cab

Thermal Transfer Printer

m4

Operator's Manual

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A General Guide to the Documentation

This manual contains the description and usage instructions for the **M4** printer. For detailed technical information on programming of the **M4**, a separate Programming Guide is available on request. For specific information on maintenance and repair of the printers, a separate Service/Maintenance Manuals is available.

The first few chapters cover general information which is necessary for unpacking and setup of the printer, including ribbon and media loading. Chapter 5 covers the connection and usage of optional equipment that may be attached to the printer.

In the appendices, additional information such as cabling specifications, error messages and problem resolution, and maintenance/cleaning instructions are included.

Please take special note of the specifications for suggested print media and the references to cleaning the printer, to prevent damage, poor quality printing and avoidable failures of your printer.

Every effort has been made in the creation of this manual to provide as much information as possible in a form that is both understandable and useful.

We welcome your comments and suggestions regarding additions or corrections to improve future editions of this manual.

1. Product Description

General Information

M4 is an innovative printer which may be used in either direct thermal or thermal transfer mode. It offers a high resolution with virtually an unlimited variety of printout designs.

The center mounting plate is made of die-cast aluminum which makes it very robust and resistant to bending.

By using 32 bit-processors from Motorola and the internal memory of 8 MB, very long large labels (up to a length of 39 in / 1000 mm) can be printed quickly.

As standard equipment, the printer has a serial RS-232-interface, an USB-interface and an Ethernet-interface. Therefore the **M4** can be used both as local printer and in a network. The printer auto-senses which interface is actually used.

The ranging power supply (100-240VAC) allows the printers to be used around the world without re-configuration.

The modular design of the printers guarantees efficient service.

Additional accessories are external un- and rewinders as well as a label/tag cutter.

Printer Types

M4/200 :   with 203dpi printhead
M4/200R :   with 203dpi printhead and internal rewinder
M4/200P :   with 203dpi printhead, internal rewinder and present sensor
M4/300 :   with 300dpi printhead
M4/300R :   with 300dpi printhead and internal rewinder
M4/300P :   with 300dpi printhead, internal rewinder and present sensor

All printer types shown above are available as thermal transfer printers or as direct thermal printers.

Particular Features M4/200P, M4/300P

The **P**-versions of the printers are specificly developed for operation in the peel-off mode and they are equipped with dispense edge and present sensor as standard. In the peel-off mode the labels are removed from the silicon liner immediately after printing, and then available in a dispense position ready for further processing. The sensor, which is attached to the printer by the peripheral connector, indicates the presence of a label, and pauses the printing process until the label is removed. After taking the label from the dispense position the next label will be printed. To guarantee a maximum of reliability in the peel-off mode the printers are additionally equipped with a pair of rollers to cause the dispense tension.

NOTICE !
In the delivery state, M4/200P is configured in such a way, that the print speed in the peel-off mode is limited to maximum 100mm/s. When using smaller labels or supply rolls with a small outside diameter it is possible to increase the print speed for the peel-off mode.
We recommend to carry out preliminary tests with speed limitation switched off (see printer configuration) !

Characteristics of the Thermal Printhead

CAUTION !
The thermal printhead is the most sensitive part of your printer. Please pay special attention to the following guidelines:

1) The glass cover on the printhead must not be touched with the hand. Also, do not use sharp objects (knives, screwdrivers, etc) to clean the printhead.
2) Ensure that the printhead is properly adjusted at all times.
3) Make sure that there are no high spots or debris on your media to lodge on or damage the printhead. The label surface must be smooth. Lower grade direct thermal paper is very rough and will act like sandpaper on the head, reducing the head's lifetime. Do not use low grade stock.
4) Clean the head at each change of ribbon, or with each new roll of direct thermal media, with a special cleaning pen, or a cotton swab with isopropyl alcohol.
5) Print with the lowest possible head temperature to increase the life of the printhead.
6) When changing the printhead, first turn the power off and disconnect the power cord. Then, place a clean paper towel or tissue under the head to provide a clean surface for it to rest on. When removing the head, hold it on the sides only.

Failure to observe the instructions above can lead to a reduced printhead life.

Compliances

The device complies with the following safety regulations :

CE :   The printer complies with the following safety requirements
- EC Low Voltage Directive (73/23/EEC)
- EC Machinery Directive (98/37/EEC)
- EC Electromagnetic Compatibility Directive
  (89/336/EEC)

FCC : The device complies with the requirements of the FCC
regulations part 15 for class A computers. Under
disadvantageous circumstances, the operation of these
devices may cause interference with radio or TV reception,
which has to be eliminated by the operator.

WARNING !

This is a Class A product. In a domestic environment this product may cause
radio interference in which case the user may be required to take adequate
measures.

Instructions for the Lithium Battery

The PCB of the printer is equipped with a Lithium battery.

Take necessary precautions against a possible short circuit if the battery is not
fully discharged. Properly remove the battery should the printer be scrapped.

Technical Specifications

Printhead

Printhead Type :	Direct thermal or thermal transfer
Printhead Model :	Thick film transfer printhead
Printhead Resolution :	M4/200 : 203 dpi = 8 dots / mm M4/300 : 300 dpi = 11.8 dots / mm
Number of dots/line :	M4/200 : 832 M4/300 : 1280
Print Speed :	M4/200 : 2, 3, 4, 5, 6 ips (50, 75, 100, 125, 150 mm/s) M4/300 : 2, 3, 4 ips (50, 75, 100 mm/s)
for peel-off mode :	The print speed is limited to maximum 4 ips (100mm/s) as standard
Print Width :	M4/200 : up to 4.1 in (104 mm) M4/300 : up to 4.25 in (108.4 mm)

Media

Material :	Standard Labels and Cardboard / Tags Direct Thermal, Thermal Transfer and various Synthetics including: thermal transfer plaincoated papers, vinyl, Mylar, metalized paper, non-woven fabric, fine woven fabric, thermal visible light scannable paper, infrared scannable paper, thermal ticket/tag stock, thermally sensitive plastic stock.
Media Type :	die cut labels, continuous paper
Media Winding :	face-in or face-out on the roll
Supply roll Diameter :	up to 8.2 in (210 mm)
Core Diameter :	1.5 to 3 in (38.1-76 mm)
Material Thickness :	0.003-0.012 in (0,07-0,3 mm)
Weight :	60-300 g/sqm
Material Width :	4.7 in (120 mm)
Media Width : for peel-off mode :	.5 to 4.6 in (12-116 mm) 1 to 4.6 in (25-116 mm)
Media Height : for peel-off mode :	.2 to 39 in (5-1000 mm) .5 to 7.9 in (12-200 mm)

Internal Rewinder :
   Core Diameter :
   Rewind Diameter :
   Label side :
	to rewind media or the liner in peel-off mode
	1.5 (38.1mm)
	up to 5.7 in (145 mm)
	out

Transfer Ribbon

Inkside :	in or out
Outer Diameter :	up to 3.1 in (80 mm)
Core Diameter :	1 in (25 mm)
Length :	up to 1650 in (500 m)
Width :	up to 4.5 in (114 mm)

Media Edge Sensor

Distance to paper edge :	.16-2.3 in (4-57,5 mm)
Material recognition :	Gap sensor ("see-through"), Bottom-reflective sensor

Electronics

Processor :	32 Bit Motorola Coldfire / 64 MHz
Internal Memory (RAM) :	8 MB
Slot for memory card :	CompactFlash Type 1 16 up to 512 MB
Real time clock :	Printout of time and date
Control panel :	Navigator Pad with the active key illuminated indicating operating mode

Interfaces

Standard:

serial :	RS-232 8 Bit; 1.200-230.400 Baud
Ethernet :	10/100 Base T
USB Slave :	for PC connection
peripheral connection :	for cutter / present sensor

Contents of the Print Image

Text Fields :	max. 250
Graphic Elements :	max. 200
Bitmap Graphics :	max. 128 (100 several graphics in memory)
Barcode Fields :	max.100

Fonts

Available Fonts :	5 Bitmap fonts incl. OCR-A and OCR-B 3 scaleable fonts (Speedo™) internal Additional Speedo™ and TrueType™ fonts may be downloaded
Character Sets :	Windows : 1250 up to 1257 DOS 437, 737, 775, 850, 852, 857, 862, 864, 866, 869 EBCDIC 500, ISO 8859-1 up to -10, -13 up to -16, Macintosh Roman, DEC MSC, KOI8-R, Win OEM 720, UTF-8
Font Size : Bitmap fonts :	Width and height .04 to .1 in (1 - 3 mm) Width and height are selectable up to 10.
Scaleable fonts :	Width and height .035 to 5 in (.9 - 128 mm) Width and height are individually changeable.
Font style :	reverse, bold, italic, underlined, outlined, grey, vertical

Font rotation :
  Bitmap fonts :
  Scaleable fonts :
	0°, 90°, 180°, 270°
	360° in 1° increments

Graphics

Graphic elements :	line, box, circle, ellipse, fill-in segment, arrow
Graphic file types :	.PCX, .IMG, .BMP, .TIF, .GIF and .MAC Graphic files

Barcodes

Linear Codes :   Code 39, Code 93, Code 128 A,B,C, Codabar, EAN 8, EAN 13, EAN 128, EAN/UCC 128, EAN/UPC Anhang 2, EAN/UPC Anhang 5, FIM, HIBC, Interleaved 2/5, Ident-/Leitcode der Deutschen Post AG, Jan 8, Jan 13, MSI, Plessey, Postnet, RSS14, UPC A, UPC E

2-D Codes :   Data Matrix, PDF417, Micro PDF, UPS Maxicode, QR-Code

Bar code height, module width and ratio are variabe, with/without check digit, human readable character, start/stop character

Control / Test

Stop of print :   Ribbon out, Paper / fanfold paper out

Test options :   System test when powering on including a printhead test short status, status print, font list, device list, ASCII dump mode

Status messages :   Counter of the printed length, counter of the operating hours

Others

Dimensions :   H: 10.8 in (274mm)   W: 9.5 in (242mm)   D: 17.6 in (446mm)

Weight :   20 lb. (9 kg)

Operating Voltage :   100-240 V~ / 50-60 Hz

Maximum Power Input :   max. 200 W

Environment :
   Operation :   at 50° to 95° F (10 to 35°C) at a humidity of 30 to 85%
   Transport :   at -13° to 158° F (-25 to +70°C) at a max. humidity of 95% non-condensing
   Storage :   at 41° to 104° F (5 to 40 °C) at a humidity of 5 to 85%

Options

External Media Unwinder/Rewinder

For operating large print jobs, external unwinders and rewinders are available to handle big label rolls. The External Rewinder **ER1** can be used for label rolls with a diameter up to 8.3 in (200mm). The External Rewinder **ER4** and the External Unwinder **EU4** are provided for roll diameters up to 11.8 in (300mm).

Present Sensor

The **Present Sensor PS8** is needed to complete the **M4 P-version** printers for the peel-off mode. The Present Sensor indicates the presence of a label in the dispense position, and pauses the printing process until the label is removed.

Cutter

With the cutter unit installed, labels or continuous media may be cut when desired. Cutter options include a choice of: after each label, after a specific quantity of labels, or at the end of a print job. For cutter operation, the printer firmware will extend the label for cutting based on specified displacements, then automatically backfeed the label, so that after making a cut, the label roll will be repositioned and ready for printing the next label.
The cutter is powered directly by the printers peripheral connector.

Memory Card

The printer includes an option for using memory cards in order to permanently store graphics, fonts or whole label formats. The data can be downloaded via any of the printers data interfaces. CompactFlash Type 1 cards with a capacity of 16 up to 512 MB are accepted.

Print Media

The **M4** printers can be run in a direct thermal or thermal transfer mode.

For direct thermal mode, the label material must be specifically designed for this use. The printout is created directly on the paper, as the paper reacts with the heat of the printhead and results in the darkening of the material.

Driving the printer in thermal transfer mode requires standard paper labels and the addition of thermal transfer ribbons. The printout is created by heating the ribbon with the printhead, resulting in a transfer of color from the ribbon onto the labels.

The printers allow for regulating the required heat setting through the software, which offers a wide range of printing possibilities.

M4 is able to print on labels and continuous media, with a maximum supply roll diameter of 8.2" (210 mm). The minimum core diameter is 1.5" (38.1mm).

Top of form (label edge) detection is accomplished with a moveable photocell, which is driven by the internal processor of the printer. The photocell does an automatic measurement of the used material. No additional adjustments are required.

The following pages contain more detailed information and specifications which apply depending on the print method to be used.

For information of specific materials you may wish to use, check with your local distributor. Not every material is suitable for quality direct thermal or thermal transfer printing. The surface of the material is very often the main factor, but not the only factor determining suitability. There are many materials available for labeling and your local distributor can offer suggestions to meet your particular needs.

Print Media for Direct Thermal Printing

The material to be printed must comply with certain important specifications to ensure a quality print image and to avoid damage or extra wear to the printhead.

Using the label stock which we have tested and recommended ensures the best treatment of the printhead. In the event that your label stock will be supplied by another manufacturer, the following points should be noted with regard to the use of thermal paper:

1. The surface coating/quality must sufficiently cover the thermo-reactive coating to ensure that the printhead does not become damaged. If the surface coating is too thin, the printhead can become pitted due to microscopically small "explosions" resulting when the chemical reaction of the thermal coating takes place. The result is that the printhead can rapidly become damaged.

2. The surface of the label should be very smooth to avoid a "sandpaper" type effect on the printhead.

3. Choose label stock which can be printed with the lowest possible thermal value. The greater the thermal value required, the greater wear on the printhead. Additionally, when the thermal value is high, the time required for the printhead to heat up and cool down can have an adverse effect on the quality of print, especially when a fast print speed is desired.

Print Media for Thermal Transfer Printing

The thermal transfer process makes possible the use of many different materials for printing, such as normal paper, cardboard, polyester film, etc.

NOTICE !
The print results depend to a great degree on a suitable combination of label material and transfer ribbon. The label surface dictates which transfer ribbon will provide the best print results, and which ribbon cannot.   An unsuitable match of label material to ribbon type can be responsible for an extremely poor print quality.

Your Dealer can give you expert advice as to which combination of materials will best meet your requirements. Your Dealer can also assist you by testing the different materials you may be considering for your labeling needs.

Label / Tag Media Specifications

Label and tag media to be used by the printer must conform to the following specifications:
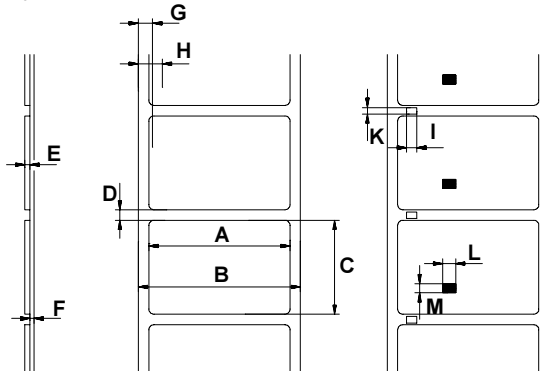

Fig. 1 Media Specifications

Item		MIN.	MAX.
A	Label width Peel-off mode	.5 (12) 1 (25)	4.6 (116) 4.6 (116)
B	Backing width	1 (25)	4.7 (120)
C	Label length Peel-off mode	.2 (5) .5 (12)	39 (1000) 7.9 (200)
D	Gap between labels	.08 (2)	39 (1000)
E	Label thickness	.003 (0.07)	.12 (0.3)
F	Thickness of backing material	.003 (0.07)	.12 (0.3)
G	Distance of the first printing position from the edge of the backing paper	.08 (2)	
H	Distance of the label edge sensor from the edge of the backing paper	.16 (4)	2.3 (57.5)
I	Width of the perforation mark	.2 (5)	-
K	Height of the perforation mark	.08 (2)	.4 (10)
L	Width of the reflective mark	.2 (5)	-
M	Height of the reflective mark	.08 (2)	.4 (10)

Table 1   Media values are displayed in inches (values in brackets are mm)

Transfer Ribbon

The choice of transfer ribbon plays an important role in the quality of print image that can be produced, and it also directly affects the longevity of the printhead.

CAUTION !
Poor quality transfer ribbon can lead to premature deterioration of the printhead !

The ribbon material must be as anti-static as possible. This is because the extremely thin surface coating on the printhead can be damaged by a build up of electrostatic charges. The temperature tolerance of the material must be extremely high in order to avoid the transfer ribbon melting directly onto the printhead. The temperature increase which results from the printing cycle must be dissipated over the label and the transfer ribbon. Poor quality transfer ribbon often has only a limited ability to dissipate the heat. This can contribute to overheating of the printhead, despite electronic protection against overheating

Poor quality transfer ribbon also tends to partially shed its ink coating, causing the printhead and sensors to accumulate dirt. In addition, with some transfer ribbons, the back coating can flake or smudge, leaving traces on the printhead. All of these effects contribute to lowering the print quality to below desired standards.

Numerous tests have been conducted with a very large number of different transfer ribbons and we recommend only ribbons supplied by reputable manufacturers. A variety of different transfer ribbons can sometimes be used for a particular type of label stock. The quality of print is determined by the correct combination of these materials.

NOTICE !
When choosing material, make sure the transfer ribbon is slightly wider than the width of the label backing.

The presence of transfer ribbon is sensed by the rotational movement control of the transfer ribbon unwinder, rather than with photocell sensors. As a result, ribbons that have a thinner coating or those with a colored coating can be used without problems.

The possiblity of printing labels up to the absolute end of the ribbon is restricted by the length of the uncoated "trailer", which attaches the end of the ribbon to the core.

NOTICE !
Make certain before purchasing transfer ribbon that the "trailer" (see above) is not more than 2.3in (60mm) long.

Software

There are several methods to create formats and to send them to the printer. Below, a short explanation of the most common methods is given.

Direct Programming

The printer is equipped with an internal command set. The command set is designed to program all functions of the printer. To create a label format, use any ASCII editor to combine the necessary commands. Save the commands to a file, then copy the file to the printer using the connected interface and HyperTerminal or the DOS COPY command.

Direct programming requires a minimum knowledge of programming logic. The printer commands are designed logically and structured clearly. However it is necessary to carry out several test prints when creating a label using the command set since no image of the label is displayed on the monitor.

The complete description of the command set and sample programs is available in the "Programming Manual cab Thermal / Thermal Transfer Printers".

Windows Printer Driver

For **M4** a Windows Printer drivers is available. You can get this driver from the Printer Accessories CD A-Series/M-Series or from the web.
Visit the appropriate website listed on page 2 to download the drivers.

The printer can be operated from any Windows Application that supports Windows Printer drivers using the driver. The graphical user interface allows for easier creation of label formats. However, the functionality depends on the choosen application and how each product supports Windows Printer drivers. There could be restrictions depending on the application you are using. A help file is included with the drivers to explain the usage and limitations when using certain Windows applications.

Label Software

There are several Windows Applications that are designed to create labels. These programs are more suited to the requirements of label printing than standard Windows Applications. In some cases these programs use the Windows Printer Driver.

Some applications, for example CABLABEL, have integrated internal drivers to operate the cab printers. These applications offer the best solution for creating and printing labels.

2. General Safety Instructions

CAUTION !

-   The printer is built exclusively to print die-cut labels, continuous media, and similar materials as listed in Technical Specifications in Chapter 1.
-   Connect the printer to an outlet with the correct voltage!
    The printer is configured for voltages of 100 to 240 V.
    Connect only to a power outlet with a **grounded** contact.
-   The printer must only be connected to devices which have extra low voltage.
-   Power must be OFF before plugging in any accessory, connecting to a computer and before performing any maintenance on the printer. Also turn the power off on all appliances before disconnecting from the printer.
-   Do not expose the printer to any moisture, or use in damp or wet areas.
-   The printer will operate with the cover open if necessary. This is not recommended, as it might allow debris to collect on the printhead surface. If the printer must be operated with the cover open, extra care must be taken to avoid allowing hair, jewelry, clothing, etc. near the moving parts.
-   During the print process the printhead will become hot. Use extra caution when touching the printhead. Do not touch the printing surface of the printhead with you hand!
-   Any adjustments or repairs which are not described in this manual, should only be carried out by an authorized service technician.
    WARNING !
    To avoid possible electric shock, do not open the backside cover!

3. Unpacking

Delivery Contents

Please inspect the printers packaging and contents immediately after receipt for possible damage during shipment.

NOTICE !
Be sure to preserve the original packaging for possible later shipment!

The shipping container will contain the following standard components:
-   Thermal Transfer Printer
-   Cardboard Core for the transfer ribbon rewinder
-   Tear-off Plate (**M4/200** and **M4/300** only)
-   Rewind Guide Plate (**M4/200R** and **M4/300R** only)
-   Dispense Plate and optional Present Sensor **PS8**
    (**M4/200P** and **M4/300P** only)
-   Power Cord
-   CD with documentation und printer driver
-   CD with label software CABLABEL LITE
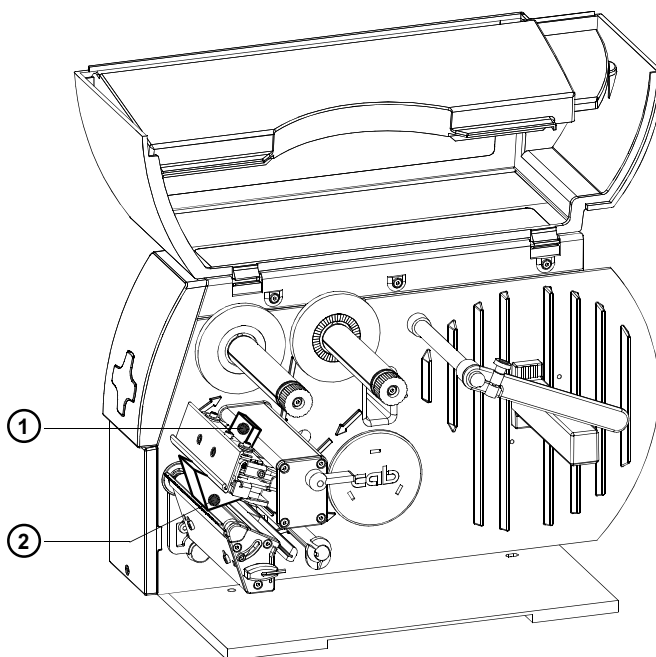
Removing the Securing Devices

Fig. 3 Removing the securing devices

1. Place the printer on a solid flat surface.

2. Open the cover.

3. Remove the securing devices (**1, 2**).
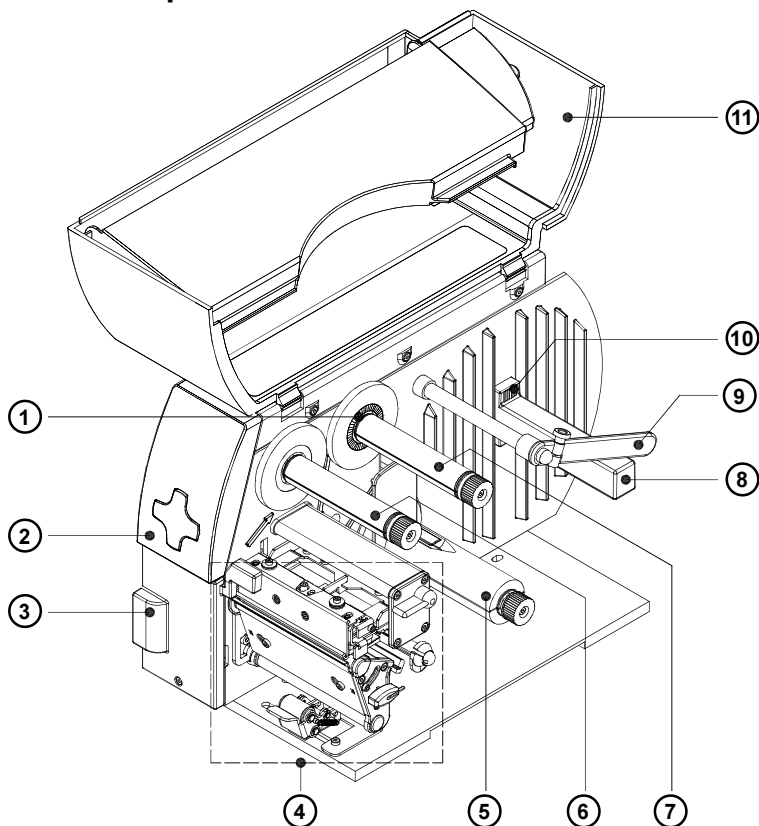
4. Printer Component Location

Fig. 4a General view

1 - Warning label "End of Ribbon"
2 - Navigator pad
3 - Present sensor **PS8** (Option for **M4/200P** and **M4/300P**)
4 - Print mechanism
5 - Internal Rewinder (not at **M4/200** and **M4/300**)
6 - Ribbon take up hub
7 - Ribbon supply hub
8 - Media hub
9 - Media Retainer
10 - Warning label "End of Paper"
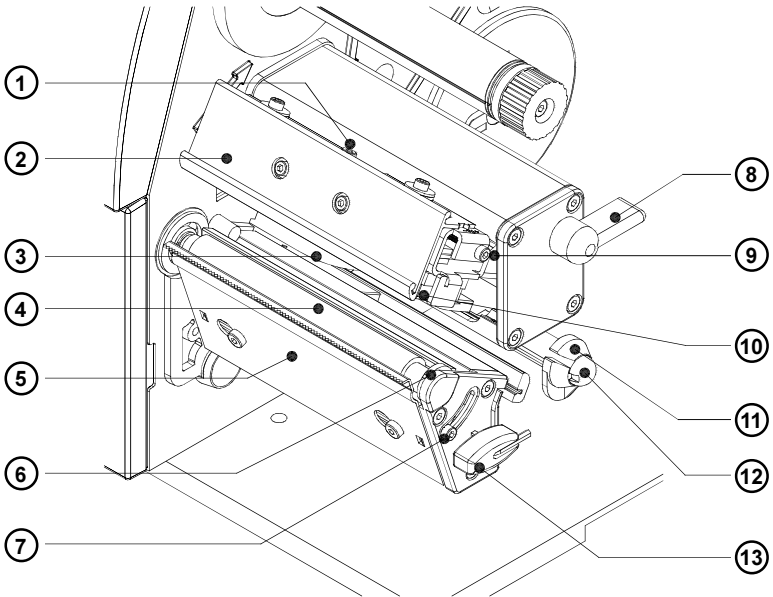**11** - Cover

Fig. 4b Print mechanism M4/200, M4/300 with printhead open

1 - Printhead locking screw
2 - Ribbon shield
3 - Label edge sensor
4 - Media feed roller
5 - Tear-off plate
6 - Printhead support
7 - Screw to adjust the printhead support
8 - Printhead lever
9 - Screw to adjust the ribbon shield
10 - Thermal printhead
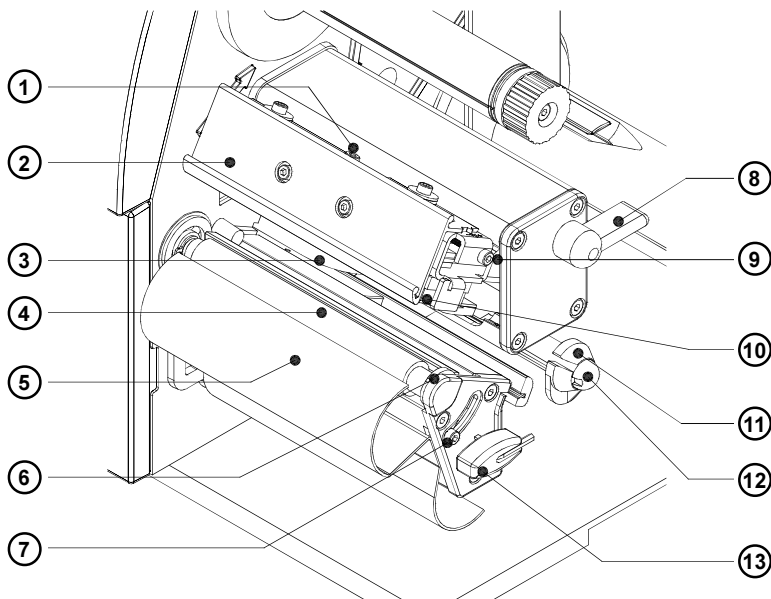**11** - Media guide
12 - Guide axle
13 - Allen Key

Fig. 4c Print mechanism M4/200R, M4/300R with printhead open

1	-	Printhead locking screw
2	-	Ribbon shield
3	-	Label edge sensor
4	-	Media feed roller
5	-	Rewind guide plate
6	-	Printhead support
7	-	Screw to adjust the printhead support
8	-	Printhead lever
9	-	Screw to adjust the ribbon shield
10	-	Thermal printhead
11	-	Media guide
12	-	Guide axle
13	-	Allen Key

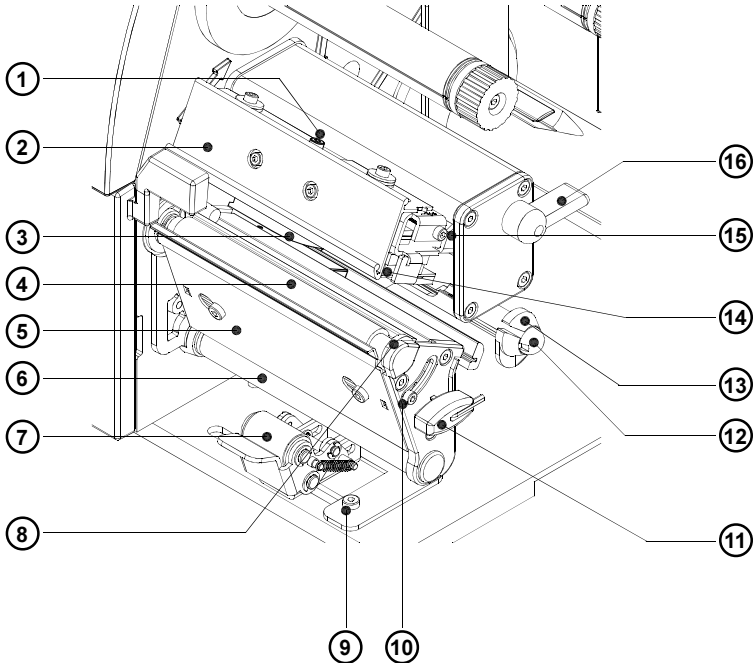**Fig. 4d   Print mechanism M4/200P, M4/300P with printhead open**

  1 - Printhead locking screw
  2 - Ribbon shield
  3 - Label edge sensor
  4 - Media feed roller
  5 - Dispense plate
  6 - Rewind assist roller
  7 - Locking system
  8 - Printhead support
  9 - Screw for adjusting locking system
10 - Screw for adjusting printhead support
11 - Allen key
12 - Guide axle
13 - Media guide
14 - Thermal printhead
15 - Screw to adjust the ribbon shield
16 - Printhead lever
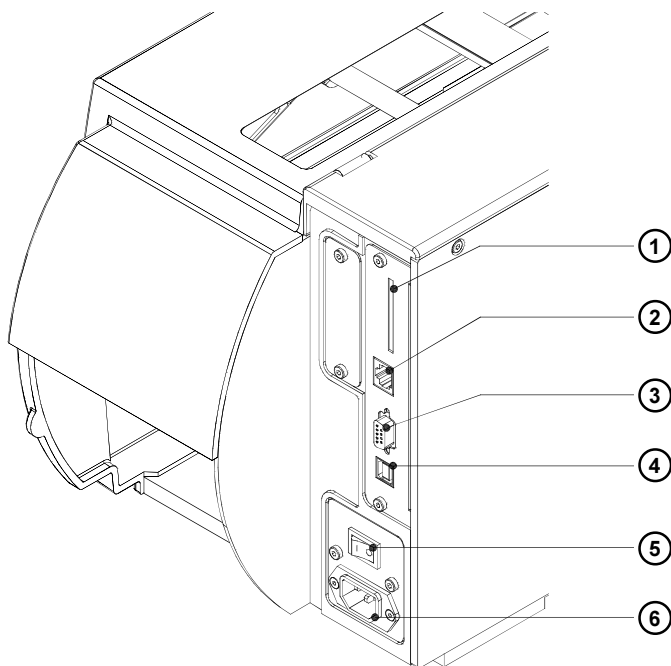
Fig. 4e Back view

1 - Memory card slot
2 - Ethernet interface
3 - RS-232 interface
4 - USB slave interface
5 - Power switch
6 - Power supply connector

5. Installation

⚠ **CAUTION !**
Make sure the printer is located where the unit or the operator cannot come in contact with water. Otherwise it could cause damage to the printer.

Connection to Power Supply

The printer is equipped with a wide range power unit (100-240V~), so it is possible to use the printer both with a voltage of 230V~/50 Hz and with a voltage of 115V~/60 Hz without making changes to the printer.

⚠ **CAUTION !**
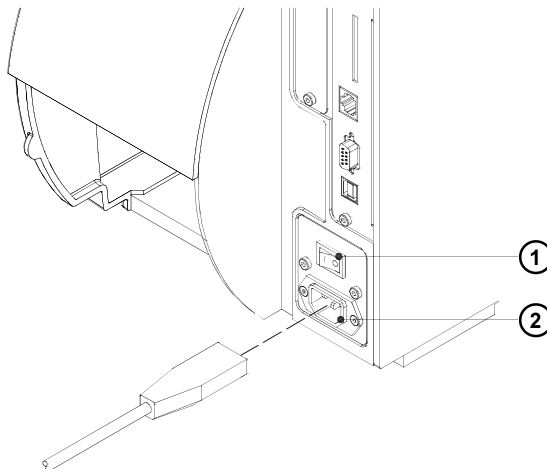**Make sure the power switch (1) is in position "O" (OFF) before connecting the printer to a power supply !**

Fig. 5a   Power supply

Insert the power cable supplied in the accessories carton into the power supply connector (**2**) and contact the cable to a grounded outlet.

Connection to a Computer

As standard, the printer is equipped with a serial RS-232-interface with a 9 pin connector (**5**) and an USB interface (**6**) for local operation. Moreover the printer has an ethernet interface (**4**) for operation in a network.
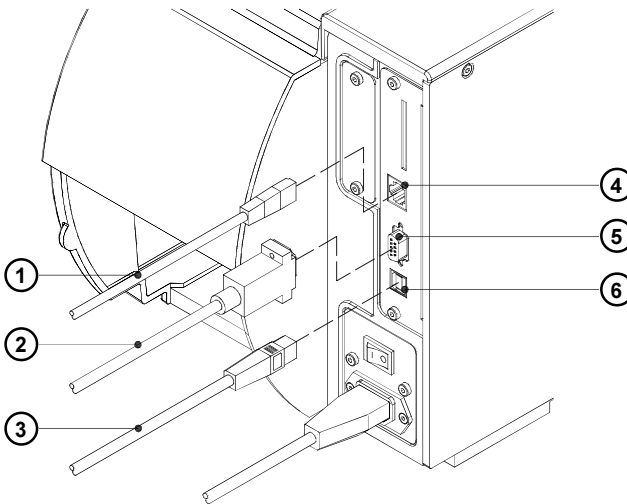

Fig. 5b   Computer connection

CAUTION !
Make sure that all connected computers and their connecting cables are correctly grounded.

USB Interface

Connect the computer with a A-B-cable (**3**) to the USB interface (**6**) of the printer.
After switching on the printer, the computer detects the new hardware component and ask you to install the printer driver. If you want to work with CABLABEL, the installation of the Windows Printer Driver is not necessary because CABLABEL has own internal drivers. Otherwise install the Windows Printer Driver.

Serial RS-232 Interface

Connect the computer and the printer with a suitable cable and secure the cable connections with screws provided on the connectors.

Cables for the serial connection (**2**) are described in appendix B. There you can also find the pin assignment of the serial interface connector (**5**).

NOTICE !
When the printer is delivered, the RS-232 is configured for automatic baud rate detection. For this method, after switching on the printer, the first sign of the serial transmission must be odd. That means, that the lowest bit of the first signs code must have the value "1".
Since it is not possible to guarantee that under all circumstances, it is recommended to choose a fixed baud rate before starting the normal operation (see chapter "Printer Configuration").

Ethernet Interface

Connect the ethernet interface (**4**) of the printer using an RJ-45 cable for 10 Base T / 100 Base T (**1**) to the network.
For connecting the printer to a network socket use a patch cable.
For a direct connection to an ethernet interface of a local computer a crossover cable must be used.

CAUTION !
For connecting the printer to the network you must use a shielded cabel !

To operate the printer in a network, an IP Address must be assigned to the printer.

NOTICE !
When the printer is delivered, the ethernet interface is configured for "DHCP" (Dynamic Host Configuration Protocol).
In order to use DHCP, you must have DHCP Servers on the network. If DHCP Servers are available, the assignment of the IP Address can be automatic.
If no DHCP server is available, you must manually enter the IP Address using the serial or USB interface (see chapter "Printer Configuration").
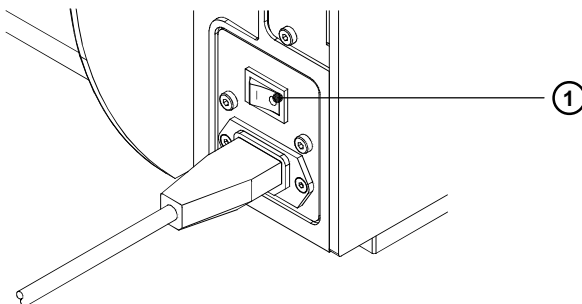
Switch on the Printer

Fig. 5c Switch on the printer

After making all connections, power on the printer using the power switch (**1**).

The printer will perform a short system test, then FEED key lights up on the navigator pad.

If a hardware failure occurs during the system test, the lettering ERROR lights up. In this case the printer should be powered off and on again. If the failure re-occurs, call for service.

If you connected the printer by the USB interface, after the first switching on, the computer ask you to install the printer driver. If you want to work with CABLABEL, the installation of the Windows Printer Driver is not necessary because CABLABEL has own internal drivers. Otherwise install the Windows Printer Driver.

Windows Driver Installation

Ther are different driver installation methods, depending on the interface connection and the Windows version.

USB Interface

NOTICE !
Windows 95 and Windows NT4.0 do not support USB interfaces !

Windows 98/ME

1. Make sure that the printer is connected to an USB interface and the printer is switched off.
2. Turn on the computer.
3. Quit any open applications.
4. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
5. Turn on the printer. Windows displays, that a new hardware was found and that the "Add New Hardware Wizard" installs a driver for that device. Click "Next".
6. The message "Search for the best driver for your device" appears. Click "Next".
7. Click the boxes as needed so that there is a check mark next to "Specify a location:".
8. Under "Specify a location:", type "`D:\WINDRV\9X2000XP`" (where D is the letter of your CD-ROM drive). Click "OK". The driver will be installed automatically.
9. The hardware wizard reports, that a driver for the device was installed. Click "Finish".
10. Windows reports that a **cab M4/200** or **cab M4/300** was found and the hardware wizard searches a driver for that device. Click "Next".
11. The message "Search for the best driver for your device" appears. Click "Next".
12. Click the boxes as needed so that there is a check mark next to "Specify a location:".
13. Under "Specify a location:", type "`D:\WINDRV\9X2000XP`" . Click "OK". The driver will be installed automatically.
14. The hardware wizard reports, that a driver for the device was installed. Click "Finish".

Windows 2000

1. Make sure that the printer is connected to an USB interface and the printer is switched off.
2. Turn on the computer.
3. Quit any open applications.
4. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.

5. Turn on the printer. Windows displays, that a new hardware was found and that the "Found New Hardware Wizard" installs a driver for that device. Click "Next".
6. The message "Search for a suitable driver for my device" appears. Click "Next".
7. Click the boxes as needed so that there is a check mark next to "Specify a location:".
8. Under "Specify a location:", type "D:\WINDRV\9X2000XP" (where D is the letter of your CD-ROM drive). Click "OK". The driver will be installed automatically.
9. If the message "Digital signature not found" appears, click "Yes" to continue with the installation.
10. The hardware wizard asks you to enter the source for the file "cabsetup.exe".
    Under "Specify a location:", type "D:\WINDRV\9X2000XP". Click "Open" and after that "OK".
11. The next window asks you to enter the source for a next file e.g."cabm4200.dat" or "cabm4300.dat".
    Under "Specify a location:", type "D:\WINDRV\9X2000XP". Click "OK".
12. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Windows XP

1. Make sure that the printer is connected to an USB interface and the printer is switched off.
2. Turn on the computer.
3. Quit any open applications.
4. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
5. Turn on the printer.The "Found New Hardware Wizard" installs automatically a driver for the USB printer support.
6. The "Found New Hardware Wizard" appears. Under "Optional search locations" click the locations as needed so that there is a check mark next to "Specify a location:". Click "Next".
7. Select "Do not search, but select the driver by myself". Click "Next".
8. If the windows "Hardware Type" appears, select "Printer" and click "Next".
9. Click on "Media" and type "D:\WINDRV\9X2000XP" (where D is the letter of your CD-ROM drive). Click "Next".
10. Select "CAB M4 203DPI" or "CAB M4 300DPI" from the printers list and click "Next".
11. If "Windows logo test failed" appears, click "Continue" to continue with the installation.
12. Click in the next window on "Finish".
13. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Serial RS-232 Interface

Windows 95/98/ME

1. Turn on the computer.
2. Quit any open applications.
3. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
4. From the Start Menu, select Settings, Printers, Add Printer.
5. The Add Printer Wizard box will appear. Click "Next".
6. Select "Local printer" and click "Next".
7. Click "Have disk". Under "Copy manufacturers files from:", type "D:\WINDRV\9X2000XP" (where D is the letter of your CD-ROM drive). Click "OK".
8. Double-click on the model that matches your printer. Click "Next" to proceed.
9. Select from the list of available ports a COM port. If necessary configure the port (e.g. baud rate, handshake). Click "Next".
10. Change the printers name if necessary, and decide if the new printer should be the standard printer. Click "Next".
11. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Windows NT 4.0

1. Turn on the computer.
2. Quit any open applications.
3. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
4. From the Start Menu, select Settings, Printers, Add Printer.
5. The Add Printer Wizard box will appear. Click "Next".
6. Select "My Computer" and click "Next".
7. Select from the list of available ports a COM port. If necessary configure the port (e.g. baud rate, handshake). Click "Next".
8. Click "Have disk". Under "Copy manufacturers files from:", type "D:\WINDRV\NT40" (where D is the letter of your CD-ROM drive). Click "OK".
9. Double-click on the model that matches your printer. Click "Next" to proceed.
10. Change the printers name if necessary, and decide if the new printer should be the standard printer. Click "Next".
11. In the next screen, choose not to share the printer.
12. Select if you want to print a test page. Click "Finish".
13. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Windows 2000/XP

1. Turn on the computer.
2. Quit any open applications.
3. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
4. From the Start Menu, select Settings, Printers, Add Printer.
5. The Add Printer Wizard box will appear. Click "Next".
6. Select "Local printer" and click "Next".
7. Select from the list of available ports a COM port. Click "Next".
8. Click "Have disk". Under "Copy manufacturers files from:", type "`D:\WINDRV\9X2000XP`" (where D is the letter of your CD-ROM drive). Click "OK".
9. Double-click on the model that matches your printer. Click "Next" to proceed.
10. Change the printers name if necessary, and decide if the new printer should be the standard printer. Click "Next".
11. In the next screen, choose not to share the printer. Click "Next".
12. Select if you want to print a test page. Click "Finish".
13. If the message "Digital signature not found" (Windows 2000) or "Windows logo test failed" (Windows XP) appear, click "Yes" (Windows 2000) or "Continue" (Windows XP) to continue with the installation.
14. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Ethernet Interface

NOTICE !
M4 supports the network print protocols LPD and RAW-IP.
Under the Windows 95/98/ME operating system, there is no built-in
support for RAW-IP and LPD. Under Windows NT4.0 RAW-IP is not
supported. But there are Third-Party solutions for using TCP/IP with the
printer. It is necessary to install special tools in order to use these
printing protocols. Information about these tools are available from cab.

Windows NT 4.0 (LPD only)

1. Turn on the computer.
2. Quit any open applications.
3. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
4. From the Start Menu, select Settings, Printers, Add Printer.
5. The Add Printer Wizard box will appear. Select "My Computer". Click "Next".
6. Select "Add Port".
7. From the menu, select "LPR Port", and click "New Port".
8. In "Name or address of server providing lpd", enter the IP address of the printer.
9. In "Name of printer or print queue on that server", enter "lp". Click "OK" and "Close".
10. Select the new printer port from the list and click "Next".
11. Click "Have disk". Under "Copy manufacturers files from:", type "D:\WINDRV\NT40" (where D is the letter of your CD-ROM drive). Click "OK".
12. Double-click on the model that matches your printer. Click "Next" to proceed.
13. Change the printers name if necessary, and decide if the new printer should be the standard printer. Click "Next".
14. In the next screen, choose not to share the printer.
15. Select if you want to print a test page. Click "Finish".
16. In the folder "Printers" the icon of the new printer appears. The installation has finished.

Windows 2000/XP

1. Turn on the computer.
2. Quit any open applications.
3. Insert the "Printer Accessories CD A-Series/M-Series" into the CD-ROM drive.
4. From the Start Menu, select Settings, Printers, Add Printer.
5. The Add Printer Wizard box will appear. Click "Next".
6. Select "Local Printer". Click "Next".
7. Select "New Port".
8. Highlight "Standard TCP/IP Port". Click "New Port". Click "Next".
9. The "Add a Standard TCP/IP Port Wizard" will be started. Click "Next".
10. Enter the IP Address of the Printer. Note: the Port Name will automatically be added. Click "Next".
11. Under "Additional Port Information" select "User defined". Click "Settings".
12. Choose between "Raw" und "LPR". If you selected "Raw" enter the port address (e.g. 9100) assigned in the printer. If you selected "LPR" enter the queue name "lp".
    Click "OK" and in the next windows "Next" and "Finish".
13. Click "Have disk". Under "Copy manufacturers files from:", type "`D:\WINDRV\9X2000XP`" (where D is the letter of your CD-ROM drive). Click "OK".
14. Double-click on the model that matches your printer. Click "Next" to proceed.
15. Change the printers name if necessary, and decide if the new printer should be the standard printer. Click "Next".
16. In the next screen, choose not to share the printer.
17. Select if you want to print a test page. Click "Next".
18. Click "Finish".
19. If the message "Digital signature not found" (Windows 2000) or "Windows logo test failed" (Windows XP) appear, click "Yes" (Windows 2000) or "Continue" (Windows XP) to continue with the installation.
20. In the folder "Printers" the icon of the new printer appears. The installation has finished.

6. Navigator Pad

The Navigator Pad allows the operator the ability to control the most important functions directly on the printer, e.g. to pause and continue or to cancel print jobs on demand.
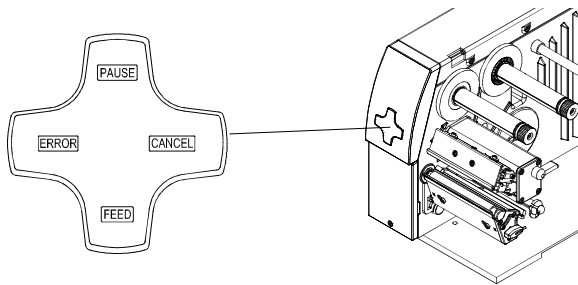

Fig. 6a Navigator Pad

During printing the keys on the Navigator Pad are illuminated to indicate what functions control the print jobs. The exact key functions in the different system modes are described below.
The text is not illuminated when the keys have no function in the current mode.
The ERROR section of the navigator pad only indicates an error state and has no key function.

System Mode ONLINE

The printer is switched ON and ready to receive data.

Key/ Lettering	State	Function
FEED	on	Performs a label feed.
PAUSE	(on)	Repeats the print of the last label, after the previous print job has been completed. (Only when setup parameter "Pause reprint" is on.)
CANCEL	(on)	Clears internal memory of the previous print job. "Pause reprint" is no longer available.

System Mode PRINT

The printer is currently processing an active print job.
In this mode, the transfer of data is possible. New print jobs will be carried out immediately following the completion of the previous job.

Key/ Lettering	State	Function	
PAUSE	on	Interrupts the current print job	
CANCEL	on	Short press	- cancels the current print job
		Long press	- cancels the current print job and deletes all jobs contained in the internal memory

System Mode PAUSE

The printing process is temporarily interrupted by the operator.

Key/ Lettering	State	Function	
PAUSE	on	Continues the print job	
CANCEL	on	Short press	- cancels the current print job
		Long press	- cancels the current print job and deletes all jobs contained in the internal memory

System Mode POWERSAVE

If the printer does not receive a print job or the navigator pad has not been accessed for a period of time, the printer will switch into a powersave mode. During powersave mode, certain functions are powered off. In this mode the lettering of the FEED key gets lighter or darker by turns.

To leave this mode press any key or send a print job.

System Mode FAULT-CORRECTABLE

The printer has encountered a fault during printing which is easily corrected by the operator (e.g. "Out of paper"). Once the fault has been corrected, the printing process may be continued.

Key/ Lettering	State	Function	
ERROR	on	Indicates the error state	
PAUSE	flashes	Continues current print job after fault correction	
CANCEL	on	Short press	- cancels the current print job
		Long press	- cancels the current print job and deletes all jobs contained in the internal memory

System Mode FAULT-IRRECOVERABLE

During printing, a fault has occured which cannot be cleared by the operator without canceling the current print job.

Key/ Lettering	State	Function	
ERROR	on	Indicates the error state	
CANCEL	flashes	Short press	- cancels the current print job
		Long press	- cancels the current print job and deletes all jobs contained in the internal memory

7. Media Loading

General Information

1. Pay attention to the specifications of the material indicated in chapter 1 .

2. When using the printer for the first time or using label media with a different width, make sure to adjust the printhead support as well as the position of the label edge sensor.

3. There are warning labels on the media hub and on the ribbon supply hub which will be visible if the material is getting low. When these warning labels are visible, prepare to replace the material soon.

   1 - Warning label "End of Ribbon"
   2 - Warning label "End of Paper"

4. If you do not use the printer for an extended period of time, lift the printhead to avoid possible flattening of the print roller.

5. If you want to move or ship the printer to another location, remove the media and the ribbon from the printer.
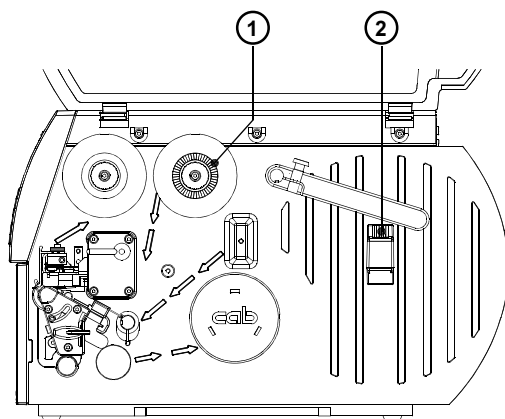

Fig. 7a Warning labels

Preparation for Tear-Off Mode / Rewind Mode

M4/200R and **M4/300R** are delivered with the rewind guide plate (**1**) mounted for operation in rewind mode. With the optional tear-off plate the printers also may be operated in tear-off mode. For this purpose the rewind guide plate (**1**) must be replaced by the tear-off plate (**3**).

M4/200P and **M4/300P** are prepared for the dispense mode. After mounting the optional tear-off or rewind guide plate the printers also may be operated in tear-off or rewind mode.
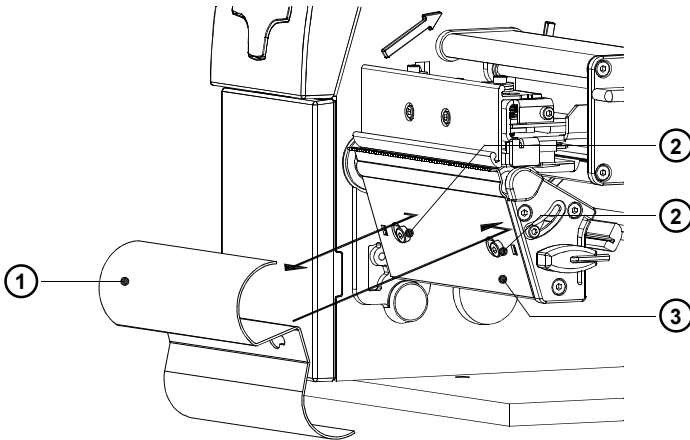
Fig. 7b Exchange Rewind Guide Plate / Tear-Off Plate

The exchange of the different plates can be made in a similar way as the exchange rewind guide plate / tear-off plate :

1. Open the cover.

2. Loosen the two screws (**2**).

3. Slide the rewind guide plate (**1**) to the right as far as possible to remove the plate from the printer.

4. Place the slotted holes on the tear-off plate (**3**) over the screws (**2**) on the front of the printer and slide the plate to the left until it stops.

5. Tighten the two screws (**2**).
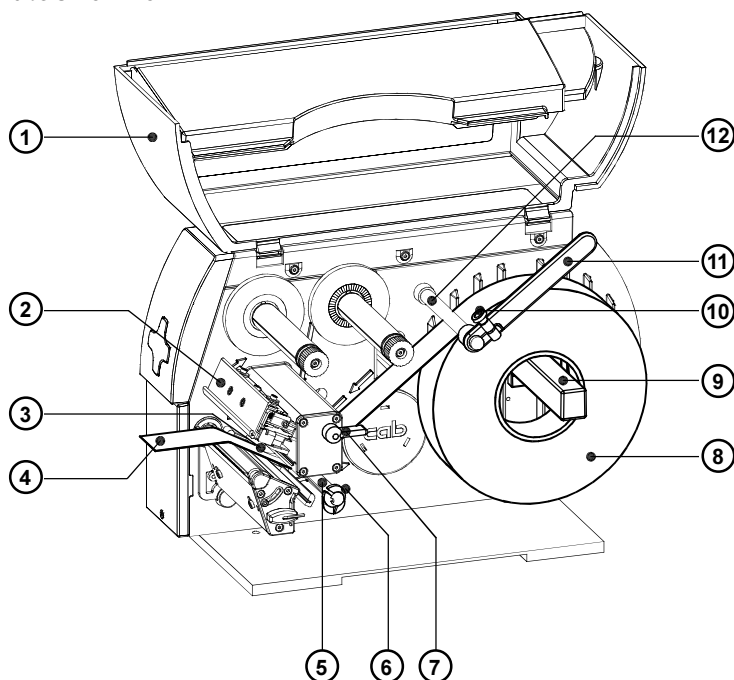
Loading Labels

Loading Labels from Roll

Fig. 7c Label Loading in Tear-off Mode

1. Open the cover (**1**).

2. Loosen the knurled screw (**10**), swing the media retainer (**11**) upwards and slide it out as far as possible.
    If you are using material that is the same width as the previous material, just swing the media retainer (**11**) upwards.

3. Place the media roll (**8**) onto the media hub (**9**) and unwind a strip of media (**4**) from the media roll. When operating in the rewind or peel-off mode make sure that the strip is long enough to reach the internal rewinder by guiding it through the whole print mechanism and underneath of it. Make sure the labels between the media hub and the print mechanism are facing up. Slide the roll onto the media hub (**9**) until it stops.

4. Swing the media retainer (**11**) downwards until it touches the media hub (**9**). Push the media retainer against the supply role until it rests against the label media. Tighten the knurled screw (**10**).

5. Raise the printhead assembly (**2**) by rotating the lever (**7**) clockwise until it stops.

6. Slide the media guide ring (**6**) outward, allowing enough clearance for the label stock's width when loaded.

7. Slide the media strip underneath the guide axle (**5**) and through the adjustable photocell assembly (**3**) until it comes out of the front of the printer. If you are using labels that are wound-in, please make sure that you slide the media strip over the internal rewind hub (**13**).
In figure 7d the feed path for labels wound-out is represented by a solid line, and the feed path for wound-in labels is represented by a broken line.
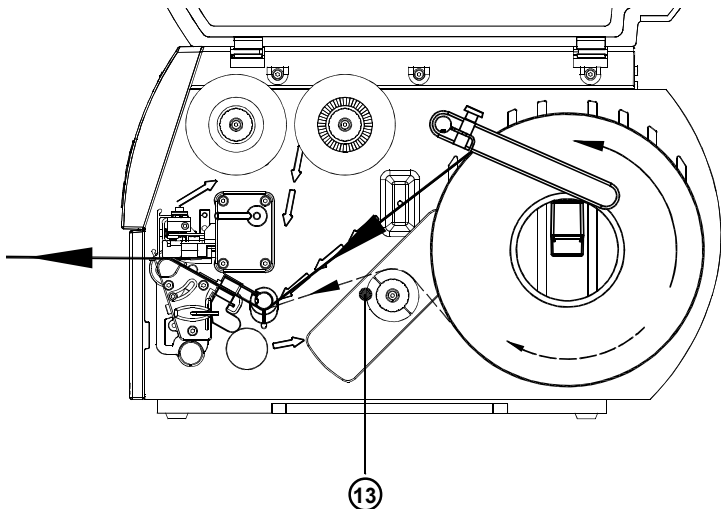

Fig. 7d Feed path in Tear-off Mode

8. Slide the media guide ring (**6**) inward until it lightly touches the side of the media strip.
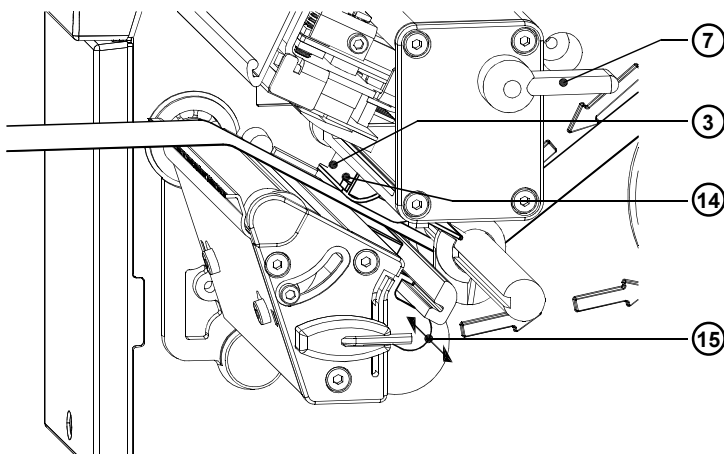
Fig. 7e Adjustment of the Label Edge Sensor

9. To accommodate a variety of print jobs, the position of the label edge sensor (**3**) can be adjusted until it is at the proper sensing position. It is important to ensure that the sensor (**14**) itself (the position of which is indicated by a notch in the sensor housing) is positioned so that the space between the labels can be recognized by the photocell. In the case of labels which have an unconventional shape (ie. not square or rectangular), the photo cell should be positioned at the leading edge of the label. Adjustment of the sensor is performed by sliding the handle (**15**) in and out.

10. Lower the printhead by rotating the lever (**7**) counter-clockwise until it locks.

11. When the printer is operated in rewind mode continue with point 12. When the printer is operated in peel-off mode continue with point 13.
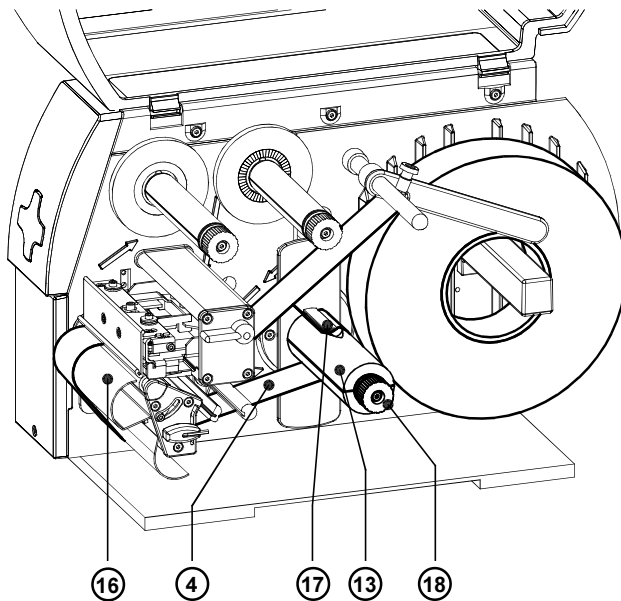
Fig. 7f Loading Labels from Roll in Rewind Mode

12. In rewind mode, the rewind guide plate (**16**) must be mounted.
    Remove the labels from the first 4 in (100mm) of the label strip.
    Then, slide the media strip (**4**) around the rewind guide plate (**16**) to the
    internal rewind hub (**13**) as shown in figure 7f. Slide the strip under the
    clamps (**17**) that are located on the internal rewind hub (**13**). Hold the
    internal rewind hub (**13**) and rotate the nut (**18**) counter-clockwise until it is
    tight. The media strip will now be fastened to the internal rewind hub (**13**).
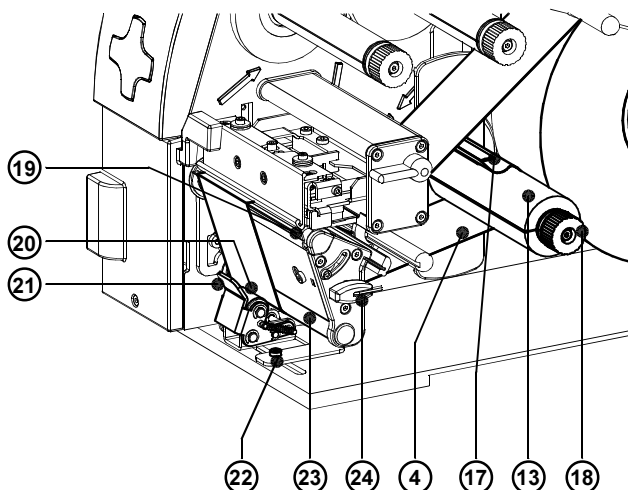   Rotate the internal rewind hub (**13**) counter-clockwise to tighten the media
    strip.

Fig. 7g Loading Labels from Roll in Peel-off mode

13. For peel-off mode swing the locking system (**21**) away from the rewind
    assist roller (**23**).

14. Remove all labels from the media strip hangig out of the printer. Then,
    slide the strip (**25**) around the dispense plate (**19**) to the internal rewind
    hub (**13**) as shown in figure 7g. Slide the strip under the clamps (**17**) that
    are located on the internal rewind hub (**13**). Hold the internal rewind hub
    (**13**) and rotate the nut (**18**) counter-clockwise until it is tight. The media
    strip will now be fastened to the internal rewind hub (**13**). Rotate the
    internal rewind hub (**13**) counter-clockwise to tighten the media strip.

15. Loosen the screw (**22**) using the Allen key (**24**).
    Align the locking system (**21**) including the pinch roller (**20**) by sliding it
    sidewards. The alignment is correct if the pinch roller (**20**) is placed in the
    middle of the label strip.

16. Swing the locking system (**21**) to the rewind axle (**23**) and tighten the
    screw (**22**).

17. For further informationen about operating in the peel-off mode see
    appendix A.

Adjustment of the Printhead Support

When printing narrow label stock (width less than 60% of the maximum print width), it is possible that the printhead will come into direct contact with the printing roller in the area where there is no media.

CAUTION !
The printhead touching the printing roller could lead to premature failure on the printhead or the print roller!

This can also cause the printhead to be at a slight angle to the media, leading to a variation in the darkness of the print across the label.
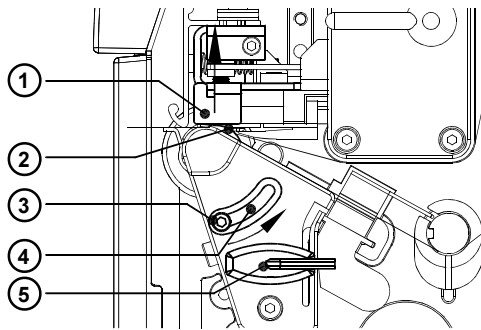This fault can be corrected by adjusting the printhead support :

Fig. 7h Adjustment of the Printhead Support

1. The current position of the printhead support (**2**) is shown by the position of the screw (**3**) in the elongated hole (**4**).
2. For wide media the screw position shown in figure 7h is recommended. In this position the printhead support (**2**) is not used.
3. For narrow media, it is necessary to adjust the printhead support. In this case insert a second strip of a label at the outer side of the print roller and close the printhead. Loosen the screw (**3**) using the Allen key (**5**) and slide it slowly in the arrow direction until the printhead support (**2**) touches the printhead mounting (**1**).
4. Tighten the screw (**3**).
5. Remove the second label strip.

NOTICE !
Incorrect adjustments of the printhead support may cause wrinkles in the transfer ribbon.
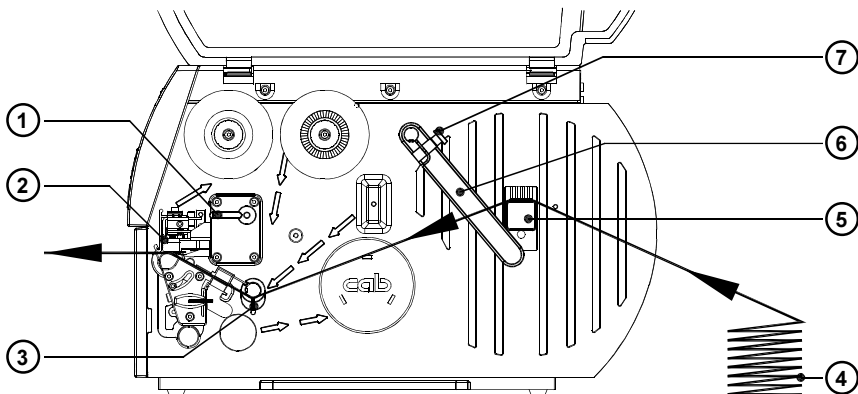
Loading Fanfold Labels

Fig. 7i Loading Fanfold Labels

1. Open the cover.

2. Loosen the knurled screw (**7**) and slide the media guide (**6**) to its outermost position. Rotate the media guide (**6**) downwards past the media retainer (**5**).

3. Place the stack of media (**4**) behind the printer. Make sure the labels on the media strip are facing up.

4. To raise the printhead assembly (**2**), rotate the lever (**1**) clockwise until it stops.

5. Slide the media guide ring (**3**) outward, allowing enough clearance for the media's width when loaded.

6. Slide the media strip through the printer as shown in figure 7i.

7. Adjust the label edge sensor so, that the sensor can recognize the space between the labels respectively the reflective or the perforation mark.

8. Slide the media guide (**6**) inward until it lightly touches the side of the media strip. Rotate the media guide (**6**) upwards against the media retainer (**5**) and tighten the knurled screw (**7**).

9. Slide the media guide ring (**3**) inward until it lightly touches the side of the media strip.

10. Lower the printhead by rotating the lever (**1**) counter-clockwise until it stops.

NOTICE !
When printing narrow label stock please activate the printhead support as described in the previous chapter !
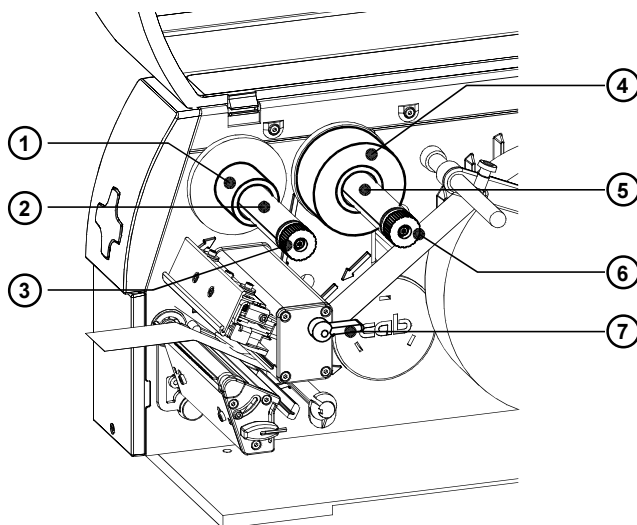
Loading Transfer Ribbon

Fig. 7k Loading Transfer Ribbon

NOTICE !
For direct thermal printing no transfer ribbon is needed !

1. Rotate the printhead lever (**7**) clockwise until it stops to raise the printhead.

2. Slide the roll of transfer ribbon (**4**) as far as possible onto the ribbon supply hub (**5**).

NOTICE !
Note which side of the transfer ribbon is coated with ink! The inked side is generally the dull side of the transfer ribbon. When the ribbon is inserted, the inked side must not be placed in contact with the printhead! In figure 7l the solid line represents ribbon with ink on the inner side, and the broken line represents ribbon with ink on the outer side.

3. Rotate the knurled knob (**6**) counter-clockwise to clamp the roll of transfer ribbon (**4**) onto the ribbon supply hub (**5**).
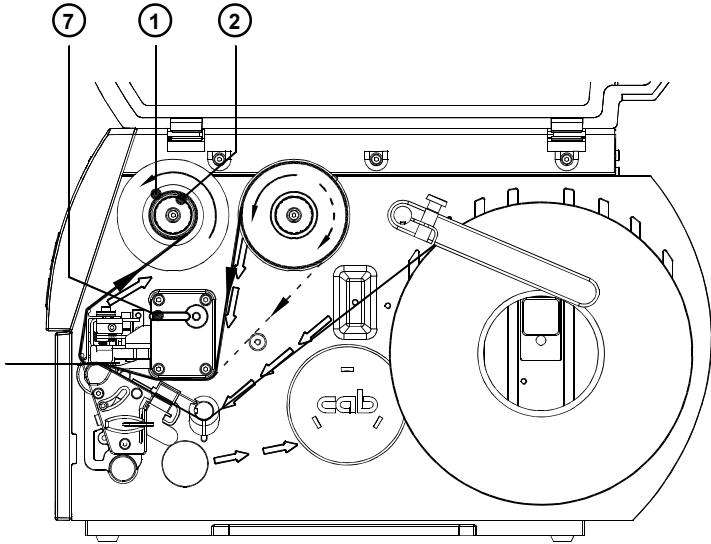
Fig. 7l Path of Transfer Ribbon

4. Slide a cardboard core (**1**) onto the ribbon take up hub (**2**). Clamp the core by rotating the knurled knob (**3**) counter-clockwise.

5. Feed the transfer ribbon along the path as shown in figure 7l and attach it to the cardboard core (**1**) using a piece of tape or a label.

6. Turn the ribbon take up hub (**2**) counter-clockwise until the ribbon is taut and without any wrinkles.

7. Rotate the printhead lever (**7**) counter-clockwise until it stops, thereby locking the printhead into position.

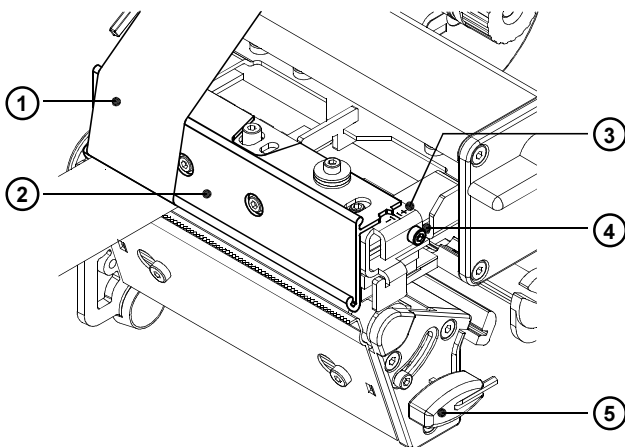## Adjustment of the Transfer Ribbon

Fig. 7m Adjustment of the Transfer Ribbon

In the event that wrinkles appear in the transfer ribbon (**1**), which cause an inconsistent print image, the transfer ribbon shield (**2**) can be adjusted to remove the wrinkles. The adjustment should be done during the printing process.

1. The current position is visible on the scale (**3**).

2. To change the position, rotate the screw (**4**) using the Allen key (**5**). Rotating it in the direction of "+" will tighten the transfer ribbon the inner edge of the transfer ribbon. Rotating it in the direction of "-" will tighten the outer edge of the tranfer ribbon.

   To eliminate the wrinkles, tighten the side where the wrinkles are originating.

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8. Printer Configuration

Overview

There are a variety of parameters that can be set to configure the printer to specific requirements.
The configuration of the parameters should be performed when operating the printer for the first time and also when basic changes need to be carried out.

NOTICE !
The settings of the Printer Configuration are individual basic settings which are stored in the printer.

In most cases however, simple changes such as heat setting adjustments, using different media will be made with software settings.
For alternative settings (for example "Transfer print On / Off") the values of the software have the priority. For geometrical and heat settings (for example "Peel position") the values of the Printer Configuration and the software settings will be added.

There are three different methods to set the parameters of the Printer Configuration :

1. If the printer is connected to a serial or USB interface of the computer, the settings can be made using the "cab Setup Utility", wich is accessible after the Windows driver installation.

2. If the printer is connected to the serial interface of the computer, the settings of the configuration parameters can be made using the CABLABEL software. The CABLABEL LITE version is delivered with each **M4** printer.

3. If the printer is operated in a networked area via Ethernet interface, an internal webserver can be accessed using a Java enabled Browser (I.E. Microsoft Internet Explorer 4.X, Netscape Navigator 4.X or higher).
   The parameters of the Printer Configuration can be set at the "Info" tab.

The following chapters describe the setup methods and the meaning of the different parameters.

Printer Configuration Using the cab Setup Utility

If the printer is connected to a serial or USB interface of the computer, the settings can be made using the "cab Setup Utility", wich is accessible after the Windows driver installation.

NOTICE !
If you operate the printer under Windows NT4.0, Windows 2000 or Windows XP you must own administrator rights for the printer to change the settings of the Printer Configuration !

- Make sure that the your printer is connected to a serial or USB interface.

- Switch on the printer.

- From the Start Menu, select Settings, Printers.

- Right-click the **M**-Series printer to configure. Click "Setup".

- Under Windows NT4.0, Windows 2000 or Windows XP click "Printer Settings".

- Select the tab "Advanced Setup" and click "Printer Settings". The start window of the cab Setup Utility appears.
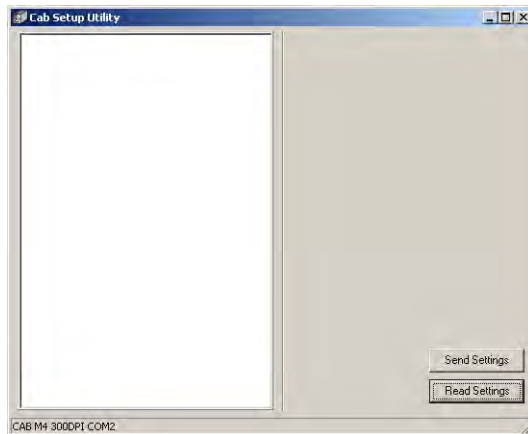

Fig. 8a   Start window of the cab Setup Utility

- Click "Read Settings".

- The current settings of the parameters are downloaded from the printer. Then the parameters are shown in a tree.
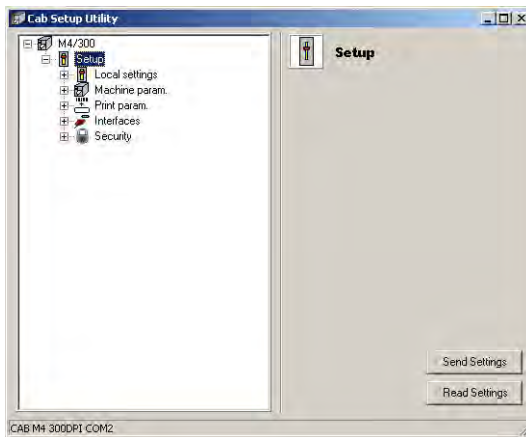

Fig. 8b Parameter tree

- To open and close the different folders click on the [+] or [-] button.

- After opening the folders the configuration parameters are accessible.

- Click on the parameter you want to change. In the right part of the window the current setting is shown. Click on that area.

- Depending on the parameter type you can select the new setting from a list or enter the new setting directly.

Fig. 8c Changing the parameter "Country"

- When you have finishing all settings, click "Send Settings".
  The new settings will be uploaded to the printer.

  NOTICE !
  If you leave the cab Setup Utility whithout clicking "Send Settings" all parameter changings are cancelled.

- The changings may be checked by clicking again "Read Settings".

Printer Configuration Using CABLABEL

If the printer is connected to the serial interface of the computer, the settings of the configuration parameters can be made using the CABLABEL software. The CABLABEL LITE version is delivered with each **M4** printer.
Detailed information about installation and use of CABLABEL you can find in the CABLABEL Help.

NOTICE !
If you operate the printer under Windows NT4.0, Windows 2000 or Windows XP you must own administrator rights for the printer to change the settings of the Printer Configuration !

- Install CABLABEL and add your **M4** printer type on a serial interface port.

- Make sure that the your printer is connected at the serial interface.

- Switch on the printer.

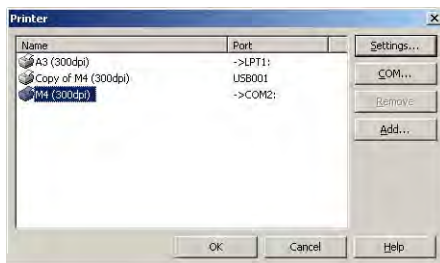- Click in CABLABEL in the "File" menu on "Select printer".

Fig. 8d   Window "Select printer" in CABLABEL

- Select the **M4** printer on the serial port (in fig. 8d **M4/300** on COM2) and click on the "Settings" button.

- The "Printer Settings" window will be opened. Click on the "M Series" tab.

- The current settings of the parameters will be downloaded from the printer. Then the "Printer Settings" window shows the parameters in a tree.
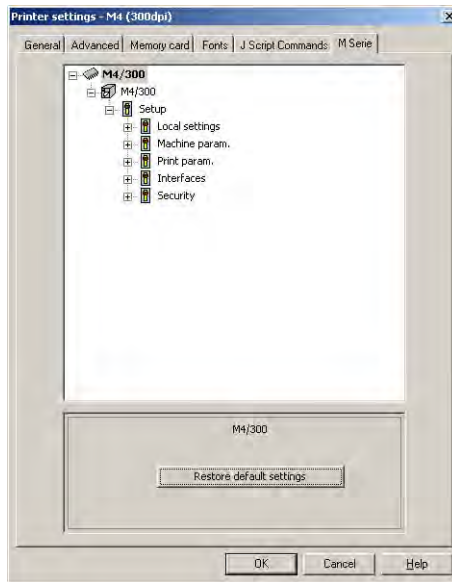

Fig. 8e Parameter tree

- To open and close the different folders click on the [+] or [-] button.

- After opening the folders the configuration parameters are accessible.

- Click on the parameter you want to change. In the lower part of the window the current setting is shown. Click on that area.

- Depending on the parameter type you can select the new setting from a list or enter the new setting directly.
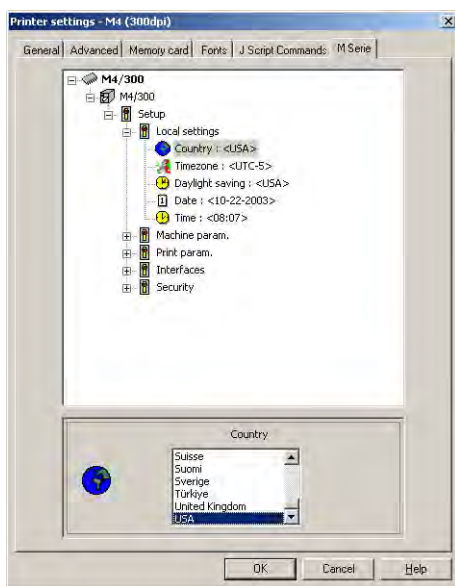

Fig. 8f Changing the parameter "Country"

- When you have finishing all settings, leave the "M Series" tab by clicking on "OK".
  The new settings will be uploaded to the printer.

NOTICE !
To cancel all new settings leave the "M Series" tab by clicking on the "Cancel" button.

Printer Configuration Using the Printer Webpage

The firmware of the printer contains an internal webserver which can be accessed via Ethernet interface using a Java enabled Browser (I.E. Microsoft Internet Explorer 4.X, Netscape Navigator 4.X or higher).
You will find details and instructions on how to use the whole webserver in the chapter "Printer Webpage".

Recognition / Assignment of the IP Address

In order to use the printer on a network, the printer must be assigned an IP Address.

Recognition of the IP Adress in a network with DHCP server :

When the printer is delivered, the Ethernet interface is set to "DHCP" (Dynamic Host Configuration Protocol) . If DHCP Servers are available, the assignment of the IP Address can be automatic.
In order to recognize the IP Address start a self test printout. To initiate a self test printout, press the FEED key when switching on the printer and keep it pressed down for 1 second.
At the "Interfaces" part of the status printout the IP Address can be found.

```
Interfaces
   Character Set    Windows 1252
   RS-232
      Baud rate     57.600
      Handshake     RTS/CTS
   Ethernet
      IP:           DHCP;192.168.100.208
      Gateway:      Off
      SMTP-Server:  Off
      RAW-IP-Port:  9100
      LPD:          Off
      SNMP:         Off
      Timeserver:   Off
```

Fig. 8g Status Print - Part "Interfaces"

<u>Assignment of the IP Address in a network without DHCP server :</u>

If no DHCP server is available, you must manually assign the IP Address.

That can be done in different ways :

A) IP Assignment using the serial interface
If you can connect the printer to a serial interface, the IP address may be assigned using the cab Setup Utility or CABLABEL (see previous chapters).

B) IP Assignment using the USB interface
If you can connect the printer to a USB interface, the IP address may be assigned using the cab Setup Utility (see previous chapters).

C) IP Assignment using the Ethernet interface and the MAC address
If there is no possibility to connect the printer to a serial or USB interface, you can use the MAC address of the Ethernet interface to establish the first network connection.
Every Ethernet interface has an unique MAC address. On **M4** the MAC address can be found on a small label near to the Ethernet interface socket. A typical MAC address for **M4** could be e.g.

<div align="center">

00 02 E7 00 19 98

</div>

After you have connected your printer to the network and you have switched on the printer, the printer will search for a DHCP server. This search will be repeated several times. If the printer does not find a DHCP server after about one minute, the printer internally assigns an IP address. The first two bytes of that address are always **169** and **254**. The last two bytes result from the last four figures of the MAC address. With the MAC address shown above the following IP address results :

<div align="center">

169.254.19.98   (SubNet mask : **255.255.0.0**)

</div>

In order to access the printer with that address, an IP address in the range 169.254.x.x also must be assigned temporarily to the computer.
Following the internal webserver of the printer can be accessed using a Java enabled Browser. That way it is possible to assign the final IP address of the printer (e.g. **192.168.100.208** / **255.255.255.0**).
The description of the Printer's Web-Page can be found in the next chapter.

Access to the Printer Web-Page

- Start the Internet Browser.

- Access the printer's web-page by entering the Printer's IP Address in the Internet Browser :

    Example :   **http://192.168.100.208**

- The printer's web-page will appear in the Internet Browser.

- If you want to change parameter settings using the printer's internal webpage, the Printer Configuration has to be protected by a PIN ! If there is no PIN activated, the following message appears :
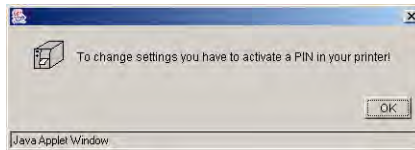

Fig. 8h Message " Activate PIN"

- Click on "OK". The "Status" tab will be displayed. Make sure the printer status is 'Online' before making adjustments to the printer.

Fig. 8i Printer Web-Page "Status" Tab

PIN Activation

- Change to the "Info" tab.
  In this tab, all configuration parameters can be set.

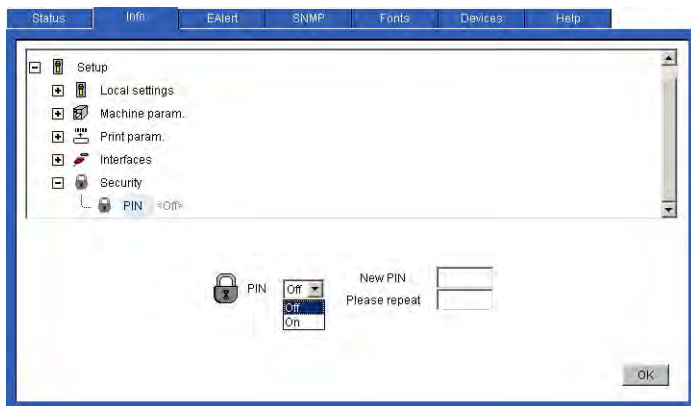- In the top window, open the folder "Security" and click on "PIN".

Fig. 8g Printer Web-Page "Info" - PIN Activation

- In the lower window select the setting "On". Enter a four-digit code number (PIN) in the "New PIN" field. Repeat the input in the "Please repeat" field and click "OK".

Changing the Parameters

After the PIN was activated, all parameters in the top window of the "Info" tab can be modified :

- To open and close the different folders click on the [+] or [-] button.

- To modify a parameter, click on the name or symbol of the parameter you wish to change. Once selected, the adjustment can be made in the lower window.

- Confirm the change by clicking the OK button.
  After that the PIN will be requested. Enter the correct PIN.

- If you have entered a wrong PIN three times, the Ethernet connection must be closed and re-opened to continue the parameter changing.

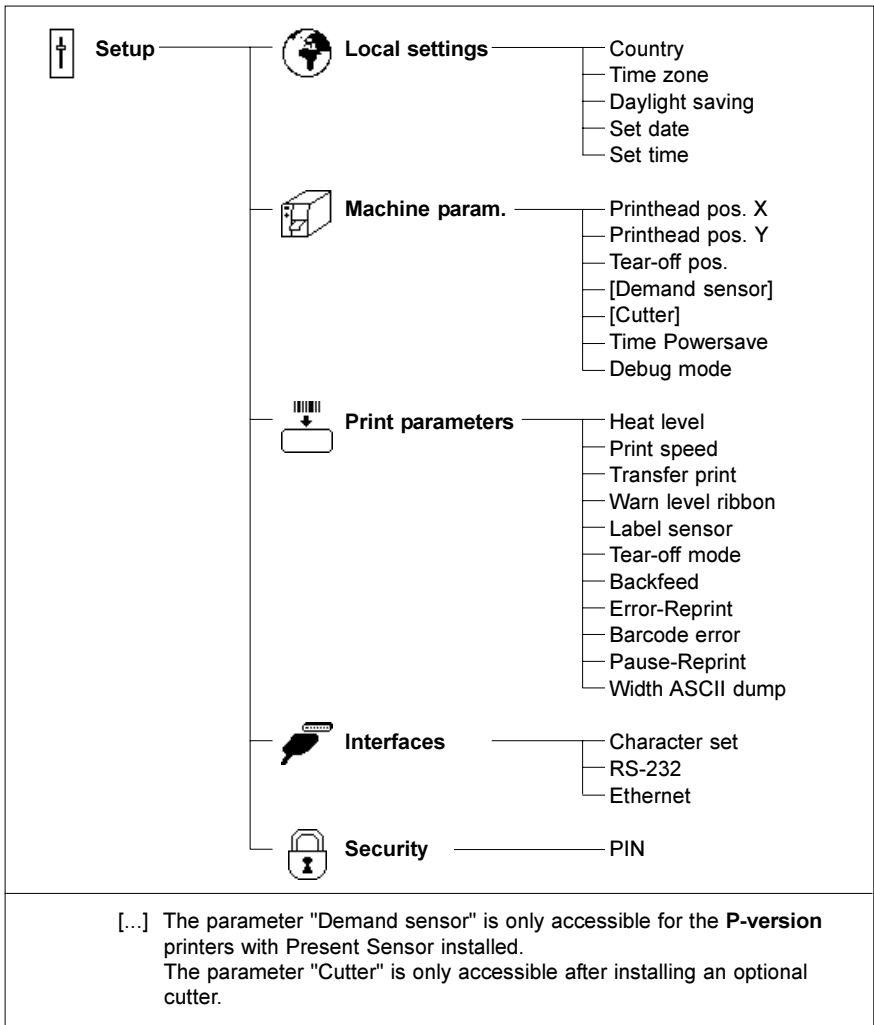## Overview of the Configuration Parameters

Setup ─── **Local settings** ─── Country
                                                        ─ Time zone
                                                        ─ Daylight saving
                                                        ─ Set date
                                                        ─ Set time

Machine param. ─── Printhead pos. X
─ Printhead pos. Y
─ Tear-off pos.
─ [Demand sensor]
─ [Cutter]
─ Time Powersave
─ Debug mode

Print parameters ─── Heat level
─ Print speed
─ Transfer print
─ Warn level ribbon
─ Label sensor
─ Tear-off mode
─ Backfeed
─ Error-Reprint
─ Barcode error
─ Pause-Reprint
─ Width ASCII dump

Interfaces ─── Character set
─ RS-232
─ Ethernet

Security ─── PIN

[...] The parameter "Demand sensor" is only accessible for the **P-version** printers with Present Sensor installed.
The parameter "Cutter" is only accessible after installing an optional cutter.

Table 8a Overview of the Configuration Parameters

Local Settings

Setup		
Local settings		
Parameter	**Meaning**	**Selection**
Land	Set the language for the Printer Configuratiom, the Printer Webpage, self-test printouts and the date and time format for the country Default Setting: **USA**	Belgie, België, **България**, Ceska republika, Danmark, Deutschland, Ελλας, Espana, Farsi, France, Italia, Lietuva, Magyarország, **Македонија**, Nederlands, Norge, Polska, Portugal, **Россия**, Schweiz, Suisse, Suomi, Sverige, Türkiye, United Kingdom, USA
Time zone	Set the Time zone using UTC (Universal Time Coordinated) Default : **UTC +1**	UTC +12 ... UTC -10
Daylight saving	Select the method of daylight savings adjustment Default : **USA**	EU USA Off
Set date	Set the printer's date Default : **current**	31.12.2069 ... 01.01.1970
Set time	Set the printer's time Default : **current**	23:59:59 ... 00:00:00

Table 8b   Overview of the "Local settings" Folder

Country

The "Country" parameter allows to set the language for the Printer
Configuration, the Printer Webpage and self-test printouts as well as the date
and time format used for printing.
The formats for time and date can be configured with software, but will not be
saved permanently.

Time zone

UTC (Universal Time Coordinated) describes the international time base used
on the web. To adjust the printer to the local time, set the parameter time zone
in relation to the UTC. The selection contains all valid time zones of the world.
Information regarding the correct time zone for UTC can be obtained from the
web.

Daylight saving

Using this parameter you can select the valid daylight savings regulation.
The time will automatically change on the correct days to adjust for daylight
savings.

Set date

Using this parameter you can change the date in the printer's internal clock.
When printed, the current date is given in the format selected based on the
"Country" parameter. It is possible to change the date with software, but the
change will not be saved permanently.

Set time

This parameter allows to set the correct time in the internal clock manually.
Using the Ethernet interface, it is possible to synchronize the time with the web
automatically.
When printed, the current time is given in the format selected based on the
"Country" parameter. It is possible to change the time with software, but the
change will not be saved permanently.

Machine Parameters

	Setup

	Machine parameters

Parameter	Meaning	Selection
Printhead pos. X	Shift the print image on the label left to right. Default : **0.0 mm**	9,9 ... 0,0
Printhead pos. Y	Shift the print image on the label top to bottom. Default : **0.0 mm**	+9,9 ... -9,9
Tear-off pos.	Shift the tear-off position Default : **0.0 mm**	+9,9 ... -9,9
Demand sensor (only for **P-version** printers)		
Peel position	Shift the position of the dispensed label relative to the dispense plate Default : **0.0 mm**	+9,9 ... -9,9
Backfeed delay	Delay time between removing the label from the peel position and the backfeed of the label Default : **250 ms**	500 ms ... 0 ms in 50 ms increments
Limit peel-off spd.	Limitation of the print speed in the peel-off mode to 100 mm/s Default : **On**	On Off
Cutter (Only displayed if the cutter is attached)		
Time Powersave	Amount of time before switching to powersave mode Default : **5 min**	60 min ... 0 min
Debug mode	Activates the debug mode Default : **Off**	On Off

Table 8c   Overview of the "Machine parameters" Folder

Printhead position X

Using this setting will shift the entire print image to the left on the label. This parameter should only be altered if you are printing the same format on several printers, and the printed image is not consistent on each printer.

NOTICE !
The value of Printhead position X cannot be greater than the difference of the printhead width and the defined label width in software. A value greater than the difference will be ignored and the actual difference will be used in place. For example, if the printhead width is 104mm and the label width defined in software is 100mm, the printer will only accept a value of 4mm or less for printhead position X. If Printhead position X is set for 6mm, the printer will only shift the label 4mm.

It is possible to adjust the value for individual jobs using software. The Printer Configuration values and software command values will be totaled together for printing.

Printhead position Y

Using this setting will shift the entire print image up or down the label. This parameter should only be altered if you are printing the same format on several printers, and the printed image is not consistent on each printer.

NOTICE !
Changing the Printhead position value Y also effects the peel position and cut position as well. It will be necessary to readjust the values for the peel and cut positions using the previous value +/- the printhead position value.

It is possible to adjust the value for individual jobs using software. The Printer Configuration values and software command values will be totaled together for printing.

Tear-off position

When the "Tear-off mode" (see chapter "Print parameters") is active, an additional feed forward will take place after completion of the print job. This additional feed makes it possible to tear off the last label at the tear-off plate. Using the setting "Tear-off position" the length of the additional feed can be adjusted.

Demand sensor - Peel position

This parameter allows for adjustment of the presentation position of the printed label on the dispense plate.
Peel position with the initial offset value of "0" causes the printed label to be peeled off from the liner leaving approximately a .1" (2mm) wide strip of the label still adhering to the liner. The amount of label left adhering to the liner can be altered with this parameter, using an offset in the range from -9.9mm to +9.9mm. Positive offset values cause more of the label surface to protrude past the dispense plate.
The offset values from "Peel position" and from software are added together for execution. The software value does not replace the "Peel position" value, but temporarily adjusts it for the current job.

Demand sensor - Backfeed delay

The "Backfeed delay" adjustment allows you to input an amount of time in milliseconds between when the label is removed from the peel edge and when the backfeed is executed. Using "Backfeed delay" should prevent labels from becoming jammed between the printhead and print roller when the liner is fed back too quickly.

Demand sensor - Limit peel-off spd.

This parameter allows to limit the print speed in peel-off mode to 4 ips (100mm/s).
When an **M4/200P** printer is delivered, the maximum print speed in peel-off mode is limited to 4 ips (100mm/s). Even if the print speed for the peel-off mode is set higher in the software, the print job will be carried out with a speed of 4 ips (100mm/s). This limitation guarantees correct operation of the **M4/200P** in peel-off mode when using maximum supply rolls (diameter 8 in (203mm), width 4.7 in (120mm)).
When using smaller supply rolls it is possible to operate with higher speed. For that purpose the speed limitation must be switched off. Then the print speed can be set on all speeds up to 6 ips (150mm/s) for **M4/200P**.

CAUTION !
When operating the M4/200P in peel-off mode with higher speed it is strongly recommended to carry out some tests beforehand by using appropriate rolls with maximum diameter !

The speed limitation in the peel-off mode does not affect any other operation modes like tear-off mode, cut mode or external rewinding.

Cutter

When the optional cutter is attached, the "Cutter" menu appears in the "Machine parameters" menu.
The menu contains all of the parameters for the cut function.
Detailed information is available in the cutter documentation.

Time Powersave

If the printer does not receive a print job or the front panel has not been accessed for a period of time, the printer will switch into a powersave mode.
During powersave mode, certain functions are powered off until the next operation is carried out.
This parameter defines the amount of time the printer will wait before entering powersave mode after the last operation.

Debug mode

The "Debug mode" is a tool for the firmware programmer.
It will assist in recognizing faults and their possible sources beyond standard error messages.

Print Parameters

Setup		

Print Parameters

Parameter		Meaning	Selection
	Heat level	Basic adjustment of the heat intensity Default : **0**	-20 ... +10
	Print speed	Basic adjustment of the print speed Default : **100 mm/s**	**M4/200 :** 50-150 mm/s **M4/300 :** 50-100 mm/s steps of 25mm/s
	Transfer print	Basic selection of thermal transfer mode / direct thermal mode Default : **On**	On Off
	Warn level ribbon	Setting the threshold diameter for the warning message "ribbon end" Default : **Off**	Off 32 ... 74 mm
	Label sensor	Method of label sensing Default : **Gap sensor**	Gap sensor Bottom reflect Endless media
	Tear-off mode	Activating a small feed to the tear plate at the end of a print job Default : **Off**	On Off
	Backfeed	Method of backfeed when using peel-off mode or the cut mode Default : **smart**	smart always
	Error - Reprint	Selection of automatically reprinting a label after a correctable error has been fixed. Default : **On**	On Off

Table 8d   Overview of the "Print parameters" Folder

Parameter	Meaning	Selection
Barcode error	Selection, if the printer should handle invalid barcode data as errors Default : **On**	On Off
Pause reprint	Allows you to print additional labels after finishing a print job by pressing the PAUSE key Default : **Off**	On Off
Width ASCII dump	Setting the print width for ASCII dump mode Default : **Automatic**	Automatic, 50mm to max. print width in steps of 5mm

Table 8d   Overview of the "Print parameters" Folder (continuation)

Heat level

The "Heat level" parameter enables the printer to adapt to possible differences in the thermal properties of the thermal printheads.
An adjustment has already been made in the factory. If the printhead must be replaced, it is very likely the "Heat level" parameter will have to be adjusted.
To adjust the print for different print jobs, it is recommended that you make the heat level adjustment with software. (e.g. for different materials and speed)
The Printer Configuration value and software command value will be totaled together when printing.
The setting of the "Heat level" parameter also affects the printer test prints (see Test functions section).

Print speed

This parameter allows the adjustment of the print speed. This adjustment also affects the printer test prints (see Test functions section).
The print speed can be set for each print job separately with software.
Changing the print speed with software does not change the basic adjustment.

Transfer print

This parameter is used to set the printer's method of printing to thermal transfer printing or direct thermal printing. The setting affects two factors directly related to thermal transfer mode. First, for thermal transfer mode, the printhead requires a lower temperature than when in direct thermal printing mode. Second, the ribbon sensor is active. The setting for transfer print for a single print job can be overwritten with software.

Warn level ribbon

That parameter allows to define a threshold diameter of the ribbon supply roll. As soon as the diameter of the roll falls below this threshold a SNMP or E-mail warning message is sent via Ethernet interface.
So the operator is already asked to prepare a new ribbon roll when the printer is still running.

If your printer has no Ethernet interface, the diameter of the ribbon supply roll can be asked by the q r command (see Programming Manual) using the serial interface. This method is also available if the parameter "Warn level ribbon" is set to "Off".

Label sensor

The printer offers two methods for recognizing the start of label. In most cases, the label edge sensor photocell can be used in the "shine-through" mode ("Gap sensor" mode), where the differing opacities between the label area and spaces between labels is distinguished. In certain special cases, (ie. pre-printed endless material), recognition of the start of the label can be made via reflective markings on the bottom side of the label material.
This parameter can also be changed using software. For different print jobs it is recommended that you make the change in the software.

The setting "Endless media" is especially intended to synchronize the feed of continuous material in cut mode after switching on the printer.
You can find detailed information in the cutter documentation.

Tear-off mode

When the "Tear-off mode" is active, an additional feed forward will take place after completion of the print job. This additional feed makes it possible to cut or tear off the last label at the tear-off plate. When a new print job is started, the label material will be fed back until the front edge of the first label is repositioned under the printhead.
If the parameter is OFF, the label feed forward stops immediately after the last label has completely passed the printhead.

Backfeed

In cut and peel-off mode, the material will be stopped in a position where the leading edge of the following label has already been forwarded beyond the printhead. The printer will then backfeed the label material from its cut/dispense position to the printhead. Therefore, the next label can be printed completely.
A backfeed will always be performed if the parameter is set to "always". If the setting is set to "smart", the backfeed will only be performed if the front label is in its cut/dispense position and the printer has not yet received all of the data for printing the following label. Otherwise, the print of the second label will be started, but only completed once the first label has been removed.

Error-Reprint

When a recoverable error occurs while printing, this option will determine how the last label will be handled. If this option is enabled (On), the last label will be reprinted once the error has been cleared. If this option is disabled (Off), the print job will continue with the next label.

Barcode error

When this option is enabled (On), after the recognition of invalid bar code contents or invalid bar code sizes the print job will be stopped.
If this option is disabled (Off), the printer tries to replace invalid data by valid characters (e.g. "0"). If the bar code size is invalid, instead of the bar code a grey box will be printed.

Pause reprint

When this option is enabled (On), it is possible to print additional labels by pressing the PAUSE key after the print job has completed, as long as the internal memory of the printer has not been cleared by pressing the CANCEL key.

Width ASCII dump

The ASCII Dump mode (see chapter 9) provides a method to print the control sequences sent to the interface. In this mode the data received will be printed in text format depending on the selected character set.
If the parameter "Width ASCII dump" is set to "Automatic" the information is printed over the maximum print width. For printing the ASCII dump on to narrow material a smaller width can be chosen.

Interfaces

Setup

Interfaces		
Parameter	**Meaning**	**Selection**
65⌐ A Character Set	Select the character set table Default : **Windows 1252**	**Windows** 1250 up to 1257, **DOS** 437, 737, 775, 850, 852, 857, 862, 864, 866, 869, **EBCDIC 500,** **ISO 8859**-1 up to -10, **ISO 8859**-13 up to -16, **Macintosh Roman, DEC MCS,** **KOI8-R, Win OEM720, UTF-8**
RS232		
Baud rate	Set the baud rate Default : **Automatic**	1.200 ... 230.400 Automatic
Handshake	Set the handshake Default : **RTS/CTS**	RTS/CTS --- XON/XOFF
Ethernet		
DHCP	Method of assignment for IP Address Default : **On**	On Off
IP (only with DHCP : Off)	Direct input of the IP address and the SubNet mask	for both parameters 000.000.000.000 ... 255.255.255.255
Gateway	Connection of the local area network to other networks Default : **Off**	Off IP DHCP (only with DHCP:On)
SMTP-Server	Connection to an eMail server Default : **Off**	Off On + IP of the SMTP- server
RAW-IP-Port	Selection of the port for the RAW-IP print service Default : **9100**	Off, 2501, 3001, 3002, 9100, 9101, 9102, 9103

Table 8e Overview of the "Interfaces" Folder

Parameter	Meaning	Selection
Ethernet (continuation)		
LPD	Activation of the print service LPD Default : **Off**	Off On
SNMP	Activation of the SNMP agent Default : **Off**	Off On
Timeserver	Connection to a Timeserver Default : **Off**	Off On + IP of the Time-server
Ethernet error	Selection, if Ethernet errors should stop a print job Default : **On**	On Off

Table 8e Overview of the "Interfaces" Folder (continuation)

Character set

The parameter defines how different characters (symbols, letters, special characters) will be translated to the interface.
Before operating the printer, the "Character set" of the printer should be adapted to match the character set of the computer.
Adjustment is not possible with software. However, it is possible to use the Unicode character table for characters which are not included in the selected font.

RS-232 / Baud rate

When the printer is delivered, the RS-232 is configured for automatic baud rate detection.

NOTICE !
For this method, after switching on the printer, the first sign of the serial transmission must be odd. That means, that the lowest bit of the first signs code must have the value "1". After that the baud rate rate is fixed until the printer is switched off.

CABLABEL and cab Setup Utility guarantee, that the first sign is odd, when a download of the configuration parameters is required. Therefore the Printer Configuration is always possible, after the printer is switched on.

CAUTION !
Since it is not possible to guarantee the odd first sign under all circumstances, it is recommended to choose a fixed baud rate before starting the normal operation.

RS-232 / Handshake

Using this parameter it is possible to select, if the serial interface should be operated with the hardware protocol "RTS/CTS", the software protocol "XON/XOFF" or without protocol (setting "---").

Ethernet / DHCP

In order to use the printer on a network, the printer must be assigned an IP Address. By adjusting the "DHCP" parameter, it is determined if the IP Address will be assigned fixed or dynamically using DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol).
In order to use DHCP, you must have DHCP Servers on the network. If DHCP Servers are available, the assignment of the IP Address can be automatic. If no DHCP server is available, you must manually enter the assigned IP Address.

Ethernet / IP

If the parameter "DHCP" is set to "Off", the IP Address must be entered manually. Make sure that the range is correct for your local network.
A defined SubNet mask of the local area network must be defined separately from the IP address. The mask defines the classification and the address range of the local area network.

Ethernet / Gateway

A connection between the local and other networks is achieved through the activation of a Gateway. Designate the IP Address of the Computer (or Router) through which a connection can be made.
If a dynamic address assignment for the printer over DHCP was agreed upon, the address of the Router can also be transferred by DHCP. A Gateway must be activated if the printer is to be accessed by a computer outside the local network.

SMTP-Server

The printer has the ability to send email based on the occurrence of certain error conditions to selected email addresses.
To use this feature, the parameter SMTP (**S**imple **M**ail **T**ransfer **P**rotocol) Server must be set to "On" and a valid IP Address for the SMTP server is entered.
More information on sending emails can be found in "Printer Web-Page / EAlert".

Raw-IP

Raw-IP is a service for printing on the network. In order to print with this service, one of the port addresses must be selected.

LPD

LPD is a network printing service. The service is available under Windows NT4.0, Windows 2000 and Windows XP.
To use the printing service, the "LPD" parameter must be set to "On".

SNMP

SNMP (**S**imple **N**etwork **M**anagement **P**rotocol) is a query and command language between managing stations on the one hand and managed units on the other hand. For that purpose the managed unit (the printer) needs a software module, the SNMP agent.
For SNMP communication between printer and managing station the parameter "SNMP Agent" must be set to "On".
More information on possible SNMP messages of the printer can be found in "Printer Web-Page / SNMP".

Timeserver

The Timeserver parameter makes it possible to connect with an Internet Timeserver and synchronize Date and Time of the printer. To use, set the "Timeserver" parameter to "On" and input the IP Address for the Timeserver. The synchronization takes place once an hour. The time received from the Timeserver is not stored permanently in the printer. If the printer is powered down, then restarted, the time displayed will be from the printer's internal clock and not the timeserver. To more closely align the internal clock with the time server, make the necessary changes to the Time parameter and click OK.

Ethernet error

When this option is disabled, error messages which result from the network communication may be suppressed.
That way may be avoided, that e.g. a lost connection to a Timeserver can stop a print job.

Security

	Setup	
	Security	
Parameter	**Meaning**	**Selection**
PIN	Set, erase, change a PIN number to protect certain functions Default : **Off**	**Off** **On** **Change**

Table 8f Overview of the "Security" Folder

PIN

With this menu it is possible to set, erase or change a four-digit code number (PIN).

NOTICE !
If you want to change parameter settings via Ethernet interface using the printer's internal webpage, you have to activate a PIN in your printer !
After a parameter modification the correct PIN must be entered ! This allows protection against unauthorized access to the settings.
The only exception, where no PIN is needed, is the first activation of the PIN itself.

9. Test Options

Overview

The printer is equipped with several test options. These options make it possible for the user to understand something about :

- important configuration parameters
- the fonts available in the printer
- important hardware components of the printer and connected peripheral devices
- the quality of the print image and the condition of the printhead
- label data sent from a computer.

Seft Test Printout

To prepare for self test printout, load media (labels, continuous paper) and a transfer ribbon (if applicable), which extends over the entire print width of the printer.

NOTICE !
During the selft test printout, the printer will not sense any label gaps. Therefore continuous paper works best for the print.

To initiate a self test printout, press the FEED key when switching on the printer and keep it pressed down for 1 second.

After that the following three test prints will be generated one after the other :
- Status print
- Font list
- Device list

For the self test printout, the print speed and heat level are used, which are adjusted in the Printer Configuration.
The self test printout can be stopped by pressing the CANCEL key.

More information about the several test prints you can find on the following pages.

Status Print

```
            Status print
M4/300
Firmware V2.89 (Dec 12 2003)
Bootloader V1.05 (Jul 18 2003)
abc licensed under Artistic license from Yabasic 2.715 (www.yabasic.de)
CMU-SNMP © 1988,1989 Carnegie Mellon University, © 1995 Glenn Waters
```

(A)

```
Local settings
  Country            USA
  Timezone           UTC−5
  Daylight saving    USA
  Date               01-30-2004
  Time               08:59:47 am
Machine param.
  Printhead pos. X   0.0 mm
  Printhead pos. Y   0.0 mm
  Tear-off pos.      0.0 mm
  Time Powersave     5 min
  Debug mode         Off
Print param.
  Heat level         0
  Print speed        100 mm/s
  Transfer print     On
  Warn level ribbon  Off
  Label sensor       Gap sensor
  Tear-off mode      Off
  Backfeed           smart
  Error-Reprint      On
  Barcode error      On
  Pause reprint      Off
  Width ASCII dump   Automatic
Interfaces
  Character set      Windows 1252
  RS-232
    Baud rate        Automatic
    Handshake        RTS/CTS
  Ethernet
    IP               192.168.100.208/255.255.255.0
    Gateway          Off
    SMTP-Server      Off
    RAW-IP-Port      9100
    LPD              Off
    SNMP             Off
    Timeserver       Off
    Ethernet error   On
Security
  PIN                Off
```

(B)

```
Printer info
  Operative time     22h 01min
  Number of labels   1908
  Thermal transfer   2105.590"
  Thermal direct     1704.631"
```

(C)

```
  Temperature        81 °F
  Heat voltage       23.8 V
```
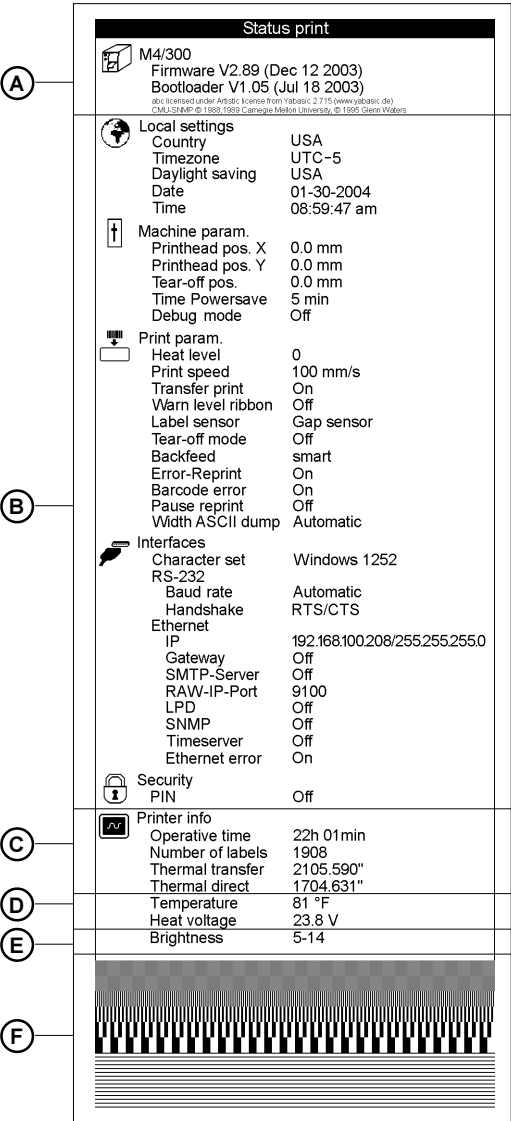
(D)

```
  Brightness         5-14
```

(E)

(F)

Fig. 9a Status Print

The status print contains :

A) the type of printer as well as the version and date of the printer's firmware.

B) the values of selected configuration parameters.

C) cumulative operating time of the printer, amount of printed labels as well as cumulative length of printed material in direct thermal and thermal transfer mode.

D) the current values of printhead temperature and heat voltage

E) details about the operation of the sensor used for recognizing the media front edge

F) a test pattern to display the quality of the print image.

Font list

No.	Name	Type	Description
Font list			
-1	_DEF1	Bitmap	Default Font 8x8 dots
-2	_DEF2	Bitmap	Default Font 11x12 dots
-3	_DEF3	Bitmap	Default Font 11x22 dots
-4	OCR_A_I	Bitmap	OCR-A Size I
-5	OCR_B	Bitmap	OCR-B
3	BX000003	TrueType	Swiss 721
5	BX000005	TrueType	**Swiss 721 Bold**
596	BX000596	TrueType	Monospace 821
8	GCTLF2ZW	TrueType	Times New Roman

Fig. 9b Font list

The important parameters of the fonts available in the printer are printed as a table. The table contains both the fonts saved in the printer internal memory and the fonts loaded into the printer externally.

The definition of the parameters printed on the font list are as follows:

No.	:	Font number for the font used in programming (**T command**)
Name	:	Name of the font as it is saved internally
Type	:	Type of the font. Determines how the font is sized and what options are available when programming. (see the **T command** in the programming guide)
Description	:	A detailed description of the font's name, size, etc.

Device list

The hardware components installed in the printer and the optional devices connected to the printer are displayed in this list.

```
┌──────────────────────────────────────────┐
│              Device list                 │
├──────────────────────────────────────────┤
│ Name     Description                     │
│ CPU      M4, #076032654714               │
│          HW-Rev. 2                       │
│ TPH      300 dpi, 1280 dots              │
│ I/F 1    Ethernet 10/100 MBit/s          │
│          MAC: 00:02:E7:00:20:18          │
│ I/F 2    USB 1.1/2.0 Full-Speed          │
│ I/F 3    RS-232                          │
│ CARD     15 MByte (SanDisk SDCFB-16)     │
│          #243338G0812, vde 1.10          │
└──────────────────────────────────────────┘
```

Fig. 9c Device list

The meaning of the details printed on the device list are as follows:

CPU   :   Type and serial number of the CPU
                          Revision number of the CPU and FPGA

TPH   :   Resolution and number of dots
                          of the printhead installed

I/F [No.]   :   Available interfaces

CARD*   :   Capacity, manufacturer, serial number and
                          version number of the FlashCard installed

* Will only be printed if the respective devices are installed.

ASCII Dump (Monitor) Mode

The ASCII Dump mode provides a method to print the control sequences sent to the interface. In this mode the data received will be printed in text format depending on the selected character set. Error messages will be printed directly behind the fault, e.g. for unknown commands.
In this mode, the printer will not sense gaps between labels.

NOTICE !
The font used for the printout in this mode is large enough to be clearly readable after facsimile transmission. For questions or future reference, using this mode, you may print and retain a copy of the label data for each label you print.

To get a printout in monitor mode, load media (labels, continuous paper) and a transfer ribbon (if applicable), which extends over the entire print width of the printer.

NOTICE !
If only small materials available then it is possible to cut the width of the printout to at least 2 in (50mm). The value can be set using the parameter "Width ASCII dump" (see Printer Configuration/ Print Parameters).

To initiate a printout in monitor mode, go on as follows :

1. Press the $\boxed{\text{PAUSE}}$ key when switching on the printer and keep it pressed down for 1 second. A short header with date, time and firmware version will be printed.

2. Send a print job to the printer.

3. The ASCII Dump mode printout will be printed with the heat level and print speed set in the Printer Configuration.

4. In ASCII Dump mode, the printing of data will occur after four lines of data has been received. In some cases, the last few lines of text have to be printed by pressing the $\boxed{\text{FEED}}$ key.

5. To cancel the ASCII Dump mode printout, press the $\boxed{\text{CANCEL}}$ key.

6. Press the $\boxed{\text{CANCEL}}$ key to return to "Online" mode.

The control characters (ASCII Code 00 ... 31) as printed on ASCII Dump mode printouts are as follows:

Code DEC	HEX	Druck	Code DEC	HEX	Druck	Code DEC	HEX	Druck	Code DEC	HEX	Druck
00	00	N_{UL}	08	08	B_S	16	10	D_{LE}	24	18	C_{AN}
01	01	S_{OH}	09	09	H_T	17	11	D_{C1}	25	19	E_M
02	02	S_{TX}	10	0A	L_F	18	12	D_{C2}	26	1A	S_{UB}
03	03	E_{TX}	11	0B	V_T	19	13	D_{C3}	27	1B	E_{SC}
04	04	E_{OT}	12	0C	F_F	20	14	D_{C4}	28	1C	F_S
05	05	E_{NQ}	13	0D	C_R	21	15	N_{AK}	29	1D	G_S
06	06	A_{CK}	14	0E	S_O	22	16	S_{YN}	30	1E	R_S
07	07	B_{EL}	15	0F	S_I	23	17	E_{TB}	31	1F	U_S

Fig. 9d Representation of the Control Characters in ASCII Dump Mode

Example of ASCII Dump Mode

The following shows the "normal" appearance of a printed label, followed by the appearance of the same label when its commands are printed in ASCII Dump mode.
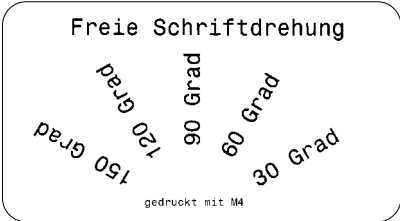
Fig. 9e Output Label
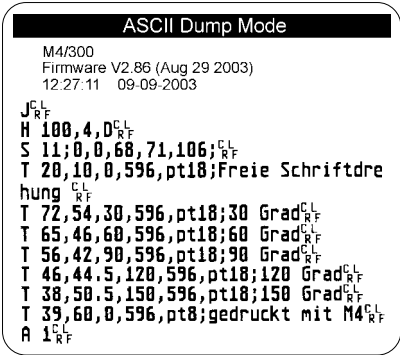
Fig. 9f Label commands printed in ASCII Dump mode

10. Network Printer Functions

M4 is equipped with an Ethernet interface. Therefore it is possible to connect the printers to a network using a **10 Base T / 100 Base T** network connector and TCP/IP Protocol.

Using the Ethernet Interface allows functions such as :

- Printing with LPR/LPD or RAW-IP
- Direct assignment of an IP Address or use of DHCP Servers
- Query status and change printer settings using HTTP
- Manipulate files stored on the memory card and update Firmware via FTP
- Send the status and error messages by E-Mail (EAlert) and SNMP
- Synchronize the date and time using a Remote Time Server

NOTICE !
The ability to use the available functions depends on the configuration of the local network.

Connecting the Printer / Printer Configuration

Information how to connect the printer on the Ethernet interface you can find in the chapter "Installation".

The chapter "Printer Configuration" contains information how to configure the printer using the Ethernet interface an the internal web-page.
Pay special attention to the recognition / assignment of the IP Address and the activation of a four-digit code number (PIN).

NOTICE !
IP Address and PIN must be known for using the network printer functions !

Printer Web-Page

The firmware of the printer contains an internal web-page that can be accessed using Ethernet and an Internet Browser with Java applets enabled.

1. Start the Internet Browser.
2. Access the printer's web-page by entering the Printer's IP Address in the Internet Browser :

   Example   **http://192.168.100.208**
3. The printer's web-page will appear in the Internet Browser.

"Status" Tab

Fig. 10a   Printer Web-Page "Status" Tab

After loading the printer's web-page, the "Status" tab is displayed. The "Status" tab contains the following information :

- the type of printer and the firmware version
- the printhead temperature and the element voltage for the printhead
- the printed lengths in direct themal and thermal transfer mode
- the time, when the printer was switched on and the number of printed labels
- the printer status (Ready, Printing Label or Error)

NOTE !
The information does not update automatically on the Web-Page. For the current status, click the Update button. Update will also take place when a tab change is made.
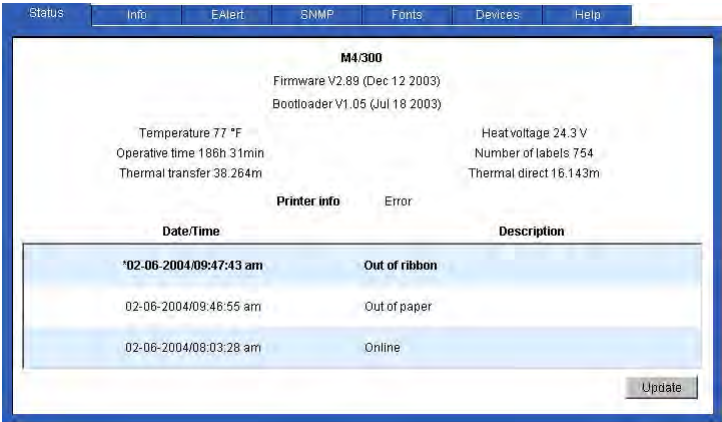
Fig. 10b   Printer Web-Page - "Status" Tab - Error List

The lower area of the display you will find a list of the error conditions, which occured since powering on the printer. The list will display the last eight events.

If the printer is currently in an error condition, the error will appear Bold and will be indicated with an *.

Fig. 10b shows in the last line, when the printer was switched on (Online). The other lines show 2 error conditions.

"Info" Tab
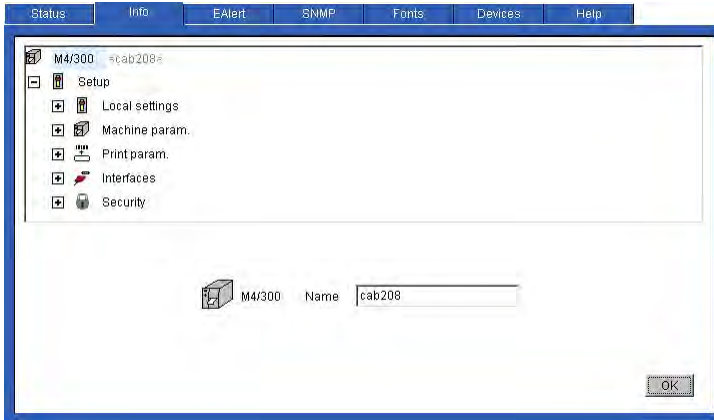
Fig. 10c Printer Web-Page - "Info" Tab

The "Info" tab allows configuration of the parameters which are also accessible using CABLABEL or the cab Setup Utility.

NOTICE !
If you want to change parameter settings using the printer's internal webpage, the setup has to be protected by a PIN !   If the setup is protected, the parameter PIN in the path "Security" is set to "On" !
Make sure the printer is Online before making adjustments using the Web-Page. You can check the printer's status by using the "Status" tab.

In the top window, the parameters are arranged in a tree structure. To modify a parameter, click on the name or symbol of the parameter you wish to change. Once selected, the adjustment can be made in the lower window. Confirm the change by clicking the OK button. After the modification of a parameter, you must enter the PIN number before changes will be accepted.
Information for the individual parameters can be found in the chapter "Printer Configuration".

At the highest level of the tree structure, you can assign a name (see Fig. 10c) for the printer. The name can be used to identify the individual printers on a network.

"EAlert" Tab

When using the Ethernet Interface it is possible for printer to send error messages by email to selected email addresses.

NOTICE !
For the use of this function, it is necessary to have an SMTP Server configured. (See chapter "Printer Configuration").

The selection of what messages are transmitted and what email address they are sent to are made using the "EAlert" tab on the printer's web-page.

Fig. 10d   Printer Web-Page - "EAlert" Tab

Before emails can be transmitted, a valid return address must be recognized by the SMTP Server.
Click the down arrow on the Pull down menu in the lower half of the screen and select "Return address" from the choices. Enter the return email address in the "Email" box and click the "Set" button. The return address will appear in the upper section of the screen.
Select the messages the same as above for the individual error condition and the email address to send the message to. The selected email address will appear in the upper window next to the selected error condition.
Modifying or deleting the selections is possible after clicking the desired line in the upper half of the screen.

NOTICE !
You must enter the PIN number before changes will be accepted.

Emails are automatically sent when the error condition occurs.

"SNMP" Tab

SNMP (Simple Network Management Protocol) is a query and command language between managing stations on the one hand and managed units (the printer) on the other hand. For SNMP communication between printer and managing station the parameter "SNMP Agent" must be set to "On". (see "Printer Configuration").

Fig. 10d   Printer Web-Page - "SNMP" Tab

The "SNMP Tab" allows configuration of the SNMP communication between the printer and the managing stations.

NOTICE !
If you want to change parameter settings using the printer's internal webpage, the setup has to be protected by a PIN !   If the setup is protected, the parameter PIN in the path "Security" is set to "On" ! Make sure the printer is Online before making adjustments using the Web-Page. You can check the printer's status by using the "Status" tab.

To modify a parameter, click on the concerning window. Confirm the change by clicking the "Set" button. After that you must enter the PIN number before changes will be accepted.

IP

IP setting for two managing stations, which may communicate with printer via SNMP.

Community

Several SNMP managing stations can be put together as a community. The membership to a community the managigng station declares with the SNMP community string (a kind of password).
The standard default string is „public".

Trap

The SNMP agent sends an event notification, called a trap to the managing station to identify the occurrence of special conditions. These traps are sent without request of the managing station.

For the **M4** printer the following traps may be choosen :

Critical fault :   All hardware and protocol error messages, which occure during operation, will be sent to the managing station.

Media error :   If that function is choosen, the following error messages will be sent to the managing station :
- Out of ribben
- Out of paper
- No label found
- Warn level ribbon

Startup :   The managing station gets a message, when the printer is switched on.

Offline :   for **M4** no function

"Fonts" Tab

In the "Fonts" tab, the parameters of the character fonts available are listed.
the table contains both printer internal fonts and the character fonts which have
been downloaded to the printer.

Fig. 10e   Printer Web-Page - "Fonts" Tab

The parameters on the screen are defined as follows :

No.   :   Identifying number assigned to the font used for
                         programming.

Name   :   The printer's internal name for a font.

Type   :   Defines what type the font is, such as Bitmap, Speedo,
                         etc.

Description :   Description of the font. (size, font family)

"Devices" Tab

The "Devices" tab displays the hardware components of the printer, as well as the devices that are attached to the printer.

Name	Description
CPU	M4, #074033657488
	HW-Rev. 5
TPH	203 dpi, 832 dots
I/F 1	Ethernet 10/100 MBit/s
	MAC: 00:02:E7:00:19:98
I/F 2	USB 1.1/2.0 Full-Speed
I/F 3	RS-232
CARD	15 MB (Mitsubishi ATA Card)
	# , Rev 1.1

Tabs: Status | Info | EAlert | SNMP | Fonts | Devices | Help

Fig. 10f   Printer Web-Page - "Devices" Tab

The parameters in the "Devices" tab are defined as follows :

CPU   :   Type and serial number of the CPU Printer Circuit Board and revision number of the Printer Circuit Board and FPGA

TPH   :   Resolution and number of heating points of the installed thermal print head

I/F [No.] :   Available Interfaces

CARD   :   Storage capacity, manufacturer, serial number and version number of the installed FlashCard

"Help" Tab

A support page for the Printer Web-Page will be displayed when clicking the "Help" Tab.

Printing on a Network

The printer can be operated on a network using the printing protocols "Raw-IP" and "LPD".

Availability and Installation of the Printing Protocols under Windows

Under Windows NT4.0 and Windows 2000 the protocols are available, but LPD is not installed using the standard installation. Under NT, an LPR protocol port can be installed and configured to print to an LPD (Line Printer Daemon) enabled printer like the **M4**. Windows 2000 offers a new port monitor which is called Standard Port Monitor (SPM). SPM is installed by default when TCP/IP is installed in Windows 2000 and can be reconfigured for LPR- or Raw-IP protocol. Information for installing and configuring these protocols can be found in Windows documentation.

Under the Windows 95/98/ME operating system, there is no built-in support for Raw-IP and LPD but network printing is still possible. There are Third-Party solutions for using TCP/IP with the printer. It is necessary to install special tools in order to use these printing protocols. Information about these Tools are available from cab.

NOTICE !
When Raw-IP is installed, you can select between port addresses of 2501, 3001, 3002, 9100, 9101, 9102 and 9103. The same port address must be configured in the printer.

When an LPD printer port is installed, the computer asks for a "queue name". Please enter the queue name "lp" (line printer).

Adjustment of the Windows Printer Settings

In order to use the printing protocols Raw-IP or LPD, the Windows Printer Settings must be configured as follows :

1. Click on Start -> Settings -> Printer.
2. Click the right mouse button when highlighting the selected printer.
3. Click on Properties and select Details or Adjustments.
4. In the list, you should find the printing protocols installed along with the standard printing protocols. The names of the printing protocols depend on the installation tools used.
5. Select the Raw-IP or LPD option and click OK.

FTP Printer Administration

Using the File Transfer Protocol (FTP) you can send files over the network. For the handling of files, you can use most common FTP programs (FTP-Clients), with which files from a local computer or server can uploaded or downloaded, deleted and overwritten.

With the FTP printer administration, the printer will function as an FTP Server.

NOTICE !
For administration of the printer, you must use an FTP Client that has Binary data transfer available.

The FTP-Printer administration covers two functions :

- Manipulation of files on the memory card installed in the printer.
- FTP firmware update

FTP Log-on

To setup an FTP connection, you must connect to the server using an FTP Client. The details on how to log-on depend on what client is being used. The following information is required for the FTP Client :

1. The IP Address for the printer

2. User name / Password

   username : "**anonymous**" / any password

   With this log-in you are able to display and download the files stored on the memory card.

   username : "**root**" / password: **PIN** number of the printer

   This log-in permits displaying, Upload and Download of memory card files and FTP firmware update.

NOTICE !
For successful log-in with the "root" user name, the PIN number must be preconfigured in the Printer's settings. This PIN number is to be input during the FTP log-on as password.

Information of configuring the PIN number can be found in the Printer Configuration section under Security.

If no PIN was assigned, this can be done using the printer's web-page under the "Info" tab.

After the log-in is made, accessing the FTP-Server is similar to accessing a Windows file.

Structure of the FTP Server
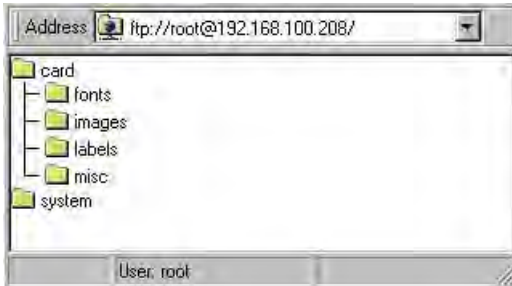
Fig. 10g   Structure of the FTP Server

The files accessible over the FTP are divided into two separate directories.

The "card" directory contains the files that are stored on the memory card installed in the printer.

The "system" directory contains the firmware of the printer as a file.

Administration of the Memory Card

> **NOTICE !**
> **Make sure before accessing the memory card that the printer is in the Online mode. You can check the status of the printer by using the "Status" tab on the printer's web-page.**

Download

A download of the files stored on the memory card can take place using both the "anonymous" log-in and the "root" log-in. The screen will display the different file types and structure of the card files.

Upload

For uploading to the card, it is necessary to log-in as "root". In order to upload label files, they must have the extension of **.LBL**. When copying the files onto the memory card, the files will be automatically sorted after the file upload takes place.

FTP Fimware Update

NOTICE !
Make sure the printer is in the Online mode before attempting a firmware
update. You can check the printer's status by using the printer's web-
page under the "Status" tab.

In order to upload the firmware update, you must be logged-in as "root" (see
"FTP Log-on paragraph").

  1. Configure the FTP Client for "Binary" transfer mode.
  2. Open the "system" folder
  3. Copy a valid firmware file (I.E. 287_3921.m4) into the "system" folder.
  4. After the file has uploaded correctly, the printer will reset.

The success of the firmware update can be checked using the Printer's web-
page and the "Status" tab.

Copyright SNMP Agent

11. Memory Cards

The **M4** printer offers the ability to use memory cards to permanently save formats, graphics, fonts and database information on the memory card. Data is sent to the memory card using the printer's interface and stored on the memory card.

Although memory cards have non-volatile memory, it is recommended that you make backup copies in case the original card malfunctions or is lost.

Type 1 CompactFlash cards with a maximum capacity of 512 MegaByte can be used.
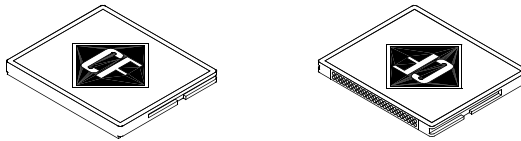
Fig. 11a   CompactFlash Memory Card

A special application of the memory card is the use of a BASIC file stored with the name "DEFAULT.LBL".

The firmware of the **M4** contains a BASIC compiler. That allows the printer to process data using BASIC programming before the data are used for the print operation. That way it is possible to substitute non-cab printers or to process data streams from systems like scales or PLC's and to print the relevant information on any label format.

A file with the name „DEFAULT.LBL" stored on the memory card is immediately carried out after sitching on the printer.

So you can store a BASIC file as decribed before on the memory card as „DEFAULT.LBL" . After switching on the printer is ready to process data from a non-cab device.

More information of the programming can be found in the „cab Printers Programming Manual".
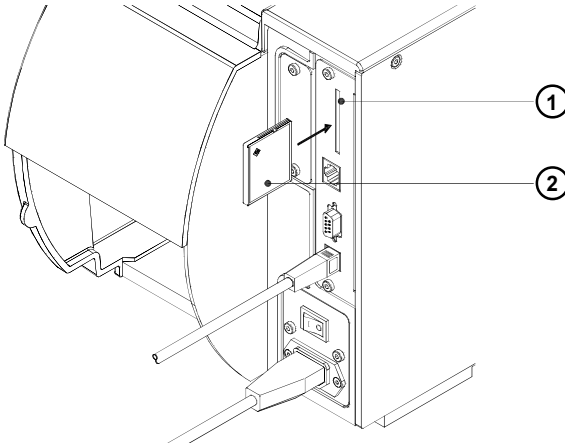
Installation and Removing the Memory Card

Fig. 11b Installation of the Memory Card

With the CompactFlash card contacts facing the slot (**1**), insert the card (**2**) into the slot (**1**).

NOTICE !
There are guides on the sides of the memory card which make it impossible to insert the card incorrectly.

For removing pull the card out of the slot (**1**).

CAUTION !
To avoid loss of data on the memory card at removing, make sure, that the printer does not access the card at this moment !

Preparing the Memory Card

In order to use the memory card the first time, the card must be formatted for the printer to read and write data. Often the cards are preformatted for use with the printer.
If you try to access a card, which is not formatted, the printer will display an error on the navigator pad. If such an error occurs, you must format the card using one of the following methods:

1. Format the card sending the software command "Mf;name CR" (see the Programming Manual for more information) through the connected interface.

2. Format the card using a FlashCard drive on a PC.

3. Format the card using CABLABEL.

Writing to the Memory Card

There are different methods to write formats to a memory card.

The most secure and practical method to write to the memory card is the printer's interface.

For saving a label to the memory card using direct programming, place the "Ms" command at the beginning and end of your format:

```
Ms LBL;ABC                    Command to save a file called ABC"
J                             |
H 100,0,T                     |
S l1;0,0,68,71,104            |           Contents of the file "ABC"
T 10,10,0,3,pt15;Memory card  |
A 1[NOPRINT]                  |
Ms LBL                        End of Save File command
```

After processing the commands, the format "ABC" is stored on the memory card
The [NOPRINT] parameter after the A command suppresses the printing of a label while saving the file to the memory card. Whenever the file "ABC" is accessed from the memory card, one label will be printed. If you want the operator to specify an amount of labels to be printed, move the A command statement after the second "Ms" command in the example above.

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Appendix A - Operation in Peel-off Mode

Components for the Peel-off Mode

The printer types **M4/200P** and **M4/300P** are specifICly developed for operation in the peel-off mode and they are equipped with dispense plate (**7**). Additionally the optional **Present Sensor PS8** (**3**) is needed.

In the peel-off mode the labels are removed from the silicon liner immediately after printing, and then available in a dispense position (**4**) ready for further processing. The see-through present sensor consisting of transmitter (**1**) and receiver (**2**) indicates the presence of a label, and pauses the printing process until the label is removed. After taking the label from the dispense position the next label will be printed.

To guarantee a maximum of reliability in the peel-off mode the printer is additionally equipped with a pair of rollers (**5**,**6**) to cause the dispense tension.
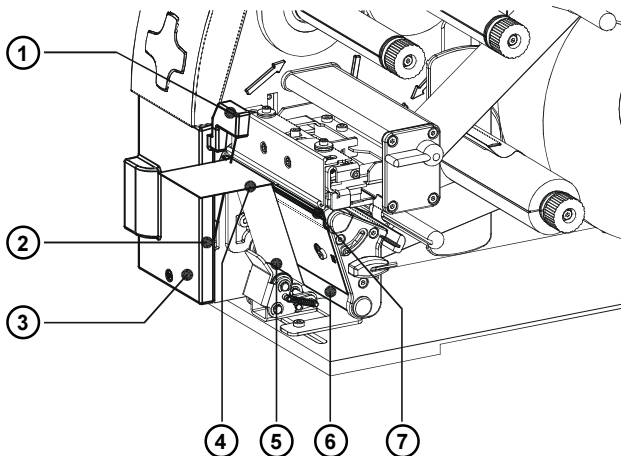
Fig. A-1 Components for Peel-off Mode

Prelimininary Tests

The media width and height given in the Technical Specifications are suggested values for media when using the present sensor :

        Label Width :   1 to 4.6 in (25-116 mm)
        Label Height :   .5 to 7.9 in (12-200 mm)

CAUTION !
When using different media from the specifications, for example
        - media which is smaller than the specifications above,
        - very thin media,
        - very thick silicon liner,
        - media with aggressive adhesive,
        - transparent media
it is recommended to test the media before !

For **M4/200P** the print speed in the peel-off mode is limited to maximum 4 ips (100mm/s). This limitation guarantees a correct operation in the dispense mode when using maximum supply rolls (diameter 8 in (203mm), width 4.7 in (120mm)) also with **M4/200P**. When using supply rolls with a small outside diameter it is possible to increase the print speed during on-demand labelling. For that purpose the speed limitation has to switch off. Then the print speed can be set on all possibilities until 6 ips (150mm/s) for **M4/200P**.

CAUTION !
When operating the M4/200P with higher speed it is strongly recommended to carry out preliminary tests using the appropriate maximum rolls !

Printer Configuration

There are a variety of parameters that can be set to configure the printer to specific requirements in the "Setup" menu of the Offline Menu. Further information to the individual parameter of the Peel-off Mode can be found in the chapter "Printer Configuration" :

Parameter	Chapter
Peel position Backfeed delay Limit peel-off spd.	Printer Configuration -> Machine param. -> Demand sensor
Backfeed	Printer Configuration -> Print parameters

Loading Labels

Loading of labels for Peel-off Mode is described in the chapter "Media Loading".

Operation

The printer is ready for operation if all connections have been made and all materials are loaded correctly.

NOTICE !
After loading the media it is necessary to locate top of form by pressing the FEED **key. Remove the dispensed labels manually from the dispense plate.**

NOTICE !
To operate the present sensor the peel-off mode must be activated in the software !
For direct programming use the P-command (see Programming Manual) !

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Appendix B - Pin Assignment of the Interface Connectors

Pin Assignment of the RS-232 Interface

The printer is equipped with a 9 pin SUB-D connector for the serial RS-232 interface.
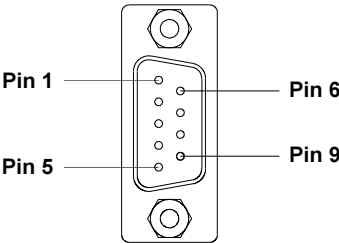
Fig. B-1 RS-232 Interface Connector (rear of the printer)

Pin	Signal	Function
1	CD	Carrier Detect
2	TxD	Transmit Data
3	RxD	Receive Data
4	DTR	Data Terminal Ready (not used)
5	GND	Ground
6	DSR	Data set ready (not used)
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring Indication (not used)

Table B-1 Pin Assignments of the RS-232 Interface Connector

Interface Cable for RS-232

To communicate with the printer, a standard RS-232 interface cable is used.

If you have any problems interfacing with the printer, contact the manufacturer of your computer on the pin assignments of the interface. Use the pin assignment of the printer as shown in Table B-1 to obtain a compatible cable.

```
PC   │ 1 ├──────────────────┤ 1 │   Printer
     │ 2 ├──────────────────┤ 2 │
     │ 3 ├──────────────────┤ 3 │
     │ 4 ├──────────────────┤ 4 │
     │ 5 ├──────────────────┤ 5 │
     │ 6 ├──────────────────┤ 6 │
     │ 7 ├──────────────────┤ 7 │
     │ 8 ├──────────────────┤ 8 │
     │ 9 ├──────────────────┤ 9 │

    9 pin connector          9 pin plug
```
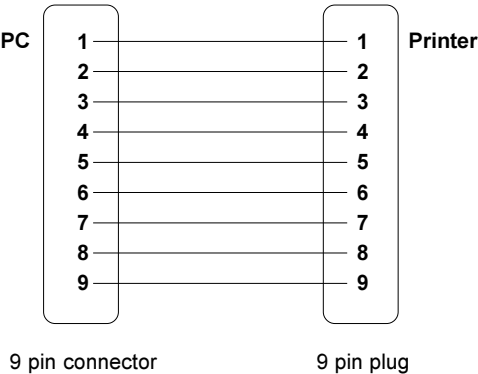
Fig. B-2 Interface Cable with 9 pin Connector

Appendix C - Error Messages / Problem Solution

Error Messages

The printer is equipped with a self diagnostic system that will indicate errors switching on the letterings $\boxed{\text{ERROR}}$, $\boxed{\text{PAUSE}}$ or $\boxed{\text{CANCEL}}$ on the navigator pad.

Recoverable Errors

While processing a print job, errors can occur that can be 'recovered' by the operator, allowing the print job to continue from the point at which it was stopped.

Indications on the Navigator Pad

Lettering	Status
$\boxed{\text{ERROR}}$	on
$\boxed{\text{PAUSE}}$	flashes
$\boxed{\text{CANCEL}}$	on

Table C-1 Indications in the Recoverable Error Mode

Key Functions

Key	Function
$\boxed{\text{PAUSE}}$	Continues the current print job after the error has been corrected.
$\boxed{\text{CANCEL}}$	Short press - Cancels the current print job Long press - Cancels the current print job and deletes all jobs from the internal memory

Table C-2 Function of Keys in the Recoverable Error Mode

Non-Recoverable Errors

During printing, an error has occured which cannot be cleared without canceling the print job (e.g. hardware error).

Indications on the Navigator Pad

Lettering	Status
ERROR	on
CANCEL	flashes

Table C-3 Indications in the Non-Recoverable Error Mode

Key Functions

Key	Function
CANCEL	Short press - Cancels the current print job
	Long press - Cancels the current print job and deletes all jobs from the internal memory

Table C-4 Function of Keys in the Non-Recoverable Error Mode

Extended Error Indication

If you operate the printer using the Ethernet interface, more detailed error messages are available. These messages you can get from the "Info" tab of the internal printer web-page.
For more information how to use the printer web-page see chapter "Network Printer Functions".
The table below contains the most important error messages :

Error	Possible Cause	Solution
File error	Requested file is not on the card.	Check the contents of the card.
No label found	There are labels missing on the media.	Press the PAUSE key repeatedly until printer recognizes the next label on the media.
	The label size defined in the format sent to the printer does not match the actual media size.	Cancel the current print job . Change the label size to the correct value. Restart the print job.
	Printer is loaded with continuous media, the software is configured for die-cut media.	Cancel the current print job. Change either the software setting or the media; Restart the print job.
Out of paper	Out of media	Insert new media.
	Media has not been properly loaded under the label sensor.	Check the media feed path.
Out of ribbon	Out of transfer ribbon.	Load new supply roll of transfer ribbon.
	Ribbon melted during printing.	Cancel the current print job. Change the heat level in the software, **clean the printhead**, reload the transfer ribbon and restart the print job.
	Printer is loaded with thermal labels for direct thermal mode, and no ribbon is loaded, but the software is configured for transfer printing.	Cancel the current print job. Set the software to direct thermal mode. Restart the print job.
	The supply roll of transfer ribbon is not secured to the ribbon supply hub.	Tighten the roll of transfer ribbon by turning the knurled knob on the ribbon supply hub.

Table C-5 Error Messages

Error	Possible Cause	Solution
Protocol error	Printer has received an unknown or invalid command (display shows command abbreviated).	Depending on the type of error, the command can be skipped by pressing the PAUSE key or the print job must be canceled by pressing the CANCEL key.
	The interface of the computer and printer are set differently.	Switch the printer off. Correct the interface settings in printer setup (see chapter 8).

Table C-5 Error Messages (continuation)

Problem Solution

Problem	Cause and Solution
Thermal transfer ribbon wrinkles	Shield for the transfer ribbon is not correctly adjusted. Make the adjustment according to chapter 7.
	Printhead support is not correctly adjusted. Make the adjustment according to chapter 7.
	Transfer ribbon is too wide. Use transfer ribbon which is slightly wider than the media.
Print image has smears or voids	Printhead is dirty, clean the printhead (appendix D).
	Temperature is set too high, decrease heat level in software.
	Incompatible combination of ribbon and media. Choose a ribbon compatible to the media.
Printer does not stop after the transfer ribbon runs out	Direct thermal printing is selected in the software. Change the setting to thermal transfer printing.
Printer does not print. "Paper out" message.	Media is not feed through the media edge sensor. Correct the path of the media (chapter 7).
	Media edge sensor is dirty. Clean the sensor.
Printer prints a sequence of characters instead of the actual label format	Printer is in ASCII dump mode. Cancel this mode.
Media is moving but the ribbon is not moving.	Transfer ribbon is installed incorrectly. Check to see if the inked side is facing the media (chapter 7).
	The combination of ribbon and media is incompatible. Choose a ribbon that is compatible.
Printer is skipping every other label when printing.	The label height in the software is set too large. Correct the setting and print the format again.

Table C-6 Problems / Solutions

Problem	Cause and Solution
Vertical white lines in the print image	Printhead is dirty, clean the printhead (appendix D).
	Printhead is defective (failure of heating elements), replace the printhead.
Horizontal white lines in the print image	Printer is being used with backfeed set to "smart" in cut or dispense mode (see chapter 8). Set backfeed to "always" in the Setup.
Print image is irregular or one side is lighter than the other side.	Printhead is dirty, clean the printhead (appendix D).
	The printhead support is not adjusted for the width of the media. Readjust the printhead support (see chapter 7).
"Ribbon out" message appears when ribbon is loaded	Transfer ribbon is not secured to the ribbon supply hub. Tighten the knob on the ribbon supply hub (see chapter 7).

Table C-6 Problems / Solutions (continuation)

Appendix D - Maintenance / Cleaning

The printer requires very little maintenance.

Most important, clean the printhead on a regular basis. This will ensure a high quality printed image. It also reduces the amount of wear of the printhead. Aside from that, the only other servicing required is to clean the outside of the printer occasionally.

WARNING !
Before starting any maintenance, power OFF the printer and disconnect the printer from the outlet!

General Cleaning

During the normal operation of the printer, particles of dust and paper can accumulate inside the printer. Remove these particles with a soft brush or a vacuum.

The cover of the printer can be cleaned with a standard cleanser.

CAUTION !
Do not use abrasive cleaners or solvents !

Cleaning the Print Roller

Accumulations of dirt on the print roller can lead to impaired media transport.

Clean the roller as follows :

1. Open the printhead.

2. Remove the media from the printer.

3. Remove all deposits with a rubber cleaner or isopropyl alcohol and a soft cloth.

Cleaning the Printhead

During printing, the thermal printhead will accumulate dirt such as paper dust or particles of color from the ribbon. This accumulation can caused a deterioration of the print quality (contrast difference of the label, appearance of clear vertical stripes). To correct or avoid these types of problems, the printhead should be cleaned at regular intervals:

Direct Thermal Printing   :   every media roll change

Thermal Transfer Printing :   each ribbon change

CAUTION !
Do not use sharp objects for cleaning the printhead !
Do not touch the protective layer of the printhead with your hands!

Clean the printhead as follows :

1. Open the printhead as far as possible.

2. Remove the media and ribbon from the printer.

3. Clean the surface of the printhead with a cleaning pen, or use a cotton swab dipped in isopropyl alcohol.

4. Let the printhead dry approximately 2 to 3 minutes before powering-on and restarting the printer.

Cleaning the Label Edge Sensor
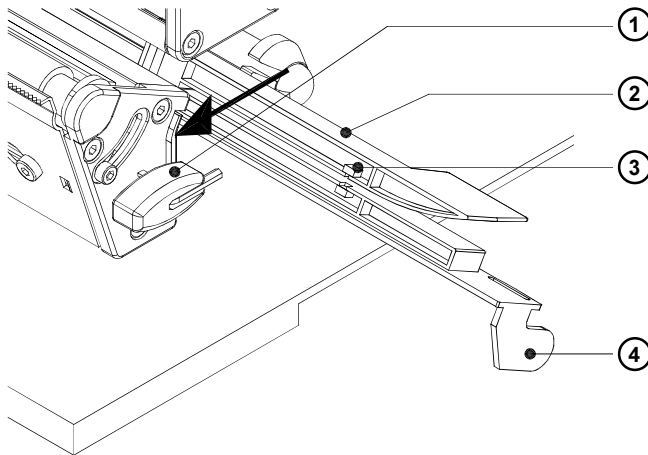
Bild D-1 Reinigung der Etikettenlichtschranke

During operation of the printer, paper dust can accumulate on the label edge sensor. In some cases, this may lead to problems when sensing the media. If this is the case, you should clean the label edge sensor.

CAUTION !
Do not use solvents to clean the label edge sensor!
Do not use sharp objects to clean the optical sensor!

1. Remove the media from the printer.
2. Press the latch (**1**) in the direction of the arrow in figure D-1.
3. Continue pressing the latch and pull the label edge sensor (**2**) with the handle (**4**) to its outermost position.

CAUTION !
The label edge sensor cannot be removed totally ! There is a stop when the label edge sensor reaches the outermost position ! If you try to pull further the label edge sensor can be damaged !

4. Clean the label edge sensor and its optical sensors (**3**) with a soft brush or a cloth dipped in isopropyl alcohol.
5. Slide the label edge sensor back into its original position.

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Appendix E - Replacing Assembly Units

Replacing the Printhead

The printers are designed so the printhead replacement can be completed without making any adjustments.

On **M4** cannot be switched between printheads with 203 dpi and 300 dpi print resolution.

CAUTION !
The printhead (1) is attached and aligned on a head plate (2). Do not loosen the screws (3), that attach the printhead to the head plate.
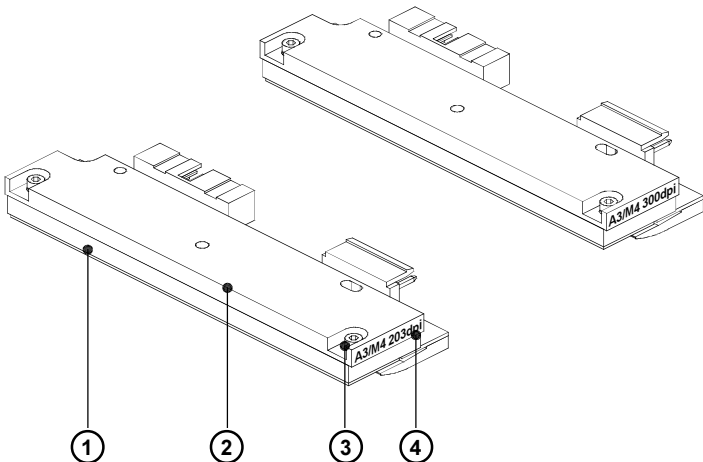
Fig. E-1 Printhead

For easy distinction between the printheads, a label (**4**) with information about the printer type is located on the head plate.
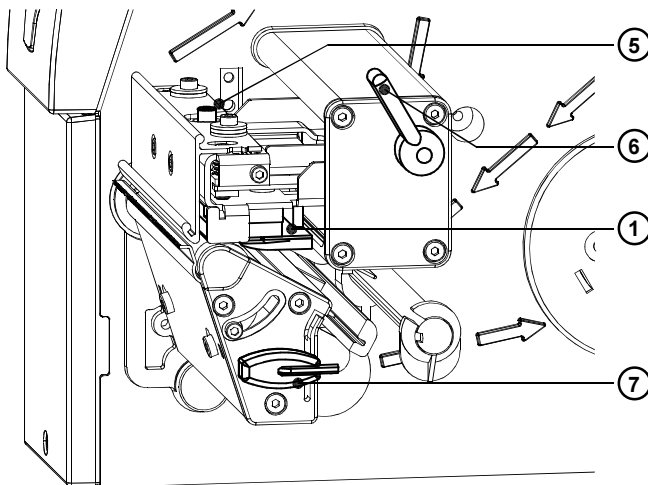
Fig. E-2 Changing Printhead I

WARNING !
Unplug the power cord from the power source before starting!

CAUTION !
Protect the printhead against damage by electrostatic dischargement !
- **Put the printer on to a grounded conductive surface !**
- **Ground yourself during printhead replacement for example using a grounded wrist-strap !**
- **Do not touch the connector pins of the printhead by naked hands !**

Make sure the glass surface on the printhead is not touched by sharp objects or your hand!

1. Remove the media from the printer.

2. Swing the lever (**6**) to the position shown in figure E-2. In this position, the printhead assembly is unlocked but still lying on the print roller.

3. Loosen the printhead locking screw (**5**) using the Allen key (**7**).

4. To lift the printhead assembly, swing the lever (**6**) clockwise until it stops.

5. Remove the printhead (**1**) from the pins (**11**) on the printhead carriage.
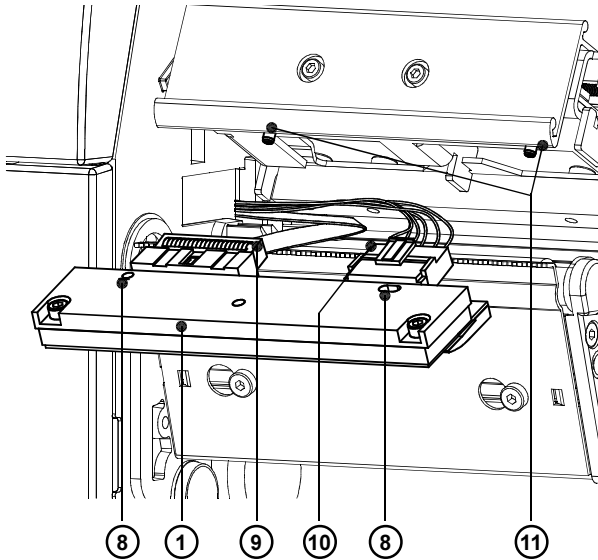
Fig. E-3 Changing Printhead II

6. Carefully unplug the printhead (**1**) from the connectors of the printhead
    cables (**9 and 10**).

7. Connect the new printhead to the cables.

8. Place the printhead into the assembly and insert the holes (**8**) onto the
    pins (**11**).

9. Tighten the locking screw (**5**) by hand. Check that the printhead is
    completely secured in the printhead carriage.

10. Swing the lever (**6**) again into the position shown in figure E-2.

11. Tighten the locking screw (**5**) completely. Do not over-tighten the locking
    screw (**5**).

Replacing the Print Roller and the Rewind Assist Roller

NOTICE !
There is described the replacement of the print roller and the rewind assist roller for the P-version printer types in this chapter.
The replacement of the print roller at the other printer types can be made in the same way !
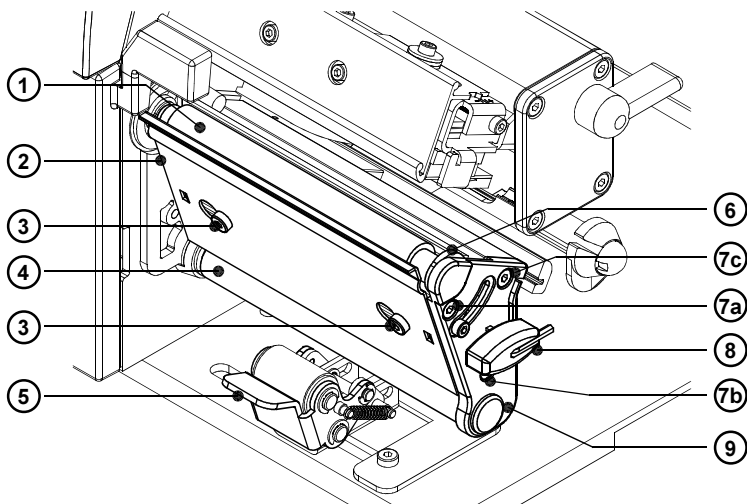
Fig. E-4 Changing Print Roller and Rewind Assist Roller (I)

WARNING !
Unplug the power cord from the power source before starting!

1. Lift the printhead up and swing the locking system (**5**) away from the rewind assist roller (**4**). Remove the media from the printer.

2. Take the Allen key (**8**), loosen the screws (**3**) and remove the dispense plate (**2**).

3. Remove the three screws (**7**).

4. Remove the plate (**9**) and the printhead support (**6**) from the axle of the print roller (**1**) and the rewind assist roller (**4**).
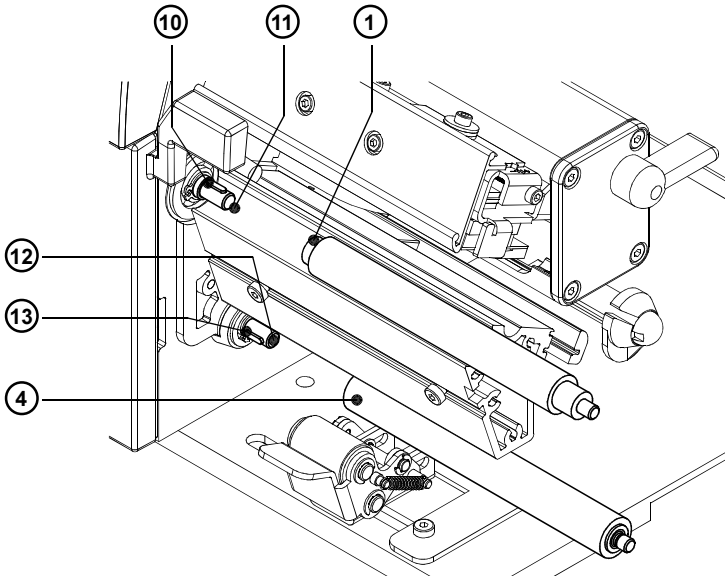
Fig. E-5 Changing Print Roller and Rewind Assist Roller (II)

5. Remove the print roller (**1**) or the rewind assist roller from the respective shafts (**11, 12**).

CAUTION !
Before assembling the new roller check if the keys (10, 13) are placed correctly in the shafts (11,12) !

6. Slide the new print roller or rewind assist roller onto the appropriate shaft. Make sure the groove in the axle of the roller (**1, 4**) is aligned to the key (**10, 13**) on the shaft (**11, 12**).

7. Reinstall the plate (**9**) and printhead support (**6**).

8. Tighten the screws (**7**) **a** screw first, then the **b** screw and then the **c** screw.

9. Reassemble the dispense plate (**2**).

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Appendix F - Firmware Updates

General Information

Over a period of time, the printer's firmware is subject to constant development and revisions to allow for new features, easier error correction, etc.
The firmware is stored in a flash-EPROM, which represents a new technology in thermal transfer printers. For firmware updates, a file containing the updated version can be copied to the printer using the parallel interface.
The firmware file is available on a disk or can be obtained from the Internet.
The **cab** Internet address is included at the front of this manual.

Firmware Update Using the RS-232 Interface

For firmware update using the serial RS-232 interface you need a terminal program that has Binary data transfer available.
Such terminal programs (e.g. TeraTerm) are available on the Internet.

1. Adjust the interface parameters on the terminal program to the printer settings (for example 57600 Baud, hardware protocol RTS/CTS) and setup a connection between terminal program and printer.

2. Enter the command **update** on the terminal program and press the enter key. The key lighting on the navigator pad changes from FEED to CANCEL.

3. Send the firmware file (e.g. 289_3c12.m4) in Binary mode from the terminal program. The transmission of the file can take a few minutes. Some terminal programs indicate the progress of the transmission on the screen.

4. After the transmission has finished, the new firmware will be stored on the printer and the key lighting on the navigator pad changes back to FEED. This indicates the completion of the update.

5. Close the terminal program.

NOTICE !
If a fault occurs during update, the previous firmware setting is invalid and the update has to be started again.

Firmware Update Using the Ethernet Interface

For firmware update using the Ethernet interface you must use a FTP Client that has Binary data transfer available.
Moreover a PIN must be activated on the printer (see "Printer Configuration").

1. Connect to the FTP-Server of the printer using a FTP-Client. To setup the FTP connection you must use the **IP Address** of the printer, the username **root** and the **PIN** of the printer as password.

   Using the Internet Explorer you could enter e.g. :

   ftp://192.168.100.208

   Click on "File" --> "Log-on as" and enter the username "root" and the PIN of the printer as password.

2. The FTP-Server of the printer is shown.

3. Configure the FTP-Client for "Binary" transfer mode and copy the firmware file (i.e. 289_3c12.m4) into the "system" folder of the FTP-Server. The FEED key lighting on the navigator pad will be switched off.

4. After the transmission has finished, the new firmware will be stored on the printer and the FEED key lighting will be switched on. This indicates the completion of the update.

5. Close the FTP-Client.

NOTICE !
If a fault occurs during update, the previous firmware setting is invalid and the update has to be started again.

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cab

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EU - Conformity Declaration

We declare herewith that as a result of the manner in which the machine designated below
was designed, the type of construction and the machines which, as a result have been
brought on to the general market comply with the relevant fundamental regulations of the EU
Rules for Safety and Health. In the event of any alteration which has not been approved by
us being made to any machine as designated below, this statement shall thereby be made
invalid.

Description: Type:

Transfer Printer   **M4**

Applied EU Regulations and Norms:

- EC Machinery Regulations	**98/37/EU**
- Machine Safety	EN ISO 12100-1:2003
	EN ISO 12100-2:2003
- EC Low Voltage Regulations	**73/23/EEC**
- Data and Office Machine Safety	EN 60950-1:2001
- EC Electromagnetic Compatibility Regulations	**89/336/EEC**
- Threshold values for the Interference of Data Machines	EN 55022:1998
- Limits for harmonic current emission	EN 61000-3-2:2000
- Limits of voltage fluctuation and flicker	EN 61000-3-3:1995+A1:2001
- Immunity characteristics- Limits and methods of measurement	EN 55024:1998
- Immunity for industrial environments	EN 61000-6-2:2001

Signed for, and on behalf of, the Manufacturer :

cab Produkttechnik Sömmerda
Gesellschaft für Computer-
und Automationsbausteine mbH
99610 Sömmerda

Sömmerda, 04.02.04

Erwin Fascher
Managing Director

cab Produkttechnik GmbH & Co KG