



PAM 3000

Printer-Applicator-System

Operator's Manual

BRADY



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PAM 3000

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Manufacturer's Declaration

A General Guide to the Documentation

Operator's Manual

The present manual contains information on the characteristics, features, functions, and use of the Printer-Applicator-System **PAM 3000**.

The manual covers general information which is necessary for operating the printer as well as information about accessibility to different components of the printer.

Furthermore the loading of media and ribbon and the configuration in setup will be explained. In the appendices, you will find useful additional information, such as internal character sets of the printer, interface specifications, comments on possible error messages and printer maintenance.

Note the directions for use on recommended material and comments on maintenance in order to avoid damage and premature failure of your printer.

Every effort has been made in the creation of this manual to provide as much information as possible in an understandable manner.

We welcome your comments and suggestions regarding additions or corrections to improve future editions of this manual. Please, let us know if you have any questions.

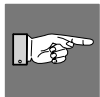
Important information contained in this manual is marked as follows:



WARNING !
Impending danger!
May cause death or physical injuries.



CAUTION !
Dangerous situation !
May cause equipment/material damage or data loss.



NOTICE !
Helpful additional information and tips for use.

Further Documentation

The programming of the **PAM 3000** printer is completely compatible to the programming of the **PAM 2000**. Therefore it is possible to use the information, that can be found in the manual "Programming Instructions - **Apollo**".

Detailed information about service and maintenance are included in the "Service Manual" of the **PAM 3000**. (e.g. replacement of components, adjustment instructions, spare parts lists, etc.)

Trademarks

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1 Product Description

General Information

The **Printer-Applicator-System PAM** is especially developed for automatic labelling.

The system is composed of two main parts: printer module and applicator module.

The printer module **PAM 3000** is equipped with a high-class 300 dpi printhead to print texts, bar codes and graphics quick, brilliant and tidy.

The print mechanism is aligned to dispense labels. The transport system guarantees a high precision in printing and applying labels independent from the size of the label supply roll. For the receipt of the print data **PAM 3000** has a serial RS-232-interface.

The printer is designated to work in the dispense mode. In this mode only each one label is printed after the receipt of an start signal. The label is peeled-off from the backing paper by moving back the peel-off table and taken by the pad. After removing the dispensed label the peel-off table is moved back in the printing position. So the printing of the next label may be started at the front label edge.

The applicator module **PAM 3002** performs the transport of the labels from the peel-off position (starting position) to the product (labelling position). The labels are transferred with a pad, by two compressed-air driven pneumatic cylinders. A lift cylinder carries out the vertical movement of the pad between the starting position and the labelling position and the turn cylinder provides the turning movement of the pad between the 0°-position and the 90°-position.

The labels could be applied parallel to the print line (**0°-position**) as well as across to the print line (**90°-position**).

For the external control of the labelling process the **PAM 3000** is equipped with a PLC (programmable logic control) interface with potential free inputs and outputs. This interface is especially used to start the printing and applying of the labels.

The **PAM 3000** is an innovative label printer and applicator system which may be used in either direct thermal or thermal transfer mode.

The double lined LCD display keeps the operator constantly informed about the current status of the printer. The setup menu allows easy configuration changes whenever desired.

There are offered varied options to complete the print system.

Characteristics of the Thermal Printhead



CAUTION !

The thermal printhead is the most sensitive part of your printer.

Pay special attention to the following guidelines :

- 1) The glass cover on the printhead must not be touched with the hand. Do not use any sharp items, such as knives or screwdrivers, to clean the printhead.
- 2) During printing, always take care that there is no dirt or foreign objects on the labels in order to avoid impurification of the printhead. This way, the printhead might be damaged.
- 3) Use proper label material with a smooth surface only.
A rough surface will affect the printhead and may cause damage and reduce its operating life.
- 4) Clean the printhead regularly with a special printhead cleaning pen, or an isopropyl alcohol soaked cotton swab.
- 5) Print with the lowest possible printhead temperature.

Careful use will allow you to print approximately between 30 to 50 km of print media before the printhead needs replacing.

Improper usage can cause damage to the printhead.

Technical Specifications

Type :	Direct thermal / Thermal transfer printer
Printhead :	Thin film transfer printhead
Resolution:	300 dpi = 12 dots / mm
Number of dots/ line :	1280
Print width :	108 mm
Print speed :	66, 100, 133, 166, 200 mm/s
Available fonts :	5 Bitmap fonts incl. OCR-A and OCR-B 2 scaleable fonts (Speedo™) - internally Speedo™ and TrueType™ fonts - to load externally
Character sets :	Windows 95/98/NT4.00/2000, Windows 1252/1250, IBM Codepage 850/852, ISO 8859-1, ISO 8859-8, EBCDIC, Macintosh Supports all Western and Eastern European Latin characters
Character size :	0.9 - 128mm For scaleable fonts : width and height are individually changeable For Bitmap fonts : the size is selectable up to a factor of 10
Font style :	bold, italic, underlined, mirror-inverted, outlined, revers, grey
Font rotation :	Bitmap fonts/Bar codes : 0°, 90°, 180°, 270° Scaleable fonts : optional, texts in circular format Speedo™ and TrueType™ fonts : alignment degree for degree, text in circular format and mirror-inverted
Bar codes :	Linear codes : Code 39, Code 93, Code 128, Codabar, FIM, HIBC, Interleaved 2/5, Ident-/Leitcode der Deutschen Post AG, MSI, Plessey, Postnet, EAN-8, EAN-13, EAN-128, EAN/UCC 128, EAN/UPC App 2, EAN/UPC App 5, JAN-8, JAN-13, UPC-A, UPC-E 2-D codes : Data Matrix, PDF417, UPS-Maxicode Bar code height, modul width, and ratio are variable, with/without check digit, human readable character, start/stop character
Graphic elements :	Line, box, circle, ellipse, fill-in segment, arrow
Graphic file type:	.PCX, .IMG, .BMP, .TIF, .GIF and .MAC files
Processor :	32 Bit, Motorola
Memory :	Internal memory 2 MB
Interfaces :	serial : RS-232, RS-422, RS-485, 1200-57600 Baud, 8 Data Bits, even parity parallel : Centronics

Peripheral ports :	PLC-interface for the control of the labelling process Interface for connecting the scanner Interface for connecting the warning sensor label end Interface for connecting the warning sensor ribbon end Interface for connecting the warning light
Test feature :	System test when switching on
Material recognition :	Gap sensor (See-trough), adjustable from 3 until 48 mm in the width
Control features :	Print stop and error message at the LCD display at - Paper out - Ribbon out - Transport system open - Applicator errors
Control panel :	4 Function keys with LED display Backlit LCD with 2 lines of text, 16 characters per line LCD can be set to display in 9 different languages
Dimensions :	Height : 420 mm Width : 290 mm Length : 530 mm
Weight :	35 kg
Operating voltage :	Switchable between 230 V A.C/ 50 Hz or 115 V A.C/ 60 Hz
Maximum power input :	1.5 A (at 230 V) / 3 A (at 115 V)
Circuit protection :	T 4 A (at 230 V) / T 6.3 A (at 115 V)
Compressed air supply :	Operating pressure : 5 bar Air connector : Push-in fitting for a 8 mm tube Filter : 5 µm
Environment :	Operation at 10° to 35°C at a humidity of 30 to 85% Transport at -25° to +70°C at a max. humidity of 95% non-condensing Storage at 5° to 40°C at a humidity of 5 bis 85%
Tolerance of the print :	+/- 0.3 at a print speed of 66 mm/s and 100 m media roll increasing with the size of the media roll
Tolerance measure :	0.6 mm at a print speed of 66 mm/s and 100 m media roll 0.8 mm at a print speed of 66 mm/s and 150 m media roll 1.0 mm at a print speed of 66 mm/s and 180 m media roll Measures determined with material of the manufacturer according to the conditions of the manufacturer.
Demand mechanism :	"Shuttle" Patent-No. : 5,300,160 Patent date : Apr. 5, 1994
Peel-off table dim. :	Length : 120 mm Width : 20 mm

Label material :	Thermal paper, Velin paper, Thermal transfer paper Various synthetics including : PE, PP PVC, Polyamid, Polyimid
Liner width :	25 mm until 120 mm
Label height :	3,5 mm until 80 mm
Supply roll diameter :	max. 200 mm
Core diameter :	76 mm

Optional Features

Keyboard Adapter

The keyboard adapter allows you to connect your **PAM 3000** to a MF-2 compatible PC keyboard using the serial interface. This will allow you to modify variable data stored on a memory card.

PC Memory Card

PAM 3000 includes an option for using memory cards in order to permanently store graphics, fonts, databases or whole label formats.

The data can be downloaded via interface. Alternatively, the printer is able to read cards which were on using PC card drives of computers, lap-tops, etc.

PCMCIA 2.1 conforming sRAM cards or Flash-EEPROM cards are accepted.

The maximum capacity for **PAM 3000** is 4 MegaByte.

Using a memory card, the printer can be operated **without** being connected to a computer which represents a great advantage regarding the flexibility.

Interface Cable

The delivery program of the **PAM 3000** includes a serial and a parallel interface cable for data transfer as an option. The standard length of each cable is 1.50 m.

Warning Light

By using the warning light it is possible to recognize the state of the printer with one view.

Warning Sensors

The sensors recognize, when the diameter of the label supply roll respectively the transfer ribbon roll decreases below a preset threshold value.

The messages of the sensors are only intended to inform the operator. They do not influence the operation of the PAM 3000, i.e. the operation is not interrupted.

The messages will be shown by switching on the yellow lamp of the warning light (option).

The signals also can be sent to a control system by using the peripheral interface.

Air Service Unit

PAM 3000 includes an option for adjusting and filtering the compressed air.

Antistatic Brush

By using the antistatic brush option it is possible to reduce the electrical charge in the print area.

Print Media

PAM 3000 can be operated in direct thermal as well as thermal transfer mode.

For direct thermal mode, only use print material with a thermal-reactive coating. The print image is transferred by heating the material at the printhead, causing a reaction on the surface of the paper and, consequently, darkening the material.

In thermal transfer mode, not only standard paper labels are needed but also the thermal transfer ribbon with a color surface. The printout is created by heating the transfer ribbon, causing a transfer of color particles onto the label.

PAM 3000 allows to regulate the heat level and also the print speed. Thus, the printer offers a wide range of opportunities for usage.

PAM 3000 is able to print on labels with a maximum supply roll diameter of 200 mm and a core diameter of 76 mm.

The ability of label edge recognition, which guarantees the precise position of the printer output, is accomplished by a photocell. This sensor is controlled by the processor of the **PAM 3000** and ensures recognition for different sorts of material. There is no need for additional electronic adjustment.

On the following pages, you will find detailed information and specifications concerning suitable materials.

Print Media for Direct Thermal Printing

The print material must correspond to several important specifications, in order to ensure high quality printing, and to avoid damage to the printhead or early wear.

Using labels which we have tested and which we recommend to our customers, will guarantee a gentle treatment of the printhead. If you want to use material by another supplier, please note the following requirements regarding the condition of thermal printer paper :

- To avoid damage to the printhead, the surface coating must cover the thermal-reactive layer. If the coating is too thin, this may cause a 'pitting' effect on the printhead, i.e. very small explosions during the chemical reaction of the thermal coating quickly resulting in damage to the printhead.
- The surface of the labels should be very smooth to avoid a 'sandpaper' effect on the printhead.
- Always choose material which can be printed on with the lowest possible heat level. The greater the heat level, the shorter the life of the printhead. Moreover, with highest heat levels the phases of heating up and cooling down extend. This may have a negative effect on the print quality, especially if a high print speed is required.

Print Media for Thermal Transfer Printing

In thermal transfer mode, a wide range of different label materials may be used. (e.g. normal paper, tag stock, a variety of synthetic material such as polyester foil, etc.)



NOTICE !

The print quality greatly depends on the right combination of label material and transfer ribbon. The surface of the labels determines which ribbon material may be used. Unsuitable ribbons may cause an extremely poor print image.

Label Media Specifications

Label media to be used for the **PAM 3000** can be found in the table below. Note this information before ordering your labels.

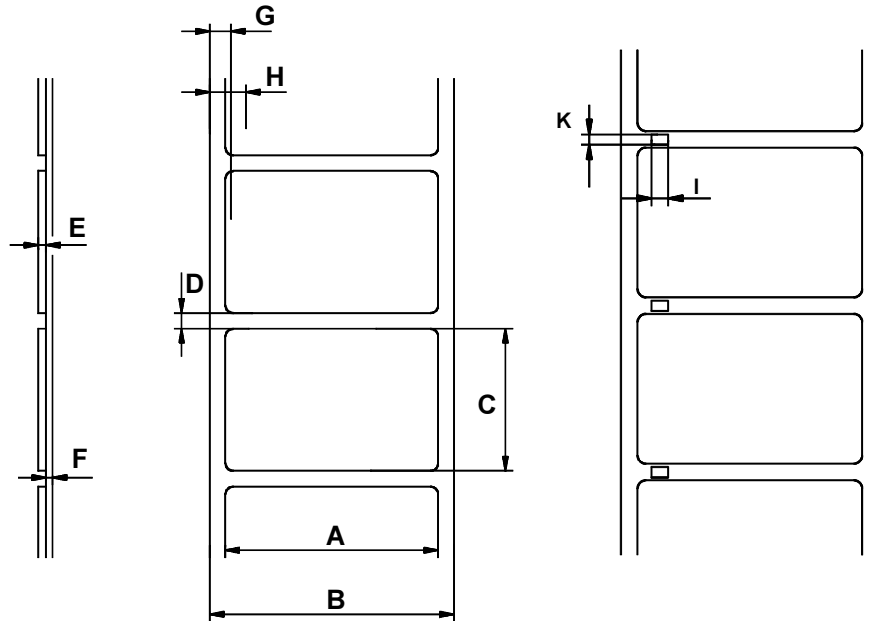


Fig. 1 Label formats

Index	Characteristics	MIN. (mm)	MAX. (mm)
A	Label width	5	115
B	Width of silicon liner	25	120
C	Label length	3.5	80
D	Gap between label	2	546
E	Label thickness	0.1	0.25
F	Thickness of silicon liner	0.05	0.10
G	Distance of the first printing point from the edge of silicon liner	2	
H	Distance of the label sensor from the edge of silicon liner	variable	
I	Width of the perforation mark	5	-
K	Height of the perforation mark	2	5

Table 1a Label formats in mm

Transfer Ribbon

The choice of a suitable transfer ribbon is important for the print quality of your printer as well as the useful life of the printhead.



CAUTION !

Transfer ribbons of inferior quality may cause premature deterioration of the printhead !

The ribbon material must be antistatic, because the extremely thin surface coating of the thermal printhead can be damaged by electrostatic discharge.

Also, the material must be extremely resistant to high temperatures to avoid melting the ribbon with the printhead.

The heat which arises during printing must be carried off by the label and by the transfer ribbon itself. Transfer ribbons of inferior quality are often poor heat conductors. This may cause overheating of the printhead in spite of electronic protection.

Poor transfer ribbons also tend to lose parts of the coating which leads to accumulating dirt on the printhead and the sensors. With some ribbons the color rubs off and soils the printhead. All of these effects contribute to poor print quality.

We have carried out numerous tests with many different ribbons and we recommend you use transfer ribbons made by well-known/ brand manufacturers only. Depending on the label material, several transfer ribbons may be suitable.

The quality of print is determined by the right combination of these materials.

The recognition of the transfer ribbon is sensed by the rotation control of the transfer ribbon unwinder, rather than by photocell sensors. As a result, ribbons with a thinner coating or those with a colored coating can be used safely. To be able to print all labels up to the exact end of the transfer ribbon, the length of the uncoated trailer is limited.



NOTICE !

When buying transfer ribbons, make sure that the trailer of the ribbon has a maximum length of 150 mm. Also note that the trailer easily can come loose from the cardboard core.

Index	Characteristics	MIN. (mm)	MAX. (mm)
A	Width	25	114
	Length	-	360
	Core diameter	25	25
	Inking	external	

Table 1b Ribbon formats in mm

2 General Safety Instructions



CAUTION !

Pay special attention to the following safety guidelines :

- The **PAM 3000** printer is built exclusively to print labels and tags, continuous paper, etc. Do not use other materials than listed in chapter 1.
- Connect the printer only to an outlet with the correct voltage !
The printer is configured for either 230V or 115V power supply, which can be switched using the input voltage selector at the right side of the printer.
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 or connecting the printer to a computer, etc. Also switch power off on all appliances before disconnecting.
- Do not expose the printer to any moisture, or use in damp or wet areas.
- In operation, moving or rotating parts are easily accessible. Therefore, keep long hair, jewelry, loose clothes away from the these parts.
- During the print process the printhead will become hot. Use extra caution when touching the printhead.
- Before starting any maintenance, switch the printer OFF and disconnect it from the power supply.
- Only qualified trained service technicians should attempt to repair your printer if damaged or in need to repair.

3 Delivery Contents

Inspect the packaging and contents immediately after receipt for possible damage caused by shipping.

The supplied equipment depends on the requested options.
Compare the delivered accessories with your order.



NOTICE !

Please keep the original packaging in case the printer must be returned.

4 Component Location

Printer

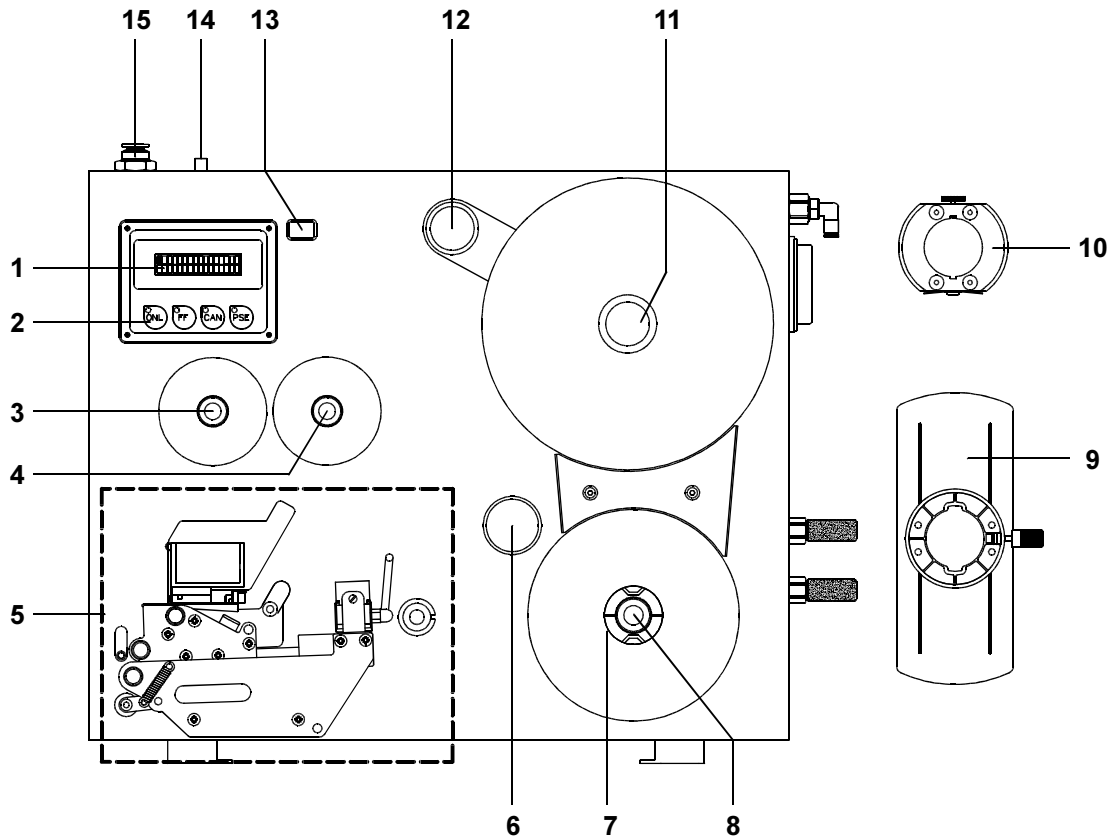


Fig. 4a Front view

- 1 - Display
- 2 - Function keys with indicator LEDs
- 3 - Ribbon take up hub
- 4 - Ribbon supply hub
- 5 - Print mechanism
- 6 - Guide roller
- 7 - Media rewind hub
- 8 - Knurled knob
- 9 - Adapter
- 10 - Flange
- 11 - Media supply hub
- 12 - Swing arm with guide roller
- 13 - Pre-dispense key (for applicator)
- 14 - Electronic connector for the applicator
- 15 - Air connectors for the applicator

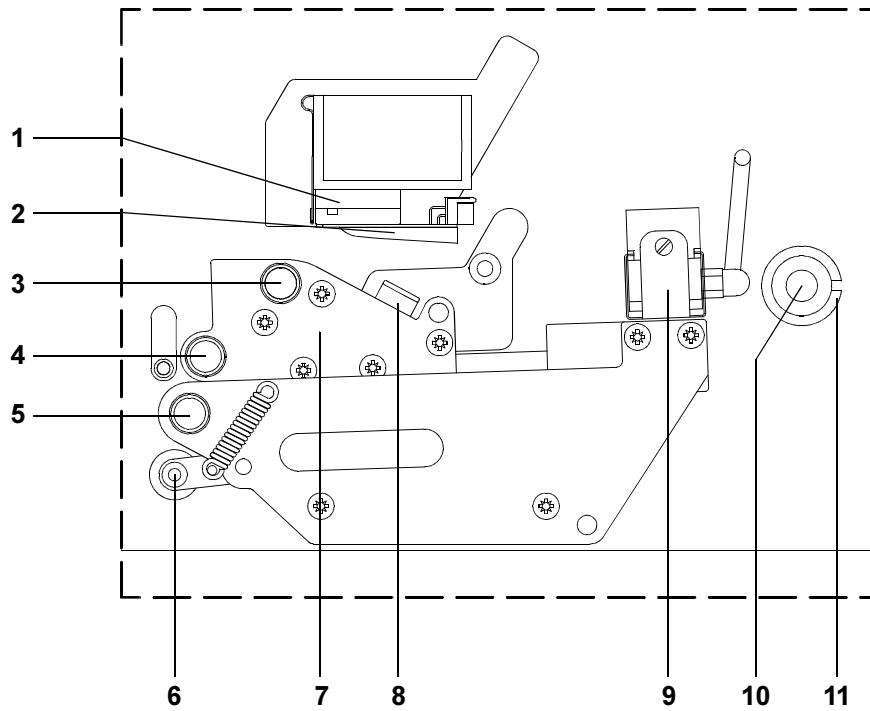


Fig. 4b Detailed view of the print mechanism

- 1 - Adjusting plate
- 2 - Printhead
- 3 - Print roller
- 4 - Feed roller
- 5 - Pinch roller
- 6 - Transport locking lever
- 7 - Peel-off table
- 8 - Label edge sensor
- 9 - Brake
- 10 - Media guide axle
- 11 - Media guide

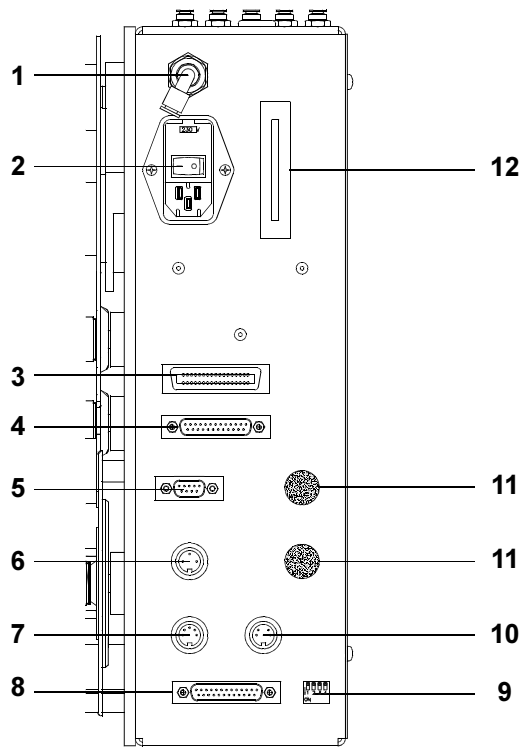


Fig. 4c Side view

- 1** - Connector for the compressed air
- 2** - Power connector with power switch
- 3** - Parallel interface port
- 4** - Serial interface port
- 5** - Scanner connector
- 6** - Connector warning sensor transfer ribbon end
- 7** - Connector warning sensor label end
- 8** - PLC interface port
- 9** - DIP switches
- 10** - Connector warning light
- 11** - Silencer
- 12** - Memory card module slot

Applicator

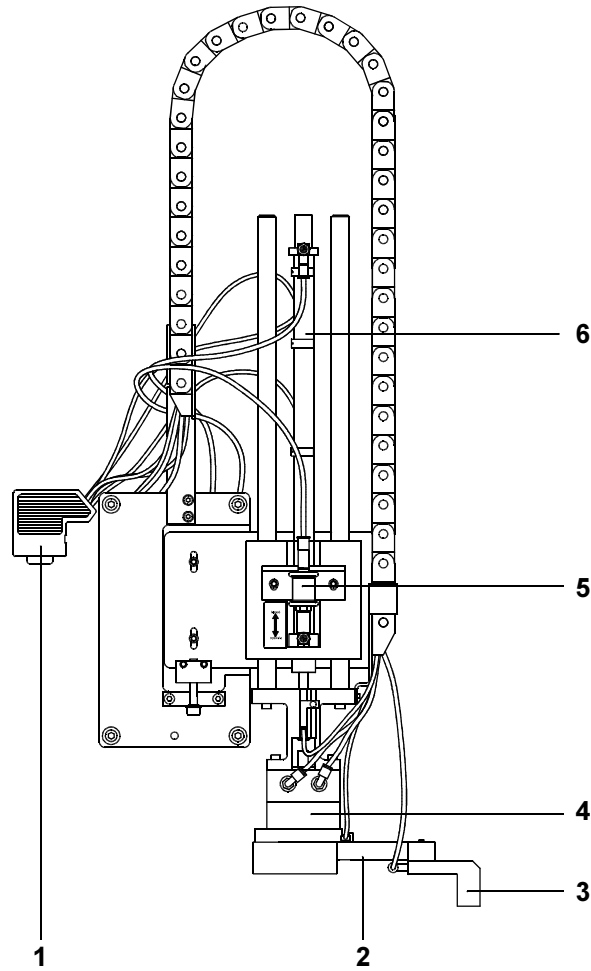


Fig. 4d Front view

- 1 - Connector for the electronics
- 2 - Pad holder
- 3 - Pad
- 4 - Turn cylinder
- 5 - Slide valve
- 6 - Lift cylinder

5 Mounting the Applicator

Installation

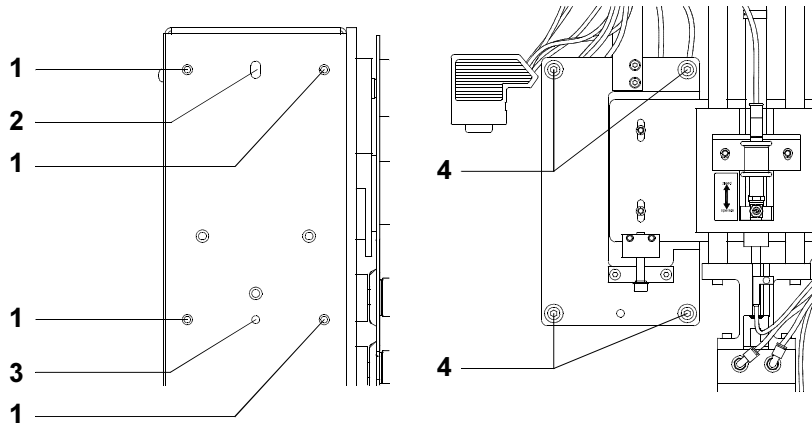


Fig. 5a Installing the applicator

1. Put the applicator at the left side of the **PAM 3000** printer using the four holes (1).
2. Fasten the applicator by screwing the four screws (4) including the washers.



CAUTION!

Make sure that the two bolts at the rear side of the applicator are inserted into the long hole (2) and the guide hole (3) on the side of the printer.

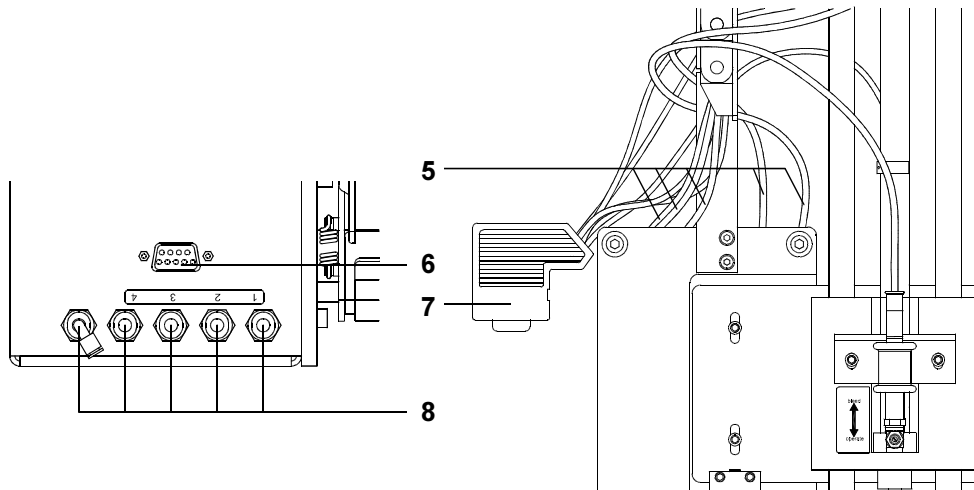


Fig. 5b Connecting the applicator

3. Plug the connector of the applicator's electronic system (7) in the peripheral port (6) of the **PAM 3000** printer.
4. Push the compressed air tubes of the applicator (5) into the appropriate push-in-fittings (8) on the top of the **PAM 3000** printer. The appropriate tubes and fittings are marked by figures.

Slide Valve

The lift cylinder (1) is equipped with a slide valve (2), which can only be actuated manually. By delivering the slide valve is closed so it is possible to keep the compressed air in the lift cylinder. That way the pad (3) is hold in its upper position.

By opening the slide valve (slide the ring upwards to the position "bleed") it is possible to remove the pad from its upper position as the compressed air supply is closed and the applicator is switched off.

But the slide valve should only be opened (bleed) if it is necessary to move the pad for mounting or service for example cleaning the pad, or removing fragments of labels.

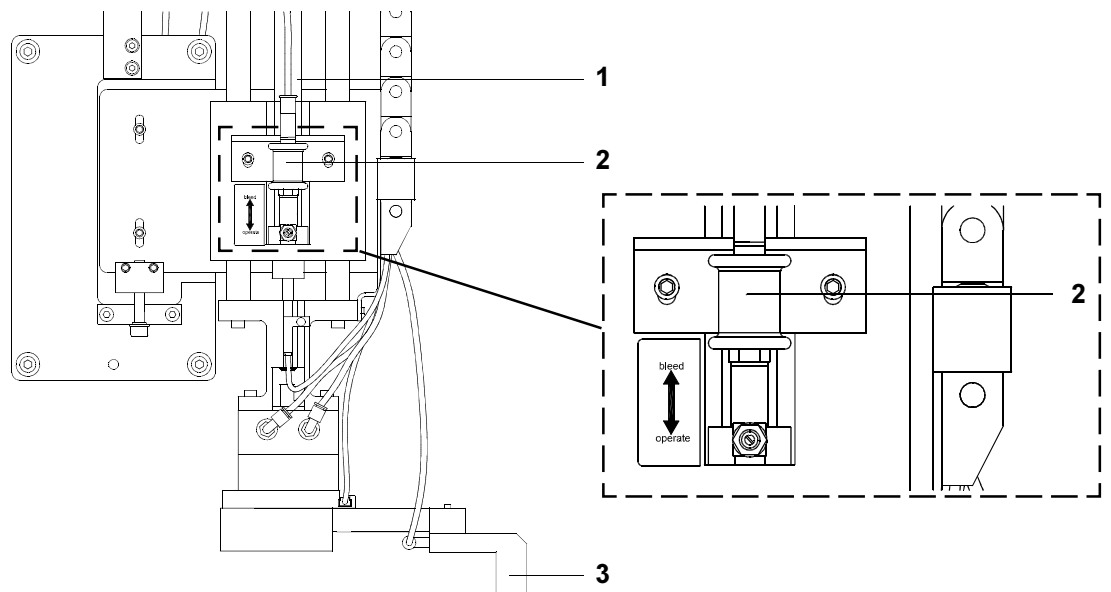


Fig. 5c Slide valve at the lift cylinder



CAUTION !

Pay attention to the pad while opening the slide valve.

It should be swung away from the peel-off edge of the printer (90°-position).



CAUTION !

The slide valve must be closed during operation.

Otherwise the lift cylinder can be moved without control, which can cause damages.

Pad Unit

Versions

The pad unit consists of the pad holder, the pad and the blow tube. The format of the pad holder and the pad depends on the label format.

So there are two different versions of the pad holder, the small format (type 1200) and the large format (type 1100).

The small format is recommended for use of small labels with a height up to 25 mm.

The pad is specific designed for each label format which is used.

When applying large labels it is necessary to mount a blow tube additionally.

Small format

Large format

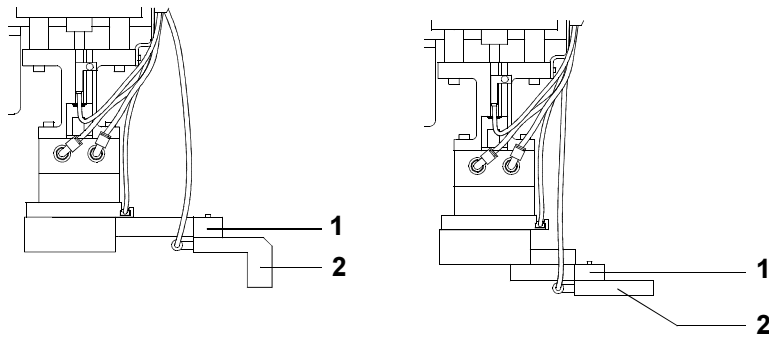


Fig. 5d Front view pad holder (1) and pad (2)

Small format

Large format

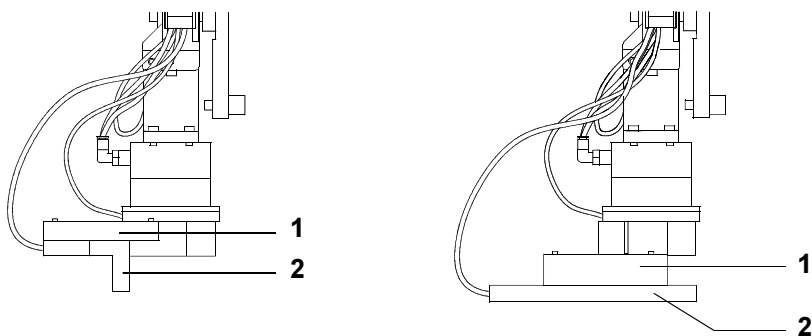


Fig. 5e Side view pad holder (1) and pad (2)

Mounting

Normally all supplied label applicators have passed a previous run at the factory. Therefore all units including the pad holder and the pad which are necessary for the operation of the device are mounted.

But it is possible to dismantle the pad holder and the pad without effort when the label format is changed. Following it is very easy to mount the new pad holder or pad.

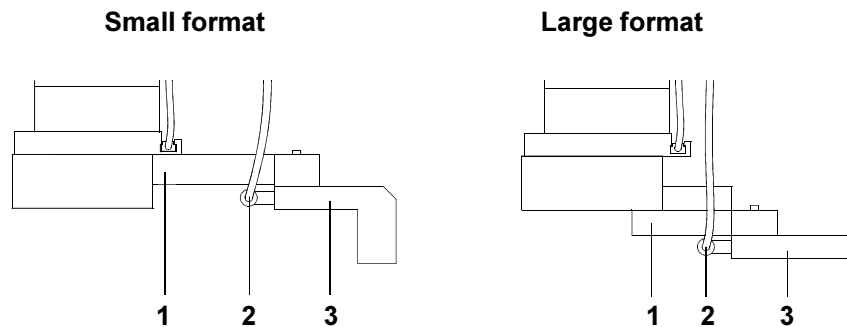


Fig. 5f Changing the pad

Changing the pad :

1. Remove the vacuum tube (2) from the pad (3).
2. Loosen the screw on the lower side of the pad (3).
3. Remove the pad (3).
4. Attach the new pad to the pad holder (1).
5. Fasten the new pad on the pad holder (1) using the screw.
6. Attach the vacuum tube (2) to the new pad.

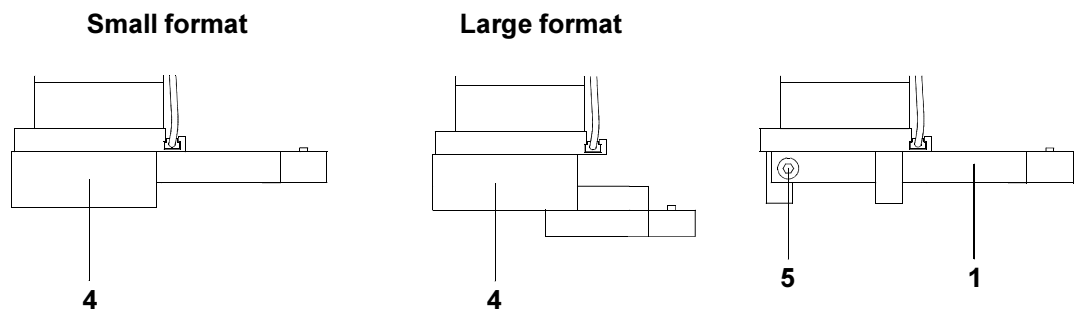


Fig. 5g Changing the pad holder

Changing the pad holder :

1. Dismount the pad (3).
2. Loosen the screw on the lower side of the cover (4).
3. Remove the cover (4).
4. Loosen the screw (5) at the pad holder (1).
5. Remove the pad holder (1).
6. Attach the new pad holder to the bolt.
7. Fasten the new pad holder by screwing the screw.
8. Mount the cover.
9. Mount the pad.

Blow Tube

It is necessary to mount a blow tube when applying large labels. This way the label is additionally blown against the pad with an air current coming from the blow tube. The air current supports the take-over of the label by the pad.

There is an equipment (1) at the front side of the printer to attach the blow tube.

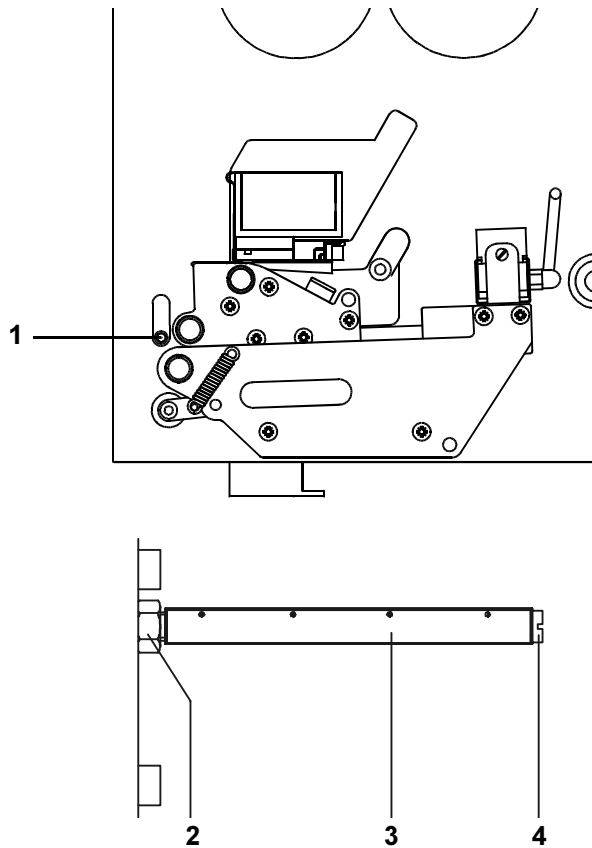


Fig. 5h Installing the blow tube

1. Screw the blow tube into the equipment (1) on the front side of the printer.
2. Turn the drillings of the tube (3) to the dispense edge of the printer.
3. Hold the slotted screw (4) with a screwdriver and fix the tube by tightening the counter nut (2).
4. Slide the DIP-switch 4 on the side of the printer to the position "OFF" (see page 34).

6 Connecting the Printer

Air Connection

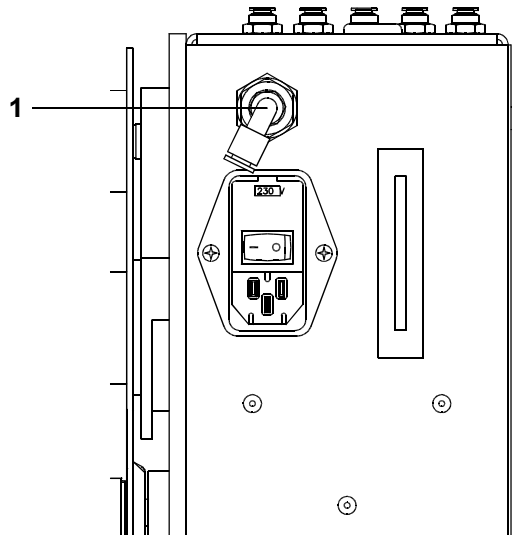


Fig. 6a Air connection

PAM 3000 needs for operation the connection to a compressed air supply. It is very important to guarantee an operating pressure of 5 bar with a tolerance of plus/minus 5 % .

The air connector (1) is located at the side of the printer. The push-in-fitting is suitable for a 8mm-tube.



CAUTION !

Make sure that the compressed air supply is switched off while connecting the printer.

- Insert the tube of compressed air supply into the push-in-fitting (1). Insert the tube firmly.
- Adjust the required operating pressure.



CAUTION !

**Use only filtered compressed air to operate the printer.
Guarantee an operating pressure of constant 5 bar during operation.**

Interface Connections

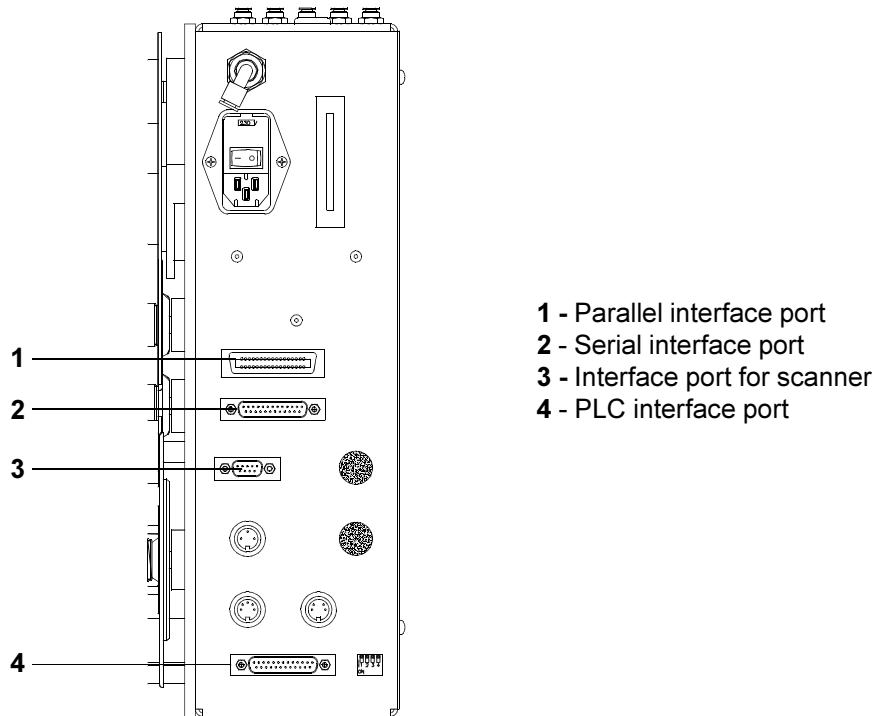


Fig. 6b Interface ports

PAM 3000 is equipped with three serial interfaces, these are RS-232, RS-422, and RS-485, all of them using the 25 pin interface connector (2).

In most cases, you can use the RS-232 interface for the connection to the computer. If your computer is located more than 15m away from the printer you should use the RS-422 interface.

The RS-485 interface is provided for using the printer as part of a networked system.

In addition to the serial port, the printer also provides a parallel (Centronics) interface which offers a faster transfer of data than the serial interfaces. Therefore, we recommend to use the parallel interface for those applications where a large number of loadable fonts or complex graphics have to be printed.

For the Centronics interface use the 36 pin interface connector (1).

Additionally **PAM 3000** has a PLC interface with 25 pin connector (4). This interface is needed for embedding the printer in the process control of a higher system and is especially used to start the printing and applying of the labels.

PAM 3000 is also equipped with a 9 pin connector (3) to connect a scanner. This way it is possible to check a printed bar code immediately after printing and before applying. If the scanner sends the goodread-signal then the label can be applied.

If there is no scanner connected it is necessary to simulate the goodread-signal. This can be realized by a plug. An example for the circuit diagram of this plug you can find in appendix C page C-9.

The interfaces are to connect with suitable cables.



CAUTION !

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

Connection to Power Supply

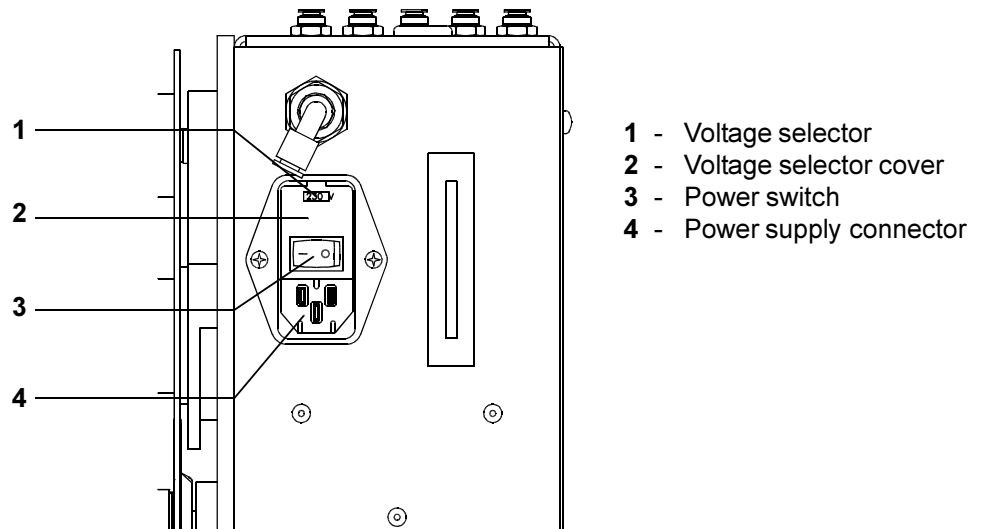


Fig. 6c Power supply module

The **PAM 3000** is designed for use with 230V A.C/ 50Hz (standard) or 115V A.C/60Hz.



CAUTION !

Before connecting the printer to the power supply, make sure that the voltage selected on the power supply module of the printer is the same as your main power supply !

To change the voltage setting, open the cover (2) and remove the voltage selector from the power unit.



CAUTION !

If you have changed the operating voltage of your printer the fuses need replacing as stated below !

230 V - 2 x T 1.5 A 115 V - 2 x T 3 A

When delivered, the correct fuses for the pre-selected operative voltage are installed. You will find the necessary fuses for the other voltage in the accessories package.

Slide the voltage selector back into the power supply module so that the correct voltage is visible in the lid window.

Connect the printer to a **grounded** outlet using the power cable supplied in the accessories package.

7 Media Loading

Preparation of the Label Supply Hub

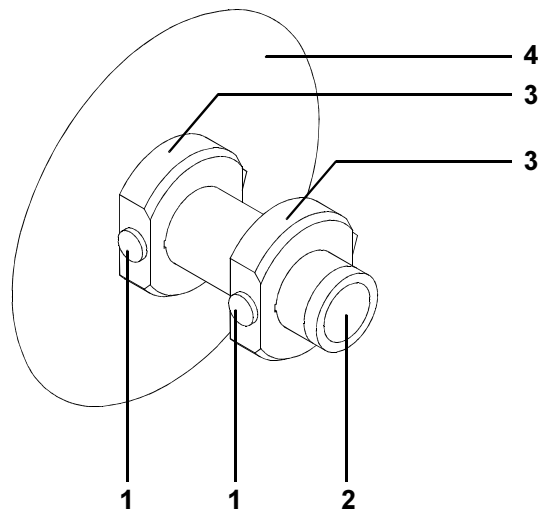


Fig. 7a Preparation of the label supply hub

PAM 3000 is equipped with a rotating label supply hub, which is able to take up rolls with a core diameter of 76 mm.

To take up these label rolls it is necessary to mount two adapters (3) onto the supply hub :

- Put the first adapter (3) onto the supply hub (2) and slide it to the wind plate (4) until it blocks. Tighten the knurled screw (1).
- Put the second adapter onto the supply hub (2) and slide it against the wind plate until the distance between the outer edge of the adapter and the wind plate (4) is a little less than the width of the label roll. Tighten the knurled screw (1).

Loading Labels

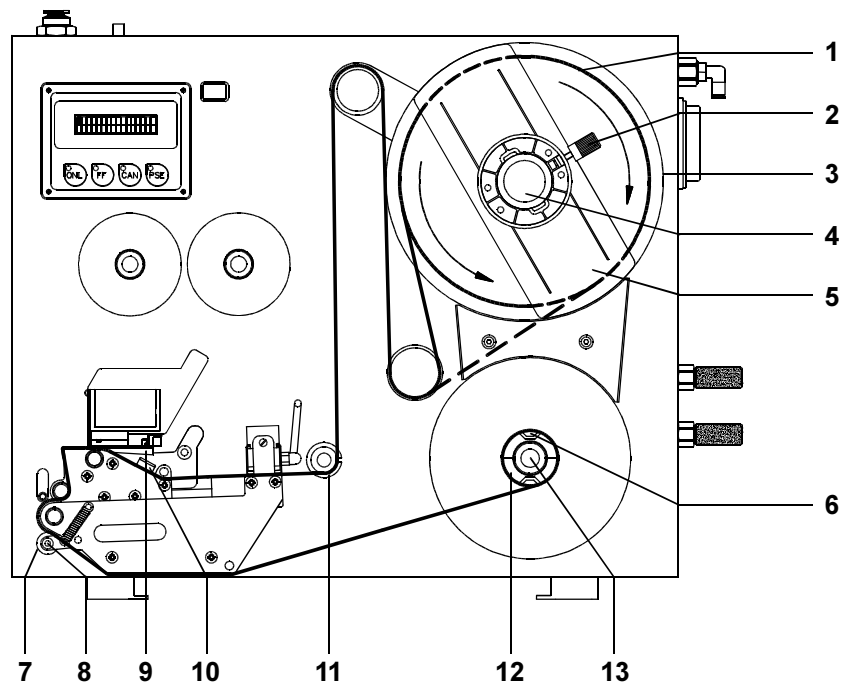


Fig. 7b Media loading

1. Place the label roll (1) onto the prepared media supply hub (4) and slide it down against the wind plate (3). The solid line represents the feed path of outside-rolled labels, the broken line of inside-rolled labels.
2. Put the flange (5) on the supply hub (4), slide it down against the label roll (1) and fix it at the supply hub by tightening the knurled knob (2).
3. Slide the media guide (11) outwards as far as possible.
4. Unlock the transport locking roller (7) by pressing the knurled knob (8) downwards.
5. Unroll a length of label stock from the media roll and feed it first to the printhead (9) as shown in figure 7b.
It is particularly important to ensure that the media strip slides properly through the fittings of the photocell assembly (10).
6. Feed the label stock out of the side of the printer until there is enough material to reach the internal rewriter.
7. Take off all labels from the outstanding liner, and feed the liner as shown in figure 7b to the internal rewriter (12).
8. Slide the media strip under the rewriter clamps (6) to the wind plate. Hold the rewriter and turn the knurled knob (13) clockwise. That way the label strip will be fixed at the rewriter.
9. Turn the rewriter (12) clockwise for tightening the label strip.
10. Press the knurled knob (8) upwards to close the transport system.
11. Slide down the guide (11) against the upper edge of the label strip.

Loading Transfer Ribbon

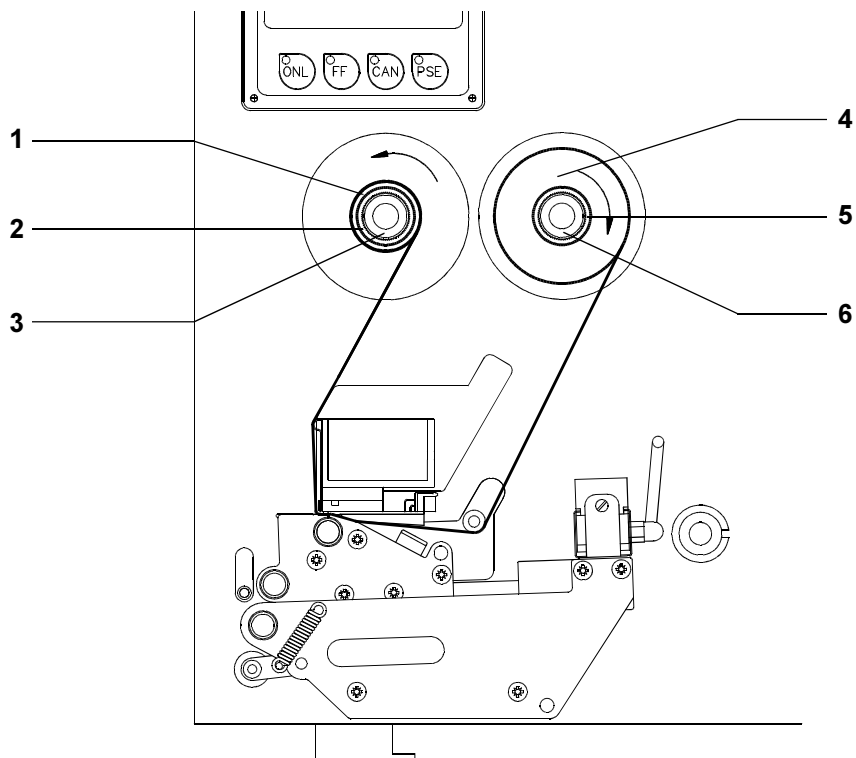


Fig. 7c Loading thermal transfer ribbon

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



NOTICE !

**Pay attention to the side of the ribbon material which is coated with ink !
The inked side is generally the dull side. When the ribbon is inserted, the inked side must face the opposite side of the printhead !**

2. Hold tight the ribbon supply hub (5) and rotate the knurled knob (6) clockwise until it stops. That way the transfer ribbon roll (4) will be attached to the ribbon supply hub (5).
3. Slide an empty cardboard core (1) onto the ribbon take up hub (2) and fix it by clockwise turning the knurled knob (3).
4. Feed the transfer ribbon along the path as shown in figure 7c, then attach it to the core (1) using adhesive tape or a label.
5. Turn take up hub (2) counterclockwise in order to smooth and stretch the ribbon.

8 Adjustments

All supplied label applicators have passed a previous run at the factory. Therefore, the basic adjustments which are necessary for the operation of the device have been carried out. It may be useful to do some more fine tuning when the applicator is installed. This refers mainly to mechanical parameters, which are depending on the format of the labels as well as some special settings for the type of operation.

Mechanical Adjustments

Adjusting the Level of the Lift Cylinder Unit

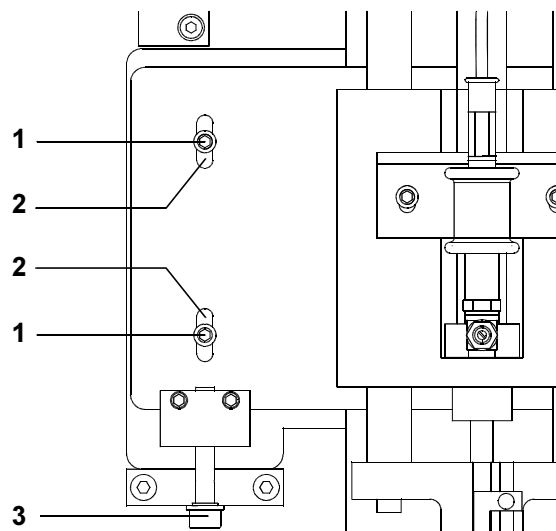


Fig. 8a Level adjustment

There are three screws at the front side of the applicator to adjust the level of the cylinder unit.

1. Loosen the two screws (1) at the carrier plate of the applicator. But they may not be removed.
2. Move the whole unit within the longish holes (2) by screwing the screw (3). The pad has to be located slightly above the dispense table of the printer.
3. Tighten the screws (1).

Adjusting the Sides of the Lift Cylinder Unit

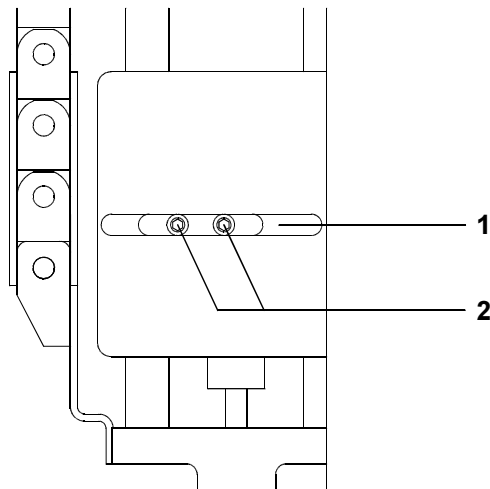


Fig. 8b Side adjustment

At the rear side of the carrier plate of the applicator there are two screws to adjust the sides of the cylinder unit.

1. Loosen the two screws (2) at the carrier plate of the applicator. But they may not be removed.
2. Move the whole unit within the longish hole (1).
Adjust until the dispensed label is aligned centrally to the pad.
3. Tighten the screws (2).

Tuning of the Blow Tube

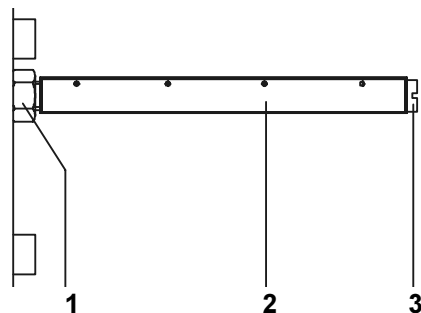


Fig. 8c Tuning the blow tube

When applying large labels it is necessary to install a blow tube additionally. The blow tube (2) for the supporting air can be rotated around its longitudinal axis. By rotating the blow tube the direction of the air current is changed (adjusting the blow openings to the dispense edge of the printer).

1. Loosen the lock nut (1) as well hold the slotted screw (3) with a screwdriver.
2. Adjust the tube until the air current is aligned with the dispense edge of the printer.
3. Tighten lock nut (1).

Adjusting the Label Edge Sensor

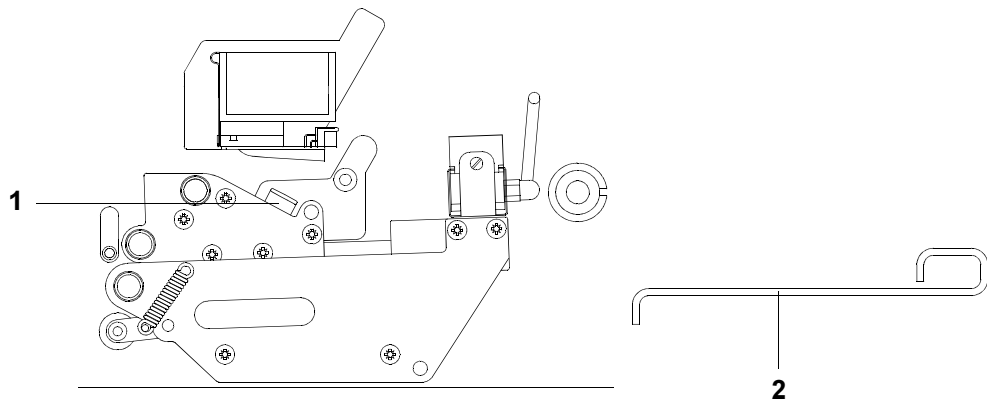


Fig. 8d Adjustment of the label edge sensor

To accommodate a variety of print jobs, the position of the label edge sensor (1) can be adjusted until it is at the proper sensing position. This setting is particularly useful when the labels to be printed are narrow, perforated, bear reflective markings, or are labels which are not square or rectangular in shape.

It is important to ensure that the sensor itself (the position of which is indicated by a green mark 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 whole label edge sensor in and out. It is recommended to use the pin-tool (2) included in the delivery contents for positioning the sensor.

Special Settings for the Operation

There are integrated four DIP-switches to determine several types of operation. The DIP-switches are located in the opening (1) at the right side of the printer.

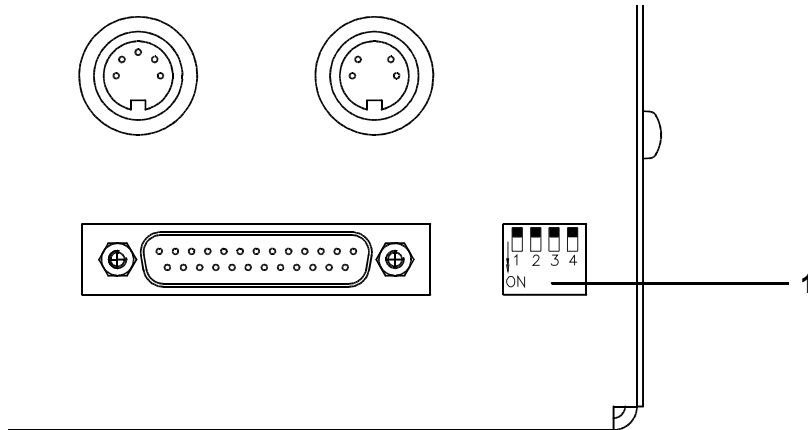


Fig. 8e DIP-switches

DIP-switch	Parameter	ON	OFF
1	Label format	small	large
2	Recycle part	not installed	installed
3	Applicator	installed	not installed
4	Print repeat	no	yes

DIP-switch 1-This switch is set on "ON" when small labels are used. By using large labels the switch has to set on "OFF".

DIP-switch 2- If the switch is set on "ON" it is not possible to dispose the bad labels recognized by a scanner at a recycle part.
If the switch is set on "OFF" it is possible to apply the bad labels on the recycle part.
It is recommended to set the switch always on "ON" if no scanner is used.

DIP-switch 3- If the switch is set on "ON" the printer notices that there is an applicator to carry out the further steps after printing.
If the switch is set on "OFF" it is necessary to guarantee the correct further processing of the applying process by other features for example manually or by industrial robots.

DIP-switch 4- If the switch is set on "ON" a bad label recognized by a scanner will not printed again.
If the switch is set on "OFF" the print of a bad label recognized by a scanner will be repeated.
It is recommended to set the switch always on "ON" if no scanner is used.

9 Control Panel

The control panel of the **PAM 3000** is fitted with 4 function keys with indicator LEDs, and a 2x16 character digital LCD display.

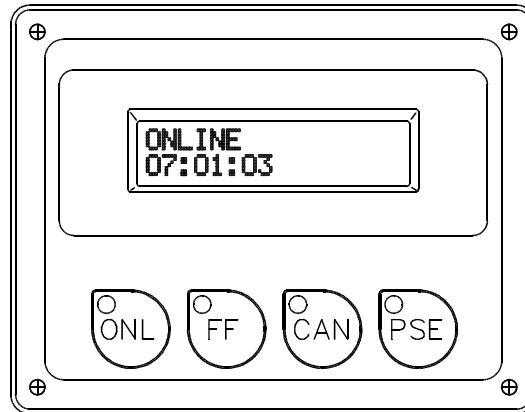


Fig. 9 Control Panel

The control panel display constantly provides the operator with the actual information concerning the current printer mode and label processing. The indicator LEDs support the information shown in the display by indicating which keys have to be pressed (e.g. in the event of a fault).

On the following pages, you will find descriptions of the key functions in the several system modes of **PAM 3000**.

System Mode ONLINE

	ONL key	Switch into OFFLINE mode (LED ONL off)
	FF key	Provides label feed. The leading edge of the next label to be printed is in print position.
	CAN key	Deletes data of the previous print job in internal memory. Following that, "Pause reprint" is not available. (see PSE key)
	PSE key	Repeats the print of the last label, after the previous print job has been completed. (only if setup parameter 'Pause reprint' is on)
	ONL key + CAN key	Pressing both keys together for at least 5 seconds will switch into the SETUP mode. (LED ONL off)

System Mode OFFLINE

	ONL key	Switch into ONLINE mode (LED ONL on)
	FF key	Provides label feed. The leading edge of the next label to be printed is in print position.
	CAN key	Switch into LABEL FROM CARD mode. (only if memory card is installed and formats are stored on it)
	PSE key	Display shows printer info display (information about printer settings)

System Mode PRINT

	CAN key	<p>short pressing : Cancels the current print job, Switch to the next job in the input buffer</p> <p>longer pressing (>1s): Cancels the current print job, Deletes the input buffer (LED CAN blinks), Switch into ONLINE mode</p>
	PSE key	Interrupts the current print job, Switch into PAUSE mode (LED PSE on)

System Mode PAUSE

	FF key	Provides label feed. The leading edge of the next label to be printed is in print position.
	CAN key	<p>short pressing : Cancels the current print job, Switch to the next job in the input buffer</p> <p>longer pressing (>1s): Cancels the current print job, Deletes the input buffer (LED CAN blinks), Switch into ONLINE mode</p>
	PSE key	Continues the current print job, Switch into PRINT mode (LED PSE off)



System Mode LABEL FROM CARD

	ONL key	Switch into OFFLINE mode
	FF key	For scrolling down within the file list stored on the card Reduces the quantity of labels to be printed
	CAN key	For scrolling up within the file list of the card Increases the quantity of labels to be printed
	PSE key	Confirms file selection Moves the cursor to the right when setting the quantity of labels to print Switch into PRINT mode

10 Setup


Using the setup mode, the configuration of the **PAM 3000** may be customized to suit specific requirements. Initial setup should be performed when operating the printer for the first time. Changes which become necessary to process different print jobs, e.g. when different materials are used, can mostly be accomplished by changing the software settings.

Start of Setup Mode

This mode is initiated by **either** simultaneously pressing down the  key and the  key when switching on the printer and keep them pressed until the system test is completed, **or** in ONLINE mode, press the same two keys down for at least 5 seconds.




Starting the setup mode, the display shows "SETUP" for about one second, followed by "Country" which represents the first of the parameters to select from. Depending on the selection, the setup parameters and their settings will be shown. The list of parameters is brought up in a row and may be run through repeatedly. Each time a parameter setting has been changed, there will be a request for confirmation. There will not be a general request before leaving the setup mode.

Leaving the Setup Mode





The setup mode can be left at any point by pressing the  key. The confirmed parameters will be saved.

If an already confirmed setting is not desired any more, switch off the printer during the setup mode to cancel changes.

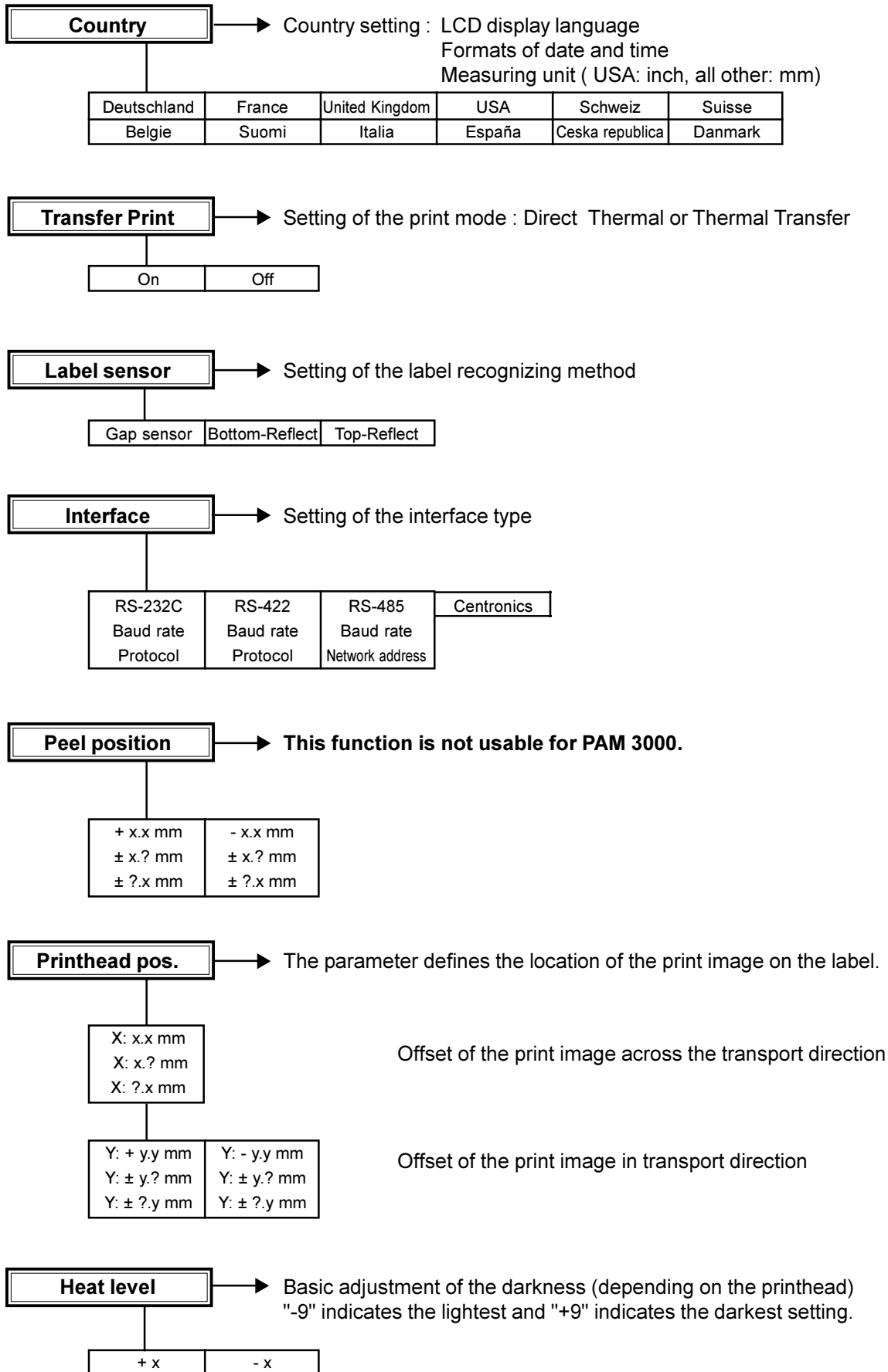
Restore the Default Setting

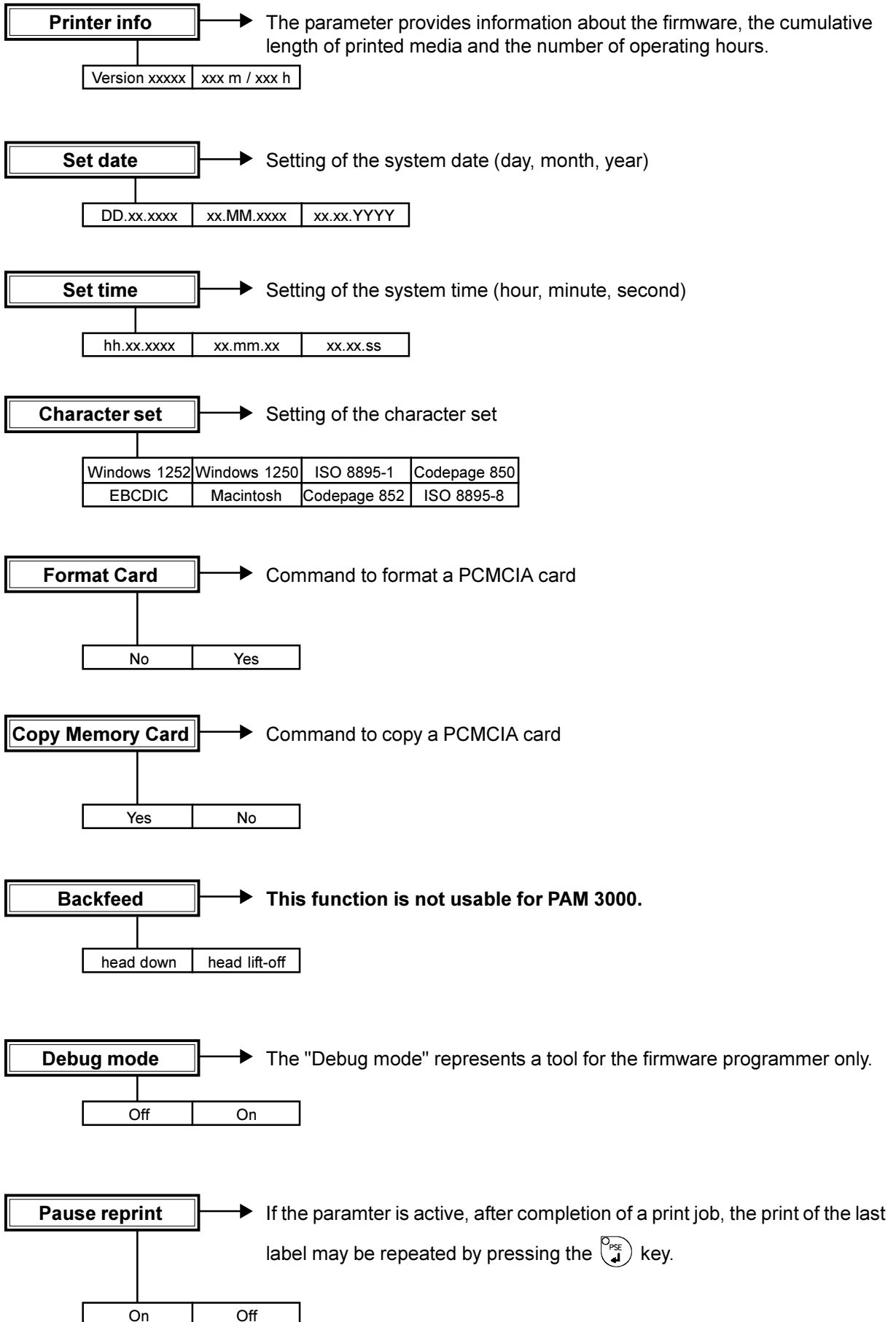
To return to the original factory default settings, press all three keys, the  key, the  key, and the  key simultaneously while switching on the printer and keep them pressed down until the display shows "--- RESTORE ---".

Function Keys in System Mode SETUP

	ONL key	Stores the chosen and confirmed settings of the setup-parameters and completes the SETUP mode. (i.e. switch into ONLINE mode (LED ONL on))
	FF key	Skips to next setup parameter. Reduces numerical setup values.
	CAN key	Skips to previous setup parameter. Increases numerical setup values.
	PSE key	Confirms selected settings for parameters.

Overview of the Setup Parameters








11 Printer Info Display

Viewing the Printer Info Display

PAM 3000 offers a convenient option for retrieving and viewing information about the printer configuration and occurred hardware problems without using setup mode or test print mode. After switching on, or completing the system test or print jobs, the printer is in ONLINE mode.

Pressing the  key will switch into OFFLINE mode where the display shows the status information on ten different pages which are accessible by repeatedly pressing the  key. The printer info display can be exited by pressing the  key (back into ONLINE mode) .

Definition of the Printer Info Display

```
Printer info
1: RS 232 / RTS/CTS
```

Fig. 11 a Printer info display 1

On the first page, the selected interface (default setting : RS232) and the handshake or protocol (default setting : RTS/ CTS) will be shown.

```
Printer info
2: 9.600
```

Fig. 11 b Printer info display 2

The second page contains information about the fixed baud rate of the serial interface (default setting : 9600).

```
Printer info
3: 2.58 / Aug  15      01
```

Fig. 11 c Printer info display 3

On the third page, the version and the date of the firmware are shown. The example as shown in figure 11c represents the firmware version No. 2.58 as at Aug 15, 2001.

```
Printer info
4: 0000 / 2 / 5 / C
```

Fig. 11 d Printer info display 4

The fourth page of the info display contains coded information on the configuration of the printer and the internal test results in the format "xxxx / y / z / C".

- xxxx Result of the system test
The four-digit hexadecimal number contains (coded) hardware faults.
The example, as shown in figure 11d, displays "0000" indicating that there have been no hardware faults.
- y Type of peripheral device
2 : Applicator (Default)
3 : None fitted
- z Configuration setting Transfer print/ Label sensor
The value of z results from adding the code numbers for selected settings.
- | | | | | |
|----------------|---|---|---|----------------------|
| Transfer print | : | 1 | = | ON (Default) |
| | | 0 | = | OFF |
| Label sensor | : | 8 | = | Bottom-Reflect |
| | | 4 | = | Gap sensor (Default) |
| | | 0 | = | Top-Reflect |
- For example, Figure 11d : "5" - Transfer print ON (1) + Gap sensor (4).
- C Indicates that the setup configuration has been altered from the defaults

Printer info 5: Windows 1252

Fig. 11 e Printer info display 5

The fifth of the info pages shows the name of the character set as selected in setup.

Delay time 0 ms
Lock time 0 ms
Support del. off 250 ms
Blow time 0 ms
Support delay on 0,0 mm

Fig. 11 f Printer info display 6 - 10

The last five info pages show different settings related to the applicator module.

12 Monitor Mode / ASCII Dump Mode

If programming directly, the monitor mode provides a method to print control sequences which were received at the interface. The commands 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.




NOTICE !


In monitor mode, the printer will not recognize gaps between labels nor control the ribbon feed.


For questions or future reference, print and retain one copy of the label format for each label printed.

Start of Monitor Mode/ ASCII Dump Mode

To start the monitor mode, press the  key while switching on the printer, and keep it pressed down until the system test is completed. The display shows "ASCII Dump Mode". Following send a print job to the printer and then press the pre-dispense key to print out the contents of the label.

In monitor mode, the print of data will be started after every four lines of data received.

Therefore, in some cases, the last lines of the label have to be retrieved by pressing the  key.

To cancel ASCII Dump mode, press the  key.

Representation of the Control Characters

The control characters (ASCII Code 00 ... 31) as shown in monitor mode printouts are as follows.

Code DEC | HEX	Printout	Code DEC | HEX	Printout	Code DEC | HEX	Printout	Code DEC | HEX	Printout
00 | 00	N _L	08 | 08	B _S	16 | 10	D _L E	24 | 18	C _A N
01 | 01	S ₀ H	09 | 09	H _T	17 | 11	D _C 1	25 | 19	E _M
02 | 02	S _T X	10 | 0A	L _F	18 | 12	D _C 2	26 | 1A	S _U B
03 | 03	E _T X	11 | 0B	V _T	19 | 13	D _C 3	27 | 1B	E _S C
04 | 04	E ₀ T	12 | 0C	F _F	20 | 14	D _C 4	28 | 1C	F _S
05 | 05	E _N D	13 | 0D	C _R	21 | 15	N _A K	29 | 1D	G _S
06 | 06	A _C K	14 | 0E	S _O	22 | 16	S _Y N	30 | 1E	R _S
07 | 07	B _E L	15 | 0F	S _I	23 | 17	E _T B	31 | 1F	U _S

Table 12 Representation of the control characters in monitor mode

Example of ASCII Dump Mode

The following figures show the "normal" appearance of a printed label, and the appearance of the same label when its commands are printed in ASCII Dump mode.

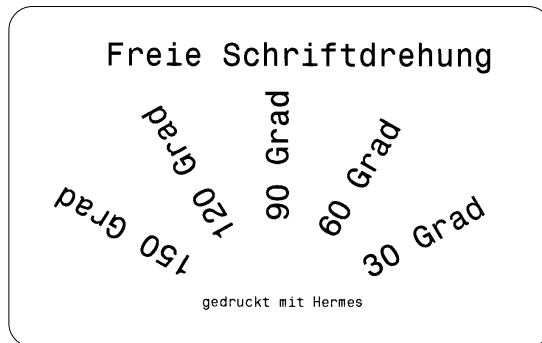


Fig. 12a "Normal" label

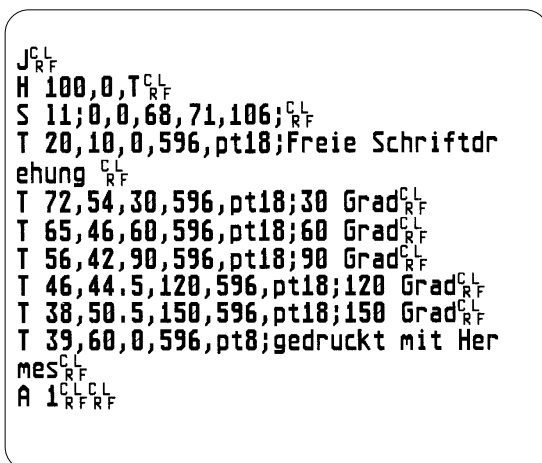


Fig. 12b The same label as above printed in ASCII Dump mode

13 Operation

Positioning of the Labels

The labels could be applied parallel to the print line (**0°-position**) as well as across to the print line (**90°-position**). An external signal via PLC interface triggers the type of labelling (see appendix C). The take-over of the labels is carried out in the 0°-position for both types of applying. The following movements are different :

0°-Applying

1. Turning into the 90°-position
2. Moving down
3. Stop
4. Turning into the 0°-position
5. Moving down
6. Applying
7. Moving up
8. Stop
9. Turning into the 90°-position
10. Moving up
11. Turning into the 0°-position

90°-Applying

1. Turning into the 90°-position
2. Moving down
3. Stop
4. **not any** movement
5. Moving down
6. Applying
7. Moving up
8. Stop
9. **not any** movement
10. Moving up
11. Turning into the 0°-position

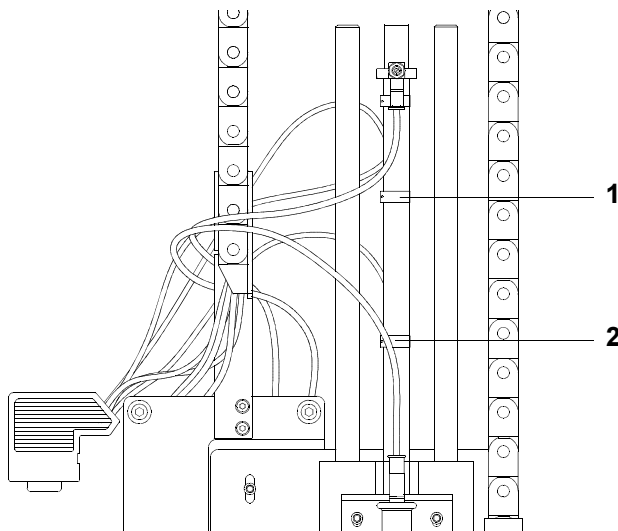


Fig. 13a Sensors

The stop is set during the movement process to guarantee a correct carrying out of the turning of the pad. The location of the stop depends on the setting of the sensors (**1, 2**). During the 90°-applying the stop is not recognized by the user.

Switch on the Printer



NOTICE !

Check all external connections before starting to print.

- Make sure that the media is loaded corresponding to the instructions.
- Check that the transfer ribbon is loaded properly before starting to print.



CAUTION !

Make sure that the slide valve of the lift cylinder is closed during operation (see chapter 5). Otherwise the lift cylinder can be moved without control. This fact can cause damages.



NOTICE !

Make sure that the pad is not covered by a label when switching on the device.

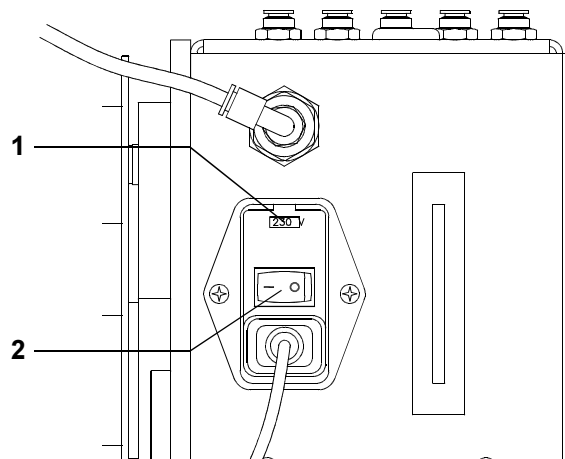


Fig. 13b Power supply

- Switch on the compressed air supply.
- Switch on the power supply (2) of the Printer-Applicator-System.

The printer carries out a short system test and following the display shows the system mode "ONLINE". If a hardware failure occurs during the system test the type of the failure will be shown. In this case the printer should be switched off and on again. If the failure occurs again call for service.

If the display is not showing anything after switching on the printer, please check the following:


- the connection of the power cord is correct
- the fuse (1) that protects the power connection, is not defective

Standard Operation



NOTICE !

Before starting the first print job after switching on the printer it is necessary to synchronize the label feed :

- Press the  key to generate a synchronous running. Remove the processed labels manually.
- Start the print job.
- Start the labelling process via PLC interface.

With every start signal received by the PLC interface the printer performs one application cycle.

- Printhead is moved down.
- Label is printed.
- Printhead is moved up.
- Pad is moved to the peel-off table, vacuum is switched on.
- Label is peeled off by moving back the peel-off table and taken by the pad of the applicator module.
- Pad is driven to move back into the upper end position.
- Peel-off table is driven to move back into the front position.
- Label is transported into the labelling position, vacuum is switched off.
- Label is placed onto the product.
- Pad is driven to return in its upper end position.

Now the printer-applicator-system is ready for the next cycle.

If an error occurs while the printer-applicator-system is operating, this is shown in the display (for types of errors and how to treat them see appendix A).

Special Operation with the Pre-dispense Key

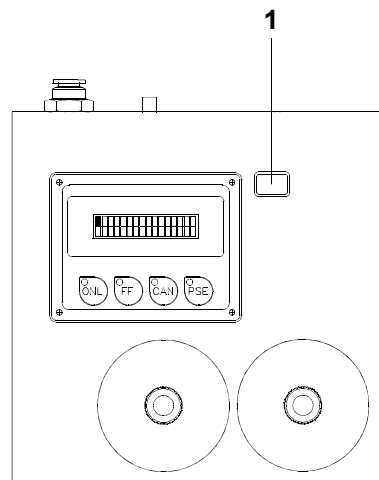


Fig. 13c Pre-dispense key

By pressing the pre-dispense key (1), half cycles of the labelling process can alternately be released, provided that there is a print job. This operation mode is especially made for setups and adjustments.

1(st) half cycle



Pressing the key releases the print of one label provided that there is a print job available. The printhead is driven down, a label is printed and following the printhead is driven up.

2(nd) half cycle

Pressing the key will drive the lift cylinder to move the pad to the peel-off table. The peel-off table is driven back and the label is put on the pad. Following the pad is moved into the labelling position and the peel-off table is driven to move to the front. The label is placed onto the product. Then, the lift cylinder is driven to move the pad back into the upper end position.

If the label is removed from the pad manually after the first half cycle, the first half cycle will be repeated when the pre-dispense key is pressed again.

If there is no print job, only the movements of the second half cycle are carried out, when pressing the key.

The first half cycle of the labelling process can also be released by pressing the  key on the control panel of the printer. In that case, a blank label is picked up by the pad. That way, the whole labelling process can be simulated by alternately pressing the  key and the pre-dispense key without the need of a print job or a connection to a computer.



CAUTION !

By carrying out the applying cycle an area for the movements of the pad has to be free.

14 Optionen

Keyboard Adapter

The **keyboard adapter** option offers to connect the printer to a standard PC keyboard, preferably "Cherry" brand or any other compatible input device (e.g. a bar code scanner) via its serial interface. Using the keyboard, print jobs of an internal PC card may be loaded and variable data may be altered. Input data requests as well as data received from the keyboard will be shown in the display of the printer.

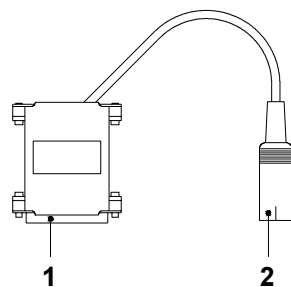
The keyboard adapter is designed for use with all keyboards which fulfill the following requirements : MF-2 compatible, having a 5pin DIN plug, supporting code set 3, and also operating with a maximum of 15 kBaud.



CAUTION !

The current consumption of the connected keyboard or scanner must not exceed 100 mA.

Installation of the Keyboard Adapter



- 1 - 25 pin SUB-D plug
- 2 - 5 pin DIN connector

Fig. 14a Keyboard adapter

1. Change the interface setting to "RS232C, 9600 Baud, RTS/CTS" and confirm.
2. **Switch the printer OFF !**
Connect the 25 pin plug (1) of the keyboard adapter to the serial interface connector at the side of the printer.
3. Connect the keyboard to the 5 pin DIN connector (2) of the keyboard adapter.

Key Assignment

The printer can easily be adjusted to the keyboard configuration of the particular country by using the setup parameter "Country". For each of the available settings the printer has a different table of key assignment, which, generally, complies with the assignment under Microsoft DOS.

The [ALTGR] key has no function. Therefore, all signs which are located on the right hand side of the key opposite of the normal characters (e.g. { } [] \) can be generated by pressing the [ALT] key.

A few of the other special signs (e.g. " × ÷) may also be generated the same way.

Other special characters (e.g. ñ ç œ) can be generated by inserting two characters one after the other, where the second input is a combination with the [ALT] key.

Some of the special characters cannot be shown in the display of the printer. In that case, the PAM 3000 will use a character which looks similar to the required character.



NOTICE !

When using a scanner, the character set of the scanner has to be the same as used by the printer.

Special Key Functions

[F1]	To enter the list of labels stored on the memory card.
[á]. [â]	To scroll up/down the list of labels on the memory card.
[ENTER] or [RETURN]	Without a current print job : to switch between ONLINE and OFFLINE; While processing a print job : to confirm the data input.
[Shift]+[Del]	To delete the input line.
[ESC]	To cancel the data input. (while printing same effect as CANCEL)
[SPACE]	While printing same effect as PAUSE.
[F2]	To repeat the print of the last label. (as command A 1 CR)
[F3]	To repeat the print of the last label including a new enquiry for variable data.
[Shift]+[F6]	To start the self test printout.
[F7]	Printer Info Display
[F8]	Form feed

Memory Cards

The printer provides an option for using memory cards to permanently save graphics, fonts, complete label formats, or database information. Data transfer may be performed via interface.

It is recommended that you make backup copies in case of malfunction of the original cards. The printer is able to read from PCMCIA version 2.1 compatible sRAM cards or Flash-EPROM cards. The maximum memory capacity is 4 MegaByte.

Preparing the Memory Card

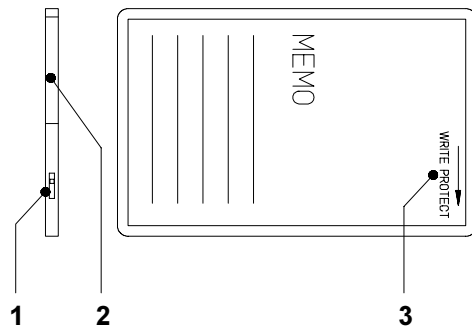


Fig. 14b Write protection / Inserting the battery

The write protection of the card may be activated or deactivated by shifting the switch (1) located at the front side of the card. The interpretation of the setting may be read from an imprint (3) on the back of the card.

If you want to format the card or write on it, switch off the write protection.

For replacing or inserting the battery in sRAM cards refer to the instructions of the manufacturer. In case the battery has to be replaced, it is usually found in a slot (2) above the switch (1).

Installation of the Memory Card

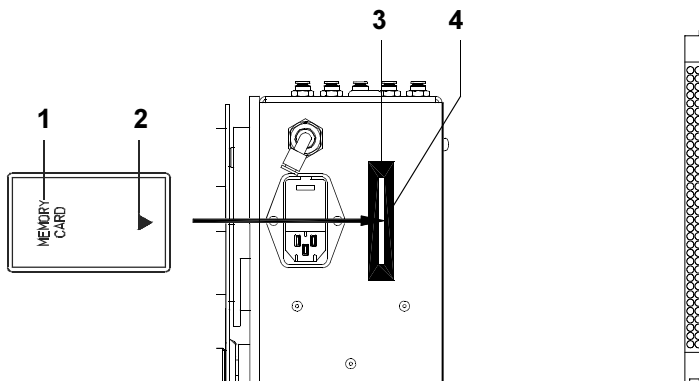


Fig. 14c Installation of the memory card

Fig. 14d Connecting side

The front side of the memory card (1) is usually marked by the inscription "MEMORY CARD", and an arrow (2) representing the direction of inserting the card into the drive. There is also an arrow (4) impressed into the frame of the memory card slot of the printer.

Insert the card (1) into the slot (3) so that the front of the card faces the arrow (4).

At the connecting side of the card there are different guides on the top and the bottom which make it impossible to insert the card incorrectly.

Formatting the Memory Card

For operation, the memory card first has to be structured internally in a certain way. Normally, memory cards are already pre-formatted in a suitable manner.

If the card you are using is not formatted at all, the printer will bring up one of the messages "Unknown card" or "Structural err.". Then, you may format the card using one of the following methods :

1. Formatting the card using the printer setup command "Format card" (see chapter 10).
2. Formatting the card using the printer interface and the printer command "Mf;name CR".

Writing on the Memory Card

There are also different methods to write onto a memory card.

The easiest way is to write on the card using the card drive of the printer and transfer the data via interface.

For saving a label, you need to put the label design commands into "brackets" consisting of "Ms"-commands :

Ms LBL;ABC		Command to save a file called "ABC"
J	|	
H 100,0,T	|	
S I1;0,0,68,71,106	|	Contents of the file "ABC"
T 10,10,0,3,pt15;Memory card	|	
A 1[NOPRINT]	|	
Ms LBL		End of Save File command

After completing the commands the file "ABC" is stored on the card with all commands from "J" to "A" which describe the label format.

The parameter [NOPRINT] used within the command A line will suppress the print of the label while saving the file.

Whenever the file "ABC" is called up, exactly one label will be printed.

If you want to print the label in a variable quantity do not use the A command within the label description.










Printing from a Memory Card



NOTICE !

Using a memory card provides the opportunity to print without a connection of the printer to a computer.

Follow the instructions below, after the card has been installed and the printer has been switched ON :

1. Switch printer into OFFLINE mode by pressing the  key.
2. After pressing the  key, the file name of the first label saved on the card will be shown.
3. Using the  key and the  key, you may scroll up and down the contents of the card. Confirm the selection by pressing the  key.
4. If you have chosen a label with a set number of labels to print, the printer will instantly start printing.
5. For labels with a variable number of labels, the top line of the display shows "Number of labels", the bottom line shows "00001" with the first figure flashing (cursor).
Using the  key and the  key, the figure at the position of the cursor may be altered. By pressing the  key the cursor can be moved on to the next figure. After confirming of the last figure, the printer starts to print.
6. To pause the selection of a label or the input of the number of labels you may press the  key.

The data saved on the card are also accessible via interface and computer.

Warning Light

By using the warning light it is possible to recognize the state of the printer with one view.

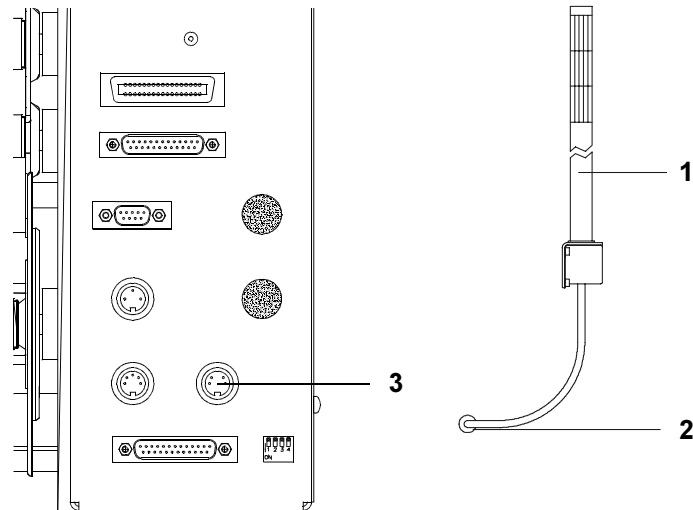


Fig. 14e Connection of the warning light

It is recommended to fix the warning light (1) at a bracket or a plate. For that purpose there are a plate and suitable screws included in the delivery contents of the light.

The warning light has to contact to the printer by inserting the connection cable (2) of the warning light into the 4-pin connector (3).

During the operation the lamps have following functions :

green	Device is switched on, voltage is available.
yellow	Warning : labels respectively transfer ribbon have passed the preset minimum quantity. Function is only available when the warning sensor label end is mounted.
red	Printer error Further information about the kind of error is shown on the display.

Warning Sensors

The sensors recognize, when the diameter of the label supply roll respectively the transfer ribbon roll decreases below a preset threshold value.



NOTICE !

The messages of the sensors are only intended to inform the operator. They do not influence the operation of the printer, i.e. the operation is not interrupted.

The messages will be shown by switching on the yellow lamp of the warning light (option). The signals also can be sent to a control system by using the peripheral interface.

Warning Sensor Label End

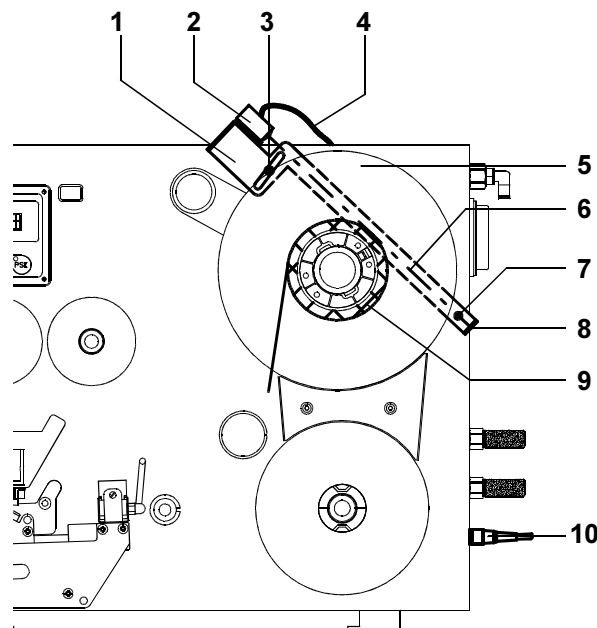


Fig. 14f Warning sensor label end

Mounting

1. Switch off the printer
2. Slide the sensor holder (1) with the warning sensor label end (2) behind the wind plate (5) of the media supply hub.
3. Attach the sensor holder with the slotted head screw (7) and the hexagon socket head screw (3) to the mounting plate. The hexagon socket head screw (3) must be used at this side, where the elongated hole is located in the sensor holder.
4. Plug the cable (4) into the 5-pin connector (10) at the side of the frame of the printer.

Adjustment

With this setting the threshold diameter (84 to 110mm) for the warning message can be adjusted.

1. Slide a label roll (9) with the intended threshold diameter onto the media supply hub.
2. Switch on the printer. The sensor (2) sends out a beam (6). If the label roll does not interrupt the path of the beam, the beam is mirrored at the reflective foil (8) and detected again by the sensor. In that case the LED at the sensor is on.
3. Loosen the hexagon socket head screw (3) and swing the sensor holder against the axle of the media supply hub as near as possible. The LED at the sensor is off.
4. Slowly swing the sensor holder away from the axle until the LED at the sensor goes on.
5. Tighten the hexagon socket head screw (3).

Warning Sensor Ribbon End



NOTICE !

The warning sensor ribbon end is only analyzed by the printer electronics if the warning sensor label end is also installed.

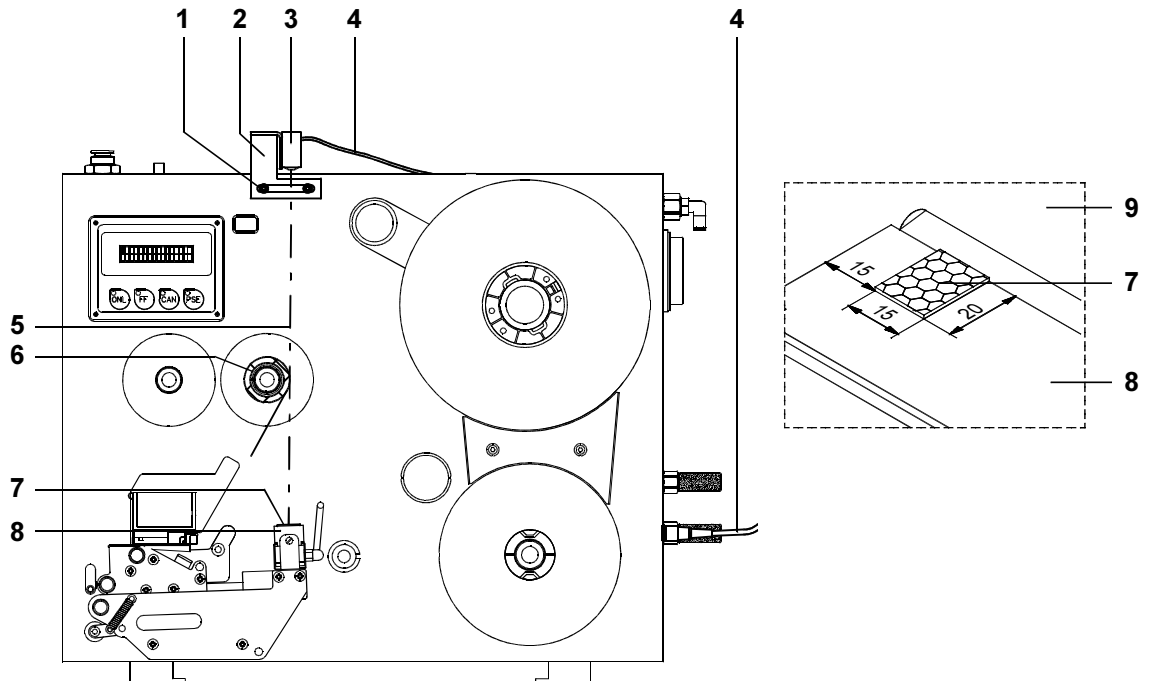


Fig. 14g Warning sensor ribbon end

Mounting

1. Switch off the printer
2. Attach the sensor holder (2) with the warning sensor ribbon end (3) to the mounting plate using the screws (1).
3. Plug the cable (4). For that the printer has a 3-pin connector at the side of the frame.
4. The contents of delivery include a reflective foil (7).
Remove the covering foil from the glued surface and stick the reflective foil (7) onto the brake (8) below the ribbon hubs as shown in fig.14g. Make sure that the distance between the reflective foil and the mounting plate (9) is about 15 mm.

Adjustment

With this setting the threshold diameter 34 to 41 mm for the warning message can be adjusted.

1. Slide a transfer ribbon roll (6) with the intended threshold diameter onto the media supply hub.
2. Switch on the printer. The sensor (3) sends out a beam (5). If the ribbon roll does not interrupt the path of the beam, the beam is mirrored at the reflective foil (7) and detected again by the sensor. In that case the LED at the sensor is on.
3. Loosen the screws (1) and move the sensor holder to the right as far as possible. The LED at the sensor is off.
4. Slowly move back the sensor holder to the left until the LED at the sensor goes on.
5. Tighten the screws (1).

Service Unit

It is very important for operating with the **PAM 3000 System** to guarantee a constant pressure of the compressed air and to use only filtered compressed air. Therefore it is recommended to use a service unit to adjust and to filter the air.

Two variations of service units are offered. The first variation is only to use for filtering and adjusting the compressed air. The second variation is additionally equipped with a start-up valve. This valve guarantees a soft flow of compressed air into the system.

A connector for the compressed air supply (1) is located at both variations of service units. The connector is suitable for a 1/4" coupling plug.

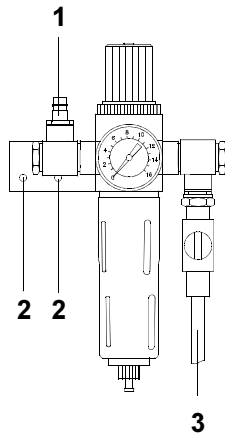


Fig. 14h Service unit - variation 1

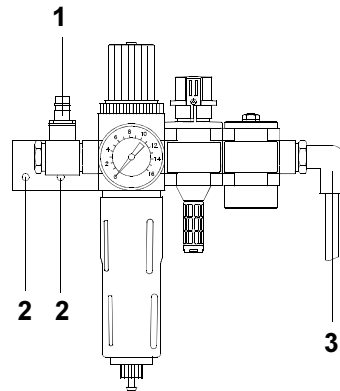


Fig. 14i Service unit - variation 2

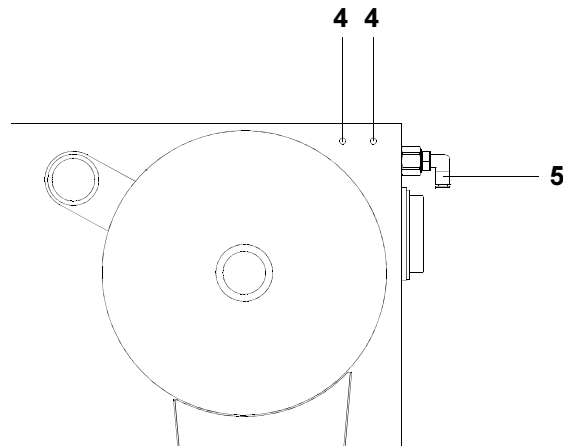


Fig. 14k Mounting the service unit

It is recommended to fix the service unit at the mounting plate of the printer. For that purpose there are two holes (4) in the mounting plate and two holes (2) in the plate of the service unit. The service unit can be mounted at the plate using the two screws included in its delivery contents.

Following the service unit has to connect to the printer (5) at one side (3) and to the compressed air supply at the other side (1).

Antistatic Brush

Using the antistatic brush it is possible to reduce the electrical charge in the print area.

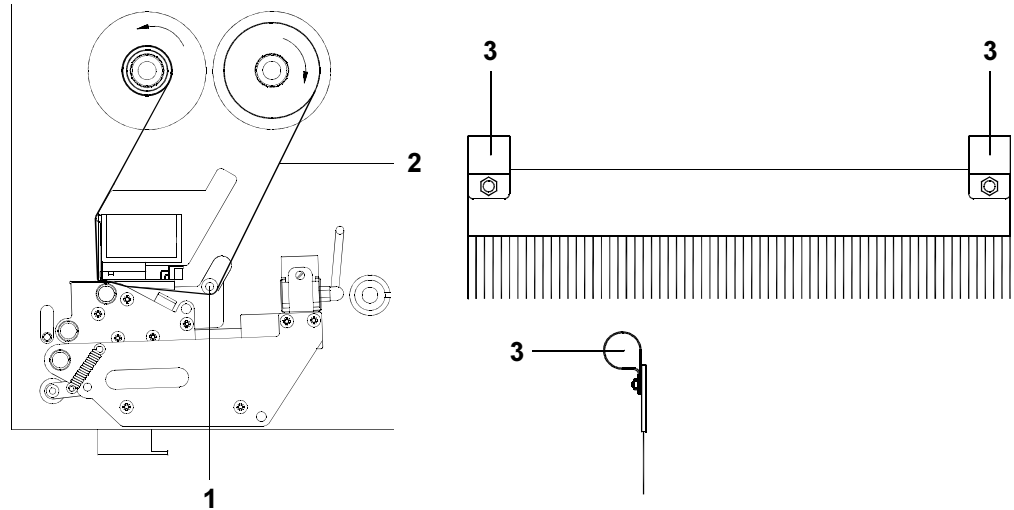


Fig. 14I Antistatic brush

It is very easy to fix the brush.

The antistatic brush has only to put off with its clamps (3) on the axle (1). The direction of putting off is shown in the figure above. Adjust the brush so that the bristles slightly touche the transfer ribbon (2).

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Appendix A - Error Messages / Problem Solution

Error Messages

The **PAM-System** is equipped with a comprehensive self diagnostic system which will indicate errors in the display of the printer. Also, the operator will be informed by the LEDs whether the fault is correctable and will, therefore, allow to continue the current print job after corrections (e.g. "Out of paper"), or the fault may require you to cancel the current print job.

Correctable Errors

While processing a print job, an error has occurred which may be corrected by the operator, and also allows you to continue the print job after fault correction.

Display

The display shows alternately the type of fault and the total of the remaining labels of the current print job.

LED Display

LED CAN on, LED PSE is flashing.

Function Keys



	CAN key	short pressing : longer pressing (>1s):	Cancels the current print job, Switch to the next job in the input buffer Cancels the current print job, Deletes the input buffer (LED CAN blinks), Switch into ONLINE mode
	PSE key	Continues the current print job after error correction, Switch into PRINT mode (LED PSE off)	

Table A-1 Function keys in mode FAULT-CORRECTABE

Irrecoverable Errors

During printing, a fault has occurred which cannot be cleared by the operator without cancelling the current print run (e.g. hardware fault).

Display

The type of fault is shown in the display.

LED Display

LED CAN is flashing.

Function Keys


	CAN key	Cancels the current print job. Switch into ONLINE mode. (LED ONL on, LED CAN off, LED PSE off) If ONLINE mode cannot be entered, switch printer on and off again. If the fault remains again, call for Service
---	---------	--

Table A-2 Function keys in mode FAULT-IRRECOVERABLE

Errors During System Test

When switched on the printer automatically performs an internal self test.
If the test is completed successfully, the **PAM 3000** proceeds into the ONLINE mode.
If a hardware-fault occurs, the type of error is shown. In this case switch printer off and on again.
If the fault remains again, call for Service.

List of Error Messages

The following table contains an overview of possible error messages, their possible causes as well as solutions to the problems.

Correctable faults as defined above are marked with a " * ".

If the suggested solutions turn out unsuccessful, call for Service.

Error message	Possible cause	Solution
ADC malfunction	Hardware error	Switch printer off and then on If error recurs → contact Service
Buffer overflow	The data receive buffer is full but the computer is still transmitting data.	Use the protocol (preferably RTS / CTS) for data transmission
Card full	Refers to the optional memory card; No more data can be stored on the card	Replace the card
dRAM malfunction	Hardware error	Switch printer off and then on If error recurs → contact Service
File not found	Requested file is not on the card.	Check the contents of the card
FPGA malfunction	Hardware error	Switch printer off and then on If error recurs → contact Service
Head above	Printhead is not in its upper position.	Check the printer for proper operation of its mechanics and pneumatics; Call for service;
Head below	Printhead is not in its lower position.	Check the printer for proper operation of its mechanics and pneumatics; Call for service;
Head too hot *	Printhead is overheated due to labels containing a lot of graphics, text, bar codes, etc.	After pausing to cool down the printhead, the print job will be continued automatically. If the fault recurs repeatedly, reduce the heat level or the print speed via the software.
Host stop/ error *	Operation has been interrupted by a signal of an external control	Label the product manually if necessary Release the signal
Invalid data	Fault while downloading graphic data	Cancel current print job Check data
Invalid outline	Error with the selected font (download font)	Cancel current print job Change font
Invalid setup	Setup is invalid	Use RESTORE function to reset all settings back to factory settings Configure setup If error recurs → contact Service

Table A-3 Error messages


Error message	Possible cause	Solution
Label not depos.	Label has not been placed onto the product; after cylinder has moved back the label still sticks on the vacuum plate of the pad	Label the product manually
LCD malfunction	Hardware error	Switch printer off and then on If error recurs → contact Service
Lower position	Pad has not reached the labelling position within 2s after the movement of the cylinder	Check the applicator for proper operation of its mechanics; Check the labelling position sensor (service); Label the product manually (service)
Memory overflow	Current print job contains too much information (selected fonts, large graphics)	Check the contents of the card
No label found *	There are labels missing on the label material	Press  key repeatedly until printer recognizes the next label on the material.
	The label format as set in the software does not correspond with the real label format	Cancel current print job Change the label format set in the software; Restart print job
	Printer is loaded with continuous paper but the software is set on labels	Cancel current print job Change either software setting or print media; Restart print job
No label size	Definition of the label size is missing at the label description	Check programming
No record found	No database record has been found when using optional memory card	Check programming and/or database for record in question
Out of paper *	Out of label material	Insert new supply roll
	Label has not properly been loaded	Check paper feed
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 via software, clean the printhead , load transfer ribbon, restart print job.
	The printer is loaded with thermal labels for direct thermal mode (without transfer ribbon); but the software is set for transfer printing.	Cancel current print job Set software to direct thermal mode Restart print job
	The supply roll of transfer ribbon is turning on the supply hub.	Tighten the supply roll of transfer ribbon by turning the knurled knob at the supply hub.

Table A-3 Error messages (continuation)



Error message	Possible cause	Solution
Pad 0° error	Pad has not reached the 0°-position.	Check the applicator for proper operation of its mechanics and pneumatics; Check the sensor; Call for Service.
Pad 90° error	Pad has not reached the 90°-position.	Check the applicator for proper operation of its mechanics and pneumatics; Check the sensor; Call for Service.
Protocol error (*)	The interfaces of computer and printer are set differently.	Switch printer off Correct the interface setting in the printer setup.
	Printer has received an unknown or invalid command (display shows command abbreviated)	Depending on the type of fault, the command can be skipped by pressing the  key or the print job has to be cancelled by pressing the  key.
Read error	Error when reading from the optional memory card	Check the data on the memory card. Save the data to another card and reformat the original card.
ROM malfunction	Hardware error	Switch printer off and then on If error recurs → contact Service
Scan result negative	The bar code is not correct.	Check the path of transfer ribbon and media. Check the printer for proper operation of its mechanics and pneumatics; Call for service;
Structural error	The optional memory card file structure is not compatible.	Format the memory card.
Table not at the back	The table has not reached its behind position.	Check the printer for proper operation of its mechanics and pneumatics; Call for service;
Table not in front	The table has not reached its front position.	Check the printer for proper operation of its mechanics and pneumatics; Call for service;
Unknown card	The optional memory card is not formatted, or the type is not supported by the printer.	Format the memory card. Use the correct type of card as specified in the Memory card section

Table A-3 Error messages (continuation)

Error message	Possible cause	Solution
Upper position	Pad has not reached the upper position within 2s after the lift cylinder has moved back; Pad has left the starting position unauthorized;	Check the applicator for proper operation of its mechanics; Check if the slide valve is closed; Label the product manually; (Service)
Vac. plate empty	Label has not been picked up properly by the pad; or Label fell off the pad before it could be placed onto the product	If possible place the 'lost' label onto the product manually; Otherwise stop print job and start again with adapted parameters (e.g. count)
Voltage error	Hardware error	Switch printer off and then on If error recurs → contact Service
Write error	The optional memory card has encountered a hardware error.	Repeat the write process or reformat the memory card.
Write protected	Refers to the optional memory card. Write protection is activated.	Deactivate write protection.

Table A-3 Error messages (continuation)

Problem Solution

Problem	Cause and Solution
Print image has smears or voids	Printhead is dirty, Clean printhead
	Temperature too high; Decrease heat level via software
	Unsuitable combination of ribbon and label media; Choose different type of ribbon
Print image is irregular, one side is lighter	Printhead is dirty, Clean printhead
	Printhead is not correct adjusted, Adjust printhead (service)
Vertical white lines in the print image	Printhead is dirty, Clean printhead
	Printhead is defective (failure of heat elements), Replace printhead (service)
Printer does not display error message: "Paper out"	Label is not inserted in the label edge sensor Correct the label path
	Label strip is not guided over the swing arm Correct the label path
Printer transports label media, but the ribbon does not move	Transfer ribbon is wrong inserted. Check, if the inked side faces the label
	The combination of ribbon and media is unsuitable Choose different type of ribbon
Thermal transfer ribbon creases	Transfer ribbon too wide. Use transfer ribbon which is max. 10% wider than the label media.
Printer does not stop after transfer ribbon runs out	Direct thermal printing is chosen in the software Change to thermal transfer printing
Error message "Ribbon out", though ribbon is loaded	Transfer ribbon is not locked at the supply hub, Supply hub does not turn, Tighten the ribbon
Printer only prints each second label	Setting of the size in the software is too large. Correct the setting
Loss of all applicator functions	Loss of compressed air; check all connections;
No I/O function	Check if ports of printer and computer are configured identically Configure ports if necessary.
	Check interface cable Replace bad I/O cable.

Table A-4 Problem solution

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Appendix B - Maintenance / Cleaning

General

The printer **PAM 3000** only requires a minimum of maintenance. It is most important to clean the printhead on a regular basis. This will guarantee a permanent high quality of the print image. Moreover, it helps to prevent an early wear of the printhead. Apart from that, the servicing only requires you to clean the outside of the printer occasionally.

Cleaning the Printhead

While operating, dirt such as paper dust or particles of ink or back coating from the ribbon may accumulate on the thermal printhead. This can cause a deterioration of the print quality (e.g. different contrasts on the label, appearance of light horizontal lines, etc.). In that case, the printhead needs cleaning.



WARNING !
Disconnect power supply !
Switch off compressed air !

Recommended cleaning intervalls :

Direct Thermal Printing : at every 1200 m

Thermal Transfer Printing : each time you change the ribbon



CAUTION !
Do not use any sharp objects for cleaning the printhead !
Do not touch the protective glass layer of the printhead !

Clean the printhead as follows :

- Remove label material and transfer ribbon from the printer.
- Clean the printhead surface with a special cleaning pen, or use a cotton swab soaked with isopropyl alcohol.
- Allow it to dry for about 2 to 3 minutes before restarting the printer.

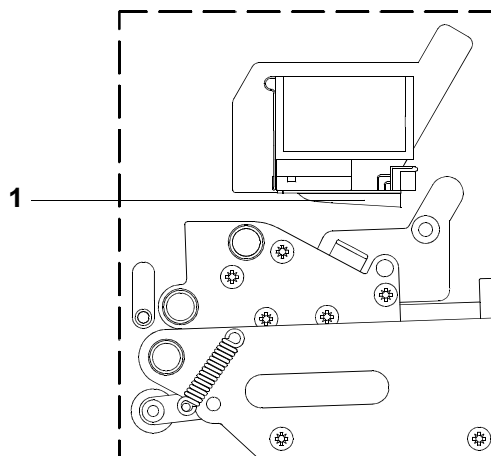


Fig. B-1 Cleaning the printhead

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Appendix C - Pin Assignment of the Interface Connectors

Pin Assignment of the Serial Interface Connectors

PAM 3000 provides a 25 pin SUB-D connector for the serial interfaces which are internally available, i.e. RS-232, RS-422 and RS-485.

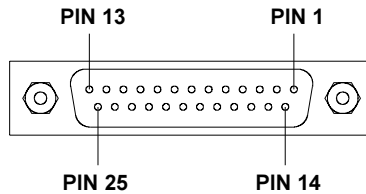


Fig. C-1 Connector of the serial interface (side of the printer)

Pin	Signal	Function
1	CG	Protective Ground
2	TxD	Transmit Data (RS-232)
3	RxD	Receive Data (RS-232)
4	RTS	Request to send
5	CTS	Clear to send
7	GND	Logic Ground
9	TDATA+	Transmit Data (RS-422, RS-485)
10	TDATA-	Transmit Data (RS-422, RS-485)
18	RDATA+	Receive Data (RS-422, RS-485)
19	RDATA-	Receive Data (RS-422, RS-485)
20	DTR	Data Terminal Ready

Table C-1 Signals of the serial interface connector

Following some typical RS-232 interface cable configurations are shown. Note, that the pin assignment may vary for different computers. If you have any problems with the connections, contact the manufacturer of your computer on the pin assignment of the interface. Use the pin assignment of the printer as shown in table C-1 to obtain a suitable cable.

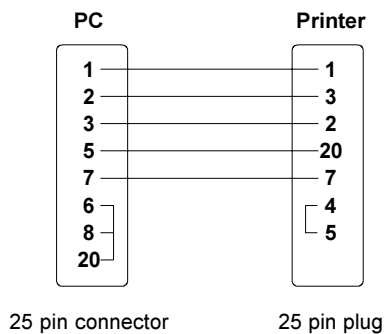


Fig. C-2 Interface cable with 25 pin computer connector for RS-232 with protocol " ---" or "XON/XOFF"

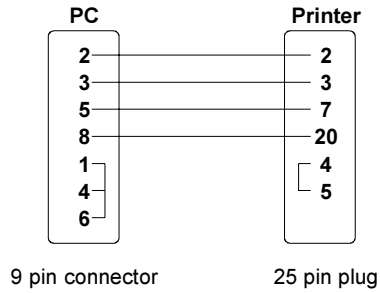


Fig. C-3 Interface cable with 9 pin computer connector for RS-232 with protocol " ---" or "XON/XOFF"

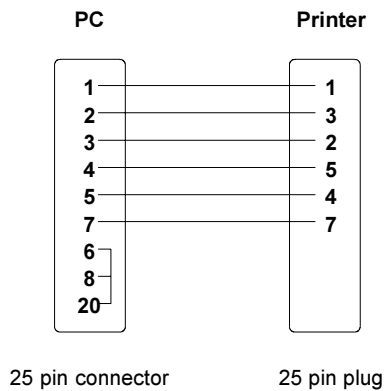


Fig. C-4 Interface cable with 25 pin computer connector for RS-232 with protocol "RTS/CTS" or "XON/XOFF"

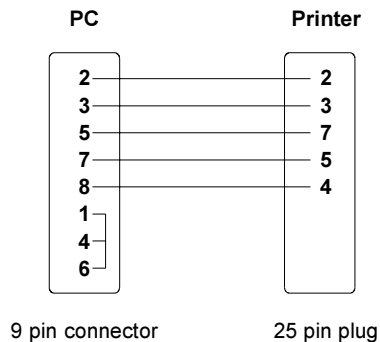


Fig. C-5 Interface cable with 9 pin computer connector for RS-232 with protocol "RTS/CTS" or "XON/XOFF"

Interface Cable for RS-422 / RS-485

To control the printer by RS-422/ RS-485 interface, only the signals TDATA+, TDATA-, RDATA+, and RDATA- are necessary. Check the pin assignment for the interface of your computer, and use the pin assignment of the printer as shown in table C-1 to obtain a suitable cable. The connectors of TDATA+ and RDATA+ as well as TDATA- and RDATA- at the plug-in-connection of the cable must be united. If there is a very large transfer distance a termination of the cables is recommended.

Pin Assignment of the Parallel Interface Connector

The printer provides a 36 pin connector for the parallel Centronics interface.

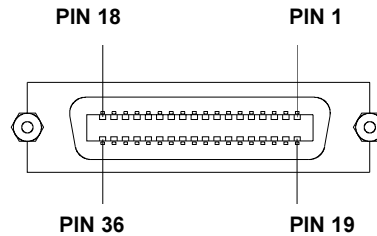


Fig. C-6 Centronics interface connector (side of the printer)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	/STROBE	10	/ACKNLG	19	GND	28	GND
2	DATA 1	11	BUSY	20	GND	29	GND
3	DATA 2	12	PE	21	GND	30	GND
4	DATA 3	13	SLCT	22	GND	31	nc
5	DATA 4	14	nc	23	GND	32	nc
6	DATA 5	15	nc	24	GND	33	nc
7	DATA 6	16	GND	25	GND	34	nc
8	DATA 7	17	nc	26	GND	35	nc
9	DATA 8	18	nc	27	GND	36	nc

Table C-2 Signals of the Centronics interface

Centronics Interface Cable

The cables used for Centronics interface connectors are standard cables, so that normally there are no problems with the external control of the printer.

In the event of any difficulties, consult the manufacturer of your computer on the pin assignment of the computer's interface. Use the pin assignment of the printer as shown in table C-2 to obtain a suitable cable.

PLC Interface Port

Pin Assignment of the PLC Interface

For use in a network the Printer-Applicator-System is equipped with a PLC interface to start and interrupt the printing and labelling process. It also passes on state information as well as error messages of the Printer-Applicator-System to the control of the network. The interface has a 25 pin SUB-D connector (1).

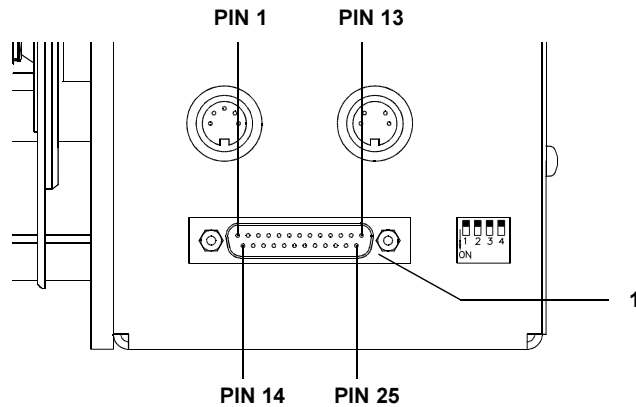


Fig. C-7 Connector of the PLC-interface (side of the printer)

Pin	Signal	Direction	Function	
			variation without applicator	variation with applicator
1	n.c.			
2	n.c.			
3	XDKO	output	Printhead position	Printhead position
4	XDNB	output	Printer not ready	Printer, applicator not ready
5	XEPOS	output	Label is printed	Pad in labelling position
6	XESP	output	Label is dispensed	Applying process is ready
7	RUEL	(output)	revers line (for all outputs)	Revers line (for all outputs)
8	XEDG	output	No existing print job	No existing print job
9	EXF	input	External error	External error
10	EUEB	input	Label is taken	Recycle part in position
11	STRT	input	Start signal	Start signal
12	DRW	input	Print repeat	GoodRead (Scan result)
13	ESP	input	Label dispense	90°-labelling
14	n.c.			
15	XTIV	output	Position of the peel-off table	Position of the peel-off table
16	XVW	output	Warning end of material	Warning end of material
17	XEDST	output	Print of label has started	Pad in starting position
18	XRTA	output	without function	Activate the recycle part
19	n.c.			
20	n.c.			
21	EXFR	(input)	External error (revers line)	External error (revers line)
22	EUEBR	(input)	Label is taken (revers line)	Recycle part pos. (revers line)
23	STARTR	(input)	Start signal (revers line)	Start signal (revers line)
24	DRWR	(input)	Print repeat (revers line)	Not connect
25	ESPR	(input)	Label dispense (revers line)	90°-labelling (revers line)

Table C-3 Pin assignment of the PLC interface

Circuit Diagram of Inputs and Outputs

The **inputs** are optocouplers with a current limiting resistor of 2.2kΩ giving a voltage of 24V in the input circuit.

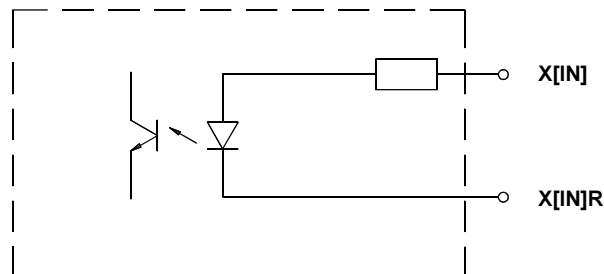


Fig. C-8 Circuit of the inputs

For each signal X[IN] there is a separate reverse line X[IN]R via plug connector. From that the following pairs of signals result :

X[IN]	Pin	X[IN]R	Pin
EXF	9	EXFR	21
EUEB	10	EUEBR	22
STRT	11	STARTR	23
DRW	12	DRWR	24
ESP	13	ESPR	25

Table C-4 Input pairs of signals

All **outputs** are recognized through solid state relays. Their outputs are connected to one another on one-side. The joint line is lead to the plug connector as a RÜL signal. The switch function of the outputs is to open or close the contact between the joint line RÜL and the respective output.

Electrical requirements : $U_{max} = 42V$
 $I_{max} = 100mA$

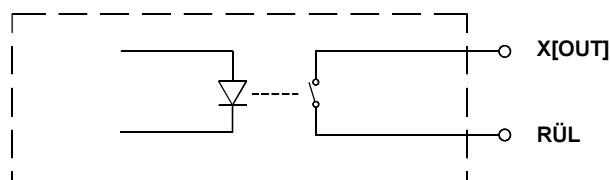


Fig. C-9 Circuit of the outputs


Explanation of the Signals


XDKO - Printhead position - **both** variations

The signal is necessary to recognize whether the printhead is in its upper or lower position. XDKO is active if the printhead is in its upper position. In this state the contact between PIN3 and RÜL (PIN7) is opened.

XDNB - Printer not ready - variation **without** applicator

An error has occurred on the printer. The label print is stopped and the details and type of error can be read from the printer display ('Ribbon out'; 'Paper out'; 'No label').


After the error is corrected, it is possible to press the  key and the print job will be continued. The last label printed before the error occurred will be repeated.


Pressing the  key will stop the print job and reset the printer.

XDNB is active if the contact between PIN4 and RÜL (PIN7) is opened.

XDNB - Printer, applicator not ready - variation **with** applicator

An error has occurred on the printer-applicator-system. The label print and apply is stopped and the details and type of error can be read from the printer display ('Ribbon out'; 'Paper out'; 'No label').

After the error is corrected, it is possible to press the  key and the print job will be continued. The last label printed before the error occurred will be repeated.

Pressing the  key will stop the print job and reset the printer.

XDNB is active if the contact between PIN4 and RÜL (PIN7) is opened.

XEPOS - Label is printed - variation **without** applicator

It is indicated that a label is printed. XEPOS is active if the contact between PIN5 and RÜL (PIN7) is closed.

XEPOS - Pad in labelling position - variation **with** applicator

The pad has reached the labelling position. XEPOS is active if the contact between PIN5 and RÜL (PIN7) is closed.

XESP - Label is dispensed - variation **without** applicator

It is indicated that the peel-off table is fed back and that way the label is taken. XESP is active if the contact between PIN6 and RÜL (PIN7) is closed.

XESP - Applying process is ready - variation **with** applicator


The applying process is completed successfully. XESP is active if the contact between PIN6 and RÜL (PIN7) is closed.


XEDG - No existing print job - **both** variations

There is no print job currently available. In this state the contact between PIN8 and RÜL (PIN7) is opened.

EXF - External error - **both** variations

An error has occurred on the external device. The label print is stopped and the display of the printer shows the message "External error".

After the error is corrected, it is possible to press the  key and the print job will continue. The last label printed before the error occurred will be repeated.

Pressing the  key will stop the print job and the printer will be reset.
EXF is active when current flows between PIN9 and PIN21.

EUEB - Label is taken - variation **without** applicator
The label is taken from the dispense position. EUEB is active when current flows between PIN10 and PIN22.

EUEB - Recycle part in position - variation **with** applicator
The recycle part is in the position to take-over the labels. EUEB is active when current flows between PIN10 and PIN22.

STRT - Start signal - **both** variations
The STRT signal triggers the start of the print with an impulse of 20 ms.
XSTART is active when current flows between PIN11 and PIN23.

DRW - Print repeat - variation **without** applicator
The print of the last label should be repeated. DRW is active when current flows between PIN12 and PIN24.

DRW - GoodRead (Scan result) - variation **with** applicator
The signal indicates the good result of scanning.
DRW is active when current flows between PIN12 and PIN24.

ESP - Label dispense - variation **without** applicator
The label should be dispensed. ESP is active when current flows between PIN13 and PIN25.

ESP - 90°-labelling - variation **with** applicator
The label should be applied in the 90°-position. ESP is active when current flows between PIN13 and PIN25.

XTIV - Position of the peel-off table - **both** variations
The signal is necessary to recognize whether the peel-off table is in its front or back position.
XTIV is active if the peel-off table is in its back position.
In this state the contact between PIN15 and RÜL (PIN7) is opened.

XVW - Warning end of material - **both** variations
This signal reports that there is only still a few amount of material (ribbon or label media) available. The user has to check the warning sensors ribbon end and label end.
In this state the contact between PIN16 and RÜL (PIN7) is opened.

XEDST - Print of label has started - variation **without** applicator
It is indicated that the print of a label has started.
XEDST is active if the contact between PIN17 and RÜL (PIN7) is closed.

XEDST - Pad in starting position - variation **with** applicator
The pad has reached the starting position.
XEDST is active if the contact between PIN17 and RÜL (PIN7) is closed.

XRTA - Activate the recycle part - variation **with** applicator
The recycle part for the bad labels should be activated.
XRTA is active if the contact between PIN18 and RÜL (PIN7) is closed.

Scanner Connector

Pin Assignment

The printer provides a 9 pin port to connect a scanner. The scanner connector is only supported at variations **with applicator**.

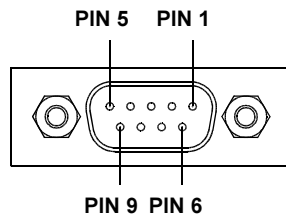


Fig. C-10 Connector of the scanner (right side of the printer)

Pin	Signal	Direction	Function
1	GND		Ground
2	DRW	input	GoodRead (Scan result)
3	XSCA	output	TopScan
6	24P		Operating voltage +24V, Si T 100mA
7	DRWR	(input)	GoodRead (revers line)
8	XSCAR	(output)	TopScan (revers line)

Table C-5 Signals of the scanner connector

Circuit Diagram of Input and Output

The **input** is an optocoupler with a current limiting resistor of 2.2kΩ giving a voltage of 24V in the input circuit.

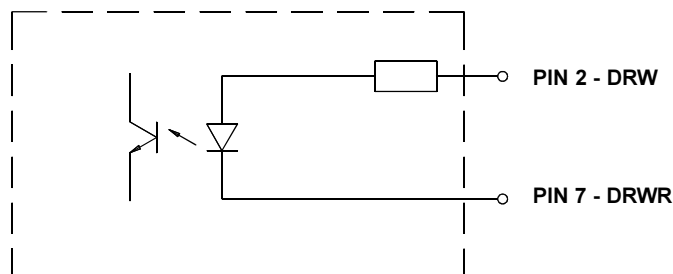


Fig. C-11 Circuit of the input

The **output** is recognized through solid state relays. The line is lead to the plug connector as a RÜL signal.
 The switch function of the output is to open or close the contact between the line RÜL and the output.

Electrical requirements : $U_{max} = 42V$
 $I_{max} = 100mA$

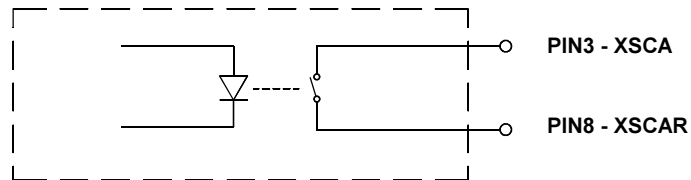


Fig. C-12 Circuit of the output

Explanation of the Signals

GND - Ground (0V)

DRW - GoodRead

The signal indicates the good result of scanning.
 DRW is active when current flows between PIN2 and PIN7.

XSCA - TopScan

The printed label should be scanned.
 In this state the contact between PIN3 and RÜL (PIN8) is closed.

24P - Operating voltage +24V, Si T 100mA

Example of a Circuit Diagram for a Connector

If there is no scanner connected it is necessary to simulate the goodread-signal. This can be realized by a connector. In the figure below you can find an example for the circuit diagram of this connector.

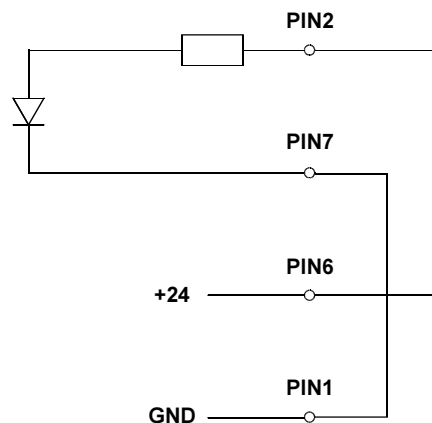


Fig. C-13 Circuit diagram of a connector to realize the goodread-signal

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Appendix D - Setup Selectable Character Tables

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	0	@	P	`	p	□	□	°	À	Đ	à	đ		
..1	□	□	!	1	A	Q	a	q	□	'	±	Á	Ñ	á	ñ	
..2	□	□	"	2	B	R	b	r	,	'	²	Â	Ò	â	ò	
..3	□	□	#	3	C	S	c	s	f	"	£	³	Ã	Ó	ã	ó
..4	□	□	\$	4	D	T	d	t	,	"	¤	'	Ä	Ô	ä	ô
..5	□	□	%	5	E	U	e	u	...	•	¥	μ	Å	Õ	å	õ
..6	□	□	&	6	F	V	f	v	†	–	|	¶	Æ	Ö	æ	ö
..7	□	□	'	7	G	W	g	w	‡	–	§	·	Ç	×	ç	÷
..8	□	□	(	8	H	X	h	x	ˆ	˜	¨	˘	È	Ø	è	ø
..9	□	□	)	9	I	Y	i	y	‰	™	©	ı	É	Ù	é	ù
..A	□	□	*	:	J	Z	j	z	Š	š	ª	º	Ê	Ú	ê	ú
..B	□	□	+	;	K	[	k	{	<	>	«	»	Ë	Û	ë	û
..C	□	□	,	<	L	\	l	|	Œ	œ	¬	¼	Ì	Ü	ì	ü
..D	□	□	-	=	M	]	m	}	□	□	-	½	Í	Ý	í	ý
..E	□	□	.	>	N	^	n	~	□	□	®	¾	Î	Þ	î	þ
..F	□	□	/	?	O	_	o	⌘	□	Ÿ	-	¿	Ï	ß	ï	ÿ

Table D-1 Character Set "Windows 1252"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	0	@	P	`	p	□	□	°			Đ		đ	
..1	□	□	!	1	A	Q	a	q	□	'	˘	±	Á	Ñ	á	ñ
..2	□	□	"	2	B	R	b	r	,	'	˘	²	Â	Ò	â	ò
..3	□	□	#	3	C	S	c	s	□	"	Ł	ł	Ã	Ó	ã	ó
..4	□	□	\$	4	D	T	d	t	,	"	¤	'	Ä	Ô	ä	ô
..5	□	□	%	5	E	U	e	u	...	•	Ą	μ	Ł	Õ	ł	ó
..6	□	□	&	6	F	V	f	v	†	–	|	¶	Ć	Ö	ć	ö
..7	□	□	'	7	G	W	g	w	‡	–	§	·	Ç	×	ç	÷
..8	□	□	(	8	H	X	h	x	□	□	˘	˘	Č	Ř	č	ř
..9	□	□	)	9	I	Y	i	y	‰	™	©	ą	É	Ù	é	ù
..A	□	□	*	:	J	Z	j	z	Š	š	Ś	ś	Ę	Ú	ę	ú
..B	□	□	+	;	K	[	k	{	<	>	«	»	Ë	Û	ë	û
..C	□	□	,	<	L	\	l	|	Š	š	¬	¼	Ì	Ü	ì	ü
..D	□	□	-	=	M	]	m	}	Ť	ť	-	½	Í	Ý	í	ý
..E	□	□	.	>	N	^	n	~	Ž	ž	®	¾	Î	Þ	î	þ
..F	□	□	/	?	O	_	o	⌘	Ž	ž	Ž	ž	Đ	ß	đ	·

Table D-2 Character Set "Windows 1250"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□		0	@	P	`	p	□	□		°	À	Đ	à	ð
..1	□	□	!	1	A	Q	a	q	□	□	i	±	Á	Ñ	á	ñ
..2	□	□	"	2	B	R	b	r	□	□	¢	²	Â	Ò	â	ò
..3	□	□	#	3	C	S	c	s	□	□	£	³	Ã	Ó	ã	ó
..4	□	□	\$	4	D	T	d	t	□	□	¤	´	Ä	Ô	ä	ô
..5	□	□	%	5	E	U	e	u	□	□	¥	µ	Å	Õ	å	õ
..6	□	□	&	6	F	V	f	v	□	□	¦	¶	Æ	Ö	æ	ö
..7	□	□	'	7	G	W	g	w	□	□	§	·	Ç	×	ç	÷
..8	□	□	(	8	H	X	h	x	□	□	¨	¸	È	Ø	è	ø
..9	□	□	)	9	I	Y	i	y	□	□	©	¹	É	Ù	é	ù
..A	□	□	*	:	J	Z	j	z	□	□	ª	º	Ê	Ú	ê	ú
..B	□	□	+	;	K	[	k	{	□	□	«	»	Ë	Û	ë	û
..C	□	□	,	<	L	\	l	|	□	□	¬	¼	Ì	Ü	ì	ü
..D	□	□	-	=	M	]	m	}	□	□	-	½	Í	Ý	í	ý
..E	□	□	.	>	N	^	n	~	□	□	®	¾	Î	Þ	î	þ
..F	□	□	/	?	O	_	o	␣	□	□	-	¿	Ï	ß	ï	ÿ

Table D-3 Character Set "ISO 8859-1"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□		0	@	P	`	p	Ç	É	á	■	Ł	ð	Ó	-
..1	□	□	!	1	A	Q	a	q	ü	æ	í	■	ł	Đ	β	±
..2	□	□	"	2	B	R	b	r	é	Æ	ó	■	ł	Ê	Ô	—
..3	□	□	#	3	C	S	c	s	â	ô	ú	|	ł	Ë	Ò	¾
..4	□	□	\$	4	D	T	d	t	ä	ö	ñ	ł	ł	È	õ	¶
..5	□	□	%	5	E	U	e	u	à	ò	Ñ	À	ł	ı	Õ	§
..6	□	□	&	6	F	V	f	v	â	û	ª	Â	ã	ı	µ	÷
..7	□	□	'	7	G	W	g	w	ç	ù	º	Ä	Å	î	þ	¸
..8	□	□	(	8	H	X	h	x	ê	ÿ	¿	©	Ł	İ	þ	º
..9	□	□	)	9	I	Y	i	y	ë	Ö	®	ł	ł	ł	Ú	¨
..A	□	□	*	:	J	Z	j	z	è	Ü	¬	ł	ł	ł	Ú	·
..B	□	□	+	;	K	[	k	{	ï	ø	½	ł	ł	■	Û	¹
..C	□	□	,	<	L	\	l	|	î	£	¼	ł	ł	■	ý	³
..D	□	□	-	=	M	]	m	}	ì	Ø	ı	¢	ł	ł	Ý	²
..E	□	□	.	>	N	^	n	~	Ä	×	«	¥	ł	ł	-	■
..F	□	□	/	?	O	_	o	␣	Å	f	»	ł	ł	ł	'	

Table D-4 Character Set "Codepage 850"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	□	□	□	&	-	□	□	□	□	□	{	}	\	0
..1	□	□	□	□	□	□	/	□	a	j	~	□	A	J	□	1
..2	□	□	□	□	□	□	□	□	b	k	s	□	B	K	S	2
..3	□	□	□	□	□	□	□	□	c	l	t	□	C	L	T	3
..4	□	□	□	□	□	□	□	□	d	m	u	□	D	M	U	4
..5	□	□	□	□	□	□	□	□	e	n	v	□	E	N	V	5
..6	□	□	□	□	□	□	□	□	f	o	w	□	F	O	W	6
..7	□	□	□	□	□	□	□	□	g	p	x	□	G	P	X	7
..8	□	□	□	□	□	□	□	□	h	q	y	□	H	Q	Y	8
..9	□	□	□	□	□	□	□	□	i	r	z	□	I	R	Z	9
..A	□	□	□	□	€	!	□	:	□	□	□	□	□	□	□	□
..B	□	□	□	□	.	\$,	#	□	□	□	□	□	□	□	□
..C	□	□	□	□	<	*	%	@	□	□	□	□	□	□	□	□
..D	□	□	□	□	()	_	'	□	□	□	□	□	□	□	□
..E	□	□	□	□	+	;	>	=	□	□	□	□	□	□	□	□
..F	□	□	□	□	|	~	?	"	□	□	□	□	□	□	□	□

Table D-5 Character Set "EBCDIC"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	0	@	P	`	p	Ä	ê	†	∞	¿	-	‡		
..1	□	□	!	1	A	Q	a	q	Ä	ë	°	±	i	—	·	Ò
..2	□	□	"	2	B	R	b	r	Ç	í	¢	≤	¬	“	,	Ú
..3	□	□	#	3	C	S	c	s	É	ì	£	≥	√	”	„	Û
..4	□	□	\$	4	D	T	d	t	Ñ	î	\$	¥	f	‘	‰	Ü
..5	□	□	%	5	E	U	e	u	Ö	ï	•	μ	≈	’	Â	ı
..6	□	□	&	6	F	V	f	v	Ü	ñ	¶		Δ	÷	Ê	˘
..7	□	□	'	7	G	W	g	w	á	ó	β	Σ	«		Á	˙
..8	□	□	(	8	H	X	h	x	à	ò	®		»	ÿ	Ë	˚
..9	□	□	)	9	I	Y	i	y	â	ô	©	π	...	ÿ	È	˘
..A	□	□	*	:	J	Z	j	z	ä	ö	™			/	Í	˚
..B	□	□	+	;	K	[	k	{	ã	õ	´	a	Á	¤	Î	°
..C	□	□	,	<	L	\	l	|	å	ú	¨	°	Ã	<	Ï	˚
..D	□	□	-	=	M	]	m	}	ç	ù	≠	Ω	Õ	>	Ì	˚
..E	□	□	.	>	N	^	n	~	é	û	Æ	æ	œ	fi	Ó	˚
..F	□	□	/	?	O	_	o	␣	è	ü	Ø	ø	œ	fl	Ô	˚

Table D-6 Character Set "Macintosh"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	0	@	P	`	p	Ç	É	á	■	⊥	đ	Ó	-	
..1	□	□	!	1	A	Q	a	q	ü	Í	í	■	⊥	Đ	ß	"
..2	□	□	"	2	B	R	b	r	é	Í	ó	■	⊥	Đ	Ö	˘
..3	□	□	#	3	C	S	c	s	â	ô	ú	|	⊥	È	Ñ	˘
..4	□	□	\$	4	D	T	d	t	ä	ö	À	⊥	—	d'	ñ	˘
..5	□	□	%	5	E	U	e	u	û	Ł	ł	À	⊥	Ń	ń	§
..6	□	□	&	6	F	V	f	v	ć	ł	Ż	À	⊥	Í	Ś	÷
..7	□	□	'	7	G	W	g	w	ç	Ś	ż	È	⊥	ă	î	ş
..8	□	□	(	8	H	X	h	x	ł	ś	Ę	Ś	⊥	ě		˘
..9	□	□	)	9	I	Y	i	y	ë	Ö	ę	⊥	⊥	⊥	Ú	˘
..A	□	□	*	:	J	Z	j	z	Ó	Ü	⊥	⊥	⊥		·	
..B	□	□	+	;	K	[	k	{	ó	T	ż	⊥	⊥	■	Ů	ů
..C	□	□	,	<	L	\	l	|	î	ť	Č	⊥	⊥	■	ý	ř
..D	□	□	-	=	M	]	m	}	Ž	Ł	ş	Ž	⊥	⊥	Ý	ř
..E	□	□	.	>	N	^	n	~	Ä	×	«	ž	⊥	⊥	Ů	ť
..F	□	□	/	?	O	_	o	⊥	Č	č	»	⊥	⊥	■	'	

Table D-7 Character Set "Codepage 852"

	0..	1..	2..	3..	4..	5..	6..	7..	8..	9..	A..	B..	C..	D..	E..	F..
..0	□	□	0	@	P	`	p	□	□	□	°	□	□	⊥	⊥	⊥
..1	□	□	!	1	A	Q	a	q	□	□	□	±	□	□	⊥	⊥
..2	□	□	"	2	B	R	b	r	□	□	¢	²	□	□	⊥	⊥
..3	□	□	#	3	C	S	c	s	□	□	£	³	□	□	⊥	⊥
..4	□	□	\$	4	D	T	d	t	□	□	¤	'	□	□	⊥	⊥
..5	□	□	%	5	E	U	e	u	□	□	¥	μ	□	□	⊥	⊥
..6	□	□	&	6	F	V	f	v	□	□	¦	¶	□	□	⊥	⊥
..7	□	□	'	7	G	W	g	w	□	□	§	·	□	□	⊥	⊥
..8	□	□	(	8	H	X	h	x	□	□	ˆ	˘	□	□	⊥	⊥
..9	□	□	)	9	I	Y	i	y	□	□	©	¹	□	□	⊥	⊥
..A	□	□	*	:	J	Z	j	z	□	□	×	÷	□	□	⊥	⊥
..B	□	□	+	;	K	[	k	{	□	□	«	»	□	□	⊥	⊥
..C	□	□	,	<	L	\	l	|	□	□	¬	¼	□	□	⊥	⊥
..D	□	□	-	=	M	]	m	}	□	□	-	½	□	□	⊥	⊥
..E	□	□	.	>	N	^	n	~	□	□	®	¾	□	□	⊥	⊥
..F	□	□	/	?	O	_	o	⊥	□	□	-	□	□	□	⊥	⊥

Table D-8 Character Set "ISO 8859-8"

Appendix E - Recommended Spare and Wearing Parts

Part.-No.	Description	Printer	Applicator
		5945001	5945202
5521552	Spring	x	
5521553	Wall Spacer	x	
5521555	Shell 123 mm, D25.4	x	
5521560	Rewinder End Cap	x	
5521561	Shell 122.3 mm, D40	x	
5521564	Rewinder Wall Plate	x	
5530552	Plate	x	
5530570	PCB Control Panel	x	
5530571	LCD Display	x	
5530823	Motor	x	
5537543	Transport Locking Roller	x	
5560434	Printhead NM3004-UA21B	x	
5905395	Swing Drive CRB1BW30-270 S		x
5945056	Pinch Roller	x	
5945066	Print Roller PAM 3000	x	
5945120	Label Sensor Assy. PAM 3000	x	
5945122	PCB Driver Electronics	x	
5945124	Feed Roller PAM 3000	x	
5945132	PCB Valve Connection	x	
5945165	PCB Applicator Control	x	
5945166	PCB CPU	x	
5945225	Pad Holder Type 1200		x
5945232	Sensor Lift Cylinder 1		x
5945233	Sensor Lift Cylinder 2		x
5945236	Sensor Turn Cylinder		x
5945237	Labelling Position Sensor		x
5945242	Pad Holder Type 1100		x
5945244	Cover		x

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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:
Printer-Applicator-System

Type:
Brady PAM 3000

Applied EU Regulations and Norms:

- EC Machinery Regulations - Machine Safety	98/37/EU EN 292/2 :1995-06
- EC Low Voltage Regulations - Data and Office Machine Safety	73/23/EEC EN60950 :1992 + A1 :1993 + A2 :1993
- EC Electromagnetic Compatibility Regulations - Threshold values for the Interference of Data Machines - Limits for harmonic current emission	89/336/EEC EN 55022 :1998 EN 61000-3-2 :1995+A1 :1998 +A2 :1998+A14 :1999 :2000
- Limits of voltage fluctuation and flicker - Interference Resistance in both Industrial and Small Plants	EN 61000-3-3 :1995 EN 55024 :1998

Signed for, and on behalf of, the Manufacturer :

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Sömmerda, 10.09.01

Erwin Fascher
Managing Director