

# SERVICE MANUAL



## INDEX EVEREST

*Version 3.0*

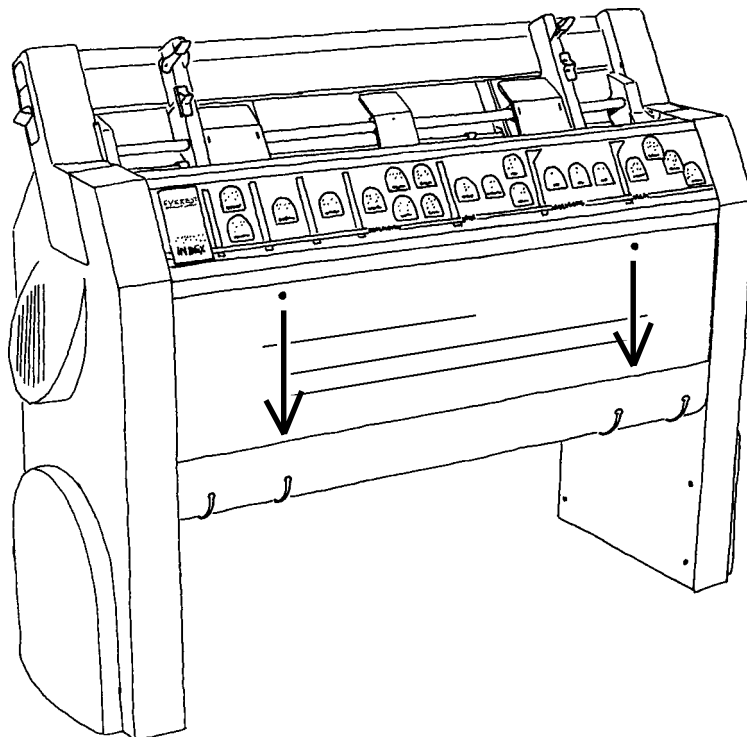
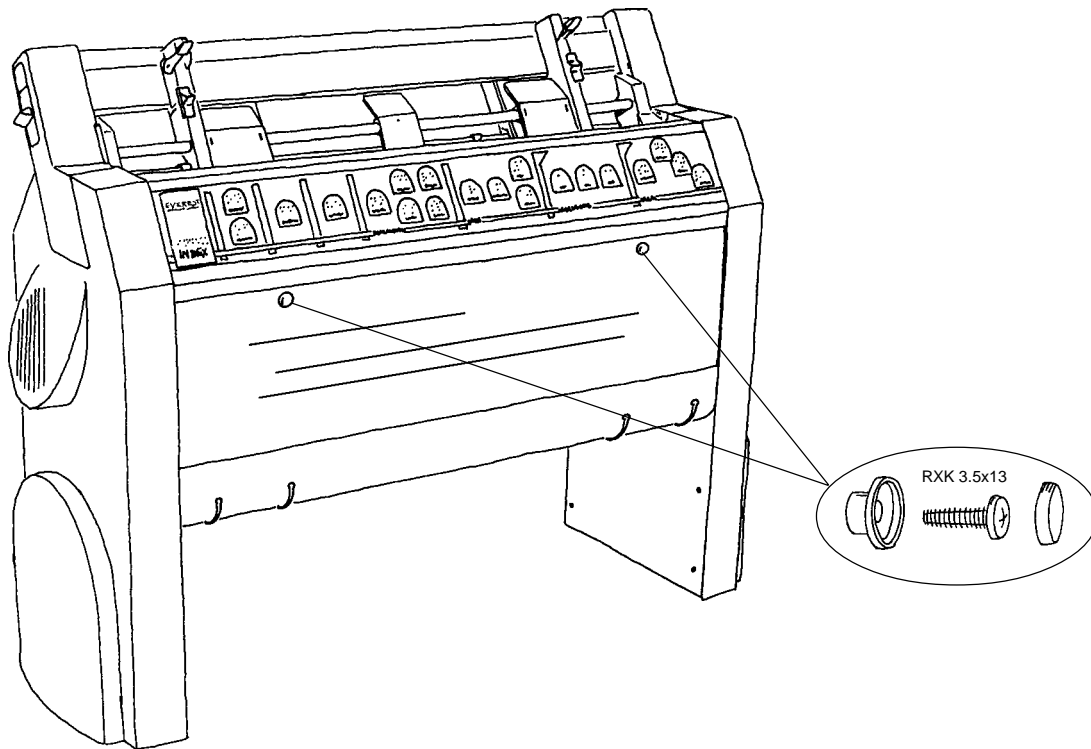


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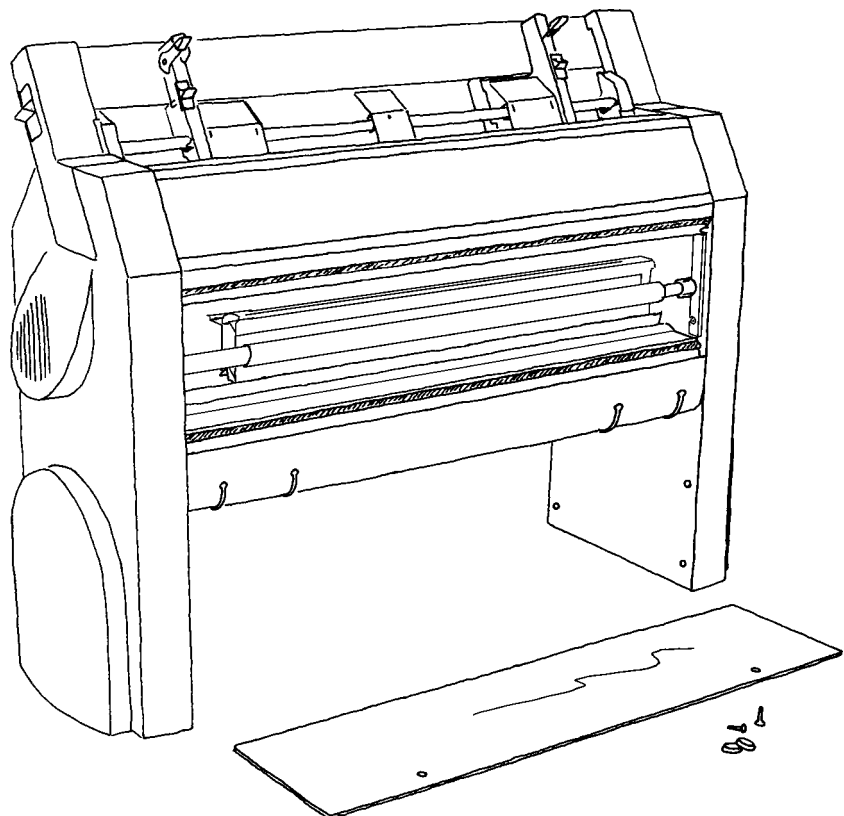
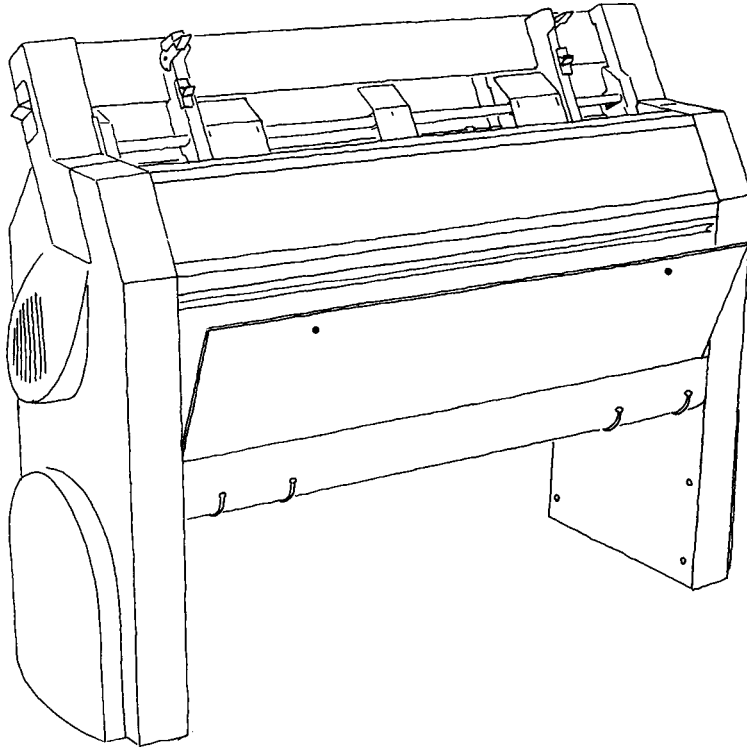
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**To receive current pricelist, please contact Index.**

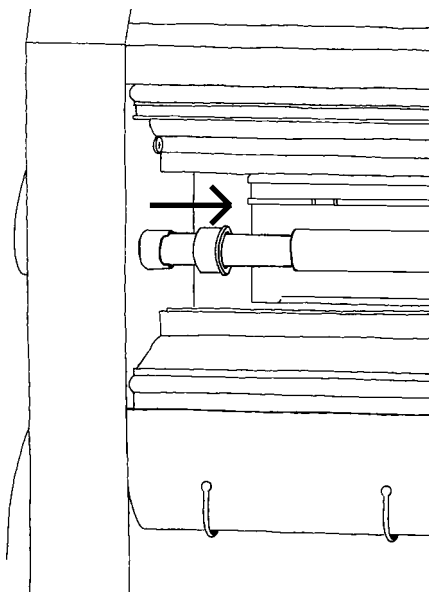
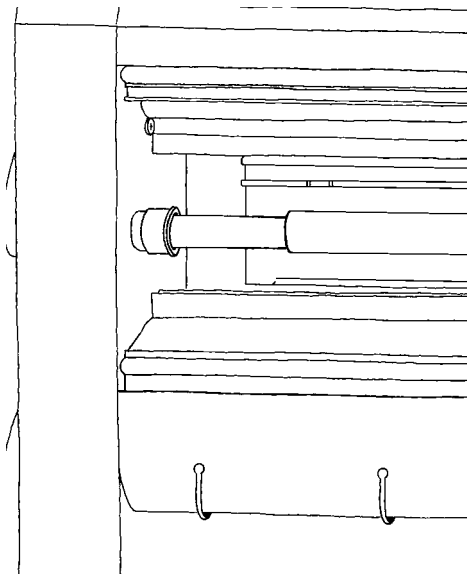
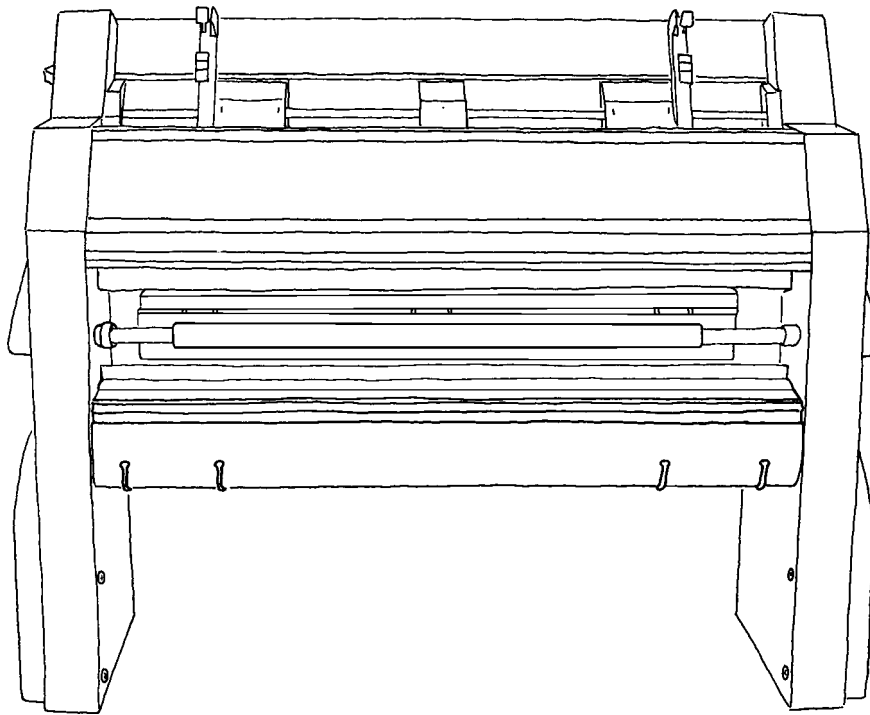
## Removing the glass



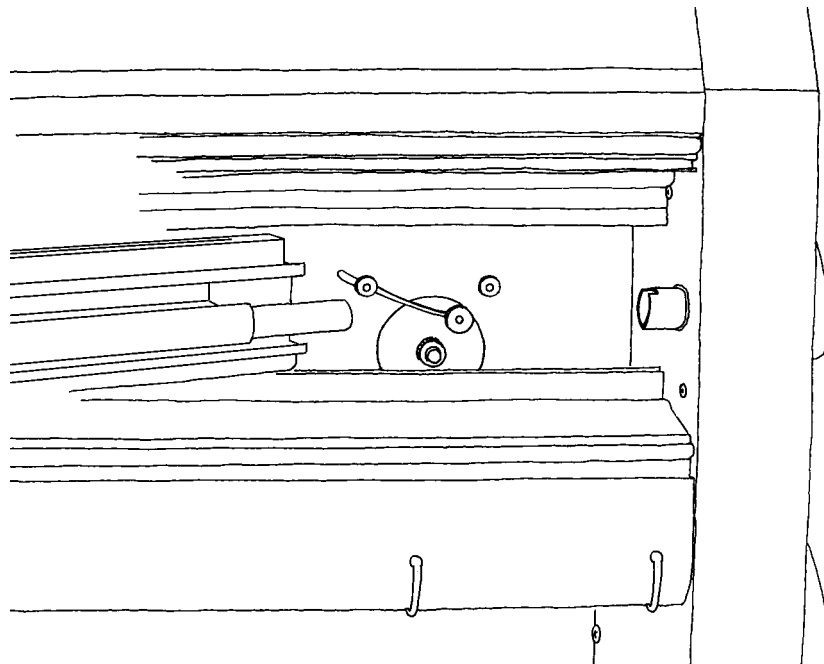
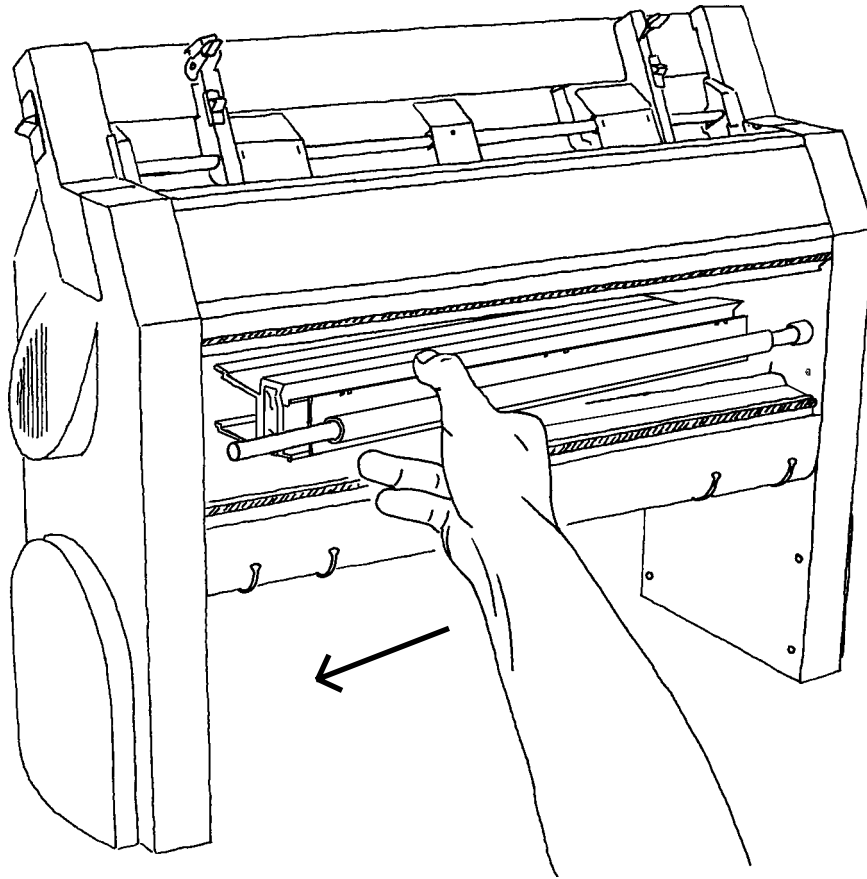
## Removing the glass



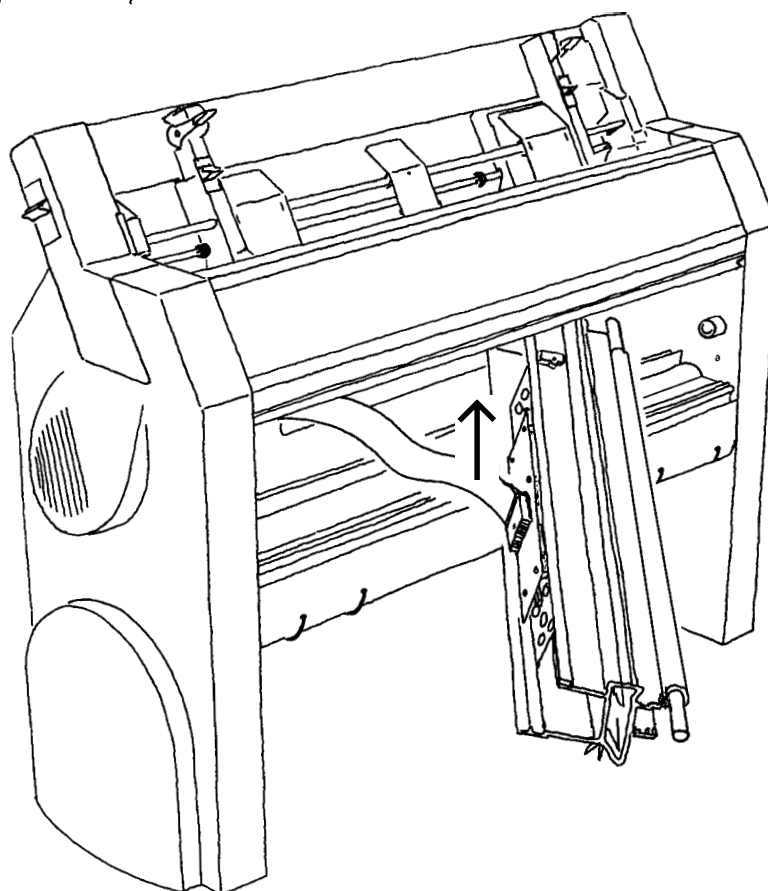
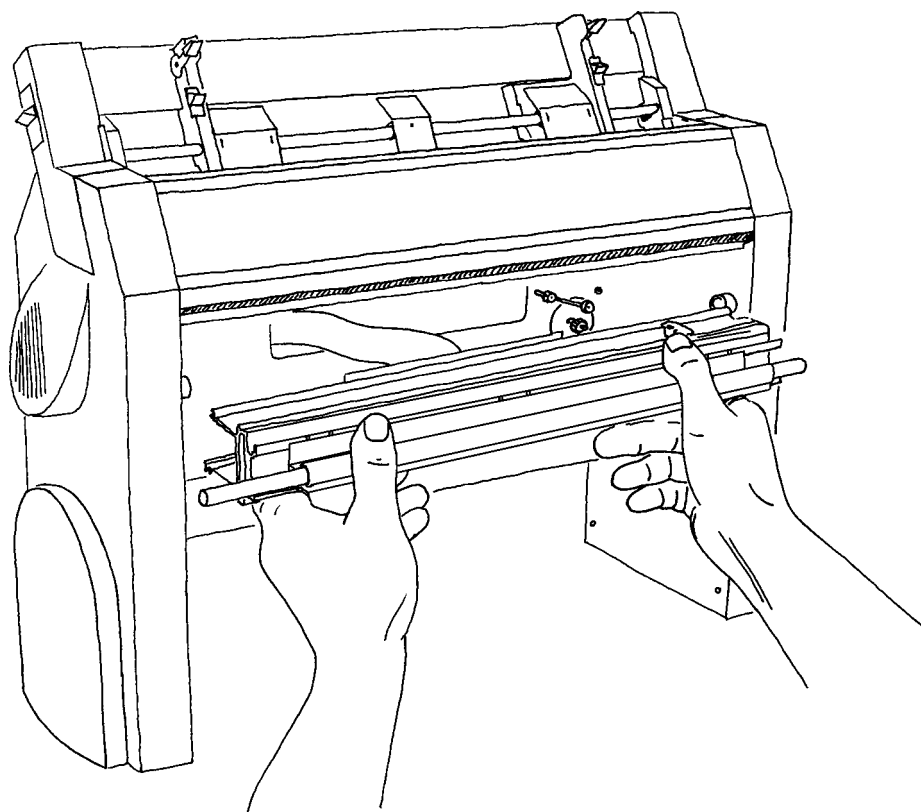
## Removing the printinghead



## Removing the printinghead

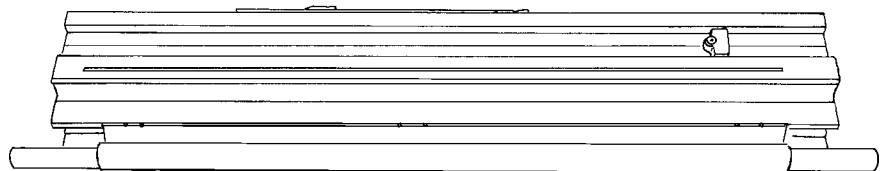
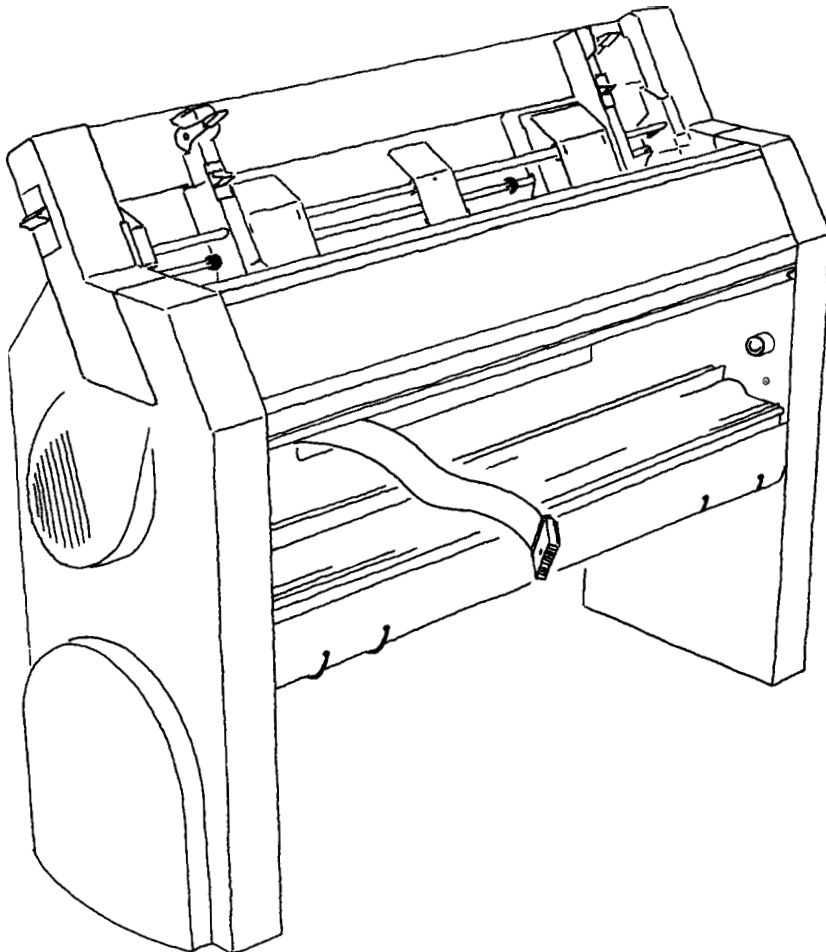


## Removing the printinghead

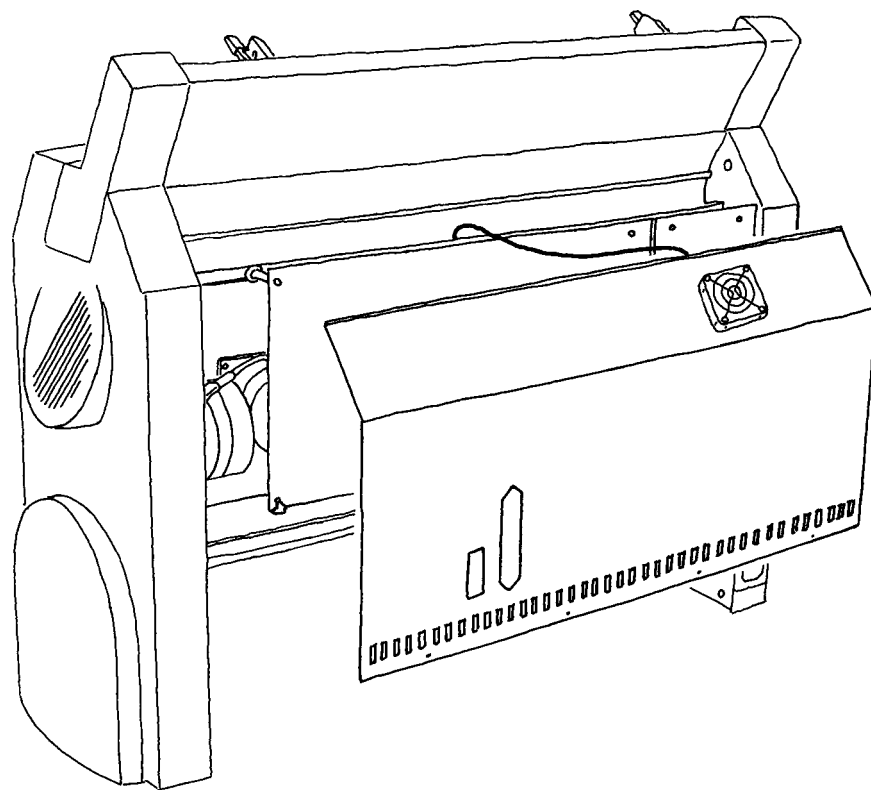
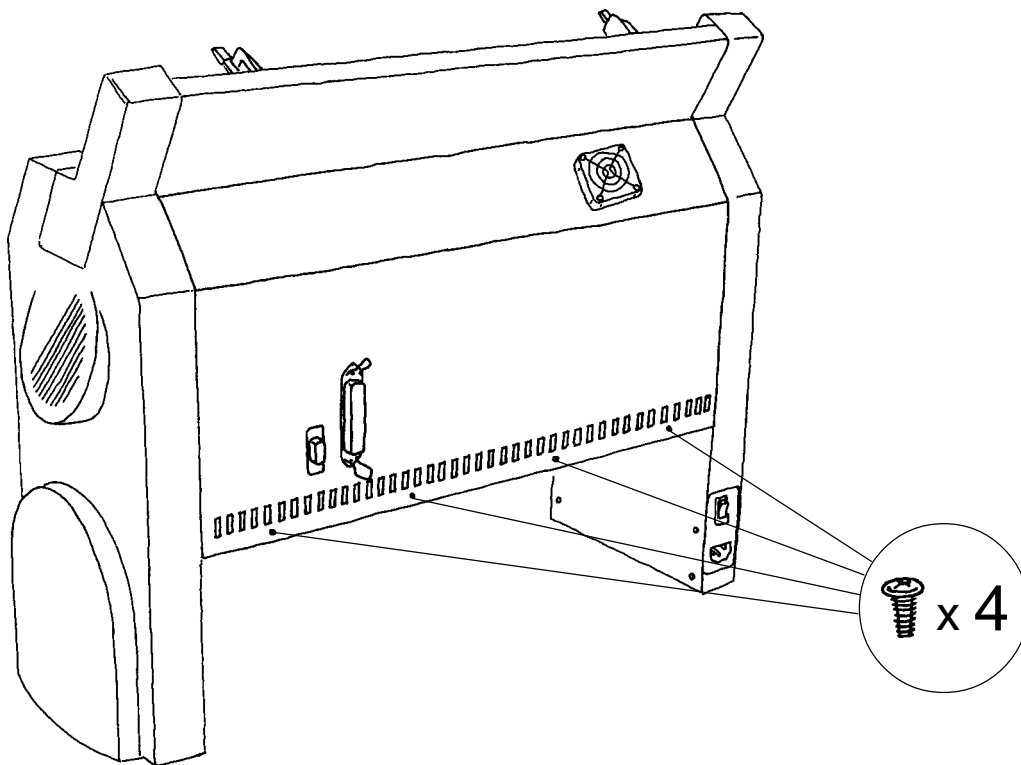




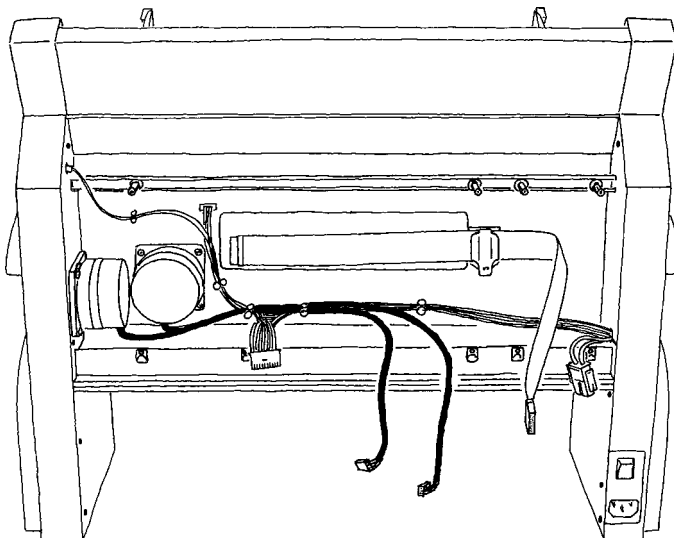
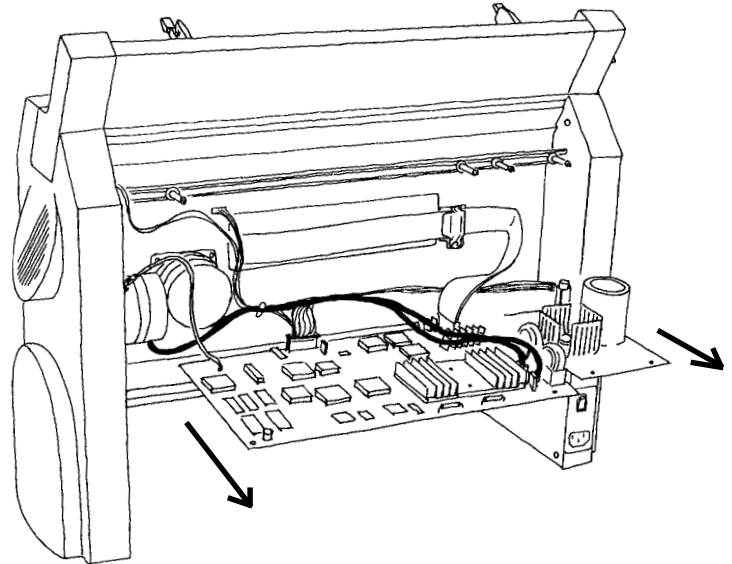
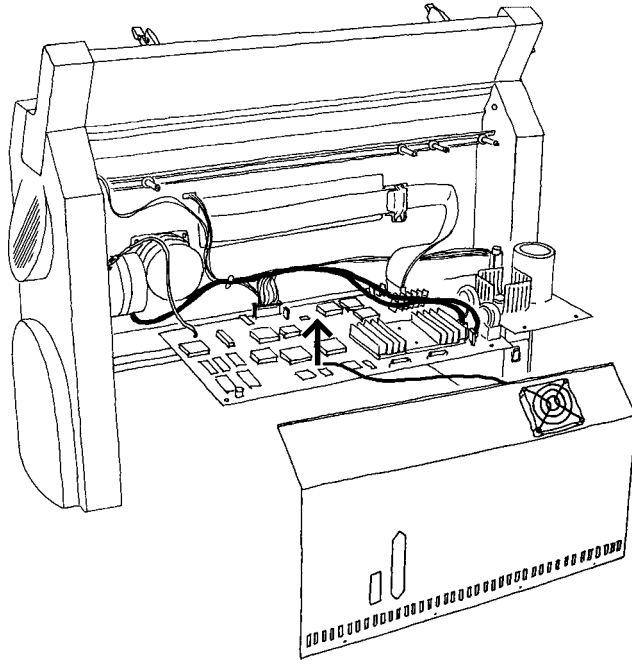
## Removing the printinghead



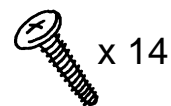
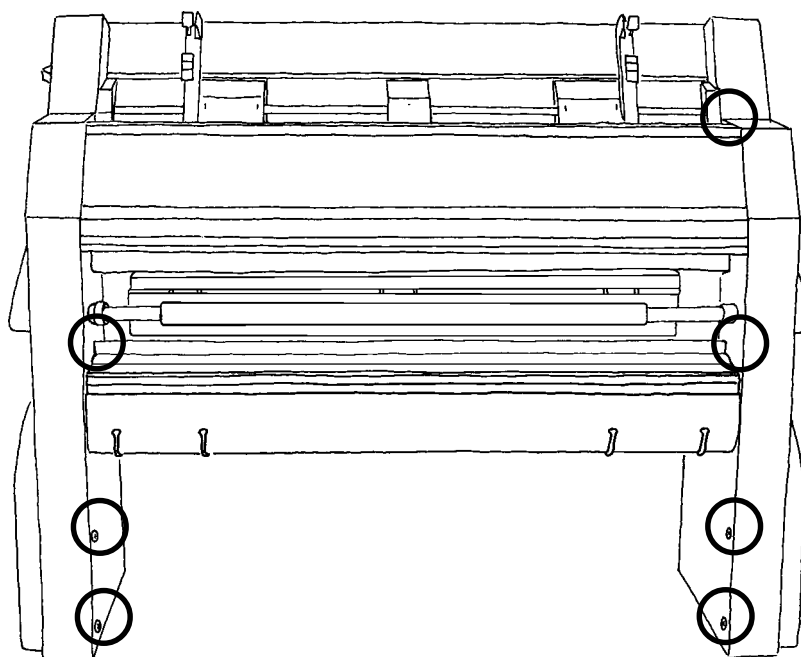
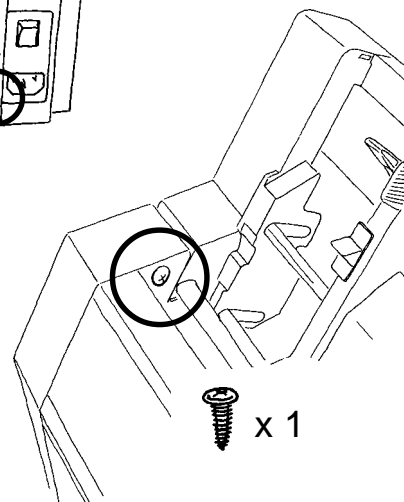
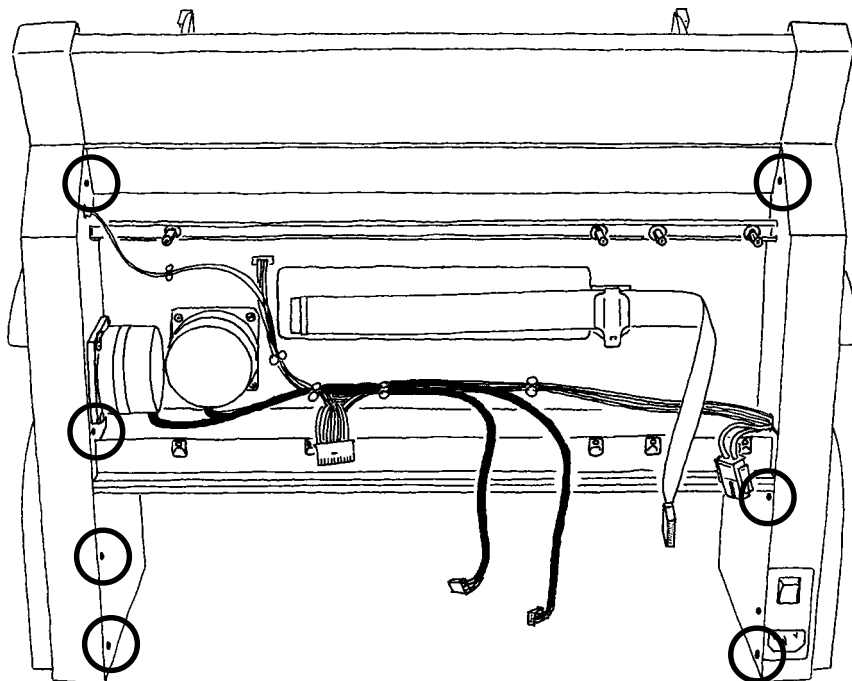
## Removing the backplate



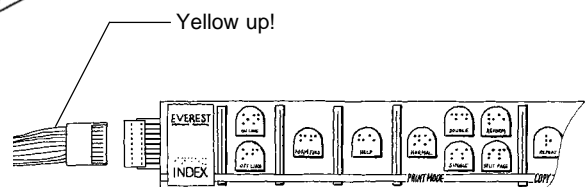
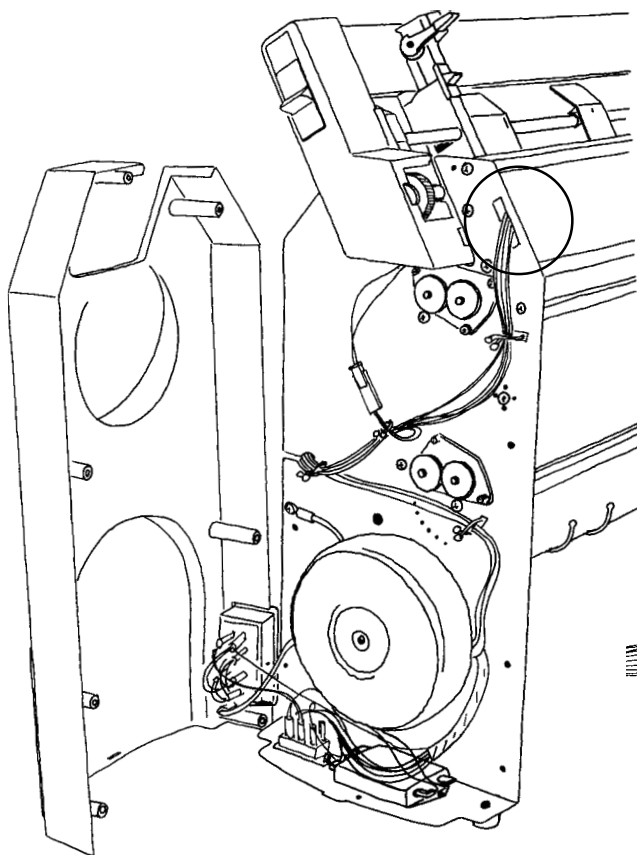
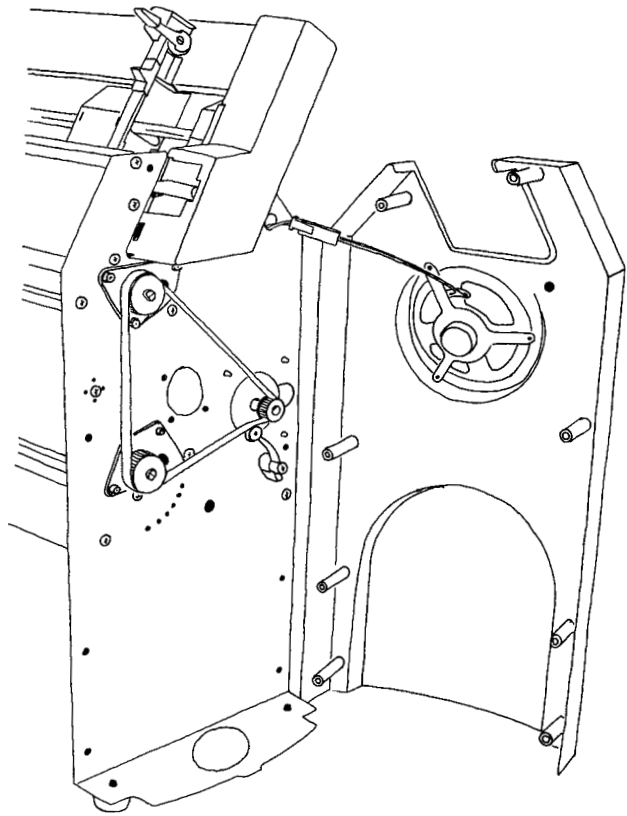
## Removing the mainboard



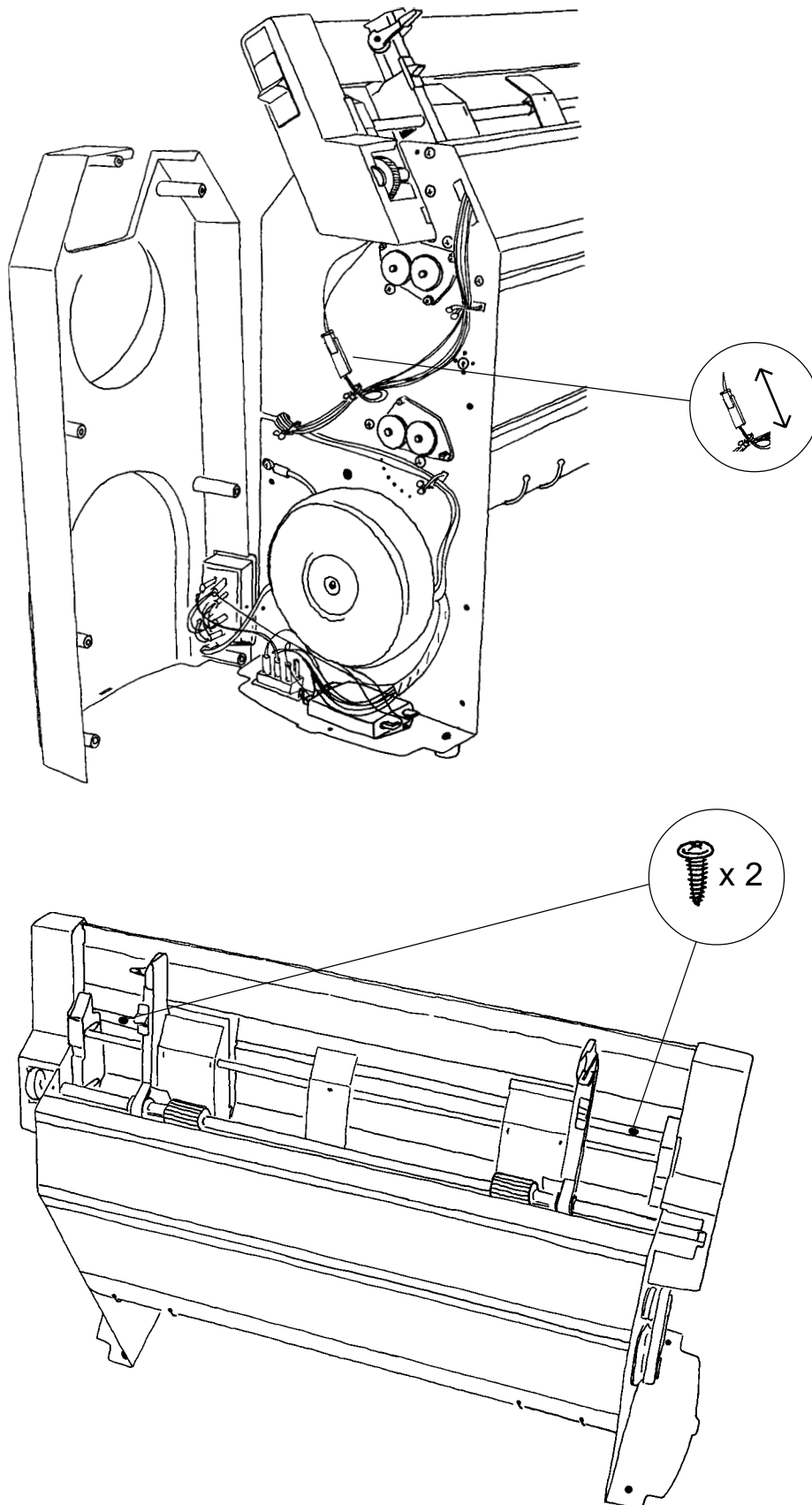
## Opening the sidecovers



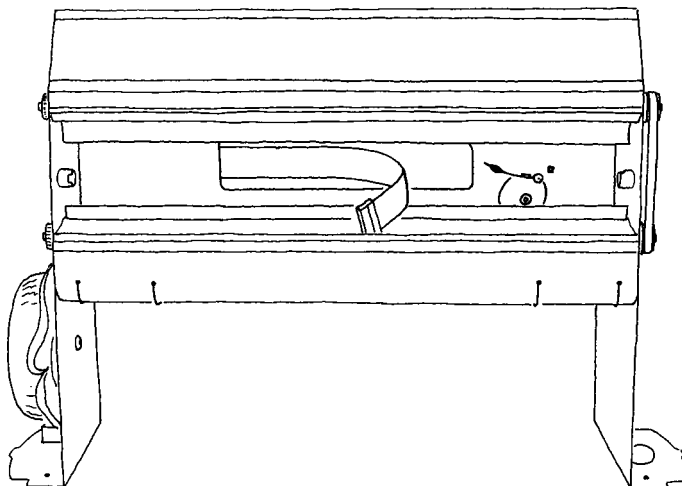
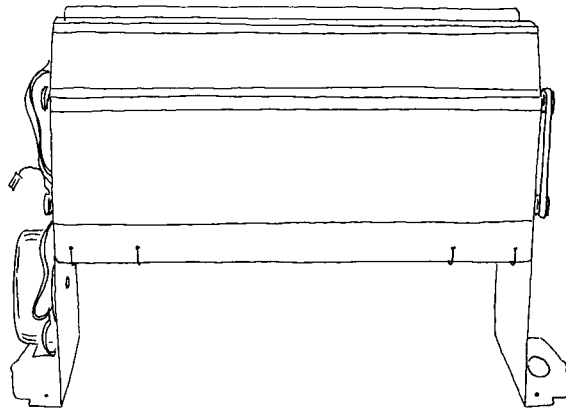
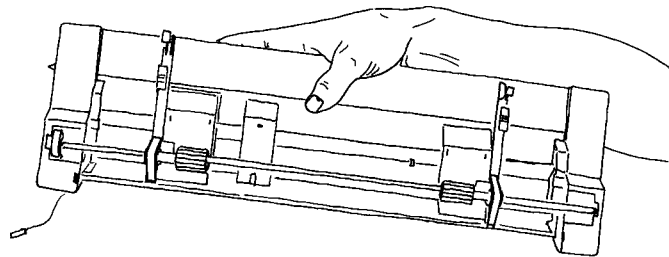
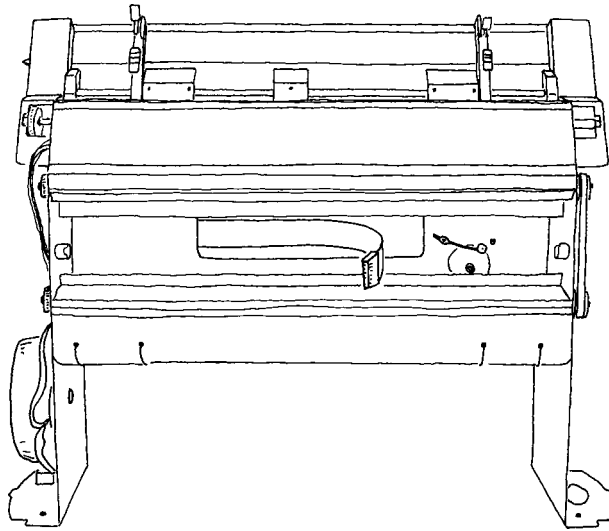
## Opening the sidecovers



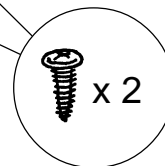
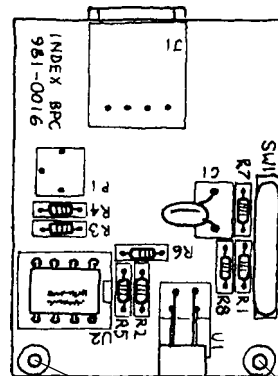
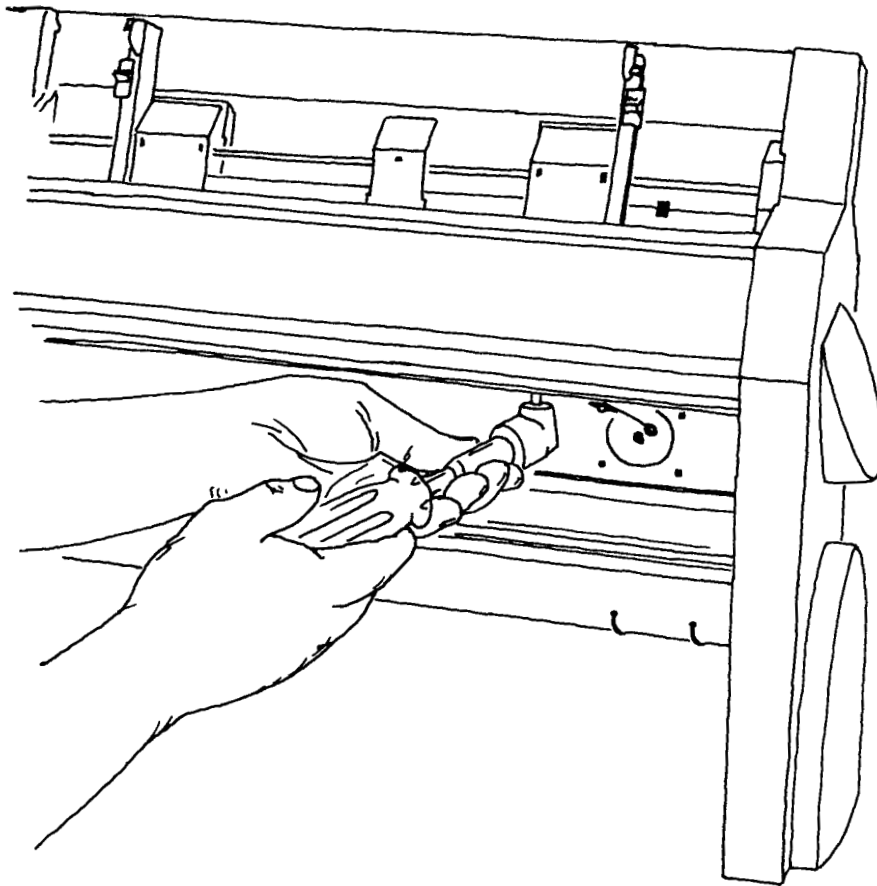
## Removing the sheetfeeder



## Removing the sheetfeeder

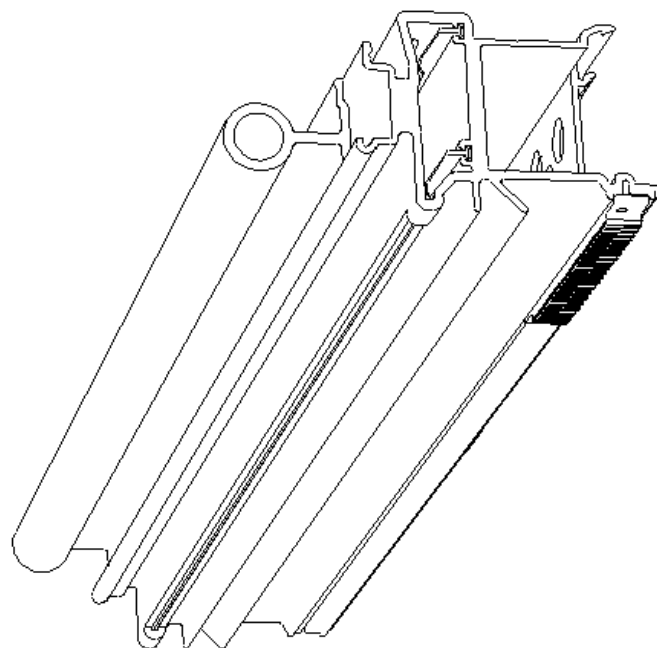
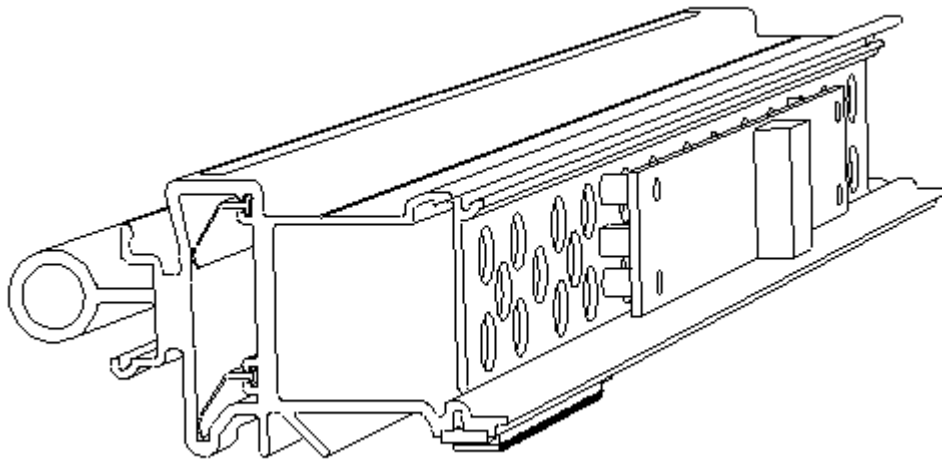
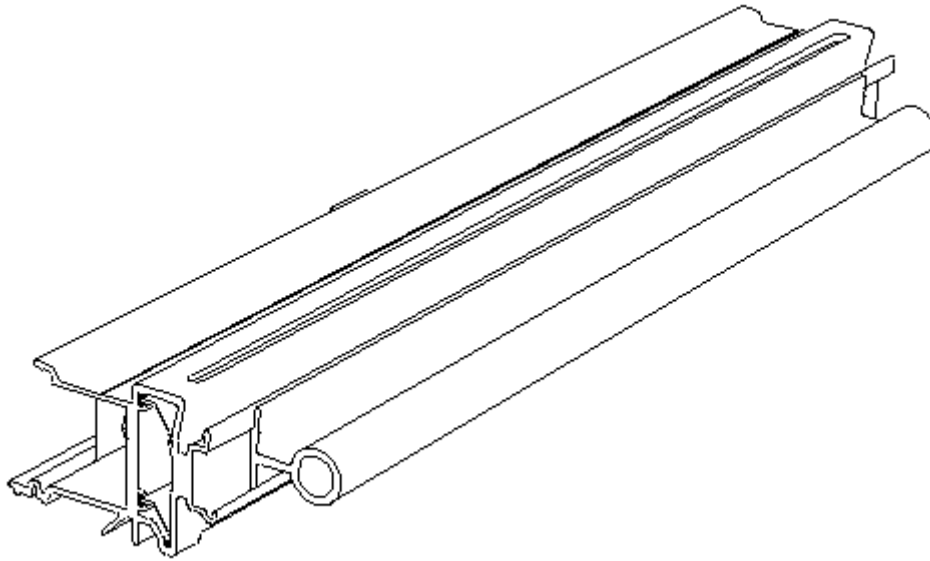


## Removing the papersensor

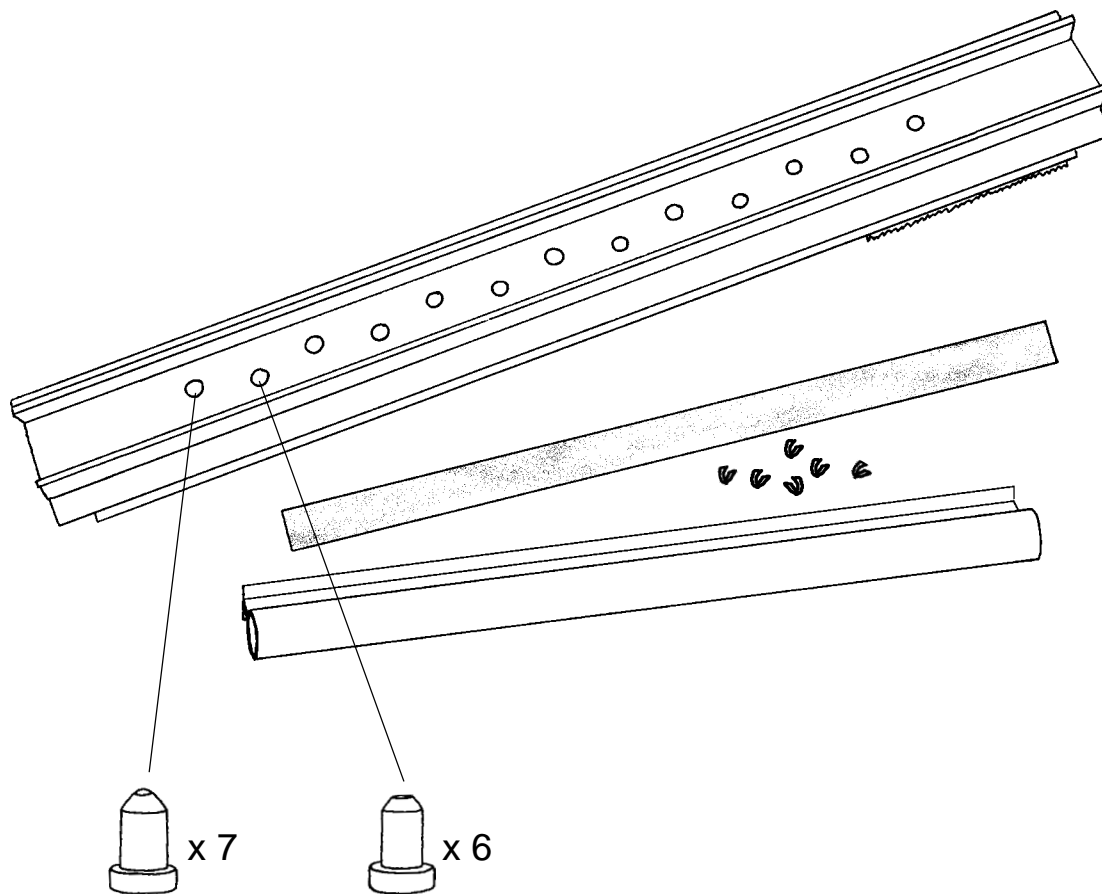




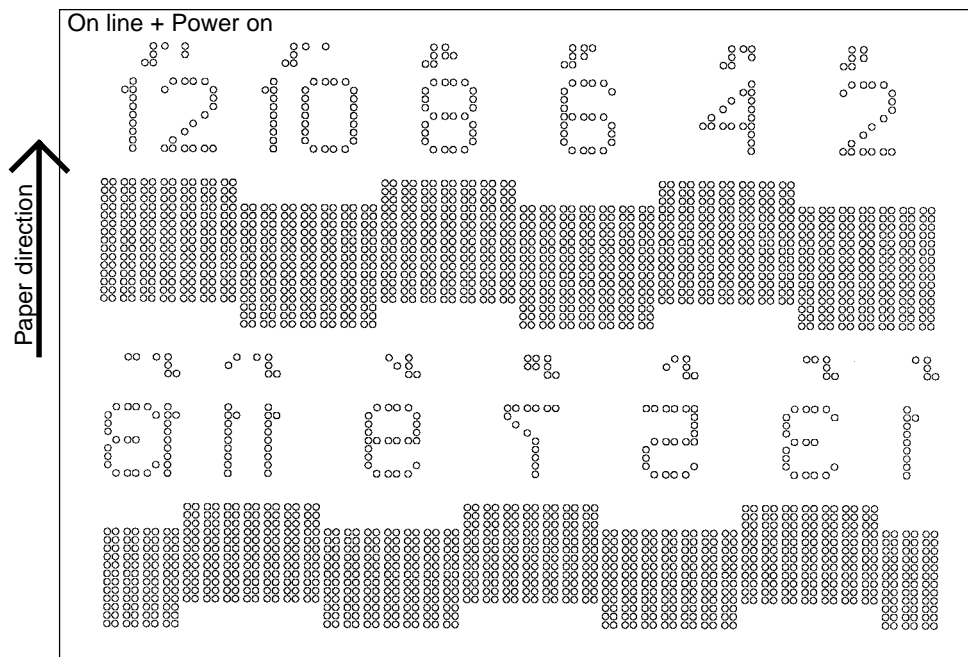
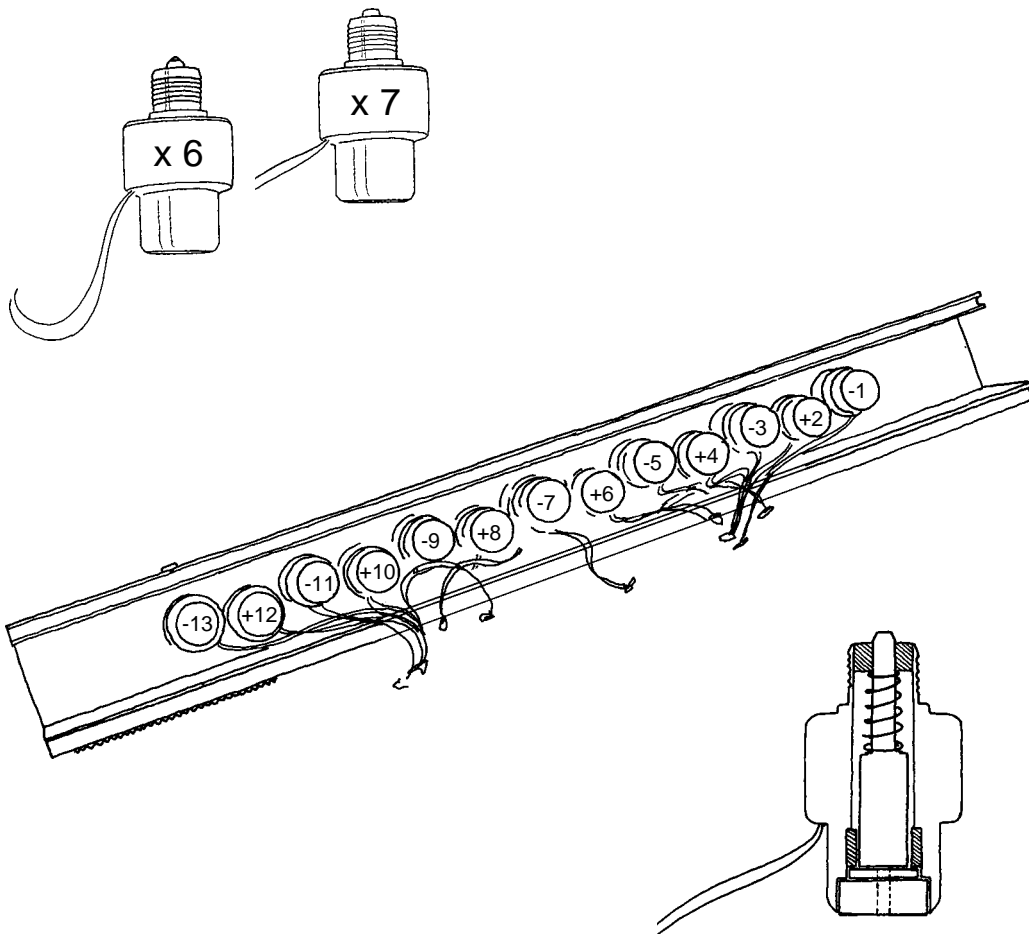
# Printinghead



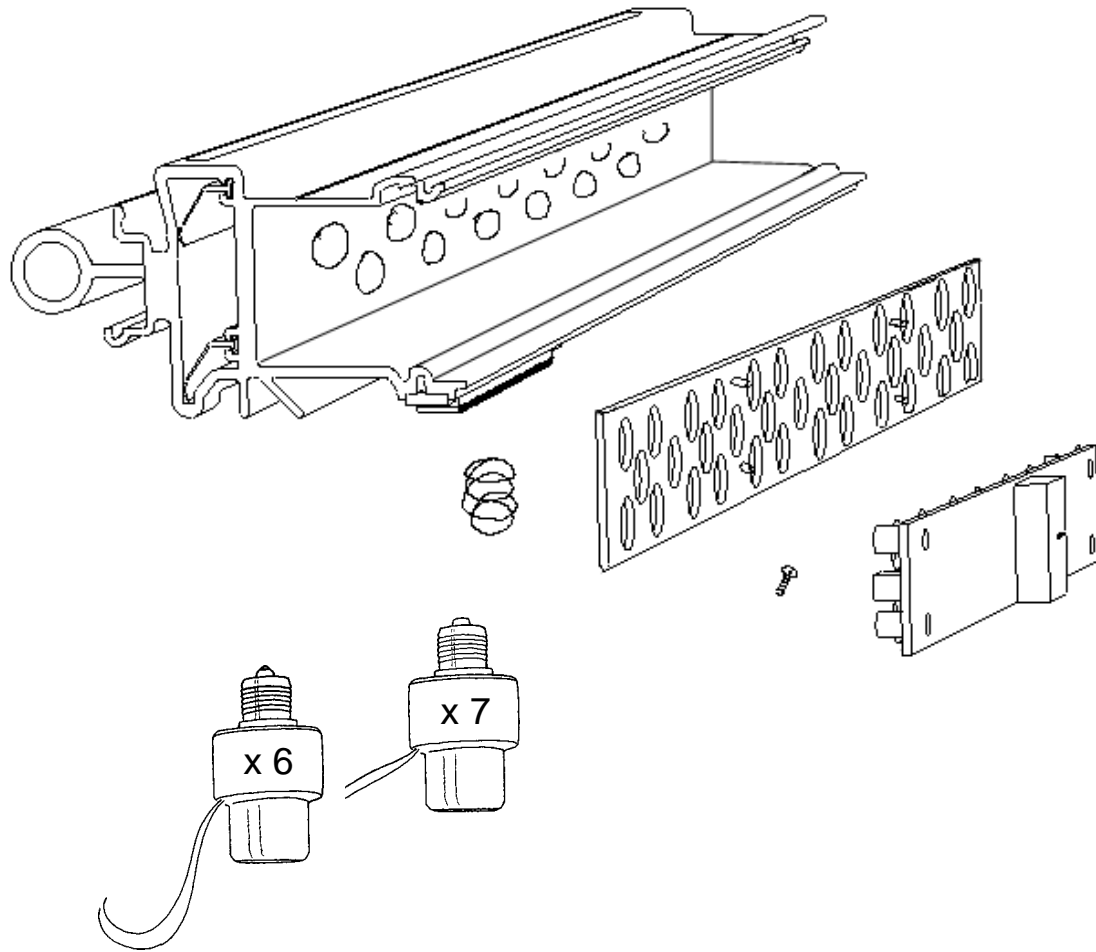
## Printinghead / anvils



# Printinghead / hammers



# Printinghead / hammers



## Hammer-test

### Logic to test faulty hammer or driving electronic

#### Hammer

The forming hammers, 6 positive and 7 negative, are of similar type as used for daisy wheel printers. They have an expected life time of 200.000.000 strokes and the hammer tip is based hardened steel to ensure maximum life time. Voltage 40 V, Current 4-6 Amps, Resistans cold solenoid 1,9-2,0 Ohm, maximum temperature 130° Celcius, Plunger stroke 3.8 mm.

#### Driving electronics

The driving electronic of the Everest is of a very stable and ruff design. In most cases when electronic driving problem occurs, it is a result of a hammer with chort circuit (0 Ohm) or bad handling of the main board/cables.

Handle the Main Electronic Board of the Everest with the respect that a six layers SMD CPU board with CMOS components require. Always use antistatics packing components and make sure that you and your work place is properly grounded.

The thirteen hammers and the stepper motor for the printing head are controlled by a pulse flow from a FIFO memory. The stepper motor pulses drives direct the two stepper motor driving circuit RIFA 3770. The puls flow used to drive hammers are created in the FIFO memory, passing a buffer step (74AC834) and controls the seven driving circuits (U35-41) for constant current regulation to the hammers via the power transistors T3-T15.

#### Test hammers and driving electronic

Make a test printout, POWER ON + ON LINE. (Picture A) Evaluate the test printout and check which hammer that cause the problem. Make sure that the printer is set for 42 characters per line interpoint mode, standard on set-up C after system reset. If not, it can happen that a fault will not be displayed on the test printout.

Evaluate if there is a hammer or a electronics fault.

If, for example, there is no print on block 6, (Picture B) test it in the following way;

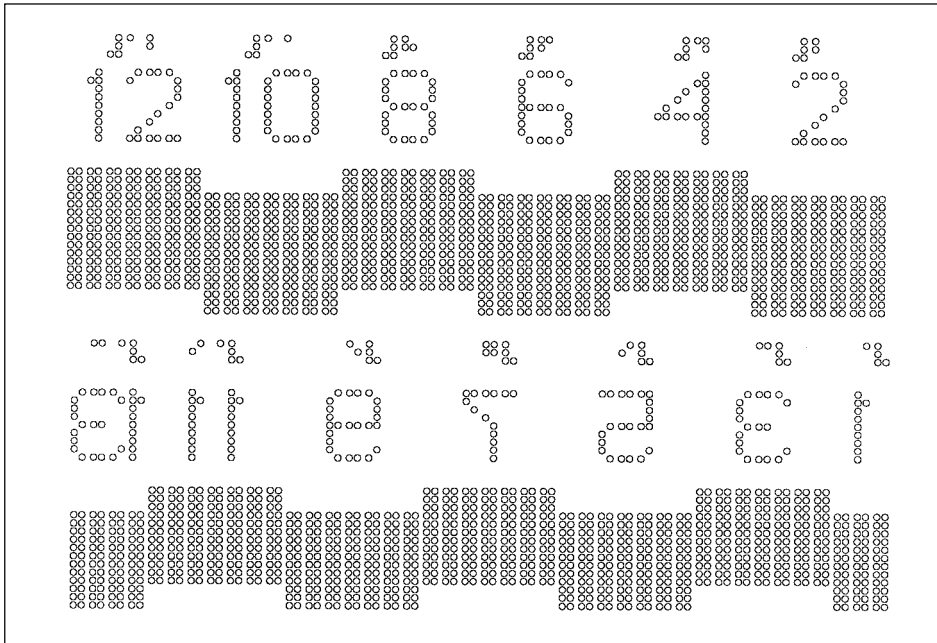
a) Open the front glass, take out the printing head and switch the connector cables between hammer 5 and 6. (Picture C) When you have the printing head separate check the resistance on each hammer. Shall be 1,9-2.0 Ohm, measure it on the printing head board.

b) Insert the printing head again and make a new test printout, POWER ON + ON LINE. (Picture A)

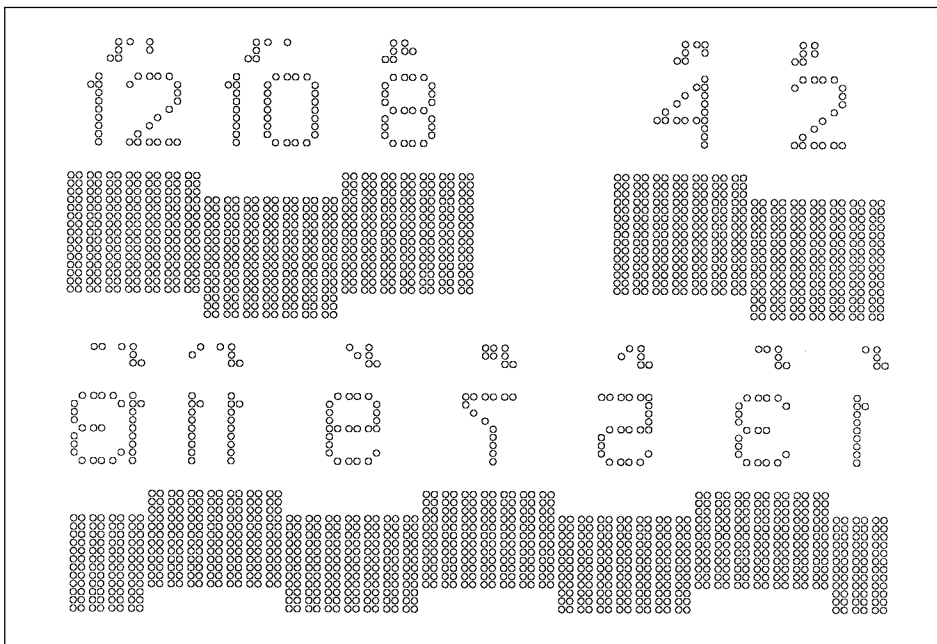
If the missed block (no 6) stays on the same side of the paper. It indicates that there is a mechanical problem on the hammer, no 6 in our example. If the missed block (no 6) moves to the other side of the paper, it is an electronic problem on main board or cable.

Note that the printout looks strange after switching hammers, so make sure that you understand the changed printout before starting to work with the printing head.

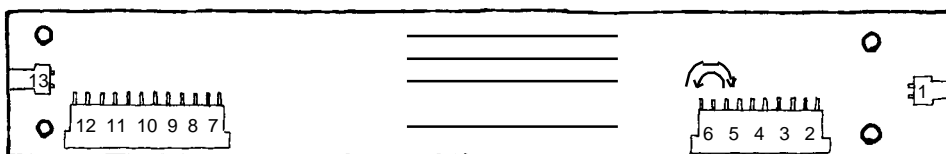
# Hammer-test



Picture A



Picture B

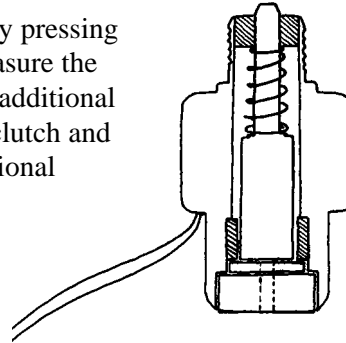


Picture C

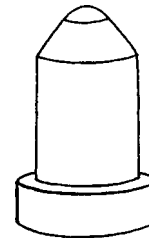
## Hammer-problem

**In case of a hammer problem.**

Check that the hammer plunge moving smoothly without friction by pressing an axle from the back hole of the hammer, movement 3.8 mm. Measure the resistance of the hammer, it should be 1.9-2.0 Ohm. If there is any additional friction on the plunge, clean the plunge of the hammer with a soft clutch and check the surface with peeling with your nails. If there still is additional friction it will be necessary to exchange the hammer.

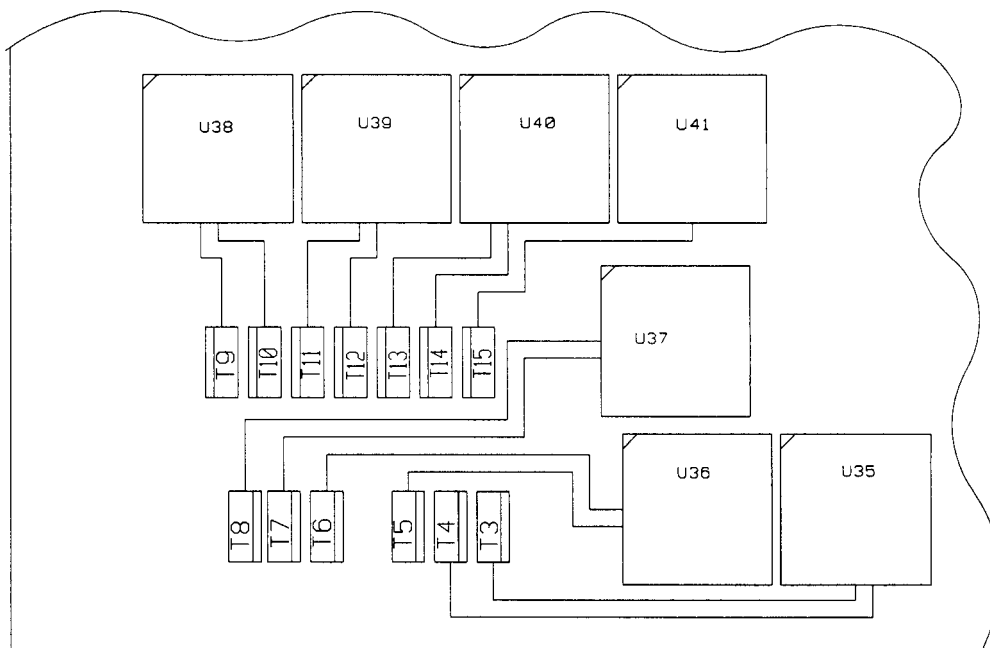


*When the printing head is separated check that the tip of the anvil have a correct sphere form.*

**In case of an electronic problem.**

a) Check that the printhead cable is without damages.

b) Check the resistance over the 13 power driving transistors (T3-T15 pin 1-3). The resistance shall be in the level 9-10 Kohm. A bad transistor normally indicates with a significant lower resistance. If this is the case exchange the transistor but be careful, it is a six layer board!



## Transistors

Our problem was on hammer six.

In below table you can see that it can be a result of driving circuit no U38.

### NOTE!

To go further and check it is necessary to have a good knowledge in computer hardware and a proper oscillochope with a probe available. Faulty handling on the board with power may damage the board and are not covered by warranty.

For a fault on hammer 6 (our example) check the in signal (pin 24+24) and out signal (18+23). These pins shall be on a logic 0, (below 1,8 V) after power on of the unit. We do not recommend to check the FIFO and Buffer circuit as they are very sensitive and soldered on the board.

After repairing a printinghead run the self-test again, POWER ON + ON LINE. Check the printout and if necessary, adjust the impact level and the vertical alignment on the printer via the support software.

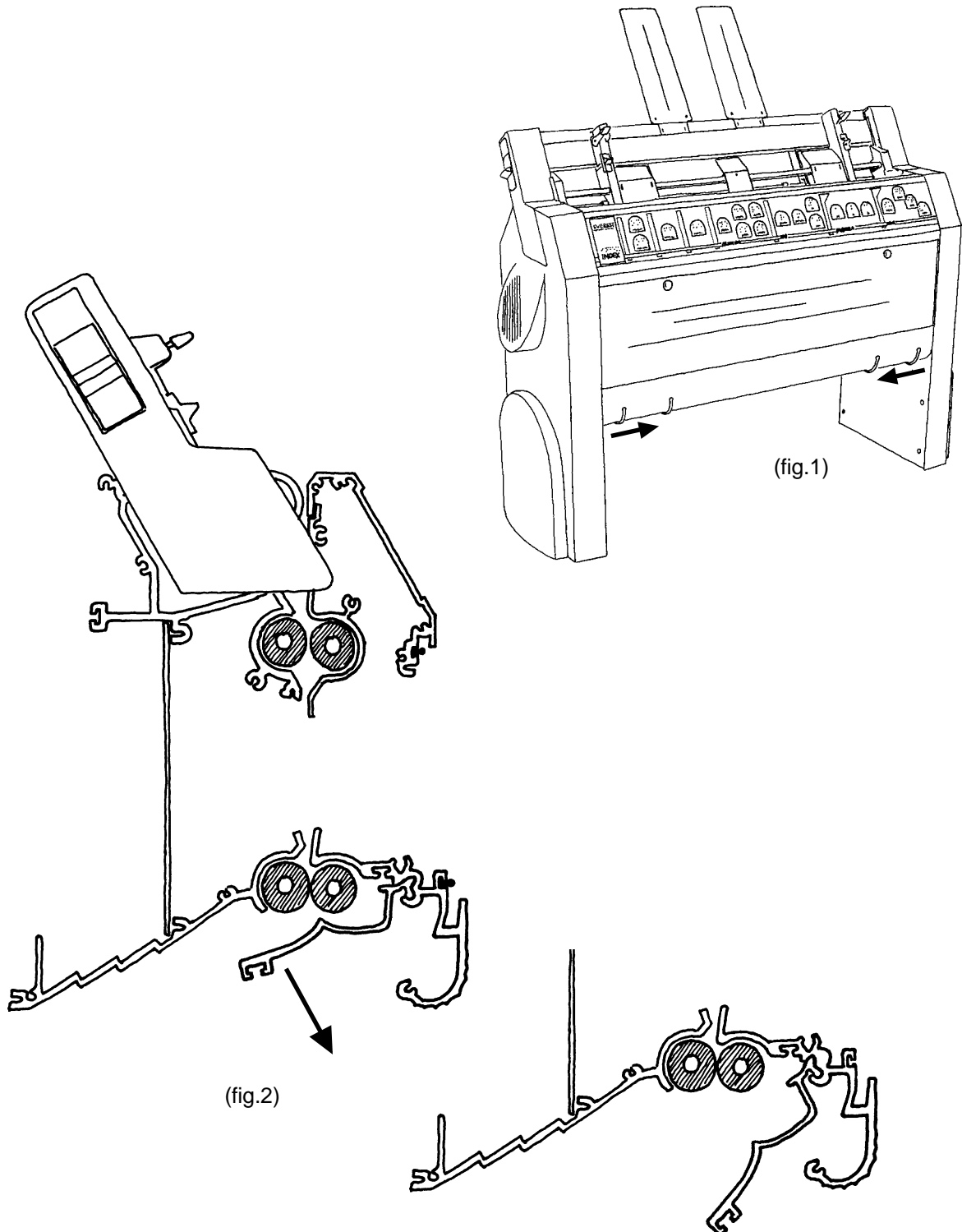
Hammer	Transistor MTP 3055E (x13)	Driving circuit UDN2916 (x7)	Buffert step (FIFO) 74AC843 (x2)
No:1 Negative	T12	U39 in 1+44 out 3+6	U32 out pin 22
No:2 Positive	T13	U40 in 24+25 out 18+23	U32 out pin 21
No:3 Negative	T14	U40 in 1+44 out 6+3	U32 out pin 20
No:4 Positive	T11	U39 in 24+25 out 18 +23	U32 out pin 23
No:5 Negative	T10	U38 in 1+44 out 3+6	U31 out pin 16
No:6 Positive	T9	U38 in 24+25 out 18+23	U31 out pin 17
No:7 Negative	T8	U37 in 1+44 out 3+6	U31 out pin 18
No:8 Positive	T6	U36 in 1+44 out 3+6	U31 out pin 20
No:9 Negative	T7	U37 in 24+25 out 18+23	U31 out pin 19
No:10 Positive	T3	U35 in 24+25 out 18+23	U31 out pin 23
No:11 Negative	T4	U35 in 1+44 out 3+6	U31 out pin 22
No:12 Positive	T5	U36 in 24+25 out 18+23	U31 out pin 21
No:13 Negative	T15	U41 in 24+25 out 18+23	U32 out pin 19



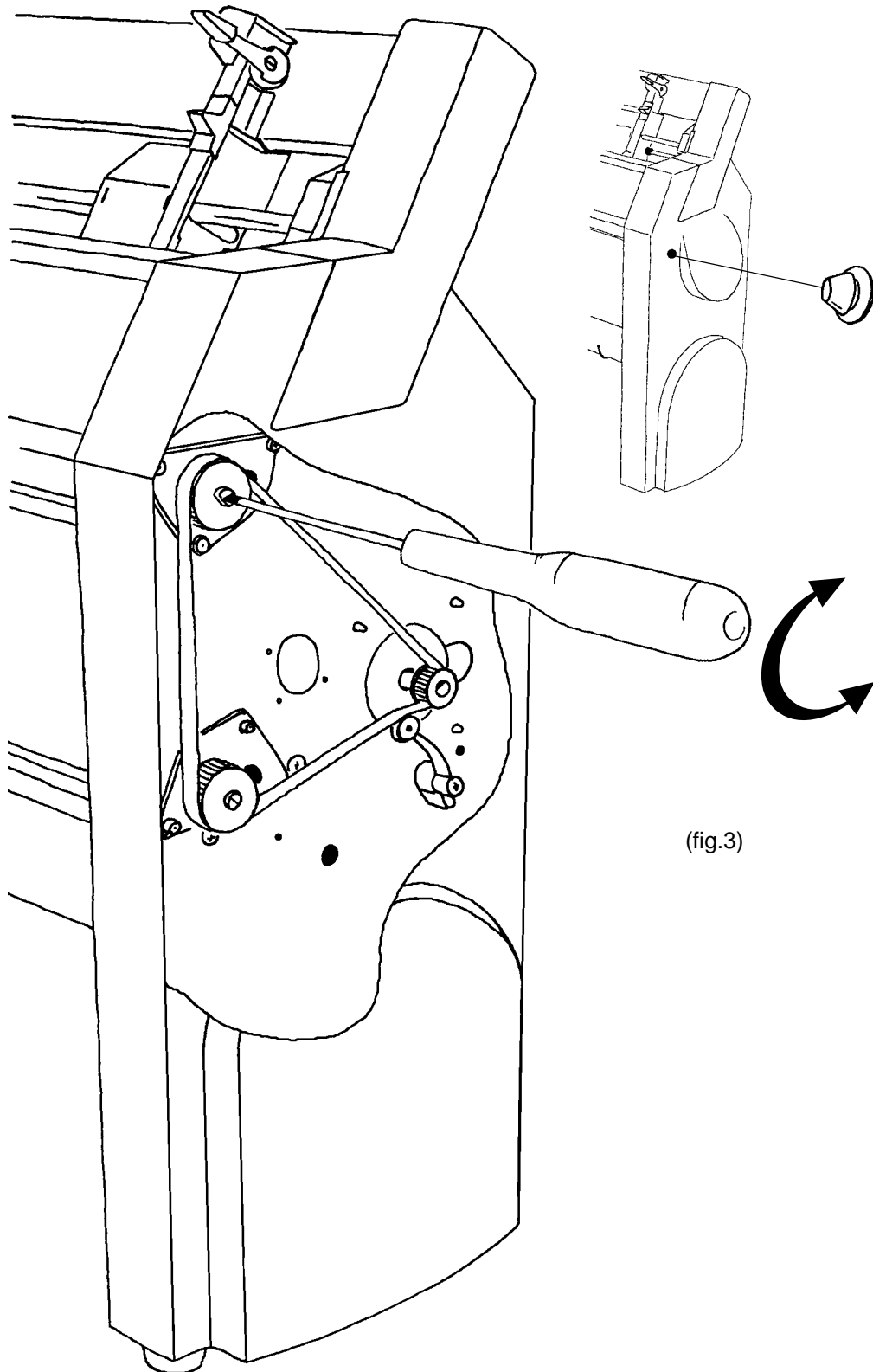
## Paper jam

**If paper jam**

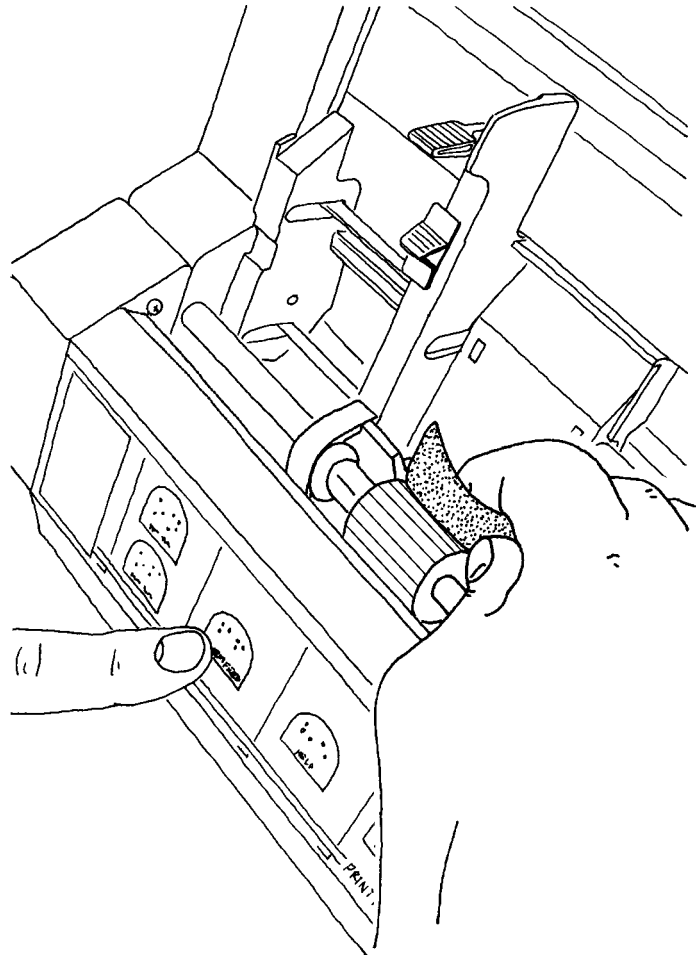
1. Remove the paper-stack
2. Check for paper at the top and under the printer
3. Open the bottom profile by sliding the lockers towards center (fig.1&2)
4. Remove cap on side cover and turn the rollers with a screwdriver (fig.3)



# Paper jam



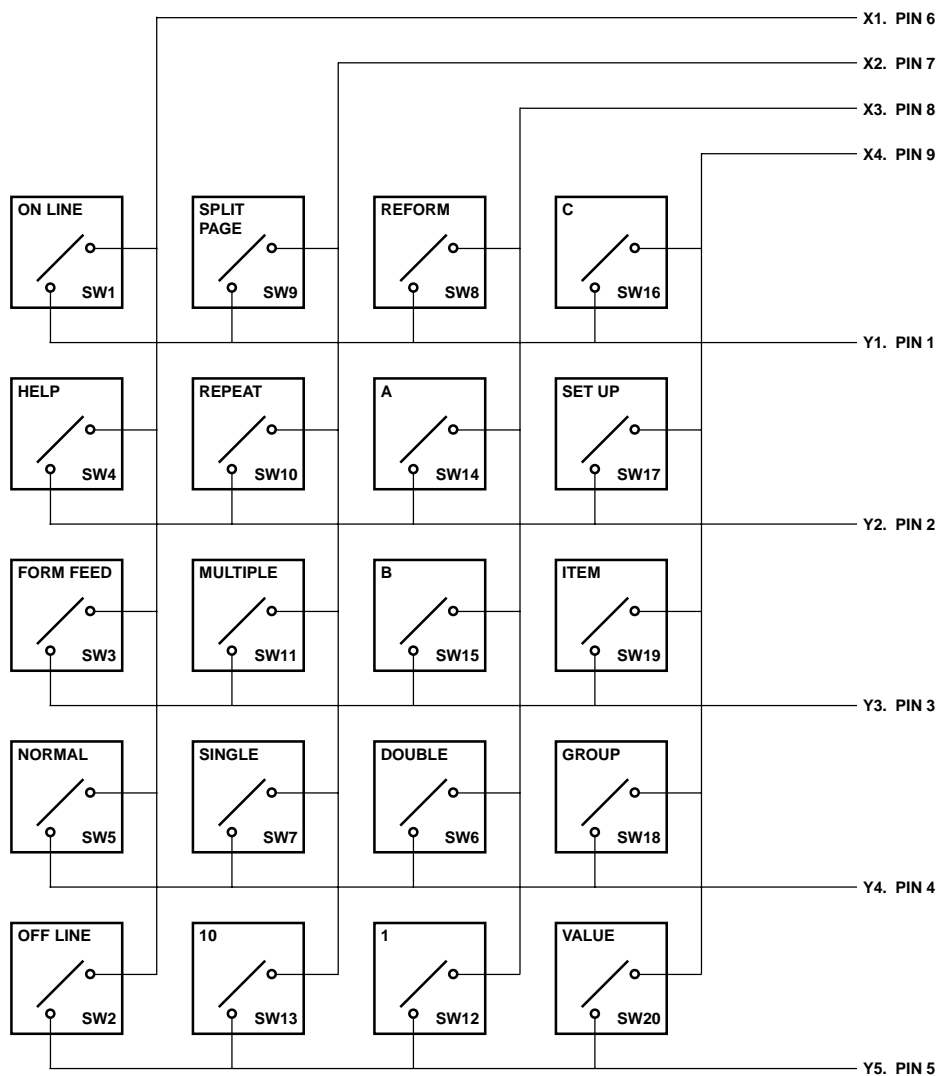
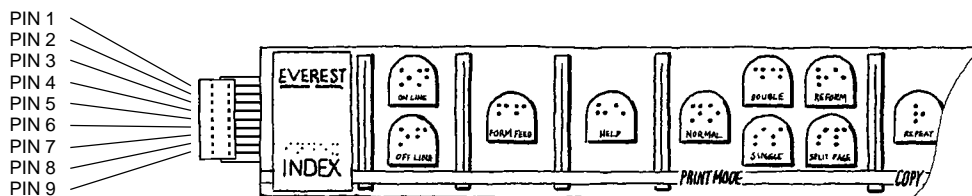
(fig.3)



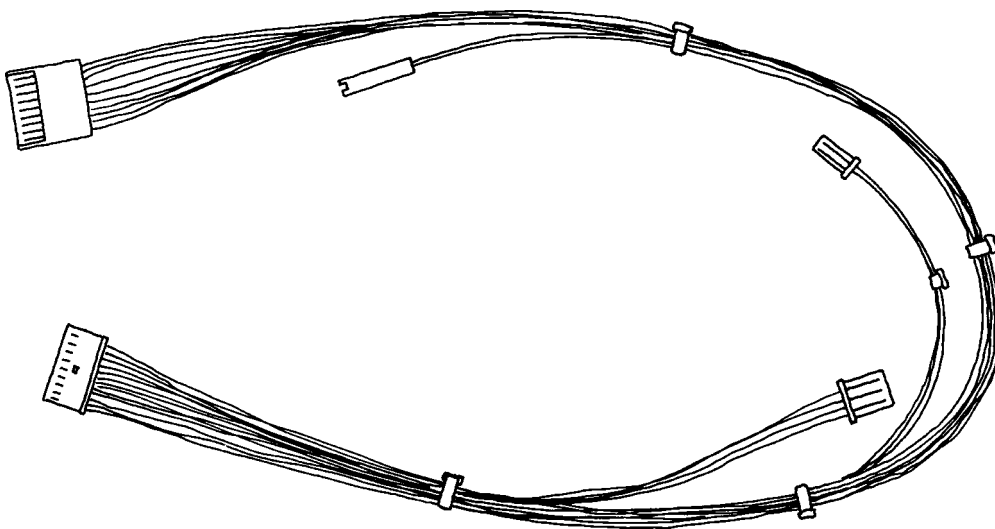
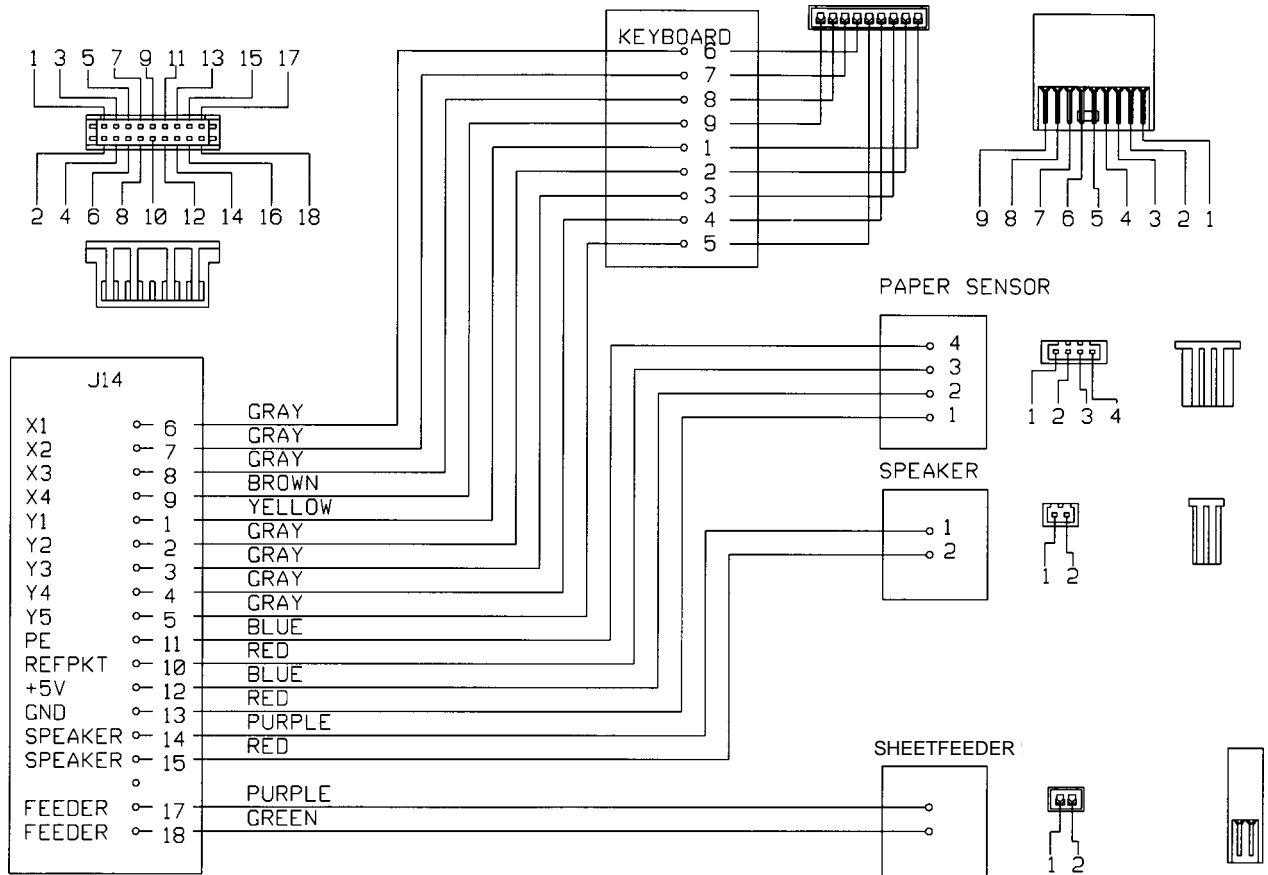
**If the sheetfeeder doesn't pull down the paper**

Clean the pickup rollers with a finegrained sandpaper  
Press "Formfeed" and then "on line"

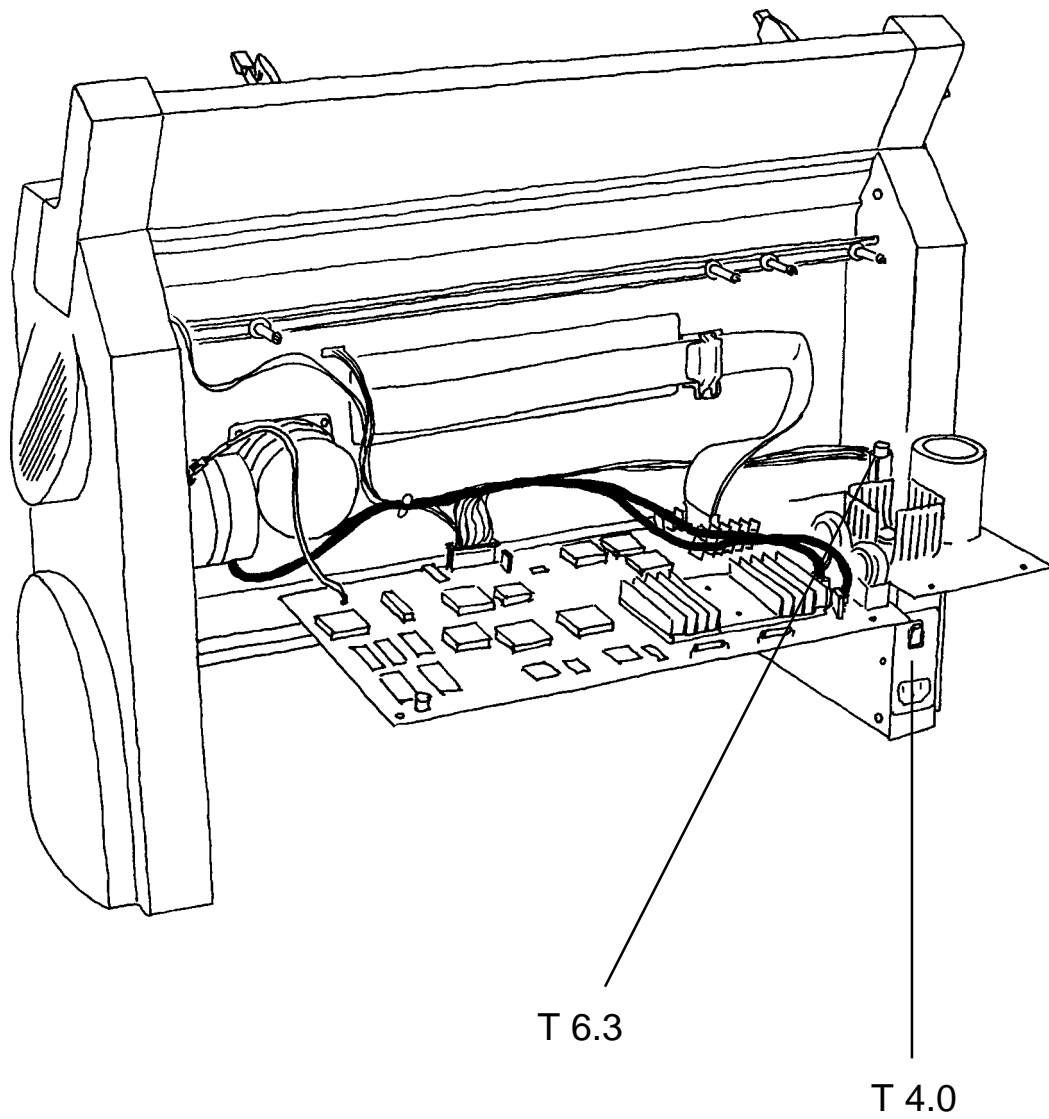
# Front panel



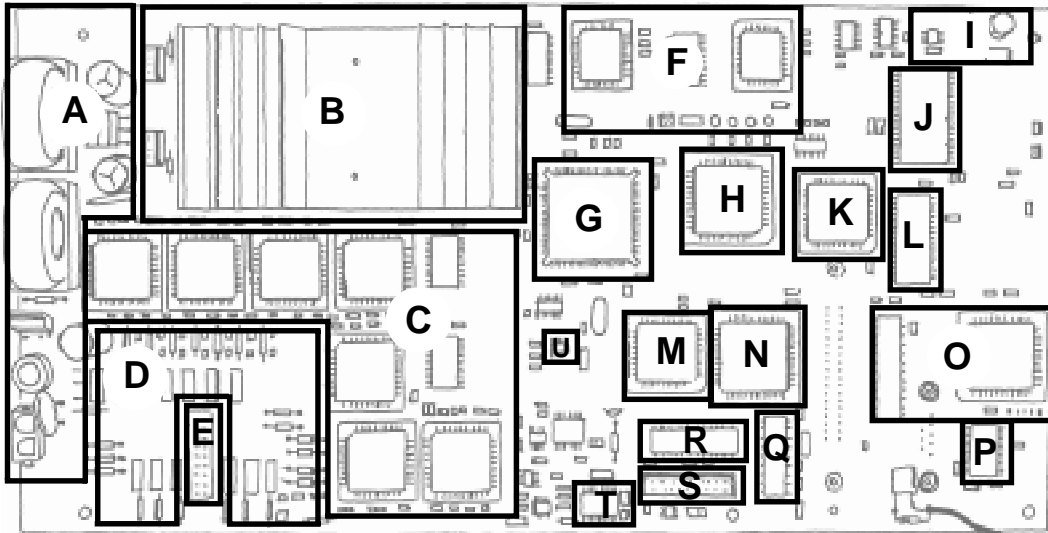
# Main cable



## Fuses

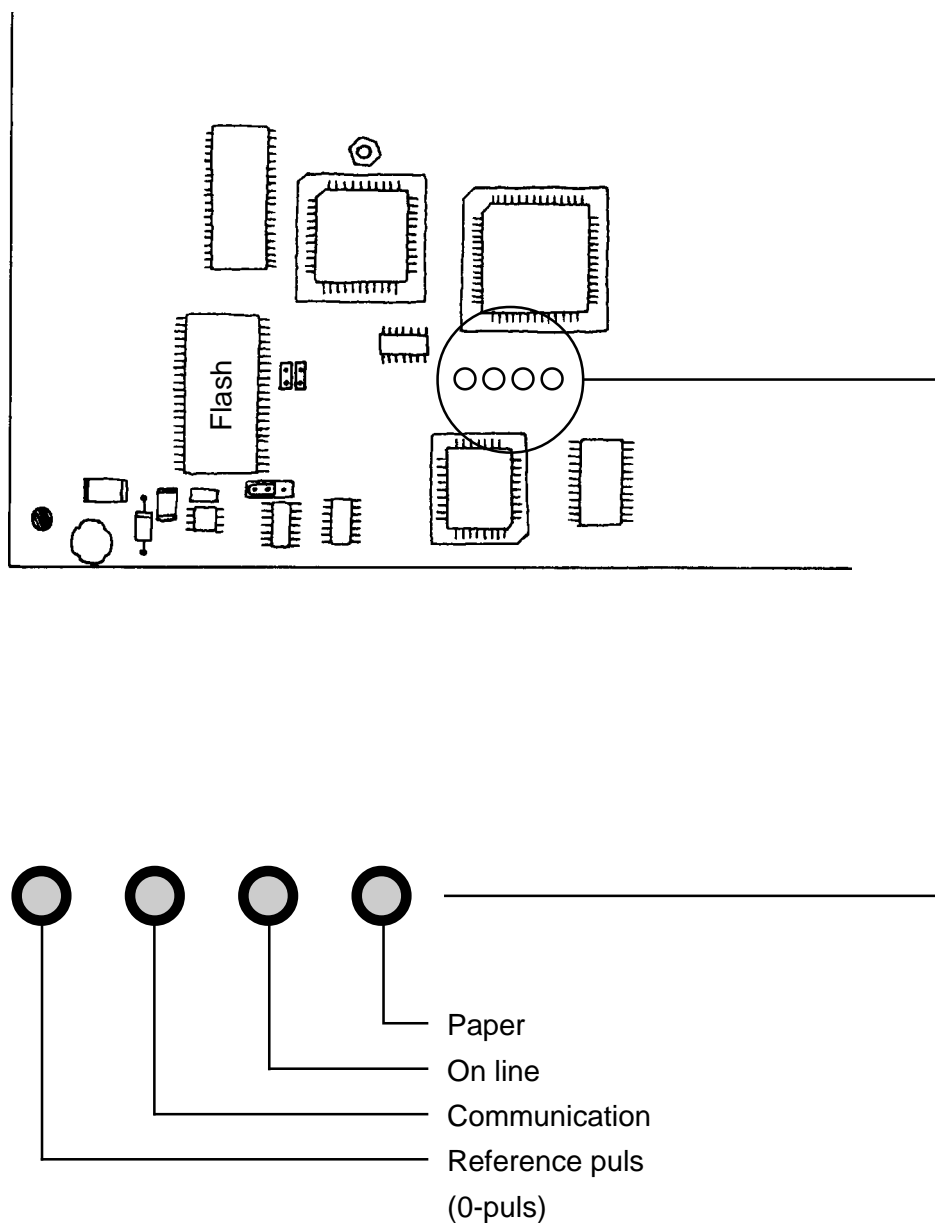


## Mainboard

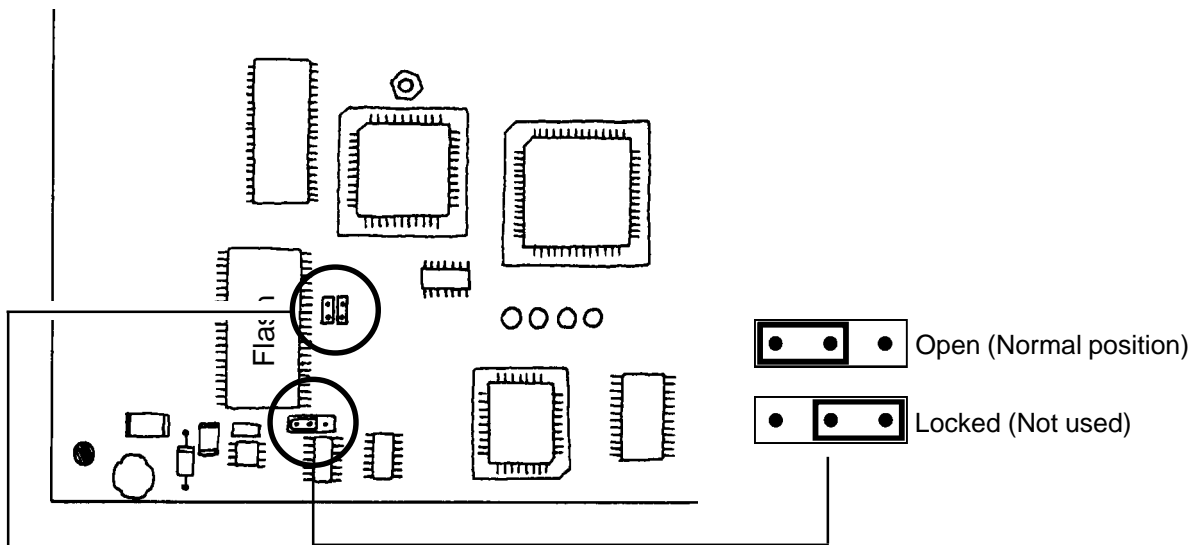


- A. Powerregulator for 5V + 12V.
- B. Stepmotor driver.
- C. Control circuite for powermodule (controlmodule).
- D. Powermodule for hammers (powermodule).
- E. Output connector for hammers.
- F. Fifo and buffer circuite for controlmodule.
- G. CPU, MC68230 FC 16.
- H. Controlcircuite for: stepmotor, fan, feeder, fifo clock and LED.
- I. Power for FLASH programming.
- J. FLASH memory.
- K. Boot prom.
- L. D-ram circuite.
- M. Mach circuite.
- N. Controlcircuite for: keyboard, speachcircuite and timerclock.
- O. Parallellport decoder.
- P. Serialport decoder
- Q. Speach circuite.
- R. Keyboard decoder.
- S. Maincable conector. (keyboard, feeder, speaker, reference, paper).
- T. Digital volumecontrol circuite.
- U. Reset circuite.

# LED indicator



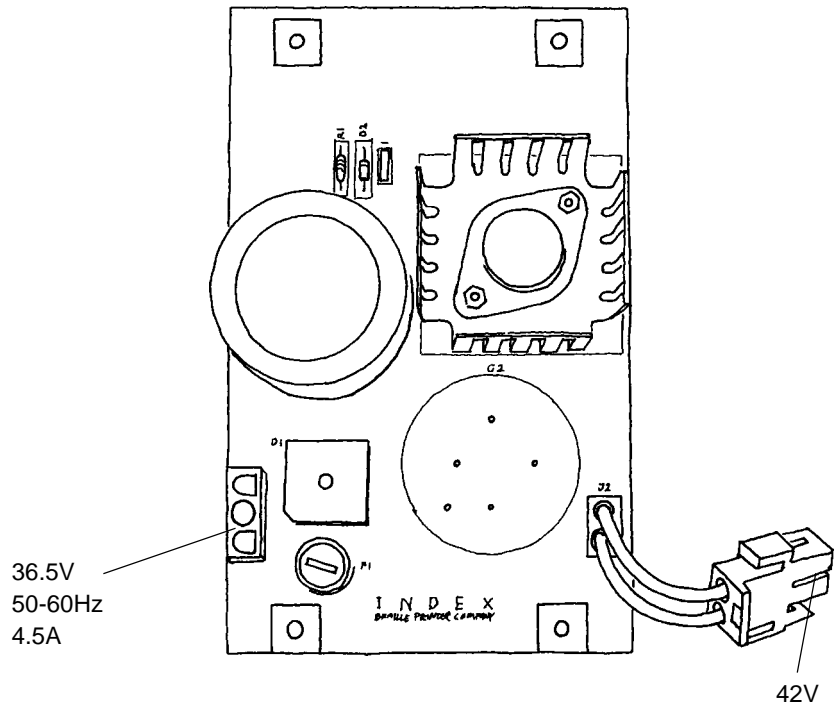
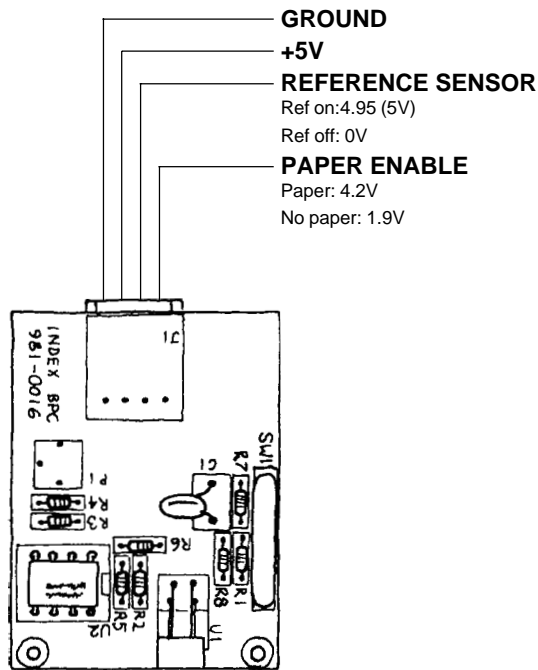
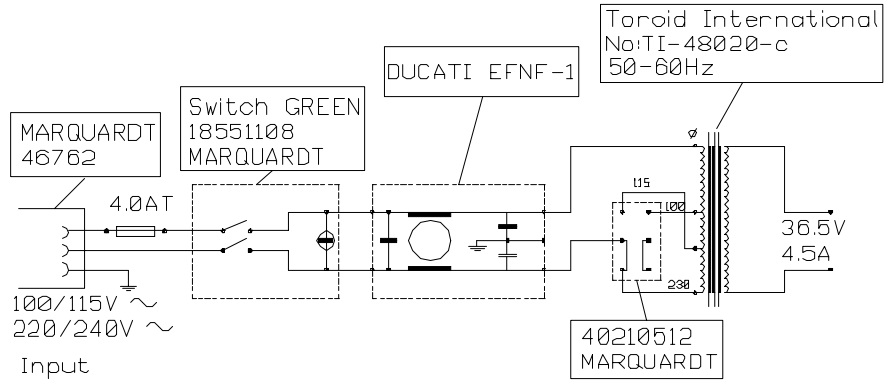




*Load internal operation system and printer software...*

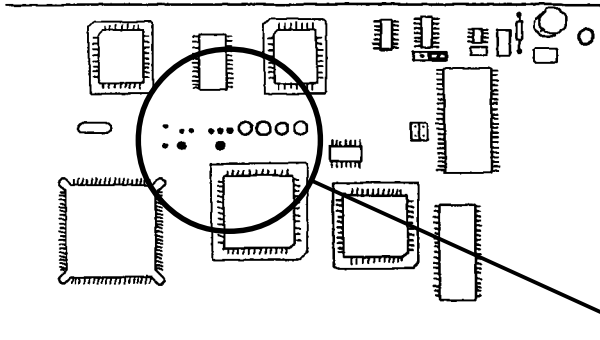
- 1 90° =
- 2 Power On Light (after 1 min)
- 3 Power Off
- 4 90° =
- 5 Power On (Ready for Programming)  
Pip, Piip, Piiip...  
Run installation software  
INSTALL NEW (5 min)
- 6 Power off
- 7 Power on + Group  
**-READY!**

# Voltage

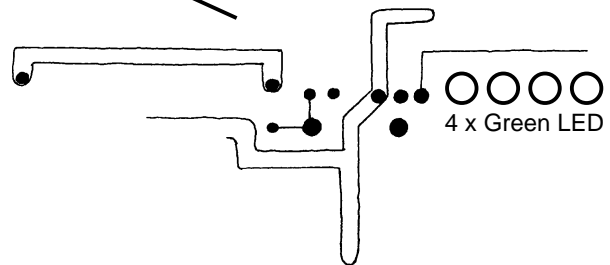


## Upgrade to fan-backplate

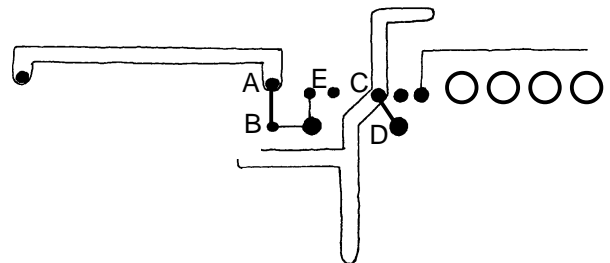
Modification of the Everest Mainboard when connecting fan-backplate.



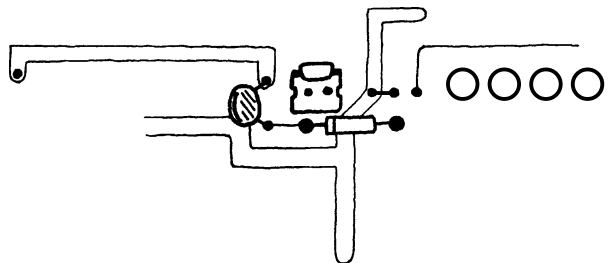
**If your Mainboard looks like this...**



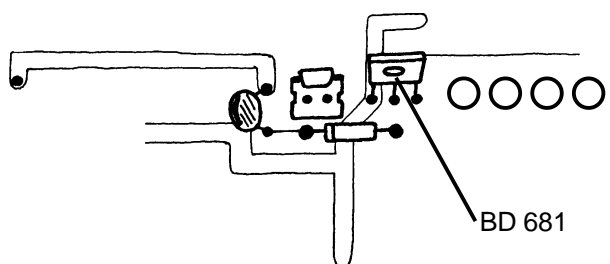
- Connect A & B with a wire.
- Connect C & D with a wire.
- Mount a 2pol pin connector at E.



**If your Mainboard looks like this...**  
(and you want automatic fan-control)



- Mount BD 681



## Software &amp; hardware versions

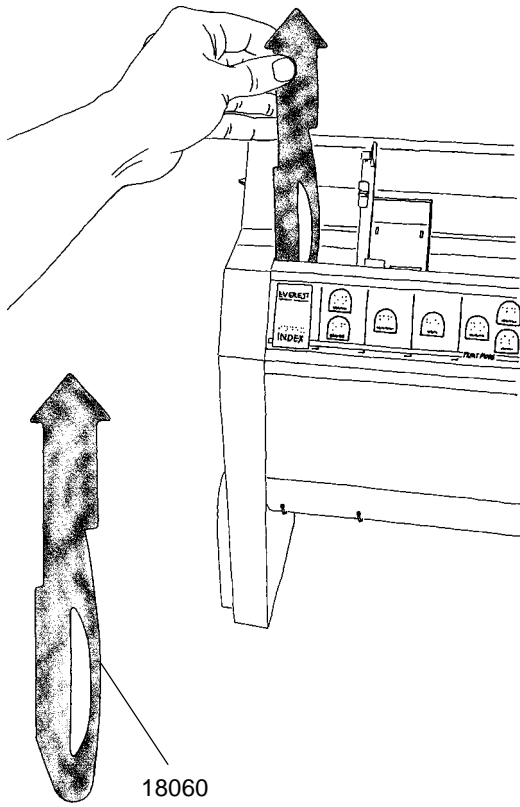
INDEX software and hardware versions. Effects and dates.

NUMBER	DATE	CHANGE	EFFECT	SOFTWARE+VARIOUS
11304-12059	W 7-95	Introduction New Everest		SW up to 5.xx, Version 1 Boot, PAL and 13 * 10 Kohm
11915-	W 47-95	Fan on backplate	Reduces the heat in the printer, important for continuous print	
12035-12154	W 8-96	Grounding of Printing head	No risk for electro- static chock from printinghead	Require extra ground cable
12041-11059	W 10-96	Version 2-A mainboard Boot Ver. 2.00 PAL 660-0014-2	Communication problem on some lap top computers solved	SW 6.xx **CHANGE** Delay to 450 Impact level 250 (power on + repeat)
12060	W 13-96	Version 2-B mainboard 2.2 Kohm * 13 power transistors, Ver. 2 Boot/PAL	Increase dot quality reduced heat on driving transistors	SW 6.xx Version 6 new Boot, PAL and 2.2 Kohm
12154	W 22-96	Grounding of printinghead 50V 1 MOhm		No extra cable to printinghead
12296	W 39-96	Flexible connection of the printinghead motor	Reduces the noise level, especially chassie vibration	
12338	W 48-96	Optimised form on hammers and anvils		Increased dot quality especially on page 2
12535	W 9-97	Screw hole for moving the paper- feed rollers	Easy to clean paper- jam	
12620	W15-97	Chassie AL profile can be opened	Easy to clean paper- jam	

**Note!**

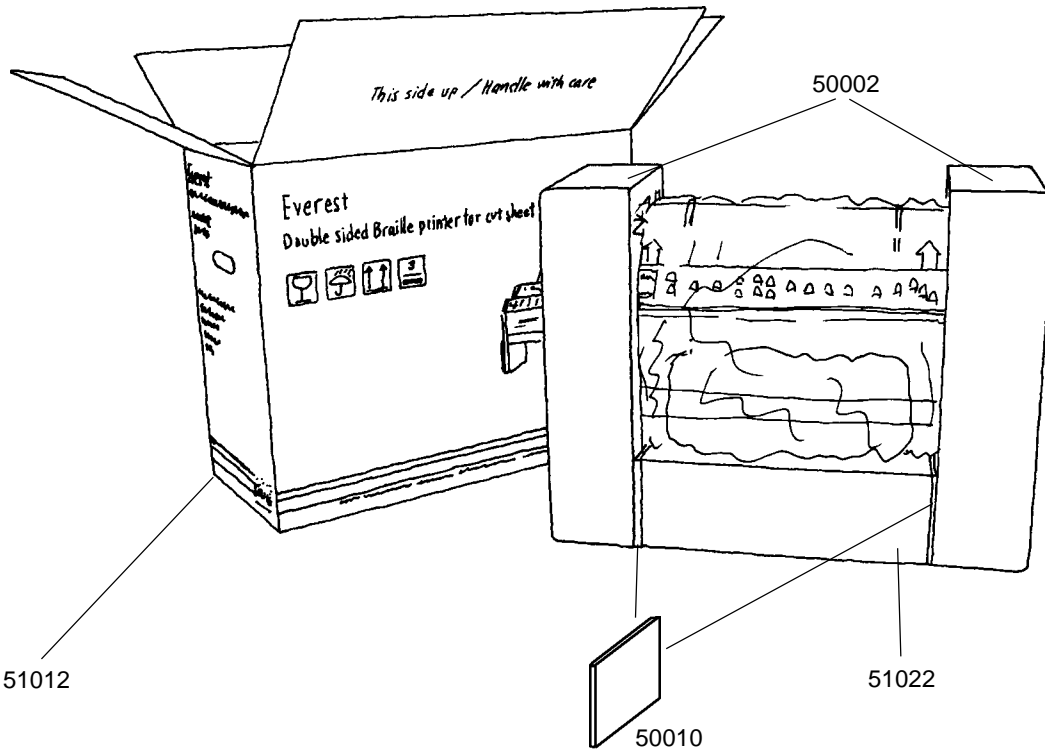
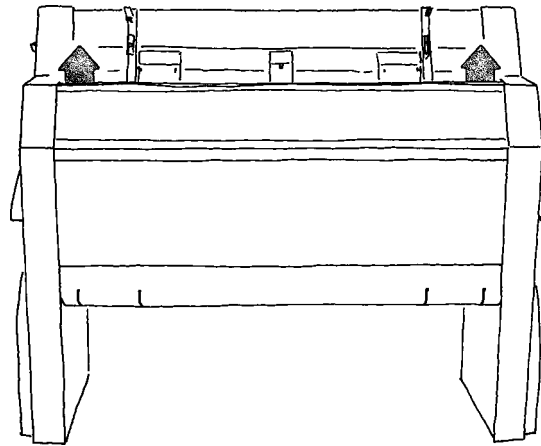
Software 6.xx and higher can only be used on printers with Version 2 Mainboard.  
Version 1 Mainboards can be updated by Index to Version 2.

## Shipping / Sparepartlist

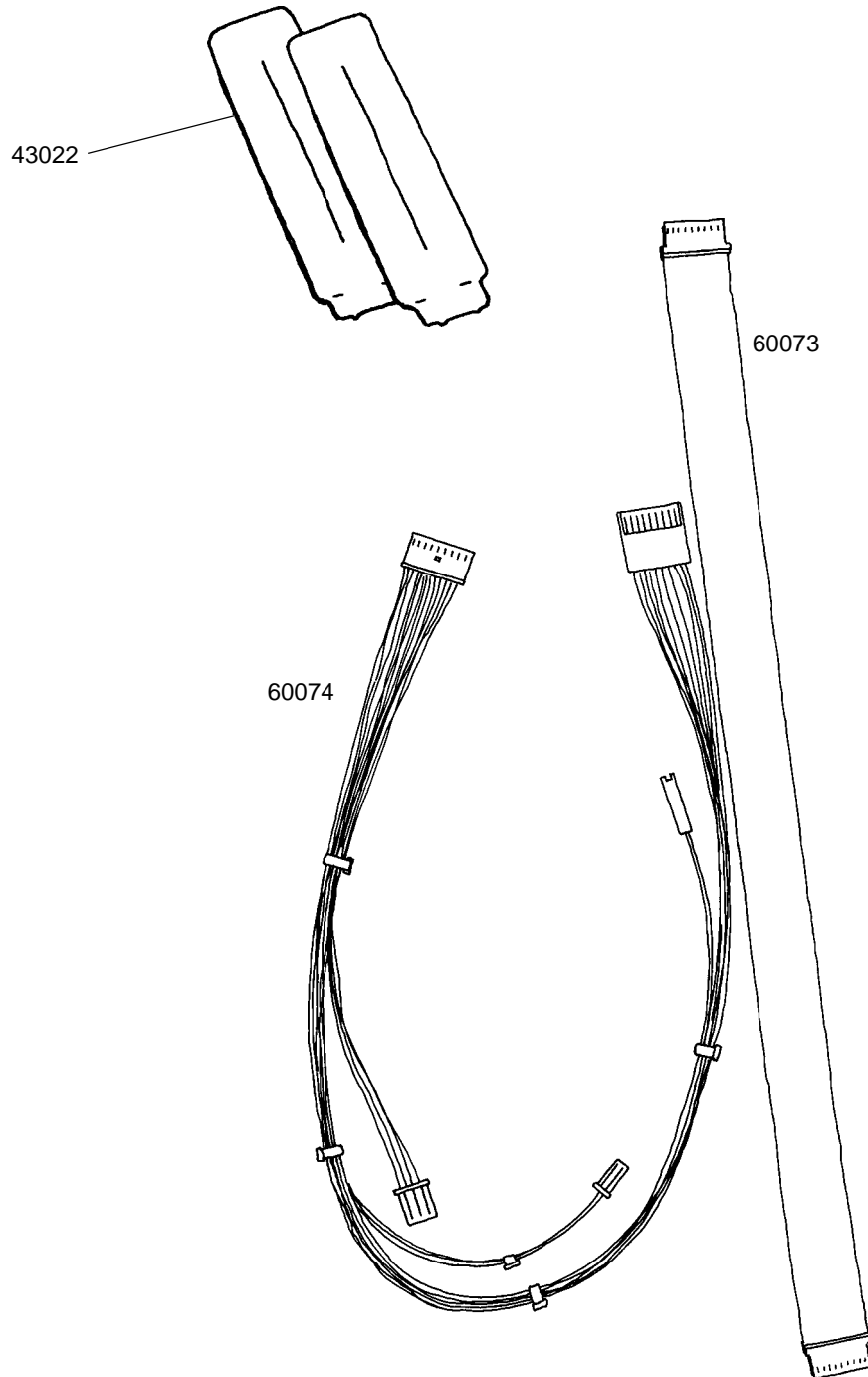


**Note!**

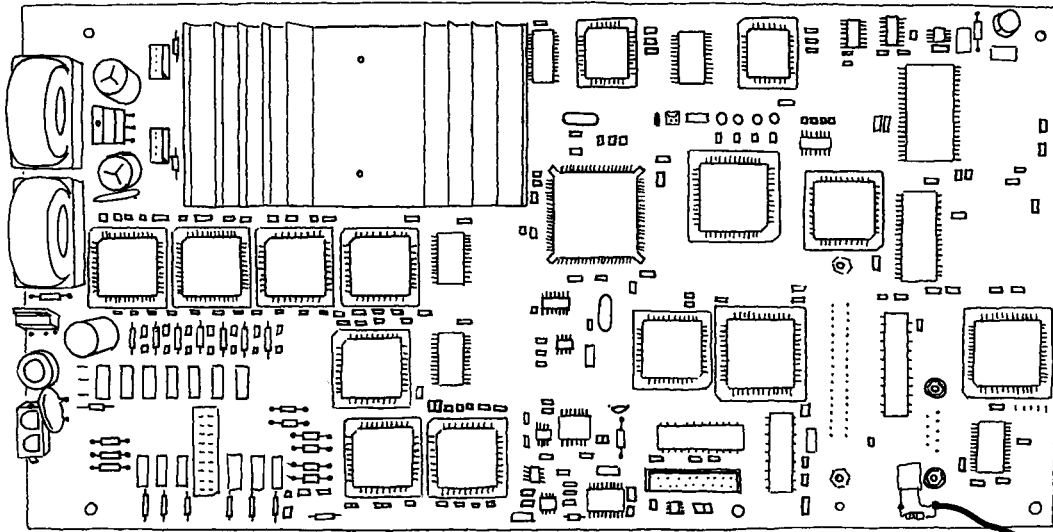
Always lock printinghead when shipping



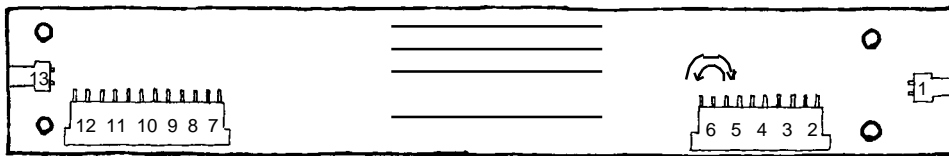
# Sparepartlist



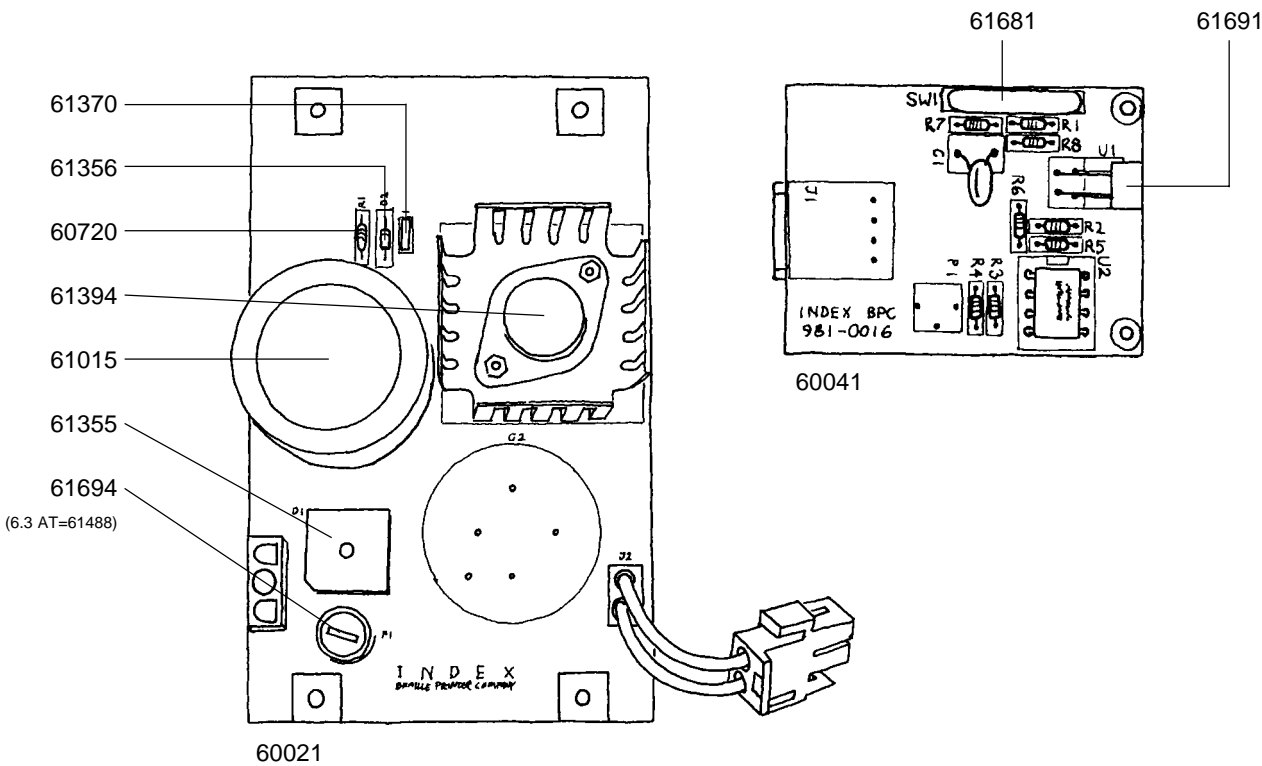
Sparepartlist



60003



60044



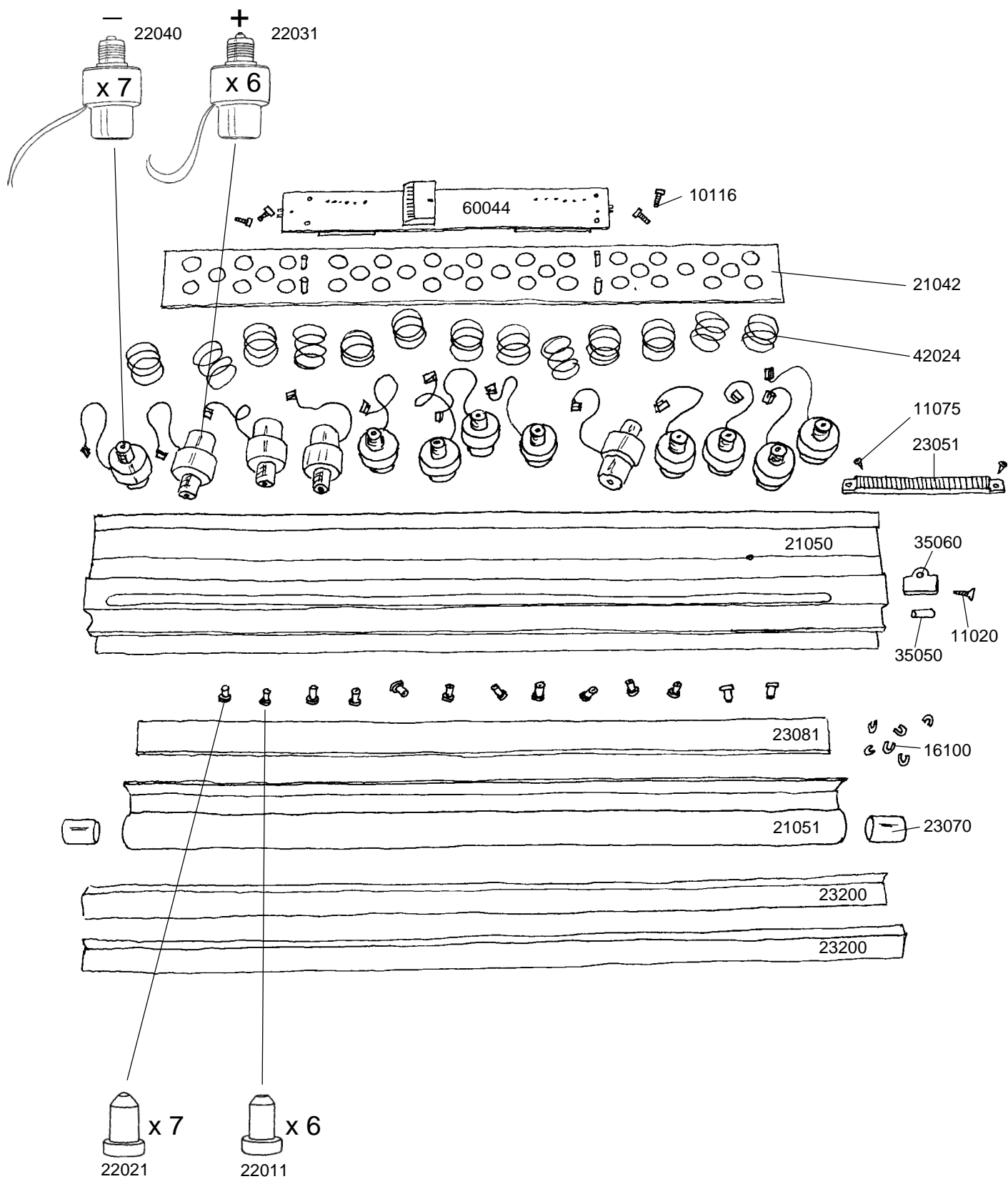
- 61370
- 61356
- 60720
- 61394
- 61015
- 61355
- 61694  
(6.3 AT=61488)

- 61681
- 61691

60021

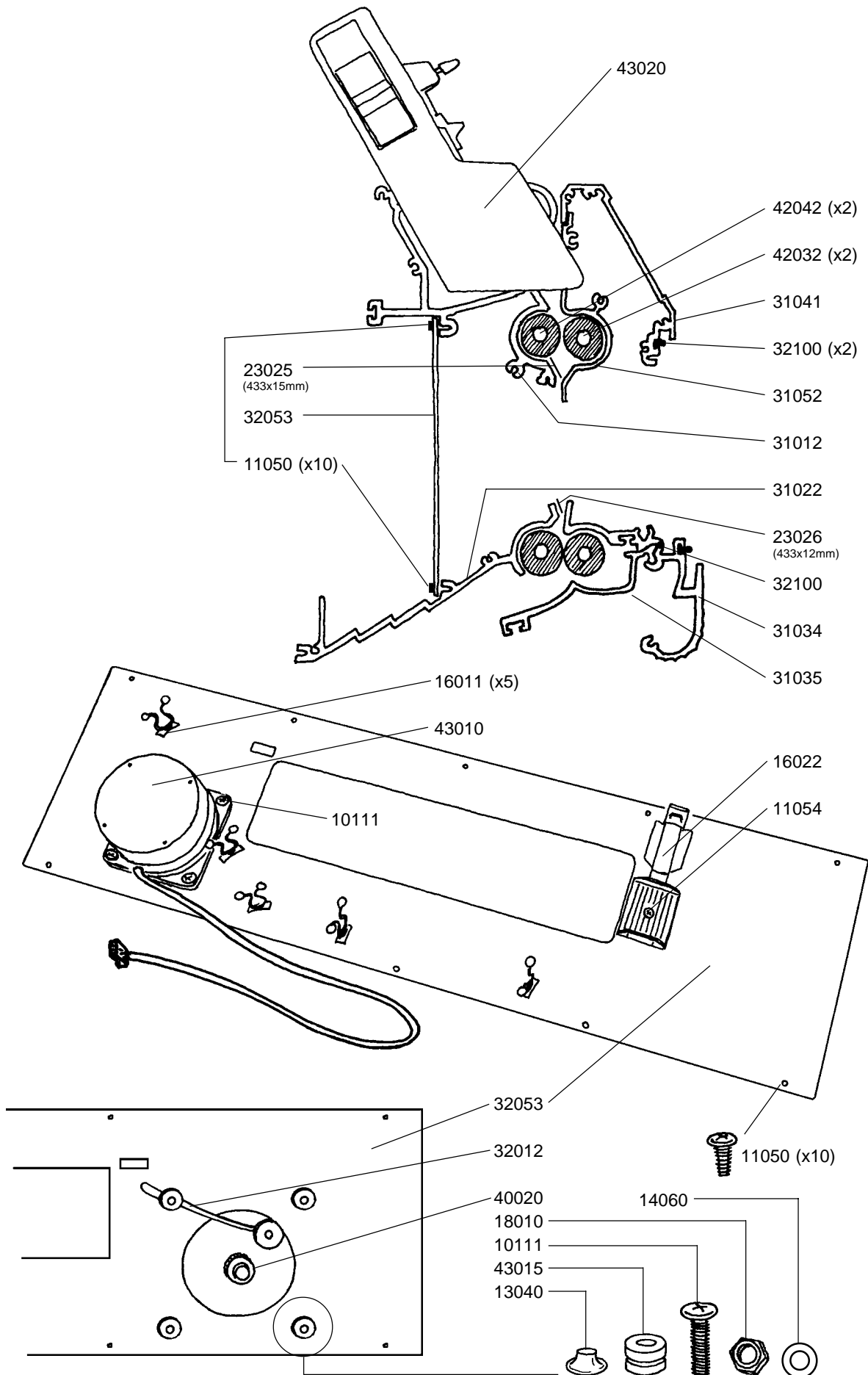
60041

# Sparepartlist

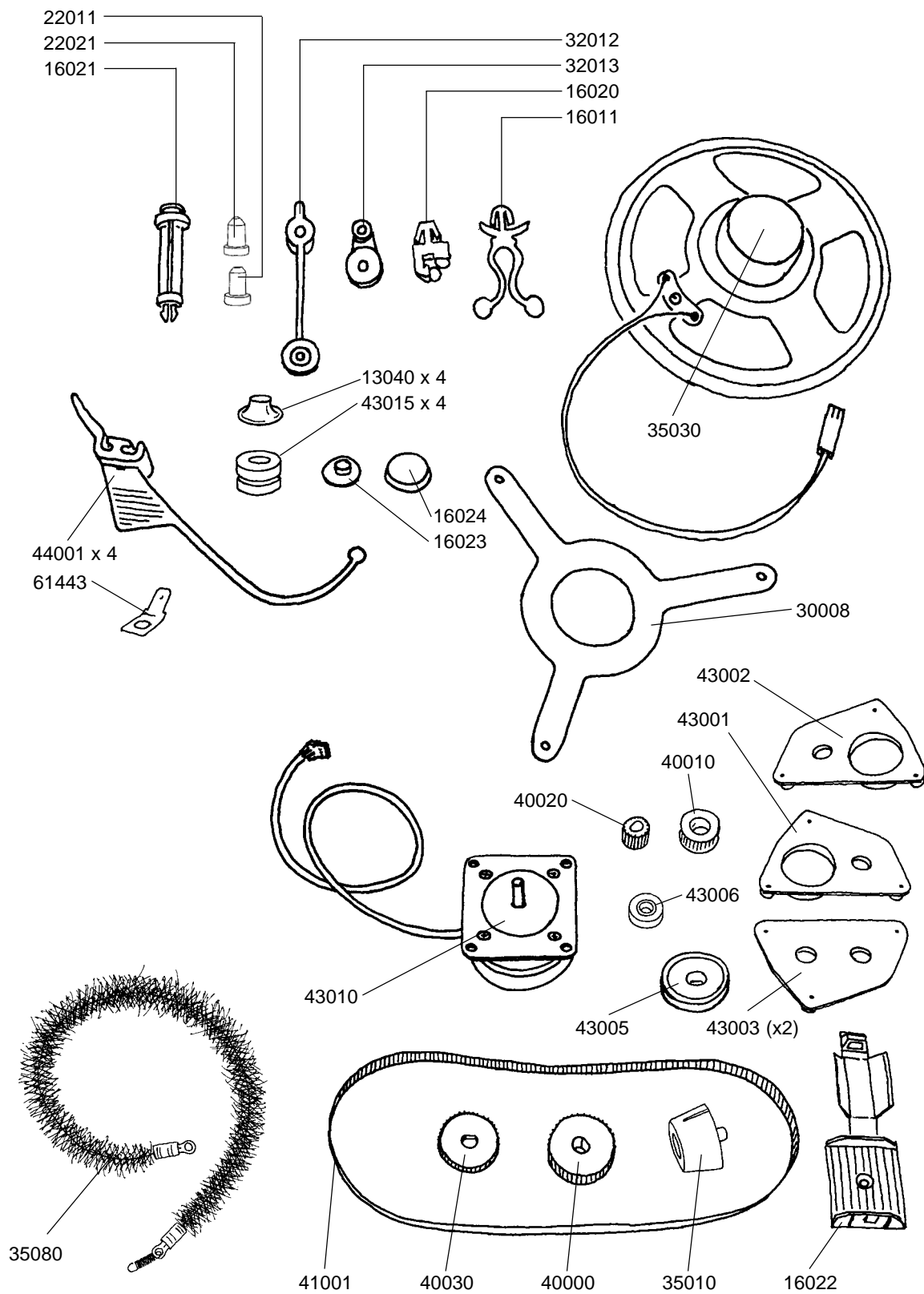




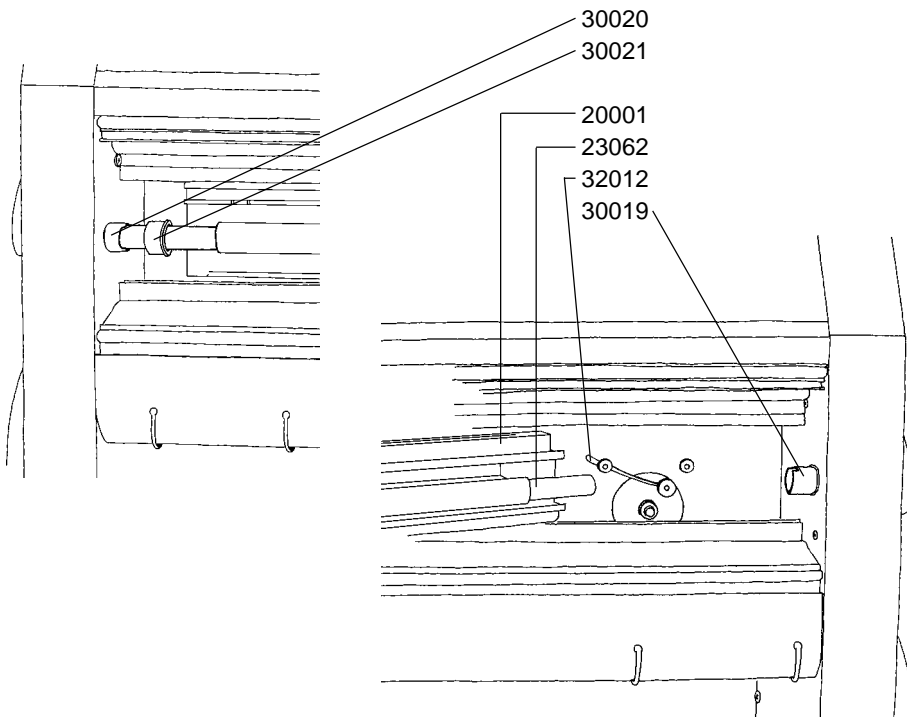
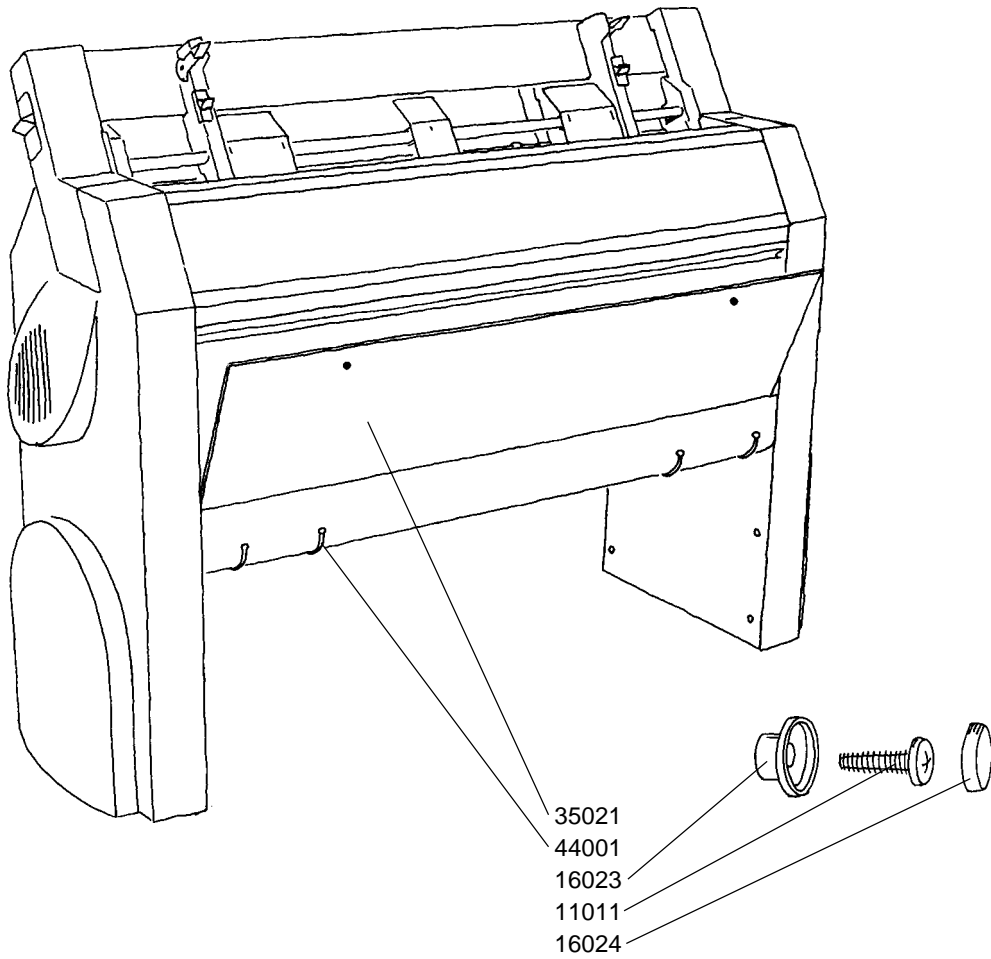
Sparepartlist



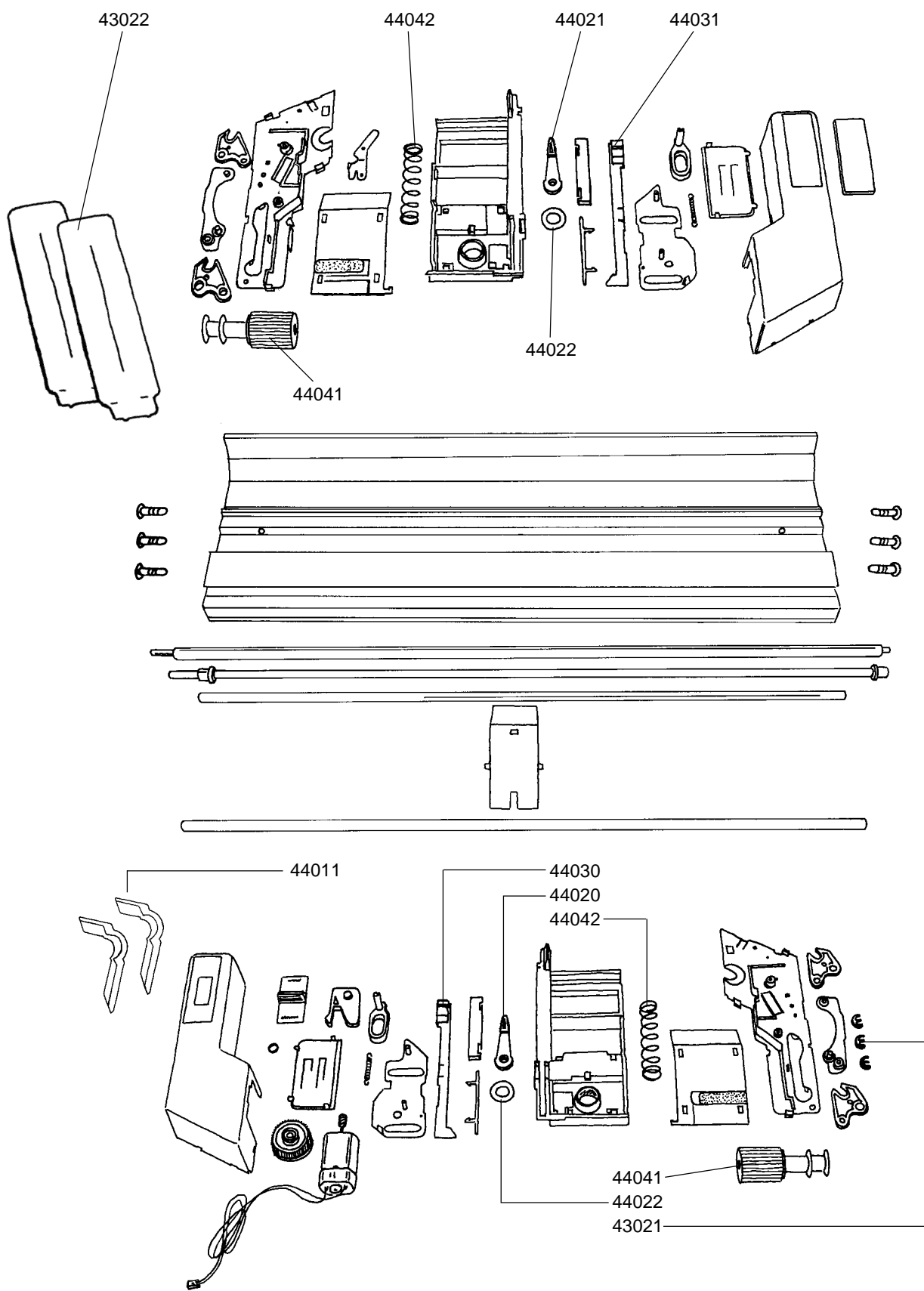
# Sparepartlist



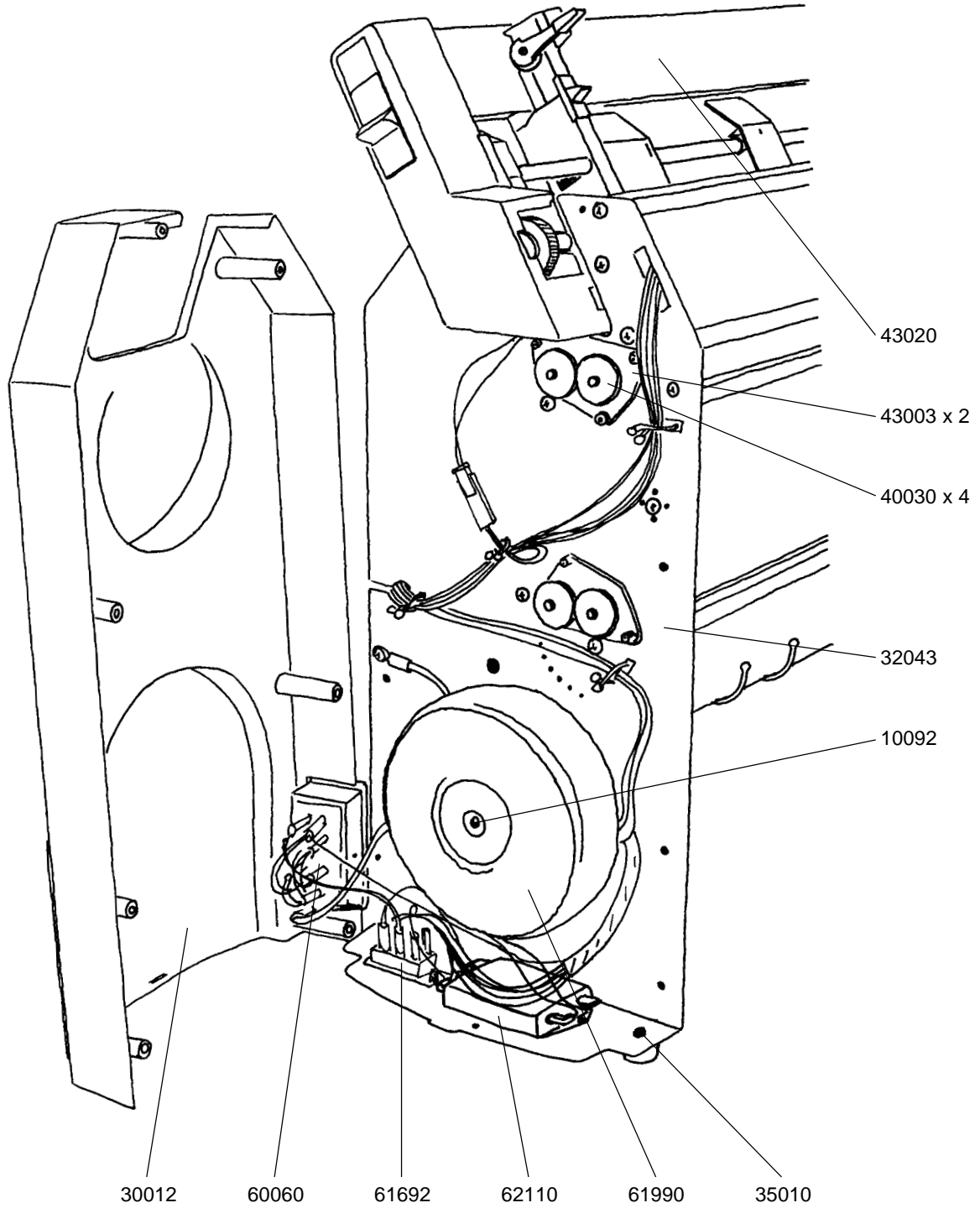
# Sparepartlist



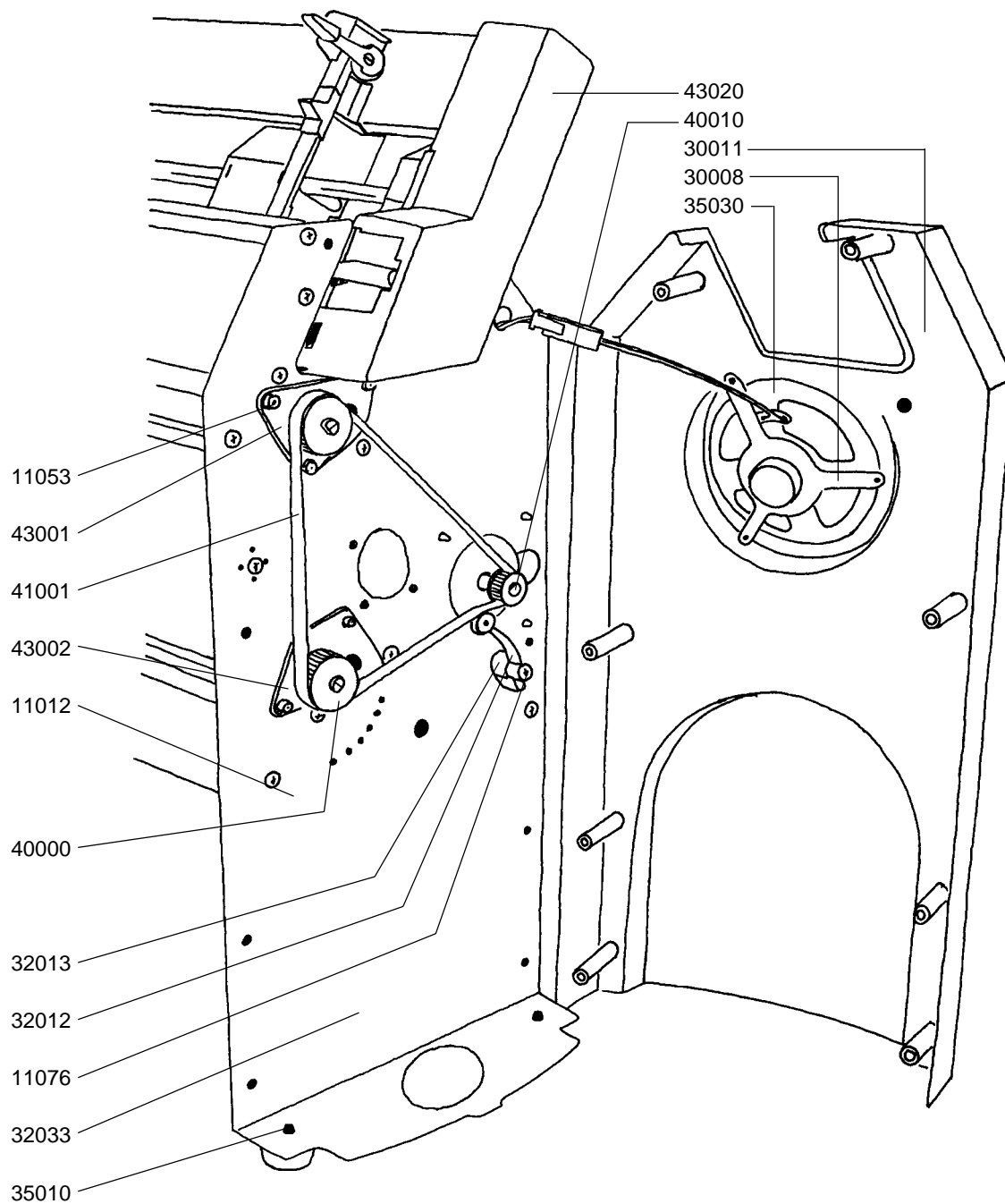
# Sparepartlist



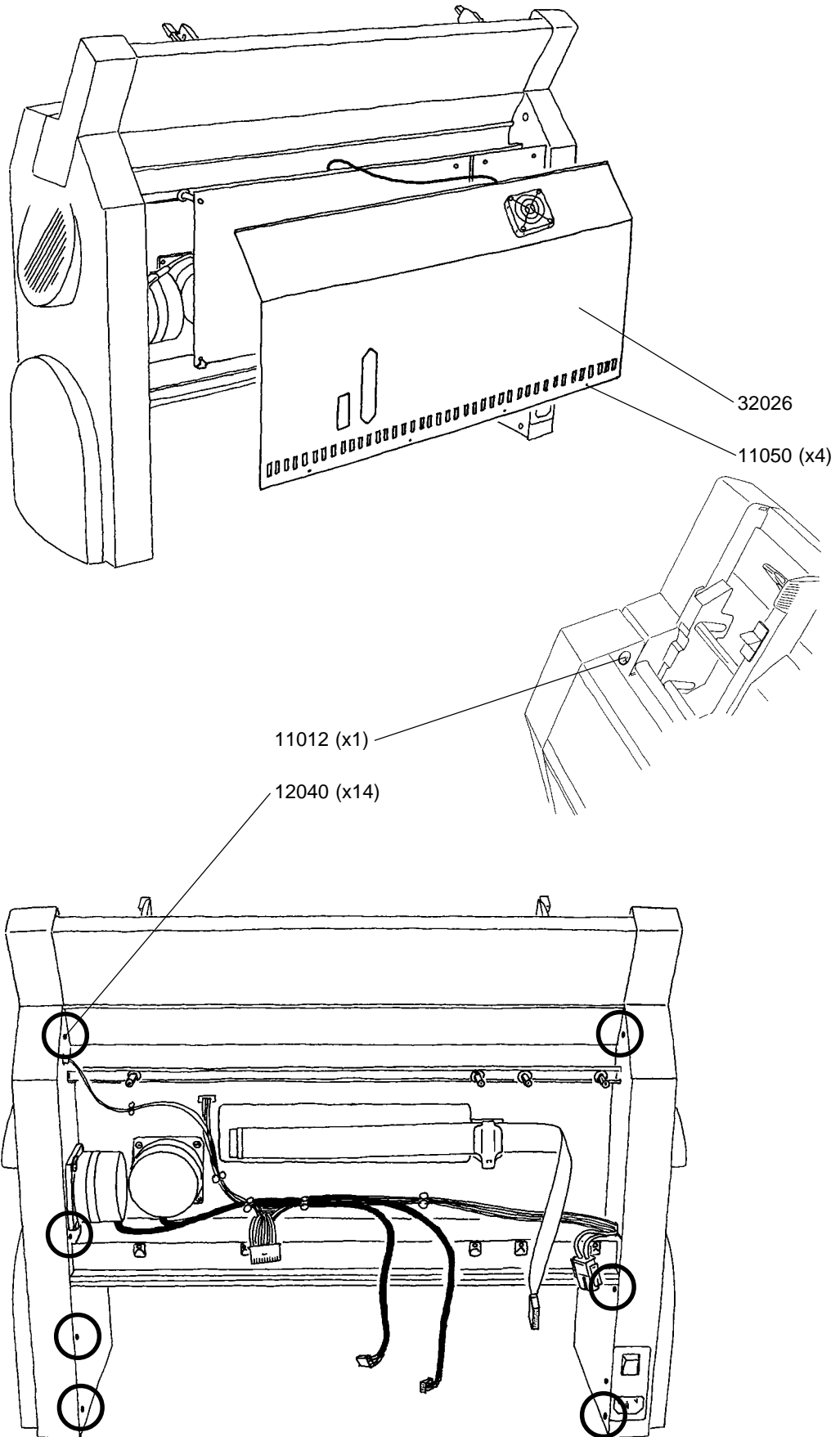
# Sparepartlist



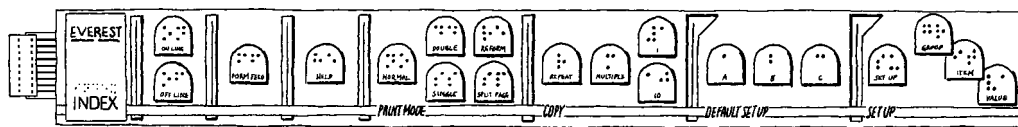
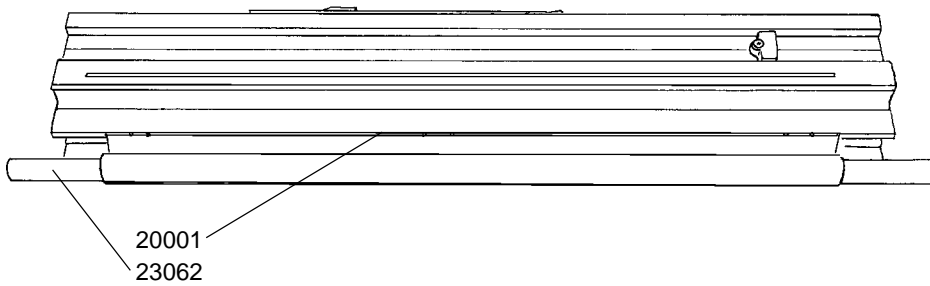
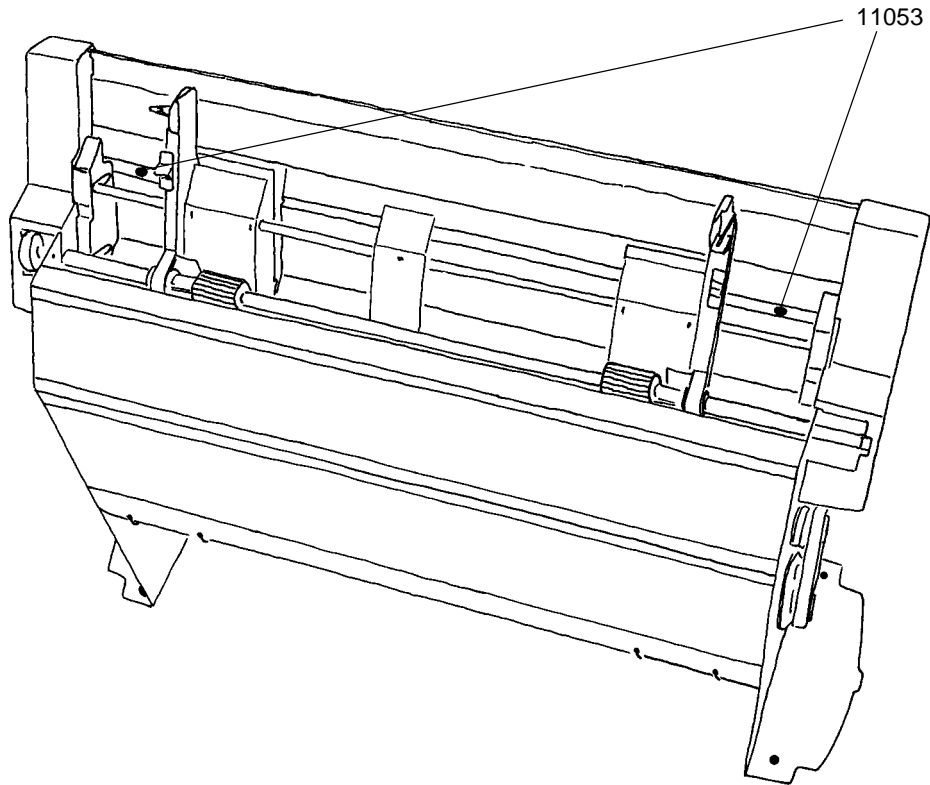
# Sparepartlist



# Sparepartlist



# Sparepartlist



34010



## Fault detection

Fault	Possible explanation	Possible solution
Low dot quality	Not fixed anvils	Screws on anvils profile
	220 V printer on 110 V	Change to 100 Voltage. The printer set for 220 V will work on 110 but with very bad dot quality
	Negative hammer/ Anvils filled with paper	Clean anvils/hammer, check paper quality
	Anvils is worn out	Change anvils, normally the positive will worn out first.
	Hammers is worn out	Change hammers, normally the positive will worn out first.
	Hammers or power transistors is bad	Run the test specified on page 20
	Not good combination of hammers and anvils	Exchange to new anvils if the result is not acceptable, change also the hammers
	Faulty type of software is installed 6.xx or higher on a board for up to 5.xx	If the mainboard is equipped with version 1 PAL and Boot circuit and 10 Kohm on driving transistors. Index can update the board to handle 6.xx and higher software.
No dots	Not connected or bad print head cable	Check cable
Bad vertical alignment	Gear wheel not fixed to the stepper motor	Clean the motor axle and gear wheel, than glue it with "Loctite 638"
	Worn out or smashed gear bar on printhead	Exchange the gearbar on the printing head
	Printer calculation resolution limitation maximum 0,3 mm.	Reduce the speed on option/print quality.
	Software bad adjusted	Can be after a new software is implemented, especially from version up to 5.48 to versions 6.xx and higher
Squeezed first line or lines	Software below 6.48 have reduced torque when starting motor	Install 6.48 (5.48 version 1 board) or higher software
	The axle is dirty	Clean the axle with alcohol.
	Bearings for printing head is not fixed	Tight the screws and check that the bearing are lined up with the print head axle line. If not bend the bearings into correct position.
Can not load own braille table	Different versions of the program in the printer and support program	Install the new version of the program in Everest than load the own tables into Everest. See: Transfer your own table to a new version of the support program.
Can not load a new program	Version 1 board and program 6.xx or higher.	a) Load program 5.xx instead b) Send the board to Index to be updated to a version 2 board.
Keys have different functions	Basic software by mistake loaded on Everest	Install the Everest program with "install new". Follow instructions page 32.

## Fault detection

Fault	Possible explanation	Possible solution
	Cable fault/twisted	Check cable see page 28
	Panel fault	Check panel see page 27
	Decoder circuit fault	Exchange decoder circuit, UXX
Paper handling problem	Pick up not working correctly	See page xx user manual and page 26 in service manual
My own tables is not on the new software	Load them from old software	a) copy "ownxx.s10" from old to new software b) copy "owntab.evp" from old to new software
Get latest software	Take it from our home page at: <a href="http://www.braille.se">http://www.braille.se</a>	a) click on the software you need and select if the name and position is OK. b) name EVXXXYYY.EXE where XXX is the language, YYY is the version no. c) Move the file (example eveng801.exe) to a temporary directory (c:\temp) d) Extract the file (example eveng801.exe) with the command "eveng801.exe -d". This will extract the files and directories on TEMP directory. e) Delete source file (example eveng801.exe) on the temp directory. f) Run "install.exe". This will install the software on directory c:\Everest\ev801 and start up the program to install on Everest. g) Next time you start the program run "everest" on c:\Everest\ev801 and follow the menu instruction.
No referens puls	Cable faulty or not connected	Check cable, page 28 and see if LED will be lighted when moving the printing head
	Magnetic sensor position and function	Check sensor function with magnet if the LED goes on, if OK move the indicator board and or twist magnet (inside holder) 180 degrees.

## Serial Number, dates &amp; HW, SW and mechanical changes Everest

From ser.no	Date	Type	SW	Change	Comments
11304	15/2-95			Introduction of Everest II	SW 5.**. 11304-11059 version 1 PAL. And 13x 1+ K.Ohm
11915	20/11-95	ME		Cooling fan in back plate	Improved cooling
12035	25/2-96	HW		Grounding of printhead with separate cable	No risk for electrostatic chock from printhead to main board.
11059	10/3-96	HW SW		Boot/ PAL version 2 13x10 K.Ohm 11059-12041	Software 6.00 Delay 450, Impact level 250 (Repeat + Power on)
12060	30/3-96	HW		Version 2 main board, increased dot quality and reduced heat on driving transistors.	For SW 6.** and higher 13X 2.2 K.Ohm.
12154	1/6-96	HW		Printhead grounded via 50 M.Ohm resistor	No extra ground wire required.
11296	30/9-96	ME		Flexible connection on printhead motor	Reduces the chassis noise
12338	30/11-96	ME		Optimised form of hammers and anvils	Increased dot quality
12594	1/3-97	SW HW		Windows compatible software Sheet feeder support fixed with screw.	Automatic paper sensor calibration Vertical alignment set to factory reset values after downloading. Possibility to set Volume reference level. Default setup A,B,C can be changed when setup is "not open". Jumbo Braille implemented. Line spacing in mm values.
12620	30/3-97	ME		Lower front profile can be opened	Easy to clean paper jam
12630	28/5-97	SW	8.02	Bug fix	Japanese 2.2 mm resolution Faulty feedback on handshake Binding margin = 0 Interrupted Letter graphic gave also next printout in Letter graphic mode. Increased torque on printhead motor. High quality mode prints from same direction.
12781	7/11-97	SW	8.04	Bug fix	File starting with FF gave backwards printout
12827	21/1-98	ME		Plastic string for driving belt holds the bearing better.	In hot conditions the ball bearing could come off from the plastic string
12918	21/1-98	SW	8.05	Bug fix	File starting with space + CR/LF was ignored
13008	15/4-98	ME		New pickup rollers on sheet feeder	Improved pickup function.
13053	7/5-98	SW	8.07	New driver for Win95/Office 97	Ibp.driv98-05-23 13.00
13080	2/7-98	SW	8.08	Bug fix	Paper calibration improved
13260	24/8-98	ME		Front panel with higher Braille	
13281	29/8-98	ME		Bigger fan on back plate	Improved cooling
13313	16/10-98	SW	8.10 DOS/ WIN	Improved Windows driver functions and installation within Windows	
13497	22/1-99	HW		New patented printhead	Improved dot quality and longer life cycle on the printhead
13634	29/3-99	HW		External ground for CPU	Solved the problem with boards that didn't start up at all.

## FAQ's

	Problem	Remedy
1	Everest prints outside the paper or nothing at all, or gives number of lines either zero or very high (e.g. 272) when pressin valule in stand by mode.	Paper sensor calibration.
2	Embosser does not start up	System reset Value power on (beep?) RESTORE CPU grounding must be improved if CPU number ends with an A
3	Installation Windows drivers – Word printout	Generic text only driver, Setup and install driver as default.
4	Vertical alignment old Everest and new Basic/Everest	Volt / Hammer software, Loose gear wheel
5	Windows/DOS Braille tables	Use BRLED to create user defined tables.
6	Problem to download new software to embosser	Shut down Win 95, Port setting to SPP, try RESTORE option.
7	Dots are not good on brand new Everest with new printinghead.	Springs are to weak. Problem selfadjusting after some time of printing.
8	Older Duxbury Braille translator does not display Index Basic D/S in the list of embosser settings.	Set the global settings for Index Everest
9	Upgrade limitations Everest	< version 6 = maximum 5.48 > version 6 = latest release on the web
10	NT drivers	Win-Braille
11	4x4 printinghead hits the margin of the paper	Press "Normal" + Power on & 1/10 keys

## Support form

**Use this form to send your support requests to Index Braille.**

This form is also available at: [www.indexbraille.com/suppreq.htm](http://www.indexbraille.com/suppreq.htm)

<b>Name</b>	
<b>Title</b>	
<b>Organisation</b>	
<b>Department</b>	
<b>Mailing address</b>	
<b>Shipping address</b>	
<b>City</b>	
<b>Zip Code</b>	
<b>State</b>	
<b>Country</b>	
<b>Phone</b>	
<b>Fax</b>	
<b>E-mail</b>	
<b>Type of embosser</b>	
<b>Serial number</b>	
<b>Software version</b>	
<b>Communication type</b>	
<b>Connected as</b>	
<b>Port</b>	
<b>Type of Computer</b>	
<b>Operating system</b>	
<b>Braille Editor</b>	
<b>Fault Description</b>	





