

# Plockmatic FTR2000 Trimmer

## Service Manual



Provided By

**MyBinding**.com®  
*When Image Matters.*

# TRIMMER FTR 2000

## SERVICE MANUAL

This manual applies to the FTR 2000 both in left and right version.  
Within this document, all references to right version also apply to the left version  
unless specially mentioned.

The difference is basically that the two models are mirrored. All pictures within this manual are of  
the right version.

Due to the mirroring, typical Front and Rear designations which normally is viewed from the opera-  
tor location has been replaced by Left and Right. Left and Right is viewed from the paper direction.

Clarification:

Left = Rear for right version & Front for left version

Right = Front for right & Rear for left

20 September 2006, Rev 0.01  
Subject to change



Page intentionally blank

## TABLE OF CONTENTS

<b>1</b>	<b>INSTALLATION PROCEDURE</b>	
1.1	INSTALLATION PROCEDURE.....	FTR-1-1
<b>2</b>	<b>PREVENTIVE MAINTENANCE SCHEDULE</b>	
2.1	PREVENTIVE MAINTENANCE SCHEDULE .....	FTR-2-1
<b>3.</b>	<b>REPLACEMENT AND ADJUSTMENT</b>	
3.1	COVERS.....	FTR-3-1
3.1.1	FRONT AND REAR COVER .....	FTR-3-1
3.1.2	TOP COVER .....	FTR-3-2
3.1.3	BLOWER MOTOR M5 / M6.....	FTR-3-3
3.1.4	INFEED COVER.....	FTR-3-4
3.1.5	LOCKING BRACKET .....	FTR-3-5
3.1.6	UPPER OUTFEED COVER .....	FTR-3-6
3.1.7	INTERLOCK SWITCH S9 &S10.....	FTR-3-7
3.1.8	LOWER OUTFEED COVER .....	FTR-3-8
3.1.9	PROTECTION COVER .....	FTR-3-9
3.2	AREA C.....	FTR-3-11
3.2.1	INFEED SENSOR Q13 .....	FTR-3-11
3.2.2	CONTROL SWITCH S2 .....	FTR-3-12
3.2.3	CONTROL SWITCH S3 .....	FTR-3-13
3.2.4	TRANSPORT MOTOR M1 .....	FTR-3-14
3.2.5	TRANSPORT BELT SENSOR Q4.....	FTR-3-15
3.2.6	TRIM KNIFE MOTOR M2.....	FTR-3-16
3.2.7	TRIM KNIFE HOME POSITION SENSOR Q5.....	FTR-3-17
3.2.8	TRIM KNIFE .....	FTR-3-18
3.2.9	PAPER PATH & OUTFEED SENSOR Q6.....	FTR-3-22
3.2.10	STOP GATE CARRIAGE.....	FTR-3-23
3.2.11	STOP GATE MOTOR M3 & SENSOR Q7.....	FTR-3-24
3.2.12	LENGTH ADJUSTMENT MOTOR M4 & SENSOR Q12 .....	FTR-3-25
3.2.13	LENGTH ADJUSTMENT HOME POSITION SWITCH S11... ..	FTR-3-26
3.2.14	LOWER OUTFEED BELTS .....	FTR-3-27
3.2.15	UPPER OUTFEED BELTS .....	FTR-3-28
3.2.16	TRIM BIN FULL SENSOR Q8 .....	FTR-3-29
3.2.17	TRANSMISSION CHAIN .....	FTR-3-30
3.2.18	KNIFE SUPPORT CHAIN .....	FTR-3-31
3.2.19	KNIFE CHAIN.....	FTR-3-32
3.2.20	INFEED BELTS .....	FTR-3-33
3.3	PCB .....	FTR-3-35
3.3.1	MD6DC PCB "A" .....	FTR-3-35
<b>4.</b>	<b>TROUBLESHOOTING</b>	
4.1	FAULT CODE DESCRIPTIONS.....	FTR-4-1
<b>5</b>	<b>SERVICE TABLES</b>	
5.1	SERVICE TABLES.....	FTR-5-1

## 6. DETAILED SECTION DESCRIPTIONS

6.1 ELECTRICAL COMPONENT LIST .....	FTR-6-1
6.1.1 REAR VIEW .....	FTR-6-2
6.1.2 INFEEED VIEW .....	FTR-6-3
6.1.3 OUTFEED VIEW .....	FTR-6-4
6.1.4 STOP CARRIAGE VIEW .....	FTR-6-5
6.2 BOARD STRUCTURE .....	FTR-6-7
6.2.1 BLOCK DIAGRAM.....	FTR-6-7
6.2.2 CONTROLLER MD6DC .....	FTR-6-8
6.2.2 CONTROLLER MD6DC, CONTINUES .....	FTR-6-9
6.3 TRIMMING PROCESS .....	FTR-6-11
6.3.1 PRINCIPLE OF OPERATION.....	FTR-6-11
6.3.2 SIZE ADJUSTMENT.....	FTR-6-12
<b>SPECIFICATIONS</b>	
SPECIFICATIONS .....	FTR-Spc-1
<b>WIRING</b>	
Trimmer.....	FTR-Wir-1

---

# 1 INSTALLATION PROCEDURE

## 1.1 INSTALLATION PROCEDURE

Trimmer INSTALLATION PROCEDURE is located in the Booklet Maker BM 2000 Service Manual.

Page intentionally blank

---

## **2 PREVENTIVE MAINTENANCE SCHEDULE**

### **2.1 PREVENTIVE MAINTENANCE SCHEDULE**

Trimmer PREVENTIVE MAINTENANCE SCHEDULE is located in the Booklet Maker BM 2000 Service Manual.


Page intentionally blank

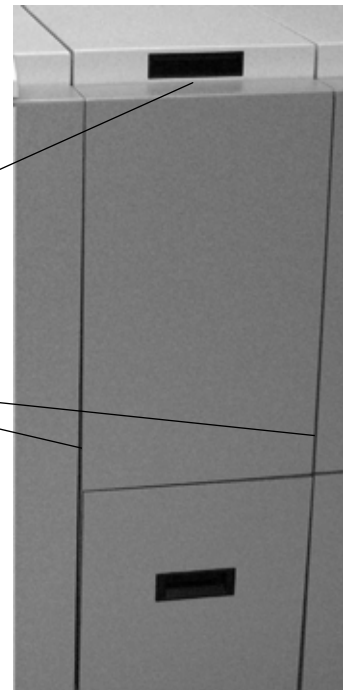
## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 COVERS

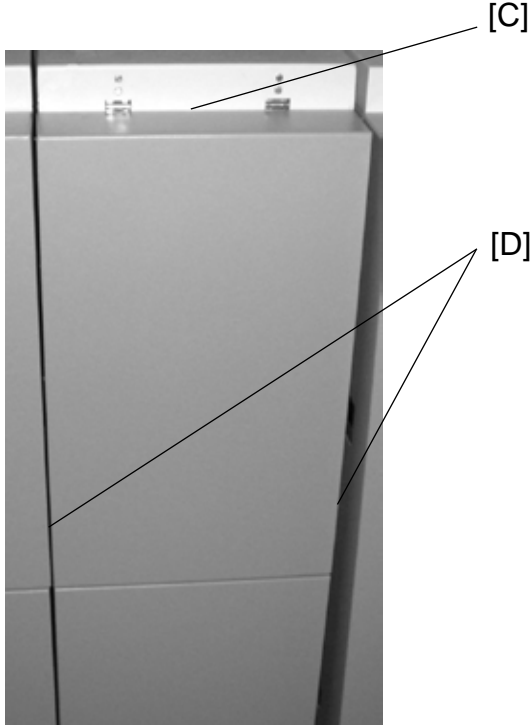
#### 3.1.1 FRONT AND REAR COVER

##### Front Cover


1. Open the Top Cover.
2. Remove screw [A] (  x1)
3. Lift cover upwards to unhook cover at the lower end [B].



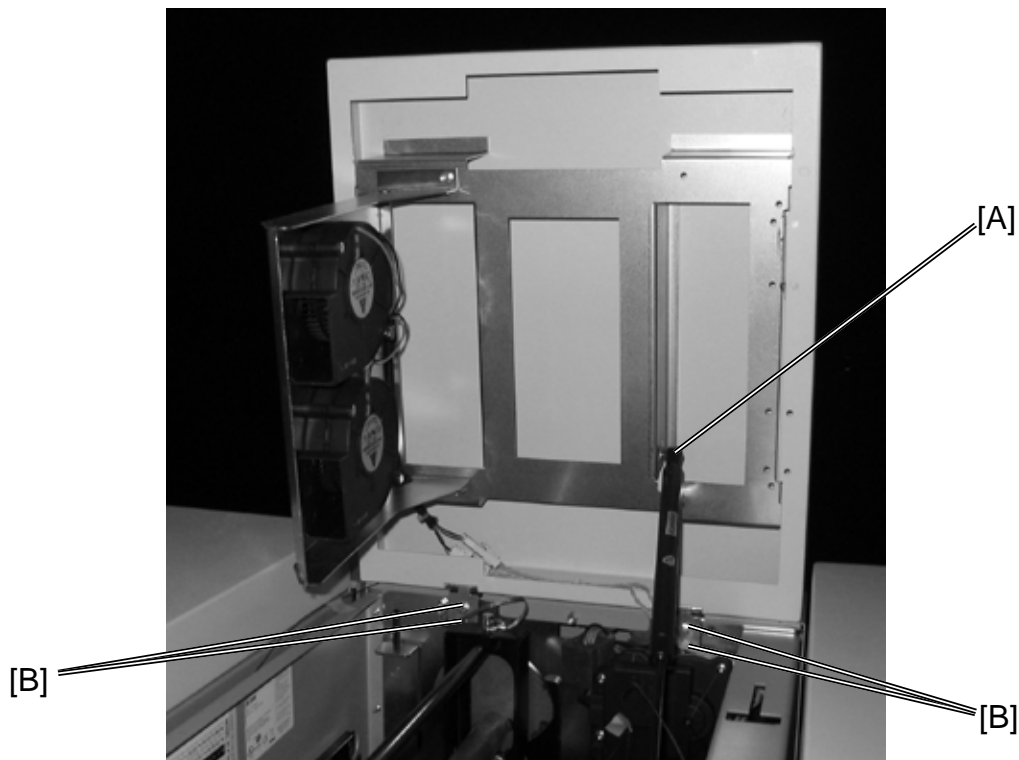
Replacement  
Adjustment





##### Rear Cover

1. Open the Top Cover.
2. Remove screw [C] (  x1). Similarly located as for the Front Cover.
3. Lift cover upwards to unhook cover at the lower end [D].

### 3.1.2 TOP COVER






#### Removal

1. Pry off the Gas spring [A] using a screw driver.
2. Loosen screws and nuts [B] (  x4,  x4).
3. Lift out Cover upwards through cut-outs.

#### Replacement

1. Reverse the removal procedure.

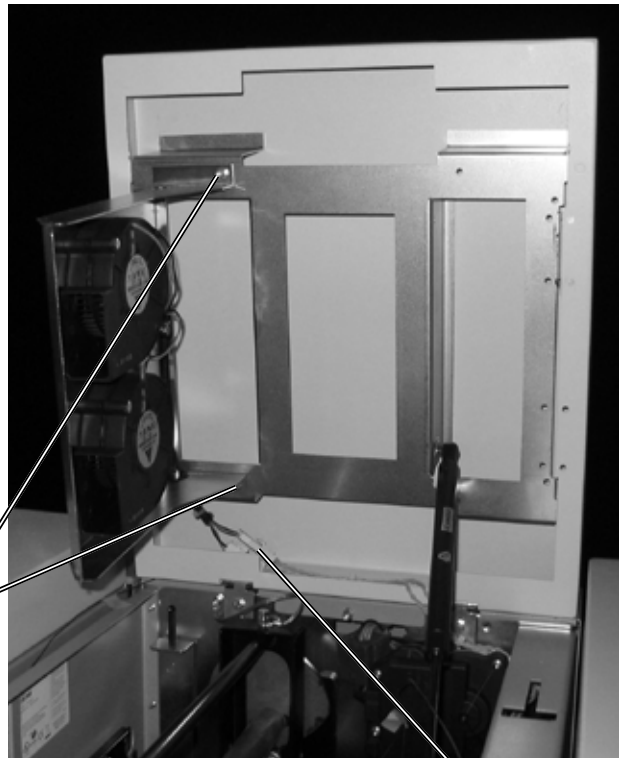
#### Adjustment

1. Check that gap Top Cover to Frame is visually equal.
2. Adjust on screws and nuts [B] if necessary (  x4,  x4).
3. Adjust Interlock Switch (  3.1.7).

### 3.1.3 BLOWER MOTOR M5 / M6



[C]






[B]

[A]

Replacement  
Adjustment

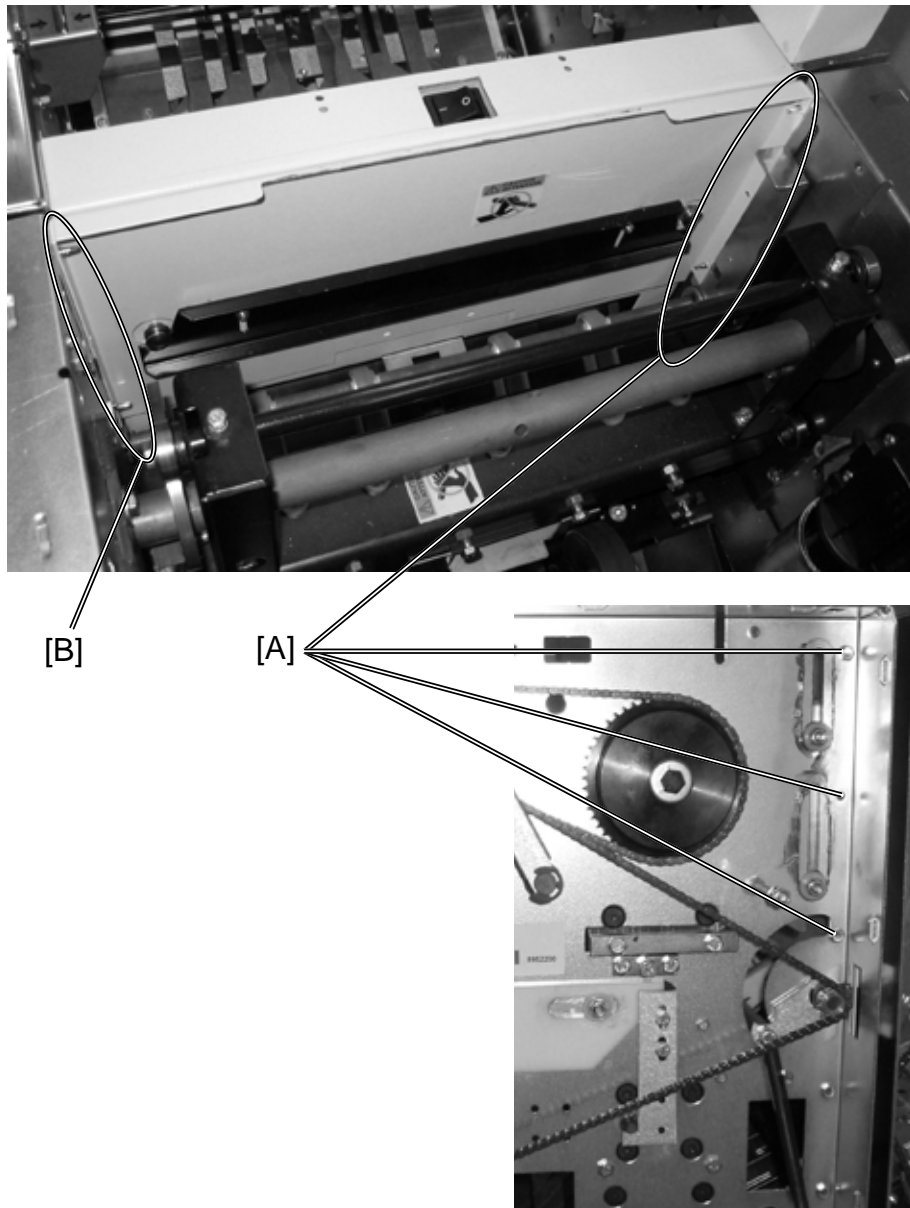
#### Removal




1. Open the Top Cover.
2. Disconnect connectors [A] (  x2).
4. Remove screws [B] (  x2).
5. Remove screws [C] (  x4).

#### Replacement

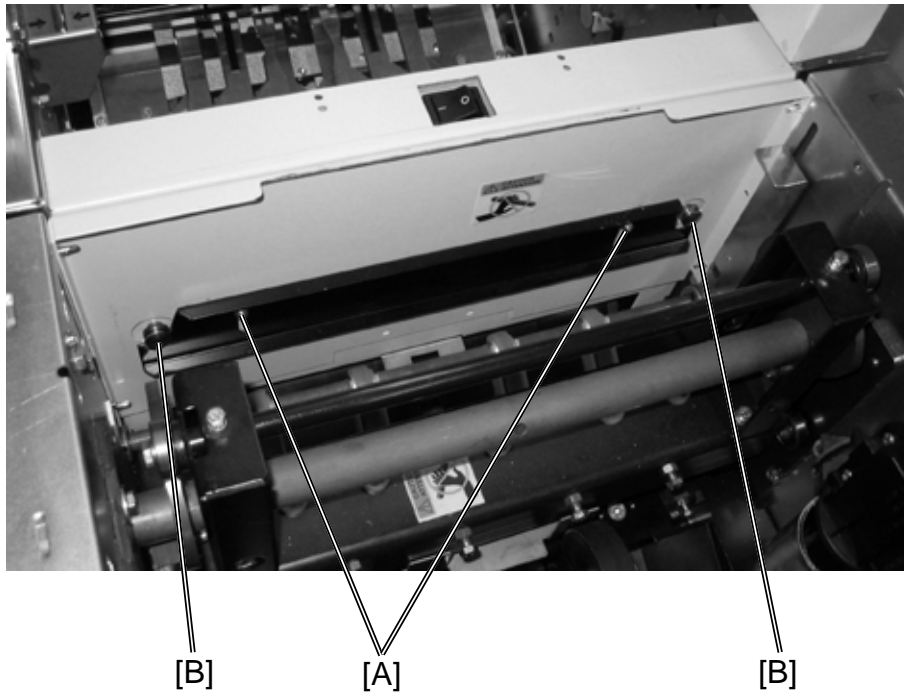
1. Reverse the removal procedure.

### 3.1.4 INFEEED COVER




1. Remove Front and Rear cover (  3.1.1).
4. Remove screws [A] (  x3).
5. Remove screws [B] similar way as [A] (  x3).

### 3.1.5 LOCKING BRACKET




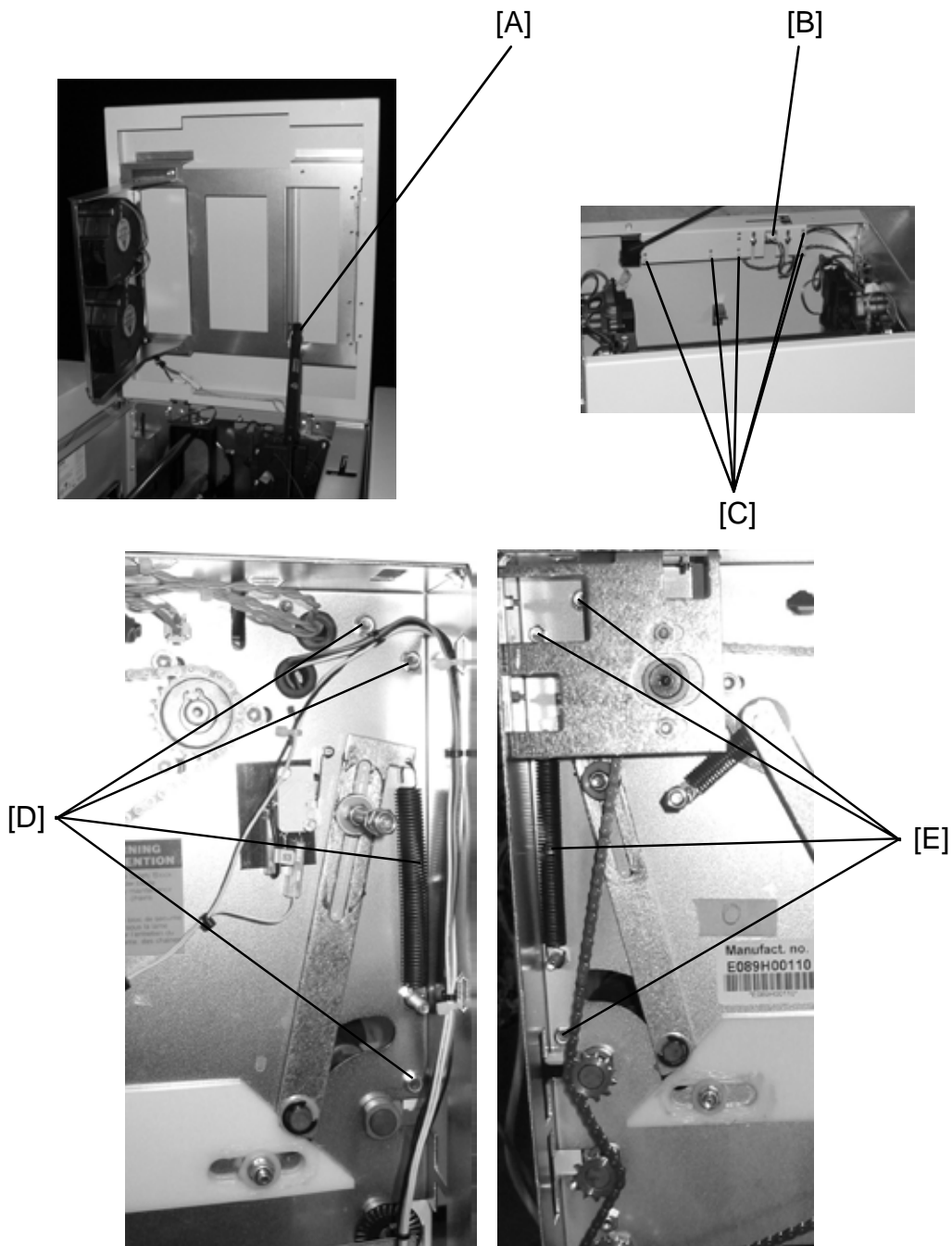
Replacement  
Adjustment





#### Removal

1. Loosen nuts [A] (  x2).
2. Locking bracket will fall down.

#### Replacement

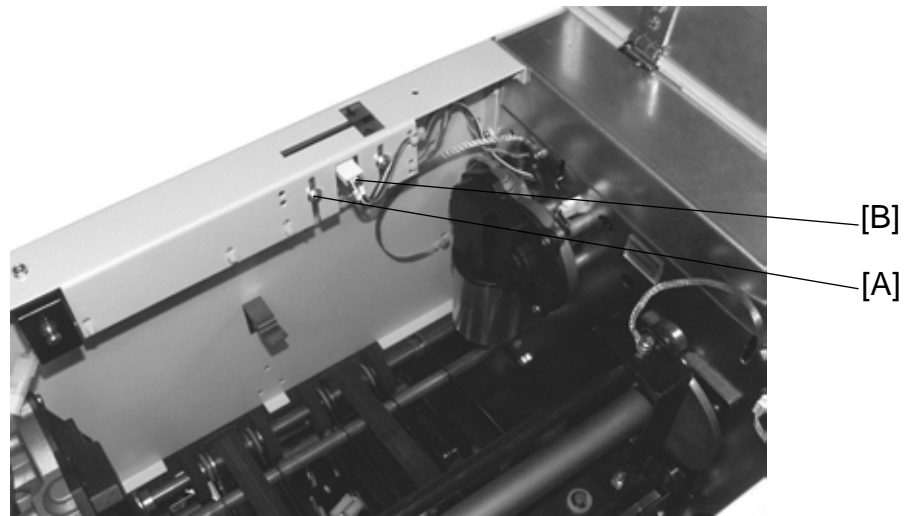
1. Push Trimmer against Bookletmaker.
2. Push up Locking bracket so it latches studs [B].
3. Tighten nuts [A] (  x2).

**3.1.6 UPPER OUTFEED COVER**

1. Remove Belt stacker.
2. Remove Front and Rear cover (  3.1.1).
3. Open the Top Cover.
4. Remove the Gas spring [A] by prying it off using a screw driver.
5. Remove connector [B] (  x1).
6. Cut cable ties [C] inside cover.
7. Remove screws [D] (  x5).
8. Remove screws [E] (  x5).



FTR-3-6

### 3.1.7 INTERLOCK SWITCH S9 &S10



Replacement  
Adjustment



#### Removal

1. Remove connector [B] (  x1).
2. Remove nuts [A] (  x2).

#### Replacement

1. Reverse the removal procedure.

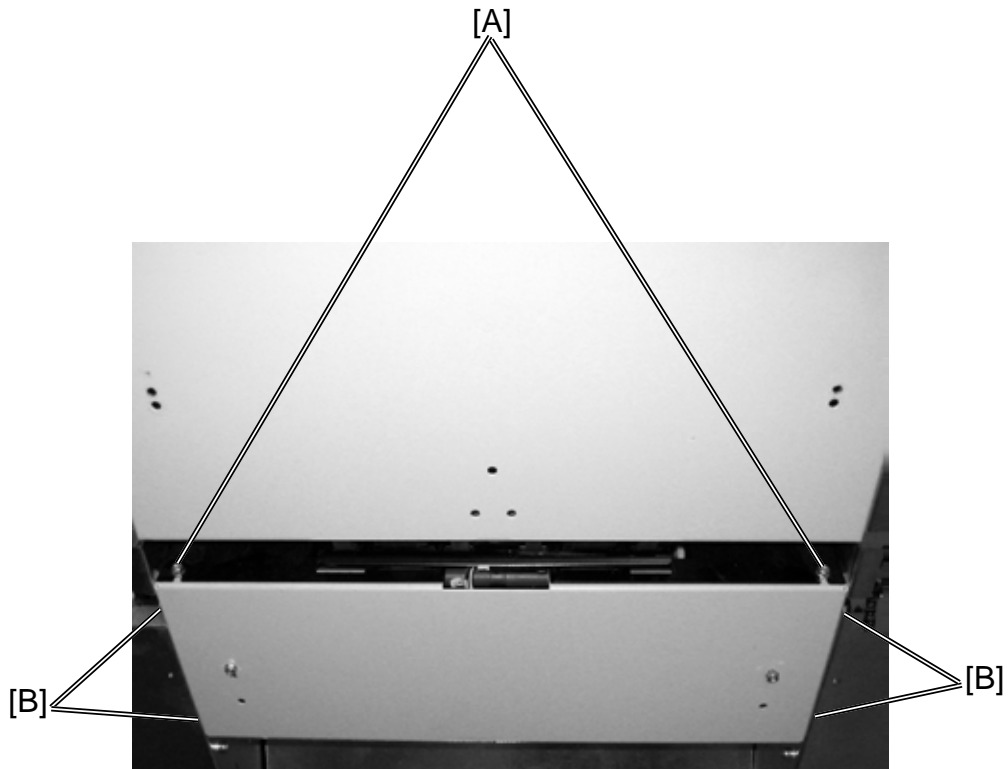
#### Adjustment





1. Loosen nuts [A] (  x2).
2. Adjust the interlock so that Top cover actuates interlock switch 2 mm before closed.  
NOTE: Make sure both rubber dampers contact the front cover when closed.
3. Tighten nuts [A] (  x2).

#### WARNING

Overriding or cheating the interlock allows the FTR 2000 system to operate with the top cover open which can result in personal injury. Never give the operator access to the cheater or show how overriding the interlock system is carried out.

### 3.1.8 LOWER OUTFEED COVER




1. Remove Belt stacker.
2. Remove Front and Rear cover (  3.1.1).
3. Remove Protection Cover (  3.1.9).
4. Loosen screws [A] (  x2).
5. Remove screws [B] (  x4).

### 3.1.9 PROTECTION COVER



Replacement  
Adjustment

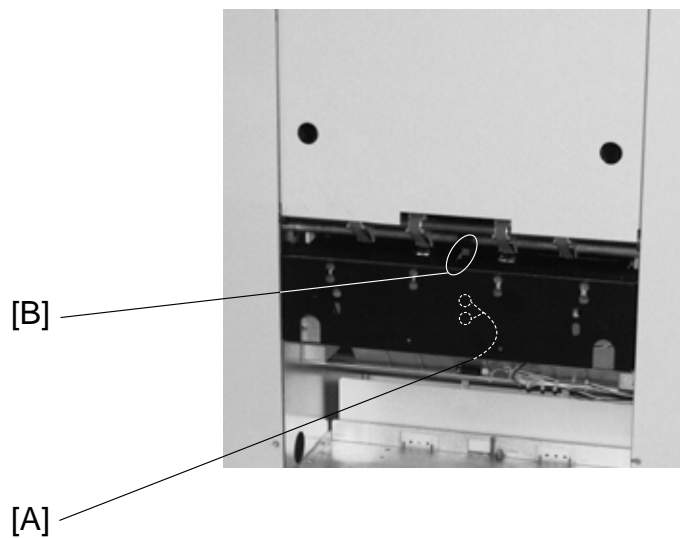
#### Removal

1. Loosen screws [A] (  x4).
2. Remove the cover through the key-holes.



Page intentionally blank

## 3.2 AREA C

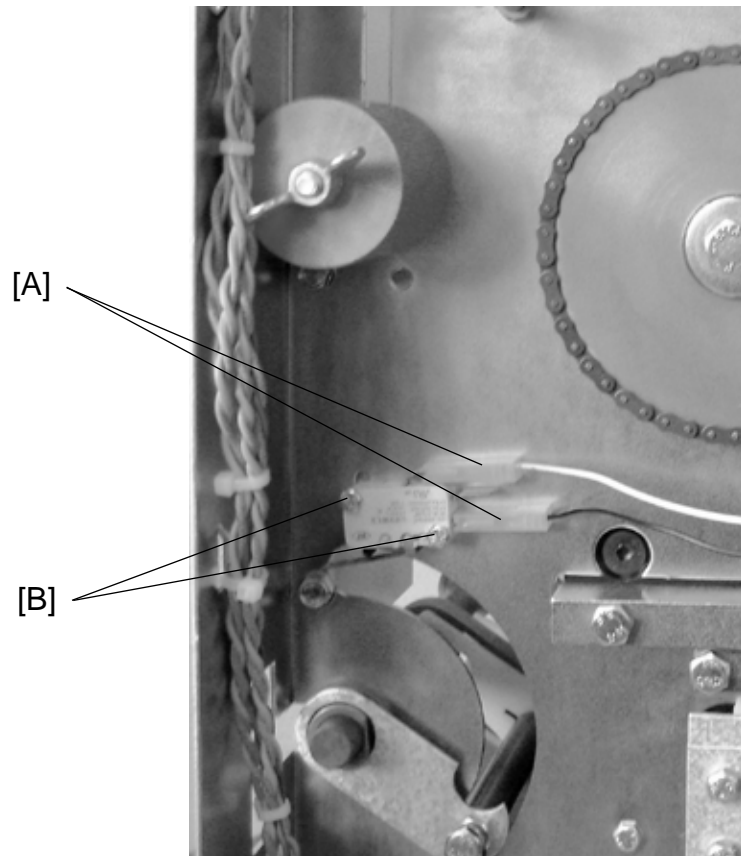
### 3.2.1 INFEED SENSOR Q13






Replacement  
Adjustment

1. Undock the Trimmer.
2. Remove nuts [A] inside bracket holding the Sensor bracket (  x2).
3. Remove connector from the Sensor (  x1).
4. Remove sensor [B].

### 3.2.2 CONTROL SWITCH S2





#### Removal

1. Remove Rear cover (  3.1.1).
2. Remove connectors [A] (  x2).
3. Remove screws [B] (  x2 ).

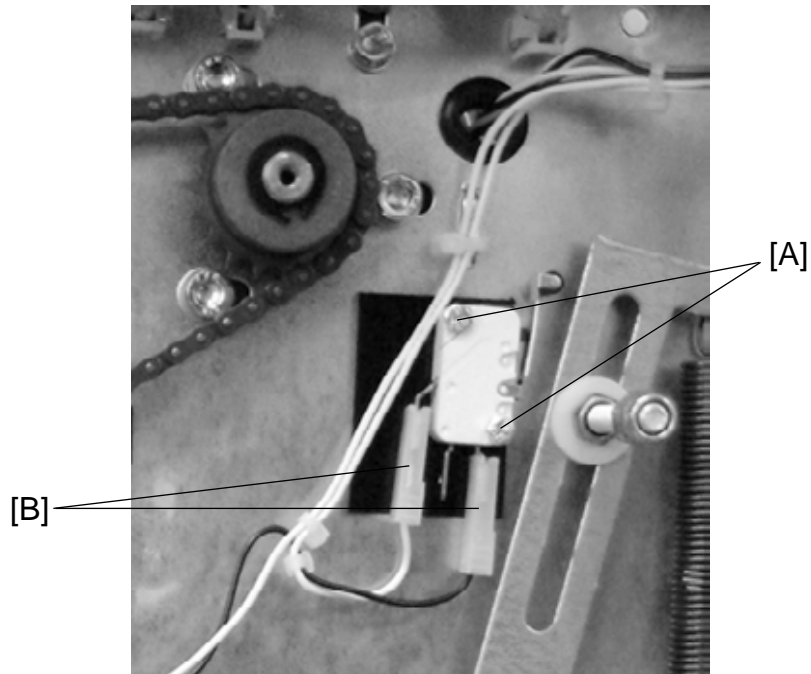
#### Replacement

1. Reverse the removal procedure.

#### Adjustment




1. Lift the Infeed shaft.
2. Make sure the Switch activates slightly before the shaft latches in upper position.
3. To adjust, loosen screws [B] (  x2 ).
4. Reposition switch to obtain adjustment.
5. Tighten screws [B] (  x2 ).

### 3.2.3 CONTROL SWITCH S3



Replacement  
Adjustment



#### Removal

1. Remove Rear cover (  3.1.1).
2. Remove connector [B] (  X2).
3. Remove screw [A] (  x2).

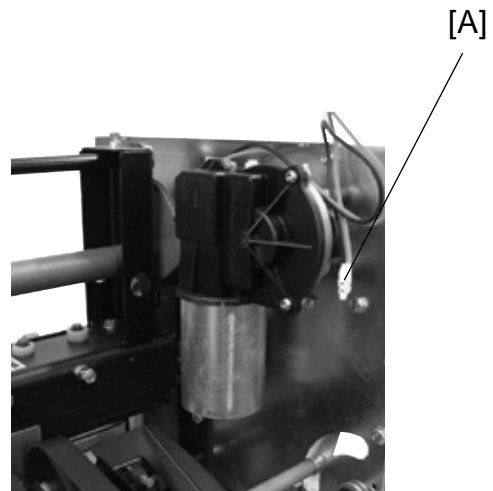
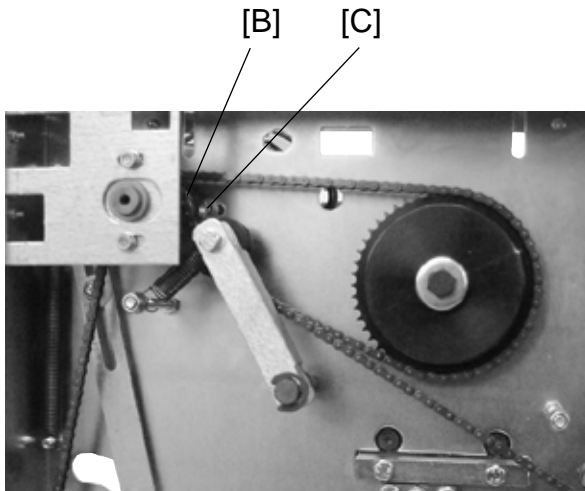
#### Replacement





1. Reverse the removal procedure.

#### Adjustment

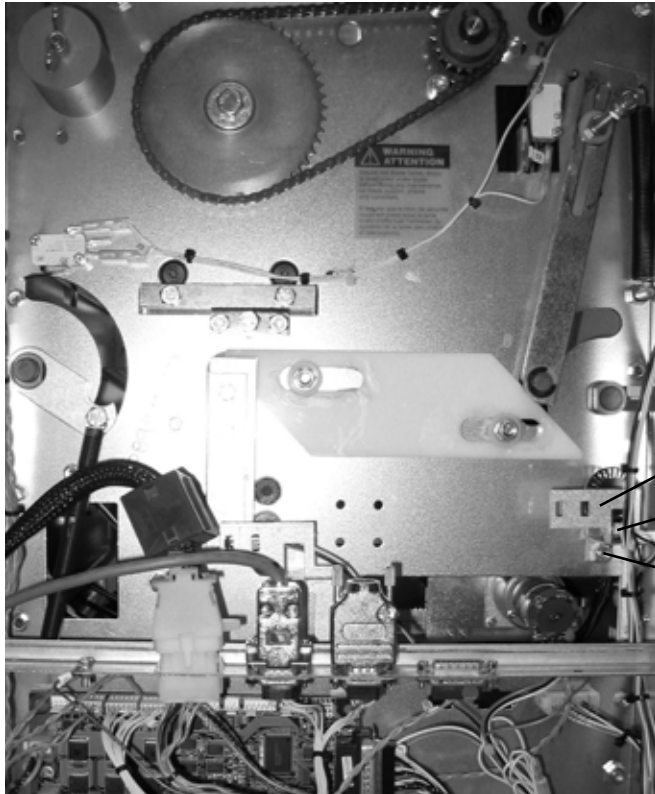
1. Lift the compressing bracket.
2. Make sure the Switch activates approximately 10 mm from where the compressing bracket latches in the upper position.
3. To adjust, loosen screws [A] (  x2 ).
4. Reposition switch to obtain adjustment.
5. Tighten screws [A] (  x2 ).

### 3.2.4 TRANSPORT MOTOR M1



1. Remove Transmission chain (  3.2.17).
2. Remove Knife support chain (  3.2.18).
3. Remove connector [A] (  x1).
4. Grab the inner sprocket to pull out the whole sprocket assembly [B].
5. Remove screws [C] holding the motor (  x3).  
NOTE: Hold the spacers between motor and frame when removing screws.

### 3.2.5 TRANSPORT BELT SENSOR Q4



[C]

[A]

[B]

Replacement  
Adjustment

#### Removal

1. Remove Rear cover ( (🔧 3.1.1).
2. Remove connector [A] ( (🔌 x1).
3. Remove nut and screw [B] ( (🔩 x1, 🔧 x1).
4. Remove bracket [C].
5. Squeeze the barbs of the sensor to remove.

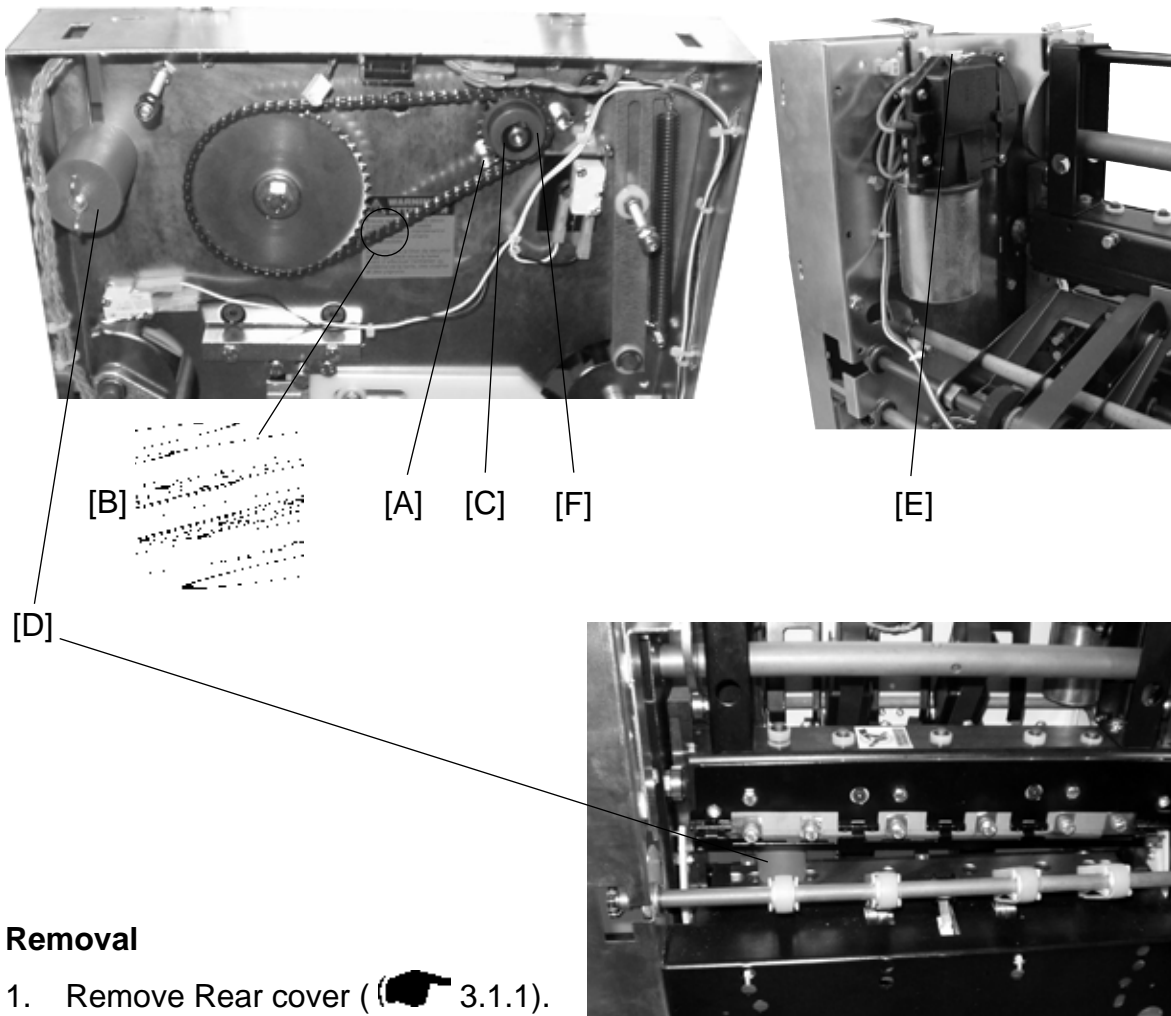
#### Replacement

1. Reverse the removal procedure  
NOTE: When tightening nut/screw make sure there is a space between encoder disc and sensor.
2. Enter service program mode and start the belts (motor M1). Check speed (m/s) is registered ( (🔧 Service Manual BM 2000: 5.1.1, 5.1.2).
3. If no, or erratic speed, loosen screw/nut [B] ( (🔩 x1, 🔧 x1).
4. Reposition sensor to obtain correct speed registration.
5. Tighten screw/nut [B] ( (🔩 x1, 🔧 x1).





### 3.2.6 TRIM KNIFE MOTOR M2

#### **⚠ WARNING**


Place the safety block [D] between lower knife and upper knife beam. When removing the chain nothing holds upper knife beam and knife in position.



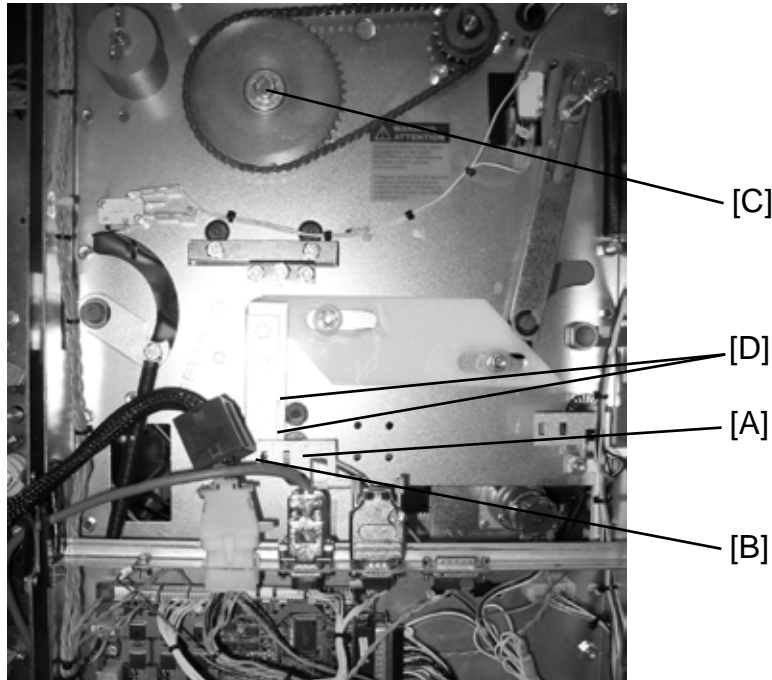
#### Removal

1. Remove Rear cover (  3.1.1).
2. Remove connector [E] (  x1).
3. Remove circlip [C] using a circlip plier.
4. Loosen screws [A] holding the motor (  x3).
5. Remove sprocket [F].
6. Remove screws [A] holding the motor (  x3).

#### Replacement

1. If it is difficult to mount sprocket [F] remove master link [B].
2. Reverse the removal procedure.
3. Tension the chain so there is no slack when tightening screws [A] (  x3).

### 3.2.7 TRIM KNIFE HOME POSITION SENSOR Q5



Replacement  
Adjustment

#### Removal

1. Remove Rear cover ( (🔧 3.1.1).
2. Remove connector [A] (🔧 x1).
3. Squeeze the barbs of the sensor to remove.  
NOTE: Gently pull bracket [B] to remove.

#### WARNING

**Stay clear from upper knife. The knife edge may cause serious injuries.**

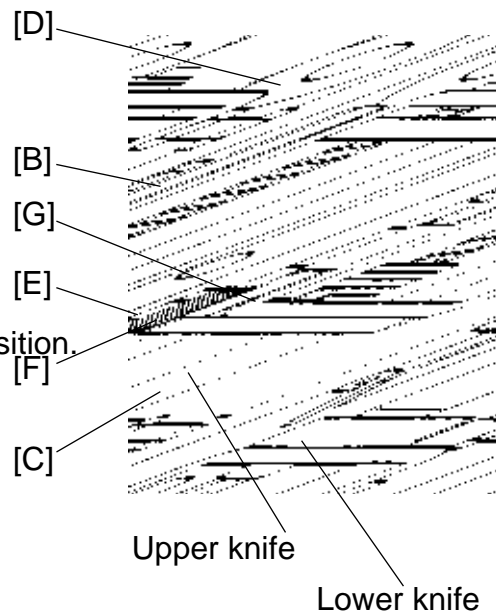
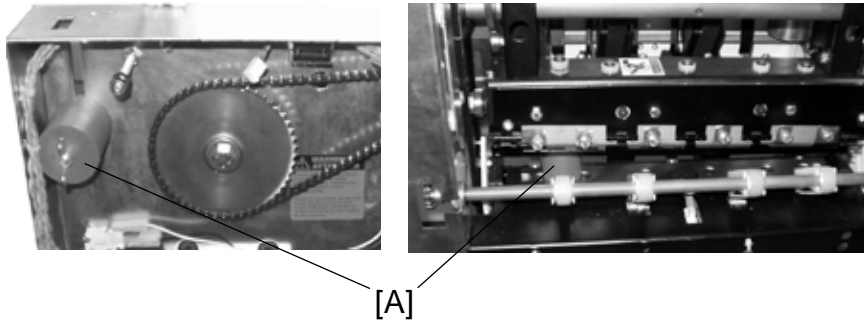
#### Replacement

1. Reverse the removal procedure.
2. Enter service program mode to check that sensor Q5 changes state when blocked/unblocked ( (🔧 Service Manual BM 2000: 5.1.1, 5.1.2).  
**NOTE:** Do not cheat the interlock.
3. Move the Upper knife by turning crank [C] using a 13 mm wrench.
4. Check on the LCD that sensor Q5 changes state when blocked/unblocked by actuators [D].



### 3.2.8 TRIM KNIFE

**⚠ WARNING**




**Stay clear from upper knife. The knife edge may cause serious injuries. Place the safety block [A] between lower knife and upper knife beam. Keep the safety block in that position as much time as possible throughout this procedure.**





#### Removal

1. Remove the belt stacker.
2. Undock the Trimmer.
3. Latch the compressing bracket in upper position.
4. Remove the infeed cover (  3.1.4).
5. Remove protection cover (  3.1.9).




#### Removal Upper knife

1. Remove screws [B] (  x3).
2. Remove knife protection plate [C].
3. Move transport protection from the new to the old knife or use the transport protection attached behind the front cover.
4. Remove the e-clip [D] from the middle plunger, to release the Set clamp (  x1).
5. Remove screws [E] and cup spring washers (  x6).  
NOTE: When removing screws [E] the nuts [G] will fall down through the cut-out in bottom of knife beam.



#### Removal Lower knife

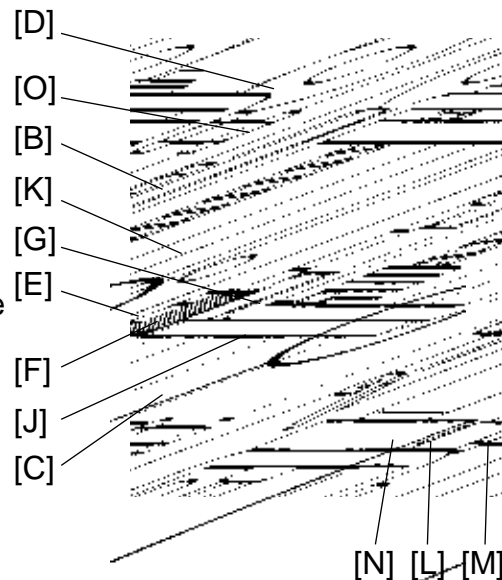
1. Remove screws [H] (  x4).
2. Remove screws [I] and cup spring washers (  x2).

### Replacement Upper knife

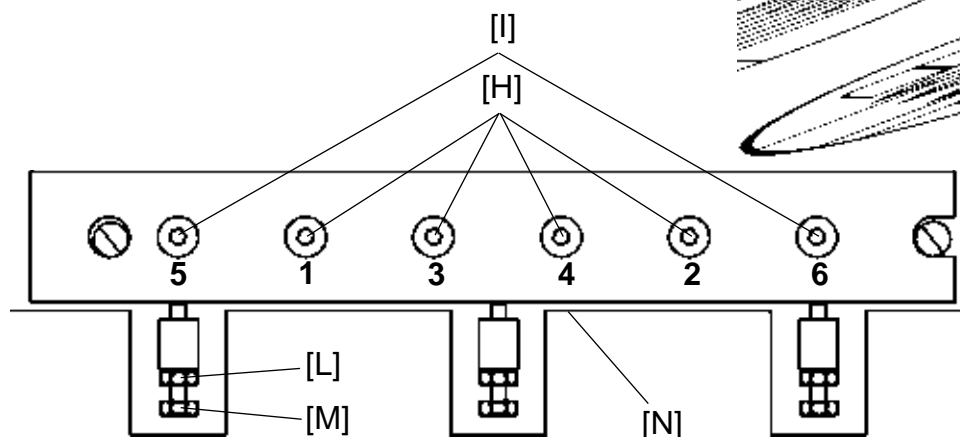
1. Move transport protection from the old to the new knife.
2. Clean and apply grease on guide bars [J] and side guides [K].
3. Fit upper knife onto guide bars [J].  
Apply grease on the cup spring washers [F] closest to the knife.  
Mount screws [E] with nuts [G] (  x6,  x6).  
NOTE: Make sure each screw has 7 cup spring washers placed according to figure.
4. Remove transport protection and mount [D] it on the old knife.
5. Mount knife protection plate [C].
6. Mount the set clamp in position with e-clip [D] (  x1 ).

### Replacement Lower knife




1. Place the lower knife onto the lower knife beam.
2. Apply grease on both washers.
3. Mount screws [I] (  x2) and cup spring washers [J].
4. Mount screws [H] (  x4).




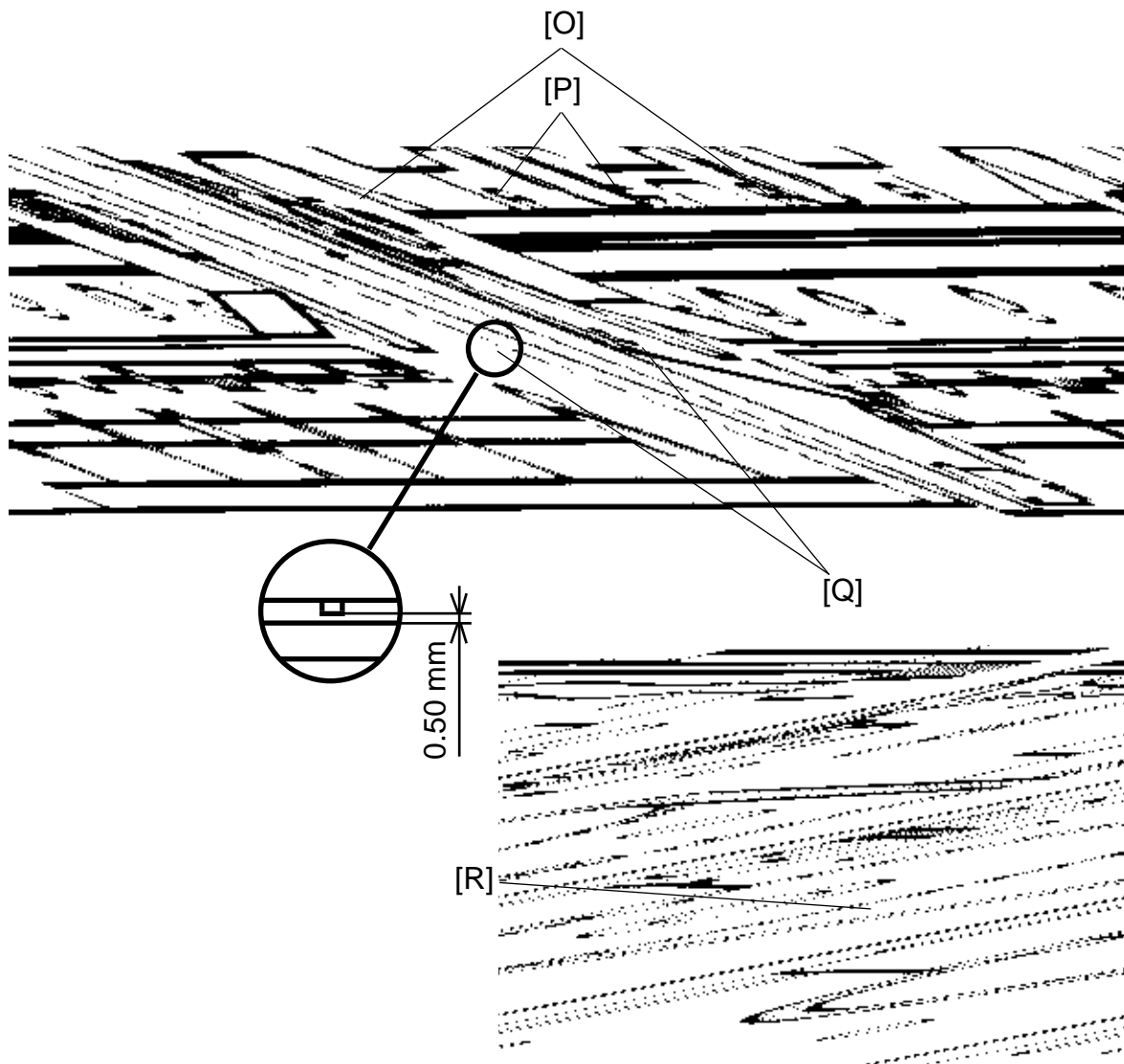
Replacement  
Adjustment





### Adjustment

1. Turn screws [E] so there is no tension and no play between cup spring washers and upper knife.
2. Then turn screws [E] one revolution clockwise each.
3. Loosen nuts [L] (  x3)
4. Turn screws [M] (  x3) counter clockwise until they pass edge [N].
5. Loosen screws [I] & [H] (  x6).
6. Push the Lower knife against the bracket [N].

7. Use a feeler gauge and check that the space [Q] between upper knife and the two red marked reference screws in the middle [P] is 0.50 mm.  
NOTE: Never touch the red painted reference screws [P].
8. Adjust the space if necessary with screws [O] (  x2).



9. Bring the Upper knife down to the bottom position by turning crank [R] using a 13 mm wrench.  
NOTE: When bringing the Upper knife down, make sure it does not touch the Lower knife.
10. Gently push in the Lower knife against the Upper knife.  
NOTE: Listen that it touches on both sides.
11. Raise the upper knife to the top position by turning crank [R].
12. Tighten screws [I] & [H] (  x6).  
NOTE: Tighten a little at first according to the sequence 1-6. Then tighten a little harder to finally fully tighten the screws. Always according to the sequence 1-6.
13. Turn screws [M] (  x3) so they touch the lower knife.

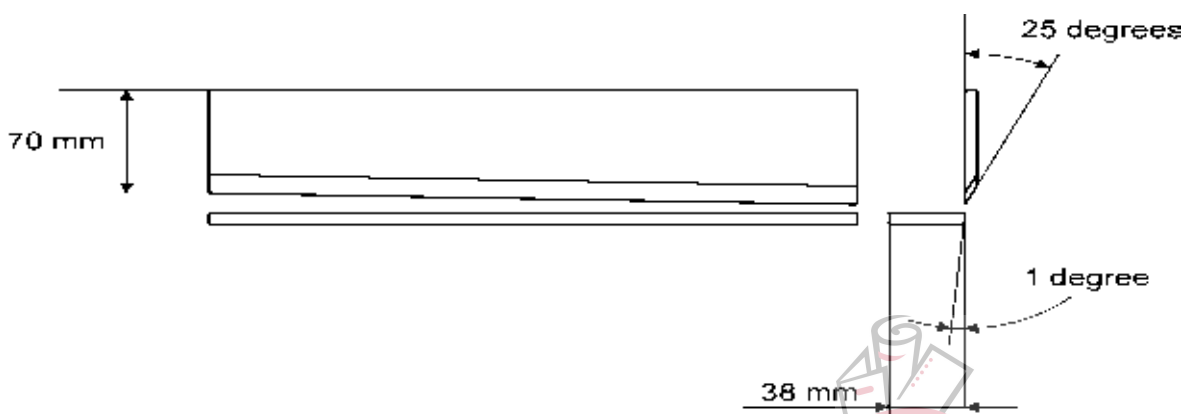
13. Slowly and carefully without paper lower the upper knife by turning crank [R]. Check that the upper knife does not contact the lower knife. In that case, back up the upper knife and start over from step 3. If no contact proceed to the bottom position.  
NOTE: Look through the cut out in the side frames while turning crank.
14. Make 5 different booklets in the BM 2000 required for the adjustment. The booklets should have 2, 15, 20 & 25 sheets A3 (11"x17") 80 gsm (20# bond).
15. Place the 2 sheet booklet in cutting position.  
Trim the set by turning crank [R].  
Inspect the trim result. Check if the lowest sheet of the booklet is cut clean throughout the length.  
If good, trim and inspect the 15 sheet booklet the same way.  
If good, trim and inspect the 20 sheet booklet the same way.  
If the set is not correctly cut on one of the ends, loosen the five screws [I] & [H] on the bad end and keep the one screw [I] tightened at the good end.  
Turn screw [M] on the bad end 1/36 revolution or 10° clockwise (🔩 x1).
16. Repeat from step 11 until trim result is perfect.  
NOTE: As guidance, trim the over spec. 30 sheet booklet to clearer see if and where it does not cut clean.
17. If not correctly cut in the middle, loosen the four screws [H] and keep the screws [I] tightened.  
Turn screw [M] in the middle 1/72 revolution or 5° clockwise (🔩 x1).  
Repeat from step 11.  
NOTE: If the knife/knives has been damaged, they have to be replaced or resharpened even if a correct result is obtained, due to shortened life time.
18. Tighten the lock nuts [L] without turning screws [M] (🔩 x3).
19. Reverse removal procedure step 1-5.

Replacement Adjustment

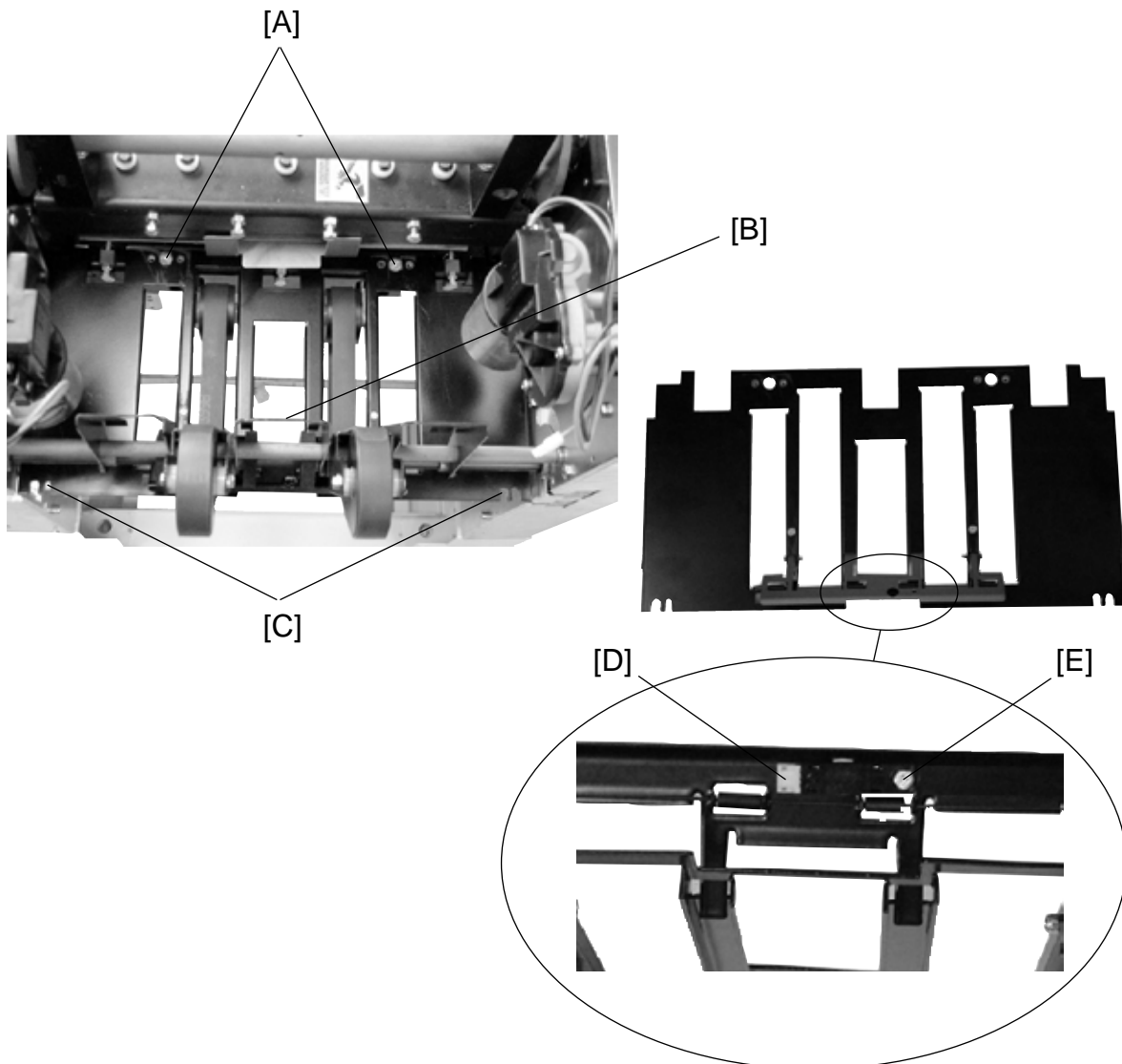
NOTE: When the knives become dull it is possible to resharpen them.

The upper knife can be resharpened until it is 70 mm (2<sup>3</sup>/<sub>4</sub>) wide at the short-end. Resharpen at a 25° angle.

The lower knife can be resharpened until it is 38 mm (1<sup>1</sup>/<sub>2</sub>) wide. Resharpen at a 1° angle.

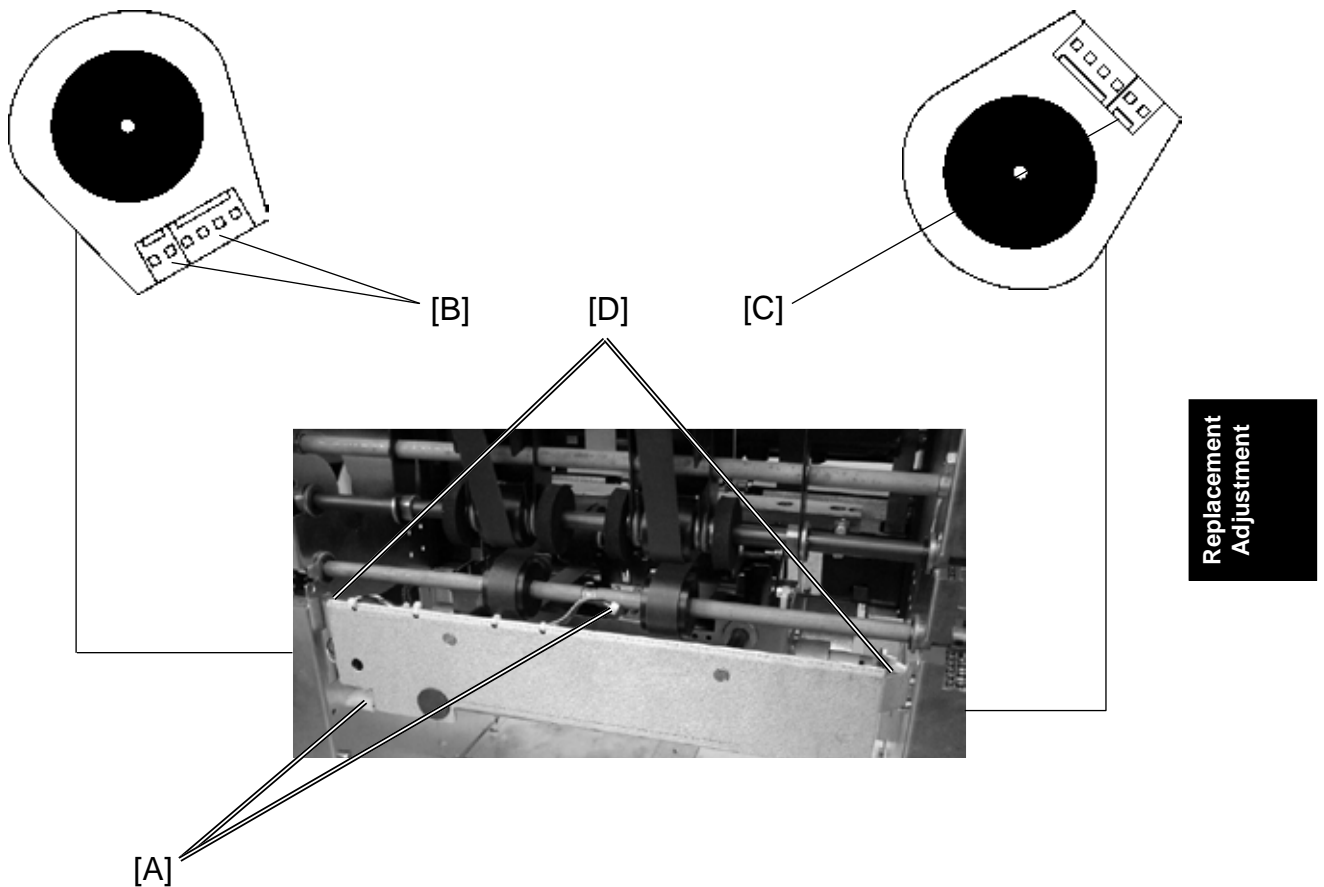


FTR-3-21





**3.2.9 PAPER PATH & OUTFEED SENSOR Q6**

1. Remove connector [D] (🔌 x1).
2. Lift up and latch compressing bracket [B].
3. Remove screws [A] (🔩 x2).
4. Remove screws [C] (🔩 x2).
5. Pull Paper path out through the outfeed.
6. To remove sensor, remove screw [E] (🔩 x1).

### 3.2.10 STOP GATE CARRIAGE



#### Removal

1. Before switching off the power, set the Trimmer (Paper size) to A4 / 8.5x11" and Trimming to off.
2. Remove Lower outfeed cover (  3.1.8).
3. Remove connectors [A] (  x2).
4. Remove connectors [B] (  x2).
5. Remove connector [C] (  x1).
6. Pull out the Carriage gently.

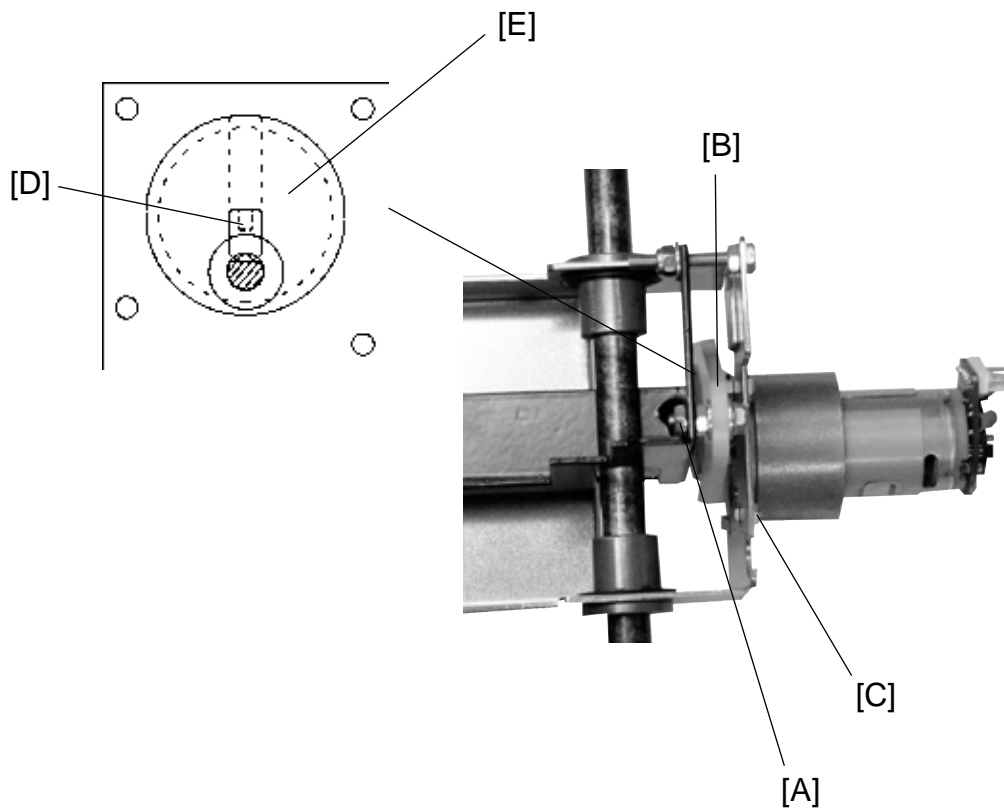
#### CAUTION

When removing the Carriage, watch out so the motor connectors [B] & [C] do not get damaged by the side frame cut-outs.





#### Replacement

1. When positioning the carriage in place, make sure the two sliding rods and the gear rack enters their holes and slot.
2. Reverse the removal procedure.






### 3.2.11 STOP GATE MOTOR M3 & SENSOR Q7



#### Removal

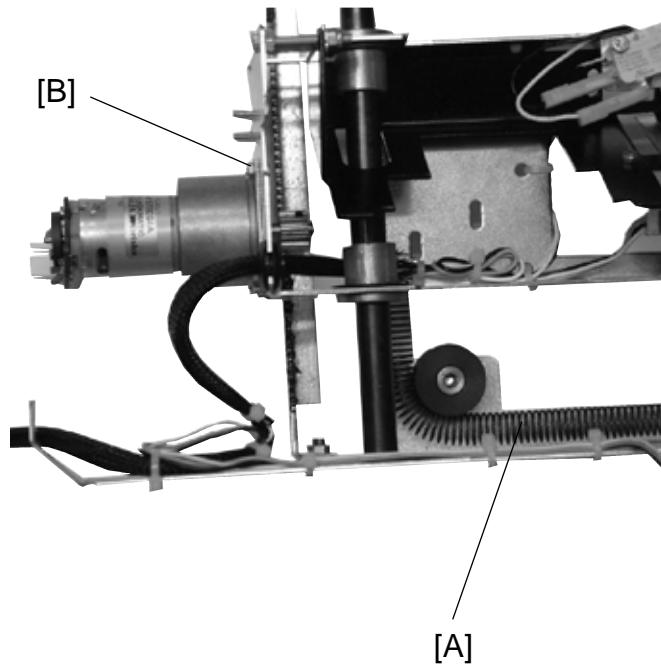
1. Remove Stop gate carriage (  1.2.10).
2. Remove nut [A] (  x1).
3. Remove Crank arm [B].
4. Remove screws [C] holding the motor (  x4).
5. Loosen set screw [D] (  x1).

#### Replacement



1. Mount the Crank pulley [E] without tightening the set screw [D] (  x1).
2. Mount motor with screws [C] (  x4).
3. Mount Crank arm [B].
4. Tightening nut [A] (  x1).  
NOTE: Make sure play for Crank arm [B] is maintained.
5. Position the Crank pulley [E] so it is aligned with Crank arm [B].
6. Tighten set screw [D] (  x1) on the flat of the shaft..
7. Reinstall Stop gate carriage (  3.2.10).

FTR-3-24

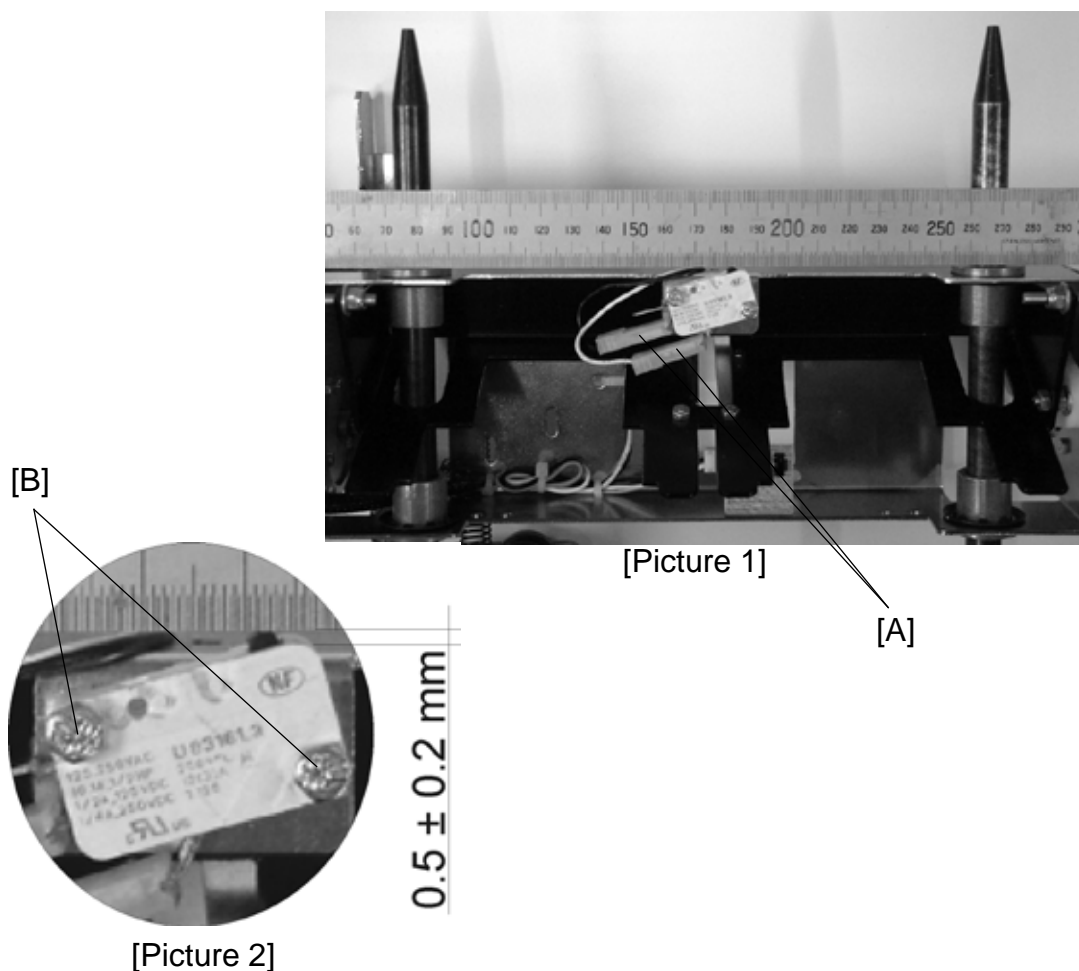
### 3.2.12 LENGTH ADJUSTMENT MOTOR M4 & SENSOR Q12






Replacement  
Adjustment

1. Remove Stop gate carriage (  3.2.10).
2. Unhook spring [A].
3. Remove screws [B] holding the motor (  x4).

### 3.2.13 LENGTH ADJUSTMENT HOME POSITION SWITCH S11




#### Removal

1. Remove Stop gate carriage (  3.2.10).
2. Remove screws [B] (  x2).
3. Remove connectors [A] (  x2).

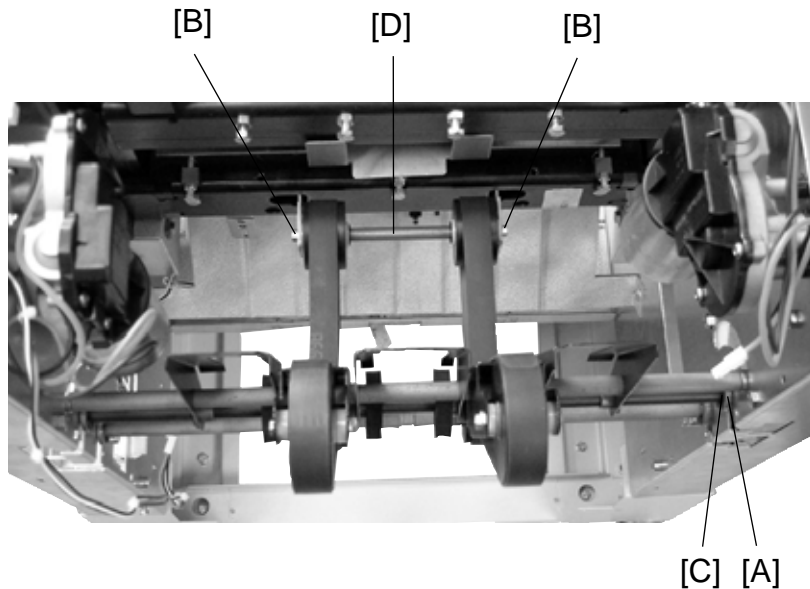
#### Replacement

1. Reverse the removal procedure.

#### Adjustment

1. Place a ruler across the slide rods and up against the flange bushings [Picture 1].
2. Position the switch so it is activated by the ruler and so there is a 0.5 mm ± 0.2 mm gap between switch body and ruler [Picture 2].
3. Tighten screws [B] (  x2).

### 3.2.14 LOWER OUTFEED BELTS



Replacement  
Adjustment

#### Removal

1. Remove Stop gate carriage ( 3.2.10).
2. Remove Paper path ( 3.2.9).
3. Remove Transmission chain ( 3.2.17).
4. Remove screws [B] ( x2).
5. Remove e-clip [C] ( x1).
6. Slide Flange bushing [C] towards the center of the shaft and tilt the shaft out through the cut-out in the side frame.

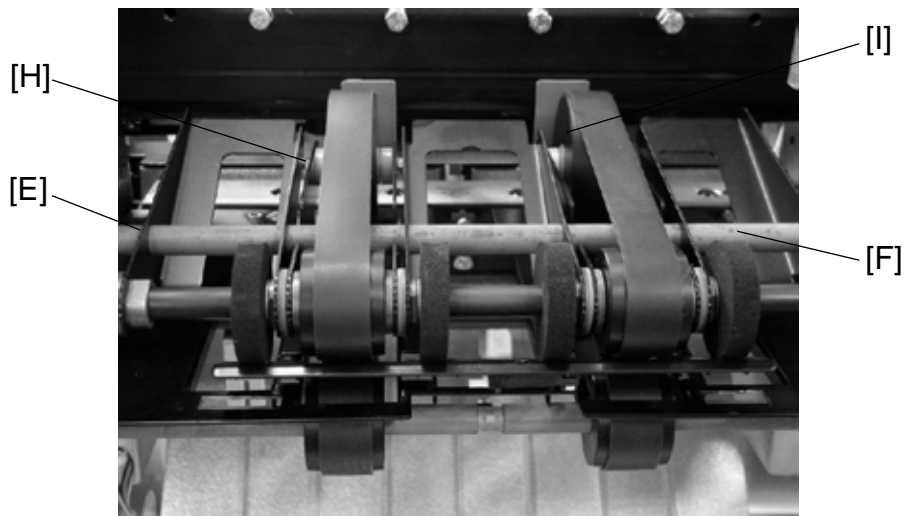
#### Replacement

1. Reverse the removal procedure.

#### Adjustment

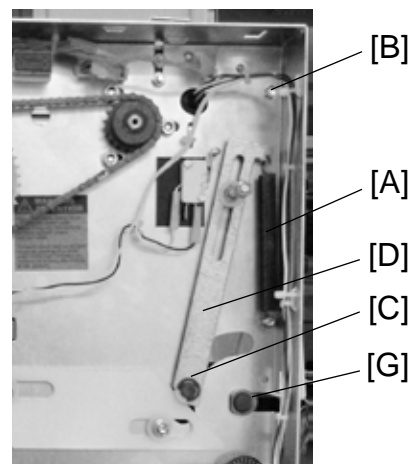
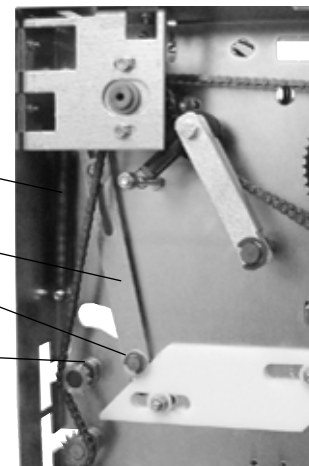
1. Loosen screws [B] ( x2).
2. The belts should be adjusted so they have no slack and even tension.
3. Pull shaft [D] to obtain adjustment and tighten screws [B] ( x2).

### 3.2.15 UPPER OUTFEED BELTS



#### Removal

1. Remove Belt stacker.
2. Remove Front and Rear cover ( ( 3.1.1).
3. Remove Transmission chain ( ( 3.2.17).
4. Unhook springs [A] (x2).
5. Remove screws [B] ( 6).
- NOTE: Leave the screw at the top on each side for the outfeed cover to pivot around.
6. Remove e-clip [C] ( 2).
- Remove nylon washer [C] (x2).
- Unhook link arm [D] (x2).
- Remove needle bearing [C] (x2).
7. Remove e-clip [E] ( 2).
8. Pull out shaft [F].
9. Remove e-clips [G] ( 2) inside frames.
10. Slide Flange bushings [G] towards the center of the shaft and pull out the whole assembly through the outfeed.
11. Loosen screws [H] ( 4) and remove belts.



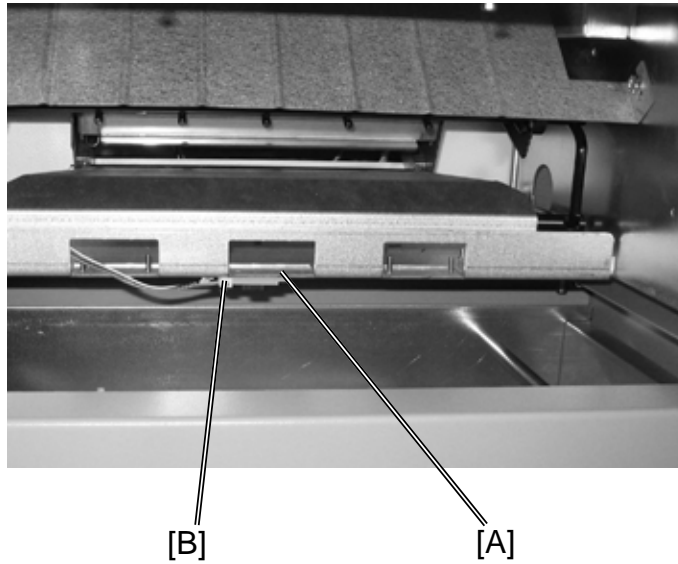
#### Adjustment

1. The belts should be adjusted so they have no slack and even tension.
2. Pull runner pulleys [I] to obtain adjustment and tighten screws [H] ( 4).




#### Replacement

1. Reverse the removal procedure.

### 3.2.16 TRIM BIN FULL SENSOR Q8



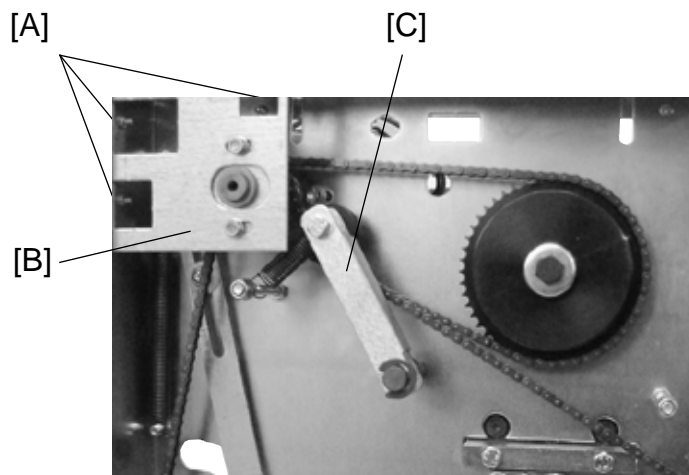
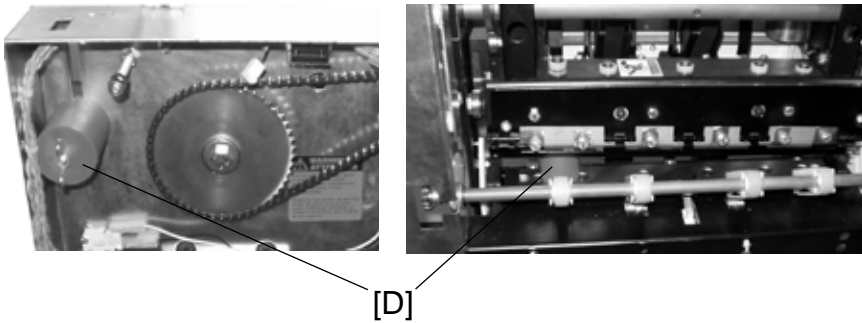
Replacement  
Adjustment

1. Undock the Trimmer.
2. Remove Protection Cover (  3.1.9).
3. Remove connector [B] (  x1).
4. Remove screw [A] (  x1).

### 3.2.17 TRANSMISSION CHAIN

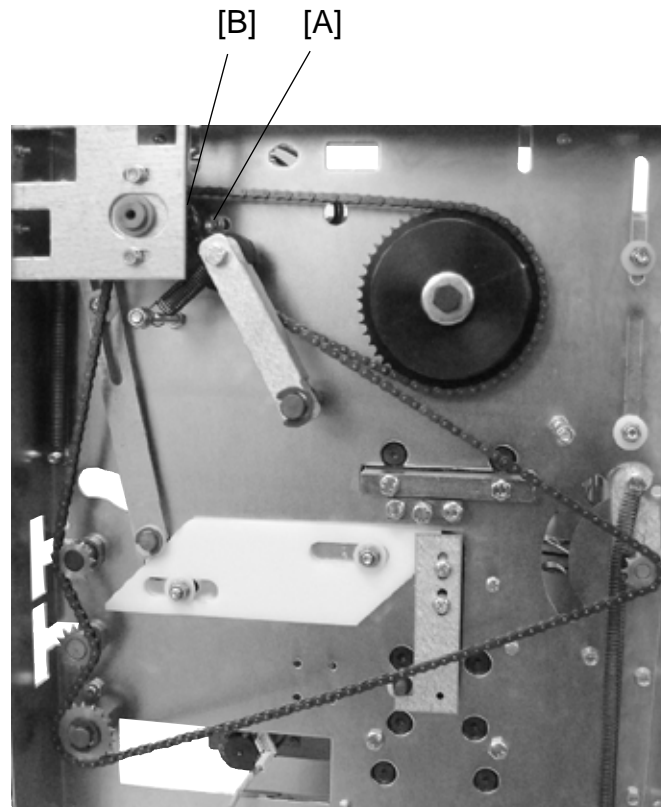
**⚠ WARNING**

Place the safety block [D] between lower knife and upper knife beam. When removing the chain nothing holds upper knife beam and knife in position.



1. Remove Front cover ( ( 3.1.1).
2. Remove screws [A] ( x3).
3. Remove bracket [B].
4. Pull Tensioner [C] to release tension when removing chain.

### 3.2.18 KNIFE SUPPORT CHAIN



Replacement  
Adjustment

1. Remove Front cover ( (🔧 3.1.1).
2. Remove Transmission chain ( (🔧 3.2.17).
3. Loosen screws [A] ( 🔧 x3).
4. Remove chain from sprocket [B].

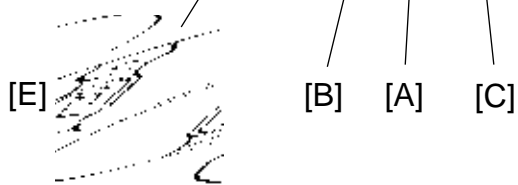
#### Replacement

1. Reverse the removal procedure.
2. Tension the chain so there is no slack when tightening screws [A] ( 🔧 x3).

### 3.2.19 KNIFE CHAIN

#### **⚠ WARNING**

Place the safety block [D] between lower knife and upper knife beam. When removing the chain nothing holds upper knife beam and knife in position.



[D]



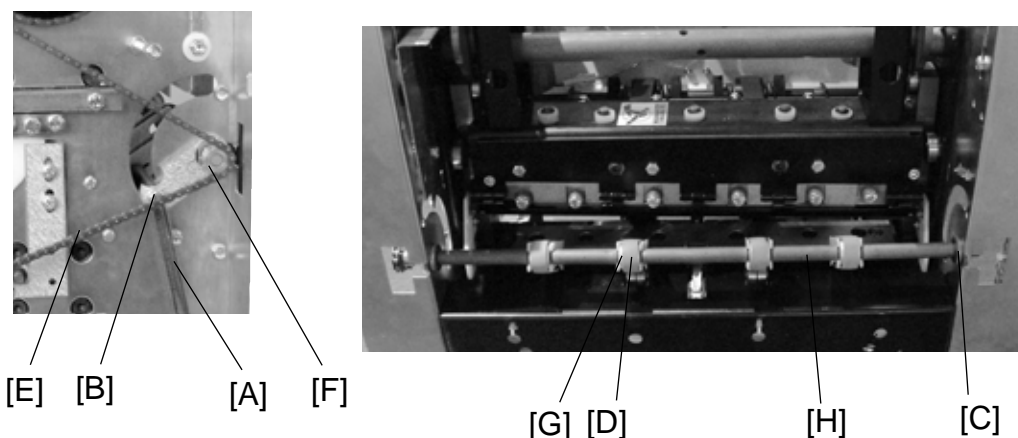
#### **Removal**

1. Remove Rear cover ( 3.1.1).
2. Remove retaining ring [A].
3. Loosen screws [B] holding the motor (  $\times 3$ ).
4. Remove sprocket [C].

#### **Replacement**

1. If it is difficult to mount sprocket [C] remove master link [E].
2. Reverse the removal procedure.
3. Tension the chain so there is no slack when tightening screws [B] (  $\times 3$ ).

### 3.2.20 INFEED BELTS



#### Removal

1. Undock the Trimmer.
2. Remove Infeed cover ( (🔧 3.1.4).
3. Remove Front and Rear cover ( (🔧 3.1.1).
4. Unhook Transmission chain [E] from sprocket [F].  
NOTE: Unhooking chain from outfeed shaft sprockets first to gain more slack.
5. Unhook Springs [A] on both ends of the shaft (x2).
6. Remove screws [B] on both ends of the shaft ( 🔧 x2 ).
7. Remove Plastic retaining clips [G] (x8).
8. Remove Belts [D] (x4) from Lever shaft [H].  
NOTE: Move the belts to one end and the lever shaft to the opposite end.
9. Remove e-clip [C] and slide flange bushing towards the center of the shaft.  
( 🗑️ x1)
10. Tilt the shaft out through the cut-out in the side frame on that end to remove the Belts [D] (x4).

#### Replacement

1. Reverse the removal procedure.

#### Adjustment

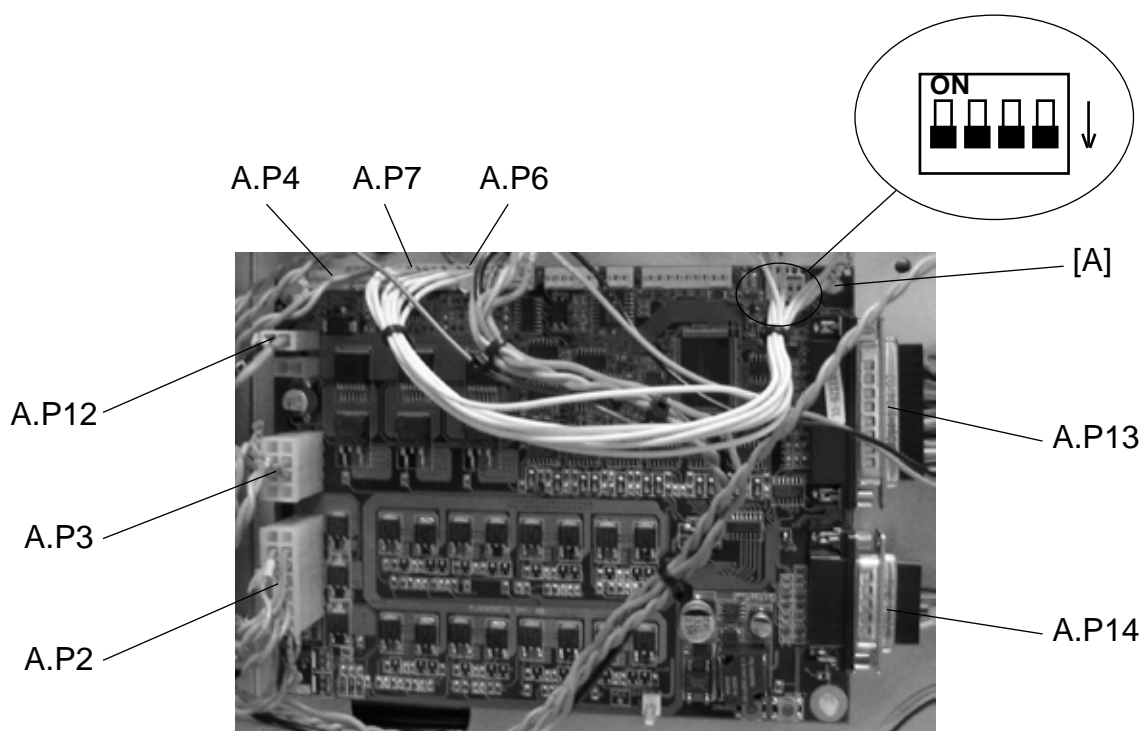
1. Loosen nuts [B] ( 🗑️ x2) slightly.
2. Place a piece of paper (80 gsm) between the two center belts and the ball bearings.
3. Pull the sheet a little, by each of the center belts to verify even pressure.
4. Unskew shaft until even pressure is obtained and tighten nuts [B] ( 🗑️ x2).

Replacement  
Adjustment

Page intentionally blank

## 3.3 PCB

### 3.3.1 MD6DC PCB "A"



Replacement  
Adjustment

#### **⚠ CAUTION**

**ESD Hazard!** ESD (Electrostatic Discharge) can cause software crashes, data and/or communications problems. Failure to use proper ESD procedures will cause damage to electronic components (example: PCBs). ESD problems can be minimized by maintaining all machine ground connections, ensuring the proper handling of circuit boards/ sensors - Use ESD protection when working near PCBs. Failure to use ESD protection is likely to result in a PCB failure ( Service Manual BM 2000 3.1 ).

#### Removal

1. Remove Rear cover ( 3.1.1 ).
2. Remove all connectors from the PCB ( x8 ).
3. Squeeze the barbs of the four pins [A] and lift out the PCB.

#### Replacement

1. Position the PCB on the pins [A] and snap it in place.
2. Connect all plugs to PCB according to picture ( x8 ).
3. Make sure all DIP-switches are set to OFF according to picture.  
NOTE: Make sure replacement PCB has matched software with the system referring to the latest Technical Bulletin.  
Download software if needed ( Service Manual BM 2000 5.2 ).
4. Reinstall Rear cover ( 3.1.1 ).

Page intentionally blank

## 4. TROUBLESHOOTING

### 4.1 FAULT CODE DESCRIPTIONS


Fault code	Item No.	Fault description	Page No.
TR-001	TR-M1	Transport motor No displacement pulses.....	TR-4-2
TR-002	TR-M1/M2	Transport motor and Trim knife motor Cycle time out.....	TR-4-3
TR-003	TR-M1	Transport motor Short circuit.....	TR-4-4
TR-004	TR-M1	Transport motor Open circuit.....	TR-4-4
TR-005	TR-M2	Trim knife motor Short circuit.....	TR-4-4
TR-006	TR-M2	Trim knife motor Open circuit.....	TR-4-5
TR-007	TR-M3	Stop gate motor Cycle time out.....	TR-4-5
TR-008	TR-M3	Stop gate motor Short circuit.....	TR-4-6
TR-009	TR-M3	Stop gate motor Open circuit.....	TR-4-6
TR-010	TR-M4	Stop gate positioning motor No displacement pulses.....	TR-4-6
TR-011	TR-M4	Stop gate positioning motor Cycle time out.....	TR-4-7
TR-012	TR-M4	Stop gate positioning motor Short circuit.....	TR-4-7
TR-013	TR-M4	Stop gate positioning motor Open circuit.....	TR-4-8
TR-014	TR-M5/M6	Blower motor(s) Open circuit.....	TR-4-8
TR-015	TR-Q13	Infeed sensor is Faulty.....	TR-4-8
TR-016	TR-S2/S3	Control switch infeed or out feed Faulty.....	TR-4-9
TR-017	TR-Q6	Outfeed sensor Trimmer is Faulty.....	TR-4-9
TR-018	TR-Q8	Trim bin full sensor is Faulty.....	TR-4-10
TR-150		36V Input low.....	TR-4-10
TR-151		36V Input high.....	TR-4-10
TR-152	TR-S9/S10	Interlock switch faulty.....	TR-4-11
TR-201	TR-Q13	Infeed sensor was Not blocked within timeout.....	TR-4-11
TR-202	TR-Q13	Infeed sensor was Blocked exceeding timeout.....	TR-4-11
TR-203	TR-Q6	Outfeed sensor Trimmer was Not blocked within timeout.....	TR-4-12
TR-204	TR-Q6	Outfeed sensor Trimmer was Blocked exceeding timeout.....	TR-4-12
TR-205	TR-S2/S3	Infeed shaft or Outfeed compressing bracket not in lower position.....	TR-4-12
TR-401		Trim bin full.....	TR-4-12
TR-501		Trim bin full.....	TR-4-12
TR-502		Trimmer fan missing.....	TR-4-13

Trouble-shooting

**TR-001**


Fault Code TR-001, indicates that the Transport motor (TR-M1) does not receive any displacement pulses.

**Initial Actions**

- Check fuse F2 on Transformer.  
 Make sure that the Transport belt sensor (TR-Q4) is installed correctly (  TR 3.2.5).

**Procedure**

Enter the Service mode and select Transport motor (TR-M1) in check motors. **Does the encoder run properly, Parts catalog page 13, Item 17?**

- ↓ N
1. Check transmission (  3.2.17).
  2. Replace motor TR-M1.

1. Replace sensor TR-Q4.
2. Disconnect plug B.P14 from PCB "A". Measure between J14-13 and J14-15? (5V and ground). **The voltage is approximately 5 VDC?**

- ↓ N
- Replace PCB "A".

Disconnect plug from sensor TR-Q4. Check wires for Continuity / Short circuit from the white wire Q4 to B.P14-14. **Is there Continuity and no Short circuit?**

- ↓ N
- Replace Wire Harness

Connect plug B.P14 to PCB "A". Measure between the red wire Q4 and the black wire Q4 (5V and ground). **The voltage is approximately 5 VDC?**

- ↓ N
- Replace wire Harness.

Replace PCB "A".

**TR-002**

Fault Code TR-002, indicates that either the Transport motor (TR-M1) or the Trim Knife motor (TR-M2) had a Cycle time out.

**Initial Actions**

- Check fuse F2 on Transformer.
- Make sure that the Trimmer knife home position sensor (TR-Q5) is installed correctly.

**Procedure**

Enter the Service mode and select Trimmer knife home position sensor (TR-Q5) in check sensors. **The Trimmer knife home position sensor indicates :1 when the sensor is blocked, and :0 when the sensor is unblocked?**

Y N  
 | 1. Replace sensor TR-Q5.  
 | 2. Disconnect plug B.P13 from PCB "A". Measure between J13-23 and J13-25 (5V and ground). **The voltage is approximately 5 VDC?**  
 | Y N  
 | | Replace PCB "A".  
 |  
 | Disconnect plug from sensor TR-Q5. Check wires for Continuity / Short circuit from the white wire Q5 to B.P13-24. **Is there Continuity and no Short circuit?**  
 | Y N  
 | | Replace wire Harness.  
 |  
 | Connect plug B.P13 to PCB "A". Measure between the red wire Q5 and the black wire Q5 (5V and ground). **The voltage is approximately 5 VDC?**  
 | Y N  
 | | Replace wire Harness.  
 |  
 | Replace PCB "A".

Enter the Service mode and select Transport motor (TR-M1) and Trim Knife motor (TR-M2) in check motors. **Both motors energizes?**

Y N  
 | Disconnect the motor plug M1 to Transport / Knife motor (TR-M1). Enter the Service mode and start Transport motor (TR-M1) in check motors. Measure between the orange wire M1 and the violet wire M1 (PWM 36V and ground). **The voltage is approximately 22 VDC?**  
 | Y N  
 | | Disconnect plug B.P3 from PCB "A". Measure between J3-2 and J3-3 (PWM 36 and ground). **The voltage is approximately 22 VDC?**  
 | | Y N  
 | | | Replace PCB "A".  
 | |  
 | | Replace wire Harness.  
 |  
 | Disconnect the motor plug M2 to Trim Knife motor (TR-M2). Enter the Service mode and start Trim Knife motor (TR-M2) in check motors. Measure between the orange wire M2 and the violet M2 (PWM 36 and ground). **The voltage is approximately 28 VDC?**  
 | Y N  
 | | Disconnect plug B.P3 from PCB "A". Measure between J3-6 and J3-7 (PWM 36 and ground). **The voltage is approximately 28 VDC?**  
 | | Y N  
 | | | Replace PCB "A".  
 | |  
 | | Replace wire Harness.  
 |  
 | 1. Make sure that nothing interferes with the mechanical movement.  
 | 2. Lubricate where needed.

1. Make sure that nothing interferes with the mechanical movement.
2. Lubricate where needed.

Trouble-shooting

**TR-003**

Fault Code TR-003, indicates that the Transport motor (TR-M1) has a Short circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M1. Run the Diagnostics again. **Fault code TR-004 (Open circuit) is displayed?**

Y	N	
		Disconnect plug B.P3 from PCB "A". Check wires for Short circuit across leads the orange wire M1 to B.P3-3 (violet) and the violet wire M1 to B.P3-2 (orange). <b>Is there Short circuit?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M1.

**TR-004**

Fault Code TR-004, indicates that the Transport motor (TR-M1) has a Open circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M1. Enter Service mode and start Transport motor (TR-M1) in check motors. Measure between the orange wire M1 and the violet wire M1 (PWM 36 and ground). **The voltage is approximately 22 VDC?**

Y	N	
		Disconnect plug B.P3 from PCB "A". Measure between J3-2 and J3-3 (PWM 36 and ground). <b>The voltage is approximately 22 VDC?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M1.

**TR-005**

Fault Code TR-005, indicates that the Trim knife motor (TR-M2) has a Short circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M2. Run the Diagnostics again. **Fault code TR-006 (Open circuit) is displayed?**

Y	N	
		Disconnect plug B.P3 from PCB "A". Check wires for Short circuit across leads the orange wire M2 to B.P3-6 (violet) and the violet wire M2 to B.P3-7 (orange). <b>Is there Short circuit?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M2.

**TR-006**

Fault Code TR-006, indicates that the Trim knife motor (TR-M2) has a Open circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M2. Enter Service mode and start Trim knife motor (TR-M2) in check motors. Measure between the orange wire M2 and the violet wire M2 (PWM 36 and ground). **The voltage is approximately 22 VDC?**

Y	N	
		Disconnect plug B.P3 from PCB "A". Measure between J3-6 and J3-7 (PWM 36 and ground). <b>The voltage is approximately 22 VDC?</b>
	Y	
		Replace PCB "A".
	N	Replace wire Harness.

Replace motor TR-M2.

**TR-007**

Fault Code TR-007, indicates that the Stop gate motor (TR-M3) had a Cycle time out.

**Initial Actions**


- Check fuse F2 on Transformer.
- Enter the Service mode and select Stop gate motor (TR-M3) in check motors.
- Make sure that the Paper stop gate home position sensor (TR-Q7) is installed correctly.

**Procedure**

Enter the Service mode and select Paper stop gate home position sensor (TR-Q7) in check sensors. **The Paper stop gate home position sensor indicates :1 when the sensor is blocked, and :0 when the sensor is unblocked?**

Y	N	
		1. Replace sensor TR-Q7.
		2. Disconnect plug B.P13 from PCB "A". Measure between J13-7 and J13-9 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	
		Replace PCB "A".
	N	Disconnect plug from sensor TR-Q7. Check wires for Continuity / Short circuit from the white wire Q7 to B:P13-8. <b>Is there Continuity and no Short circuit?</b>
	Y	
		Replace wire Harness.
	N	Connect plug B.P13 to PCB "A". Measure between the red wire Q7 and the black wire Q7 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	
		Replace wire Harness.
	N	Replace PCB "A".

**Are you able to move the Stop gate up and down without it interfering with anything?**

Y	N	
		Make sure that the Stop gate does not interferes with the "Deck plate". Adjust if necessary (  TR 3.2.10).

1. Check the allen screw on the "cam" to TR-M3.
2. Replace motor TR-M3.

Trouble-shooting

**TR-008**

Fault Code TR-008, indicates that the Stop gate motor (TR-M3) has a Short circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M3. Run the Diagnostics again. **Fault code TR-009 (Open circuit) is displayed?**

Y	N	
		Disconnect plug B.P2 from PCB "A". Check wires for Short circuit across leads the orange wire M3 to B.P2-11 (violet) and the violet wire M3 to B.P2-4 (orange). <b>Is there Short circuit?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M3.

**TR-009**

Fault Code TR-009, indicates that the Stop gate motor (TR-M3) has a Open circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M3. Enter Service mode and start Stop gate motor (TR-M3) in check motors. Measure between the orange wire M3 and the violet wire M3 (PWM 36V and ground). **The voltage is approximately 36 VDC?**

Y	N	
		Disconnect plug B.P2 from PCB "A". Measure between J2-4 and J2-11 (PWM 36V and ground). <b>The voltage is approximately 36 VDC?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M3.

**TR-010**

Fault Code TR-010, indicates that the Length adjustment motor (TR-M4) do not receive any displacement pulses.

**Initial Actions**

- Check fuse F2 on Transformer.
- Enter the Service mode and select Length adjustment motor (TR-M4) in check motors.

**Procedure**

Disconnect the sensor plug Q12 to motor M4. Measure between the red wire Q12 and the black wire Q12 (5V and Signal ground). **The voltage is approximately 5 VDC?**

Y	N	
		Disconnect plug B.P14 from PCB "A". Measure between the J14-3 and J14-5 (5V and Signal ground). <b>The voltage is approximately 5 VDC.</b>
	Y	N
		Replace PCB "A".
		Replace wire harness.

Disconnect plug B.P14 from PCB "A". Check wires for Continuity / Short circuit from the grey wire Q12 to B.P14-7, the white wire Q12 to B.P14-4, the black wire Q12 to B.P14-3, the red wire Q12 to B.P14-5. **Is there Continuity and no Short circuit?**

Y	N	
		Replace wire harness.

1. Replace motor TR-M4.
2. Replace PCB "A".

**TR-011**

Fault Code TR-011, indicates that the Length adjustment motor (TR-M4) had a Cycle time out.

**Initial Actions**

- Check fuse F2 on Transformer.
- Enter the Service mode and select Length adjustment motor (TR-M4) in check motors.
- Make sure that the Length adjustment home position switch (TR-Q131) is installed correctly.

**Procedure**

Enter the Service mode and select Length adjustment home position switch (TR-Q131) in check switches. **The Length adjustment home position switch indicates :1 activated, and :0 deactivated?**

Y	N	Disconnect plug B.P13 from PCB "A". Measure between J13-2 and J13-3 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	
	N	Replace PCB "A".
		Connect plug B.P13 to PCB "A". Measure between the white wire Q131 and the black wire Q131 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	
	N	Replace wire Harness.
		1. Replace switch TR-Q131 2. Replace PCB "A".

Enter the Service mode and select Length adjustment motor (TR-M4) in check motors. **The motor energizes?**

Y	N	Replace motor TR-M4.
---	---	----------------------

2. Check the allen screw on the "cam" to the "Stop gate push rod".
1. Lubricate were needed.

**Trouble-shooting**
**TR-012**

Fault Code TR-012, indicates that the Length adjustment motor (TR-M4) has a Short circuit.

**Initial Actions**

- Check fuse F2 on Transformer.

**Procedure**

Disconnect the motor plug M4. Run the Diagnostics again. **Fault code TR-013 (Open circuit) is displayed?**

Y	N	Disconnect plug B.P2 from PCB "A". Check wires for Short circuit across leads the orange wire M4 to B.P2-9 (violet) and the violet wire M4 to B.P2-2 (orange). <b>Is there Short circuit?</b>
	Y	
	N	Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M4.

### TR-013

Fault Code TR-013, indicates that the Length adjustment motor (TR-M4) has an Open circuit.

#### Initial Actions

- Check fuse F2 on Transformer.

#### Procedure

Disconnect the motor plug M4. Enter Service mode and start Length adjustment motor (TR-M4) in check motors. Measure between the orange wire M4 and the violet wire M4 (PWM 36V and ground). **The voltage is approximately 36 VDC?**

Y	N	
		Disconnect plug B.P2 from PCB "A". Measure between J2-2 and J2-9 (PWM 36V and ground). <b>The voltage is approximately 36 VDC?</b>
	Y	N
		Replace PCB "A".
		Replace wire Harness.

Replace motor TR-M4.

### TR-014

Fault Code TR-014, indicates that the Blowers (TR-M5/M6) have an Open circuit.

#### Initial Actions

- Check fuse F2 on Transformer.
- Check placement of blowers.

#### Procedure

Disconnect the blowers. Enter Service mode and start blowers (TR-M5/M6) in check motors. Measure between the orange wire M5/M6 and the violet wire M5/M6 (24V and ground). **The voltage is approximately 24 VDC?**

Y	N	
		Replace PCB.

Replace blowers TR-M5/M6.

### TR-015

Fault Code TR-015, indicates that the Infeed sensor (TR-Q13) is faulty.

#### Procedure

Enter the Service mode and select Infeed sensor (TR-Q13) in check sensors. **The Infeed sensor indicates :1 activated, and :0 deactivated?**

Y	N	
		Disconnect the connector to sensor Q13. Measure between the wires to sensor Q13 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	N
		1. Replace PCB "A". 2. Replace wire harness.
		Replace Infeed sensor (TR-Q13).

Replace PCB "A".

**TR-016**

Fault Code TR-016, indicates that the Control switch infeed (TR-S2) or Control switch outfeed (TR-S3) is faulty.

**Initial Actions**

- Make sure that the Infeed shaft and the Outfeed compressing bracket is in it's lower position.

**Procedure**

Enter the Service mode and select Infeed switch (TR-S2/S3) in check switches. **The Infeed switch indicates D:1 activated, and D:0 deactivated?**

Y	N	
		Disconnect the two connectors to switch S2/S3. Measure between the two connectors to switch S2/S3 (5V and ground). <b>The voltage is approximately 5 VDC?</b>
	Y	N
		Replace PCB "A".
		Replace switch S2/S3.
		Replace PCB "A".

**TR-017**

Fault Code TR-017, indicates that the Outfeed sensor Trimmer (TR-Q6) is faulty.

**Initial Actions**

- Make sure that the Outfeed sensor Trimmer (TR-Q6) is installed correctly.

**Procedure**

1. Replace sensor TR-Q6.
2. Disconnect plug B.P13 from PCB "A". Measure between J13-4 and J13-6 (5V and ground). **The voltage is approximately 5 VDC?**

Y	N	
		Replace PCB "A".

Disconnect plug from sensor TR-Q6. Check wires for Continuity / Short circuit from, the white wire Q6 to B.P13-5. **Is there Continuity and no Short circuit?**

Y	N	
		Replace wire Harness.

Connect plug B.P13 to PCB "A". Measure between the red wire Q6 and the black wire Q6 (5V and ground). **The voltage is approximately 5 VDC?**

Y	N	
		Replace wire Harness.

Replace PCB "A".

**TR-018**

Fault Code TR-018, indicates that the Trim bin full sensor (TR-Q8) is faulty.

**Initial Actions**

- Make sure that the Trim bin full sensor (TR-Q8) is installed correctly.

**Procedure**

1. Replace sensor TR-Q8.
2. Disconnect plug B.P13 from PCB "A". Measure between J13-10 and J13-12 (5V and ground). **The voltage is approximately 5 VDC?**

Y	N
	Replace PCB "A".

Disconnect plug from sensor TR-Q8. Check wires for Continuity / Short circuit from, the white wire Q8 to B.P13-11. **Is there Continuity and no Short circuit?**

Y	N
	Replace wire Harness.

Connect plug B.P13 to PCB "A". Measure between the red wire Q8 and the black wire Q8 (5V and ground). **The voltage is approximately 5 VDC?**

Y	N
	Replace wire Harness.

Replace PCB "A".

**TR-150 / 151**

Fault Code TR-150, indicates that the Unreg is low/high.

**Procedure**

Measure between D.P14-1 and D.P14-2in the BM 2000. **The voltage is approximately 36V?**

Y	N
	Replace the BM 2000 Interlock PCB "D".

Measure between D.P14-7 and D.P14-8 in the BM 2000. **The voltage is approximately 36V?**

Y	N
	Replace the BM 2000 Interlock PCB "D".

Power OFF the Booklet Maker. Remove the power cable between the booklet maker and the trimmer. Measure for continuity in the wires between Pin 1, 2, 7 and 8 on both ends of the cable. **Is there continuity between all cables?**

Y	N
	Replace the power cable between the BM 2000 and FTR 2000.

Power ON the Booklet Maker. Measure between A.J12-1 and A.J12-2 in the FTR 2000. **The voltage is approximately 36V?**

Y	N
	Replace the FTR 2000 wire harness.

Replace PCB "A".



### TR-203

Fault Code TR-203, indicates that during Run, the Outfeed sensor trimmer (TR-Q6), was not blocked within timeout.

#### Initial Actions

- Check fuse F2 on Transformer.
- Make sure that the Outfeed sensor trimmer (TR-Q6) is installed correctly.
- Ensure that the Outfeed sensor trimmer (TR-Q6) is clean.

#### Procedure

Enter the Service mode and select Outfeed sensor trimmer (TR-Q6) in check sensors. Block, then unblock, the TR-Q6 with a sheet of paper. **The Outfeed sensor trimmer (TR-Q6) sensor indicates :1 when the sensor is blocked and :0 when the sensor is not blocked.**

Y	N
	Go to TR-017 fault code.

Make sure that nothing interferes with the paper path.

### TR-204

Fault Code TR-204, indicates that at "initialization" or during Run, the Outfeed sensor Trimmer (TR-Q6), was blocked exceeding timeout.

#### Initial Actions

- Check fuse F2 on Transformer.
- Make sure that the Outfeed sensor Trimmer (TR-Q6) is installed correctly.
- Ensure that the Outfeed sensor Trimmer (TR-Q6) is clean.

#### Procedure

Enter the Service mode and select Outfeed sensor Trimmer (TR-Q6) in check sensors. Block, then unblock, the TR-Q6 with a sheet of paper. **The Outfeed sensor Trimmer (TR-Q6) sensor indicates :1 when the sensor is blocked and :0 when the sensor is not blocked.**

Y	N
	Go to TR-017 fault code.

Make sure that nothing interferes with the paper path.

### TR-205

Fault Code TR-205, indicates that the Infeed shaft or the Outfeed compressing bracket not is in it's lower position or that control switch S2 or S3 is faulty.

#### Procedure

**Is the Infeed shaft or the Outfeed compressing bracket lifted from it's lower position?**

Y	N
	Go to TR-016 fault code.

Lift Infeed/outfeed latch and make sure that the Infeed shaft and the Outfeed compressing bracket is in it's lower position.

### TR-401

Fault Code TR-401, indicates that the Trim bin is full, or that the Trim bin full sensor TR-Q8 is faulty.

#### Procedure

**Is there something blocking the Trim bin full sensor TR-Q8?**

Y	N
	Go to TR-018 fault code.

Remove the object and empty the Trim bin.

### TR-501

Fault Code TR-501, indicates that the Trim bin is full, or that the Trim bin full sensor TR-Q8 is faulty.

#### Procedure

**Is there something blocking the Trim bin full sensor TR-Q8?**

Y	N
	Go to TR-018 fault code.

Remove the object and empty the Trim bin.

20 September 2006, Rev 0.01

## TR-502

Fault Code TR-502, indicates that the blowers (TR-M5/M6) do not respond.

### Initial Actions

- Check placement of blowers.
- Make sure blowers are installed correctly.

### Procedure

Enter the Service mode and select blowers Trimmer (TR-M5/M6) in check motors. **Do the blowers work?**

Y            N  
|            Go to TR-014 fault code.

Replace PCB.

Trouble-  
shooting

Page intentionally blank

---

## 5 SERVICE TABLES

### 5.1 SERVICE TABLES

Trimmer SERVICE TABLES is located in the Booklet Maker BM 2000 Service Manual.

Page intentionally blank

## 6. DETAILED SECTION DESCRIPTIONS

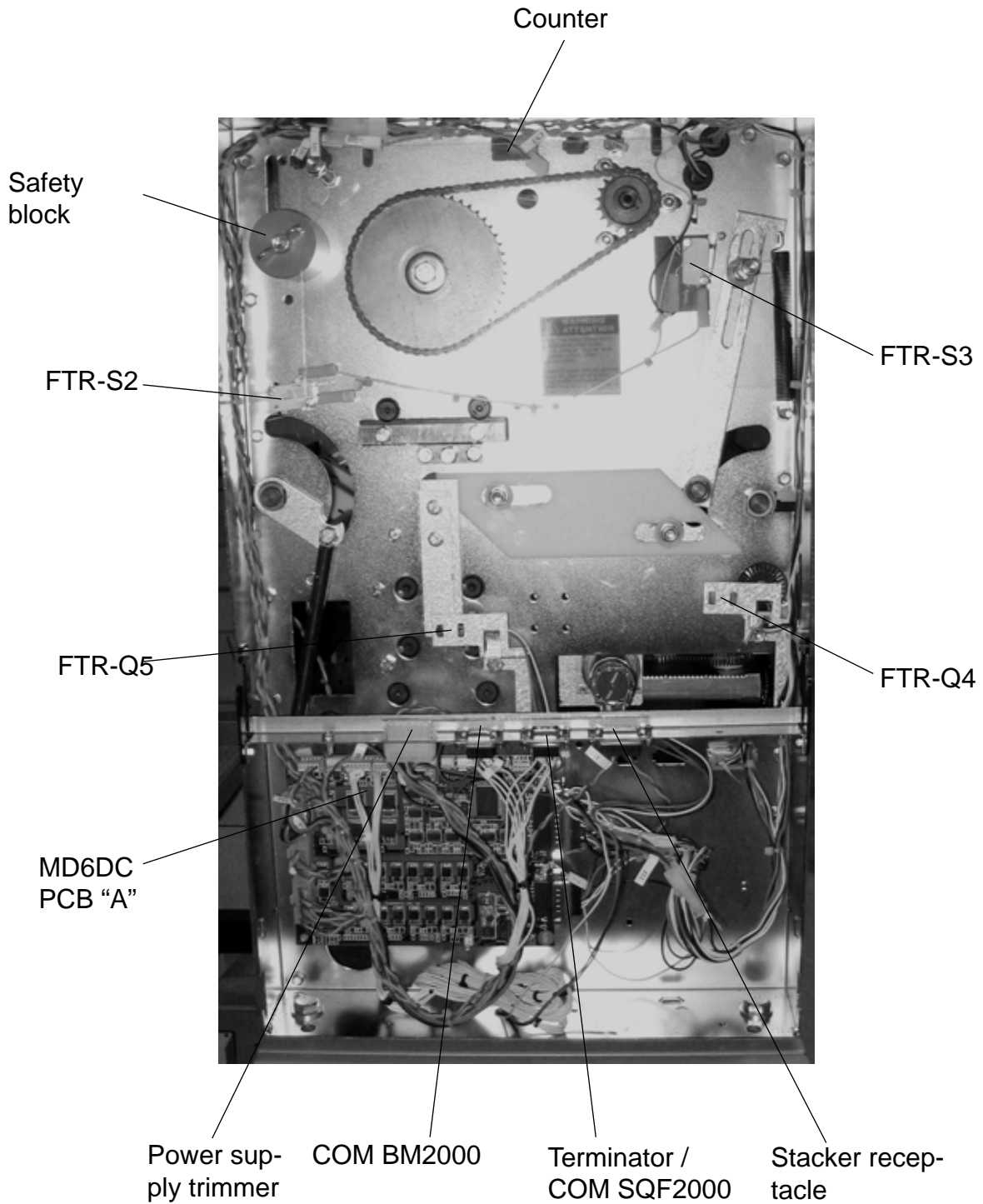
### 6.1 ELECTRICAL COMPONENT LIST

#### Page

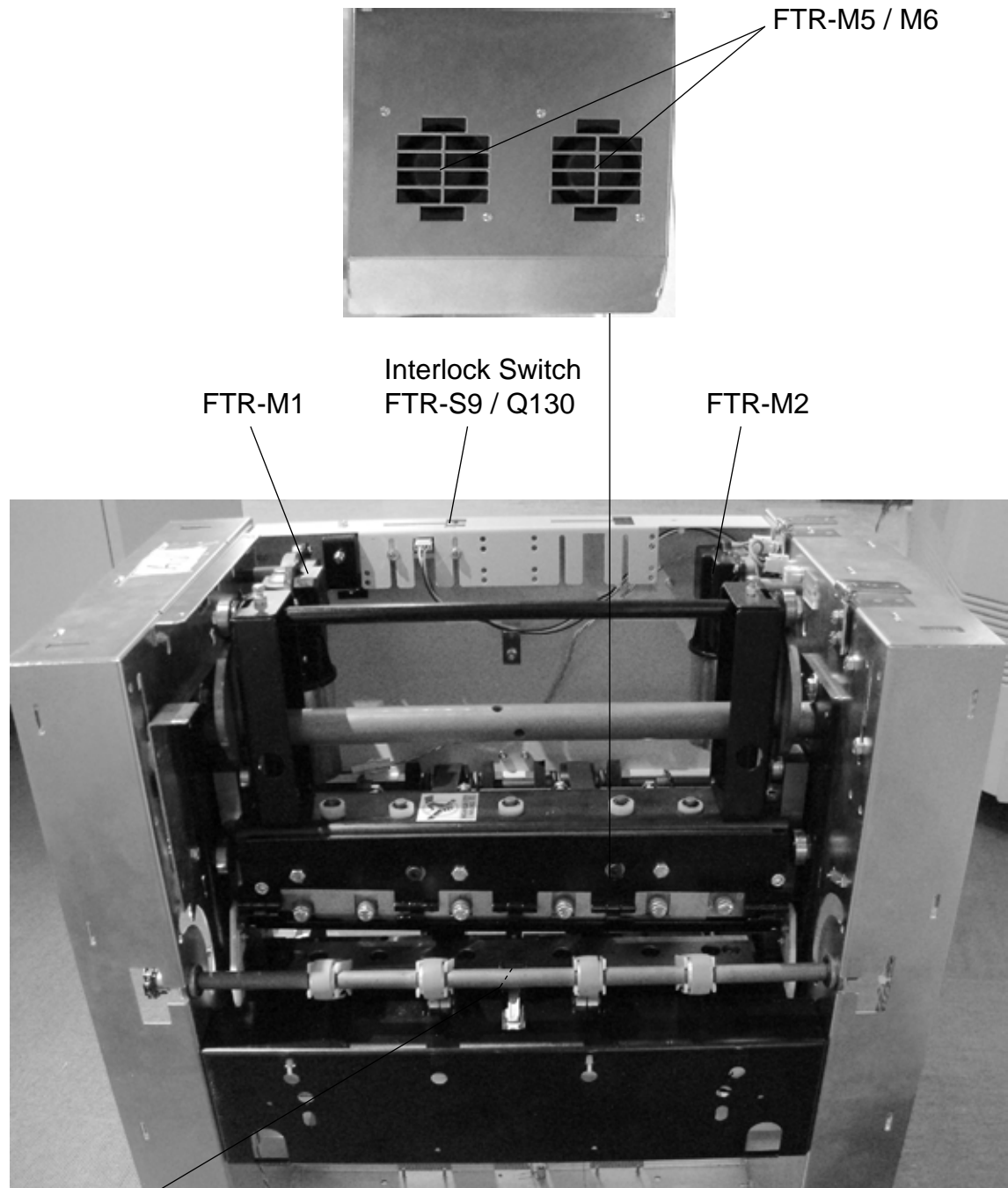
FTR-M1	Transport motor .....	FTR-6-3 / FTR-6-4
FTR-M2	Trim knife motor.....	FTR-6-3 / FTR-6-4
FTR-M3	Stop gate motor .....	FTR-6-5
FTR-M4	Length adjustment motor .....	FTR-6-5
FTR-M5/M6	Blower motor.....	FTR-6-3
FTR-Q13	Infeed sensor .....	FTR-6-3
FTR-S2	Control switch infeed .....	FTR-6-2
FTR-S3	Control switch outfeed.....	FTR-6-2
FTR-Q4	Transport belt sensor .....	FTR-6-2
FTR-Q5	Trim knife home position sensor .....	FTR-6-2
FTR-Q6	Outfeed sensor .....	FTR-6-2
FTR-Q7	Paper stop gate home position sensor .....	FTR-6-5
FTR-Q8	Trim bin full sensor.....	FTR-6-3
FTR-S9	Interlock switch.....	FTR-6-3
FTR-Q130	Interlock magnet.....	FTR-6-3
FTR-S11	Length adjustment home position switch.....	FTR-6-5
FTR-Q12	Length adj. motor sensor (loc. on mot M4).....	FTR-6-5
PCB	MD6DC PCB "A" .....	FTR-6-2
Stacker Receptacle.....		FTR-6-2
Communication Booklet Maker BM2000 .....		FTR-6-2
Power supply Trimmer FTR2000.....		FTR-6-2
Terminator / Communication Square Fold SQF2000.....		FTR-6-2
Counter .....		FTR-6-2
Safety block for knife .....		FTR-6-2

Detailed  
description

### 6.1.1 REAR VIEW



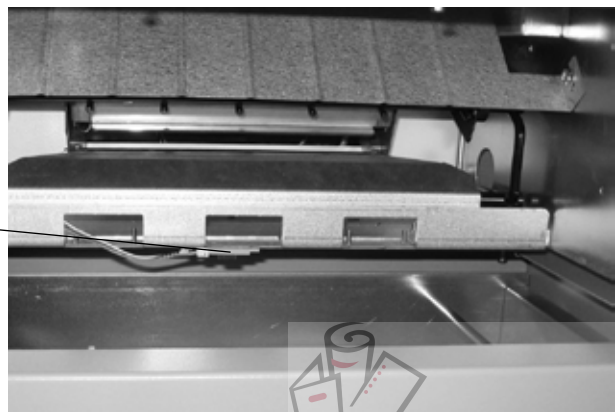
### 6.1.2 INFEED VIEW



Detailed description

FTR-Q13

FTR-Q8



FTR-6-3

**6.1.3 OUTFEED VIEW**

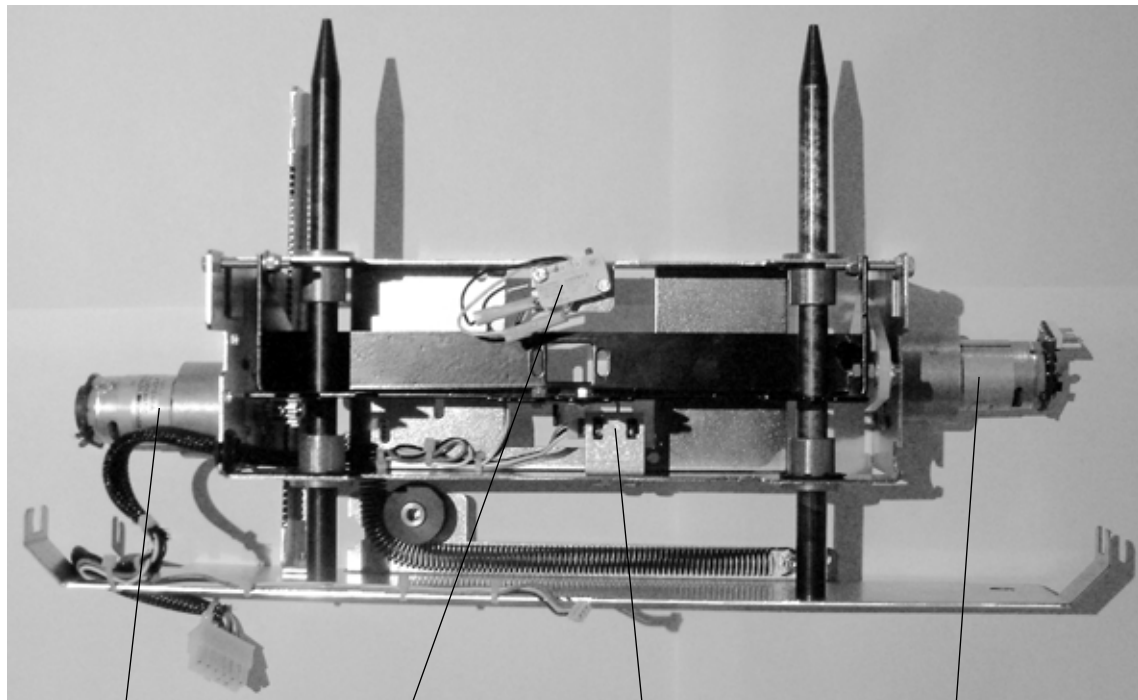


FTR-M2

FTR-Q6

FTR-M1

### 6.1.4 STOP CARRIAGE VIEW



FTR-M4 /  
FTR-Q12

FTR-S11

FTR-Q7

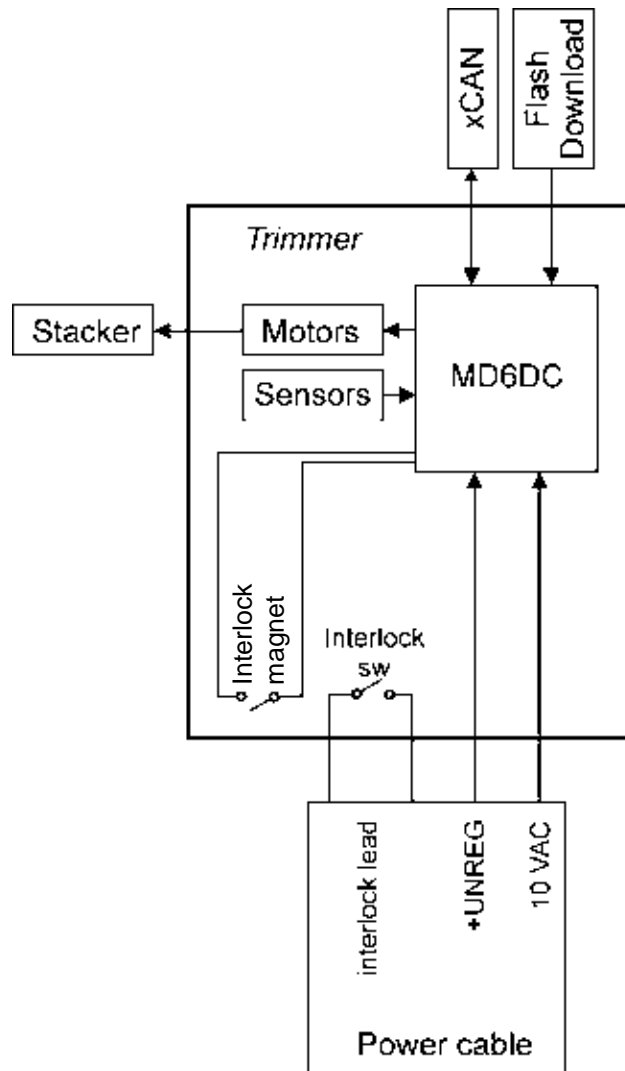
FTR-M3

Detailed  
description

Page intentionally blank

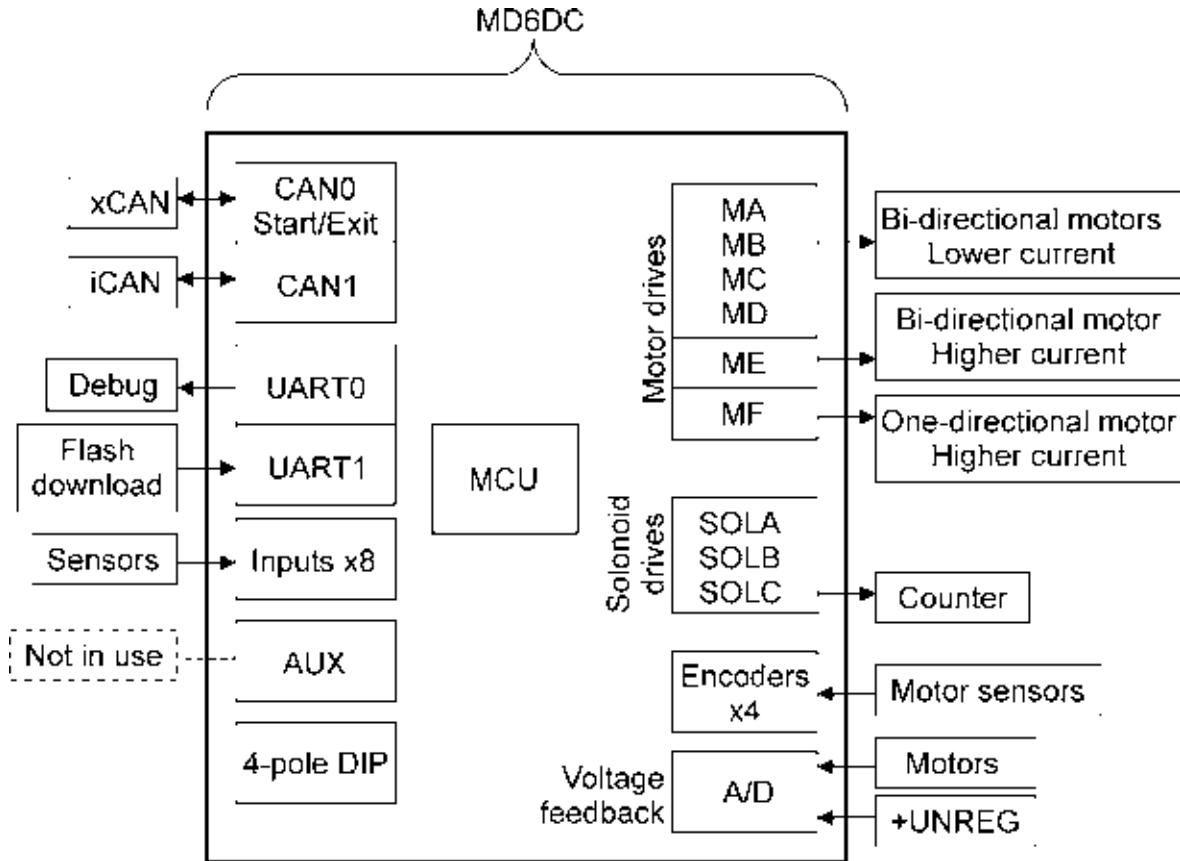
## 6.2 BOARD STRUCTURE

### 6.2.1 BLOCK DIAGRAM



Detailed  
description

## 6.2.2 CONTROLLER MD6DC



The motor drives:

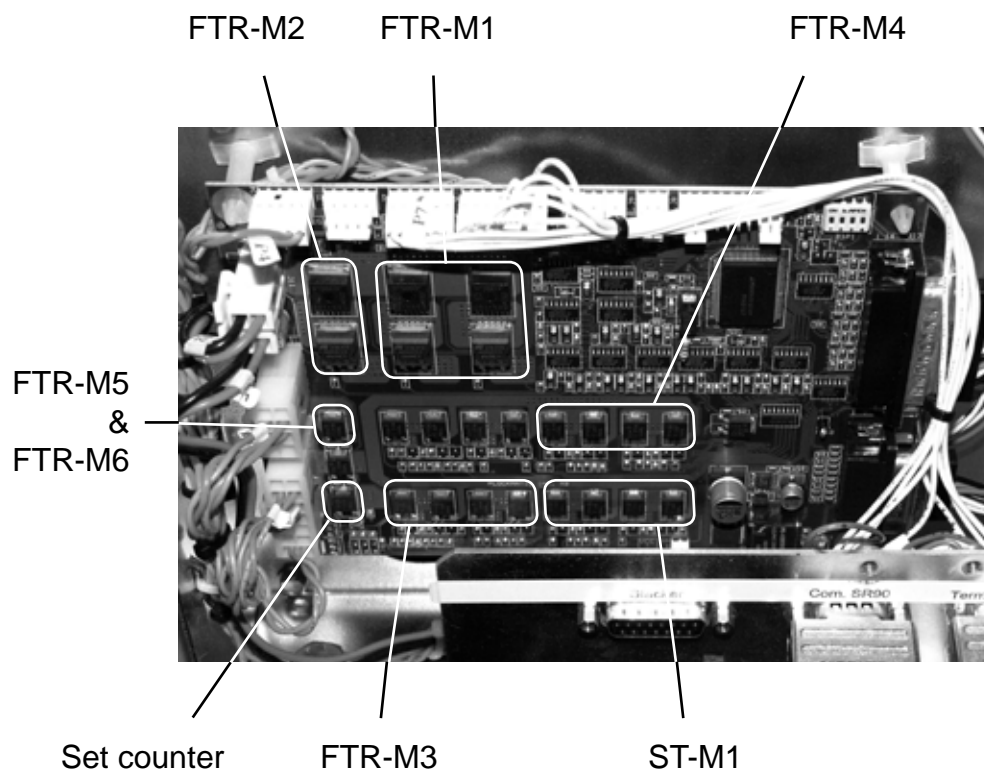
MA-MD are for bi-directional motors with lower current

ME is for bi-directional motor with higher current.

MF is for one-directional motor with higher current.

As the FTR 2000 does not have any solenoids, one of the solenoid drives is used for the electro-mechanical counter.

## 6.2.2 CONTROLLER MD6DC, CONTINUES

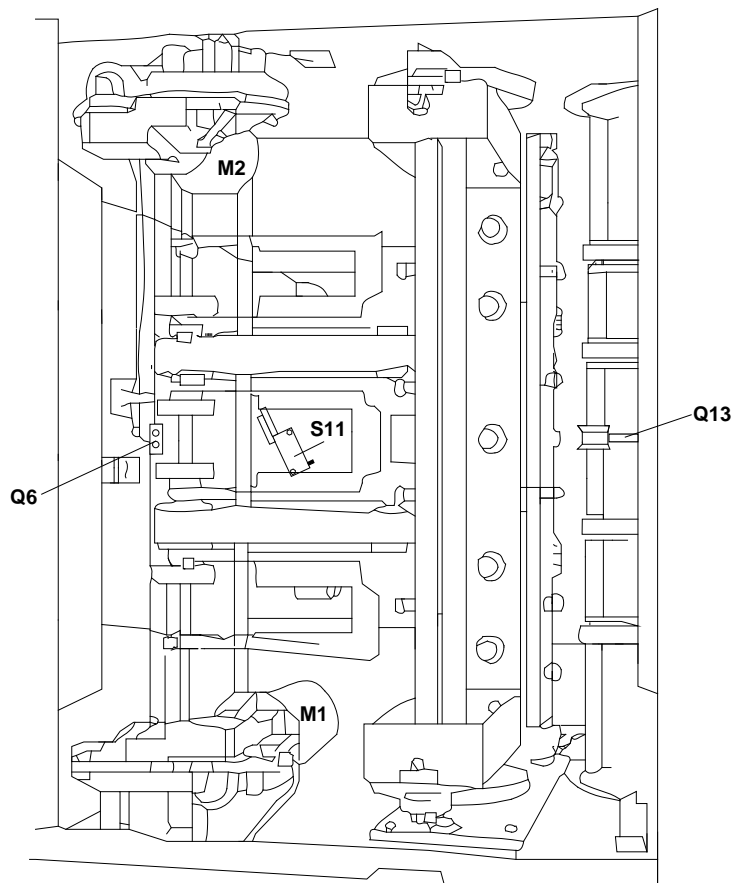


Detailed  
description

Page intentionally blank

## 6.3 TRIMMING PROCESS

### 6.3.1 PRINCIPLE OF OPERATION



#### Trimming

Booklet maker sends a start signal, stop gate motor (FTR-M3) moves the stop gate to up position and is stopped when the stop gate home position sensor (FTR-Q7) activates. The transport motor (FTR-M1) starts and transports the booklet into the machine. The infeed sensor (FTR-Q13) is activated by the booklet. The booklet passes and deactivates the infeed sensor (FTR-Q13). When the booklet hits the stop gate, the transport motor (FTR-M1) stops. The timing is controlled by transport motor sensor (FTR-Q4) and set by the paper size.

Trim knife motor (FTR-M2) starts moving the knife down. After a while when the knife is about to cut the sheets, transport motor (FTR-M1) is triggered by knife position sensor (FTR-Q5) to reverse and helps knife motor (FTR-M2) during the cutting stroke. About the time when the knife has cut through the sheets, the stop gate motor (FTR-M3) moves the stop gate down and the transport motor (FTR-M1) reverses again to transport the set out of the machine. The knife motor completes its cycle and stops at the trim knife home position sensor (FTR-Q5).

The stacker motor (ST-M1) starts when the outfeed sensor (FTR-Q6) activates and runs for a short while to separate the booklets on the stacker belt.

Detailed  
description

## 6.3.2 SIZE ADJUSTMENT

### ***Initialization cycle***

Main power is switched on.

Length adjustment motor (FTR-M4) starts. The motor (FTR-M4) moves the stop gate to the smallest booklet size.

The motor (FTR-M4) stops when length adjustment home position switch (FTR-S11) is activated.

When the switch(FTR-S11) is activated, a counter for the motor (FTR-M4) starts and the motor (FTR-M4) reverses.

The motor (FTR-M4) runs until\* length adjustment motor sensor (FTR-Q12) has counted the preset amount of pulses set by the paper size and trim length. The stop gate is now in correct position corresponding to the paper size and trim length selected.

### ***Changing paper size***

New paper size and or trim length is selected on the UI.

Length adjustment motor (FTR-M4) starts. The motor (FTR-M4) runs in the direction towards the new paper size. Length adjustment motor sensor (FTR-Q12) counts pulses from the previous paper size to the new paper size and stops motor (FTR-M4) when correct amount of pulses are received\*. Stop gate is now in correct position corresponding to the new paper size selected.

### ***If paper jam occurs***

If top cover is opened and closed:

Stop gate motor (FTR-M3) moves the stop gate down. Length adjustment motor (FTR-M4) moves the stop gate to the smallest booklet size.

*\* Length adjustment motor (TR-M4) actually passes the stop position slightly, reverses slightly pass the point and reverses again for the last time to stop at the exact position, to take out any play.*

20 September 2006, Rev 0.01

---

# SPECIFICATIONS

## SPECIFICATIONS

Trimmer SPECIFICATIONS is located in the Booklet Maker BM 2000 Service Manual.

Specification

FTR-Spc-1



Page intentionally blank

20 September 2006, Rev 0.01

---

## WIRING

### Trimmer

See pocket at rear of manual for wiring diagrams.

Wiring

FTR-Wir-1

Page intentionally blank