

Service Instructions

Automatic Forms Cutter



Modell 6609d-6612d
Stand: 31.05.2006



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Measurement-Points-PC-Board	21/22
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Tool list

A tool case is available which contains all the tools listed below:

Part no.	Description	Size	No. each
10580	Cable tie		3
10893*	Pin (for installing the pulley of the cross cutter)		1
10897	Feeler gauge	6	1
10899*	Open-ended spanner	12	1
10961*	Tool for adjusting tractor shaft		2
11077*	Tachometer generator, complete		1
11096*	Holder complete for measuring unit		1
11099*	Measuring device for dial indicator		1
11101*	Adjusting tool for mounting cross cutter		2
11102*	Dial indicator	5/40	1
11103	Plastic hammer	22	1
11104	Open-end ring wrench	10	1
11105	Socket spanner	10	1
11106	Hexagon screwdriver with T-handle	5	1
11107	Open-end wrench	5,5	1
11110	Screwdriver for Philips screws	2	1
11111	Screwdriver for Philips screws	1	1
11112*	Plastic oiler	1	1
11113	External snap ring pliers	A0	1
11114	Screwdriver	3,5 x 90	1
11115	Screwdriver	5,5 x 250	1
11116	Open-end wrench	7	1
11117	Hexagon offset screwdriver	3	1
11119*	Magnet		1
11121*	High-speed grease		1
11122*	Triboelectric grease		1
11123*	Thermal transfer compound		1
11124	Cable tie		20
11158	Tool case		1
11167*	Adjusting tool for potentiometer		1
12678	Hexagon offset screwdriver	5	1
13119	Hexagon ball-head screwdriver	3	1
13572*	Lever (to change knives)		1
14130	Bit handle equipped with		2
14131	Bit (head 4 mm) for hexagon socket	2	1
14132	Bit (head 4 mm) for hexagon socket	1,5	1
15336*	Lever (to remove hexagon shaft)		1
15368	Hexagon offset screwdriver	2,5	1
15369	Bit (head 4 mm) for hexagon socket	2,5	1
15667*	Extension cord (for cross cutter motor)		2
15729*	Holder complete for measuring unit		1
15731*	Measuring device for dial indicator		1
17597	Brush		2
17688*	Extension cord (for cross cutter motor) 40 cm		1
18182	Open-ended ring spanner	7	1
18853	Hexagon screwdriver with T-handle	4	1
19574	Hexagon offset screwdriver	8	1
21317	Hexagon socket key with long handle		1
23872	Bit handle equipped with	1/4"	2
24939	Bit (head 1/4" mm) for hexagon socket	2,5	1
24940	Bit (head 1/4" mm) for hexagon socket	3,0	1
29890	Hexagon offset screwdriver	1,5	1
29891	Hexagon offset screwdriver	2	1
29892	Hexagon offset screwdriver	4	1
35211	Bit (head 1/4") for Torx	TX 10	1
35212	Bit (head 4mm) for Torx	TX 10	1
35286	Torx Offset Screwdriver	TX10	1
29894	Order-no. for hexagon screwdriver set complete consisting of no.: 11117, 12678, 14130 (2x), 14131, 14132, 23872 (2x), 24939, 24940, 29890, 29891, 29892		1
13570	Order-no. for tool case complete		1

* Müller special tool

Release: 31.05.2006

EC Declaration of Conformity with EC Directive on Machines (89/37/EG)

Müller Apparatebau GmbH

Industriepark
85402 Kranzberg

hereby declares that the machines described below

6609-6614	Automatic Forms Cutter	6792	Check-terminal	6892	Compressor for Re/Unwinder 6801/6802
6615	Automatic Forms Cutter pinless/pinfeed	6795,6819	Slitter and Merger	6896	Transport Unit
6618,6619	Pinless-Automatic Forms Cutter	6797	Device for connection of a Hoover Unit Hose on the Cutter	6897	Stitcher (up to 20mm) right
6622	Transversal Accumulator		Autoloader	6898	OCB" OMR Input from PC"
6624,6724	Conveyor Stacker	6798	Modification for Forms Cutter	6899	Rear Cover Tape Glue System
6625	Conveyor Stacker with 2 driving units	6799	Rewinder	6900	Insert for C4 size
6626,6628	Multichannel System	6801	Unwinder	6901	OCB" Remonte control PC"
6627,6727	Drop Stacker-Conveyor Belt	6802	Autoloader- Standalone	6902	Suction Feeder
6630	Outsorter/Deflector	6809	STOP-Function	6903	"HIGH SPEED" Accumulator
6650-6653	Drop Stacker	6815	Stitcher (stitch bottom right)	6904	OMR
6654	Receiving Tray - Online	6816	Active drive	6905,6908,6918	Colour Reading Head
6655	Receiving Tray - Standard	6817	Slit & Merger	6907	Bypass Module
6656	Drop Stacker for online applications	6819	Folder	6910	OMR Scanner
6680/6681	Catalog-Dispenser	6820-6825	STOP-Function	6912	Sheet rotator 90°
6683/84/86	Cut-Sheet-Feeder	6826	Stitcher (stitch top left)	6916,6917	OMR top and bottom for 6618
6685	Post Accelerator	6827	Stitcher (stitch bottom left)	6920	External OMR input, online
6687	Vacuum Feeder	6828	Throughput Station Standalone	6922	Automatic Drop Stacker 26"
6692/93/99	Sequencer	6829	Glueing Modul	6924	Sheet Rotator 90° for 4"
6700	Optical Mark Recognition	6833	Grooving Unit	6926	Accumulator Conveyor for 16"
6703-6705	Optical Mark Recognition	6836	Turnover Unit	6927	2D-Code Reading
6701,6719	Loop Control Unit	6837	Sheet Rotator	6928	Compressor for Rear Cover Tape Glue system
6706,6731	Additional Power Supply	6842	Suction Opener	6932	Drop Stacker 26"
6707	Single Cycle Synchronisation	6843,6861	Transport Unit	6936	Adapter for Core D=200mm
6708	Job Separator	6847	Programming Terminal for Folder	6937	Adapter for Core D=150mm
6711	Vertical Slitters Left and Right	6848	Conveyor-Belt	6939	Drive unit for Printer Station
6712	Remote Control for Forms Cutter	6849	Anti Static Device	6940	Envelope Turn Over Unit for Insert
6717	Masterterminal	6850	Center Slitter for Cut Sheet	6941	Enclosure-Feeder DL-Size
67..	Black-Box	6852	Waste Extraction Unit	6942	Deflector Unit (special) downwards
6730	Transport Unit	6862	Waste Evacuation f. Slitter and Merger	6943	Stack Tower
6731	Power Supply	6866	Bypass Module	6944	Alignment Unit
6737	Barcode-Scanner CLV 210 (BCR)	6867	Center slitter (4-10mm)	6945	Alignment Device with job separation
6750	Optical Character Reading (OCR)	6869	Pressure Heat-sealing System	6946	Bypassmodule with input plate
6762	Digi-Switch for counter function	6870	Alignment Device	6947	Conveyor Stacker for envelopes
6765,6813,6818,6830,6896	Transport Unit	6871	Single sheet takeover unit	6949	Envelope turn over unit for Franking Machine
6766	Stitcher (stitch top right)	6875	Center Slitter	6954	Alignment Device with job separation
6772-6776	Optical Mark Recognition (OMR)	6876	Driving Entry Unit	6960	Deflector Unit for DL, C5 and C4 size
6779	Shingling Accumulator	6878	Facsimile Signatures	6961	Accumulator HIGHSPEED for A4 portrait
6780	Center Slitter	6883,6893,6894,6895,6945	"HIGH SPEED" Accumulator	6970/6980	Vacuum Feeder
6781,6785	Optical Mark Recognition (OMR)	6885	Device for connection of a Hoover Unit Hose	7006	Insert for DL size (ca. 6000 cycles)
6783,6829	Throughput-Station	6887	Single sheet takeover unit	7010	Insert for DL size (ca. 10000 cycles)
6784,6814,6856	Transport Unit	6888	Rear Cover Tape Glue System	7015	Insert for DL size (ca. 15000 cycles)
6786	Accumulator	6890	Transport Unit to laser printer	9821	Sword Folding Machine
6787	Continuous web 90° Turnover Unit	6891,6911	Bypass Module	9825	Sword Folding Machine
6790	Cutsheet Guillotine				
6791	Remote Control for Feeder				

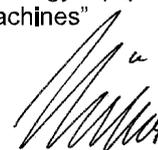
conforms with the following EC directives:

Machine directive "98/37/EG"
Low voltage directive 73/23
EMV directive 89/336

Standards and technical specifications:

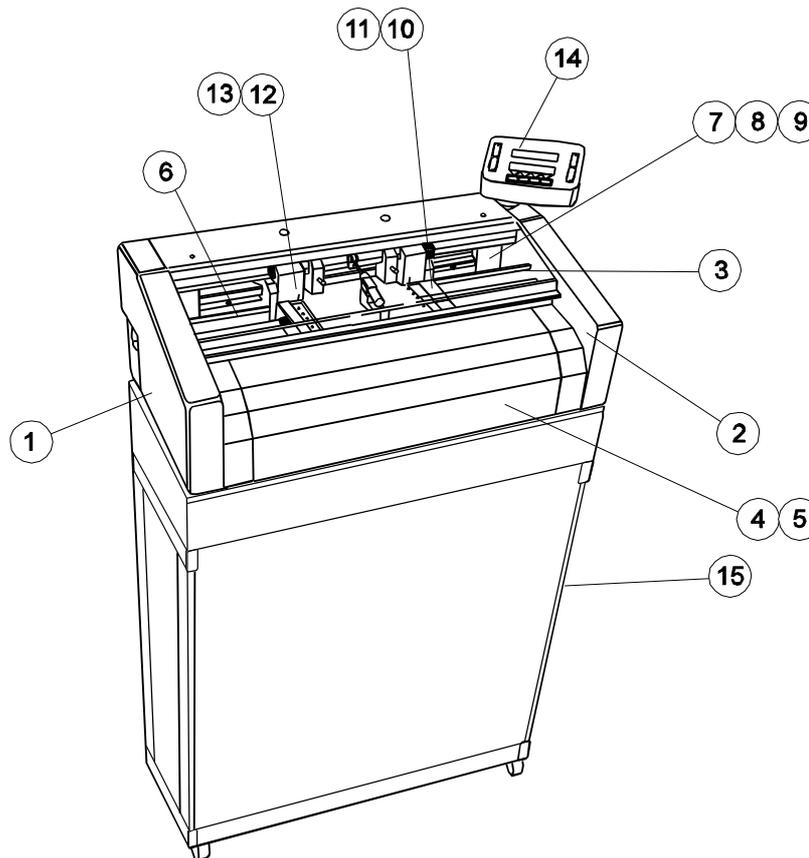
- EN 292-1, EN 292-2
- EN 294
- EN 349
- EN 60073
- EN 60950
- "Safety of machines"
- "Safe distances to prevent upper limbs from touching danger points"
- "Minimum distances to prevent crushing of body parts"
- "Coding of display devices and control elements using colours and other means"
- "Safety of information technology equipment including electric office machines"

Kranzberg, den 25.07.2005



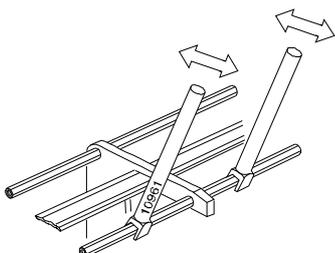
Manfred Müller
General Manager

Subassemblies



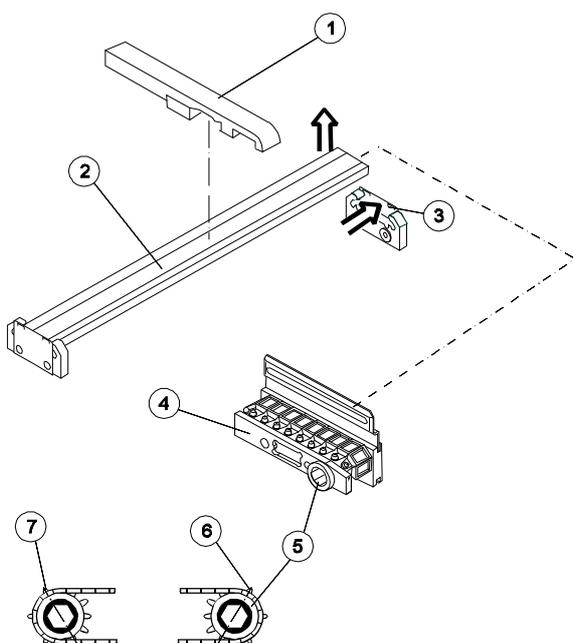
- ① Housing and cover sheets
- ② Frame
- ③ Driving shafts
- ④ Frame - motors and fan
- ⑤ Safety cover
- ⑥ Cross cutter - blade bar
- ⑦ Cross cutter - ejector
- ⑧ Cross cutter - drive
- ⑨ Tractor unit
- ⑩ Tractor right and left
- ⑪ Edge cutter unit
- ⑫ Edge cutter right and left
- ⑬ Terminal
- ⑭ Power switch unit
- ⑮ Electronic and optoelectronic systems

Caution: When performing servicing work on the cutter, always make sure it is disconnected from the mains power supply.



1. Adjusting tractor shaft

The tractor shaft is divided in the middle. Use the two adjusting tools (tool no. 10961) to rotate the tractor shaft and adjust the angle of the cross cutter.



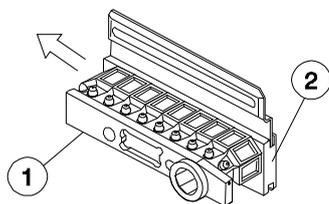
2. Removing the sprocket belts of the tractors

Remove the tractor shaft as described in 9.

Remove lower paper guide ①. Press the plate ③ in the direction of the arrow and remove the tie-bar ② and tractor. Unscrew and take off the cover plate ④.

Remove the sprocket belt. When re-installing the sprocket belts, make sure that the gear teeth of the left ⑦ and right ⑥ tractors are in the same position with regard to the hexagon socket of the toothed gear.

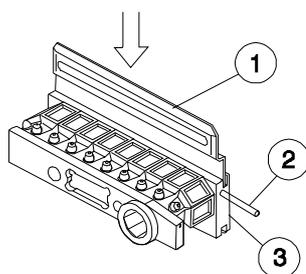
This is easier, if you first position the sprocket belt on the toothed gear ⑤.



3. Tightening the sprocket belts

Tightening the sprocket belts is done by pushing the rear cap bolt. To do so, first take off the cover plate ① and unscrew the plate ②.

Do not overtighten the sprocket belts (test by hand to make sure they move easily).



4. Removing the plate cover on the tractor

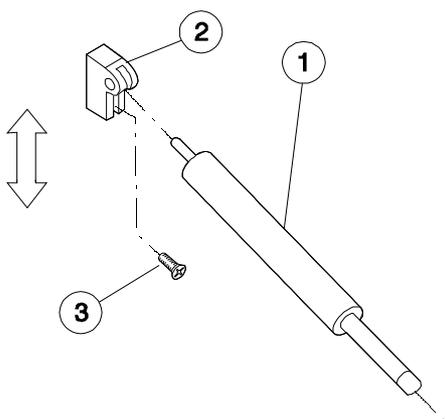
Unscrew the plate ③. Remove both pins with a permanent magnet (tool no. 11119, ②). When removing the pins with the magnet, also press down on the plate cover ① to compensate for spring resistance. Otherwise the pins will not come out.

5. Adjusting the magnetic hall-sensor on the plexiglass cover

To adjust the magnetic sensor, turn the screw on the left side wall. The automatic cutter should come to a stop when the plexiglass cover is lifted approx. 20 mm.

6. Adjusting the pneumatic spring on the plexiglass cover

To adjust the pneumatic spring ①, push the connecting piece ② in a vertical direction. To do so, first remove the screw ③.



Mounting position of the pneumatic spring:

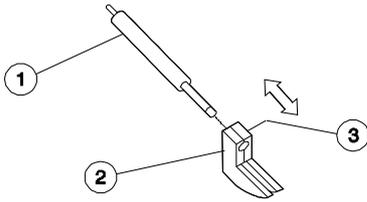
The thin piston should point towards the handle of the plexiglass cover.

Normal position

Push the connecting piece ② up as far as it goes and fasten it with the screw ③.

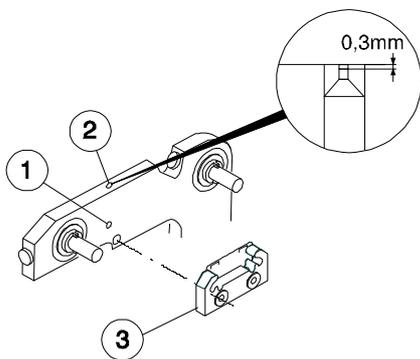
After adjusting the spring, make sure that the cover stays open and closed.

7. Adjusting the paper guide (on the pneumatic spring)



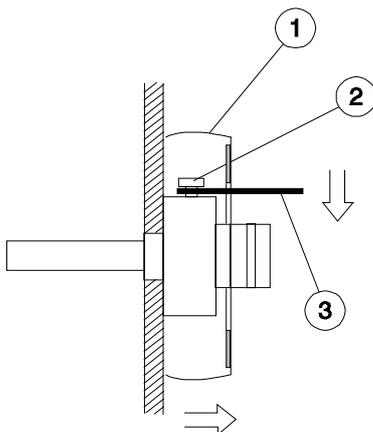
When the plexiglass cover is closed, the paper guide ② should be about 1 to 1.5 mm from the center bearing block. Remove the screw ③ to move the device for holding down paper ② onto the gas cylinder ①. Be very careful when making this adjustment since this directly affects the correct positioning of the paper on the edge of the cross cutter.

Be sure not to accidentally cover the fibre-optic sensor for determining paper end with the device for holding down paper. Otherwise, the automatic cutter will continue to run once the end of the paper has been reached and run in reverse when the machine is started.



8. Adjusting the fibre-optic sensor for determining paper end

Remove the tie-bar and tractor according to the instructions in 2. Unscrew the tie-bar holder ③. Remove the screw on the side ① and vertically move the sensor head ②. The sensor head should have a clearance of 0.3 mm.

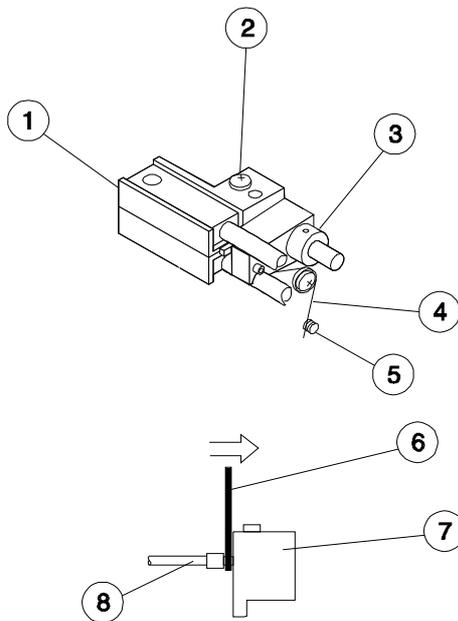


9. Removing the tractor shaft

Take out the flat belt. Insert the lever tool-nr. 15336 ③ in the belt pulley ①. Lift the locking pin ② and, at the same time, pull out the tractor shaft in an axial direction.

When reinstalling the tractor shaft, make sure that the locking pin "clicks" into place in the shaft.

10. Removing scanners on the tractor and cross cutter



To remove the scanner on the cross cutter, first take out the entire cross cutter (see 13).

The fibre-optic heads on the shafts of the tractor and cross cutter are screwed into a holder.

Caution: Do not unscrew the scanning heads from this holder and do not remove the screws ②. Otherwise, you may ruin the positioning of the scanners which was precisely set at the factory. If this happens, you will have to order a entire new scanner with the correct factory set-up.

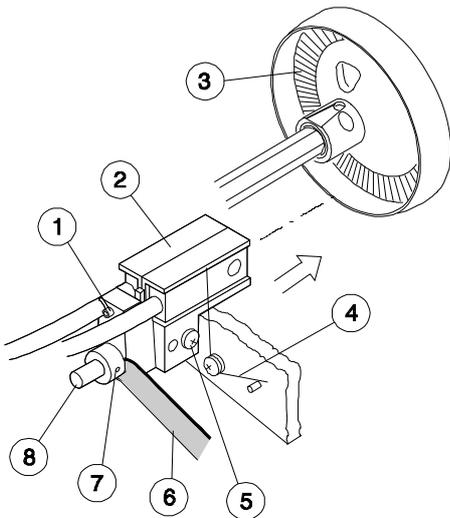
Remove the screws on the main board and pull it forward about 5 cm. Disconnect both plugs on the LED block ⑦. Use the lever (tool no. 15336 - ⑥) to disconnect the fibre plug - **do not** disconnect it by pulling on the cable ⑧.

Release the spring ④ at pos. ⑤. Open the setting collar and remove the scanner.

Scanners can only be exchanged as entire units (see list of exchangeable parts).

See 11. for instructions on how to install and adjust the scanner.

11. Cleaning, installing and adjusting scanners on the tractor shaft



Remove the tractor shaft as described in 9. Clean the encoder disc ③ and scanner head ② with a soft lint-free cloth. Do not use any cleansing agents.

Important: Do not use compressed air. This would distribute the paper dust throughout the entire machine and would particularly damage the optical scanning systems and ball bearings.

Reassemble using the following sequence:

1. Mount the tractor shaft and encoder disc (see 9.)

2. Mount and adjust the scanner.

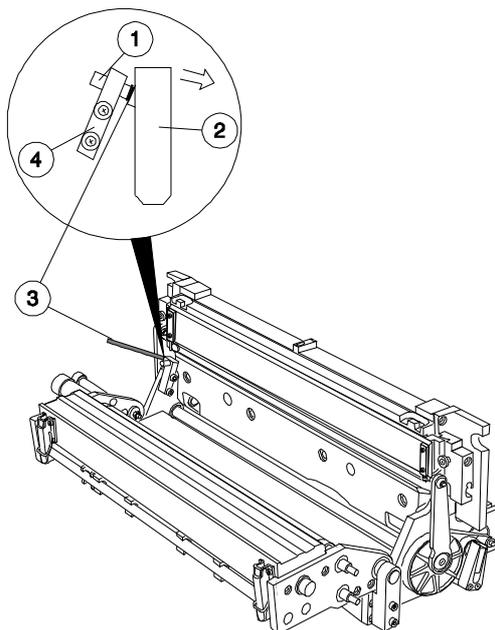
Insert the compression spring and scanner on the pin ⑧. Insert the feeler gauge ⑥ (0.3 mm) between the setting collar ⑦ and the scanner. While the feeler gauge ⑥ is in place, push the setting collar towards the encoder disc until the scanner ② is flush against the encoder disc.

Tighten the setting collar and pull out the feeler gauge. Attach the spring ④.

The two screws ⑤ are protected from being removed with loctite and should not be unscrewed. If this happens, you will have to order a entirely new scanner with the correct factory positioning. Use the same procedure for adjusting the scanner on the cross cutter.

Adjusting the phase angle:

Use the grub screw ① to adjust the phase angle. See Operating Instructions for information on settings.

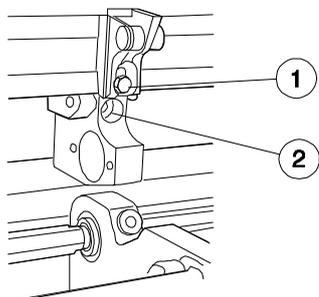


12. Cleaning, installing and adjusting scanners on the cross cutter

Remove the entire cross cutter as described in 13. Remove the driving gear as described in 19. and clean the scanner according to the directions provided in 11. Use the extension cord (tool no. 15667) to attach both motors to the bushings of the cross cutter. Carefully move the lower blade bar ② away from the block ④. From the side, insert the cable clamp (tool no. 10580 - ③) between the screw ① and lower blade bar. When making adjustments, the cable tie prevents the blade from being damaged while the machine is running without paper.

See 11. for instructions on how to adjust the scanner on the cross cutter.

13. Removing the cross cutter

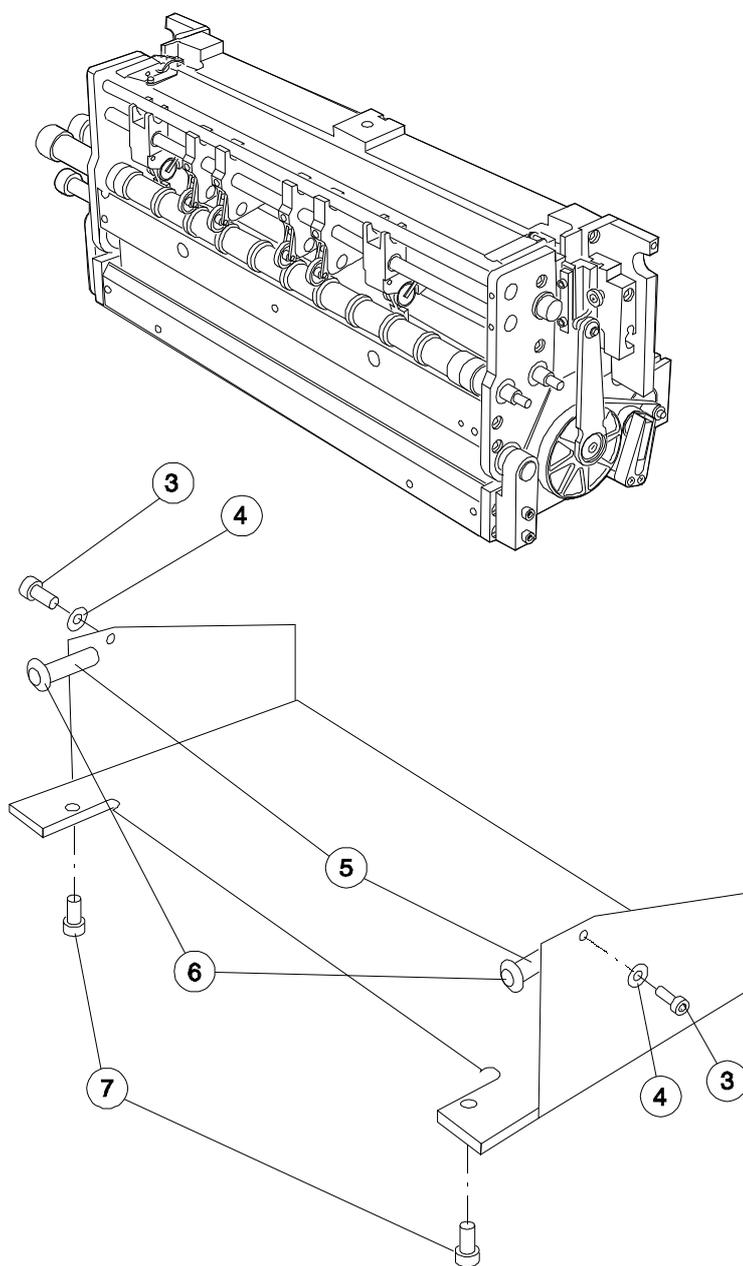


The cross cutter can be removed as a single unit for servicing or replacing.

To do so, remove the drive belt and air tube. Lift up the bars. Disconnect both motors of the cross cutter. Open the plexiglass cover. Remove screws ①, ②, ③, ⑦. You can push the entire cross cutter towards the back on the two pins ⑤. The stoppers will catch the cutter and prevent it from being pushed too far.

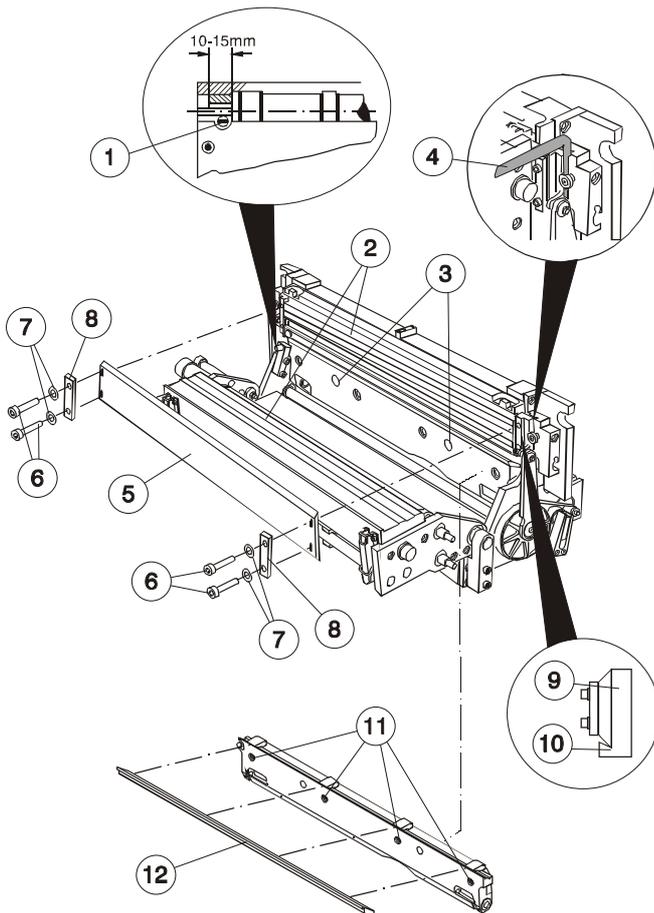
To completely remove the cross cutter, first disconnect the fibre plugs 1 and 2 and unscrew the two stoppers ⑥.

To reassemble the cross cutter, use the same steps in the reverse order (do not forget to insert the disc springs - ④).



14. Removing and adjusting the cross cutter blade

Remove the drive belts and air tube. Lift up the bars and open the snap locks. Tilt down the entire ejector unit. Move the upper blade to its maximum position by hand. Reduce spring pressure of the lower blade. Turn both screws ③ clockwise as far as they will go, remove screws ⑥ and carefully take the blade ⑤ out of the machine.



CAUTION Danger of injury!

The cutter guides ② have been treated with a small amount of high-speed grease (tool no. 11121). Re-grease if necessary.

Install the new blade. Fasten the screws ⑥. Do not forget to insert the disc springs ⑦ and the plates ⑧. Shut the ejector unit. Insert the feeler gauge ④ (tool no. 10897 - 0.1 mm) from above between the fixing block and side guide. Fasten the screws with a hexagon ball-head screwdriver. Tilt down the ejector unit and re-tighten the screws. The cutter should rest on both heels (left and right, ⑩) of the holder ⑨.

Loosen and remove the lower blade ⑪ by turning the screws ⑪ with the hexagon ball-head screwdriver (tool no. 13119). When replacing the blade, make sure that the blade is even with the blade bars (left and right). The blade should not stick out on either side.

Adjusting:

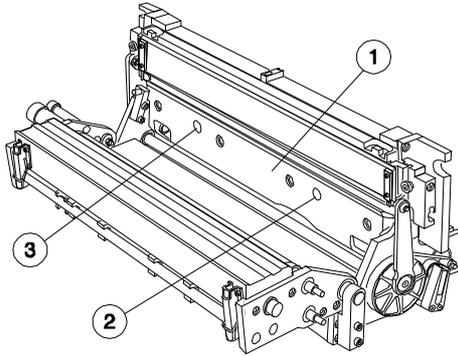
Check the angle of the cross cutter (see 18.). Use the fine thread screw ① to adjust the initial cutting point of the upper blade in relation to the lower blade. Both blades should meet about 10-15 mm after initial penetration (i.e. begin to cut). Adjust spring pressure of the cross cutter as described in 15.

Important information for installing new blades:

When using a new blade (i.e. with cutters which have never been used), first carefully lower the upper blade by hand. While lowering the blade, reduce spring pressure of the lower blade by pressing against it with your thumb. The blades should not contact each other at full spring pressure for the first few manual cutting cycles. This would damage the blades right from the start. To prevent this, carry out a few cutting strokes by hand, gradually reducing the pressure placed on the blade by your thumb. After a few manual cuts, the blades will no longer be in danger of being damaged.

Special exchange prices are available for blades (see list of exchange parts).

15. Adjusting spring pressure of the lower blade on the cross cutter

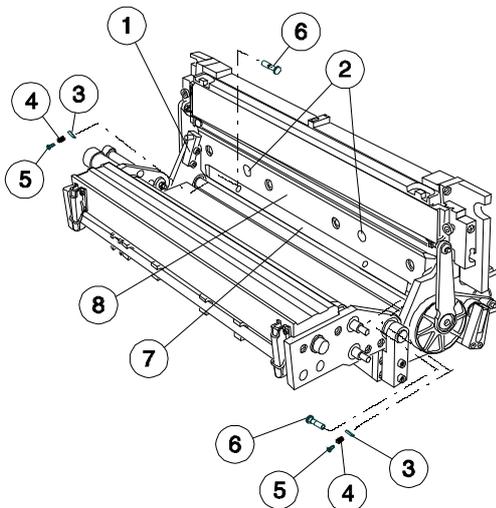


Tilt down the ejector unit (see 14). Turn the screws ②, ③ to adjust spring pressure of the lower blade ①. This pressure must be set correctly to ensure top cutting performance. Under difficult cutting conditions, increase the pressure of this spring. However, please keep in mind, higher spring pressure increases wear on both blades. Both screws can only be turned to a certain point in both directions. When using double cuts, if the second cut does not go all the way through, slightly increase spring pressure. However, in general try to keep spring pressure as low as possible (at the normal setting).

Normal setting:

Turn both screws clockwise as far as they will go. Rotate screw ③ four full turns; turn screw ② five full turns.

16. Removing the blade bar



Tilt down the ejector unit (see 14). Reduce spring pressure. Turn both screws ② clockwise as far as they will go. Remove the block ①. Unscrew the plate ⑦. Remove the screws ⑤ and bolts ⑥. Take out the blade bar ③.

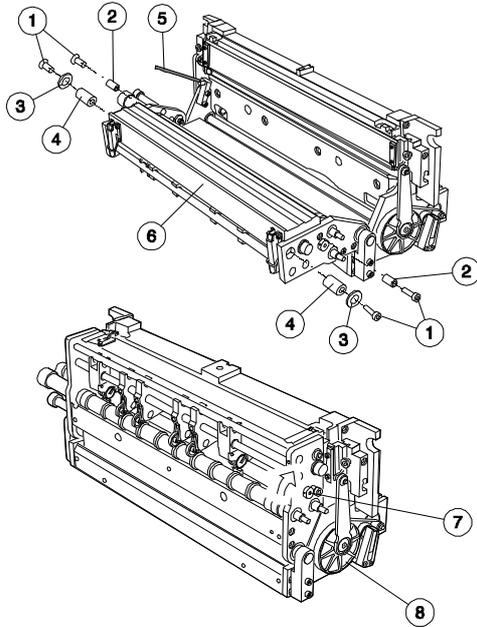


CAUTION Danger of injury!

Mount the lower blade on the new blade bar (see 14). Do not forget to install the springs ④ and plates ③. Check the angle of the cutter (see 18).

Adjust the initial cutting point as described in 14. and spring pressure of the lower blade as described in 15.

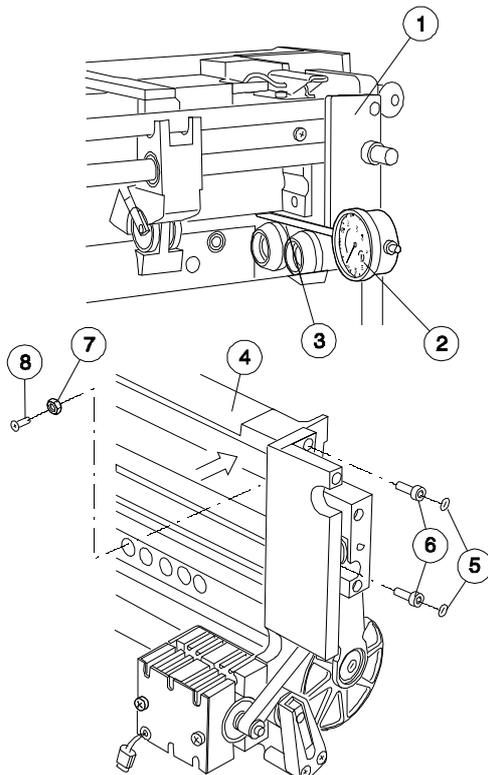
17. Removing and adjusting the blade guide bar



Blade guide bars can only be exchanged as entire units (see list of exchange parts). The guides are removed and replaced at the factory. Tilt down the ejector unit (see 14). Remove the screws ①. Replace the blade guide bar ⑥. Mount the bushings ②, ④ and tighten the screws (do not forget to insert the disc springs ③). Insert the cable clamp (tool no. 10580, ⑤) between the screw and lower blade bar (see 12).

To adjust the blade guide bar, loosen the eccentric cam ⑦ on both sides. Turn the pulley by hand ⑧. At the same time, turn the eccentric cam with a hexagonal screwdriver (size 2) in the direction of the arrow. Keep turning until the pulley offers resistance. Slightly loosen the eccentric cam and secure it. Make sure the pulley is easy to turn.

Check the angle of the cutter as described in 18. and the initial cutting point as described in 14.

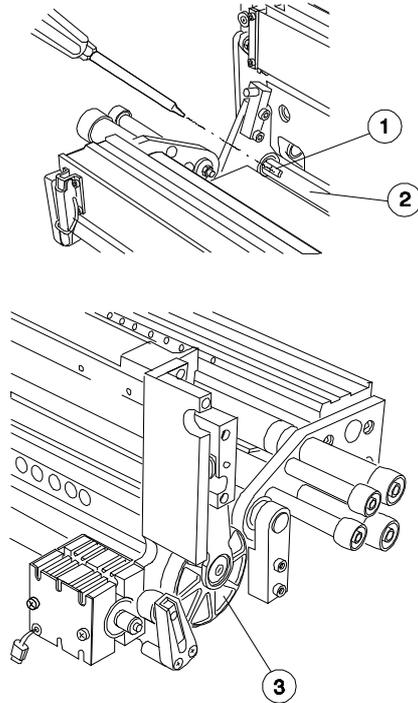


18. Checking and adjusting the angle of the cross cutter

Remove the ejector cylinder (see 20). Attach the holder ① with the dial indicator ② and measuring device ③. Slowly lower the upper blade by hand, keeping an eye on the hand of the dial indicator. Keep lowering the blade until the indicator shows a total change of 0.5 to 0.6 mm. This is the original factory setting which should be used when installing resharpened blades or new blade bars.

Use the following procedure to make adjustments if the angle is too small: remove caps ⑤. Turn the screws ⑥ a few times to loosen them. With the screw ⑧, slightly push the blade bar ④ in the direction of the arrow and lock with the nut ⑦. Tighten the screws ⑥. Check the angle with the dial indicator.

19. Removing the driving gear on the cross cutter



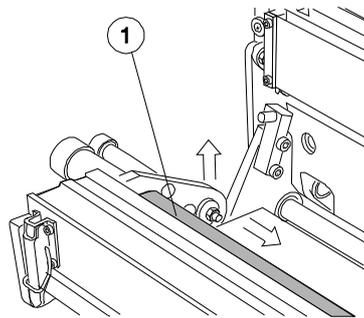
Completely remove the cross cutter (see 13). Tilt down the ejector unit. Remove the Seeger circlip ring. To remove the belt pulley ③ of the cross cutter, remove the three screws which can be accessed through the hole in the belt pulley itself. Carefully pull on both ends of the connecting rod. Should you have difficulties removing the belt pulley, please only use a small screwdriver to help lift it out. Do not use any other tools.

Clean the encoder disc and scanning heads (see 12), if necessary.

Use the pin (tool no. 10893) to align the belt pulley and screw holes. It may also help to gently tap on the ends of the connecting rod.

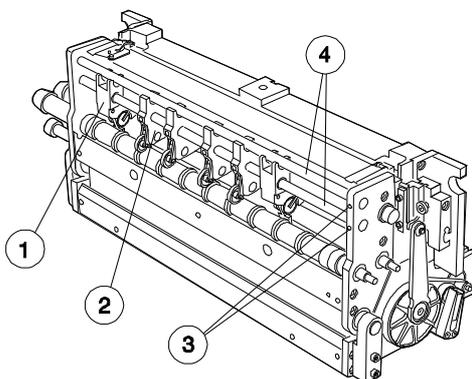
Caution: Be sure the shaft ② is perfectly aligned with the driving pin ① of the driving pulley, otherwise you will not be able to push in the belt pulley. If necessary, turn the shaft to align them.

20. Removing the deflector cylinder and ejector cylinders



Tilt down the ejector unit. Press the deflector cylinder ① to the right and take it out of its conical mount. The pin of the right-hand conical mount has been treated with a special grease (tool no. 11122) to prevent triboelectric corrosion (apply grease, if necessary). Remove the ejector cylinder.

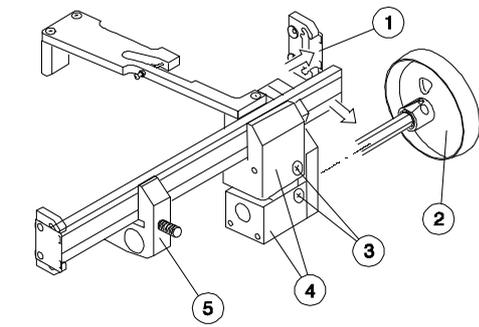
21. Removing the ejector and deflector



Remove the grub screws ③. Press the shafts ④ to the left or right until the ejector ② and/or the deflector ① can be removed.

Ejectors and deflectors can be exchanged as complete units. Special exchange prices are available (see list of exchange parts).

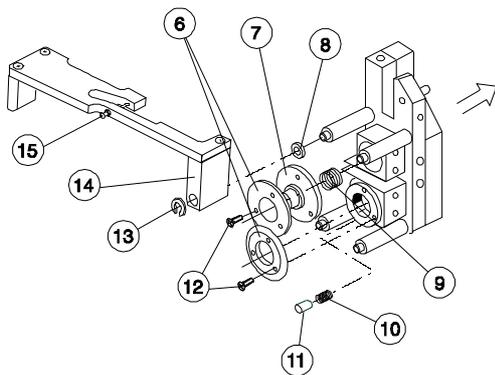
22. Removing the blades of the edge cutters



Remove the drive shaft ② as described in 9. Unscrew the paper guide ⑤. Loosen the screws ③ by turning them 1-2 rotations and remove the housing plates ④. Take off the washer ⑬. Completely remove the edge cutter from the block ⑭. Press the plate ① in the direction of the arrow and remove the tie-bar and edge cutter unit.

A special holder (tool no. 13572) is available to help when changing blades. This tool prevents the blade holder from twisting when the screws are removed. Position the holder, remove the screws ⑫ and replace the blade ⑥.

Special exchange prices are available for blades (see list of exchange parts).



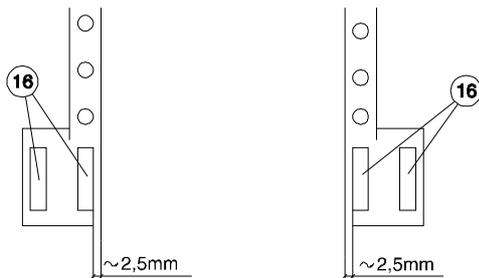
CAUTION Danger of injury!

When replacing blades, also inspect the flexible blade holder ⑦ to make sure it is not worn out and moves easily on the shaft (apply triboelectric grease no. 11122 to prevent triboelectric corrosion).

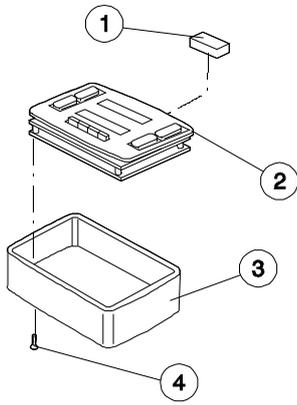
Reassemble the system using the same steps in the reverse order.

Do not forget to insert the following parts:

- Pos. ⑧ : washer
- Pos. ⑨ : spring
- Pos. ⑩ : spring
- Pos. ⑪ : felt

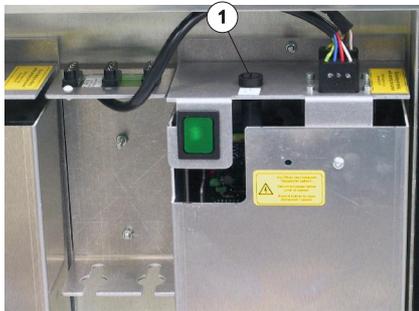


Use the screw ⑮ to adjust the distance between the deflector cylinders ⑯ and the paper. However, it is only necessary to make this adjustment when, for example, replacing the deflector.



23. Removing the terminal board and replacing the eprom

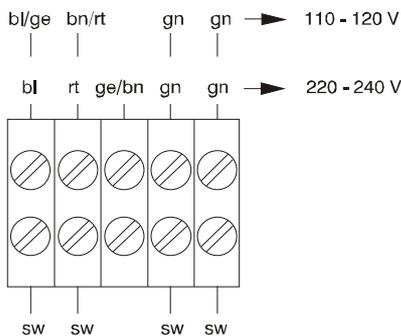
Undo the four screws on the bottom of the terminal ②. Push the terminal forward to remove it. Disconnect the plug. Terminals can only be exchanged as entire units (see list of exchange parts). Remove the EPROM ① from the socket using a tool. Insert the new EPROM. Be sure to put it in the right way with the notch on the correct side (check IC pins).



24. Replacing the fuse

Take off the screw cap ①. Change the fuse. Only use the same type of fuse that was originally installed (Wickmann Co. DIN 41662).

IMPORTANT: 5 A at 220-240 V (No. 15741)
10 A at 110-120 V (No. 10653)



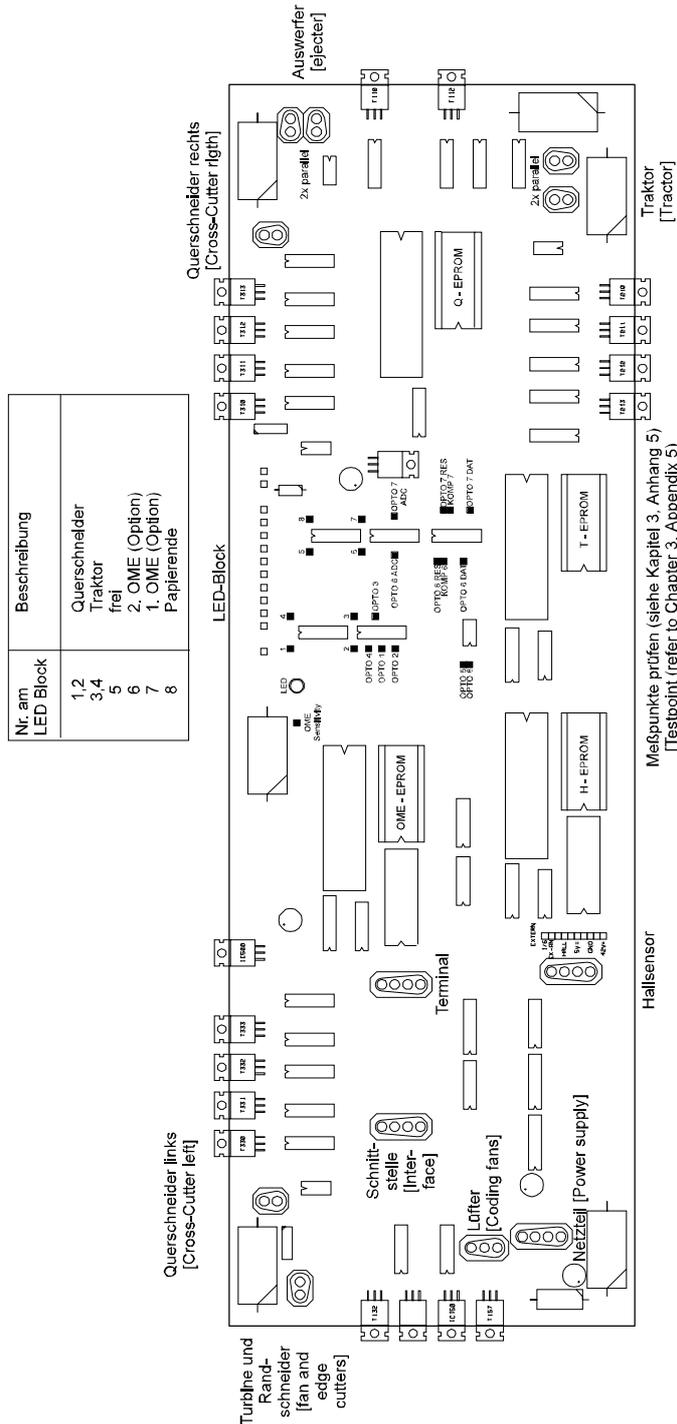
25. Changing the mains voltage

Remove the plexiglass cover. Additional steps for Model 6612 only: Disconnect the heat sensor, loosen the knurled screws and remove the air duct.

Connect the appropriate cables for the mains voltage being used.

Caution: When changing the mains voltage, be sure to also use an appropriate fuse.

26. Main PC-Board connections



27. Removing the main board

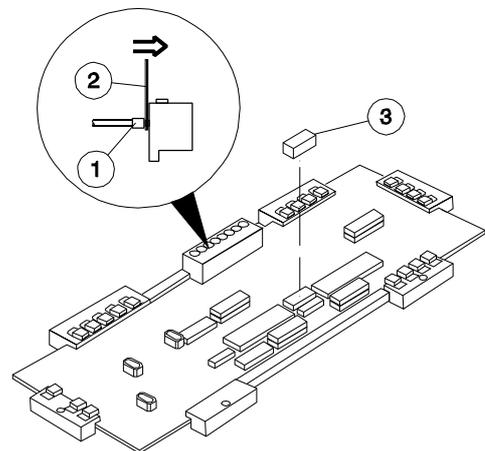
Lift the plexiglass cover. Disconnect all plugs. Remove the eight knurled screws. Pull the board 5 cm forward. Use the lever (tool no. 15336 - ②) to disconnect the fibre-optic plugs - do not disconnect it by pulling on the cable ①. Remove the board.

Boards and EPROMs can only be exchanged as entire units (see list of exchange parts).

Caution: To prevent dust from entering into the fibre-optic bloc, clean the machine before beginning the procedure for removing the main board.

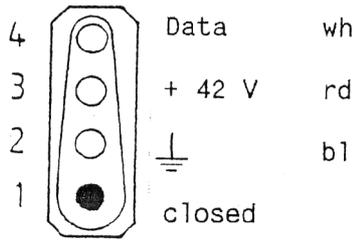
Before reconnecting the fibre plugs, clean the light output opening with a lint-free cloth. Do not forget to replace the ID chip ③ on the new board.

Caution: Before starting the Automatic Forms Cutter, run service routine 10 (for more information see Operating Instructions).

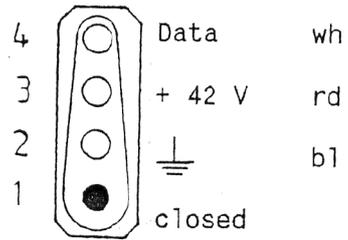


CONNECTOR ON MAIN PCB

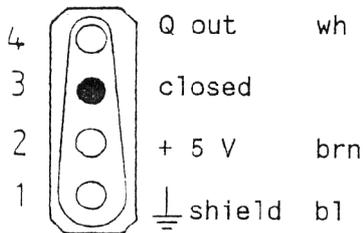
INTERFACE / DISPLAY
letter "T"



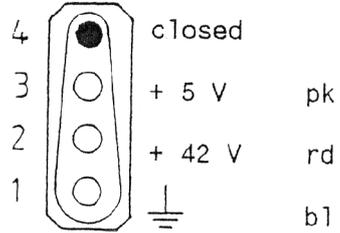
INTERFACE / OUTSIDE
letter "S"



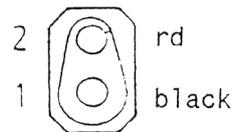
HALLSENSOR
letter "H"



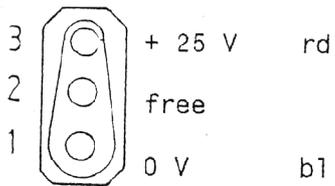
POWER SUPPLY
letter "N"



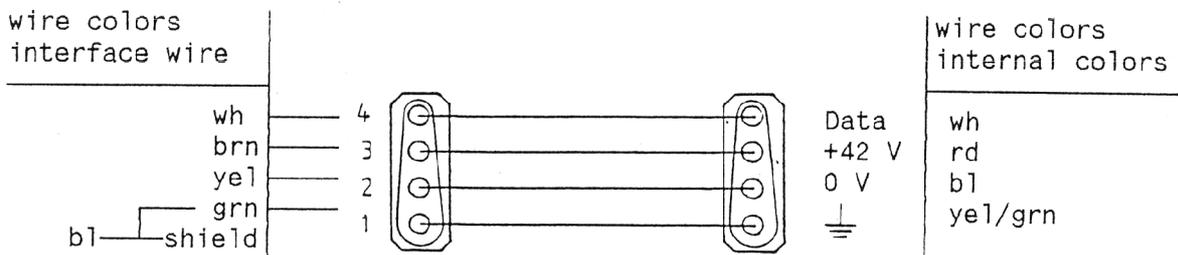
MOTORS



COOLING FANS



Interface connectors next
main switch



both connectors in parallel

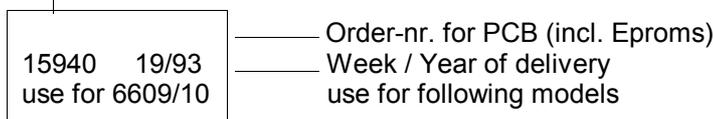
Main PC-Board installation

Please note the following positions, before setting the PCB`s to work!

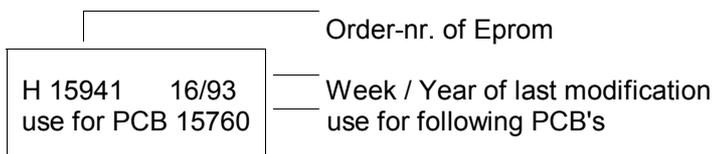
- a) Connect all fibre optic plugs. (Take care beforehand, that plugs and connector sockets are perfectly clean!)
- b) Fix all thumbscrews on the PCB tight (due to ground contacts).
- c) Insert the ID-chip on the the new PCB (take it from the exchanged board!).
- d) Both encoding disks inside the cutter- and tractor pulley must be clean and without scratches.
- e) Connect all plugs to the according sockets on the PCB, DC-motors are allways plugged into the nearest socket.
- f) Check and adjust 0,3mm distance between optic head and encoding disk (cutter and tractor).
 Start service-routine 10:
 (hold down F1-F4 - then switch on cutter - push the INFO-button once after the message "OK"- then release F1-F4. With pushing first INFO and then PROG, you are in SERVICE-SELECT).
 With service routine 10 all electrical values are now adjusted fully automatic (which has been done up to now with potentiometers).
 This procedure has to be done once after power on (after exchanging a new printed circuit board).
 During continuous run all these values are under microprocessor control and will be adjusted all the time automatically.

Both for the PCB and the Eproms there are labels. The Eproms have to fit onto the according board. Therefore the Eprom-labels show, on which PCB's the Prom can be used.

The labels for PCB's contain the following data:



The labels for Eproms contain the following data:



Listing of all Automatic Forms Cutter PCB, being produced since 1988.

The different PCB releases are corresponding to technical detail-improvements.

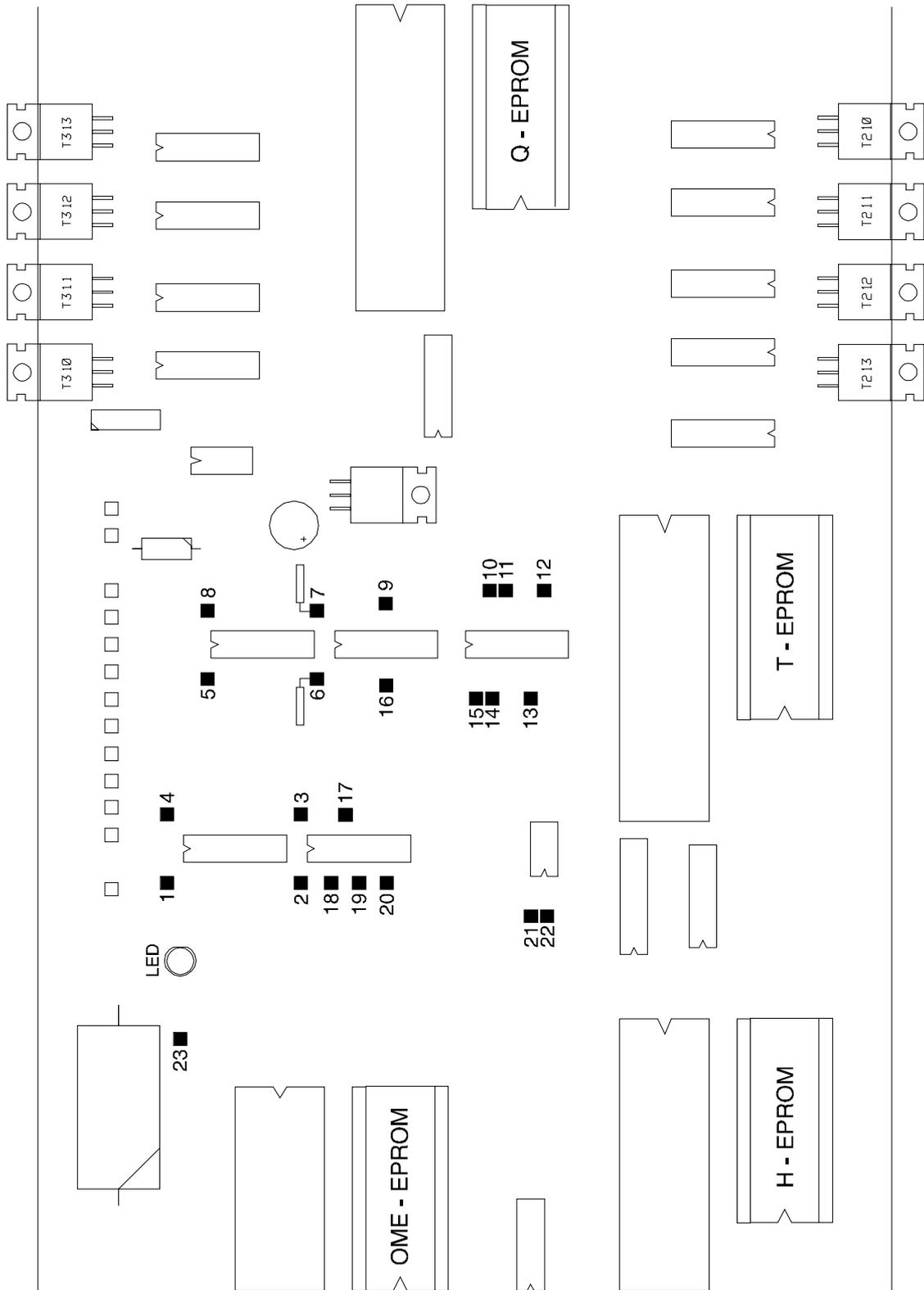
	1. Version after 1988		2. Version after 1993				3. Version after 1995					4. Version after 11/1999		5. Version after 26/2002
	10581 with poti	11780 with poti	15945 Final amplifier with IRF	15995 Final amplifier with IRF	15940 Final amplifier with BUK	15990 Final amplifier with BUK	15940 Final amplifier with BUK- without pressure, with temperature sensor	15990 Final amplifier with BUK- without pressure and temperature sensor	19090 Final amplifier with IRF, pressure and temperature sensor	19095 Final amplifier with IRF, without pressure and temperature sensor	20329 same as 19090, with fan motor 42 V	24530 Encoding Disc position has been changed New cooling fan	24535 Encoding Disc position has been changed New cooling fan	28815 replaced by 24535 (New final stage for fan, lateral additional PCB 20730 dropped)
6609 without Chopper one Tractormotor	x					x		x						
6609 with Chopper one Tractormotor					x		x							
6610 without Chopper one Tractormotor	x					x		x						
6610 with Chopper one Tractormotor					x		x							
6611 without Chopper two Tractormotors		x		x						x				
6611 with Chopper one Tractormotor			x						x					
6611 for use in printing and mailing houses*			x						x					
6612 with Chopper one Tractormotor			x						x					
6612 for use in printing and mailing houses*			x						x					
6611C											x			
6612C											x			
6609D-6610D												x		
6611D-6612D													x	x

*Printing and mailing houses:

No Waste-Chopper and ejectors are not installed.
The power supply is mounted outside the machine

Measurement-Points-PC-Board

LED-Block

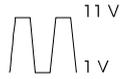


MEASUREMENT-POINTS (Fibre-Optic) at PC-Board

1) Analogue-output Amplifier for encoding-disks with running motors:

Testpin 1 and 2 Cross-Cutter:

Scope square (trapezoid) signal 1V - 11V (start service routine 011/012, disconnect function of the cutting blade (follow the instructions at chapter 3, Pos. 17) - harmonious speed.)



Testpin 3 and 4 Traktor:

Scope-square (traapezoid) signal 1V - 11V (start service routine 013/014 - harmonious speed.)



In the case, that the measurements on testpin 1+2 and 3+4 are not showing the same results, the encoder disc must be checked or the board must be changed.

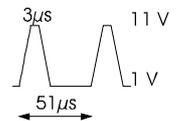
2) Analogue-outputs Amplifier for OMR and Papersensor:

Testpin 5 (spare for optional sensor)

Testpin 6 OMR spare channel

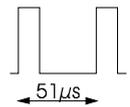
Testpin 7 OMR standard:

Scope trapezoid signal 1V - 11V (white paper under the head, start service routine 017, or reading routine 1, EZ = 010. START, most upper position of the signal must be 3 sec. flat.



Testpin 8 paper sensor: over the

Square signal 1V - 11V (with paper sensor).



3) Further signals (digital signals):

Encoder-signals after Schmitt-Trigger:

Testpin 19 (OPTO 1), Testpin 20 (OPTO 2), Testpin 17 (OPTO 3), Testpin 18 (OPTO 4):

Square signal 0V - 5V, 50%

Papersensor:

Testpin 21 (OPTO 5), Testpin 22 (OPTO 8): DC-voltage 0V with paper, 5V without paper

OMR:

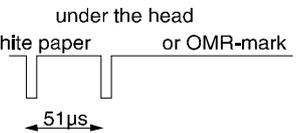
Testpin 23 (OMR Sensitivity): DC - Voltage, dependant on sensitivity-level

Service	060 level	0:	ca. 8,1V
	061	1:	ca. 9,0V
	062	2:	ca. 9,5V
	063	3:	ca. 10,1V

The general OMR-sensitivity has been made less sensitive than up to now. The lowest sensitivity level 0 (service 060) is now at about 6V, sensitivity 3 (service 063) is at about 8,5 V. When processing weak matrix-printed papers, the sensitivity level may now be set to level 1 or 2 (more sensitive)

Service	060 level	0:	ca. 6V
	061	1:	ca. 6,8V
	062	2:	ca. 7,6V
	063	3:	ca. 8,5V

Testpin 16 (OPTO 6ADC),
 Testpin 9 (OPTO 7ADC): after installation of the adjustment-marking: 2,6V DC
 flap is open (no paper): 1,3V DC



Testpin 14 (KOMP6),
 Testpin 11 (KOMP7): square-signals 0V - 5V
 white paper is under the head: 0V DC
 OMR-mark is under the head: 5V DC

Testpin 15 (OPTO 6RES),
 Testpin 10 (OPTO 7RES): all 1/6" / 1/8" negative "needles" from 5V to 0V, the cutter is programmed with reading and is in operation (or start Service 017).



Testpin 13 (OPTO 6DAT),
 Testpin 12 (OPTO 7DAT): normal 0V, with OMR-marks in the line 5V