

THERMAL & THERMAL TRANSFER LABEL PRINTERS

models

**smart 2000, smart 2001GM
&
smart 3001GM**

USER MANUAL

Starting from S/N 847U



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s2000/2001GM/3001GM

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Features and specifications are subject to change without notice

smart 2000, smart 2001GM & smart 3001GM

GRAPHIC LABEL PRINTERS

1. GENERAL DESCRIPTION

These units offer an accurate and high quality printing moreover a formatting capability of 26 layouts in Flash memory. They can operate in dispensing mode, because of the inside mechanism for peeling and rewinding, or in strip form. Resident Bar Codes are dispensed at high speed and

the twentythree character generators with eighty magnifications give a wide range of fonts.

The inside label unwind holder offers an autonomy of 1500 labels (106 x 70 mm), the modular design of these printers offers an easy service as well for electronic boards as for mechanics maintenance.

2. TECHNICAL SPECIFICATIONS

Printers of this family have obtained the IMQ approval according to European Standard EN 60950.

PRINTING

Method: Direct Thermal and Thermal Transfer
Resolution: 8 dots, (**smart 2000**)
8 dots/mm, GM (**smart 2001 GM**)
12 dots/mm, GM (**smart 3001 GM**)
Print width: 102.0 mm (**smart 2000**)
102.0 mm (**smart 2001 GM**)
108.5 mm (**smart 3001 GM**)
Print speed: **smart 2000** up to 150 mm/s
smart 2001/3001 up to 200 mm/s

DISPLAY: backlit LCD 2x16 characters and 4 membrane switches (**smart 2001/3001**)

X/Y positioning of texts and bar codes

Texts and bar codes printed in four orthogonal directions

Lines, boxes, shadow and reverse printing

Graphic and logos: bit image mode

Bar Codes: EAN8, EAN13, 2/5, 2/5 I, 3/9, 2/7, DUN-14/16,

UPC-A, UPC-B, UPC-E, CODE128, EAN128, Code 32,

PZN, Code 93, PDF 417, Datamatrix, GS1 Databar

Automatic Check Digit computation

Wide/narrow ratio full programmable

Half, standard and double density

Height programmable

Suppression of human readable characters

Batch printing: up to 99.999.999 labels

Layouts: 26 programmable in Flash

Up to 10 protection levels for variable data printing

4 up/down 16 digits alphanumeric counters

Real Time Clock

Black intensity adjustable via software

Print button for last label repeating

THERMAL HEAD TEMPERATURE CONTROL

DATA TRANSFER INTERFACE

RS232 : serial parameters settable via software

RS485 : on request

PARALLEL CENTRONICS : standard

HANDSHAKE PROTOCOL

SW : XON/XOFF

HW : DTR

DATA TRANSMISSION

ASCII format

CHARACTER GENERATORS

5 fixed matrix), 6 proportionals

up to 112 customized

(see Programming Manual for further details)

Magnifications 9x9

MEMORY

32 - bit RISC microprocessor

4 MB flash memory

1 MB RAM

PCMCIA memory interface

DETECTORS

End of paper and feeding synchronism

End of thermal ribbon

PRINT MEDIA

Labels, tags and continuous paper

LABEL SIZES

Width: 30 mm min., 110 mm max

Length: 10 mm min.

1.200 mm max **smart 2000/2001**

500 mm max **smart 3001**

Key: width min.: 2 mm

depth min.: 7 mm starting 2 mm min.
from the inner edge

ROLL SIZES

Width: 30 mm min., 110 mm max

Outer diameter: 150 mm max

Core diameter: 38 mm min.

THERMAL RIBBON

Base polyester film

Outer diameter: 58 mm max, length 220 meters

Width: 35 mm min., 110 mm max

Core diameter: 25.4 mm

PRINTER DIMENSIONS

Height: 200 mm; Depth: 440 mm

Length: 235 mm; Weight: 17 Kg

POWER REQUIREMENTS

Voltage: 115/230/240 Vac; 50-60 Hz

ENVIRONMENT

Operating temperature: 0°/ 40° C

Storage temperature: -20°/60° C

Humidity: 10% - 95% non-condensing

OPTIONS

Label taken sensor

Guillotine

Pick & Place interface (optoisolated)

lines: one INPUT, two OUTPUT)

RS485 Interface

3. UNPACKING

Open the box and check the content : **italora** printer model **smart 2000** or **2001GM** or **3001GM**

b) power cable

c) roll of labels

d) roll of thermal ribbon

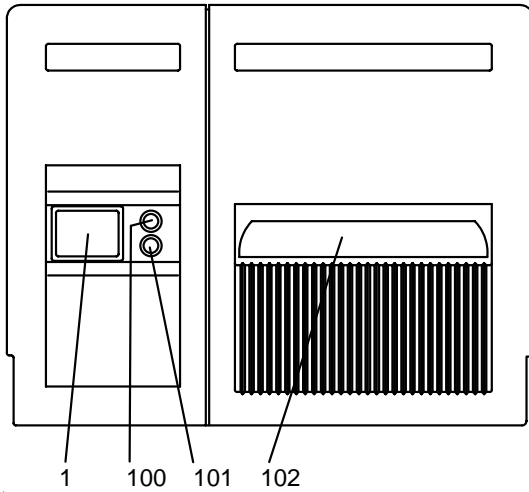
e) printing tests

f) serial cable RS232 and Centronics cable

g) CD Rom with manuals and Etik Light

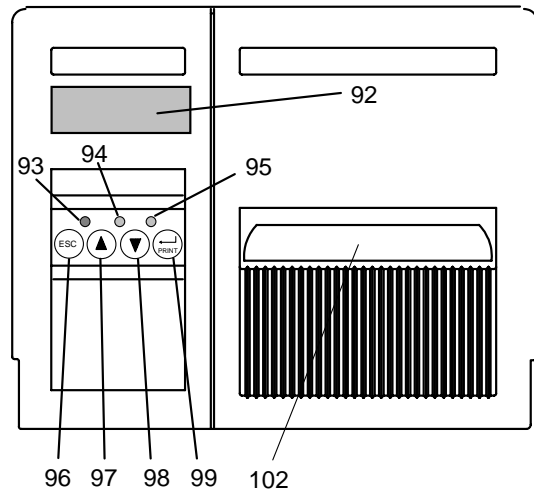
4. EXTERNAL DESCRIPTION

s2000/2001GM/3001GM



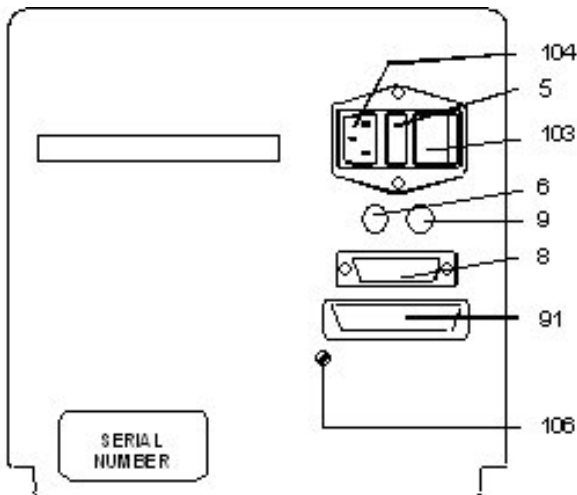
PICTURE 3 (smart 2000)

- 1: manual printing push button
 100: **red led** => lit at POWER ON
 101: **status led** =>
 - **lit green:** ON-LINE
 - **blinking green:** end of paper
 - **lit yellow:** syntax error (push printing button to restart)
 - **blinking yellow:** head temperature control active
 - **alternate green/yellow blinking:** end of ribbon (TT models only)
 102 label output



PICTURE 3 (smart 2001/3001)

- 92: display 16 x 2
 93: **red led** => lit at POWER ON
 94: **status led** =>
 - **lit green:** ON-LINE
 - **blinking green:** end of paper
 - **lit yellow:** syntax error (push printing button to restart)
 95: - **blinking yellow:** head temperature control active
 - **alternate green/yellow blinking:** end of ribbon (TT models only)
 96: escape
 97: menu increment
 98: menu decrement
 99: enter/print button



PICTURE 4

- 5: 2 fuses 2AT (main)
 6: 1 fuse 1.6AT (logic)
 8: serial port
 9: fuse 8AT (thermal head)
 90 PCMCIA card slot
 91 parallel port
 103: main switch
 104: power cord plug
 106 trimmer for black intensity fine adjust
 - clockwise = more intensity
 - anticlockwise = less intensity

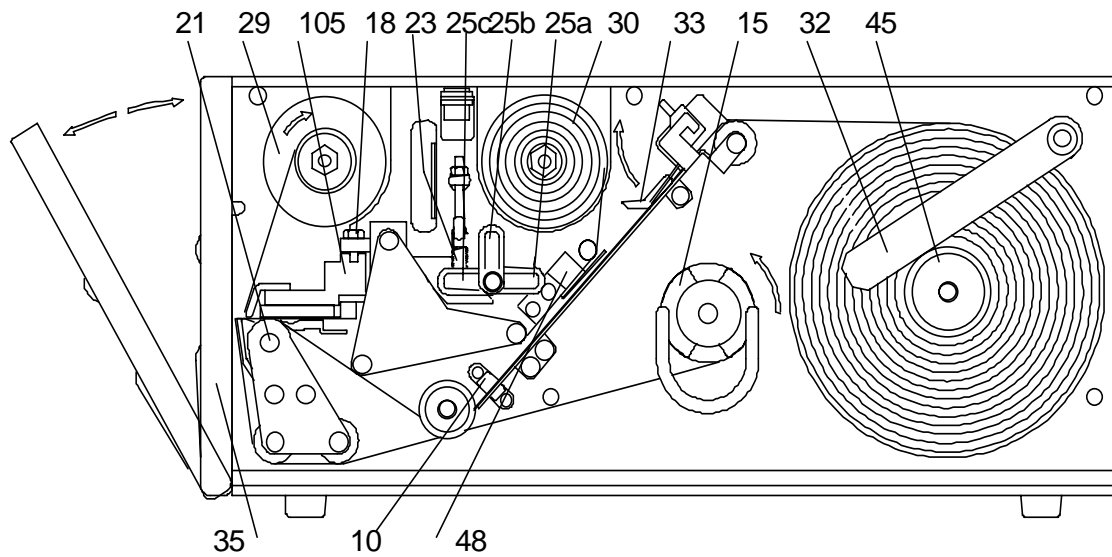
5. MAIN COMPARTMENT DESCRIPTION

(see following picture)

- 10 - photosensor for end of roll and label synchronisation
 15 - rewinding shaft with adjusting clutch
 18 - print head position fine adjustment
 21 - rubber feeding roll
 23 - print head assembly pressure spring
 25 - lock / unlock lever
 25a - working position
 25b - open position
 29 - thermal ribbon rewinder
 30 - thermal ribbon stock
 32 - label guide arm

- 33 - pressure clip
- 35 - front cover
- 45 - label unwind holder
- 25c - cleaning position

- 48 - photosensor for end of thermal ribbon
- 105 - print head assembly



PICTURE 6

6. INCOMING INSPECTION

- * Open the main compartment.
- * Check the presence of the label roll and of the thermal ribbon roll.
- * Check the correct pinout of the serial I/O Cannon 25 pins female connector (or of the Centronics 36 pins female connector) and connect the printer to the computer.
- * For further details see chapter "Connection to Host Computer".
- * Check the voltage on the name plate next to the power receptacle.
- * Connect the power cable to a grounded power line
- * Lift the printhead down by rotating the lever #25a.
- * Switch the main switch on (rear panel) RED and GREEN leds ON mean operating conditions.
- * Push the PRINT (ENTER) BUTTON, you will get a printing test with the FIRMWARE release information.
- * Sending data from the computer you will get the first printing.
- * Push the PRINT (ENTER) BUTTON to get the last printing again; the printer keeps the information of the last printing until next data arrive.

NOTE: **Printer retains the label length and the backing paper transparency in permanent memory. In case of change of print media see the following paragraph.**

6.1. LABEL FORMAT SET UP PROCEDURE

(see pictures 7 and 8)

The printer retains the label length and the backing paper transparency in permanent memory. **If changing label format or print media type** you have to use the following procedure to update the values:

- 1 - Switch the printer off.
- 2 - Lift the printing head up by rotating lever #25b.
- 3 - Thread the web between the feed roller and the printig head #21,105.
- 4 - Check web has been rightly positioned under the label photosensor #10.
- 5 - Lift the printing head down by rotating the lever #25a.
- 6 - Switch the printer on while pushing the print (enter) button.
- 7 - Printer ejects some labels (depending on their length) and stores the values of the media.
- 8 - Release the print button.
- 9 - The green led lit and the printer is ready to work.

For further information about media options see chapter 7 and the paragraph "Labels, tags and continuous media printing" of the PROGRAMMING MANUAL.

7. PRINTING MEDIA DESCRIPTION

7.1 PAPER SPECIFICATIONS

White coated glossy printing paper

- weight: 65 ÷ 90 g/mq (ISO536)
- caliper: 0,075 ÷ 0,083 mm (ISO534)

ADHESIVE SPECIFICATIONS

- peel adhesion(90° C): 430 N/m
- service temperature: -20° C ÷ + 70° C

LINER SPECIFICATIONS

- BG 40 brown, supercalendered glassine
- weight: 65g/mq (ISO536)
- caliper: 0.057 mm (ISO534)
- transparency: 45%

TAGS AND CONTINUOUS STRIPS

- weight: 200 g/mq max

SUGGESTED MODELS

- Fasson Fastthermal NT
- Kanzaki KPT 86-H
- Fasson Fastransfer MP - S470 (TT models)
- Fasson Fastransfer Extra - S470 (TT models)

LABEL AND TAGS DIMENSIONS

See Chapter 2

7.2. THERMAL RIBBON SPECIFICATIONS

- film thickness 4.5 ÷ 6 micron
- core diameter: 25.4 mm
- outer diameter: 58 mm max
- width: 35 mm min/ 110 mm max
- length: about 220 meters (58 mm DIA. max)
- ink coating outside

SUGGESTED MODELS

- TOIKO C 250 (matt paper)
- TOIKO CR 150 (glossy paper and polypropylene)
- TOIKO R 300 (plastic media)

STORAGE

Keep labels and ribbons in a dry place at temperature not over 40° C and not exposed to direct sun light.

8. THERMAL RIBBON AND LABEL ROLL REPLACEMENT

8.1. THERMAL RIBBON REPLACEMENT (TT MODELS)

(see picture 7)

Open side of printer.

Remove the used roll. Remove the core #47 from the shaft and put it on the rewinder #29.

By rotating the lever #25b, lift the printing head #105 from the feed roller #21, setting the movement of the ribbon free.

Slide new ribbon #43 onto shaft and thread it under the ribbon photosensor #48 and the threaders #108,107 and 37 and up round to the rewinder #29.

Attach the ribbon leader with label/tape to core #47. Return head lever to closed position #25a.

Close side of printer.

8.2. LABEL ROLL REPLACEMENT

In case of changing of label format or printing media type, remember to follow the "Label format set up procedure" shown on paragraph 6.1.

8.2.1. DISPENSING MODE

(see picture 8)

Open side of printer.

Remove the empty label roll.

Lift guide arm #32.

Insert new label roll onto roller #45

Bring the guide arm #32 down and push it tightly against the side of the label roll.

By rotating the lever #25b, lift the printing head #105 from the feed roller #21, setting the movement of labels and ribbon free.

Remove clip #28 from the rewinding shaft #15.

Remove backing paper from the rewinding shaft.

Remove the first 50 centimetres from liner of the new roll labels.

Hold pressure clip #33 up and feed the liner through the path, slide it on the rewinder unit #15 and fasten it with the clip holder #28.

Turn the rewinder to stretch the paper.

Turn head lever back to closed position #25a.

Check paper has been rightly positioned under the label photosensor #10.

Check pressure clip #33 has been positioned between centre and outer side of the label.

Close side of printer.

8.2.2. STRIP FORM MODE

(see picture 9)

Open side of printer.

Remove the empty label roll.

Lift up the guide arm #32.

Insert new label roll onto roller #45

Bring the guide arm #32 down and push it tightly against the side of the label roll.

By rotating the lever #25b, lift the printing head #105 from the feed roller #21, setting the movement of

labels and ribbon free.

Hold pressure clip #33 up and feed the paper through the path.

Turn head lever back to closed position #25a.

Check paper has been rightly positioned under the label photosensor #10.

Check pressure clip #33 has been positioned between centre and outer side of the label.

Close side of printer.

8.2.3. REWINDING MODE

(see pictures 10 and 11)

Is necessary to rewind printed labels inside to remove the plate #20, turning the screws #139,140 out.

Open side of printer.

Remove the empty label roll.

Lift guide arm #32.

Insert new label roll onto roller #45

Bring the guide arm #32 down and push it tightly against the side of the label roll.

By rotating the lever #25b, lift the printing head #105 from the feed roller #21, setting the movement of labels and ribbon free

Remove clip #28 from the rewinding shaft #15.

Hold pressure clip #33 up and feed the paper through the path, slide it on the rewinder unit #15 and fasten it with the clip holder #28.

Turn the rewinder to stretch the paper.

Turn head lever back to closed position #25a.

Check paper has been rightly positioned under the label photosensor #10.

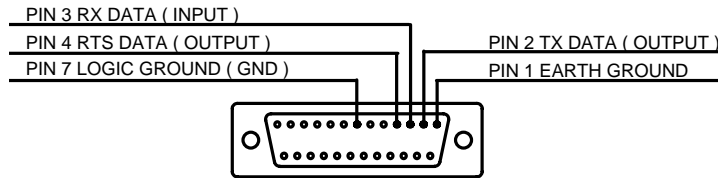
Check pressure clip #33 has been positioned between centre and outer side of the label.

Close side of printer.

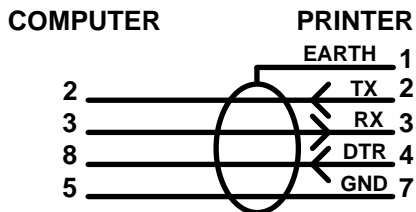
9. CONNECTION TO HOST COMPUTER

9.1 SERIAL INTERFACE

smart 2000, 2001GM and **3001GM** printers have a RS232 hardware interface (RS422 or 485 on request). Provided on board connector is a Cannon 25 pins "DB" female cabled as shown in the following pictures.



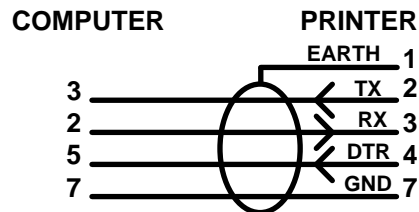
COMPUTER CONNECTOR WITH 9 PINS



COMPUTER CONNECTOR:

- using sw protocol XON/XOFF:
short together PINS 7-8 and 1-4-6.
- using hw protocol DTR:
short together PINS 1-4-6.

COMPUTER CONNECTOR WITH 25 PIN

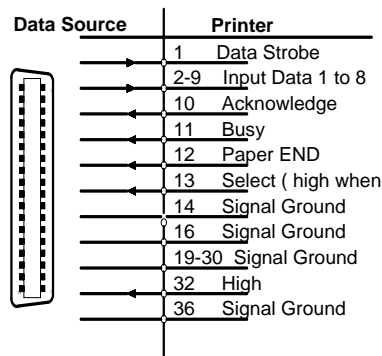


COMPUTER CONNECTOR:

- using sw protocol XON/XOFF:
short together PINS 4-5 and 6-8-20.
- using hw protocol DTR:
short together PINS 6-8-20.

9.2 PARALLEL CENTRONICS INTERFACE

Provided on board connector is a 36 pins female cabled as shown in following picture.



9.3 PCMCIA CARD

68 pins PCMCIA / JEIDA SRAM cards up to 4 Mb are supported.

10. MAINTENANCE

WHEN NOT IN USE:

- SWITCH OFF POWER
- ALWAYS LIFT UP THE PRINTER HEAD

10.1. CLEANING

Print Head

- Turn the power off.
- Wait until thermal head cools down.
- Lift the print head by using the lever on position 25c
- Remove labels and thermal ribbon.
- Moisten a cotton cloth with denatured alcohol.
- Polish the below side to remove incidental adhesive traces or parts of labels
- Wait until dry before use

WARNING: never use hard tools as this may damage the print head.

Rubber feeding roll: use alcoholic detergents.

Photosensor: use a soft brush.

Metallic and plastic parts: use a soft cloth with water-based detergent (weak).

Removing adhesive traces or parts of labels: use alcoholic detergents. Be careful the liquid does not drip on the electronic compartment.

11. TROUBLE SHOOTING

11.1. NO LABELS FEEDING

Four situations may occur.

a) RED led is OFF, check (pict.3,#100):

- main voltage
- main switch (pict.4,#103) ON.
- main connector (pict.4,#104) plugged in
- main fuses (pict.4,#6) intact.

b) RED led is ON, STATUS led is BLINKING GREEN, check:

- label roll is not used up.
- paper position under the photosensor (pict.8,#10)

c) RED led is ON, STATUS led is BLINKING alternately GREEN and YELLOW, check:

- thermal ribbon is not used up (TT models).
- thermal ribbon position under the photosensor (pict.7,#48) (TT models).

d) RED led is ON, STATUS led is BLINKING YELLOW:

- head temperature control active, printer stops until temperature has fallen to normal values.

11.2. INCORRECT LABEL ALIGNMENT

Make sure that:

- print head is closed (pict.6,#25a)
- paper position under the photosensor (pict.8,#10)
- backing paper is correctly rewound (pict.6,#15)
- pressure clip (pict.6,#33) is positioned

between centre and outer side of the label.

- guide arm (pict.6,#32) is tightly pushed against the side of the label roll.

See also "Label format set up procedure" paragraph 6.1

11.3. PAPER SLIDES TO RIGHT SIDE

Check whether:

- pressure clip (pict.6,#33) is positioned between centre and outer side of the label.

- guide arm (pict.6,#32) is closely positioned against the side of the label roll.

11.4. PRINTING WITH PATCHES MISSING

Check whether:

- thermal print head needs cleaning (chapter 11)

AND FOR TT MODELS:

- thermal ribbon unwinds correctly.

- there are creases on the rewound thermal ribbon. If so, turn the nut (pict.7,#110) clockwise, in order to increase the rewinding torque (a quarter of a turn max) while holding the roller (pict.7,#29) still.

11.5. BLANK LABELS

Check whether

- the fuse (8AT) on the back panel has blown
- the print head connector is correctly plugged in

(pict.13,#112) with polarity key up.

- thermal ribbon is correctly positioned, opaque surface on the label side (TT models).

11.6. POOR PRINTING CONTRAST

- See printer rear panel.
- turn the print head screw (pict.4,#106) for temperature fine adjustment :
clockwise to make print darker.
anticlockwise to make print lighter.

Otherwise use the software command ?77& (see Programming Manual)

BEWARE: continual high operating temperature of thermal head may reduce its working life and may also fuse the ribbon(TT models).

11.7. LABELS ARE NOT CORRECTLY PEELED OFF (DISPENSING MODE)

- Make sure the label adhesive respects the specifications (see chapter 7).
- Turn the nut (pict.16,#41) clockwise, in order to increase the rewinding torque (a turn max) while holding the roller (pict.16,#15) still.

BEWARE: excessive torque may cause incorrect labels alignment.

12. HARDWARE NOTES

12.1. HOW TO CHECK ELECTRONIC BOARDS

- **First unplug the power cable from the printer.**
- open side of printer
- remove the 6 side screws (pict.19,#114,115,116, 119,120,121)
- turn the 2 rear panel screws (pict.18,#117,118) out.
- pull carefully off the electronic cabinet from the printer chassis and unplug the following connectors from CPU board (pict.21 or 21 bis).
Y2 = ribbon photosensor
Y3 = leds and push button (**smart 2000**)

- Y4 = stepping motor
- Y5 = label photosensor
- Y9 = thermal head (**smart 2000**)
- Y15 and YGM = thermal head (**smart 2001/3001**)
- Y17 =keyboard (**smart 2001/3001**)
- Y18 = display (**smart 2001/3001**)
- Y19 = leds (**smart 2001/3001**)
- disconnect the ground cable turning the chassis nut out.

12.2. ELECTRONIC BOARDS REPLACEMENT

Unplug the following connectors from the CPU board (pict.21):

- Y7 = serial interface
- Y10 = power supply
- Y13 = parallel interface
- turn the 4 rear panel screws (pict.18,#122,123,124,125) out.

- turn the lock screws (pict.20,#111,113) out and pull out the CPU board (pict.20,#50).
- unplug the fuses connectors and the main switch connector.
- turn the 2 lock screws (pict.20,#126,127) out.
- pull the power supply (pict.20,#13) out.

12.3. PRINT HEAD PROTECTION FUSE REPLACEMENT

- Thermal print head is protected by an 8 A timed fuse (pict.4,#9).

12.4. THERMAL PRINT HEAD REPLACEMENT

(see picture 27)

- 1 switch the printer off .
- 2 unplug connector(s) #112 from the print head.
- 3 lift print head by rotating the lever #25c..
- 4 turn the screw #130 out.
- 5 remove the adjusting nut #18.
- 6 pull out the print head and dissipater assembly from the pivot pin.
- 7 turn the screw #138 out and remove the print head #26 from the dissipater.
- 8 replace thermal head and run back steps 7 to 2.

WARNING: pay attention to plug in correctly thermal head connector(s), wrong connection causes

irreversible damage to the print head functionality (pict. 13)

- 9 in case of printing quality problems, loosen the screw #130 and turn slowly the adjusting nut in or out #18, for the best printing quality, finally lock the screw #130.
- 10 in case of creases on the rewound thermal ribbon, loosen the screws #128,129 and adjust the plate #37 in order to obtain a correct parallelism and flatness on the rewound ribbon; finally lock the screws #128,129 (TT models).

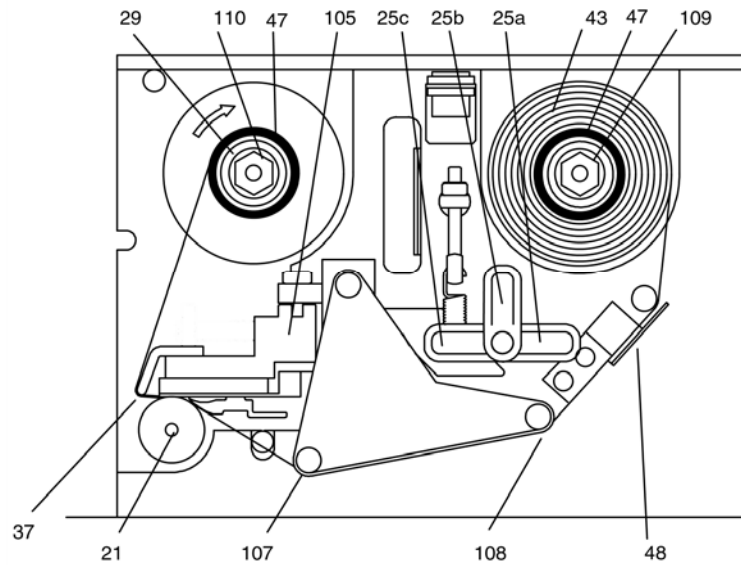
12.5. DRIVE BELT REPLACEMENT

(see pictures 28 and 29)

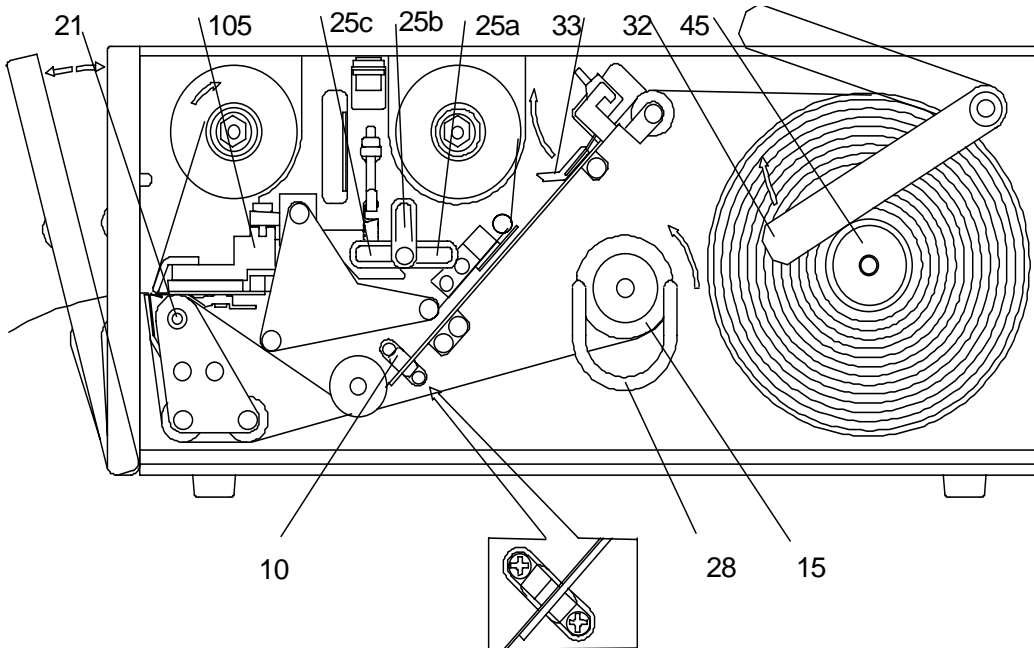
Disassemble the electronic cabinet from the printer chassis as shown in paragraph 14.1, remove the 2 screws #131, 133 and the safeguard plate #134, then

loosen the idler #16. Replace the belt and stretch it by the idler till you get a deflection of 4 to 6 mm when applying a force of 7 N.

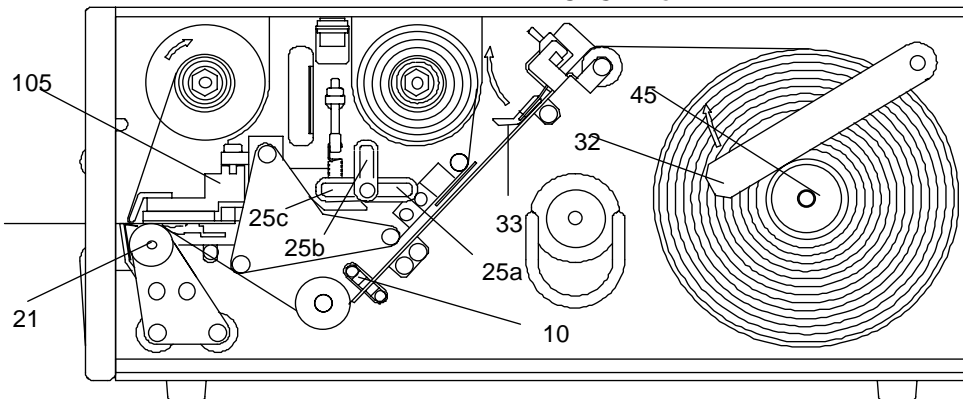
13. PICTURES



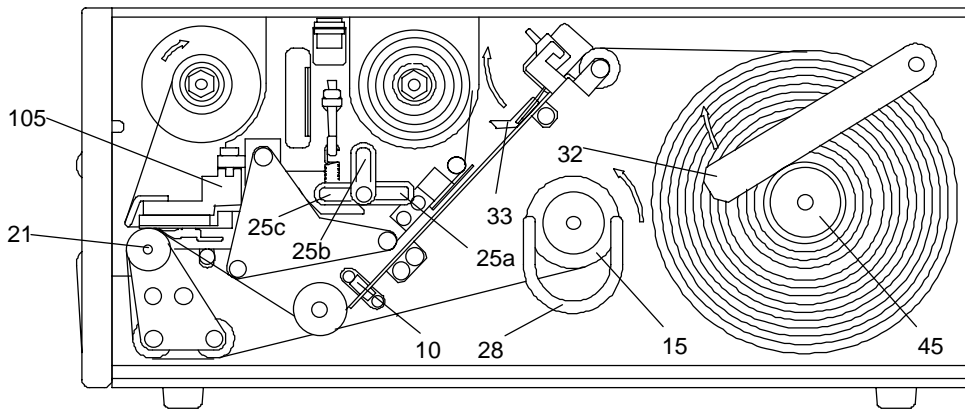
PICTURE 7



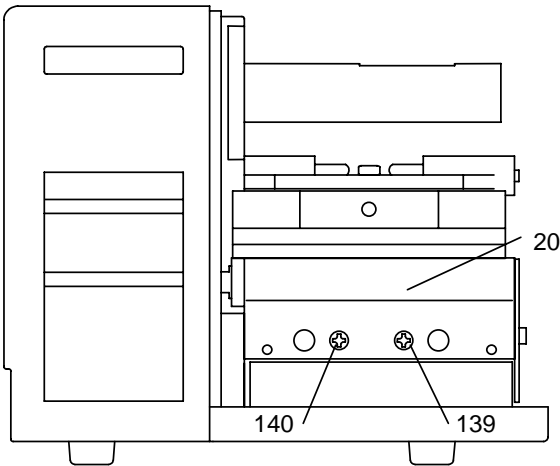
PICTURE 8



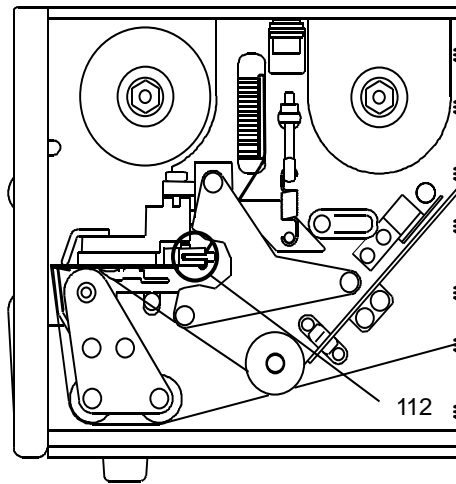
PICTURE 9



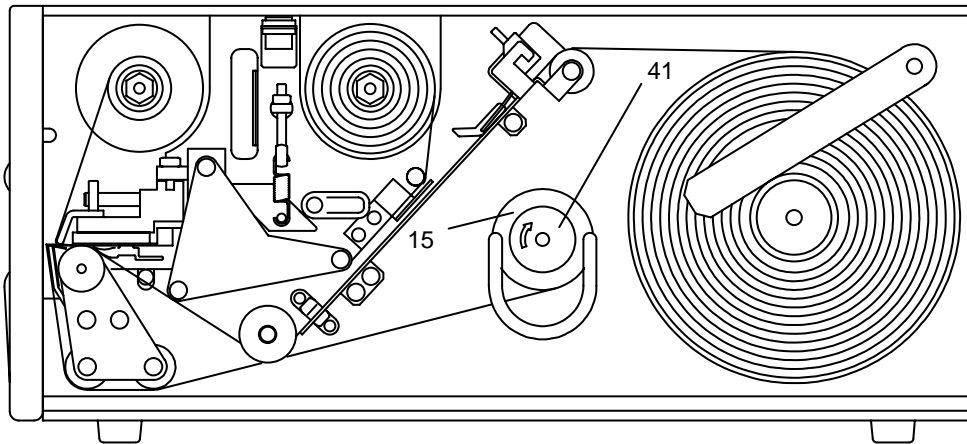
PICTURE 10



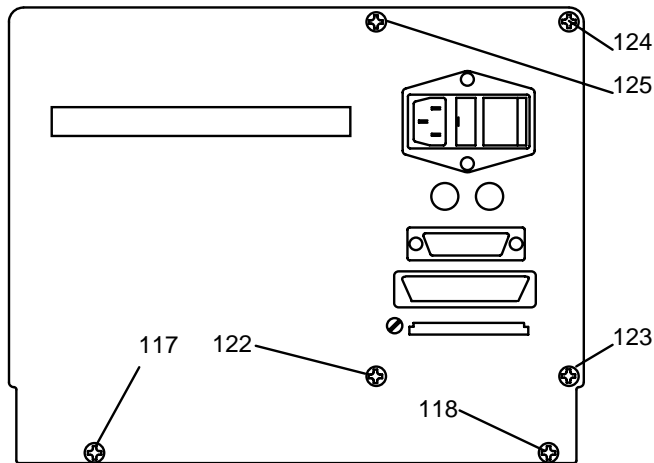
PICTURE 11



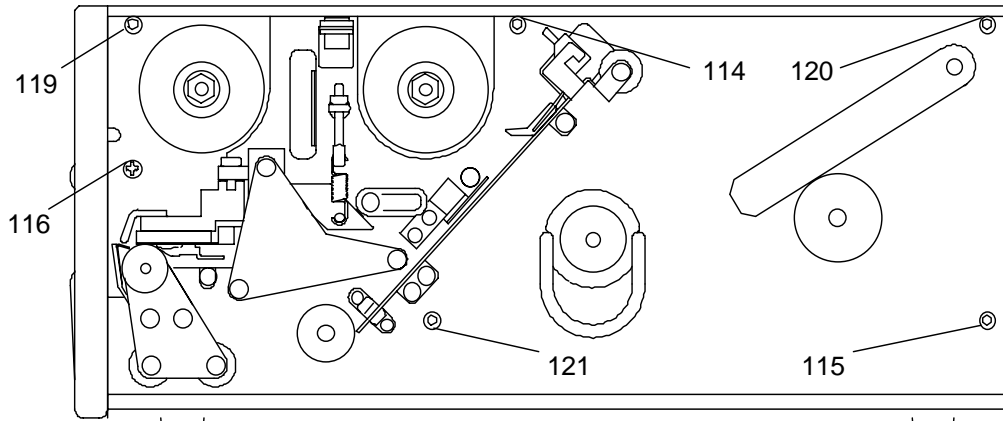
PICTURE 13



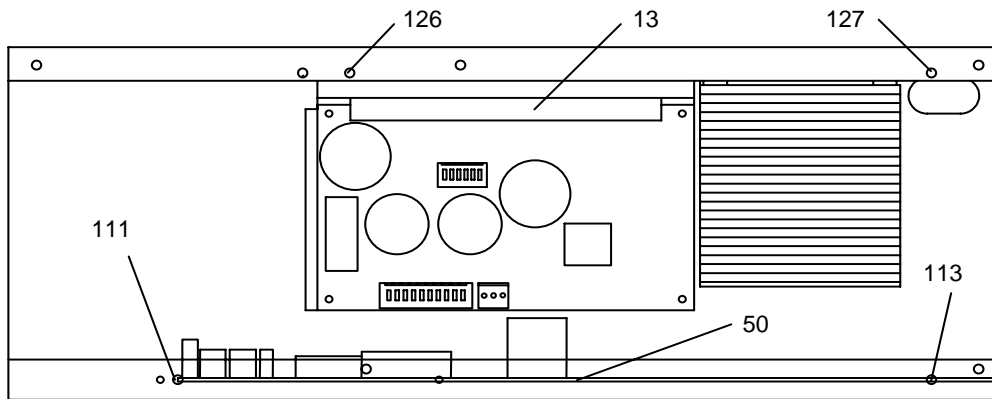
PICTURE 16



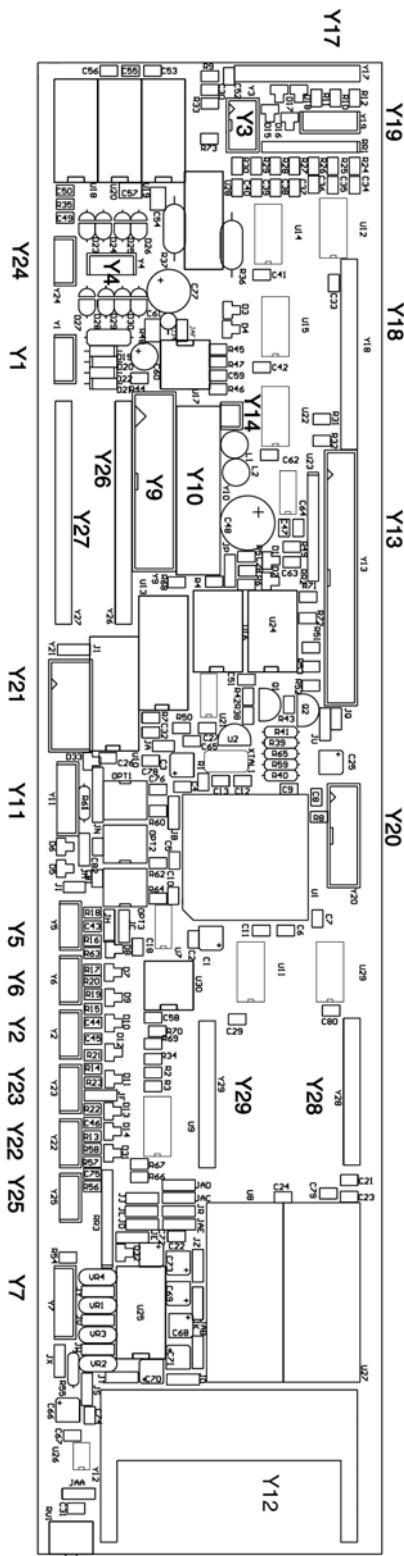
PICTURE 18



PICTURE 19



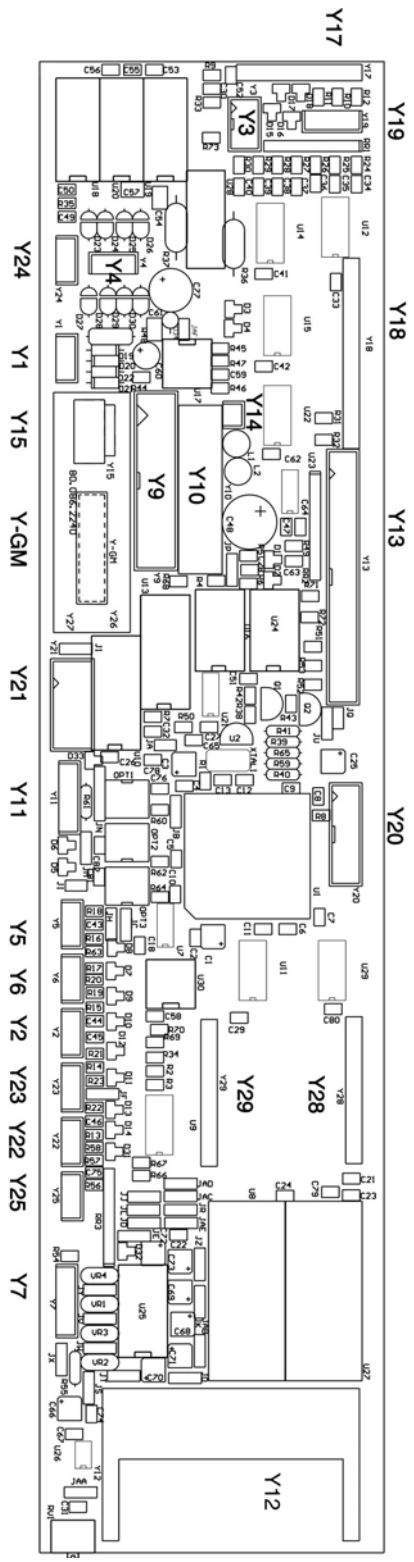
PICTURE 20



smart 2000

- Y1 Cutter
- Y2 Ribbon sensor
- Y3 Push button, Leds
- Y4 Motor
- Y5 Label sensor
- Y6 Label taken sensor
- Y7 Serial port
- Y8 -----
- Y9 Thermal head 8 dots
- Y10 Power supply
- Y11 Optocouplers
- Y12 PCMCIA 68 Pin Card
- Y13 Centronics
- Y14 -----
- Y15 -----
- Y16 -----
- Y17 Membrane Switches
- Y18 LCD
- Y19 Membrane Leds
- Y20 -----
- Y21 -----
- Y22 -----
- Y23 -----

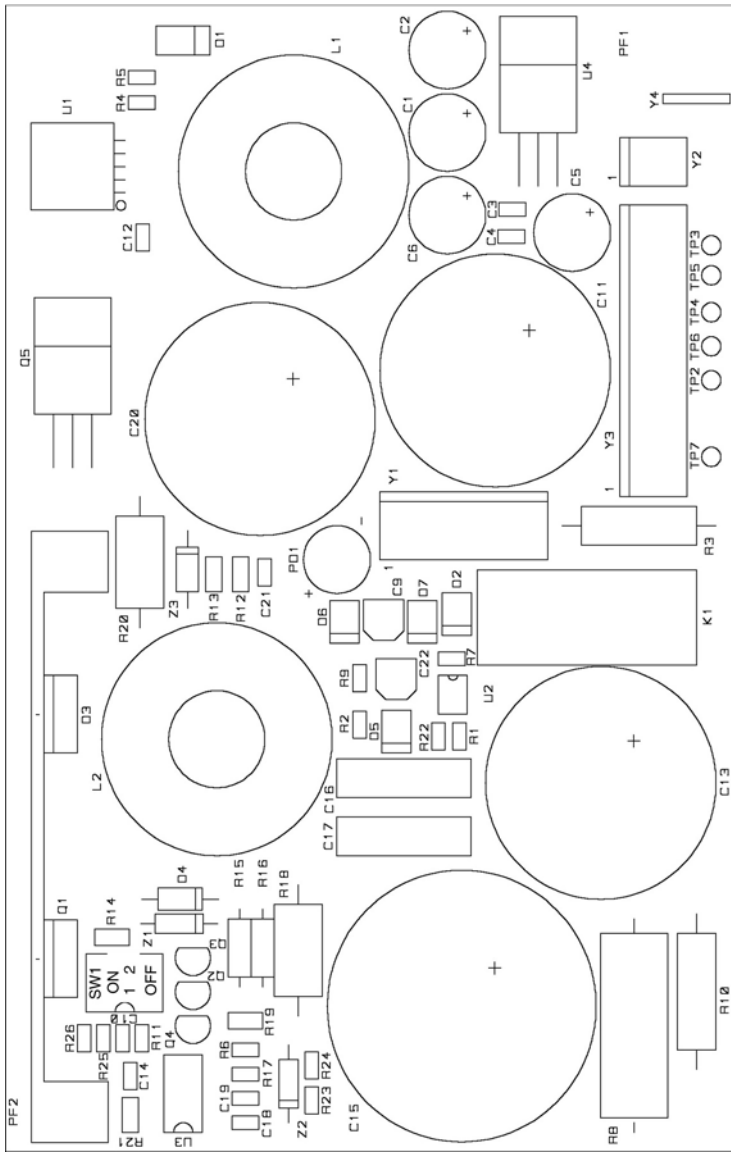
PICTURE 21 LOGIC BOARD - layout



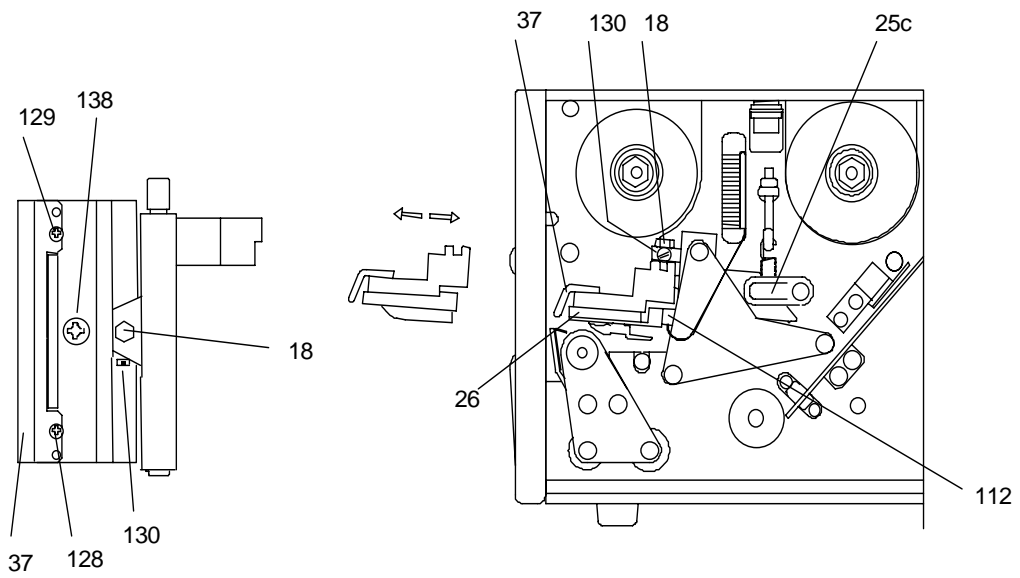
smart 2001GM smart 3001GM

- Y1 Cutter
- Y2 Ribbon sensor
- Y3 Push button, Leds
- Y4 Motor
- Y5 Label sensor
- Y6 Label taken sensor
- Y7 Serial port
- Y8 -----
- Y9 -----
- Y10 Power supply
- Y11 Optocouplers
- Y12 PCMCIA 68 Pin Card
- Y13 Centronics
- Y14 -----
- Y15 Thermal head 8-12 dots
- Y16 Thermal head 8-12 dots
- Y17 -----
- Y17 Membrane Switches
- Y18 LCD
- Y19 Membrane Leds
- Y20 -----
- Y21 -----
- Y22 -----
- Y23 -----

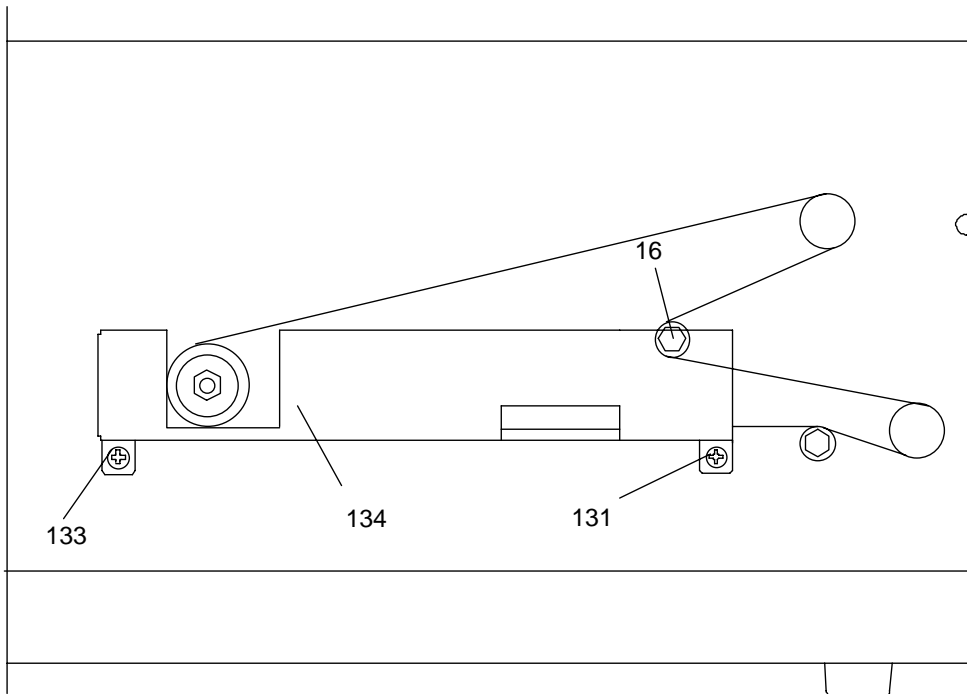
PICTURE 21 bis LOGIC BOARD - layout



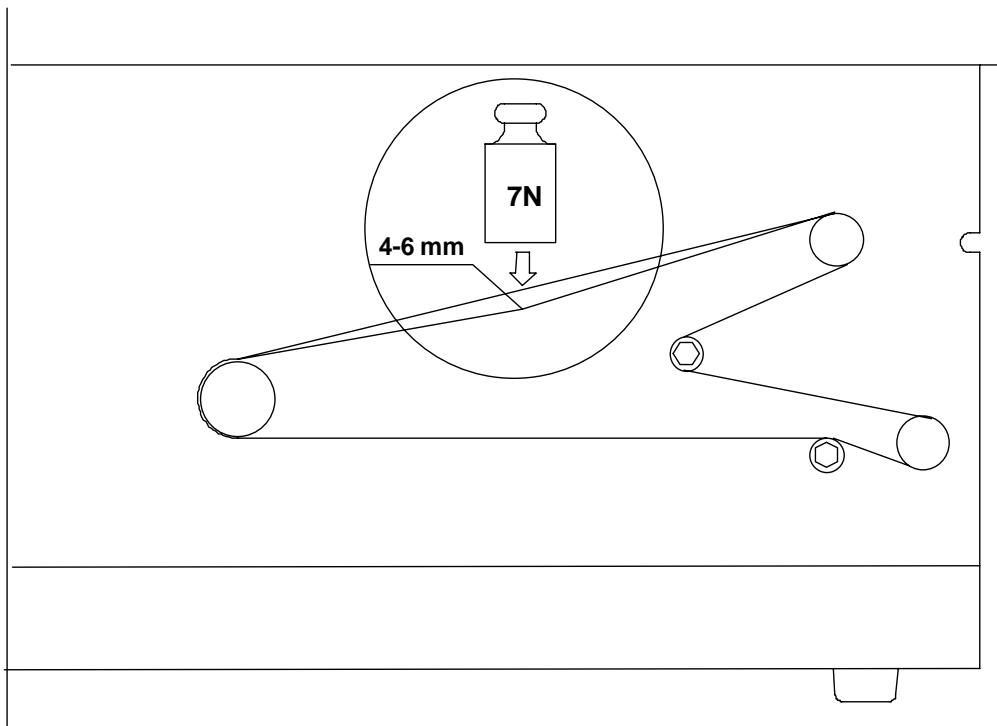
PICTURE 23 POWER SUPPLY - layout



PICTURE 27

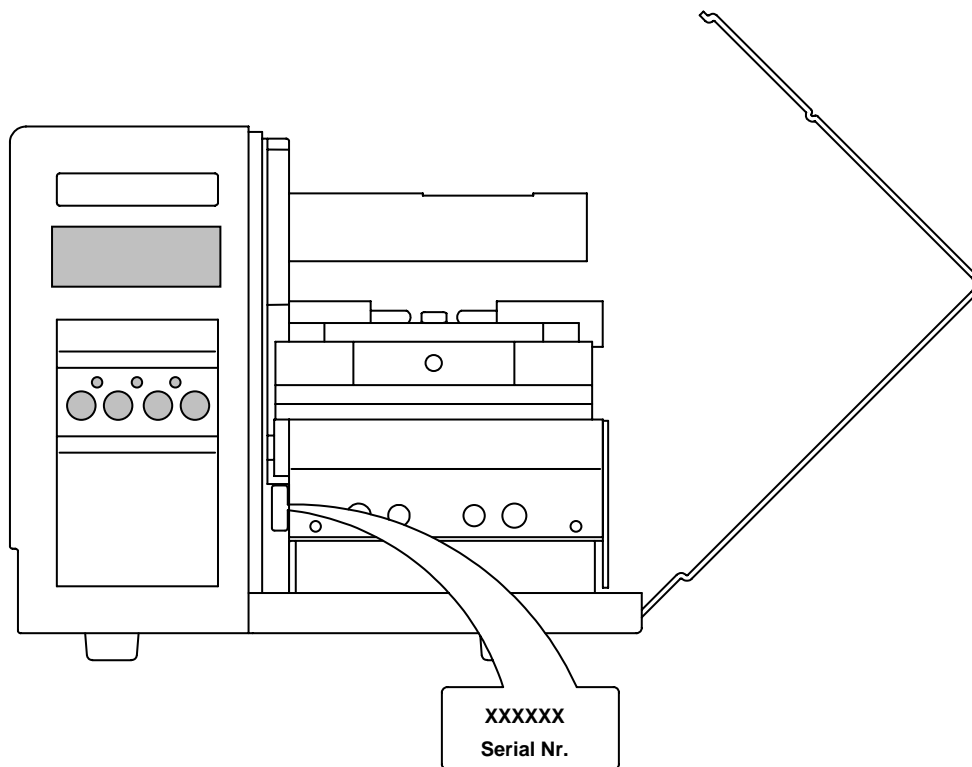


PICTURE 28



PICTURE 29

14. PART LIST AND RELEVANT PICTURES



Spare parts list

(items are referred to following pictures)

ITEM	CODE	DESCRIPTION	smart 2000	smart 2001 GM	smart 3001 GM
3	800948680	rear panel	*	*	*
4	801292050	filter cap	*	*	*
5	056102080	fuse 2A T	*	*	*
6	056102020	fuse 1.6A T	*	*	*
7	801665120	Centronics connector		*	
8	801665050	RS232 connector	*	*	*
9	056102030	fuse 8A T	*	*	*
10	801295040	label photosensor	*	*	*
11	059006130	print head power cable		*	*
12	051507660	print head flat cable 20 wires		*	*
12	801665210	print head flat cable 26 wires	*		
13	800945H3002	power board	*	*	*
16	800925310	belt idler assembly	*	*	*
18	800722460	nut	*	*	*
19	061702070	bush	*	*	*
20	800926290	peeling plate assembly	*	*	*
21	801842380	feeding roller	*	*	*
23	800742100	spring	*	*	*
24	801872020	pinion	*	*	
24	801842660	pinion			*
25	800925890	print head lever	*	*	*
26	800822011	print head (8 dots)	*		
26	800822720	print head (8 dots GM)		*	
26	800822450	print head (12 dots GM)			*
28	801842130	clip holder	*	*	*
29	800942690	ribbon rewinding assembly	*	*	*
30	800942700	ribbon stock assembly	*	*	*
31	801845083	side cover	*	*	*
33	810940029	media position holder assembly	*	*	*
34	80076212401	grey-green front cover	*		
35	800948620	grey-green front cover (with keyboard and display)		*	*
36	801842083	electronic cabinet	*	*	*
37	800542410	ribbon plate	*	*	*
38	800872320	belt	*	*	*
39	801622160	ribbon rewinding gear	*	*	*
44	800925320	grey-green front cover (movable)	*	*	*
48	801625030	ribbon photosensor	*	*	*
49	800946610	stepping motor assembly	*	*	
49	800946970	stepping motor assembly			*
50	80087510201	CPU board	*		
50	80087510264	CPU board GM		*	
50	800875102A3	CPU board GM			*
51	800926320	heat dissipater assembly	*	*	*
52	801842501	tie rod	*	*	*
55	800925280	ring clip	*	*	*

