Unit strip



Section 1b - Edge Trimmer Unit strip (continued)



1. Remove the paper guide by loosening the knurled screw and push the guide out from the rear. (Fig. 1 & 2)
2. Remove the paper deflector plate to expose the edge trimmer blades. (Fig. 3 & 4) **WARNING** Even blades that have been used may still be sharp so proceed with caution.
3. Loosen the grub screw in the front of the edge trimmer which retains the eccentric bush. (Fig. 5) **WARNING** The eccentric bush is spring loaded so you must keep your thumb over the top while removing the grub screw.(Fig. 6)

Section 1b - Edge Trimmer Unit strip (continued)

4. Once the eccentric bush and spring have been removed, you are able to see the upper hub axle. (Fig. 7)
5. The axle is removed by pushing it out from the opposite end. You may have to apply a small amount of pressure, using a pin punch. (Fig. 8)
6. Once the end of the axle is exposed you will be able to remove it from the edge trimmer unit. (Fig. 9) **WARNING The upper hub is no longer retained and may fall out.**
7. Carefully remove the upper hub. (Fig. 10)
8. Remove the lower hub retainer and carefully remove the hub. (Fig. 11) You may need to apply a small amount of pressure to the drive edge of the lower hub. (Fig. 12)
9. Apply a small amount of light machine oil to the blade wick. (Fig. 13)
10. Remove any dust build up in the casting with a soft hair brush, or airline. (Fig. 14)

Section 1c - Edge Trimmer Unit rebuild

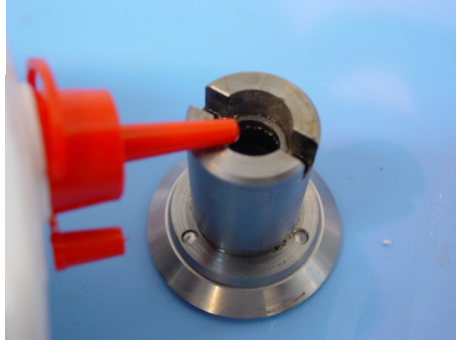


Section 1c - Edge Trimmer Unit rebuild (continued)

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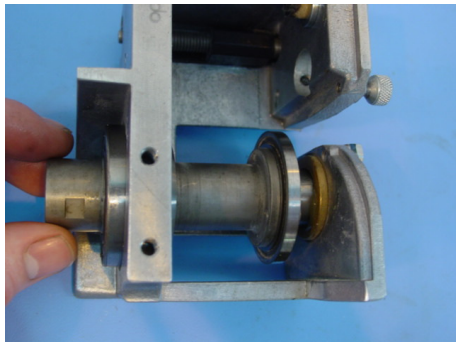
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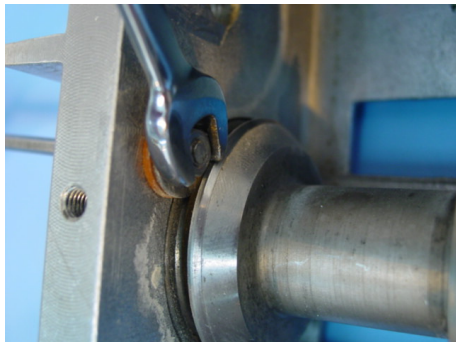
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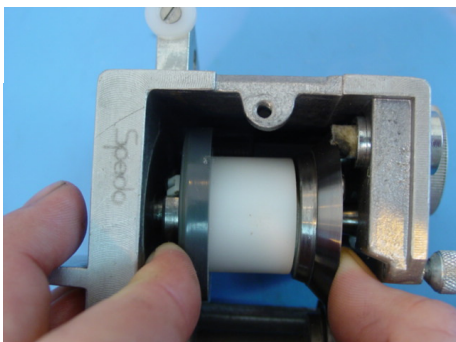
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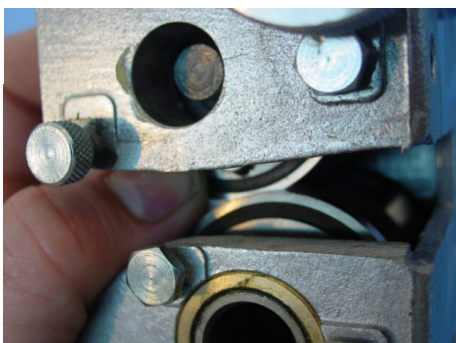
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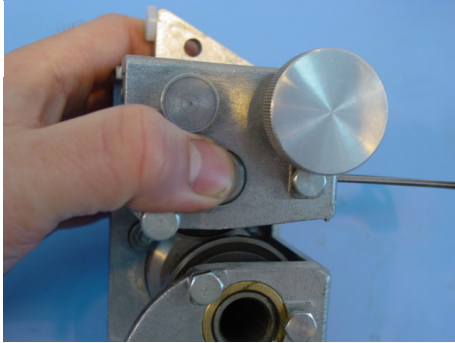


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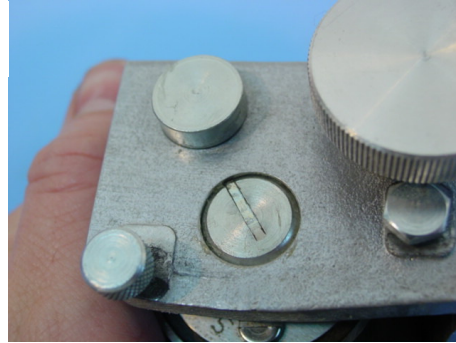


Section 1c - Edge Trimmer Unit rebuild (continued)

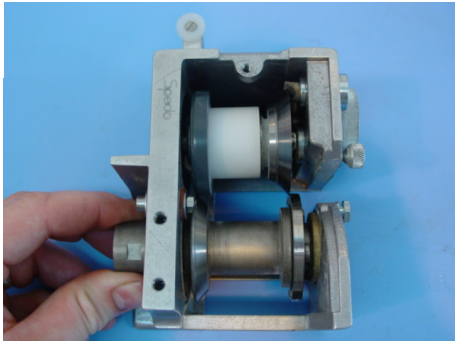
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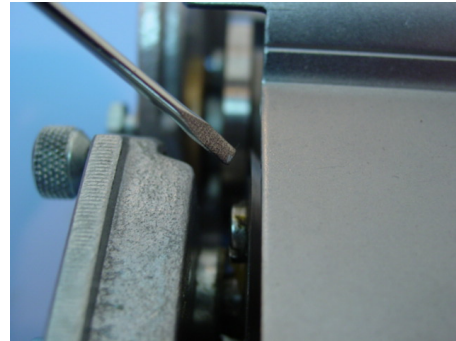
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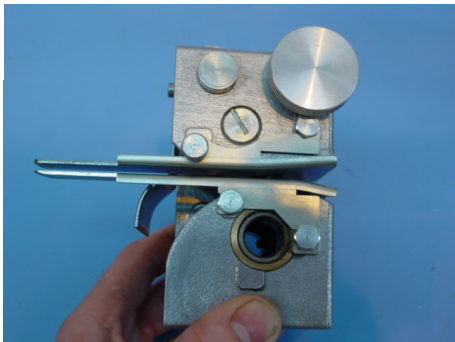
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1. Remove the lower edge trimmer blade. (Fig. 1) This blade has two cutting faces. If one face is good, turn the blade so that the good face is to the inside. (Fig. 2)
2. Remove the friction hub, (Fig. 3) and the pressure springs. (Fig. 4) Then refit the friction hub, (Fig. 5) this will give you something to hold as you undo the upper edge trimmer blade. (Fig. 6) **WARNING Hold the blade as shown, failing to do so may result in injury.**
3. Replace the upper blade. Always fit a new upper blade if you either turn, or replace the lower blade (Fig. 7)
4. Apply a small amount of light machine oil to the upper hub wick. (Fig. 8)
5. Refit the springs and friction hub to the upper hub. (Fig. 9)
6. Apply HMP grease to the bearing surface of the lower hub. (Fig. 10)
7. Refit the lower hub and lower hub retainer. (Fig. 11 & 12)
8. Apply HMP grease to the upper hub axle. (Fig. 13)

Section 1c – Edge Trimmer Unit rebuild (continued)

9. Compress the upper hub and fit into position within the edge trimmer housing. With the upper hub still compressed insert the axle. This can be very tricky and may take several attempts. (Fig. 14) **WARNING** The upper blade is very sharp. Care must be taken when refitting the upper hub.
10. With the upper hub still compressed, move the upper hub down behind the lower hub to create an overlap. (Fig. 15)
11. Refit the eccentric bush and spring. Once the bush is located into the edge trimmer housing, you can release the upper hub. Keep your thumb over the eccentric bush as the spring will try to dislodge it. (Fig. 16)
12. With your thumb still positioned over the eccentric bush, tighten into place. (Fig. 17)
13. Loosen the grub screw holding the eccentric bush by approximately ¼ turn. Then with a screw driver adjust the eccentric bush to the position shown. Retighten the grub screw. The head of the eccentric bush should now be approximately flush with the side of the edge trimmer housing. (Fig. 18)
14. Cycle the edge trimmer unit by hand. There should be no binding or stiffness in the operation. (Fig. 19) **WARNING** Keep your fingers clear as you cycle the blades.
15. Refit the paper deflector plate. (Fig. 20) **NOTE** the deflector should be positioned approximately 1mm from the blade cutting edge.
16. Refit the paper guide. (Fig. 21)
17. The edge trimmer units can now be fitted back into the machine. To refit the edge trimmer units complete Section 1a ‘Edge Trimmer Shaft Removal’ in reverse order. **NOTE: It is recommended that anti-fret compound is used on the shaft as it is reinserted into the bearings either end of the drive shaft.**

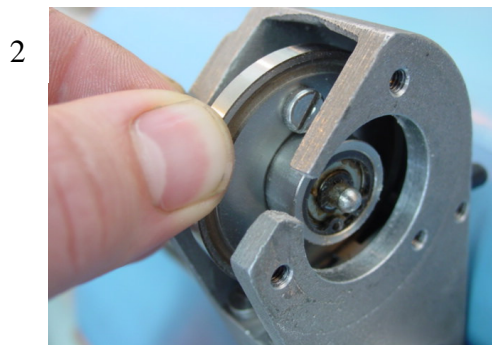
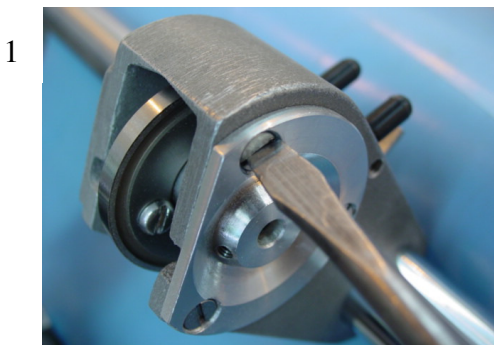
Section 2a – Centre cutter lower hub removal

Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure.

1. Remove the lower centre cutter hub by completing Section 1a ‘Edge Trimmer Shaft Removal’

Section 2b – Centre cutter arm service



Section 2b - Centre cutter arm service (continued)

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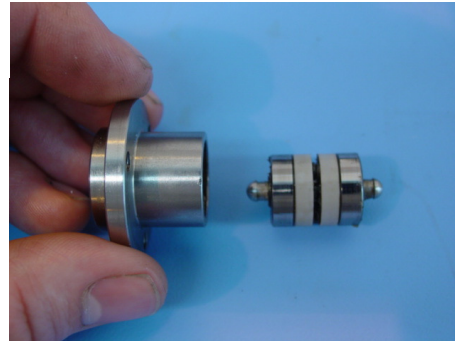
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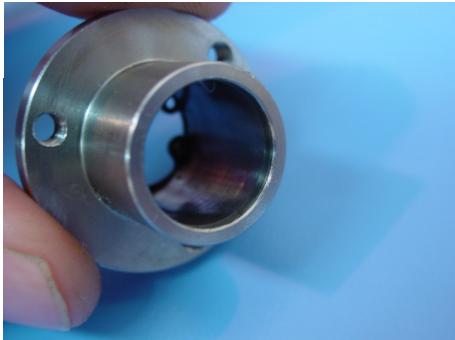
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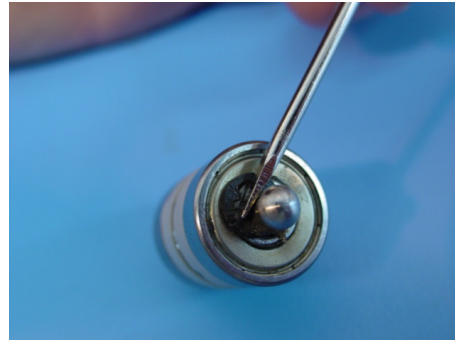
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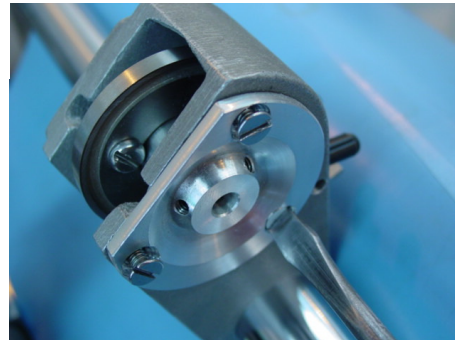
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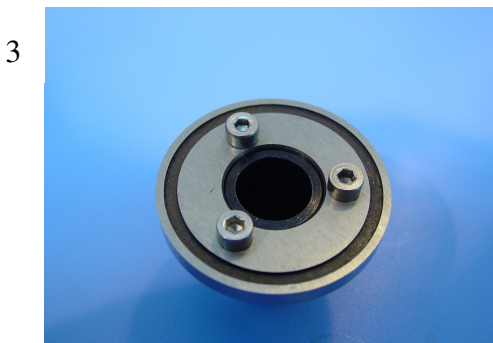
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Section 2b – Centre cutter arm service (continued)

1. Remove the centre cutter adjustment plate. (Fig. 1) **WARNING** The upper hub is no longer retained and may fall out.
2. Remove the upper centre cutter hub. (Fig. 2) **WARNING** Even blades that have been used may still be sharp so proceed with caution.
3. Remove the centre cutter blade. (Fig. 3 & 4)
4. Remove one of the circlips on the upper centre cutter hub. (Fig. 5) **WARNING** Safety goggles must be worn when removing circlips.
5. The bearing assembly should now slide out of the upper centre cutter hub. (Fig. 6)
6. Inspect the condition of the bearing surface on the inside of the upper centre cutter hub. It is normal for there to be a small number of marks on the bearing surface. However if there are any deep scores this will affect the centre cutter operation. (Fig. 7)
7. Remove the circlip from the bearing assembly, (Fig. 8) and remove the axle. (Fig. 9) Check the bearings for signs of wear, then lubricate the springs and axle with HMP grease, and reassemble into the hub. (Fig. 10)
8. Refit the centre cutter blade. This blade has two cutting faces. If one face is good, turn the blade so that the good face is on the side that the centre cutter is adjusted to cut on. (Fig. 11) *See Section 2d ‘Set the Centre Cutter’ for instruction on how to change the side the centre cutter cuts on.*
9. Refit the centre cutter adjustment plate. If you haven’t changed any settings on the adjustment plate, then you will be able to simply refit, without further adjustment. (Fig 12)

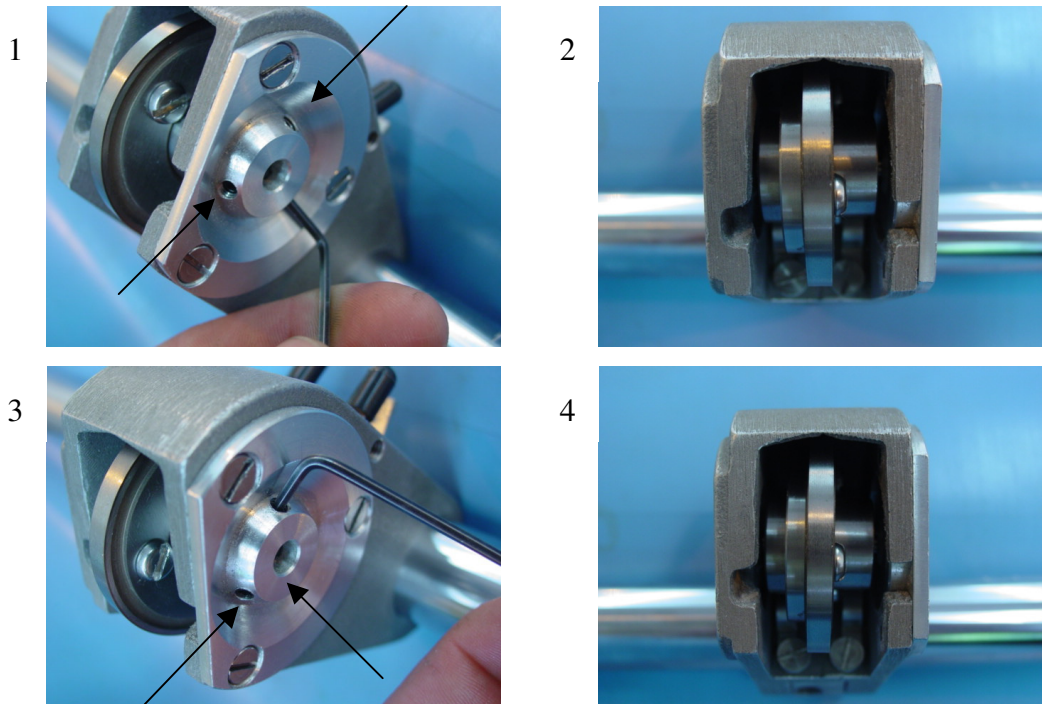
Section 2c – Centre cutter lower hub blade change



Section 2c – Centre cutter lower hub blade change (continued)

1. Remove the blade from the lower centre cutter hub. Use a cloth to wrap the blade to protect your hand. (Fig. 1 & 2) **WARNING Even blades that have been used may still be sharp so proceed with caution.**
2. Refit the centre cutter blade. This blade has two cutting faces. If one face is good, turn the blade so that the good face is on the side that the centre cutter is adjusted to cut on. (Fig. 3) See Section 2d ‘Set the Centre Cutter’ for instruction on how to change the side the centre cutter cuts on.

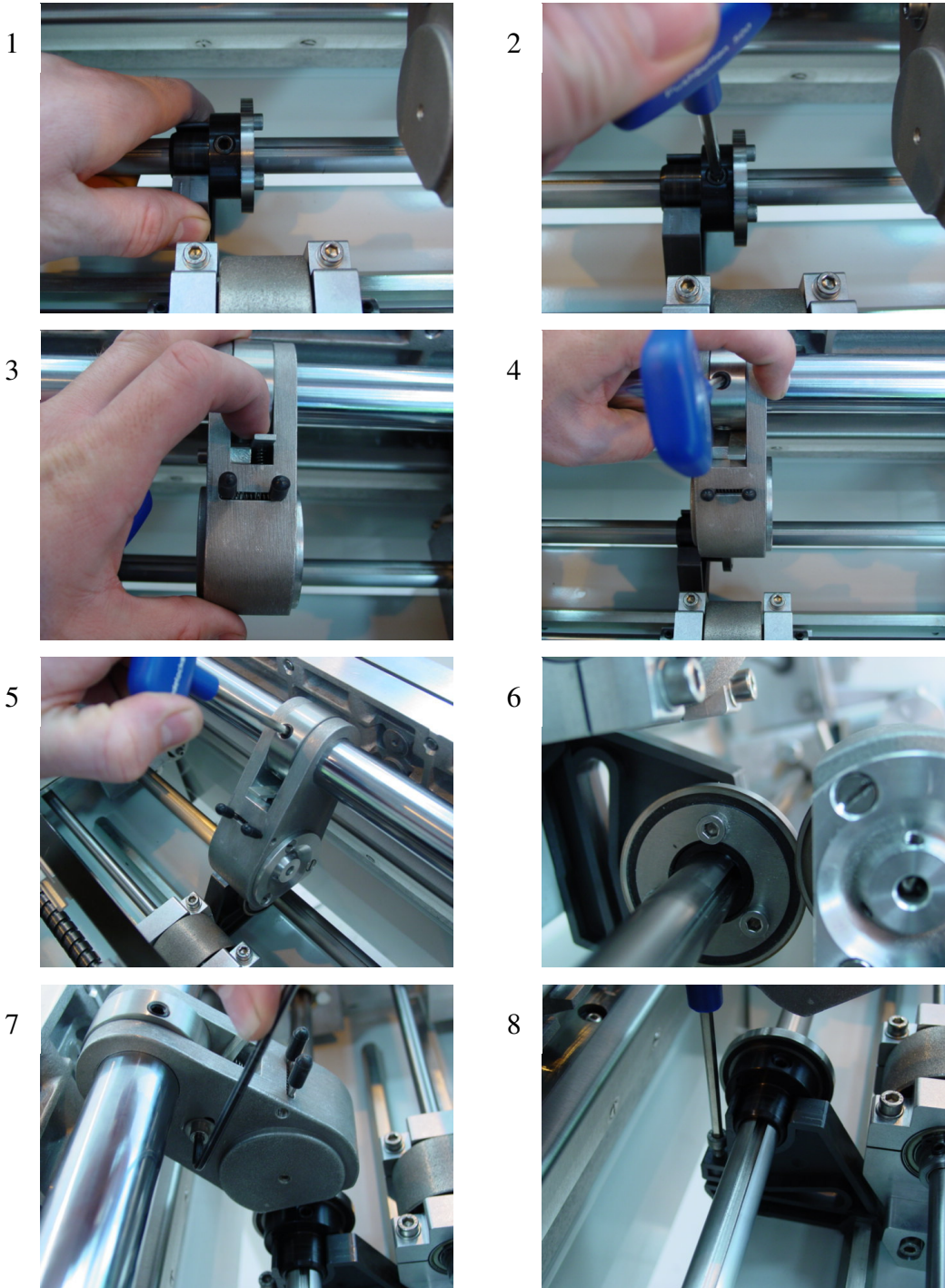
Section 2d – Centre cutter arm adjustment



1. To adjust the centre cutter arm to cut on the right side of the lower centre cutter blade. First loosen the two grub screws marked (Fig. 1). Tighten the rear grub screw all the way in then loosen by $\frac{1}{4}$ turn. Then retighten the two marked grub screws. This will angle the blade as shown in Fig. 2.
2. To adjust the centre cutter arm to cut on the left side of the lower centre cutter blade. First loosen the two grub screws marked (Fig. 3). Tighten the top grub screw all the way in then loosen by $\frac{1}{4}$ turn. Then retighten the two marked grub screws. This will angle the blade as shown in Fig. 4.

Section 2e - Centre cutter setting

1. Refit the lower centre cutter hub by completing Section 1a 'Edge Trimmer Shaft Removal' in reverse order. **NOTE: It is recommended that anti-fret compound is used on the shaft as it is reinserted into the bearings either end of the drive shaft.**



2. Set the centre cutter lower hub so that the cutting edge of the blade is approximately central. (Fig. 1) Tighten the hub in place. (Fig. 2) *During this section I will be setting the centre cutter arm to cut on the right side of the lower centre cutter blade. This is our standard factory setting.*

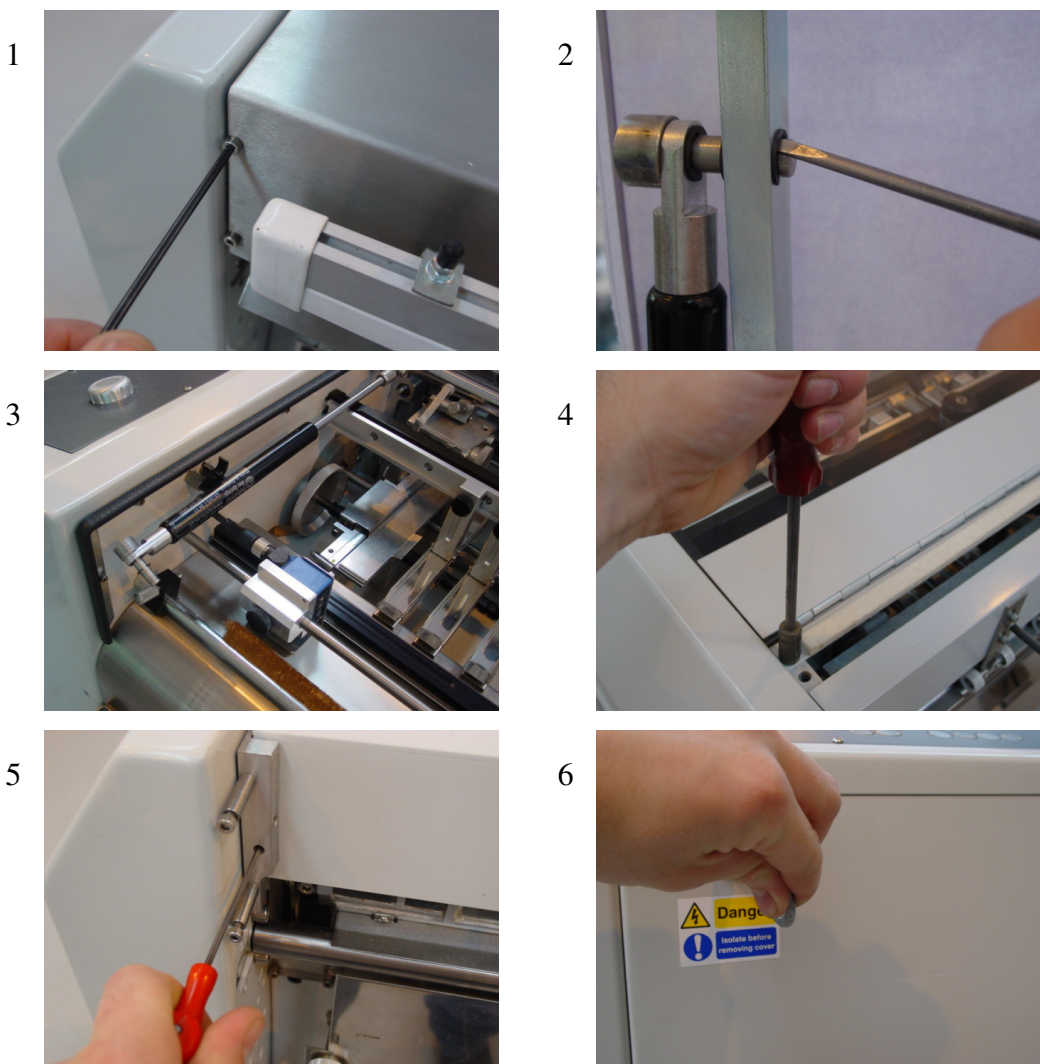
Section 2e – Centre cutter setting (continued)

3. Disengage the centre cutter arm. (Fig. 3) Slide it up against the lower centre cutter hub, apply a little pressure and tighten in place. (Fig. 4 & 5)
4. Check the centre cutter arm blade and lower centre cutter blade overlap. This must be no less than 0.5mm or exceed 1mm of overlap. (Fig. 6) Once you are satisfied that the overlap is correct, tighten the centre cutter arm in position (Fig. 7)
5. Check the setting of the lower centre cutter hub support. This should just cradle the hub and not act as a bearing surface; equally there shouldn't be a visible gap between it and the lower centre cutter hub. Adjust accordingly. (Fig. 8)
6. Test the centre cutter operation, if the cut isn't clean complete Section 2d 'Centre Cutter Arm Adjustment'.

Section 3a – Cross cut blade guard removal

Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure.

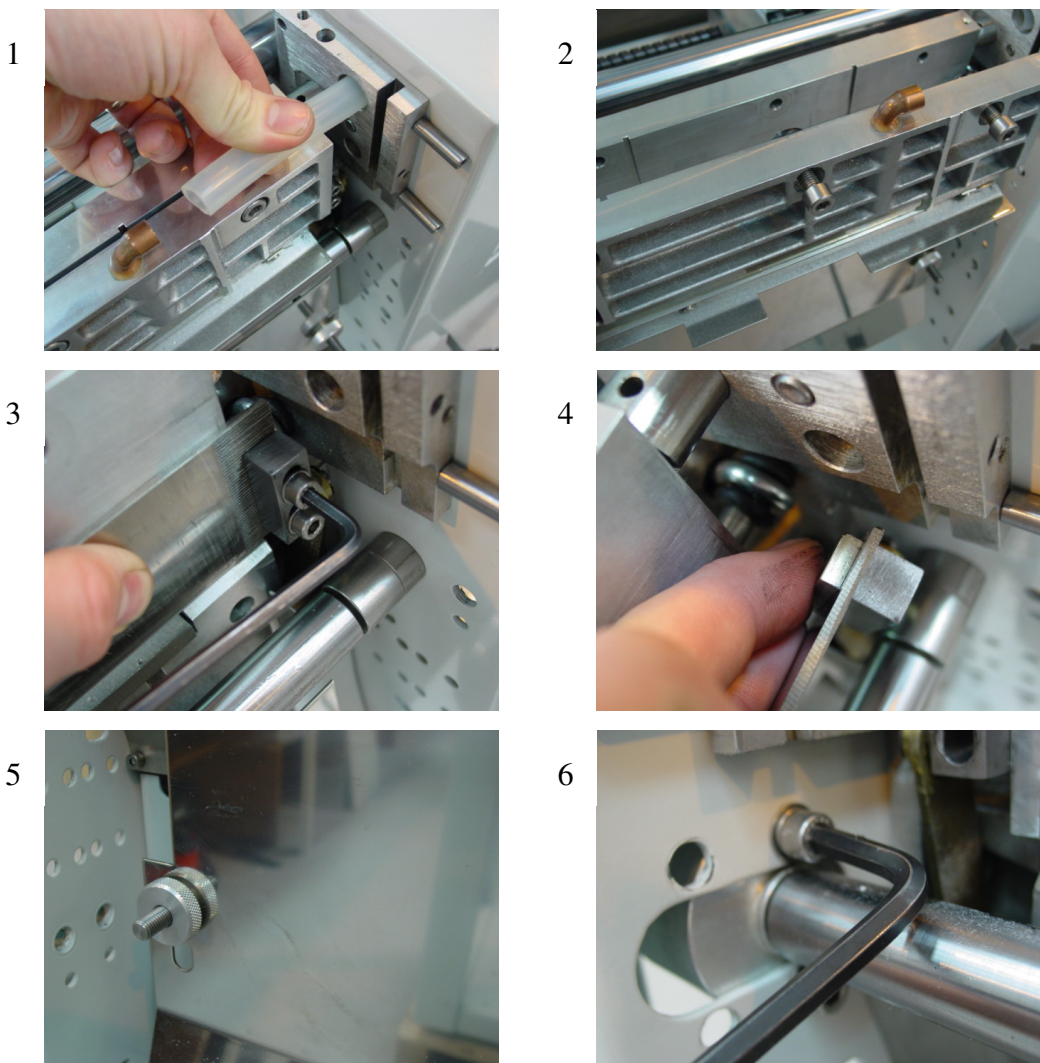


Section 3a – Cross cut blade guard removal (continued)

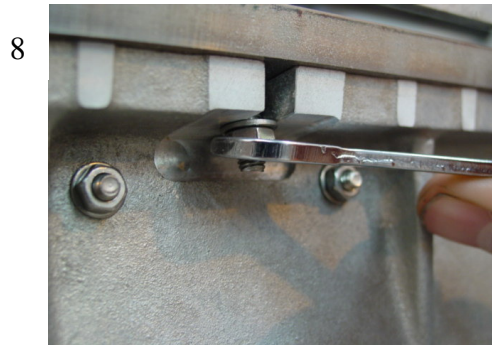
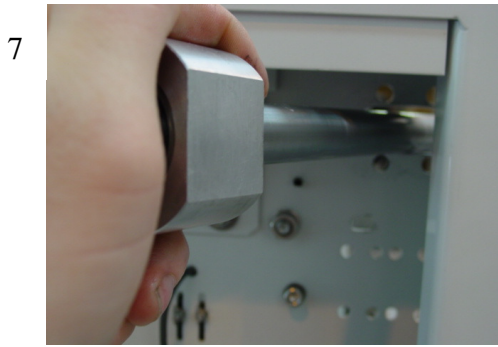
1. Remove the blade guard (Fig. 1) **WARNING Exposed blades, proceed with caution.** *Shown with anti-static option fitted this will not affect the procedure.*
2. Remove the safety cover gas strut circlip. (Fig. 2) **WARNING Safety goggles must be worn when removing circlips.**
3. Disengage the gas strut from the safety cover bar. (Fig. 3) **WARNING Support the safety cover when removing the gas strut to prevent the cover slamming shut.**
4. Close the safety cover and remove the two retaining bolts. You can now lift the cover clear of the machine. (Fig. 4)
5. Loosen the two grub screws which hold the kick-out roller pressure head mount plate. Then lift clear of the machine. This will reveal the blade guide. (Fig. 5)
6. Remove the service doors both ends. (Fig. 6)

Section 3b – Cross cut blade removal

WARNING The following sections involve handling extremely sharp blades. Protective gloves must be worn at all times. Extremely high risk of serious injury.



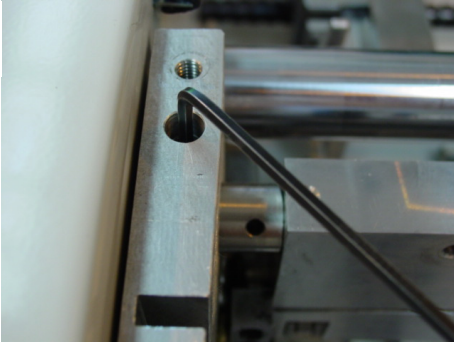
Section 3b - Cross cut blade removal (continued)



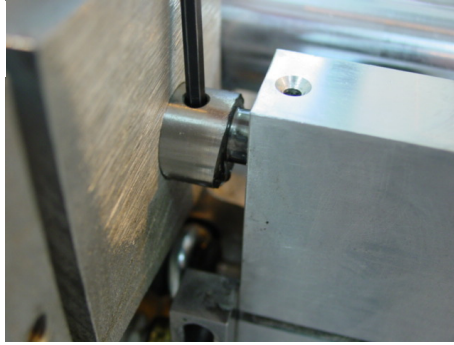
1. Remove the air hose (Fig. 1)
2. Loosen the six bolts holding the rear blade guide in place. Holding the guide with one hand, completely undo each screw in-turn. (Fig. 2) **NOTE: All spacers must be retained**
3. Holding the upper cross cut blade as shown, loosen and remove the four screws that hold the blade in position. (Fig. 3) *There are two screws each end of the blade.* Take care to retain the two threaded plates which sit behind the blade. (Fig. 4) *One plate each end of the blade.* The upper cross cut blade can now be lifted clear of the machine. **WARNING Even blades that have been used may still be sharp so handle with care.**
4. Remove the strip cut plate (Fig. 5)
5. Remove the screws which hold in place the kick-out roller assembly, making sure that first you remove the drive belts. (Fig. 6) *Belt removal shown in Section 1a 'Edge Trimmer Shaft Removal' Fig. 2.* Once the assembly is no longer retained, simply remove through the outer side of the machine. (Fig. 7)
6. Loosen the three nuts which hold the lower cross cut blade. (Fig. 8) The lower cross cut blade can now be lifted clear of the machine.(Fig. 9) **WARNING Even blades that have been used may still be sharp so handle with care.**

Section 3c - Blade guide preparation

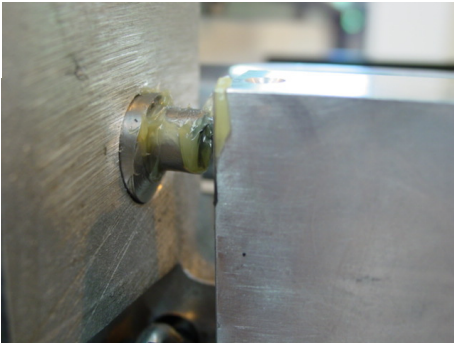
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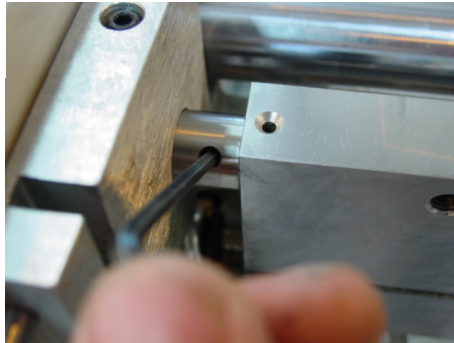
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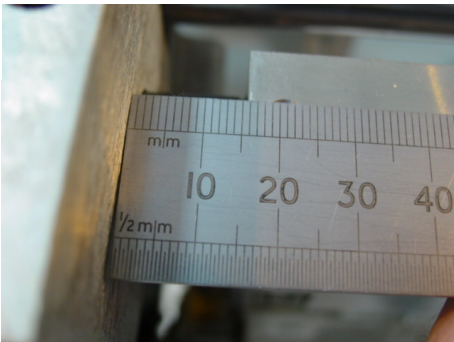
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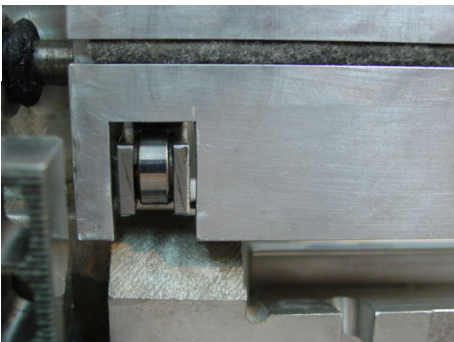
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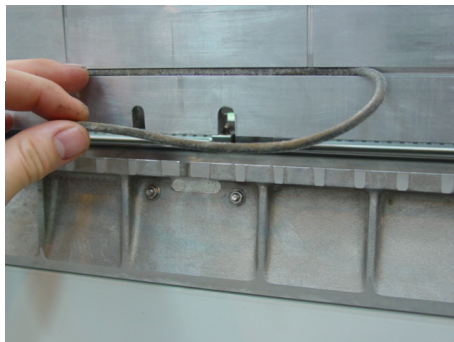
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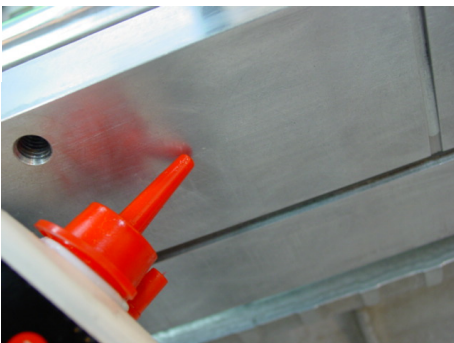
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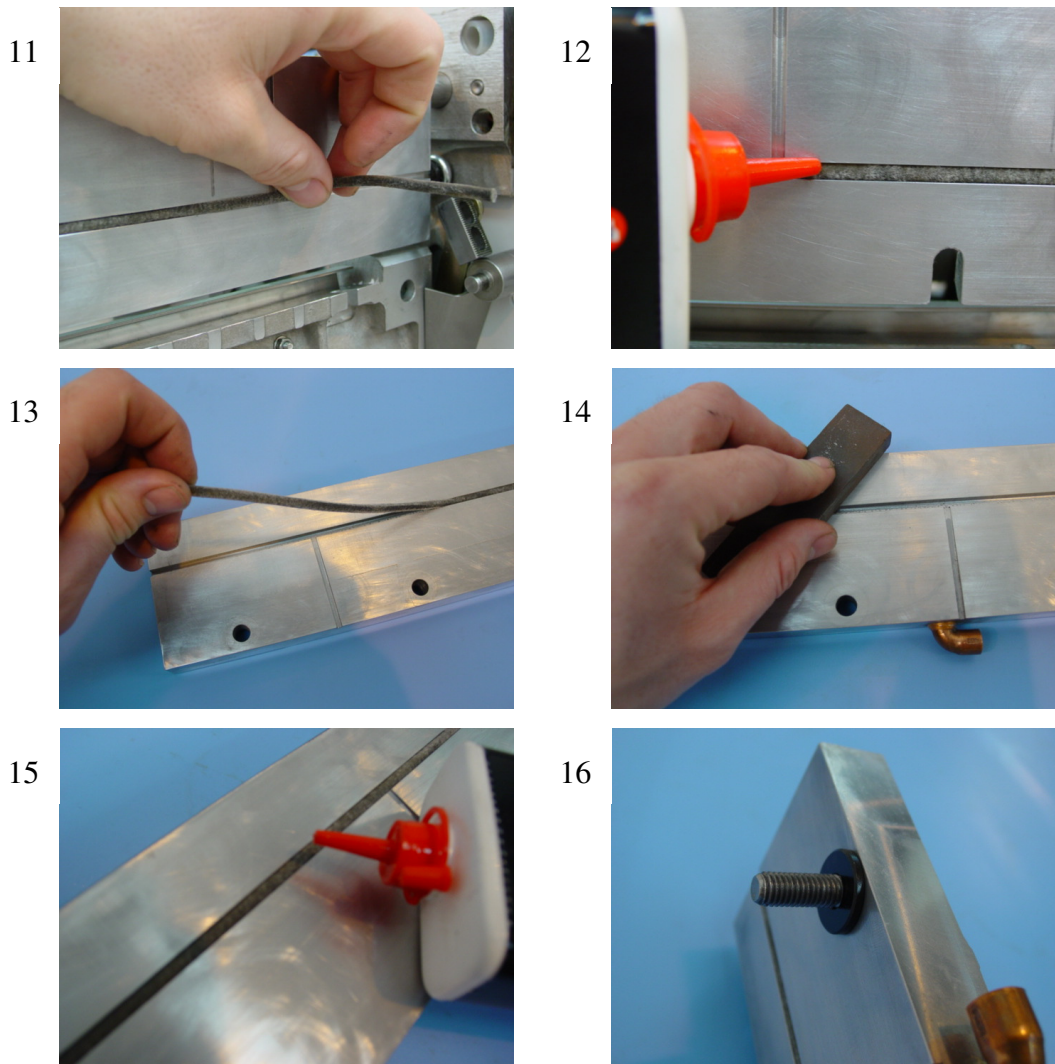
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Section 3c - Blade guide preparation (continued)



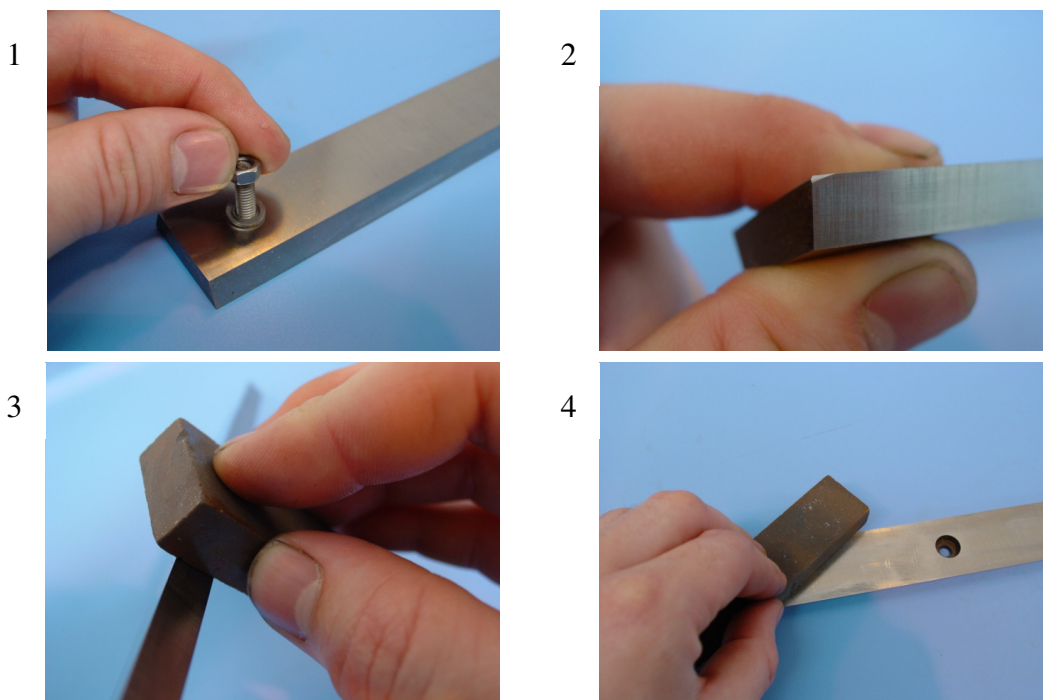
1. Loosen the grub screws which hold the blade guide eccentrics. (Fig. 1) *There are two eccentrics, one at each end of the blade guide.*
2. Insert a bar into the hole through the blade guide eccentric, move the eccentric towards the blade mount. (Fig. 2) Once clear apply some HMP grease to the end of the blade guide eccentric. (Fig. 3) *This should be carried out for both eccentrics.*
3. Re-insert the blade guide eccentric into the blade guide. Reset the position of the eccentric by rotating it towards the rear of the machine at about 45 degrees from vertical. (Fig. 4) *This should be carried out for both eccentrics.*
4. Check the blade guide's lateral position by measuring from the end of the guide, to the inside edge of the blade mount. The gap both ends should be approximately the same +/- 1mm. (Fig. 5 & 6) If this has been done correctly the upper cross cut blade backstop will sit approximately central in the relief in the front blade guide.(Fig. 7)
5. Remove the upper cross cut blade oil wick. (Fig. 8) Oil the surface of the front blade guide with a small amount of light machine oil. (Fig. 9) Then using a circular motion with a medium grade oil stone, hone the surface of the front blade guide. (Fig.10) *If the surface of the blade guide is deeply scored then the part must be replaced.*

Section 3c - Blade guide preparation (continued)

6. Refit the upper cross cut blade oil wick and lubricate with light machine oil. (Fig. 11 & 12)
NOTE: Do not over oil the wick, as this may cause the machine to leave marks on the cut forms.
7. Repeat step 5 & 6 on the rear blade guide. (Fig 13, 14 & 15)
8. Refit the six bolts which hold the front and rear blade guides together. Place one spacer onto each of the six bolts. (Fig. 16) This should now be put somewhere safe until needed.

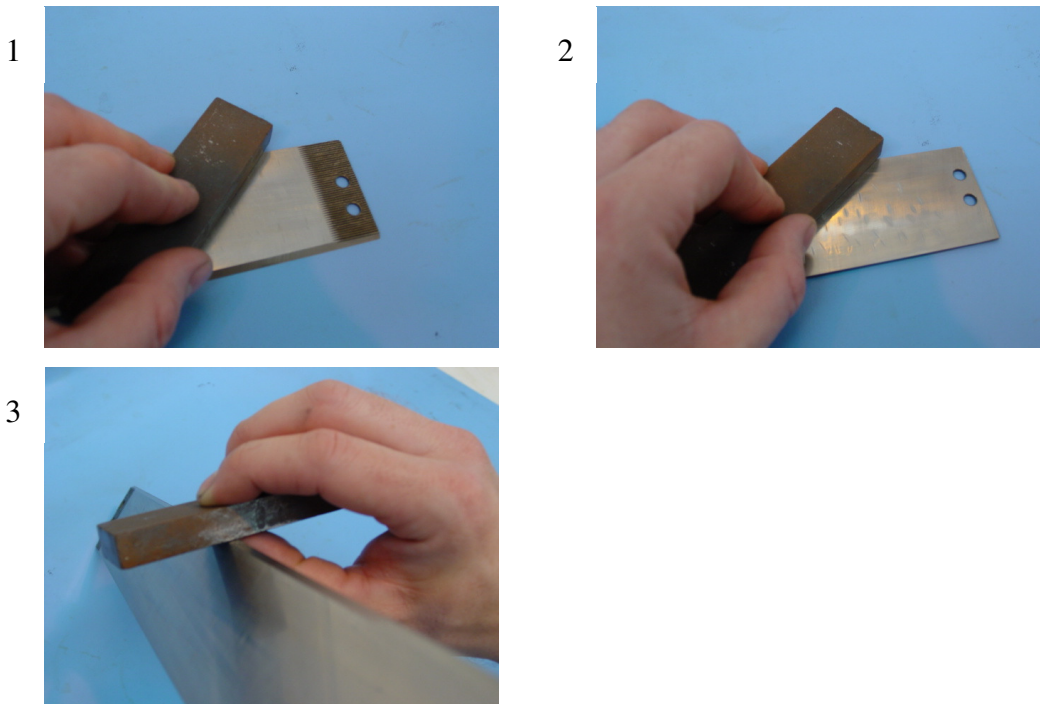
Section 3d - Lower blade preparation

WARNING The following sections involve handling extremely sharp blades. Protective gloves must be worn at all times. Extremely high risk of serious injury.



1. Remove the three sets of nuts, bolts and washers from the lower cross cut blade (Fig. 1) check the blade for wear. The lower cross cut blade has two cutting faces so although one side may be blunt the other may still be sharp.
2. Whether you are using the good side of a used blade, or a new one; you will need to use a medium grade oil stone to add a lead onto the far left edge of the blade. (Fig. 2)
3. Following the angle of the cutting face, run the oil stone along the full length of the blade. (Fig. 3) This will remove any burrs protruding horizontally from the top face of the blade.
4. Using a circular motion, hone the top face of the blade. (Fig. 4) This will remove any burrs protruding vertically from the cutting face.
5. Repeat step 3 & 4 until there are no burrs left on the blade. **NOTE: Always finish on step 4. This means that any remaining burrs will be removed by the upper cross cut blade during operation.**

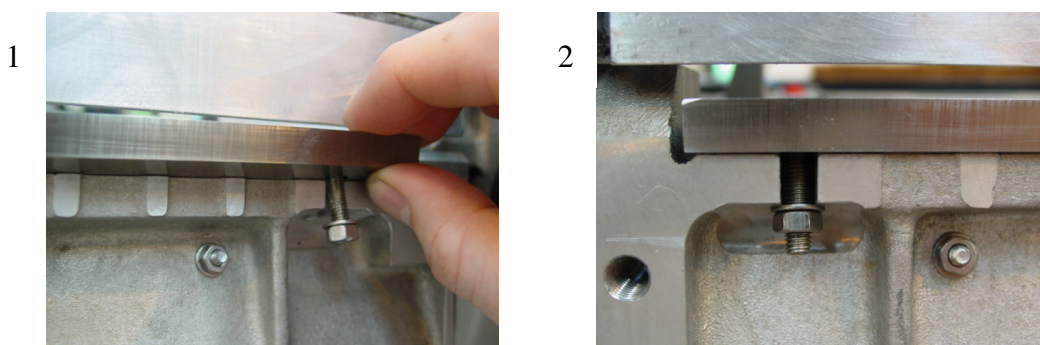
Section 3e - Upper blade preparation



NOTE: If you have either turned or replaced the lower blade, you must fit a new upper blade.

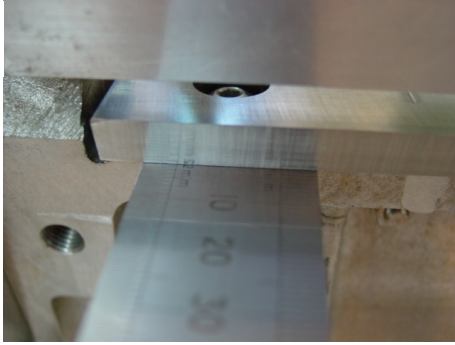
1. Using a circular motion, with a medium grade oil stone; hone the outer face of the blade. (Fig. 1) This will smooth any straightening marks on the surface of the blade.
2. Using a circular motion, hone the inner face of the blade. (Fig. 2) This will smooth any straightening marks on the surface of the blade. Also remove any burrs protruding vertically from the cutting face.
3. Following the angle of the cutting face, run the oil stone the full length of the blade. (Fig. 3) This will remove any burrs protruding horizontally from the inner face of the blade. *Although a 45 degree blade is shown, the same process is used for an 80 degree blade.*
4. Repeat step 2 & 3 until there are no burrs left on the blade. **NOTE: Always finish on step 3. This means that any remaining burrs will be removed by the lower cross cut blade during operation.**

Section 3f - Lower blade adjustment

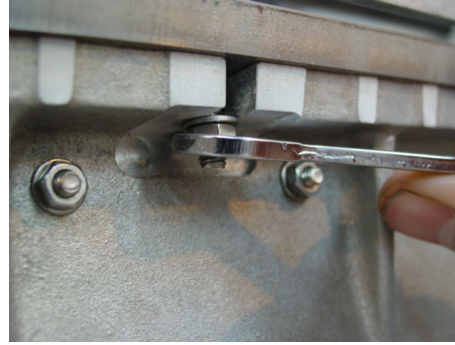


Section 3f - Lower blade adjustment (continued)

3



4



1. Refit the lower cross cut blade. (Fig. 1) Ensure that the lead is on the far left side of the blade; now loosely fit the blade into position. (Fig. 2)
2. Set the amount the lower cross cut blade over hangs the blade mount to 1.5mm or take the measurement at the position shown. (Fig. 3) This measurement must be repeated in the same position, at the opposite end of the lower cross cut blade. The blade can now be tightened into place. (Fig. 4)

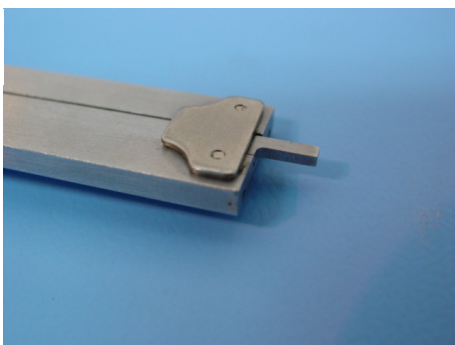
NOTE: This must be set accurately as it will ultimately determine how square the final cut will be. It is also worth re-checking the 1.5mm overhang once the blade has been fully tightened.

For most applications this level of accuracy will be fine, however Section 3g 'Advanced Lower Blade Adjustment' shows the factory method of setting the lower cross cut blade.

Section 3g - Advanced lower blade adjustment

This section shows how the lower cross cut blade is set in the factory. This level of accuracy is only necessary in certain applications.

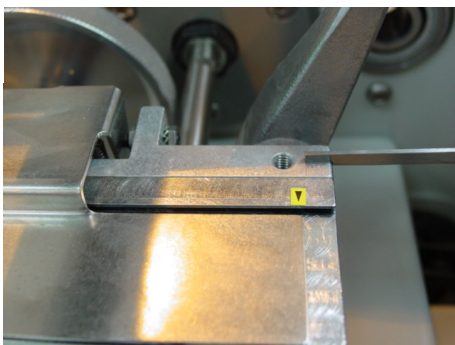
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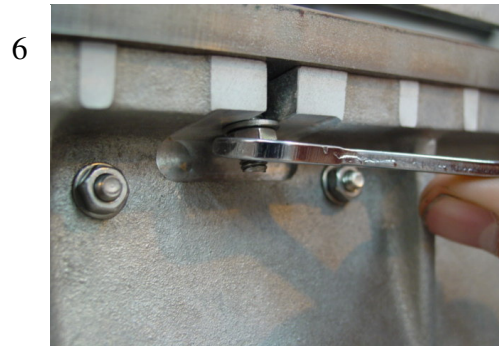
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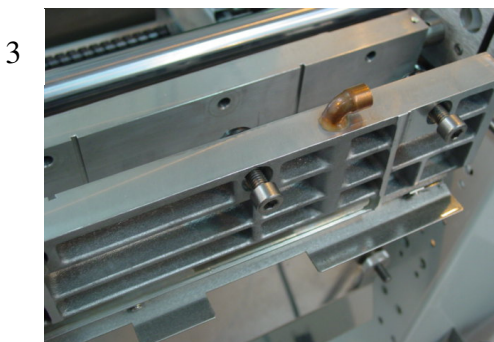
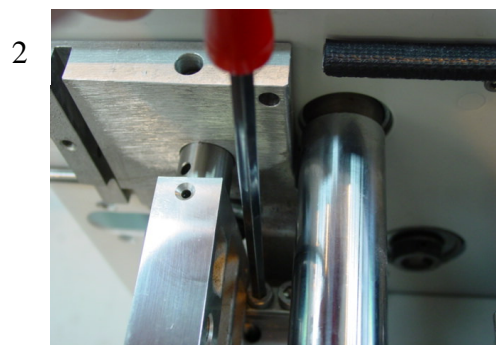


Section 3g - Advanced lower blade adjustment (continued)

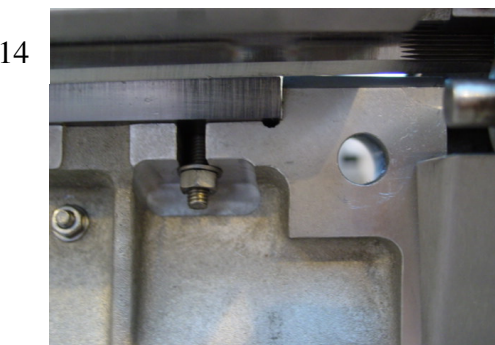
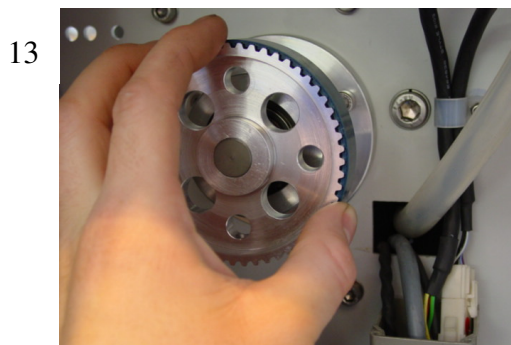
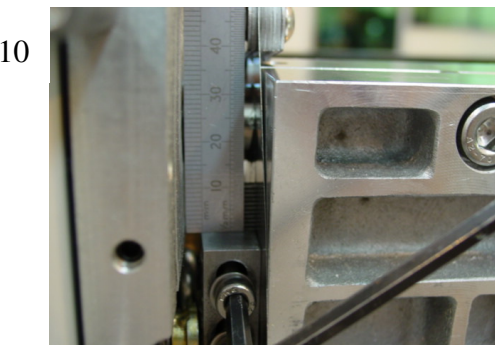
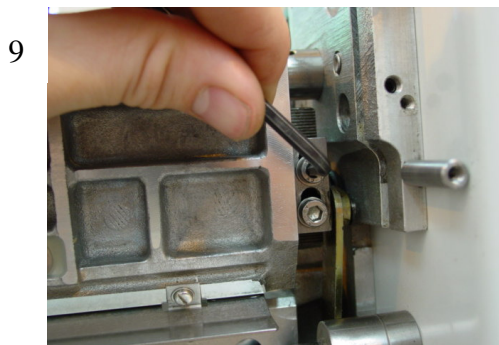
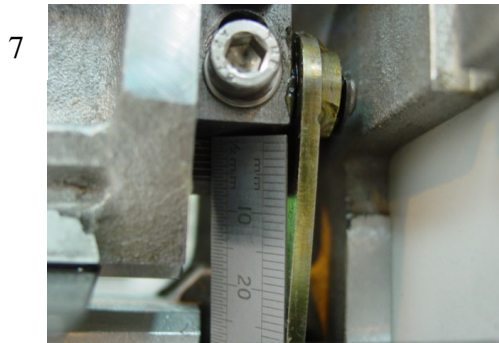
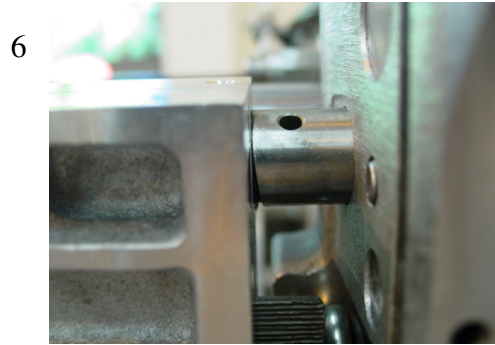
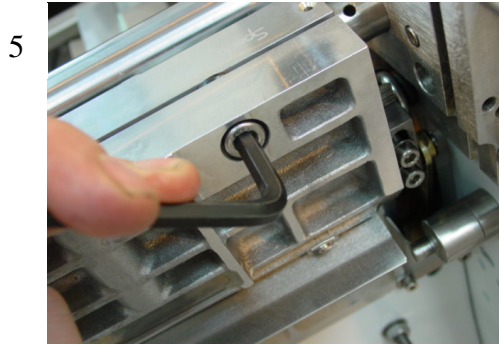


1. Complete step 1 & 2 of Section 3f 'Lower Blade Adjustment'.
2. Set your digital vernier calliper so that the leading edge of the radius is flush with the lower edge of your vernier calliper. (Fig. 1)
3. Zero your display. This means that you are now able to measure from the radius edge of the form guide mount (Fig. 2)
4. Set the form guides to the widest point and measure from the radius edge of the form guide mount, (Fig. 3) to the cutting face of the lower cross cut blade. (Fig. 4) This measurement should be repeated from the other form guide mount, to the opposite end of the lower cross cut blade.
5. The measurement should be 122.30mm (+/- 0.05mm) from the radius edge of each of the form guides, to the cutting face of the lower cross cut blade at both ends. (Fig. 5) *The blade may need to be readjusted to achieve this measurement.* Once the lower cross cut blade has been set in the correct position, you can now tighten it in place. (Fig. 6) **NOTE: Be sure to re-check this measurement once the blade has been fully tightened.**

Section 3h - Upper blade adjustment



Section 3h - Upper blade adjustment (continued)

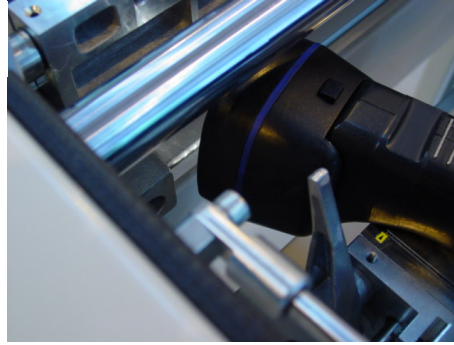


Section 3h - Upper blade adjustment (continued)

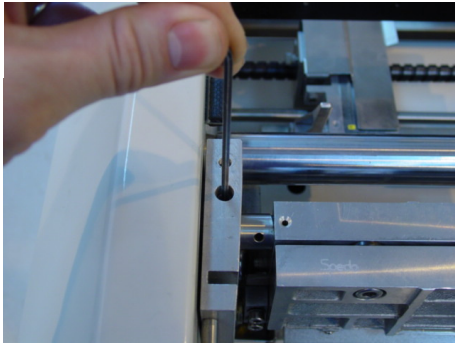
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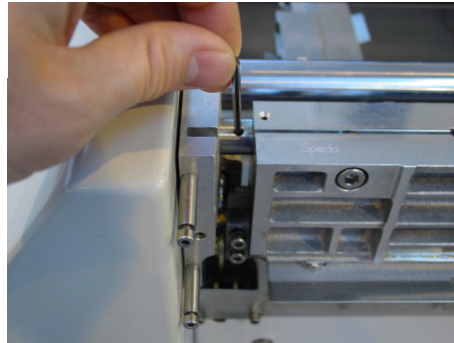
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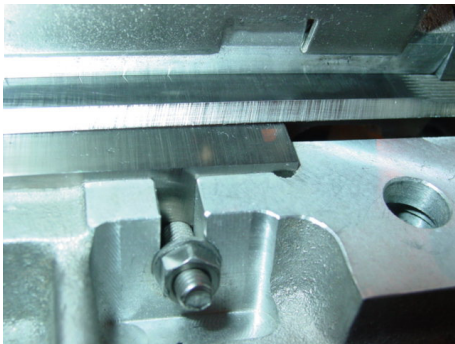
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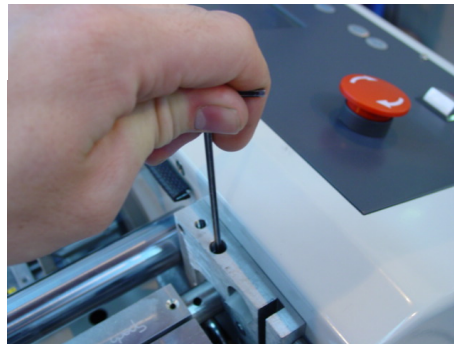
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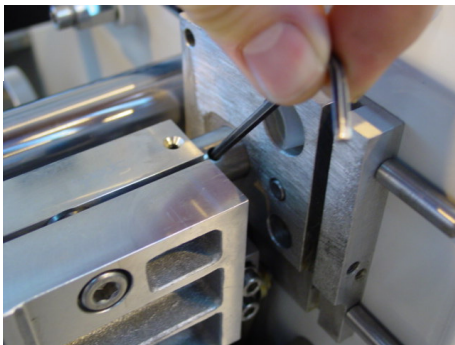
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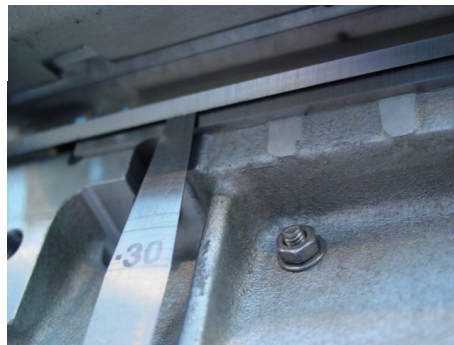
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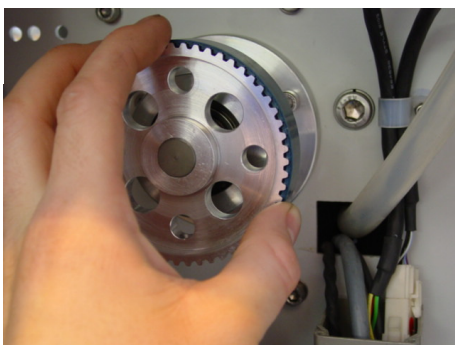
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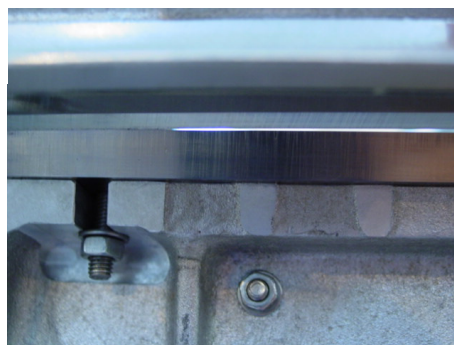
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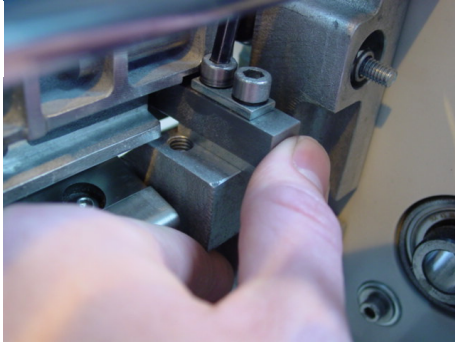


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Section 3h - Upper blade adjustments (continued)

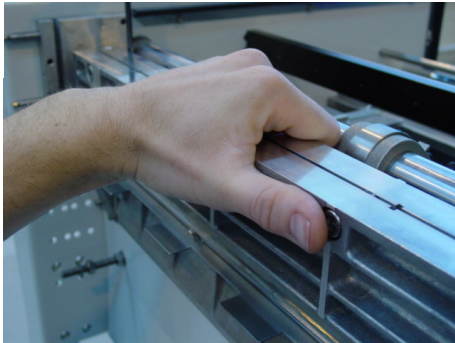
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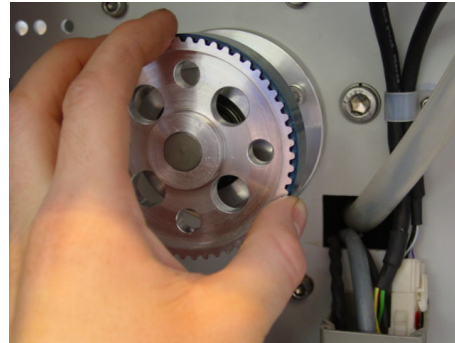
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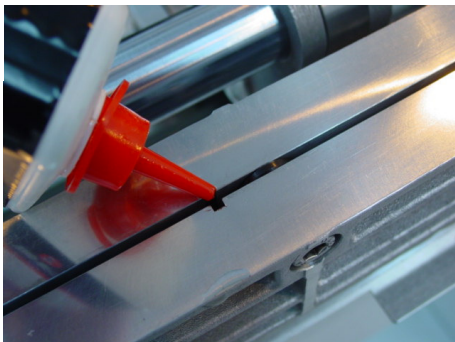
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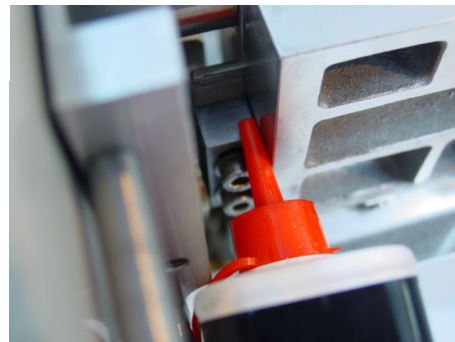
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31



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1. Refit the upper cross cut blade. The blade should only be fitted loosely in position at this stage. (Fig. 1)
2. Loosen the blade backstop. And pull the stop away from the blade guide. (Fig. 2)

Section 3h – Upper blade adjustments (continued)

3. Refit the rear blade guide complete with spacers as shown Section 3c ‘Blade Guide Preparation’ Fig. 16. Make sure that all the spacers are in place before attempting to fit the rear blade guide. (Fig. 3 & 4)
4. Tighten the rear blade guide into place, (Fig. 5) making sure that the front and rear guides align horizontally both ends. (Fig. 6)
5. Set the position of the upper cross cut blade by first measuring from the cutting edge of the upper cross cut blade, to the lower edge of the blade mount block at the narrow end of the blade. (Fig. 7) **NOTE: This measurement will vary depending on the type of blade fitted.** For ‘narrow type’ blades 45/80 degree this measurement should be 7mm (+/- 0.5mm) For the ‘standard type’ blades 45/80 degree this measurement should be 5mm (+/- 0.5mm). Tighten the blade into position. (Fig. 9)
6. Check the measurement from the upper edge of the upper cross cut blade, to the upper edge of the blade mount block. (Fig. 8) **NOTE: This measurement will vary depending on the type of blade fitted.** For ‘narrow type’ blades 45/80 degree this measurement should be 11mm (+/- 0.5mm) for a new blade. This could be as little as 8mm (+/- 0.5mm) for a minimum size reground blade. For a ‘standard type’ blades 45/80 degree this measurement should be 13mm (+/- 0.5mm) for a new blade. This could be as little a 10mm (+/- 0.5mm) for a minimum size reground blade.
7. The relevant measurement for the blade type you have fitted, taken at the narrow end of the blade (see step 6) must be replicated at the wide end of the blade. (Fig. 10) E.g. Fitting a new narrow blade, the measurement from the cutting edge of the upper cross cut blade to the lower edge of the blade mount block and the narrow end of the blade should measure 7mm (+/- 0.5mm). (Fig. 7) This will give a measurement from the upper edge of the upper cross cut blade to the upper edge of the blade mount block of 11mm (+/- 0.5mm) (Fig. 8)
8. Once the upper cross cut blade has been positioned correctly, a feeler gauge set to 0.2mm (Fig. 11) is inserted between the blade mounting block and the blade guide. This is performed at the wide end of the upper cross cut blade. The blade is then tightened into position. (Fig. 10)
9. Hold the upper cross cut blade away from the lower cross cut blade by rotating the blade guide towards the rear of the machine. (Fig. 12) **NOTE: If you find it difficult to rotate the blade guide towards the rear of the machine you may need to relieve some of the tension from the blade pressure springs. They are located either end of the blade mount. (Fig. 15)** Cycling the blade timing pulley anti-clockwise, (Fig. 13) drive the upper cross cut blade down over the lower cross cut blade. Stop when the blade is in the position shown. (Fig. 14). The blade should cycle very freely with no binding. That said sometimes replacing the oil wicks may cause some resistance. **However if the resistance seems to be excessive investigate the cause before proceeding.**
10. Set the blade guide tension by adjusting the blade pressure springs. *These are located either end of the blade mount.* You relieve pressure from the blade by rotating the nuts anti-clockwise and apply pressure by rotating the nuts clockwise. (Fig. 15) **NOTE: The blade guide tension must be applied evenly and not exceed 35N.**
11. To adjust the narrow end of the blade, firstly make sure that the blade is positioned as shown. (Fig. 14) Also that the blade guide is correctly tensioned (Fig 15.) Place a torch as shown, (Fig. 16) this will help with setting the gap between the upper and lower blades.

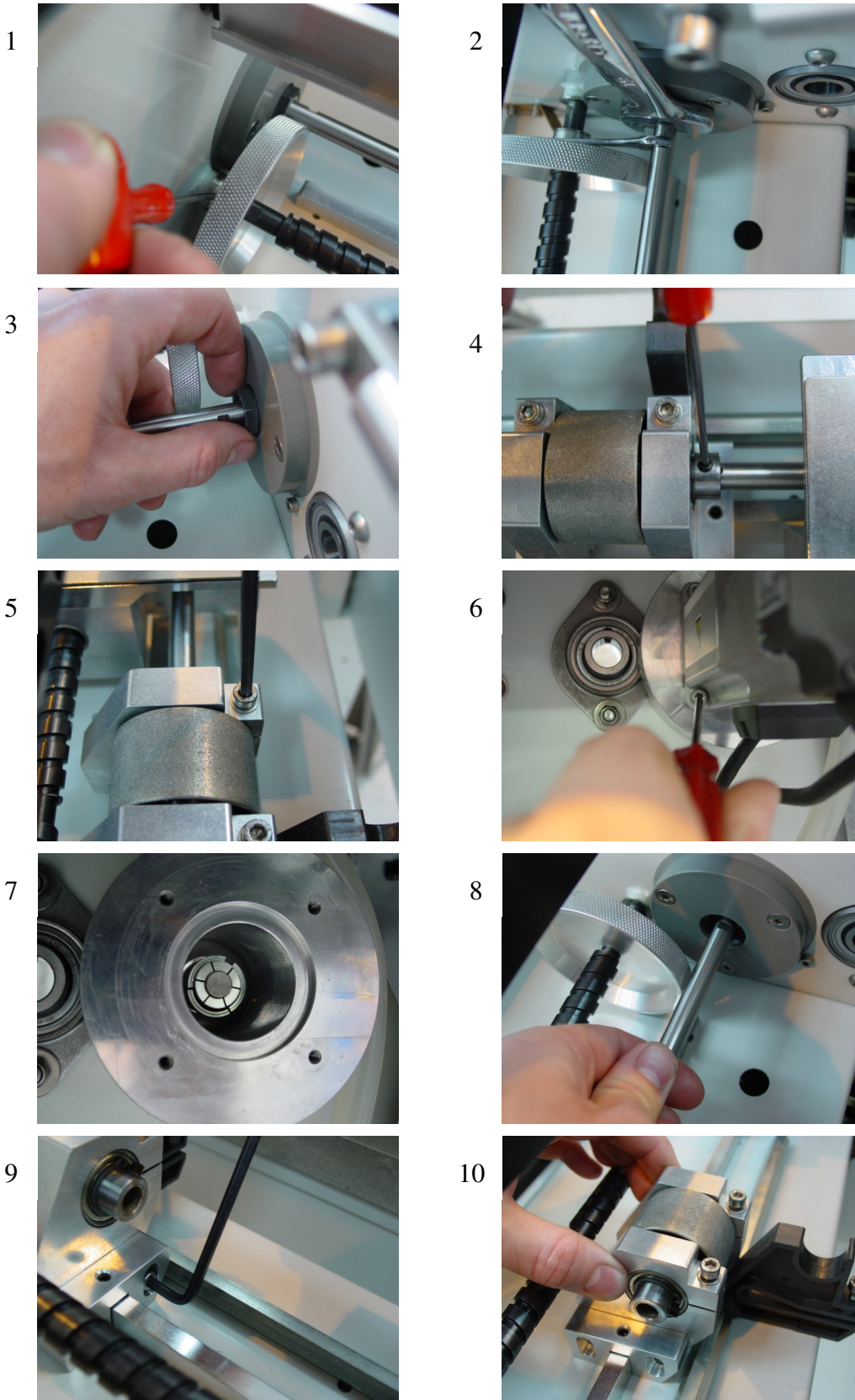
Section 3h – Upper blade adjustments (continued)

12. Loosen the grub screw holding the blade guide eccentric on the far left (*outer side*) of the blade guide. (Fig.17) Then insert a bar through the blade guide eccentric and then rotate it towards the front of the machine. (Fig. 18) This will open the gap between the upper and lower cross cut blades at the narrow end of the blade, (Fig. 19) this is where using a torch helps; rotate the blade guide eccentric towards the rear of the machine until the light from the torch is extinguished.
13. Once you are satisfied this has been set correctly, push on the back of the eccentric (*located inside the machine*) and tighten the grub screw to hold the eccentric in place. (Fig. 17)
14. To adjust the wide end of the blade, firstly make sure that the blade is still positioned as shown. (Fig. 14)
15. Loosen the grub screw holding the blade guide eccentric on the far right (*operator side*) of the blade guide. (Fig. 20) Then insert a bar through the blade guide eccentric and then rotate it towards the front of the machine. (Fig. 21) This will open the gap between the upper and lower cross cut blades at the wide end of the blade. You now need to insert an feeler gauge set to 0.3mm for standard set up, (40 – 120 gsm paper) *alternatively it will be 0.35mm for 120 – 300 gsm paper and 0.4mm for card*, at the point shown. (Fig. 22) Rotate the blade guide eccentric towards the rear of the machine until the feeler gauge is just gripped between the upper and lower cross cuts. **NOTE: Slowly rotate the eccentric towards the rear of the machine. As soon as the feeler gauge is gripped stop; closing the gap too much, will damage the cutting edge of the lower blade.**
16. Once you are satisfied this has been set correctly, push on the back of the eccentric (*located inside the machine*) and tighten the grub screw holding the eccentric in place. (Fig. 20)
17. Cycle the blade timing pulley anti-clockwise, (Fig. 23) until the wide end of the blade reaches the position shown on the up stroke. (Fig. 24) The length of the upper and lower cross cut blade overlap at this point should be approximately 20mm.
18. Push the backstop against the upper cross cut blade, (Fig. 25) apply a small amount of pressure, then tighten into position. (Fig. 26) Complete the cycle to TDC, listening for any knocking sound as the upper cross cut blade leaves the lower. (*A knock would mean the backstop will have to go out further.*) **NOTE: This may take quite a few attempts to set correctly.**
19. Relieving some of the tension on the blade guide, (Fig. 27) cycle the upper cross cut blade downward (Fig. 28) until the blades just overlap at the wide end of the blade, (Fig. 24) then release the blade guide and completely cycle the blade slowly back to TDC. **NOTE: The first few cycles must be completed very carefully, as the blades may try to jam into one another.**
20. Once you are happy the upper cross cut blade can cycle freely over the lower cross cut blade, (Fig. 29) then it is time to test your set up with paper. Insert a single sheet of 40- 80 gsm paper between the upper and lower cross cut blades, approximately 25mm in from the end of the lower blade with the lead on. Slowly cycle the upper cross cut blade over the lower, the paper should be cut cleanly. (Fig. 30)
21. Re-oil the blade wicks with a small amount of light machine oil, one drop down each oil channel. (Fig. 31) Also using light machine oil, apply one drop to the top of each blade mount block. (Fig. 32)

Section 4a - Drive wheel assembly removal

Please read this complete section before starting.

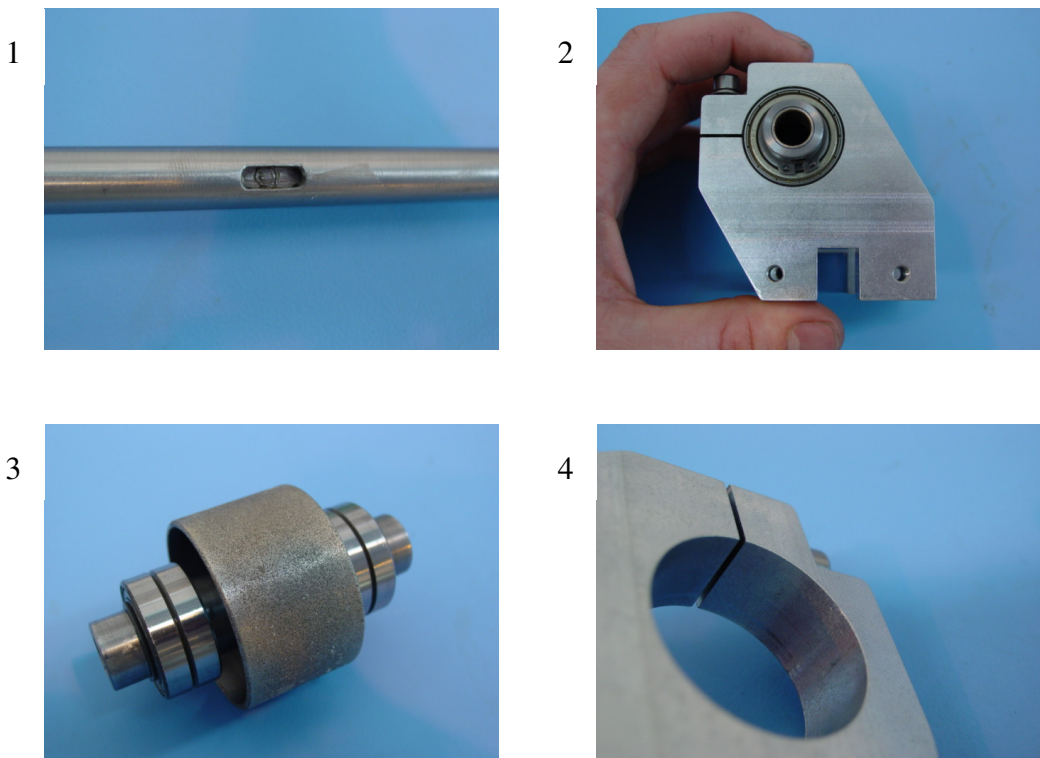
WARNING The machine must be isolated from its power supply before starting any maintenance procedure.



Section 4a - Drive wheel assembly removal (continued)

1. Loosen the grub screw holding the scroll shaft hand wheel.(Fig. 1)
2. Loosen the drive wheel shaft coupling by using an 8mm open ended spanner to hold the shaft, while loosening the coupling with a 19mm open ended spanner. (Fig. 2)
3. Once the coupling has been loosened it should be able to be rotated freely by hand. (Fig. 3)
4. Remove the two grub screws that transmit the drive from the shaft to the drive wheel. These are fitted using a medium strength retaining compound, so they may be a little stiff to remove. To aid removal apply a little heat. (Fig. 4) **NOTE: Only use a heat gun to warm the drive wheel. DO NOT USE A BLOW LAMP**
5. Loosen the two screws which clamp the drive wheel bearings. (Fig. 5)
6. Remove the operator side compartment door, this will give you access to the back of the drive roller motor. Remove the four screws which hold the motor in place, (Fig. 6) and remove the motor. (Fig. 7)
7. Push the shaft out through the operator side of the machine. (Fig. 8) The shaft should move very freely, if it doesn't check the shaft for damage. **WARNING Do not use excessive force on the shaft as this will distort it.**
8. Remove the screws which hold the bearing support onto the mount. (Fig. 9) Then lift out the lower drive wheel assembly. (Fig. 10)

Section 4b - Drive wheel assembly replacement



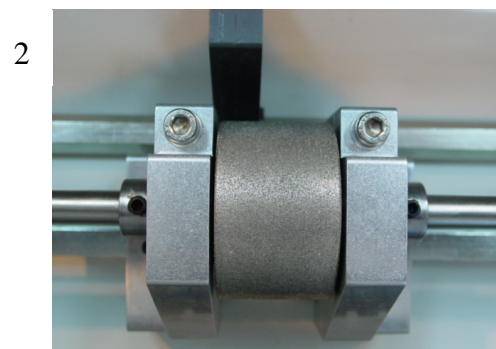
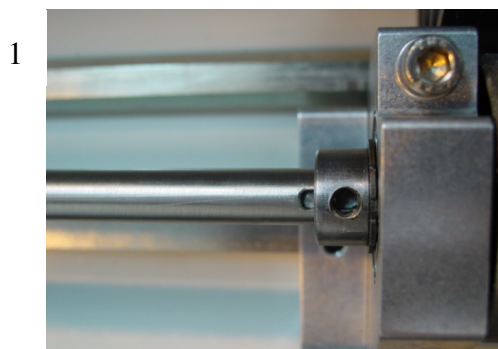
1. Check the drive shaft for damage, paying particular attention to the key ways. (Fig. 1)

Section 4b - Drive wheel assembly replacement (continued)

2. Remove the bearing supports from the drive wheel. (Fig. 2) They should freely slide off the drive wheel bearings. If they prove difficult to remove, firstly check that the clamp screws are loose; gently apply heat to the bearing support. **NOTE: Only use a heat gun to warm the bearing supports. DO NOT USE A BLOW LAMP**
3. Once the drive wheel has been removed, check the bearings for signs of wear. (Fig. 3) If the bearings are in good condition, the hub can be reused. However if the bearings are worn, the hub will need replacing. **NOTE: We do not recommend trying to remove the bearings as this may damage the hub.**
4. Before fitting the bearing supports back onto the drive wheel, check the bearing support clamping surface for signs of damage. (Fig. 4) Typically this will be caused by the bearing rotating in the bearing support. If there are any signs of damage the bearing supports must be replaced.
5. Refit the bearing supports, (Fig. 2) leaving the clamp screw loose at this stage.

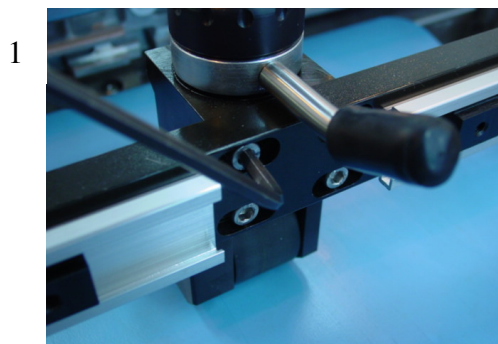
Section 4c - Drive wheel assembly installation

1. Refit the drive wheel assembly by completing Section 4a 'Drive Wheel Assembly Removal' in reverse order. **NOTE: It is recommended that anti-fret compound is used on the drive shaft as it is reinserted through the drive wheel assembly.**



NOTE: Make sure the threaded hole in the drive wheel assembly aligns with the key way in the drive shaft. (Fig. 1) When refitting the grub screws, (Fig. 2) apply a very small amount of medium strength retaining compound to the thread of each screw. (Loctite 243 or equivalent)

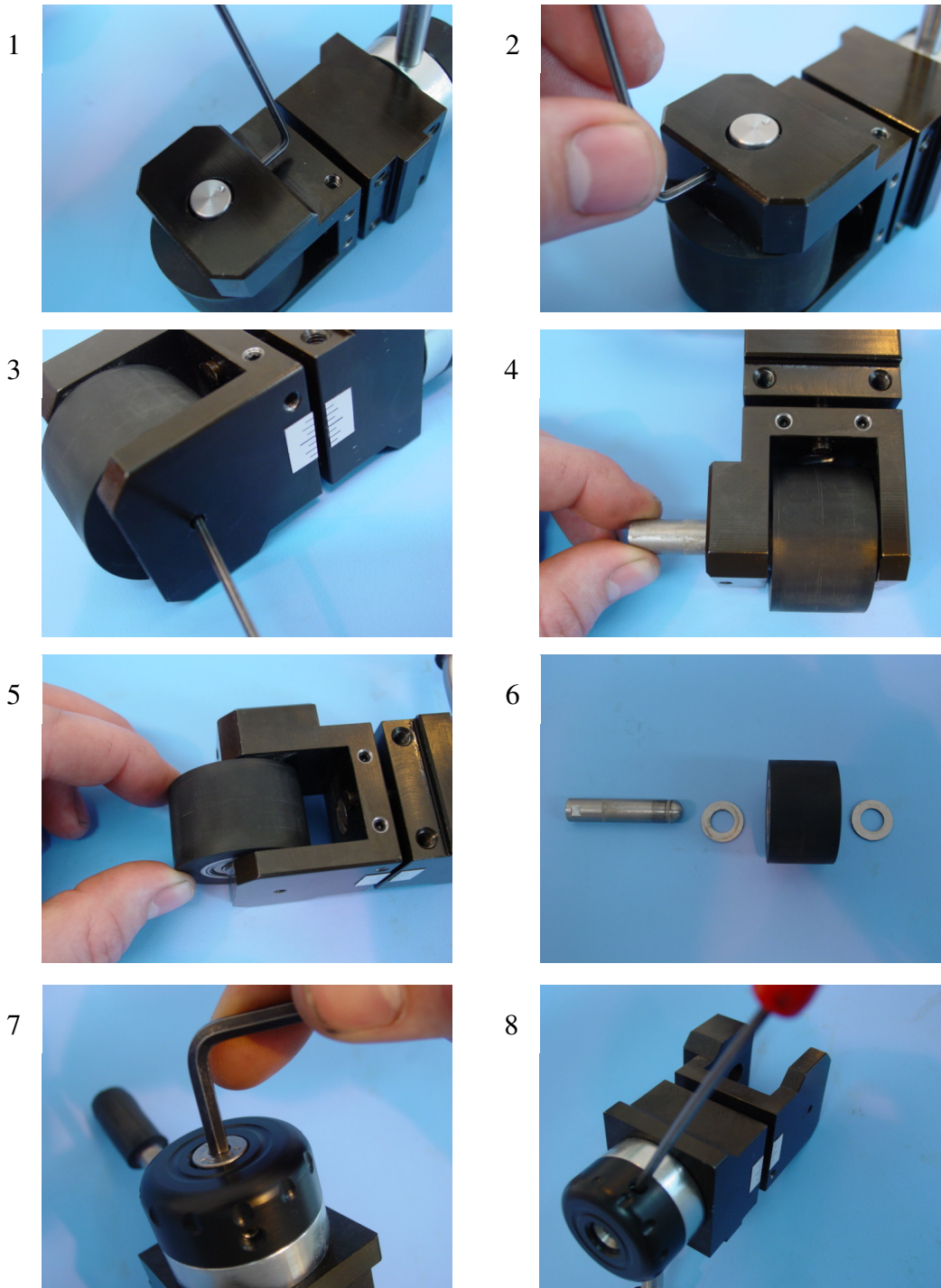
Section 4d - Pressure head assembly removal



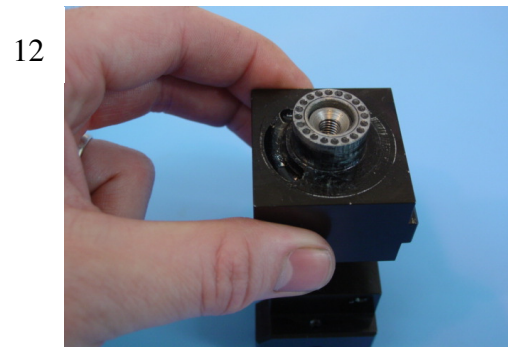
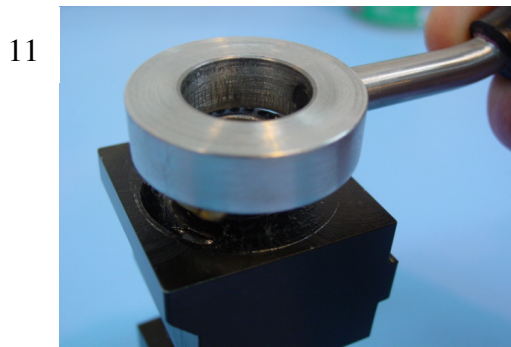
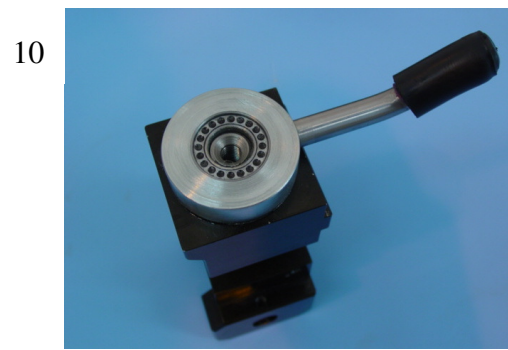
Section 4d - Pressure head assembly removal (continued)

1. Only remove the pressure head assembly by removing the four screws as shown in Fig. 1.
2. **IMPORTANT: Never under any circumstances remove the four screws (two each end) which hold the pressure head mount bar in position. These screws have been highlighted with red paint (Fig. 2)**

Section 4e - Pressure head assembly strip

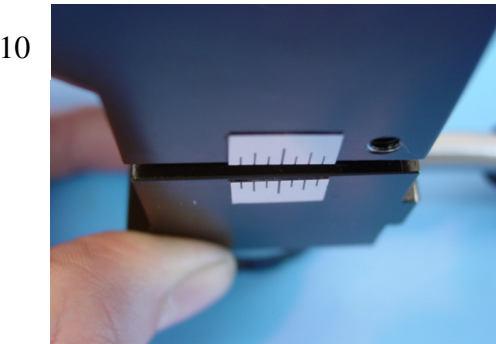
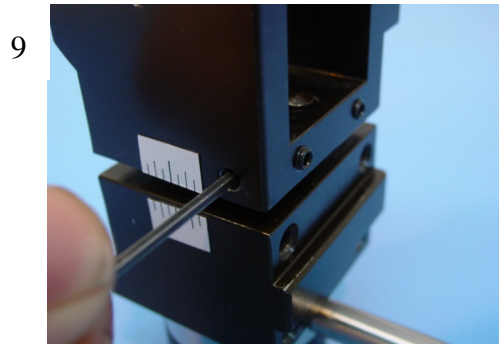
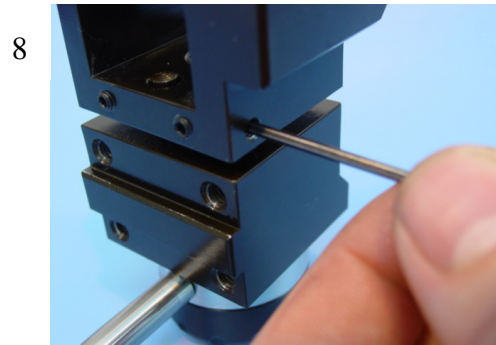
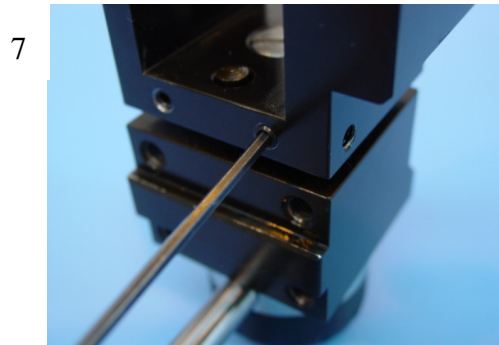
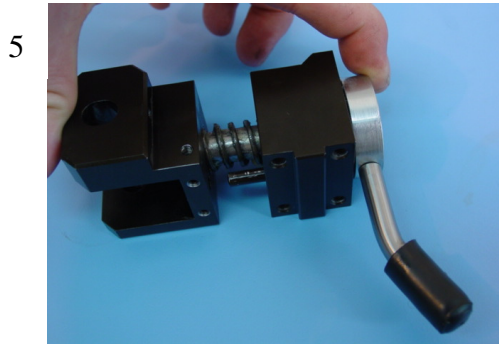
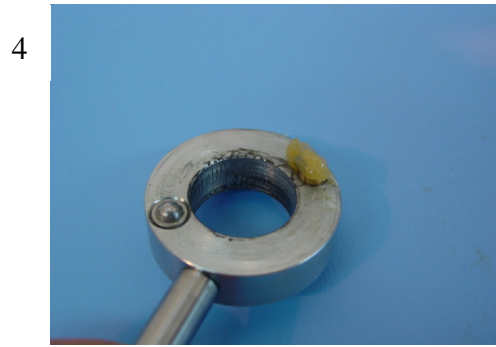
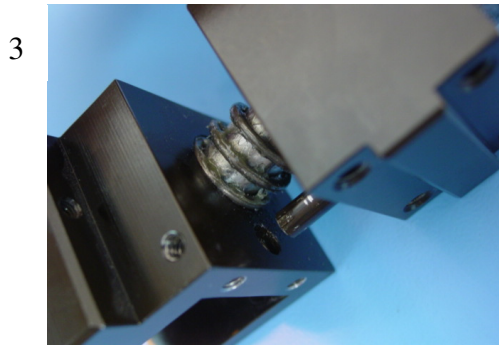
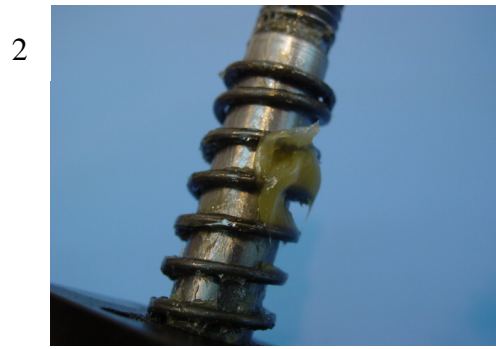
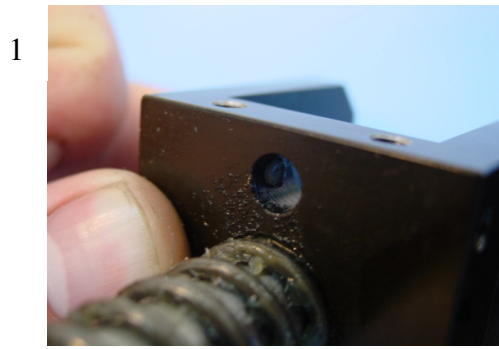


Section 4e - Pressure head assembly strip (continued)

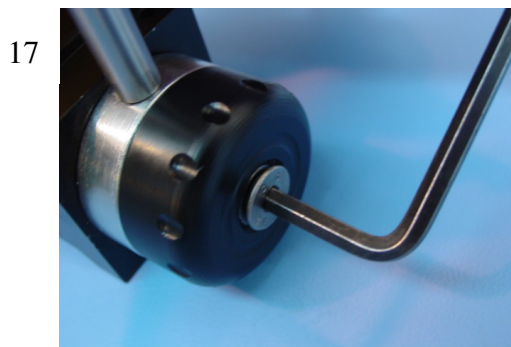
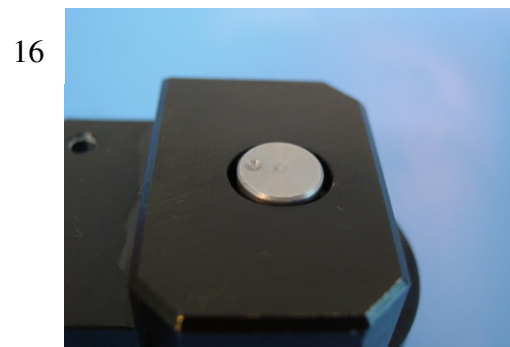
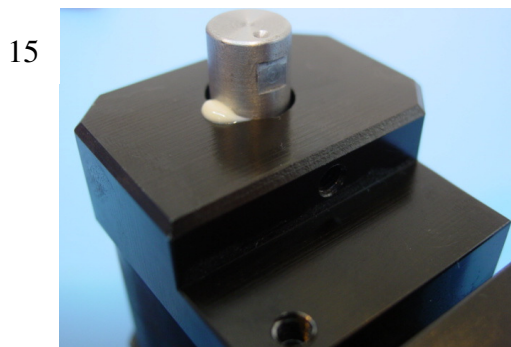
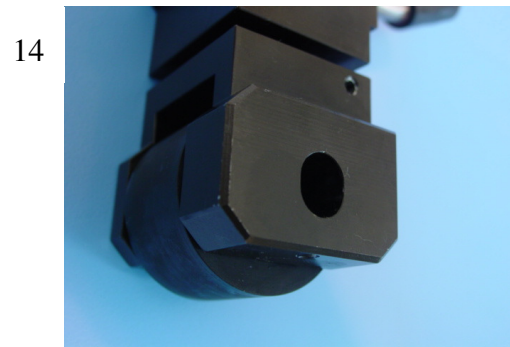
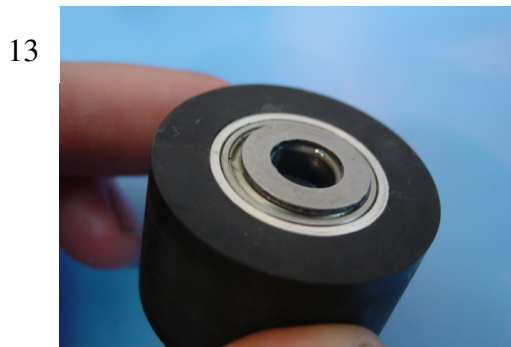
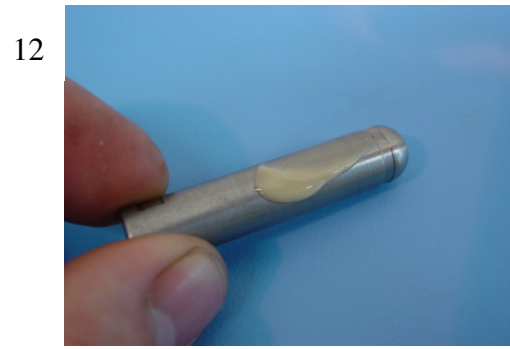
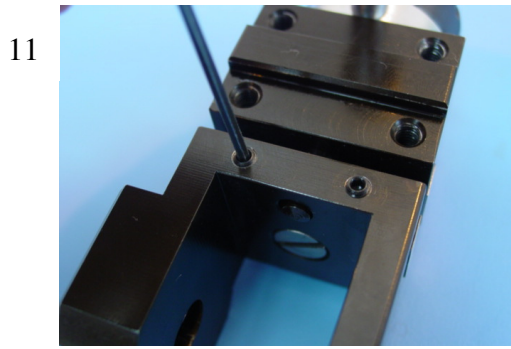


1. Loosen the grub screws which locate and adjust the pressure head axle. They are located on the lower section of the pressure head, one above the axle, (Fig. 1) and one below.(Fig. 2)
2. The axle is removed by pushing it out from the opposite end. You may need to apply a small amount of pressure, using a pin punch. (Fig. 3 & 4)
3. The pressure wheel can now be removed, complete with the two shims. (Fig. 5 & 6)
NOTE: Care must be taken not to lose the shims as they can easily fall out.
4. Remove the pressure adjuster wheel retaining screw from the top of the pressure head. (Fig. 7)
5. Loosen the pressure adjuster locking screw from the pressure adjuster wheel. (Fig. 8) You are now able to unscrew and remove the pressure adjuster wheel. (Fig. 9) **CAUTION: The pressure adjuster wheel is under spring pressure – REMOVE WITH CARE**
6. With the pressure adjuster wheel removed, (Fig. 10) you can now remove the pressure release arm. (Fig. 11)
7. Remove the upper section of the pressure head, (Fig. 12) to reveal the pressure head spring. (Fig. 13)

Section 4f - Pressure head assembly rebuild



Section 4f - Pressure head assembly rebuild (continued)

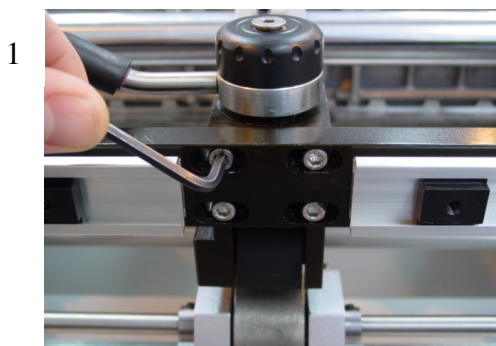


1. Check the condition of the pressure head tracking screws. These have very delicate nylon tips and can easily get damaged. (Fig. 1) **NOTE: If the nylon tips are distorted or missing they must be replaced.**
2. Apply grease to the pressure head spring, (Fig. 2) then refit the pressure head upper section. (Fig. 3)
3. Apply grease to the pressure release pin on the pressure release assembly. (Fig. 4)

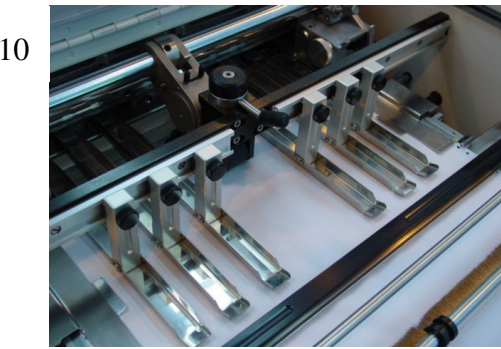
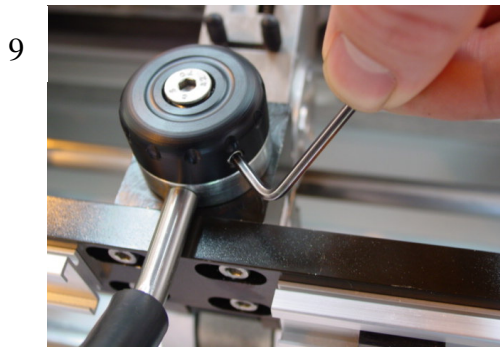
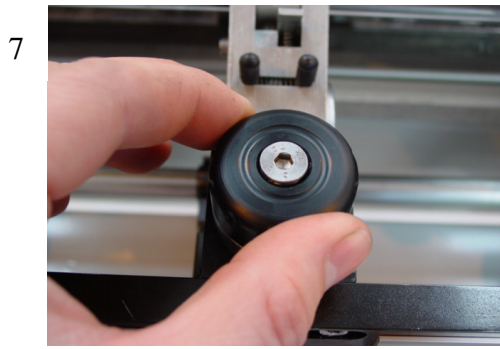
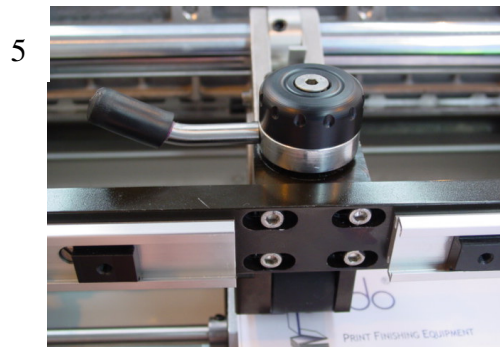
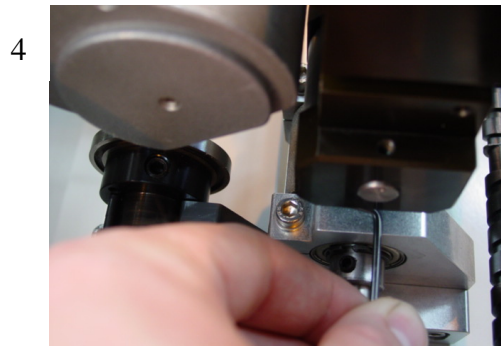
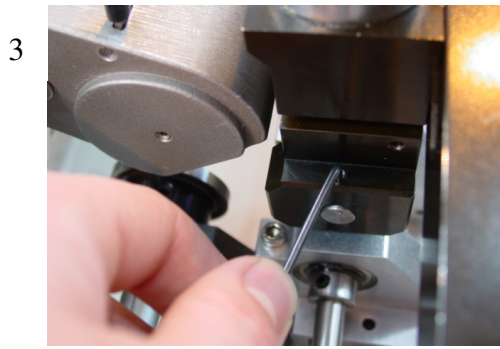
Section 4f - Pressure head assembly rebuild (continued)

4. Compress the assembly, taking care to align the pressure head tracking pin through the pressure head tracking screws. If they are misaligned it may damage the nylon tips on the tracking screws. (Fig. 5) While the assembly is still compressed, refit the pressure adjuster wheel. (Fig. 6) **CAUTION: Care must be taken when compressing the spring.**
5. Loosen the two locking screws which fix the position of the pressure head tracking screws. (Fig. 7) **NOTE: Do not completely remove the locking screws as there are very small nylon pads under them to prevent damage to the pressure head tracking screws.**
6. Adjust the pressure head tracking screws in and out to rotate the pressure head lower section independently from the pressure head upper section. (Fig. 8 & 9) The pressure head tracking will be set once the marks on the two halves of the pressure head align. (Fig. 10) Once this is set correctly, make sure that both tracking screws are in contact with the tracking pin then tighten the locking screw which holds the tracking screws in position. (Fig. 11) **NOTE: The tracking screws must be in firm contact with the tracking pin, but not so much that it causes the operation of the pressure head to be excessively stiff.**
7. Check the condition of the pressure head axle. The surface of the is axle clear of scores or evidence of bearing slip, if the surface is in any way uneven the axle should be replaced. Apply some anti-fret compound to the surface of the axle, (Fig. 12) in preparation for reinstallation.
8. Check the condition of the surface of the pressure wheel. It should be worn evenly and free of scoring or flats. **IMPORTANT: if the surface of the pressure wheel is damaged in any way it will have to be replaced. Failure to do so will have a serious effect on how the paper tracks in the machine resulting in an inaccurate cut.** Using a little anti-fret compound or grease, stick the two shims (*one on each side*) to the bearings of the pressure wheel. (Fig. 13) This will make reinstalling the pressure wheel much easier. (Fig. 14)
9. Insert the pressure head axle, ensuring that the flats on the axle align with the screws that locate and adjust the axle. (Fig. 15 & 16) **NOTE: Position the axle approximately central in the slot; this will be accurately set once the assembly has been refitted.**
10. Refit the pressure adjuster wheel retaining screw.
11. The pressure and camber adjustments on the pressure wheel still needs to be set, this can only be carried out when the assembly has been reinstalled in the machine.

Section 4g - Pressure head assembly setting



Section 4g - Pressure head assembly setting (continued)



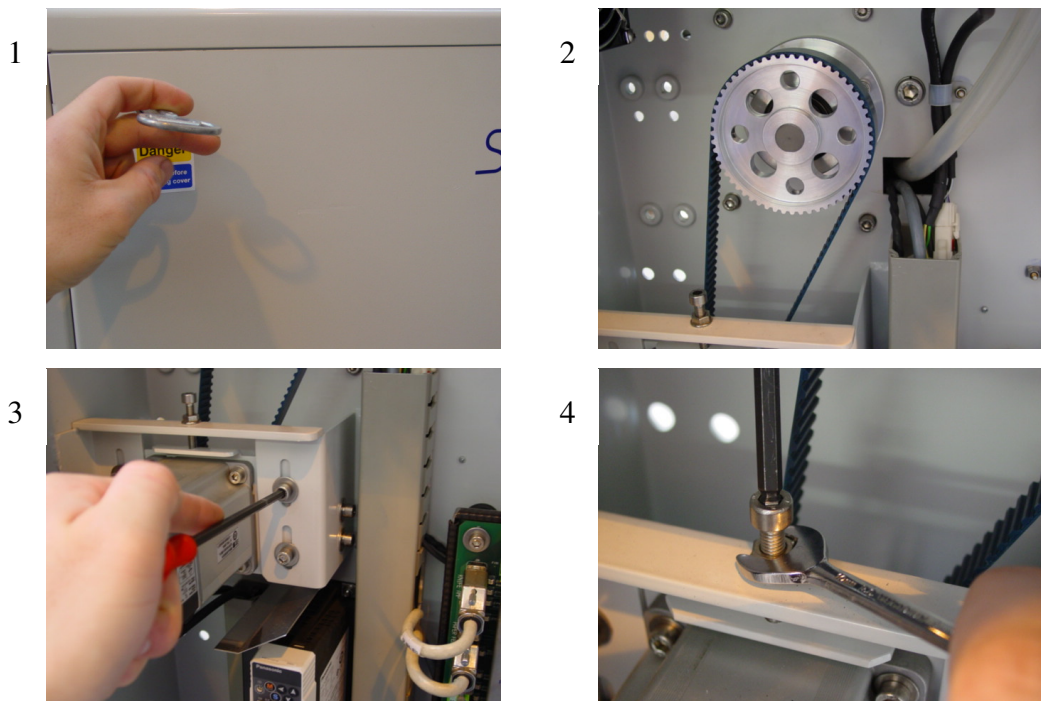
Section 4g - Pressure head assembly setting (continued)

1. Refit the pressure head assembly onto the pressure head mount bar. (Fig. 1)
2. Check the gap between the pressure wheel and the drive wheel. (Fig. 2) The pressure wheel will need its camber adjustment setting so the gap is even.
3. The camber adjustment on the pressure wheel is altered by the two grub screws; these are located one above and one below the pressure head axle. (Fig. 3 & 4) **NOTE: Tightening the upper grub screw moves the left corner of the pressure wheel down, tightening the lower grub screw moves the left corner up.**
4. Set the pressure head load by inserting a sample sheet of the type of paper you wish to cut. (Fig. 5) Engage the pressure head. (Fig. 6) Then rotate the pressure adjuster wheel anti-clockwise to increase the load, and clockwise to reduce the load. (Fig. 7) The pressure is set once the form is gripped firmly between the two rollers. (Fig. 8)
5. Once the correct pressure has been set, fix the pressure adjuster wheel in position with the locking screw. (Fig. 9)
6. Assuming the machine is now all back together, test with paper. (Fig. 10) Check the registration marks on the form, they should align perfectly. (Fig. 11) However if the registration marks do not align this means that the lower blade may not have been fitted square, or the tracking and camber has not been set correctly on the pressure head.

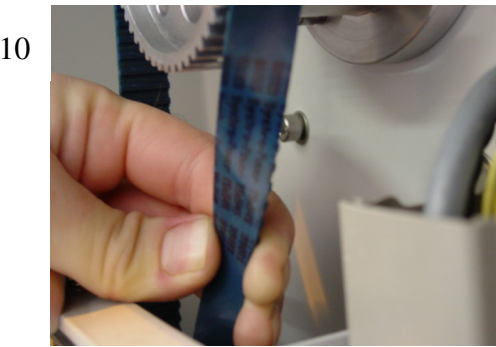
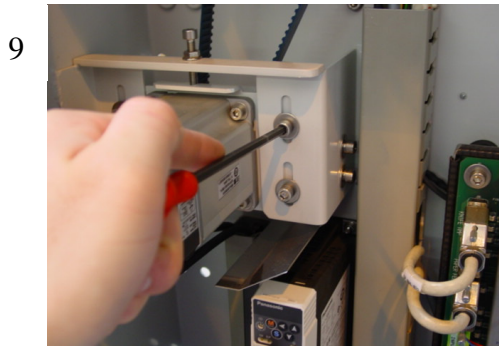
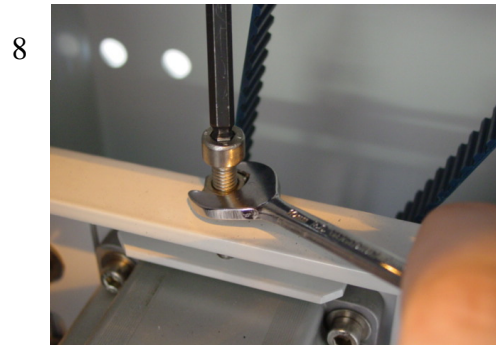
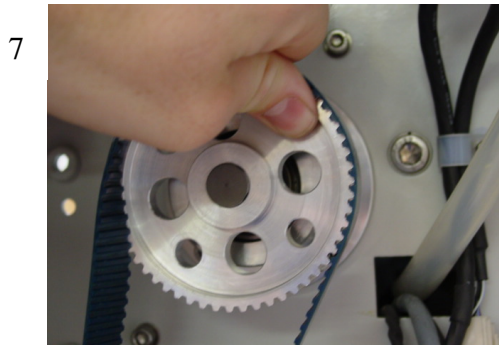
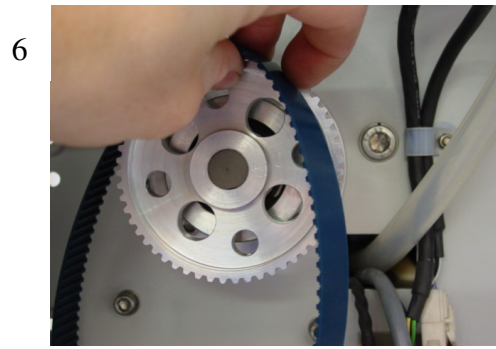
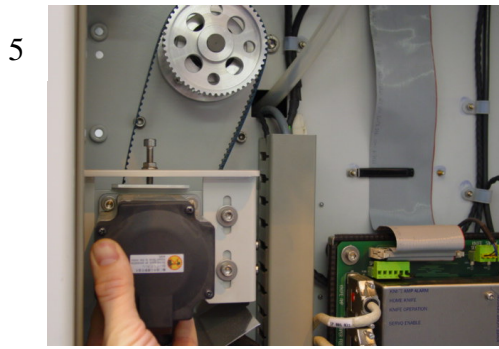
Section 5a - Blade drive belt renewal

Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure.



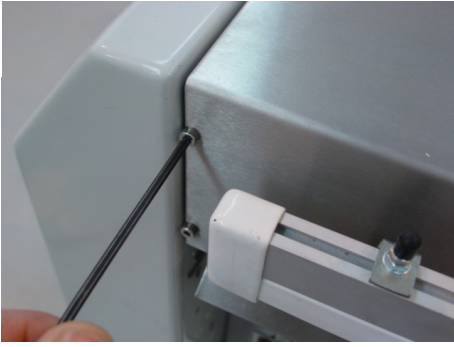
Section 5a - Blade drive belt renewal (continued)



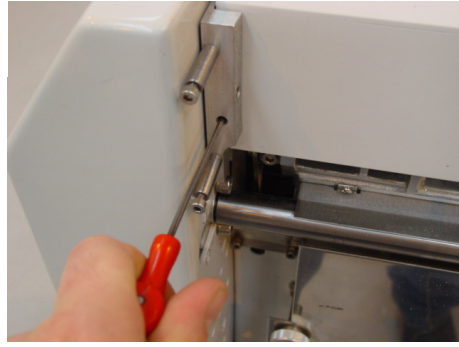
1. Remove the operator side service door. (Fig. 1) This will reveal the blade drive timing pulley. (Fig. 2)
2. Loosen the screws which hold the blade drive motor. (Fig. 3)
3. Loosen the locking nut and belt tensioner screw; this will slacken the blade drive belt. (Fig. 4)
4. With the blade drive belt tension screw loosened you can lift the blade drive motor, (Fig. 5) and remove the blade drive belt. (Fig. 6)
5. Fit the new blade drive belt by looping it over the blade motor pulley first, then over the blade drive timing pulley. (Fig. 7)
6. Tension the blade drive belt using the belt tension adjuster screw, and then once the tension is set tighten the locking nut. (Fig. 8)
7. Tighten the blade motor into position. (Fig. 9) Check the blade drive belt tension; you should be able to give the belt a half twist at the centre point of the belt run. (Fig. 10)

Section 5b - Blade sensor setup

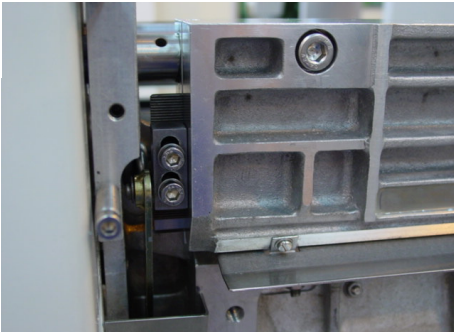
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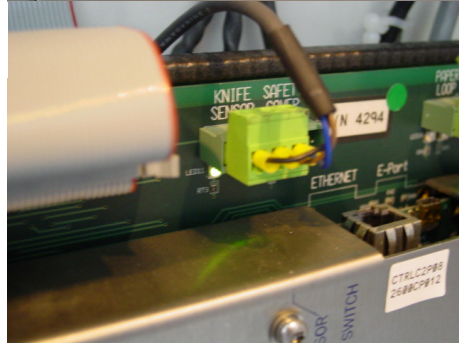
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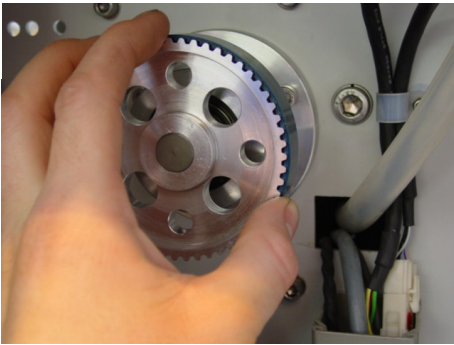
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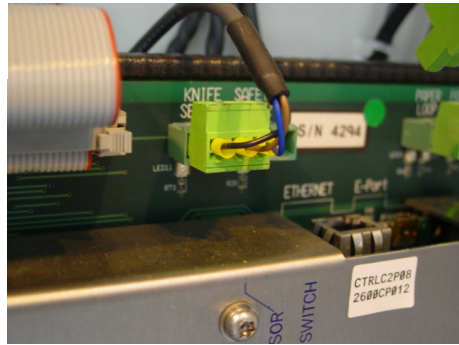
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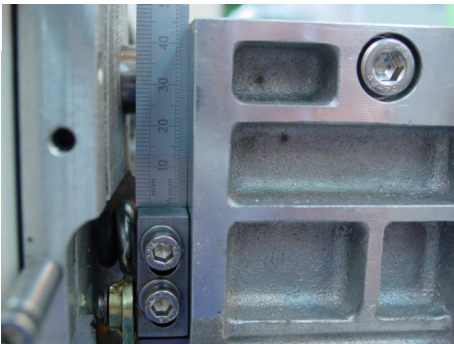
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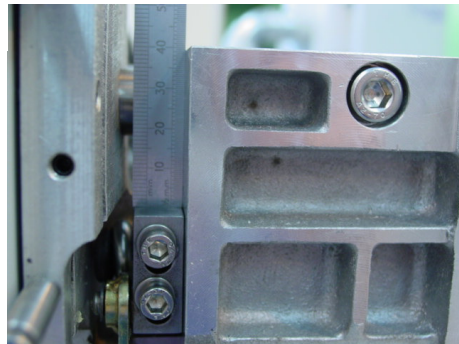
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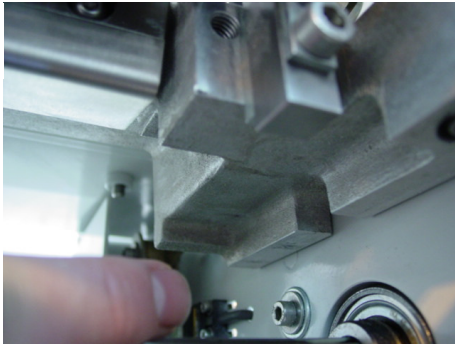


10



Section 5b – Blade sensor setup (continued)

11



12

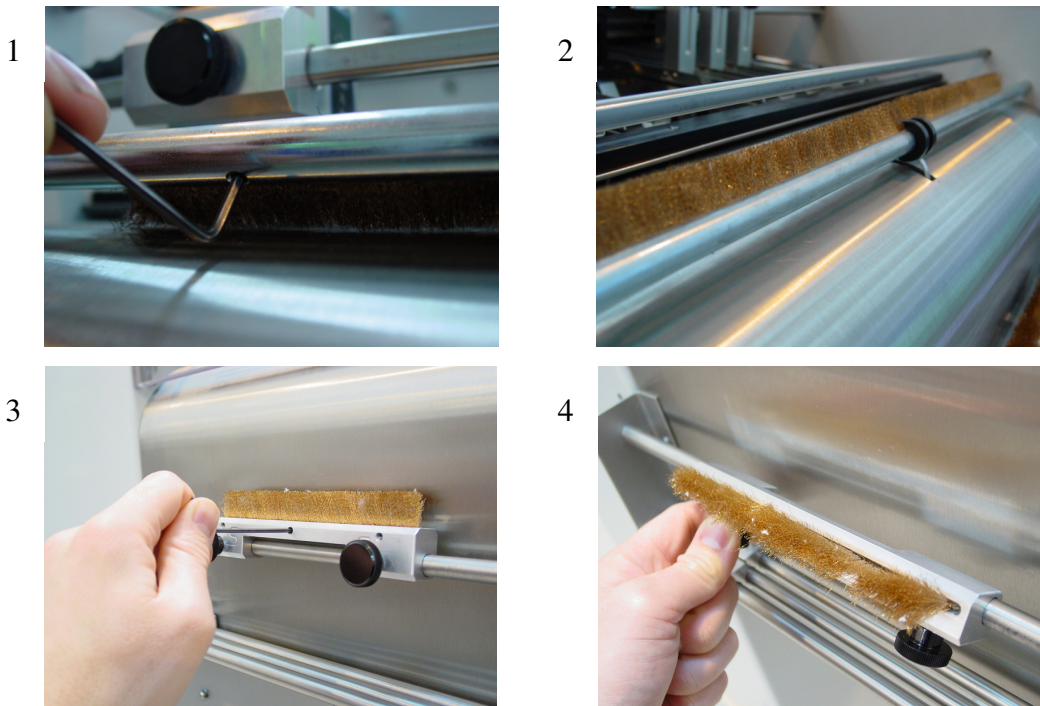


1. Remove the blade guard (Fig. 1) **WARNING Exposed blades, proceed with caution.** *Shown with anti-static option fitted this will not affect the procedure.*
2. Loosen the two grub screws which hold the kick-out roller pressure head mount plate. (Fig. 2) Then lift clear of the machine. This will reveal the blade guide. (Fig. 3)
3. Remove the service doors both ends. (Fig. 4)
4. Connect the mains power and switch the machine on. (Fig. 5) **WARNING Although power to the logic unit, motors and drivers will be cut with the doors removed, the power distribution box will still be live. PROCEED WITH CAUTION.**
5. With the power on and the blade in its ‘home’ position, the light below the blade sensor socket should be illuminated. (Fig. 6)
6. Rotate the blade drive timing pulley until the blade sensor light is extinguished. (Fig. 7 & 8)
7. For a **narrow** blade the measurement from the upper edge of the blade guide to the upper edge of the blade mounting block should be 45mm. (+/- 0.5mm) (Fig. 9) For a **standard** blade the blade measurement from the upper edge of the blade guide to the upper edge of the blade mount block should be 40mm (+/- 0.5mm) (Fig. 10)
8. If the measurement for your blade type does not match that stated in step 7 you will need to adjust the blade sensor. The sensor is located as shown in Fig. 11. You will need to loosen the nuts on the rear of the sensor which hold it in position. (Fig 12) With the blade sensor now loose, set the blade to the correct position for your blade type. (*for narrow 45mm [+/- 0.5mm] or for standard 40mm [+/- 0.5mm]*) Then move the sensor up or down so that the light on the logic unit is extinguished at the correct point. Once set then tighten the sensor into position.
9. **Disconnect from the mains power.**
10. Refit the safety guards by completing steps 1 – 3 in reverse order, prior to testing. **WARNING Make sure that the mains power is disconnected prior to refitting the guards. The machine may become operational before all guards are in place.**

Section 6a - In-feed brush element renewal

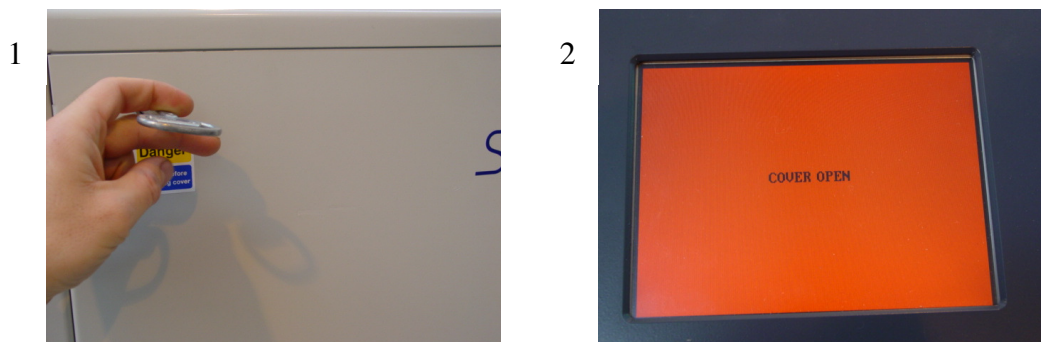
Please read this complete section before starting.

WARNING The machine must be isolated from its power supply before starting any maintenance procedure.

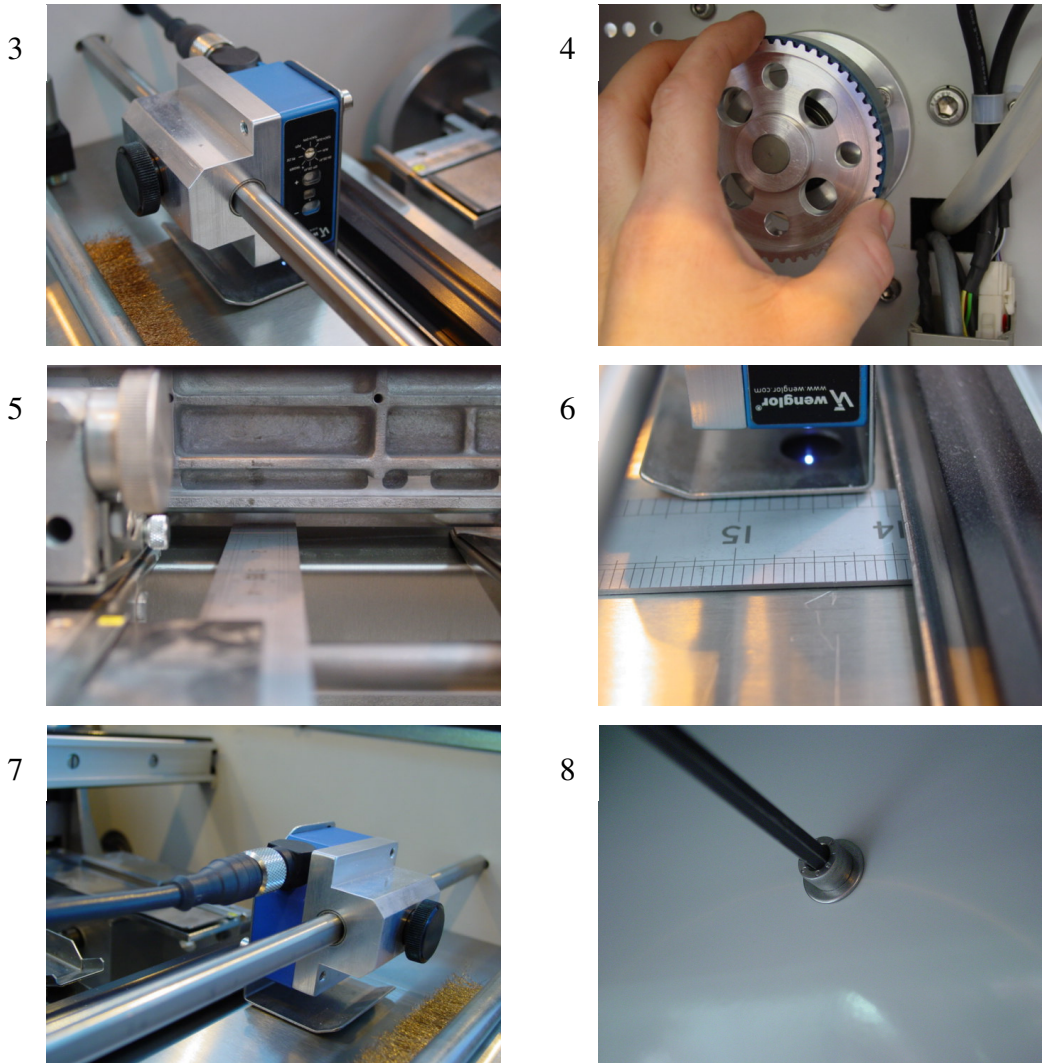


1. Loosen the five grub screws on the underside of the in-feed brush bar, (Fig. 1) and remove the worn bush element.
2. Insert a new bush element into the in-feed brush bar, (Fig. 2) and retighten the five grub screws.
3. Loosen the three grub screw on both of the in-feed guide brush holders, (Fig. 3) and remove the worn brush element.
4. Insert a new brush element into each of the in-feed guide brush holders, (Fig. 4) and retighten the screws.

Section 6b - OMR sensor set up



Section 6b - OMR sensor set up (continued)



1. Remove both the service doors. (Fig. 1)
2. Connect the mains power and switch the machine on. (Fig. 5) **WARNING** Although power to the logic unit, motors and drivers will be cut with the doors removed, the power distribution box will still be live. **PROCEED WITH CAUTION.**
3. The OMR sensor should now be illuminated. (Fig. 3)
4. Rotate the blade timing pulley anti-clockwise to drive the blade downward (Fig. 4) until the upper and lower cross cut blades overlap.
5. Using a steel rule, measure from the back of the upper cross cut blade, (Fig. 5) to the illuminated mark from the OMR sensor. (Fig. 6) The measurement should be 14 1/2" (+/- 1/16").
6. This measurement must be repeated with the OMR sensor positioned at the far left (Fig. 3) and far right (Fig. 7) of its adjustment.

Section 6b – OMR sensor set up (continued)

7. If the position of the OMR sensor needs adjusting, loosen the two screws on either end of the OMR sensor mounting bar (Fig. 8). You can now adjust the OMR sensor backwards and forwards in the slots to achieve the correct measurement of 14 ½” (+/- 1/16”). **NOTE when adjusting the OMR mounting bar position, make sure you maintain the gap between the sensor deflector plate and the intake plate. The measurement should be 1.5mm or 1/16” which is the approximate thickness of a standard steel rule. (Fig. 6)**
8. **Disconnect from the mains power.**
9. Refit both service doors prior to testing. **WARNING Make sure that the mains power is disconnected prior to refitting the doors. The machine may become operational before both service doors guards are in place.**

Section 7 – Trouble shooting guide

The table below shows some of the most commonly reported faults and their possible causes. Before fault finding we advise all settings on the machine are returned to standard, also the machine is isolated from other equipment.

WARNING The machine must be isolated from its power supply before starting any of the following procedures.

Description of fault	Possible cause
Form keeps wrecking	<ul style="list-style-type: none">• Paper guides are missing• Incorrect height on the form guide flap• A form jammed in the kick out section• Edge trimmer drive belts are worn• In feed brush is worn• Blade sensor mistimed
Edges of the form are rough	<ul style="list-style-type: none">• Edge trimmer blades are worn• Friction hubs worn• Edge trimmer belts worn
End of the form are rough	<ul style="list-style-type: none">• Cross cut blades are worn• Cross cut blades are out of adjustment
The cut form is not square	<ul style="list-style-type: none">• Cross cut blades are out of alignment• Tracking setting incorrect on the pressure head• Camber setting incorrect on the pressure head

	<ul style="list-style-type: none"> • Worn pressure wheel • Worn drive wheel
The blade is noisy	<ul style="list-style-type: none"> • Lack of oil in the blade guide • Air blast bush worn • Gantry arm bushes worn • Gantry con rod bearings failed • Blade guide eccentrics worn • Poor blade set up • Worn blade drive belt • Incorrect belt tension
Centre cut is rough	<ul style="list-style-type: none"> • Centre cutter blades are worn • Centre cutter is out of adjustment • Centre support is set incorrectly or worn • The locking lever spring is damaged
The waste is coming through with the job	<ul style="list-style-type: none"> • Kick out roller pressure heads aren't engaged • The strip cut plate is missing • Kick out roller drive belts are worn

