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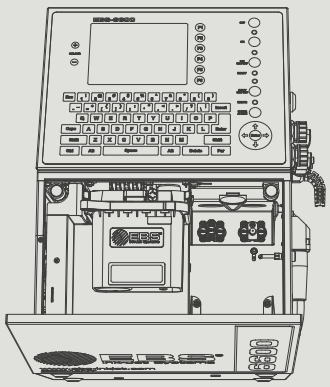
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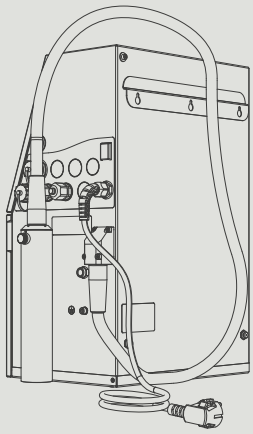
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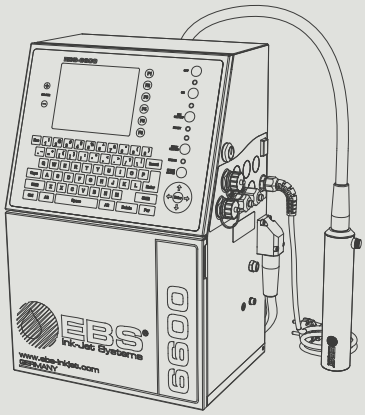
EBS-6600 / EBS-6900

USER MANUAL

Industrial CONTINUOUS INK-JET Printers
Original Instructions







EN

Part 1 of 3

You can find our user manuals at:
manual.ebs-inkjet.de

2026.08.20

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CHAPTER 1
PRELIMINARY INFORMATION

Dear User,

Before using the Boltmark®II-series printer, please read carefully the documents attached to the printer, especially the Safety Manual and the material safety data sheets (SDSs) of consumables in use.
The document, entitled Safety and Important Information (signature G2025/07/449_1EN) is an integral part of this User's Manual. The above-mentioned documents constitute a set of user documentation.



This User Manual should be easily accessible and ready to use whenever the need to do so arises.

This version of the document includes most of the modifications implemented to the **EBS** printers (manufactured by **EBS Ink Jet Systeme GmbH**) up to software version **39_4N**, and the descriptions contained herein correspond to the printers on which this software version is installed.

The scope of delivery depends on the order, therefore it may happen that the actual equipment and functions of your printing system differ slightly from some descriptions or illustrations. As we need to keep pace with continual technical advancement and our customers' individual requirements we have to reserve the right to introduce changes in the design, version and technical solutions. Therefore, no data, illustrations and descriptions contained in this User Manual shall make grounds for any claims. Should your printer be provided with the details of the equipment or software that are not illustrated or described in this User Manual or should you have additional queries after having read this Manual, please contact an authorized representative of **EBS Ink Jet Systeme GmbH** for more information.

The manufacturer shall not be liable for any damage caused to the printer by improper handling or operation, that is the failure to follow this User Manual, and by the consequences of editorial or publishing errors in the Manual.
The application and use of products are beyond our control and thus you apply and use the products exclusively on your own responsibility.

Original Instructions.
The User Manual in the English language is the original instructions. In case of disputes, this language version shall prevail. The instructions in other languages are translation of the original instructions.

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1. PRELIMINARY INFORMATION

The following symbols are used in the manual.



An important note or tip.
It is advisable to strictly follow the tips.



Before starting using the printer or before conducting a particular operation read carefully the documentation attached to the printer.



Wear safety goggles while conducting a given operation.



While conducting a given operation wear protective gloves that are resistant to ink / cleaner.



Wear protective clothing while conducting a given operation.



Additional information on a given subject. a supplement or a reference to the text where more details can be found.



A list of tools, accessories and spare parts necessary for carrying out a given maintenance or service procedure.



Additional information on a given subject in the form of a multimedia file.
Redirection to the site where more details are available and whose address is given with the QR code.

The following signs can be placed on the printer:

- a general warning sign:



*Safety hazards may be present in the printer. They are indicated with the **general** warning sign. For more details on a particular hazard (the type of hazard, clarification and ways of risk prevention, etc.) refer to the relevant sections further in this manual.*
*If there is a **dedicated** warning sign for a given type of hazard, then that sign is used instead of the general sign (see the "**Sharp elements**" sign given below as an example).*

- an example of a dedicated warning sign:



CAUTION: Sharp elements!
*While installing / replacing consumables be careful not to get wounded with the needle that is part of the consumable connection. **Do not touch the needle!** Avoid manipulations near the needle.*

- the sign that indicates the necessity to read the manual:



The sign is most frequently used in combination with the general warning sign, which warns of a safety hazard. The sign indicates that you need to read obligatorily the manual where the hazard is identified, explained and where a suitable course of action is described in order to protect the user from the risk of suffering pain and/or injuries (and sometimes also from the risk of damaging user property).

The part numbers quoted in this document are the same for every figure and every description given in this document.

This manual applies to the following **Boltmark®II**-series printers:

- EBS-6600 **Boltmark®II**; a low investment printer designed for simple applications,
- EBS-6900 **Boltmark®II**, an all-round printer on which the full range of options can be installed.

Regardless of the language version of the Manual, examples of printer screen dumps are presented in English.

Additional characteristics (bold face, italics, changed color) are applied to the document to highlight such items as:

- the printer name, access level or any other important information (*e.g.* **Boltmark®II** EBS-6600),
- a part number in drawings (*e.g.* **3**),
- a message available in the printer interface (*e.g.* a **message**),
- a reference to another section or drawing (*e.g.* see ***"1.1. Configurability of the Boltmark®II-series Printers"***),
-  - to press an icon or a function key,
-  - to wait before a successive operation can be carried out.

1.1. CONFIGURABILITY OF THE Boltmark®II-SERIES PRINTERS

Owing to a variety of different configurations of the **Boltmark®II**-series printers, the equipment and active options depend on the individual country and the specific application at the user's.

Contact an authorized representative for more details about the options.

The printer can be equipped with a number of options to satisfy the user's requirements. They can be:

- **hardware** options, which require additional sub-assemblies, but do not need to be enabled by an authorized representative;
- **software** options, some of which can be activated remotely after the user has contacted an authorized representative, while the other require that the printer software be modified.

Part of the software options require that additional sub-assemblies be installed.

1.1.1. HARDWARE OPTIONS

Selected hardware options:

Various lengths of the head cable

The printhead can be equipped with a head cable of the following length:

- **3 m (9.85 ft)**,
- **6 m (19.7 ft)**.

*The availability of the 6-meter head cable in each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

Angle printhead

A printhead designed for labeling object in spaces are not easily accessible. The option is recommended for the applications where installation of a straight printhead is impossible or difficult.

*The availability of the angle printhead in each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

*For more details see **"2.2.3. Printhead with a Cable"**.*

Additional protection of the head cable coating

A printhead with a cable whose coating is additionally protected against abrasion. The option is recommended when the head cable gets in touch with another object during printing.

The application of additional protection for the head-cable coating is advisable especially for dynamic operation, i.e. when the printhead is installed in a manipulator.

The availability of the additionally protected head cable in each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

It is recommended that the software option ***ROBOT*** *be used for dynamic operation, i.e. for operating the printhead installed in a manipulator. For more details see* ***"1.1.2. Software Options"****.*

Photodetector connector

In the **Boltmark®II**-series printers, the photodetector connector on accessories connector plate **4** (see ***Fig. 5 on page 28***) is available in two versions:

- as a cable strain relief,
- as a photodetector quick-connector.

The type of photodetector connector in each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

With the quick connector for photodetector you can connect photodetectors used in older CIJ printer models manufactured by ***EBS Ink Jet Systeme GmbH*** *to the* **Boltmark®II***-series printers.*

Another photodetector

The **Boltmark®II**-series printers can be equipped with two photodetectors:

- photodetector **A**,
- photodetector **B**.

Encoder connector

In the **Boltmark®II**-series printers, the encoder connector on accessories connector plate **4** (see ***Fig. 5 on page 28***) is available in two versions:

- as a cable strain relief,
- as an encoder quick-connector.

The type of encoder connector in each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

With the quick connector for encoder you can connect encoders used in older models of the ***EBS Ink Jet Systeme CIJ GmbH*** *printers to the* **Boltmark®II***-series printers.*

Detection of conveyor belt back movement

The **Boltmark®II**-series printers can support an encoder that is equipped with the back movement detection function.

*The printer can sense the direction in which the conveyor belt moves provided that the encoder is connected to input **IN A** as well as input **IN B**. For more details see **"2.3.8.2. Connecting an Encoder"**.*

*Printing can be handled properly even if the conveyor belt moves backward only when the **CONVEYERback** software option is enabled in the printer. For more details see **"1.1.2. Software Options"**.*

Ruggedized ETHERNET connector (type M12)

The **Boltmark®II**-series printers can be equipped with a ruggedized **ETHERNET** connector (a type **M12** connector). a type **M12** connector should be installed in port **CUSTOM 3** (**4g**) on accessories connector plate **4** (see ***Fig. 5 on page 28***).

RS-232 connector

The **Boltmark®II**-series printers can be equipped with an **RS-232** connector 10101 installed on accessories connector plate **4** (see ***Fig. 5 on page 28***).

*The availability of the **RS-232** connector in each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

Option for operation in harsh conditions

The **Boltmark®II**-series printers can be equipped with the option that enables operation in harsh conditions , for example, in the food processing industry. The harsh conditions include:

- a highly dusty environment,
- an environment where the risk of steam condensation occurs.

The option consists of:

- external air supply to the electronics compartment, with the circuit being connected to one of the connectors on accessories connector plate **4** (see ***Fig. 5 on page 28***); owing to it, the printer casing rating raises from **IP55** to **IP65**,
- additional insulation for the high voltage electrode in the printhead.

*To meet the **IP65** class requirements for the printer casing, all unused connectors on accessories connector board **4** (see **Fig. 5 on page 28**) must be secured with plugs:*
*- for plugging cable strain relief holes (Part No. **4810252**) or*
*- for quick connectors to connect accessories (Part No. **2240065**).*

*For more details see **"2.3.2. Preliminary Operations"**.*

*It is recommended that fastening element **20** (see **Fig. 7 on page 30**) situated at the back of the printer housing be used for connecting external air sub-assemblies to the printer.*

ALARM / STOP

The **Boltmark®II**-series printers can support an external status beacon, and they can also control external devices, *e.g.* they can stop the conveyor belt if an error occurs and makes printing impossible.

A status beacon or a module for controlling external devices can be connected to one of the connectors on accessories connector plate **4** (see ***Fig. 5 on page 28***).

*It is recommended that fastening element **20** (see **Fig. 7 on page 30**) situated at the back of the printer housing be used for connecting a status beacon to the printer.*

Hardware code switch (CS)

An emulated code switch or a hardware code switch can be used for code-switch printing. The hardware code switch is available in two variants:

- serial code switch,
- parallel code switch (which needs the **OLDCSW** software option to be enabled).

The hardware code switch can be connected to one of the connectors on accessories connector plate **4** (see ***Fig. 5 on page 28***).

*For more details see **"4.3.4. Code Switch Printing"**.*

ACPS® system for preventing tubes and nozzles from clogging

The **Boltmark®II**-series printers can be equipped with the **ACPS®** (Anti Clogging Power Supply) system for preventing the tube and nozzles from clogging. Owing to that the printers can be shut down and the printhead circuits can be rinsed before shutting down even if a power failure occurs.

Printing-direction change connector (manipulator operation)

The **Boltmark®II**-series printers can be equipped with a connector for supplying the signal that compels a change in the direction of printing. The connector can be installed on accessories connector plate **4** (see ***Fig. 5 on page 28***). It is used for dynamic operation (the printhead installed in a manipulator).

*It is advisable to use the software option **ROBOT** for dynamic operation, i.e. to operate the printhead fastened in a manipulator. For more details see **"1.1.2. Software Options"**.*

Counter reset connector

The **Boltmark®II**-series printers can be equipped with a connector for supplying the external signal that resets counters. The connector can be installed on accessories connector plate **4** (see ***Fig. 5 on page 28***).

*Counters can be reset with an external signal if the software option **RES_LICZNIKI** is enabled. For more details see **"1.1.2. Software Options"**.*

1.1.2. SOFTWARE OPTIONS

The **Boltmark®II**-series printer is a device intended for professional use.

Most of the software options available can be activated remotely without the need for a service staff visit. The only thing the user needs to do is to contact an authorized representative.

The status of the majority of software options can be viewed by pressing  *. For more details see* ***"7.6. Program Option Information"****.*

A selected software option can be activated after contacting an authorized representative by pressing  *. For more details see* ***"10.4. Releasing Protections"****.*

Selected software options:

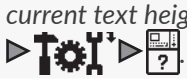
In the following descriptions, the item "" indicates whether a given option can be activated remotely (**YES**) or requires software modifications (**NO**).*

Option	Name	*
Maximum number of printed text rows	**None**	**NO**

The maximum text height can be:

- **16** rows (**MINI**),
- **25** rows (**MIDI**),
- **32** rows (**MAXI**).

The maximum number of printed text rows in each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

The status of this software option is not available be pressing  *The maximum current text height [or a number of rows] that the printer can print can be viewed by pressing*  *. For more details see* ***"7.5. Printer Information"****.*

Maximum number of objects in the library	**TXT_NO**	**NO**

The maximum number of objects (texts and parameter blocks) stored in the library can be:

- **100**,
- about **1000**,
- about **2000**.

The maximum number of objects in the library of each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

2-dimensional codes	**ECC200 QR_CODE**	**YES**

Create and print 2-dimensional codes If the option is activated, the set of available parameters of a **BAR CODE**-type subtext changes.

The possibility of supporting 2-dimensional codes in each of the **Boltmark®II***-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

For more details see ***"5.4.5. Creating / Editing a BAR CODE-type Subtext"****.*

Option	Name	*
Additional character matrices	**ARABIC CYRILLIC**	**NO**

The printer can support additional languages and owing to that, texts can be created and printed by mean of Arabic, Cyrillic or other character matrices.



For more details see ***"5.4.3.1. Character Matrices in a CHARACTER STRING-type Subtext"****.*

Ignore objects during printing	**IGNORE**	**YES**

A defined number of objects (photodetector trigger operations) can be omitted during printing. The number of objects to be omitted is defined with the **Print every n** parameter.

Collect data received from an external device	**KS_MEMORY**	**YES**



The option is linked with supporting the ***Spec. chan.*** *special register. For more details see* ***"5.6.3. Data from an External Device"****.*

Data received from an external device is collected in a printer buffer. Then the data is printed successively.

No data is collected as standard, and only the last data portion transferred is printed.

Reprint data received from an external device	**KS_RUN**	**YES**



The option is linked with supporting the ***Spec. chan.*** *special register. For more details see* ***"5.6.3. Data from an External Device"****.*

Data transferred from an external device to the printer is printed several times. The data is reprinted until another data portion is received.

The received data is printed only once as standard.

Transfer the data reprint counter	**KS_REPEAT**	**YES**



The option is linked with supporting the ***Spec. chan.*** *special register. For more details see* ***"5.6.3. Data from an External Device"****.*

The data reprint counter is transferred together with the data received from an external device. The reprint counter must be at the beginning of the data and preceded by the **<DC1>** character.

The received data is printed only once as standard.

Support the external start / stop button	**EXT_PAN**	**YES**

The external button whose function is similar to that of the PRINT ON/OFF button on the operator panel is supported.

Option	Name	*
Change the direction of printing	**ROBOT**	**YES**

The horizontal and vertical directions of printing can be triggered with an external signal. The option can be used, for example, when a movable printhead, which is installed in a manipulator, describes immovable objects by shifting from one side to the other alternately. If the option is activated, the number of settings available for the **Vert. direct.** and **Conv. direct.** printing parameters increases.

*For using the **ROBOT** option, it is recommended that the printer be equipped with an optional input for supplying the signal that compels a change in the direction of printing. For more details see **"1.1.1. Hardware Options"**.*

*It is advisable to use the **ROBOT** option when the head cable coating is additionally protected against rubbing in your printer. For more details see **"1.1.1. Hardware Options"**.*

Change the counters contents only when triggered with an external signal (counting strobe signals)	**RobotCNT**	**YES**

*The option is linked with supporting the **Up counter**, **Down count.** and **Univ.count.** special registers. For more details see **"5.6.1. Object Counter"**.*

The contents of object counters change only when an external signal occurs.

Reset counters contents	**RES_LICZNIKI**	**YES**

*The option is linked with supporting the **Up counter**, **Down count.** and **Univ.count.** special registers. For more details see **"5.6.1. Object Counter"**.*

The counters are reset (or their initial settings are restored) with an external signal.

*To use the options **RES_LICZNIKI** it is required that the printer be equipped with an optional input for supplying the counter reset signal. For more details see **"1.1.1. Hardware Options"**.*

The option parameters can additionally be configured by pressing



Continue counting with the universal counter	**UNI_PRT_CNT**	**YES**

*The option is linked with supporting the **Univ.count.** special register. For more details see **"5.6.1.3. Universal Counter"**.*

The counting with the universal counter continues (regardless of the counter parameter settings) each time printing starts.

Continue counting with the incremental and decremental counters	**PRT_CNT_CNT**	**YES**

*The option is linked with supporting the **Up counter** and **Down count.** special registers. For more details see **"5.6.1. Object Counter"**.*

Continue counting with the incremental and decremental counters each time printing starts.

Option	Name	*
Update the special registers contents only when an object is detected by the photodetector	**REP_RSPEC**	**YES**

Update the special registers contents only when an object is detected by the photodetector. The contents of special registers remain unchanged while successive reprints of the same text are made.

The contents of special registers are updated each time a print is made (even if reprints of the same text are made on an object) as standard.

Change the counters contents when the end of an object is detected by the photodetector	**PHOT_CNT_NACT**	**YES**

*The option is linked with supporting the **Up counter**, **Down count.** and **Univ.count.** special registers. For more details see **"5.6.1. Object Counter"**.*

The counters contents can also be changed when the end of an object is detected by the photodetector.

Switch the text printed with a code switch after its name has been input	**noSTROBE**	**YES**

*The option is linked with code-switch printing. For more details see **"4.3.4. Code Switch Printing"**.*

Texts printed with a code switch are switched over immediately after the name of the consecutive text has been input. The printer does not wait for a strobe signal.

Send the <ACK> character when printing finishes	**SENDACK**	**YES**

*The option is linked with supporting the **Spec. chan.** special register. For more details see **"5.6.3. Data from an External Device"**.*

The **<ACK>** character confirming the reception of data is not sent by the printer until printing of a given text containing the **Spec. chan.** special register finishes.

The **<ACK>** character is sent by the printer after the special channel has received the **<ENTER>** character (or transmission of data from an external devices has finished) as standard.

Support the code switch via an RS-232 interface connector	**serialCSW**	**NO**

During code switch printing, the names of successive texts are transferred to the printer via an **RS-232** serial interface connector.

*For more details see **"4.3.4. Code Switch Printing"**.*

Option	Name	*
Support the parallel code switch	**OLDCSW**	NO

The option of using the parallel code switch during code-switch printing is activated.
The printer supports the serial code switch as standard.



*For more details see **"4.3.4. Code Switch Printing"**.*

Pause printing right away	**QUICKSTOP**	**NO**

Printing is paused immediately after the end of an object has been detected by the photodetector. The printer always operates as if the photodetector has been configured to be triggered with the active level.



*For more details see **"8.5. Configuring the Photodetector"**.*

When the name of the consecutive text is input during code-switch printing, printing of the previous text interrupts right away.

Set the direction of printing similarly to how it is done in older generation printers	**OldLeftRight**	**YES**

The direction of printing is configured with the **Vert. direct.** and **Conv. direct.** printing parameters similarly to how it is done in older generation printers. If the **OldLeftRight** option is active, the range of settings for the above-mentioned parameters in the **Boltmark®II**-series printers is the same as in the older generation printers.

Print even if the conveyor belt moves backward	**CONVEYER-back**	**NO**



*The option applies only when printing is timed with an encoder (**Generator** = **SHAFT**). For more details see **"4.5. Managing Printing Parameters"**.*

Printing is performed only when the conveyor belt moves forward. If the belt moves backward, the printer does not print, but it counts impulses generated by the encoder. Owing to that printing is not resumed until the conveyor belt returns to the point where the printing paused.

Shut down the printer automatically after idle time	**AutoShutOff**	**NO**

The printer is shut down automatically after idle time, which can be set with an additional configuration parameter and ranges from 7 to 1440 minutes.

Skip the objects indicated with an external signal while printing	**extIGNORE**	**NO**

The option of using an external signal to indicate the objects to be ignored while printing.

Option	Name	*
Change the way of printing the data received from an external device	KS_Just2Right	NO

*The option is linked with supporting the **Spec. chan.** special register. For more details see "5.6.3. Data from an External Device".*

If the length of the **Spec. chan.** special register is greater than the number of the data items transferred from an external device, the data missing on the left will be supplemented with spaces to equal the register length (right justification).

The data missing on the right will be supplemented with spaces to equal the register length (left justification), as standard.

1.2. PURPOSE

The printers ensure firm and clear prints on:

- paper and cardboard,
- plastic materials,
- fabric,
- leather and leather-like products,
- wood and wood-like products,
- glass and ceramic products,
- metal surfaces of any type.

The **Boltmark®II**-series printers print with black, dye (non-pigment) ink that is based on methyl ethyl ketone, as standard.

Optionally, the **Boltmark®II**-series printers can print with such inks as, for example:

- the ethanol-based ink designed for foodstuffs,
- the ink that changes color due to a change in temperature (thermochromatic ink),
- other special inks.

*For detailed information on the inks available for the **Boltmark®II**-series printers contact an authorized representative.*

The printer is not intended to store or process personal data.

CHAPTER 2
DESCRIPTION

2. DESCRIPTION

2.1. OVERVIEW

The **Boltmark®II**-series printers are industrial **CIJ** (Continuous Ink-Jet)-type printers for touchless labeling of objects moving (traveling, turning) in front of the printhead.

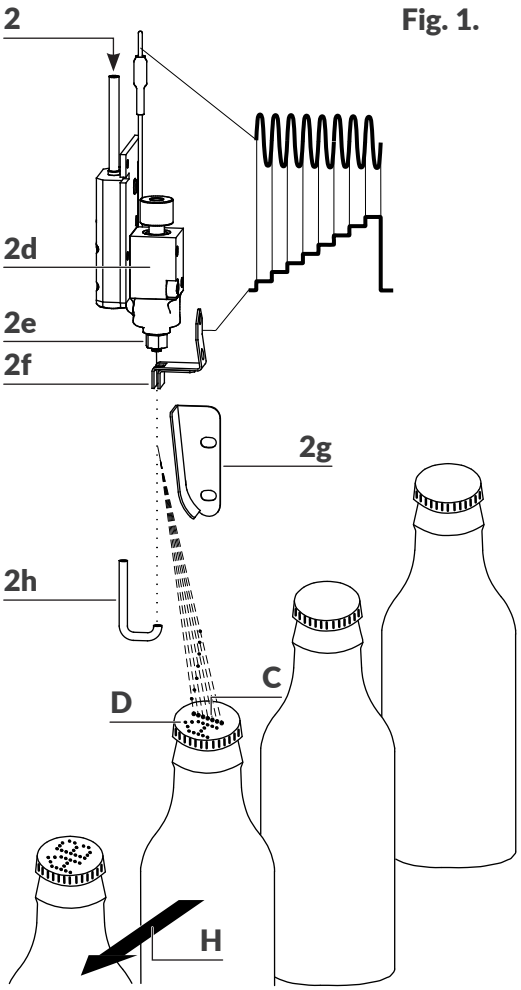


Fig. 1.

The principle of making prints with the **CIJ** printer:

1. A continuous ink jet flows from the printer to printhead **2** (see ***Fig. 1*** and ***Fig. 8 on page 31***) where it is broken into drops via gun **2d** and nozzle **2e**.
2. The drops are charged in the electric field generated by charging electrode **2f**.
3. Charged drops are deflected in the electric field generated by deflecting electrode **2g**, to create vertical row (column) **C** of drops **D** on a labeled object (see ***Fig. 1*** and ***Fig. 2***).
4. Objects to be labeled move in front of the printhead, and successively printed columns **C** make a print based on a text prepared on the printer in advance.
5. Uncharged drops (which are not used for making a print) are not deflected and fall into gutter **2h**, from where they are drawn back to the printer ink system.

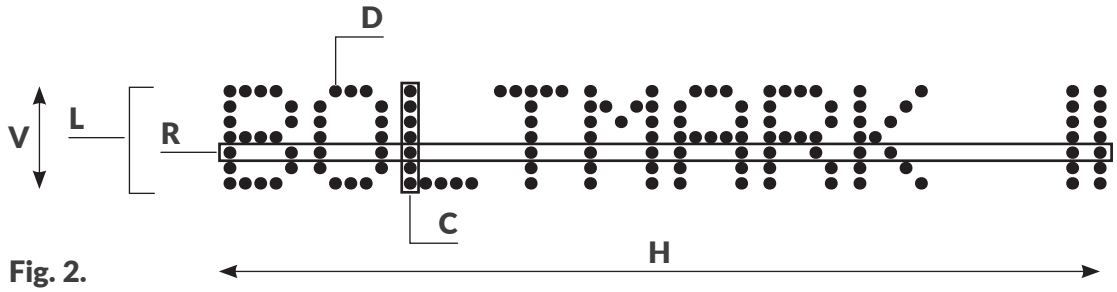


Fig. 2.

D	Print drop.
C	Vertical row (column) of a print.
R	Horizontal row of a print.
L	Line of a text.
V	Direction of drop deflection; vertical direction of printing.
H	Direction in which objects move in front of the printhead; horizontal direction of printing.

2.2. PRINTER STRUCTURE

2.2.1. FRONT VIEW

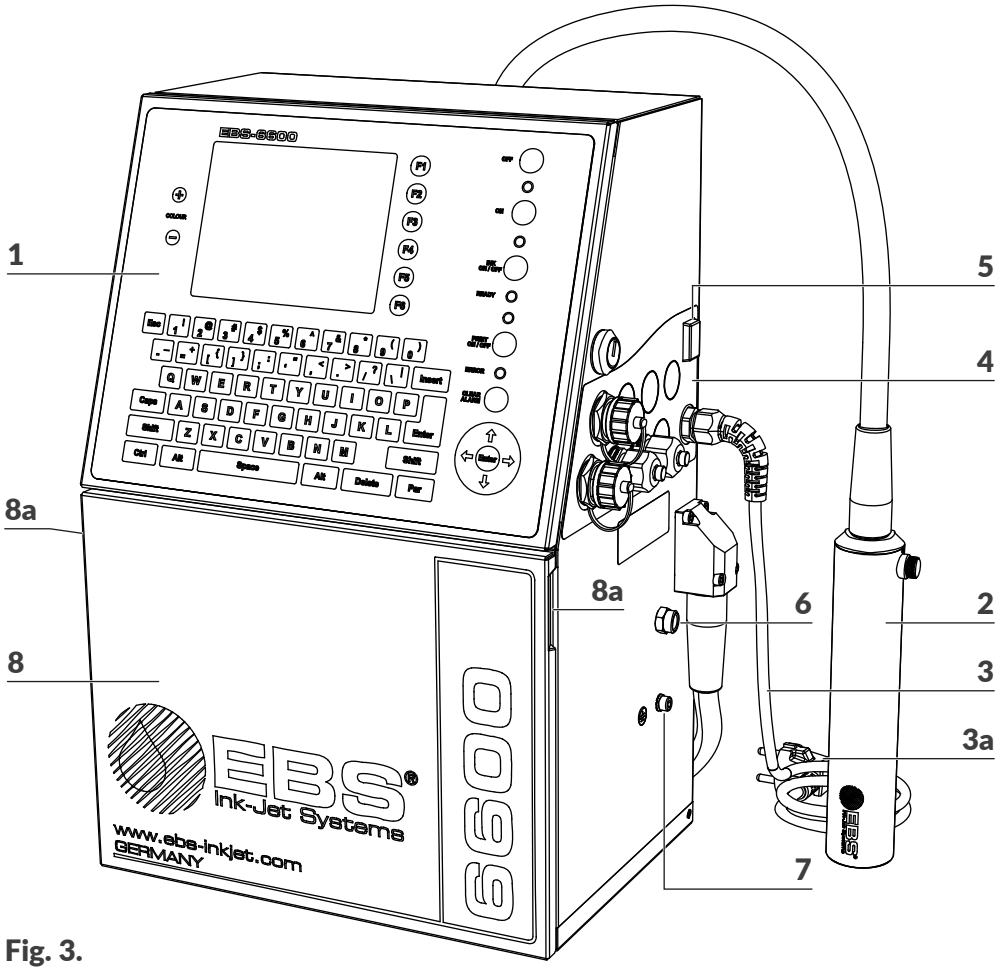
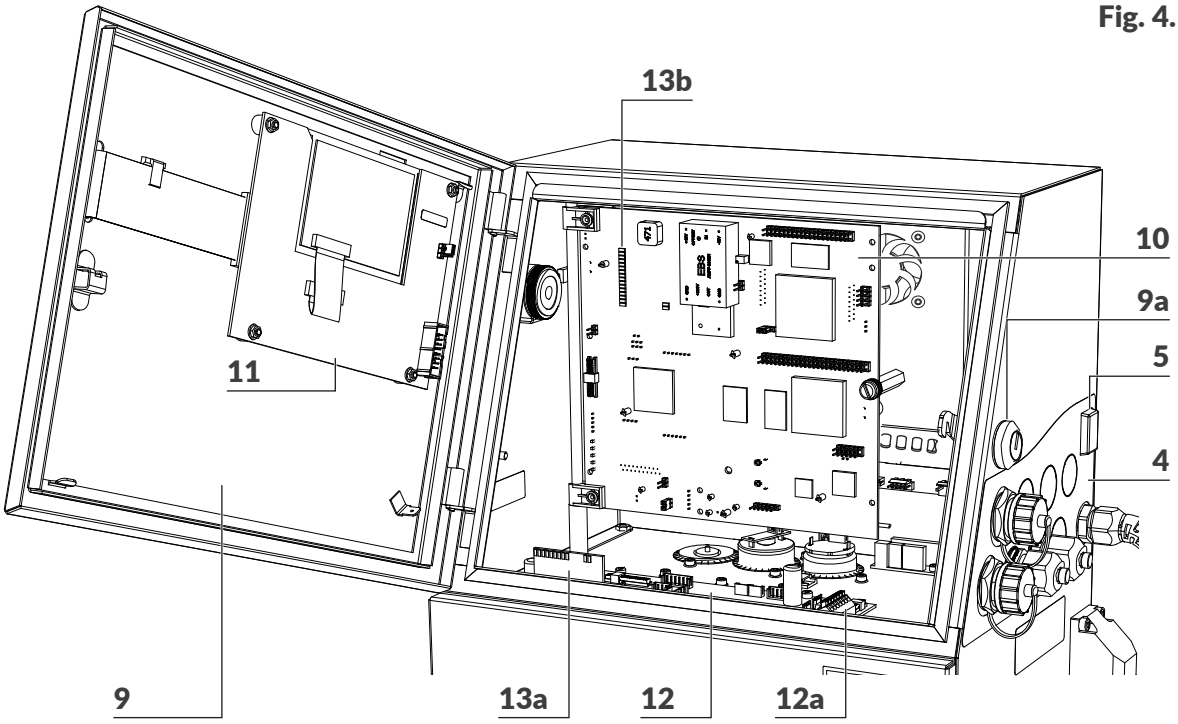


Fig. 3.

1	Operator panel.
2	Printhead.
3	Power cable with power plug **3a***.
4	Accessories connector plate.
5	Power switch **POWER**; a safety cut-off switch.
6	Vapor outlet.
7	Ground terminal.
8	Consumables compartment door with door holders **8a**.

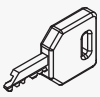
** Depending on the individual country, the power plug **3a** may differ from that shown in **Fig. 3***

Fig. 4.



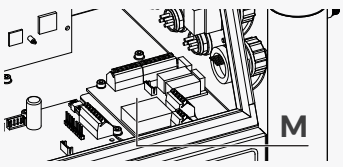
4	Accessories connector plate.
5	Power switch **POWER**; a safety cut-off switch.
9	Electronics compartment door; equipped with key-operated lock **9a**.
10	Main board **RKM**.
11	Panel board **PK6K**.
12	Ink system control board **PSA6K**.
12a	Photodetector and encoder terminal **PHOTO/SHAFTENC**.
13	Inner panel LED sets (**13a**, **13b**).

*Lock **9a** and the key (see the drawing on the right) are a protection against unauthorized or accidental opening of electronics compartment door **9**. For this reason, only service or trained staff should have access to the key and it should not be left in lock **9a**.*



*Any operations that involve the opening of electronics compartment door **9** must be performed exclusively:*
*- by **instructed** or **skilled persons**,*
- when the printer is disconnected from the electric mains.

*The **Boltmark®II**-series printers can be equipped with an extension module (**M**; see the drawing on the right), as standard, depending on the individual country. The module is placed at the bottom of the electronics compartment. Contact an authorized representative for detailed information.*



2.2.1.2. ACCESSORIES CONNECTOR PLATE

*To meet the **IP55** (or optionally **IP65**) class requirements for the printer casing, all unused connectors on accessories connector board **4** must be secured with blanking plugs:*
*- Part No. **4810252**, for cable strain reliefs or*
*- Part No. **2240065**, for quick connectors to which accessories are connected.*

*For more details see **"2.3.2. Preliminary Operations"**.*

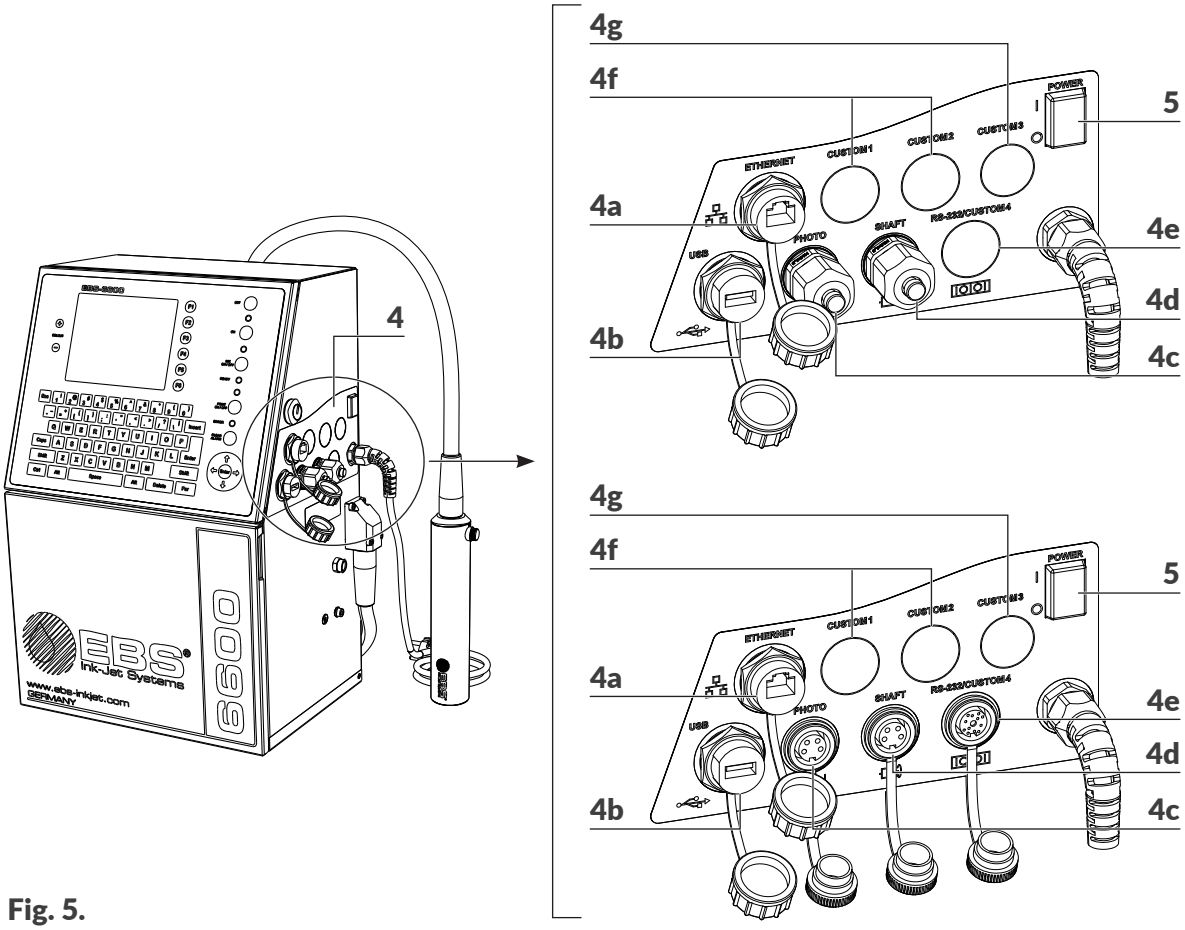


Fig. 5.

4	Accessories connector plate.	
5	Power switch **POWER**; a safety cut-off switch.	
4a	**ETHERNET** interface connector (a type **RJ45** connector).	
4b	**USB** connector.	
4c	Photodetector connector **PHOTO**. *The connector of the **PHOTO** photodetector can be either a cable strain relief or a photodetector quick-connector, depending on the individual country. For more information on the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*	
4d	Encoder connector **SHAFT**. *The connector of the **SHAFT** encoder can be either a cable strain relief or an encoder quick-connector, depending on the individual country. For more information on the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*	

4e	**RS-232** interface connector. *Depending on the individual country, the printer can be equipped with an **RS-232** connector, but the connector port can also remain unused. For more information on the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.* *The unused **RS-232/CUSTOM 4** port can also be used for other additional connectors, as it is the case with the **CUSTOM 1** and **CUSTOM 2** connectors described below.*	
4f	**CUSTOM 1**, **CUSTOM 2**; ports for additional connectors, such as: – external status signaler connector, – conveyor belt stopping connector, – serial/parallel code switch connector, – connector for handling the signals: **END_CNT**, **FOT_ACK**, **STAN_FOT**, **UNI_OUT**, – **ROBOT** option connector, – counter reset connector, – hydraulic connector for external air supply.	
4g	**CUSTOM 3**; a port for an additional connector such as: – ruggedized Ethernet connector (a type **M12** connector), – cable strain relief for installing any option.	

2.2.1.3. CONSUMABLES COMPARTMENT

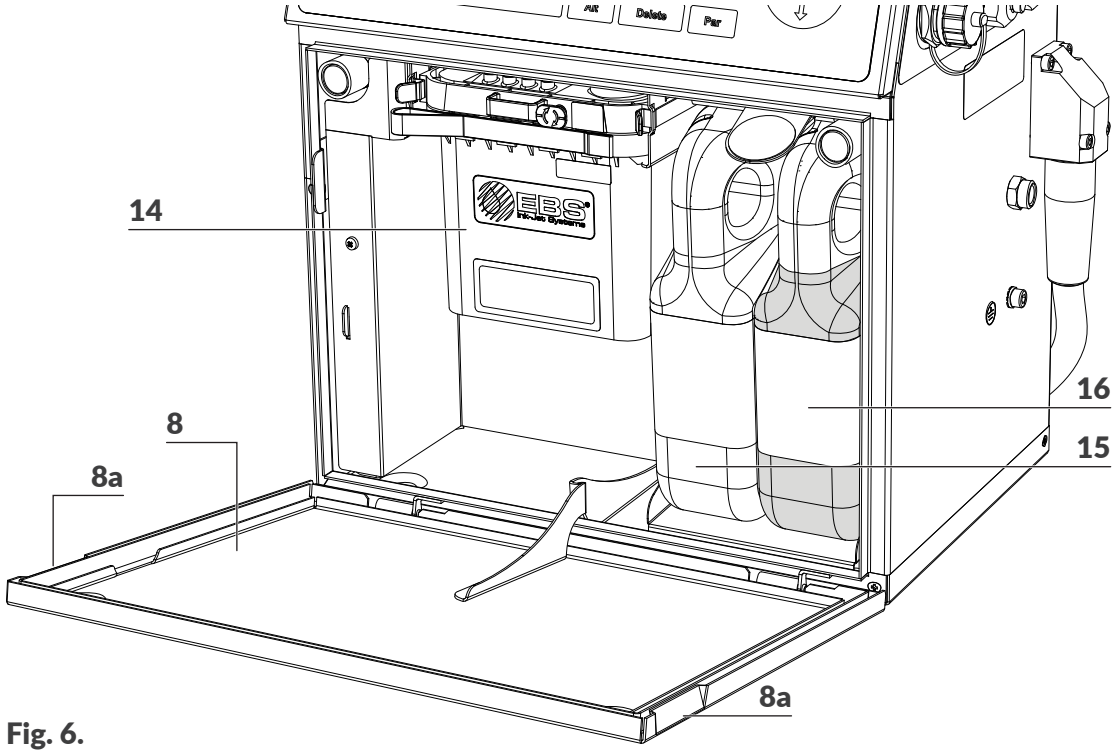


Fig. 6.

8	Consumables compartment door with door holders **8a**.
14	**iModule®**.
15	Solvent bottle.
16	Ink bottle.

2.2.2. REAR VIEW

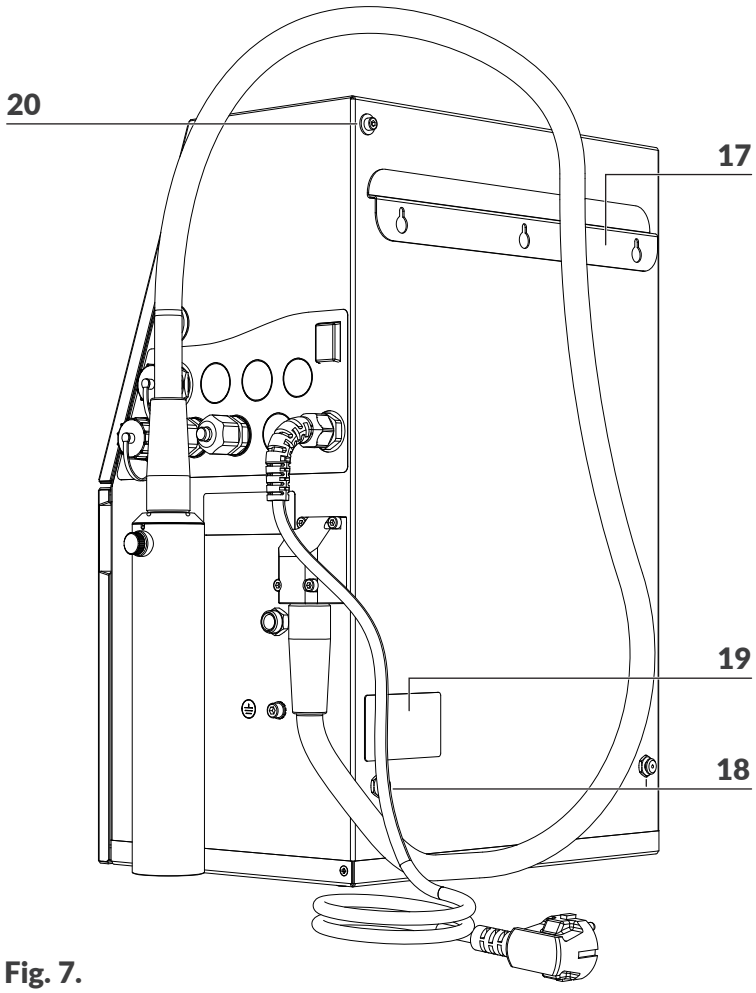


Fig. 7.

17	Stand.
18	Supports (support sleeves).
19	Nameplate.
20	Attachment for a hardware options holder*.

** The hardware options that can be installed with the holder include, e.g.*
- external status signaler,
- external air supply to the electronics compartment (an option for operation in harsh conditions).

For more details about the available options see ***"1.1. Configurability of the Boltmark®II-series Printers"****.*

2.2.3. PRINTHEAD WITH A CABLE

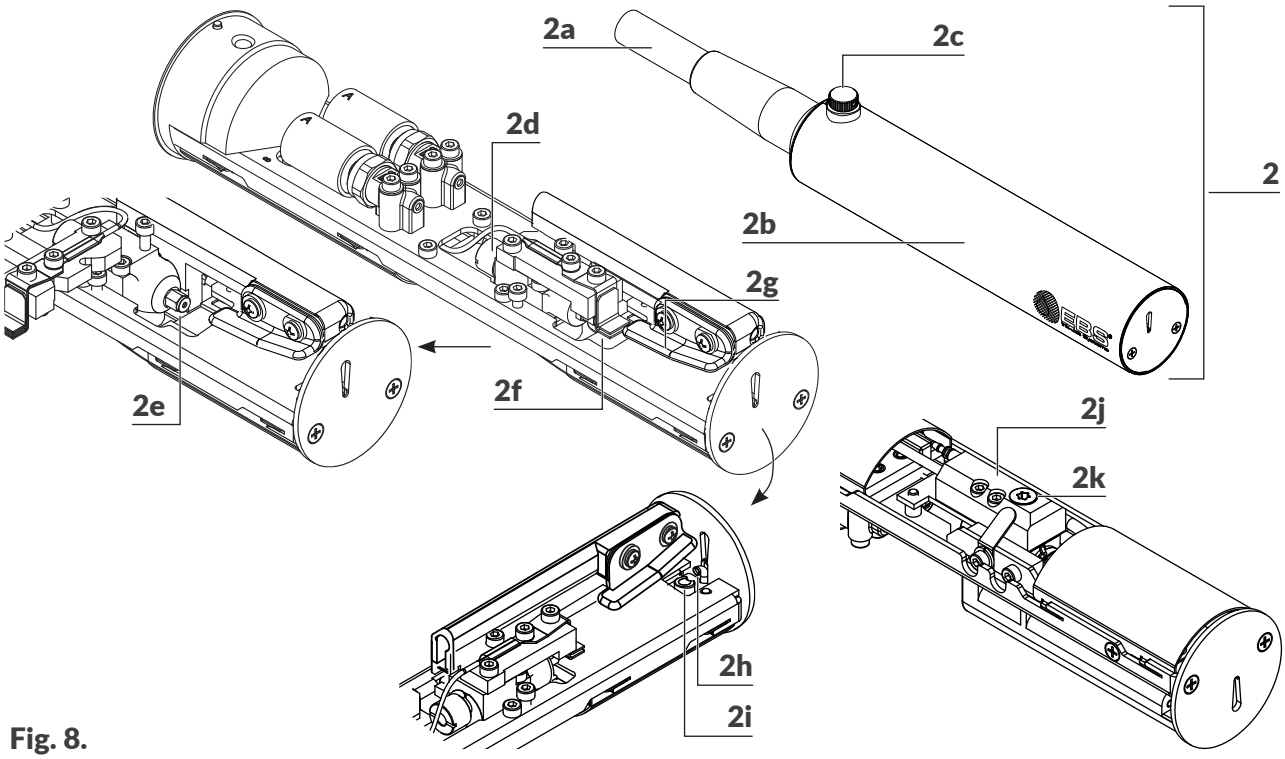
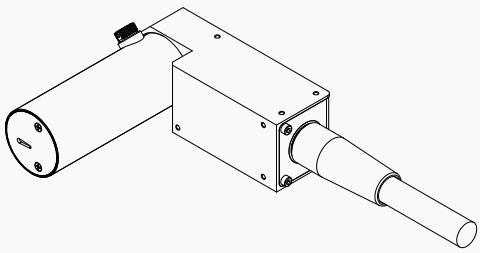


Fig. 8.

2	Printhead.
2a	Integrated head cable.
2b	Printhead cover.
2c	Bolt for fastening printhead cover **2b**; cover sensor.
2d	Gun.
2e	Nozzle.
2f	Charging electrode.
2g	Deflecting electrode.
2h	Gutter.
2i	Phasing signal measurement electrode.
2j	Gun connector.
2k	Ink filter fitting.

Depending on the individual country, the ***Boltmark®II****-series printers can be offered together with head cables of various lengths, with additional protection coat, and also with an angle printhead for labeling objects that are difficult to access (see the drawing on the right). For more details about the available options see* ***"1.1. Configurability of the Boltmark®II-series Printers"****.*



2.2.4. CONSUMABLES

2.2.4.1. INK AND SOLVENT BOTTLES

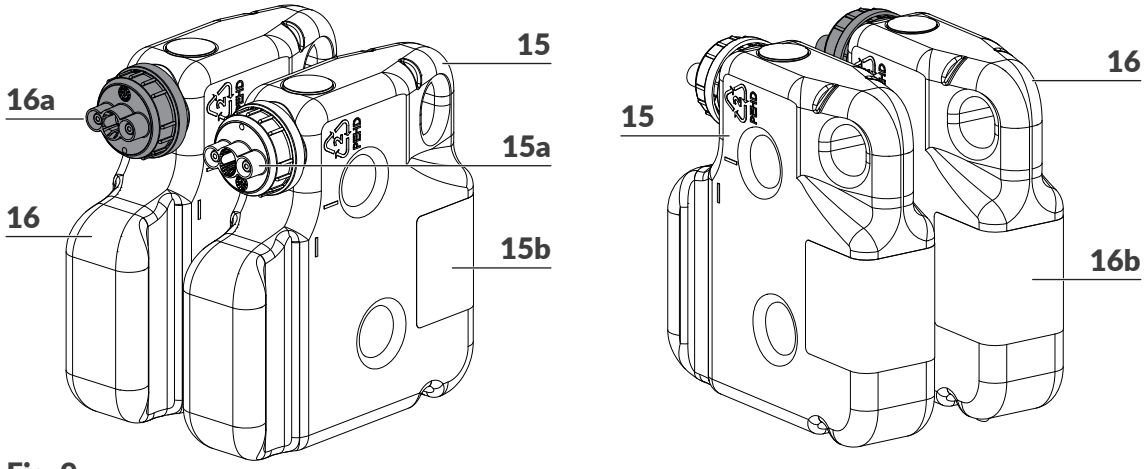


Fig. 9.

15	Solvent bottle.
15a	Solvent bottle cap; white.
15b	Solvent bottle label.
16	Ink bottle.
16a	Ink bottle cap; black.
16b	Ink bottle label.

*Solvent bottle **15** contains **900 ml** of solvent.*
*Ink bottle **16** contains **900 ml** of ink.*

2.2.4.2. IMODULE®

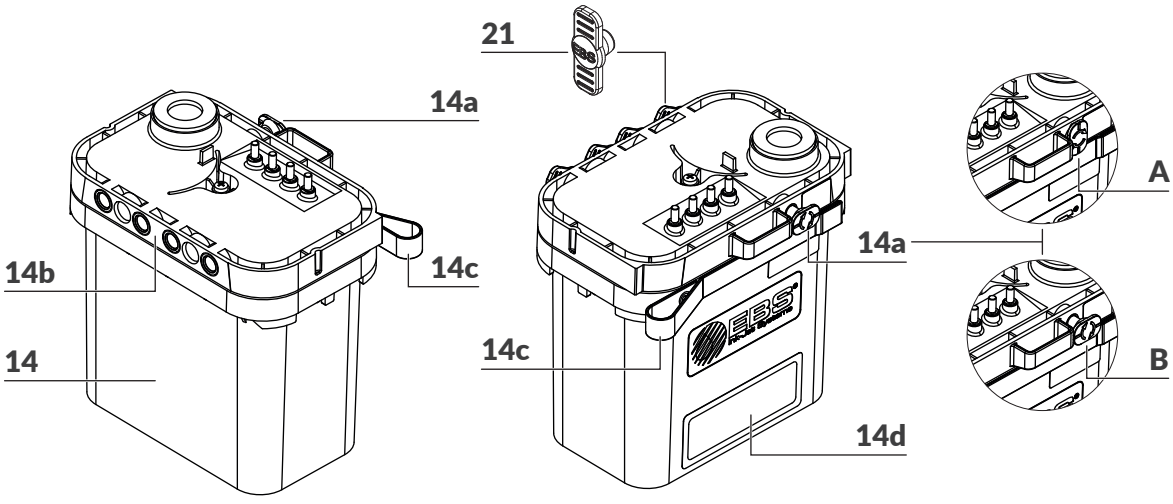


Fig. 10.

14	**iModule®**.
	Protections used when the printer is transported:
14a	**A** - in the "**closed**" position,
	B - in the "**open**" position.
14b	**iModule®** connectors.
14c	Strap-holder.

14d	**iModule®** label.
21	Transport-protection plug type **I**.

*For information on the available **iModule®** units contact an authorized representative.*

2.3. PRINTER INSTALLATION

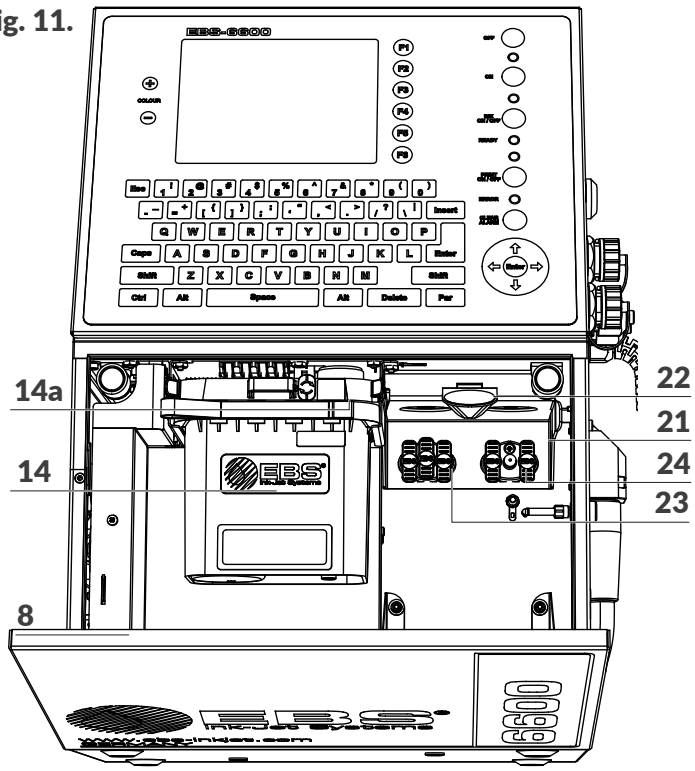
The **Boltmark®II** printers must be installed and operated only in an industrial environment where appropriate physical and logical measures are in place to restrict access to authorized devices and persons only. The customer is responsible for ensuring the physical protection of the installation site, and access to the area where the printer is located must always be properly secured.
The first installation of the printer should be carried out by a **skilled person**.

A trained user can reinstall / move the printer to another workplace provided that the printer:

- is filled with ink,
- has previously been prepared for transporting in compliance with the instructions given in *"9.4.3. Transporting the Printer"*; see *Fig. 11*,

*Installation of a printer that has previously been prepared for storage for more than 1 month, i.e. among other things, filled with solvent, may only be carried out by a **skilled person**.*

Fig. 11.



8	Consumables compartment door.
14	**iModule®**.
14a	Transport protection of **iModule®**.
21	Transport protection plug type **I**.

22	Latch fastener for bottles.
23	Connector (white) for a solvent bottle.
24	Connector (black) for an ink bottle.

– has been supplied without **iModule®**, and a new **iModule®** unit (or the one used in that printer before) has been delivered separately; see ***Fig. 12***.

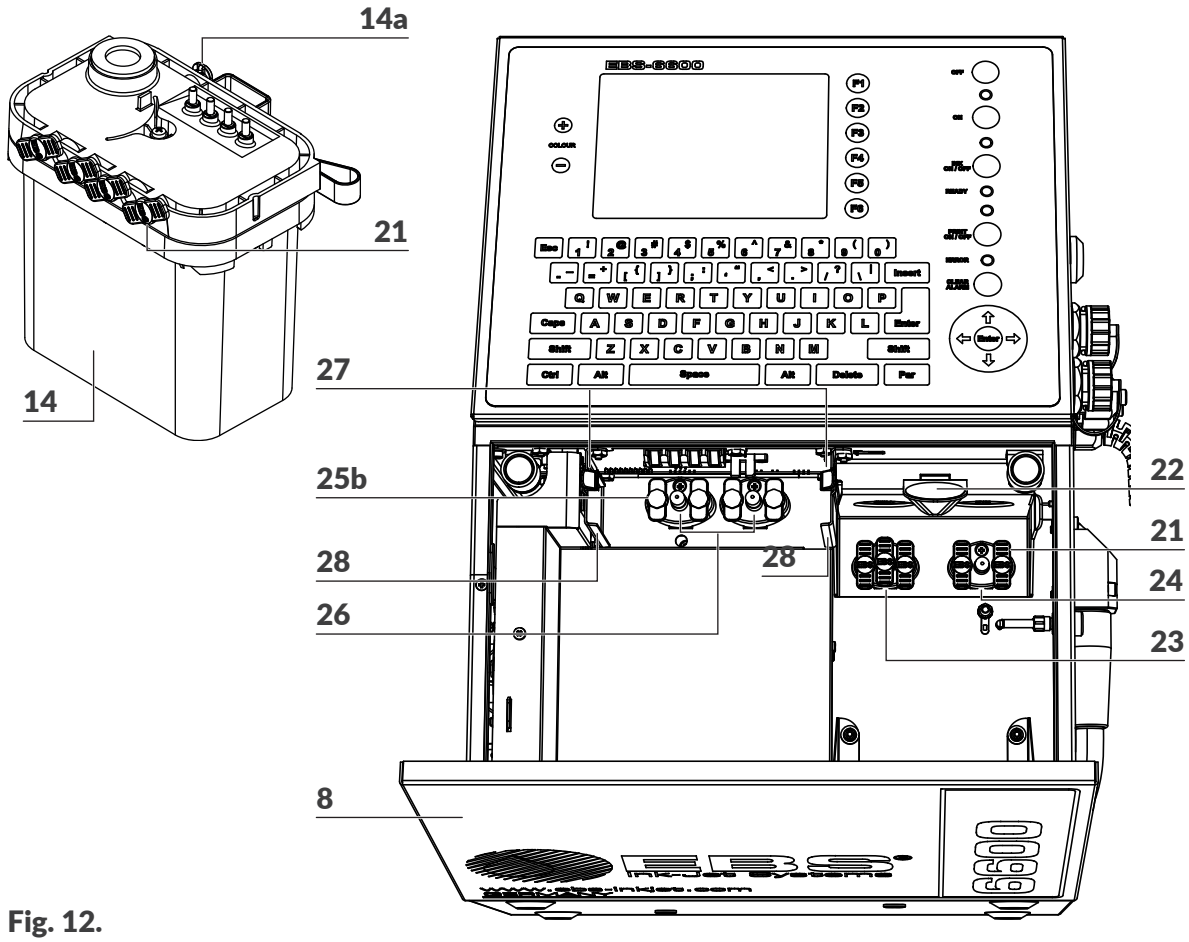


Fig. 12.

8	Consumables compartment door.
14	**iModule®**.
14a	Transport protection of **iModule®**.
21	Transport-protection plug type **I**.
22	Latch fastener for bottles.
23	Connector (white) for a solvent bottle.
24	Connector (black) for an ink bottle.
25b	Transport-protection plug type **IV**.
26	**iModule®** connector.
27	Catches that fasten **iModule®**.
28	**iModule®** guides.

2.3.1. INSTALLATION KIT

Owing to a variety of different configurations of the **Boltmark®II**-series printers, the printer equipment depends on the individual country and the specific application at the user's.

Basic elements of the installation kit:

- a printer with printhead **2** (see *Fig. 8 on page 31*),
- ink bottle **16** (see *Fig. 6 on page 29*),
- solvent bottle **15** (see *Fig. 6 on page 29*),
- **iModule® 14** (see *Fig. 6 on page 29*).

Optional elements of the installation kit:

- a photodetector (Part No. **P390043, P390059**, **P390053**, **P390060**),
- a shaft rotation converter, a so called encoder (Part No. **P320387**),
- a stand for **EBS Ink Jet Systeme GmbH** CIJ printers:
  - legged stand (Part No. **P910172**, **P910173**),
  - a wheeled stand (Part No. **P910175**),
- a printhead holder (Part No. **P510456**),
- a gun-type holder for manual labeling of unmovable objects (Part No. **P320121**),
- an external status signaler:
  - two-color (Part No. **P320356**),
  - three-color (Part No. **P320448**)
- an external code switch; serial, parallel,
- external air supply to the electronics compartment (an option for operation in harsh conditions),
- a wash-up bottle; a sprayer.



*For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

Tools and accessories:

- a **#4** open ended spanner (Part No. **P562548**),
- a flat tip screwdriver,
- a **T15 Torx**-type screwdriver (Part No. **8430067**),
- **#2**, **4**, **5** hex (Allen) keys,
- an adapter (Part No. **P511772**) for connecting a solvent bottle to ink connector.
- a set of transport-protection plugs (Part No. **P512678**),
- open-end wrenches, sizes **#21** and **#22**.

2.3.2. PRELIMINARY OPERATIONS

Unpack the printer and place it in a convenient place to ensure easy access to:

- operator panel **1** (see ***Fig. 3 on page 26***),
- accessories connector plate **4** (see ***Fig. 5 on page 28***), including main power switch **POWER 5**, which is a safety cut-off switch,
- the consumables chamber (see ***Fig. 6 on page 29***).

*The ingress protection classes **IP55**, **IP65** referred to above concern the printer casing and exclude the printhead.*

*Vapor outlet **6** (see **Fig. 3 on page 26**) should be piped out to the outside of the building. An **NPT 1/8"** female thread outlet is used.*

*To raise ingress protection class of the printer casing from **IP55** to **IP65** (which can be used in food processing, for example), the option for operation in harsh conditions should be applied. For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

Place printhead **2** (see ***Fig. 8 on page 31***) in a place that:

- ensures convenient access to objects to be labeled,
- is free from shocks and vibration.

*The printhead can print in **any** position.*

*The maximum distance between the printhead face and an object is **30 mm**.*

*The maximum difference in levels between the printhead and the printer is **±2.5 m** (see **Fig. 50 on page 270**). If the difference in levels between the printhead and the printer exceeds **±0.5 m**, it is required that the printhead position adjustment procedure be applied. The procedure can be carried out by **SERVICEMAN** .*

2.3.2.1. HEAD CABLE INSTALLATION REQUIREMENTS

Correct installation of the **Boltmark®II**-series printer head cable impacts significantly on the cable lifetime and the reliability of the entire printer.

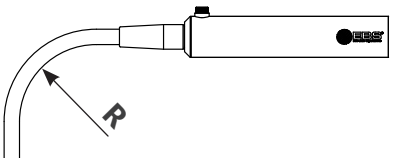
If the head cable requirements quoted in this section are not met, the cable can get damaged, and such damage is not covered by the warranty!

The printhead can be used for dynamic operation. However, this type of application requires the satisfaction of additional conditions concerning, for example, the head cable's minimum bend radius or the printer's working temperature.

The head cable installation requirements are:

- Make sure that the minimum bend radius is maintained along the entire head cable length.

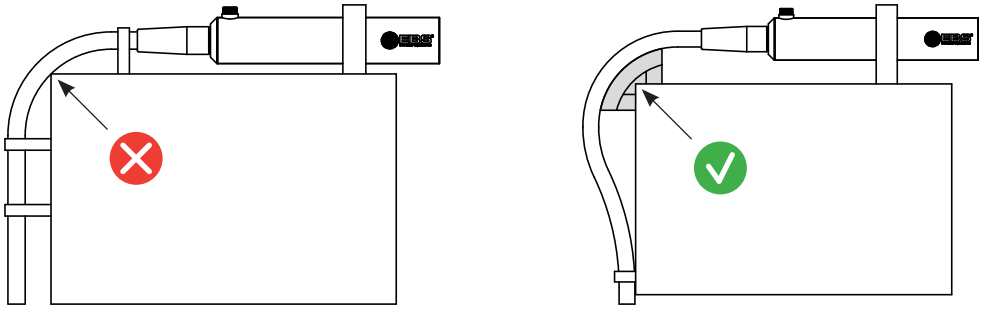
  The minimum head cable bend radius **R** (see the drawing on the right) is:

  - **75 mm**; for static operation (the printhead is rigidly fixed),
  - **150 mm**; for dynamic operation (the printhead is installed in a manipulator).
- Make sure that the printer's working temperature is:
  - **+5°C to +40°C (+41°F to +104°F)** for static operation,
  - **+15°C to +40°C (+59°F to +104°F)** for dynamic operation.

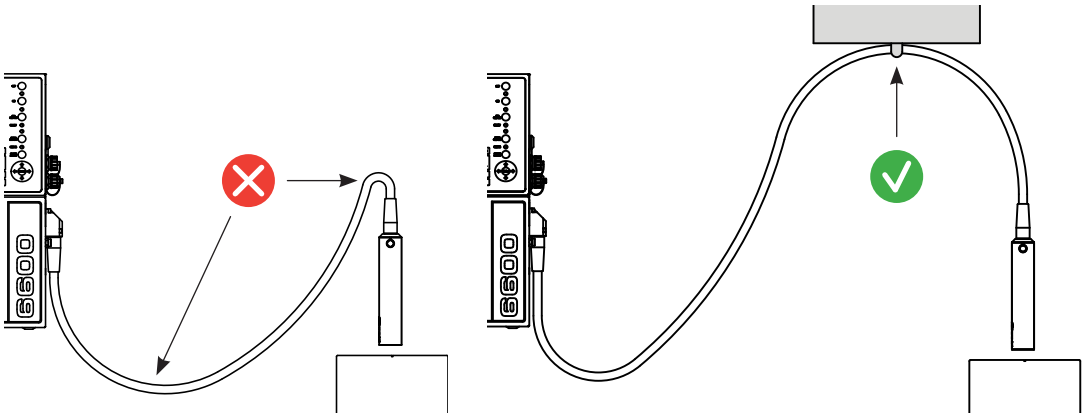
*If the printhead is used for dynamic operation in a lower temperature than **15°C (59°F)**, the service life of the head cable reduces. This may lead to cable damage, which is not covered by warranty.*

- Secure the head cable against contact with another object.



*The head cable coating is not abrasion resistant. If the head cable is in touch with another object during operation, then the printer with an additional, optional cable coating protection should be ordered. The application of additional protection for the head cable coating is advisable especially for dynamic operation. For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

- Secure the head cable against hanging loose or moving.



*The protection elements shown in the above-given drawings are not offered by **EBS Ink Jet Systeme GmbH**. They need selecting during installation according to the head cable application.*

2.3.3. RECOMMENDED MODES OF INSTALLATION

2.3.3.1. INSTALLING ON A STAND

Tools and sub-assemblies required:
- a key for unlocking the electronics compartment door,
*- a complete printer with ink and solvent bottles and with **iModule**®,*
- a photodetector,
- an encoder (optionally),
- a #4 hex (Allen) key,
*- a protective wire (**3 m** long: **P381086**, **1.5 m** long: **P381131**),*
- a #5 hex (Allen) key,
*- a **CIJ** printer stand (legged: Part No. **P910172**, **P910173**, wheeled: Part No. **P910175**).*

Fig. 13 shows an example of how to install the printer on a stand, with:

- the printhead **a** and the photodetector **B** being fixed to a holder **C** that is attached to a factory conveyor **D**; the holder can also be attached to the stand,
- an encoder **E** being connected to the printer, to measure traveling speed of the conveyor **D** belt,
- the printer being connected to a factory conveyor **D** with a protective wire **F**.

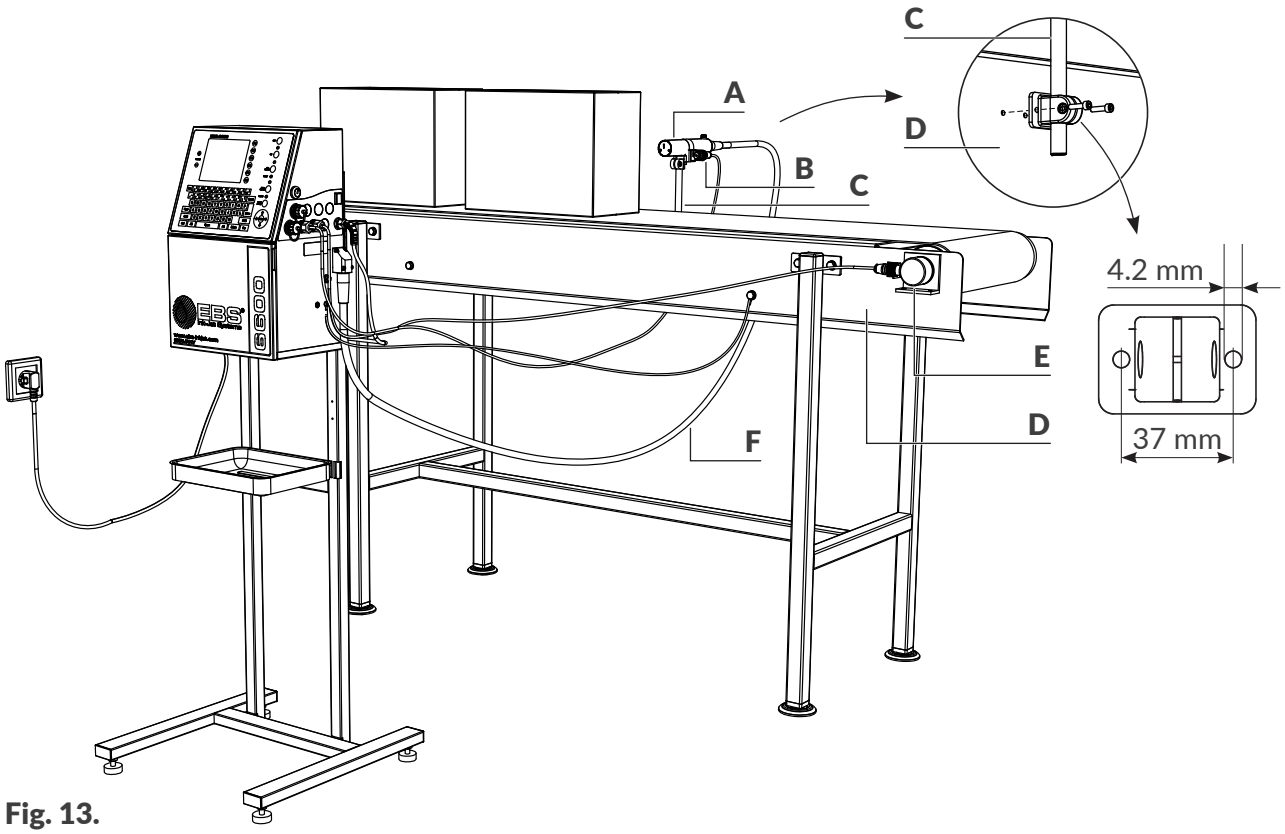


Fig. 13.

The stand and the printer should be secured against movement. If the printer is installed on a wheeled stand, the wheel brake must be put on.

2.3.3.2. INSTALLING ON A HANGER

Tools and sub-assemblies required:
- a key for unlocking the electronics compartment door,
*- a complete printer with ink and solvent bottles and with **iModule®**,*
- a photodetector,
- an encoder (optionally),
- a #4 hex (Allen) key,
- a protective wire,
- a #5 hex (Allen) key,
- tools for preparing mounting holes.

*There is a **CIJ** printer frame available (Part No. **P910174**) for fastening the printer to the wall. For information on accessories, please contact an authorized representative.*

The printer is installed on a hanger in a similar way to installation on a stand (see ***Fig. 13 on page 38***); instead of on a stand, the printer is hang via hanger **17** (see ***Fig. 7 on page 30***), *e.g.* on a wall or on a factory conveyor.

Fig. 14 shows the hanger dimensions needed to prepare the corresponding mounting holes for attaching the printer.

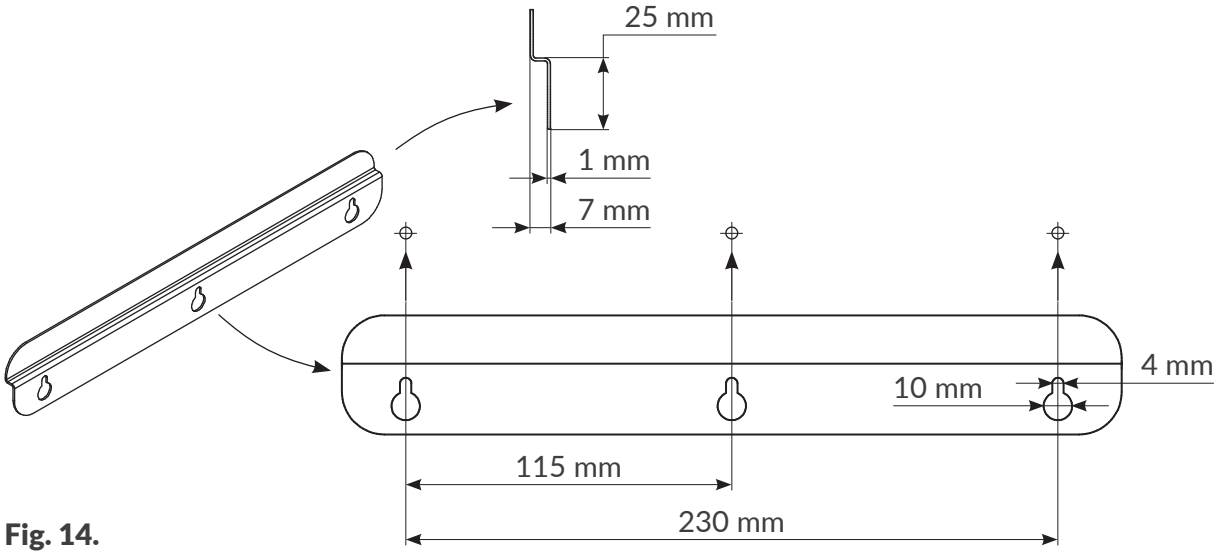


Fig. 14.

Before you start installing the printer check what material the surface on which you want to hang the printer is made of and make sure that it is suitable for hanging the printer on it.

Select attachments according to the type of surface.

Make sure you know the layout of the wiring, hydraulic or sewage systems, so that they are not damaged while mounting holes are made.

Weight of a complete printer:
*- the printer: about **12.5 kg** (without bottles),*
*- an ink bottle: about **0.9 kg** (**900 ml**),*
*- a solvent bottle: about **0.9 kg** (**900 ml**).*

2.3.3.3. INSTALLING ON A TABLE

Tools and sub-assemblies required:
- a key for unlocking the electronics compartment door,
*- a complete printer with ink and solvent bottles and with **iModule®**,*
- a photodetector,
- an encoder (optionally),
- a #4 hex (Allen) key,
- a protective wire,
- a #5 hex (Allen) key,
- a firm table.

Fig. 15 shows an example installation of the printer on a table, with:

- the printhead **a** and the photodetector **B** being fixed to a holder **C** that is attached to a factory conveyor **D**,
- an encoder **E** being connected to the printer, to measure traveling speed of the conveyor **D** belt,
- the printer being connected to a factory conveyor **D** with a protective wire **F**.

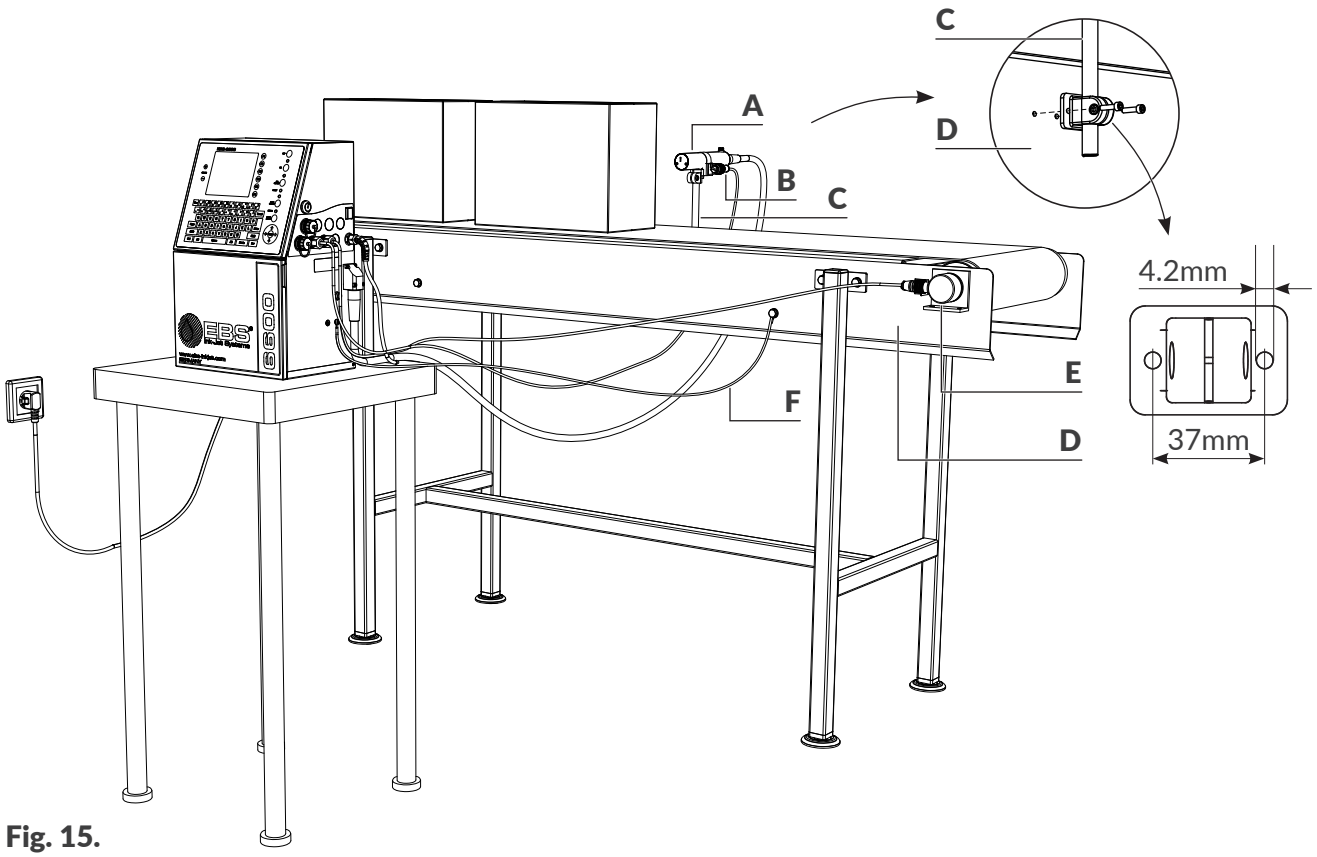


Fig. 15.

The printer installed on a table should be secured against a change in position relative to the printhead fixed in a holder.

Weight of a complete printer:
*- the printer: about **12.5kg** (without bottles),*
*- an ink bottle: about **0.9kg** (**900ml**),*
*- a solvent bottle: about **0.9kg** (**900ml**).*

2.3.4. POWER SUPPLY

The printer **must be** connected to a power outlet equipped with protective grounding. The grounding efficiency should conform to the applicable standards.

The information on the power supply requirements of the printer is given on the printer nameplate.

*The main power switch **POWER** (**5**; see **Fig. 5 on page 28**) on accessories connector plate **4** should be easily available as it is a safety cut-off switch.*

Printer power supply:
*- supply voltage: **100 V- 240 V∿ , 50/60Hz,***
*- max. current consumption: **0.6 A - 0.2 A.***
*If the printer is equipped with an optional anti-clogging power supply system (**ACPS®**), and it is started up while the **ACPS®** modules are completely discharged, current consumption may slightly exceed its quoted maximum for a short time.*

The power supply circuit of the printer must be secured with a cut-out device, whose rated current is:
*max. **16 A** for **230 V∿***
or
*max. **20A** for **110 V∿**.*

2.3.5. CONNECTING A PROTECTIVE GROUND TERMINAL

Tools and sub-assemblies required:
- a #4 hex (Allen) key,
*- a **min. 4 mm²** protective wire terminated with clamping soldering eyes **M5** on both ends,*
- protective ground terminal/screw,
- toothed washer.

While installing the **Boltmark®II**-series printer, connect protective ground terminal **7** (see ***Fig. 16 on page 41***) to a grounded element of the printing system, *e.g.* to a factory conveyor. Owing to that you ensure equalization of potentials among individual elements of the printing system. This is required especially when the printer is connected to a local managed network.

To connect a protective wire to the printer:

1. Use the #4 hex key to screw out screw **7**, which is a protective ground terminal. The screw is equipped with toothed washer **7a**.

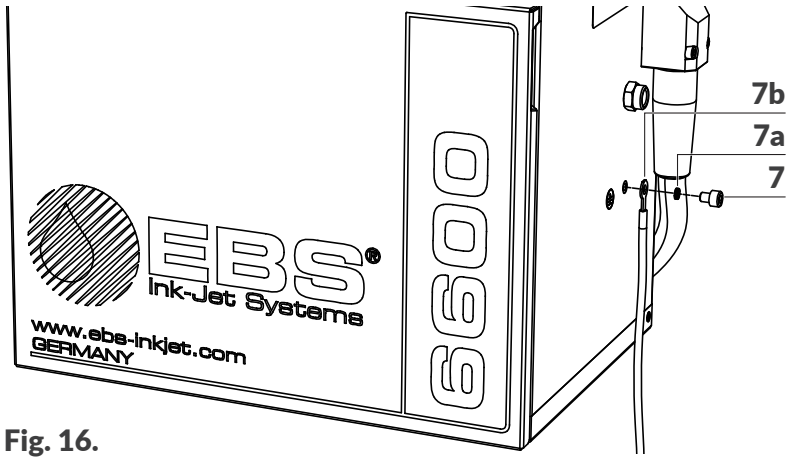


Fig. 16.

7	Protective ground terminal / screw.
7a	Toothed washer.
7b	Protective wire with a clamping soldering eye.

2. Connect the eye of protective wire **7b** to terminal **7** according to ***Fig. 16***.
3. Use the #4 hex key to screw home screw **7**.
4. Connect the second end of protective wire **7b** to another element of the printing system, *e.g.* to a factory conveyor.

*The second end of protective wire **7b** should be connected in the same way as on the printer side.*

2.3.6. INSTALLING BOTTLES

While bottles are being installed, be careful not to get wounded with the needles that are part of the bottle connections in the consumables compartment.

To install bottles:

1. Open consumables compartment door **8** (see ***Fig. 11 on page 33***).
2. Remove transport-protection plugs type **I** **21** from bottle connectors **23**, **24** in the printer.
3. If the bottles are protected with transport-protection plugs type **II** **25a** and type **III** **30** (see ***Fig. 44 on page 232***), remove the plugs.
4. Lift latch **22** that fastens the bottles.
5. Connect the bottles to their corresponding connectors, pressing them to the limit:
   - solvent bottle **15** with a white cap - to white connector **23** on the left-hand side,
   - ink bottle **16** with a black cap - to black connector **24** on the right-hand side.
6. Lower the latch fastener **22** so that it rested in the bottle grooves.
7. Close consumables compartment door **8**.

The instructions on how to replace an ink/solvent bottle can be watched on a You Tube - ebsinkjetsystems video (see a QR code with the link).

2.3.7. INSTALLING IMODULE®

If the printer has been transported **without iModule®** (see ***Fig. 12 on page 34***), then **iModule®** that goes with that printer should be installed **before printer startup**.

To install **iModule®**:

1. Remove transport protection plugs type **I** **21** from the **iModule®** connections, if the plugs are installed.

2. Check to see if the **iModule®** connections are clean. Should any remnants of dry ink be found, remove them.
3. Open consumables compartment door **8**.
4. Remove transport-protection plugs type **IV** **25b** from **iModule®** connector **26** in the printer.
5. Spray solvent on to the O-rings that are part of **iModule®** connector **26** in the printer. This will facilitate the insertion of a new **iModule®**.
6. Install **iModule®** by inserting it **horizontally** along guides **28** until catches **27** are heard clicking.
7. Open transport protection **14a** of the **iModule®**, *i.e.* pull it out to the limit and rotate through 90°.



*The **iModule®** transport protection **14a** cannot be opened until the printer is in its target workplace.*

8. Close the consumables compartment door **8**.

If the printer has been transported **with its iModule® installed** (see ***Fig. 11 on page 33***), then only the **iModule®** transport protection needs opening before printer startup.

To open the **iModule®** transport protection:

1. Open consumables compartment door **8**.
2. Open transport protection **14a** of the **iModule®**, *i.e.* pull it out to the limit and rotate through 90°.



*The **iModule®** transport protection **14a** cannot be opened until the printer is in its target workplace.*

3. Close the consumables compartment door **8**.

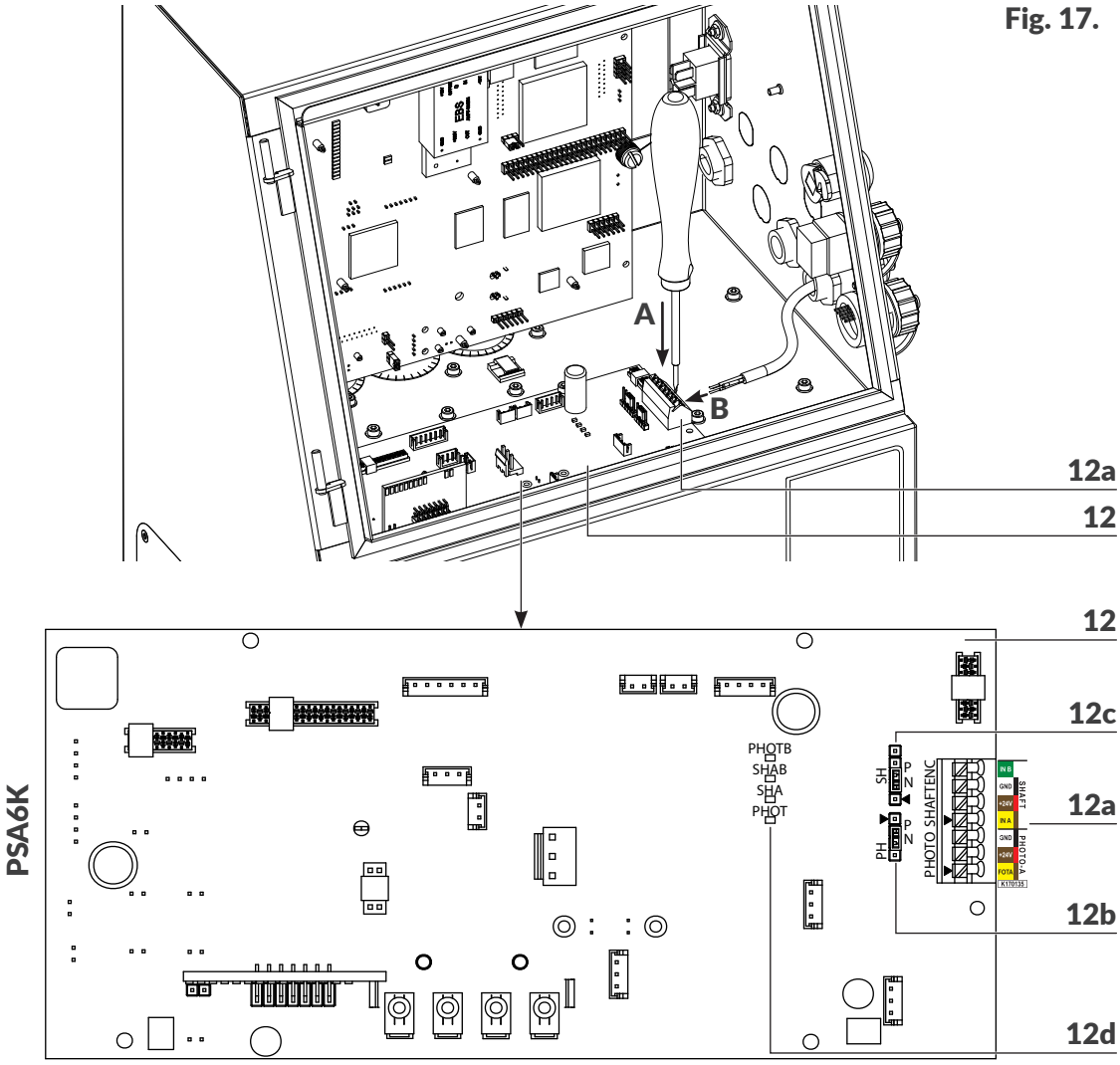
*An instructional video showing how to replace the **iModule®** is available on the company's YouTube channel, ebsinkjetsystems. See the QR code for the link*

2.3.8. INTEGRATING THE PRINTER INTO A PRODUCTION LINE

The sub-assemblies designed for integrating the printer with a production line:

- a photodetector; to detect objects on a factory conveyor,
- an encoder; to measure traveling speed of the conveyor belt.

Fig. 17.



12	Ink system control board **PSA6K**.
12a	Photodetector and encoder terminal **PHOTO/SHAFTENC**.
12b	Photodetector configuration jumper **PH**.
12c	Encoder configuration jumper **SH**.
12d	LEDs to signal: **PHOT** - that an object has been detected by photodetector **A**, **SHA** - encoder impulses; it means that the conveyor belt has moved, **SHAB** - encoder impulses used for sensing backward movement of the conveyor belt (an option), **PHOTB** - that an object has been detected by photodetector **B** (an option).

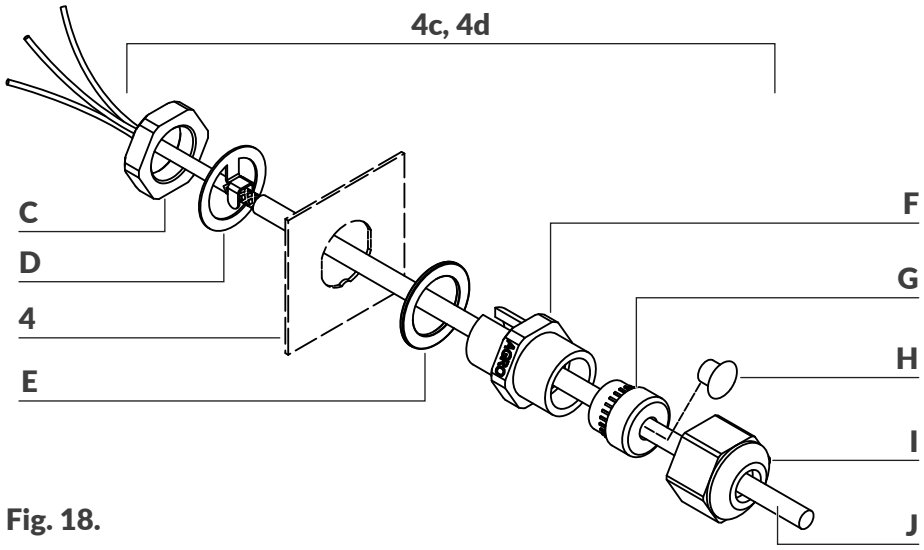


Fig. 18.

4	Accessories connector plate.
4c	Complete cable strain relief.
C	Nut for fixing the cable strain relief.
D	Terminal.
E	Washer.
F	Terminal.
G	Gasket.
H	Blanking plug.
I	Retaining nut.
J	Photodetector / encoder cable.

2.3.8.1. CONNECTING A PHOTODETECTOR

The connection of a photodetector to the **Boltmark®II**-series printer varies according to the type of photodetector connector on accessories connector plate **4**:

- if the printer is equipped with a photodetector quick-connector, it is enough to connect the photodetector to the (**PHOTO**) connector and configure it with the **PH** jumper (**12b**; see ***Fig. 17 on page 44***) on the **PSA6K** board (**12**),

> *The (**PHOTO**) socket on accessories connector plate **4** can be used to connect a photodetector equipped with an appropriate 4-pin plug, e.g. as supplied by an authorized representative together with:*
> *- a **5-meter** cable (Part No. **P390053**),*
> *- a **7-meter** cable (Part No. **P390060**).*

- if the printer is equipped with a cable strain relief, the photodetector wires need to be connected to the terminal **PHOTO** (**12a**) on the **PSA6K** board (**12**) in the electronics compartment.

> *The **PHOTO** terminal can be used to connect a photodetector supplied by an authorized representative together with:*
> *- a **5-meter** cable (Part No. **P390043**),*
> *- a **7-meter** cable (Part No. **P390059**).*
>
> *The descriptions of how to connect a photodetector to the printer equipped with a cable strain relief and how to configure the photodetector are given further in this section.*

The **Boltmark®II**-series printers can work with the following types of photodetectors:

- **NPN** (**N/O** - Normally Open),
- **NPN** (**N/C** - Normally Closed),
- **PNP** (**N/O** - Normally Open),
- **PNP** (**N/C** - Normally Closed).

To the printer you can connect:

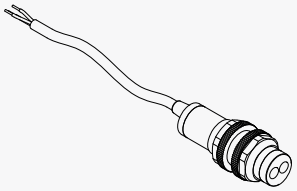
- a standard **NPN (N/C)**-type photodetector supplied by an authorized representative,
- another photodetector (*e.g.* the one that forms part of the conveyor infrastructure), which can be energized from the printer or from an external power source.

*If you use a photodetector that is energized from an external power source, the photodetector output voltage (applied to the **FOTA** input - see step **19** below) must be higher than **8 V**.*

*Optionally the **Boltmark®II**-series printers can work with two photodetectors (**A**, **B**). For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

To connect a photodetector to the printer equipped with a cable strain relief:

Tools and sub-assemblies required:
- a key for unlocking the electronics compartment door,
- a photodetector intended for connection to a terminal (see the drawing on the right),
- a flat tip screwdriver,
*- **#21** and **#22** open ended spanners.*



1. Set main power switch **POWER** (**5**; see ***Fig. 5 on page 28***) on accessories connector plate **4** to the "**O**" position.
2. Check the type (**NPN**, **PNP**) of photodetector to be connected.
3. Use the key to unlock electronics compartment door **9** (see ***Fig. 4 on page 27***).

*Any operations that involve the opening of electronics compartment door **9** must be performed exclusively:*
- by the manufacturer's authorized service staff or a user trained by the manufacturer's authorized representatives in performing such operations,
- when the printer is disconnected from the electric mains.

4. Set a required type of photodetector with jumper **PH** (**12b**; see ***Fig. 17 on page 44***) on board **PSA6K** (**12**):

Type of photodetector	Setting of the **PH** jumper	
NPN (**N/O** and **N/C**)	**N**	
PNP (**N/O** and **N/C**)	**P**	

5. Use the **#22** open ended spanner to unscrew nut **C** that fastens cable strain relief (**PHOTO**) **F** (see ***Fig. 18 on page 45***) in accessories connector plate **4**.

*While unscrewing nut **C**, secure cable strain relief **F** against turning.*

6. Remove nut **C** and terminal **D** by sliding them from cable strain relief **F** to the inside of the electronics compartment.
7. Slide cable strain relief **F** out of accessories connector plate **4** to the outside of the printer housing.
8. Use the #**21** open ended spanner to screw retaining nut **I** out of cable strain relief **F**.
9. Remove blanking plug **H** from gasket **G**.
10. Place gasket **G** in cable strain relief **F**.
11. Screw nut **I** (but do not screw it tight) onto cable strain relief **F**.
12. Thread photodetector cable **J** through an hole in cable strain relief **F**.
13. Place the cable strain relief together with washer **E** and photodetector cable **J** in the hole in accessories connector plate **4**.
14. Thread photodetector cable **J** to the inside of the electronics compartment in such a way that access is ensured for the unshielded segment of the photodetector cable **J**.
15. Install terminal **D** on photodetector cable **J** on the unshielded cable segment.



*If photodetector cable **J** is not originally designed for installation of terminal **D**, prepare the cable by removing the shielding where the cable contacts the terminal.*

16. While holding cable strain relief **F** in the hole in accessories connector plate **4**, keep shifting photodetector cable **J** to the outside of the printer housing until terminal **D** touches the inner surface of the printer housing.
17. Use the #**22** open ended spanner to tighten up nut **C** that fastens cable strain relief  (**PHOTO**) **F** in accessories connector plate **4**.



*While tightening up nut **C**, secure cable strain relief **F** against turning.*

18. Use the #**21** open ended spanner to tighten up retaining nut **I**.



*While tightening up retaining nut **I**, secure cable strain relief **F** against turning.*

*Retaining nut **I** must be tightened up so that photodetector cable **J** is secured against shifting in the cable strain relief. Only such tightening up of retaining nut **I** does ensure appropriate airtightness of the cable strain relief.*

19. By pressing down appropriate cable locks on the **PHOTO** terminal (**12a**) on board **PSA6K** (**12**) with flat tip screwdriver **a** (see ***Fig. 17 on page 44***), connect photodetector wires **B** to the terminal:

FOTA	Photodetector **a** signal input; brown wire (for a standard photodetector supplied by an authorized representative).
+24V	+24V DC (power); red wire (for a standard photodetector supplied by an authorized representative).
GND	Ground; black wire (for a standard photodetector supplied by an authorized representative).

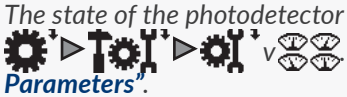
20. Use the key to lock electronics compartment door **9**.

    The photodetector is connected to the printer.

> *A standard photodetector supplied by an authorized representative can be fixed in the holder that is part of the printhead holder.*

On starting up the printer together with a photodetector connected to it:

- make sure that the photodetector is connected correctly, by checking its state in the printer,

> *The state of the photodetector can be viewed by pressing*  *v* *. For more details see* ***"7.3. Monitoring Basic Printer Parameters"****.*

- configure the photodetector.

> *For more details on how to configure a photodetector see* ***"8.5. Configuring the Photodetector"****.*

2.3.8.2. CONNECTING AN ENCODER

The connection of an encoder to the **Boltmark®II**-series printer varies according to the type of encoder connector on accessories connector plate **4**:

- if the printer is equipped with an encoder quick-connector, it is enough to connect the encoder to the (**SHAFT**) connector and configure the encoder with the **SH** jumper (**12c**; see ***Fig. 17 on page 44***) on the **PSA6K** board (**12**),

> *The* ***SHAFT*** *socket on accessories connector plate* ***4*** *can be used to connect a encoder equipped with an appropriate 4-pin plug, e.g. an encoder with a* ***5-meter*** *cable as supplied by an authorized representative (Part No.* ***P320387****).*

- if the printer is equipped with a cable strain relief, the encoder wires need to be connected to the terminal **SHAFTENC** (**12a**) on the **PSA6K** board (**12**) in the electronics compartment.

> *The descriptions of how to connect an encoder to the printer equipped with a cable strain relief and how to configure the encoder are given further in this section.*

The **Boltmark®II**-series printers can work with the following types of encoders:

- **NPN** (**N/O** - Normally Open),
- **NPN** (**N/C** - Normally Closed),
- **PNP** (**N/O** - Normally Open),
- **PNP** (**N/C** - Normally Closed).

To the printer you can connect:

- a standard **NPN (N/C)**-type encoder supplied by an authorized representative,

– another encoder (e.g. the one that forms part of the conveyor infrastructure), which can be energized from the printer or from an external power source.

*The maximum frequency of the signal measured at the encoder output is **100 kHz**. If a higher frequency encoder is to be used, contact an authorized representative.*

*If you use an encoder that is energized from an external power source, the encoder output voltage (applied to the **IN A** and **IN B** inputs - see step **19** below) must be higher than **8 V**.*

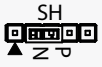
To connect an encoder to the printer equipped with a cable strain relief:

Tools and sub-assemblies required:
- a key for unlocking the electronics compartment door,
- an encoder intended for connection to a terminal,
- a flat tip screw driver,
*- **#21** and **#22** open ended spanners.*

1. Set the main power switch **POWER** (**5**; see ***Fig. 5 on page 28***) on accessories connector plate **4** to the "**O**" position.
2. Check the type (**NPN**, **PNP**) of encoder to be connected.
3. Use the key to unlock electronics compartment door **9** (see ***Fig. 4 on page 27***).

   *Any operations that involve the opening of electronics compartment door **9** must be performed exclusively:*
   - by the manufacturer's authorized service staff or a user trained by the manufacturer's authorized representatives in performing such operations,
   - when the printer is disconnected from the electric mains.

4. Set a required type of encoder with jumper **SH** (**12c**; see ***Fig. 17 on page 44***) on board **PSA6K** (**12**):

Type of encoder	Setting of the **SH** jumper	
NPN (**N/O** and **N/C**)	**N**	
PNP (**N/O** and **N/C**)	**P**	

5. Use the **#22** open ended spanner to unscrew nut **C** that fastens cable strain relief (**SHAFT**) **F** (see ***Fig. 18 on page 45***) in accessories connector plate **4**.

   *While unscrewing nut **C**, secure cable strain relief **F** against turning.*

6. Remove nut **C** and terminal **D** by sliding them from cable strain relief **F** to the inside of the electronics compartment.
7. Slide cable strain relief **F** out of accessories connector plate **4** to the outside of the printer housing.
8. Use the **#21** open ended spanner to screw retaining nut **I** out of cable strain relief **F**.
9. Remove blanking plug **H** from gasket **G**.
10. Place gasket **G** in cable strain relief **F**.
11. Screw nut **I** (but do not screw it tight) onto cable strain relief **F**.
12. Thread encoder cable **J** through the hole in cable strain relief **F**.

13. Place the cable strain relief together with washer **E** and encoder cable **J** in the hole in accessories connector plate **4**.
14. Thread encoder cable **J** to the inside of the electronics compartment in such a way that access is ensured to the unshielded segment of encoder cable **J**.
15. Install terminal **D** on encoder cable **J** where the cable is unshielded.

    *If encoder cable **J** is not originally designed for installation of terminal **D**, prepare the cable by removing the shielding where the cable contacts the terminal.*

16. While holding cable strain relief **F** in the hole in accessories connector plate **4**, keep shifting encoder cable **J** to the outside of the printer housing until terminal **D** touches the inner surface of the printer housing.
17. Use the **#22** open ended spanner to tighten up nut **C** that fastens cable strain relief (**SHAFT**) **F** in accessories connector plate **4**.

    *While tightening up nut **C**, secure cable strain relief **F** against turning.*

18. Use the **#21** open ended spanner to tighten up retaining nut **I**.

    *While tightening up retaining nut **I**, secure cable strain relief **F** against turning.*

    *Retaining nut **I** must be tightened up so that encoder cable **J** cannot shift in the cable strain relief. Only such tightening up of retaining nut **I** does ensure appropriate airtightness of the cable strain relief.*

19. By pressing down appropriate cable locks on the **SHAFTENC** terminal (**12a**) on board **PSA6K** (**12**) with flat tip screwdriver **a** (see ***Fig. 17 on page 44***), connect encoder wires **B** to the terminal:

IN A	Encoder impulse input.
+24V	+24V DC (power).
GND	Ground.
IN B	Encoder impulse input used for sensing conveyor-belt backward movement.

20. Use the key to lock electronics compartment door **9**.

    The encoder is connected to the printer.

2.4. FIRST PRINTER STARTUP

*While the printer start-up procedure is followed, **iModule®** transport protection **14a** (see **Fig. 10 on page 32**) must be open.*

To start up the printer:

1. Connect outlet plug **3a** (see ***Fig. 3 on page 26***) to electric power supply.
2. Set power switch **POWER** (**5**; see ***Fig. 5 on page 28***) on accessories connector plate **4** to the "**I**" position.
3. Press the ON button.
   The printer starts up.
   The printer is started up and ready to print when the **READY** LED illuminates yellow.

*For more details about starting up the printer see **"4.1. Starting the Printer up"**.*

When new bottles are installed, then messages typical of the bottle replacement procedure are displayed on the screen during printer startup. In such a case follow the description given in ***"4.6.1. Replacing the Ink / Solvent Bottle"***.

When a new **iModule®** unit is installed, then messages typical of the **iModule®** replacement procedure are displayed on the screen during printer startup. In such a case follow the description given in ***"4.6.2. Replacing iModule®"***.

*An empty **iModule®** unit can be refilled, when bottles are installed in the printer and the level of the ink in the ink bottle is **min. 3 cm**.*

*The printer with a new empty **iModule®** unit may need a dozen of so minutes to start up.*

*For security reasons, you must change the default password for the **ADVANCED OPERATOR** user type. Until you make any changes to user management, you should keep a record of the default password for the **ADVANCED OPERATOR** user type.*

2.4.1. TEST PRINTS

*The procedure is not available to **OPERATOR**.*

To make the first print:

1. Create a test text; it is advisable to create a simple text, which contains no special registers.

   *For more details on how to create / edit texts see **"5.7. Text Handling"** and **"6.1. Editing and Printing a Simple Text"**.*

2. Select the created text as the active text for printing.

   *For more details see **"4.3.1. Selecting a Text for Printing"**.*

3. Set appropriate printing parameters; it is advisable to use the default parameters.

   *For more details see **"4.5. Managing Printing Parameters"**.*

4. Secure the printhead outlet with absorbent material.
5. Start printing the active text.

   *For more details see **"4.3.2. Starting Printing"**.*

   If the default printing parameters are used:
   - printing is released by the internal generator,
   - printed texts are repeated in continuous mode.

6. Move a sheet of paper in front of the printhead face and in front of the photodetector to get prints.

2.5. DECOMMISSIONING THE PRINTER

The decommissioning procedure may be carried out by instructed persons.

To decommission the printer:

1. Restore the factory default settings to delete the device user files and settings.

   To restore the factory default settings:

   Press ▸ ▸ .

2. Shut the printer down.

   *For more details see **"4.2. Shutting the Printer down"**.*

3. Disconnect power plug **3a** from the electrical mains (see ***Fig. 3 on page 26***).
4. Dispose of all remaining consumables in accordance with local waste management regulations.
5. Dismantle the printer and its accessories in the reverse order to that used for installation.

   *For more details see **"2.3. Printer Installation"**.*

6. Dispose of the device in accordance with local waste management regulations.

2.6. USER TRAINING

Many of the operations described in this manual may be performed only by trained personnel. Therefore, the local representative of **EBS Ink Jet Systeme GmbH** is responsible for providing appropriate training, which should cover at least the following topics:

- safety requirements and potential hazards,
- basic printer installation,
- device operation,
- replacement of consumables,
- basics of device configuration,
- basic maintenance, diagnostic and service operations,
- transport and storage of the device.

CHAPTER 3
USER INTERFACE

3. USER INTERFACE

The user interface enables the user to operate the printer easily and intuitively. This applies to both text handling (to edit a text, to set text parameters, to start / pause printing) as well as printer maintenance and servicing.

3.1. ACCESS LEVELS / USERS

There are three different user access levels in the printer:

- **OPERATOR** (the icon on information bar **1g**; see *Fig. 22 on page 61*),
- **ADVANCED OPERATOR** (the icon on information bar **1g**),
- **SERVICEMAN** (the icon on information bar **1g**).

The **OPERATOR** has the privileges to:

- switch on / shut down the printer,
- select an active text,
- start / pause printing,
- preview the currently printed text,
- disable / enable ink jetting,
- check the current date,
- check / modify the current time,
- clear alarm messages.

The **ADVANCED OPERATOR** has all the privileges of the **OPERATOR** and the following additional privileges to:

- create / edit / delete texts,
- edit printing parameters,
- create / edit / delete blocks of parameters,
- edit printer settings,
- import / export data via a **USB** connector,
- access any printer information,
- access most of maintenance and service functions,
- change the password of the **ADVANCED OPERATOR**.

The **SERVICEMAN** has full access to the printer.
This access level is not described in detail in this document.

3.2. CHANGING AN ACCESS LEVEL / A USER

When the printer starts up, the **OPERATOR** privileges are available by default.

The icon is displayed on information bar **1g** (see *Fig. 22 on page 61*).

For security reasons, the default password for the ADVANCED OPERATOR user type must be changed during the first startup procedure. Until any changes are made to user management, information about the default password for the ADVANCED OPERATOR user type should be retained.

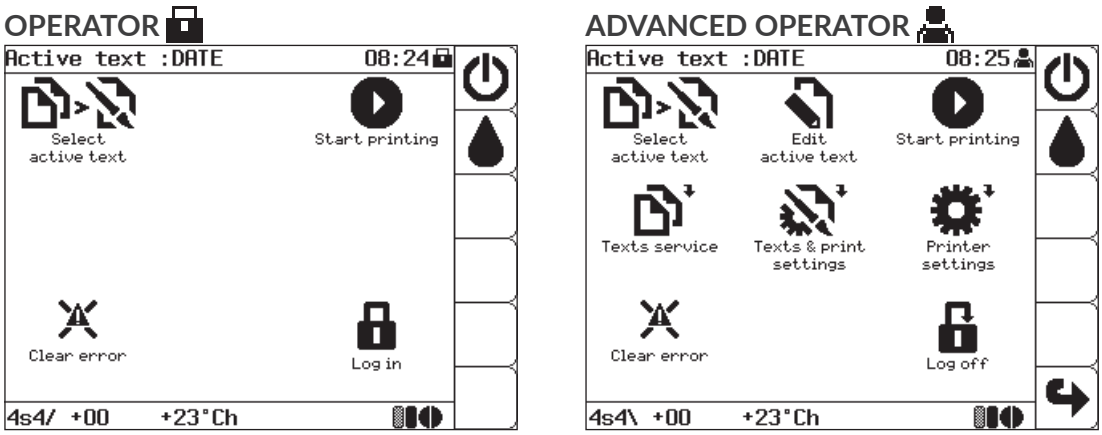


Fig. 19.

To change an access level (a user):

1. Press .
2. Type in the correct password for a required access level (a given user).

   *The default password of the **ADVANCED OPERATOR** is "**EBS**". After printer startup, the* Caps *button is active immediately, and then, capital letters can be typed in via the printer keyboard without the need for performing any additional operations.*

   *The above password can be changed by the **ADVANCED OPERATOR** by pressing:*

   *If the **ADVANCED OPERATOR** password is not known, contact an authorized representative for help and then delete it by pressing . For more details see **"10.4.1. Deleting the ADVANCED OPERATOR Password"**.*

3. Press ENTER to continue.

   The access level (user) is changed.

   The icon corresponding to a defined user is displayed on information bar **1g** (see *Fig. 22 on page 61*).

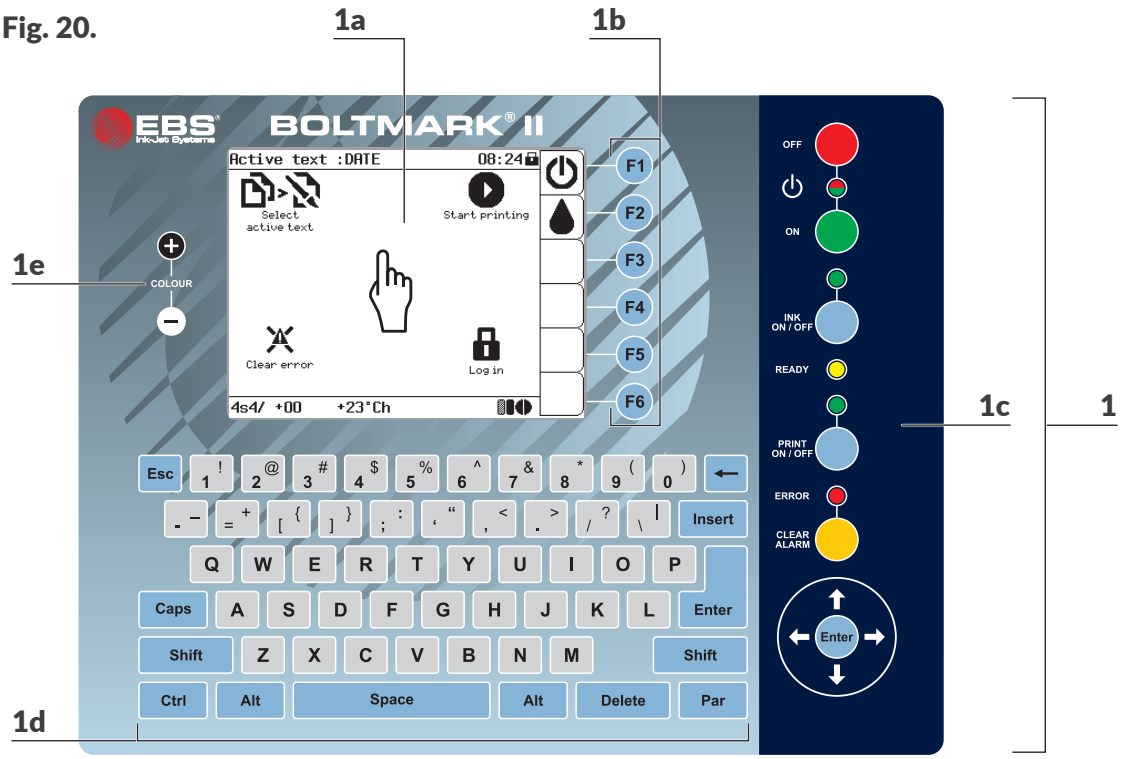
Press to return to the **OPERATOR** privileges.

The icon is displayed on information bar **1g**.

3.3. OPERATOR PANEL

Operator panel **1** enables the user to control printer operation, monitor the current printer state and take actions required in a given state. It also enables the user to perform basic operations such as enabling / disabling printing, localizing the reason for an alarm, clearing an alarm, etc.

Fig. 20.



1	Operator panel.
1a	**LCD** touch screen.
1b	Function buttons.
1c	Main panel.
1d	Alphanumerical keyboard.
1e	**LCD** color change buttons.

3.3.1. SIGNAL LEDS AND BUTTONS

Main panel **1c** (see *Fig. 20 on page 57*):

Button	Function
OFF	Shut the printer down.
ON	Switch the printer on.
INK ON/OFF	Enable / disable ink jetting in the printhead.
PRINT ON/OFF	Start / pause printing.
CLEAR ALARM	Clear an alarm.
ENTER	Move one level up in the MENU (to the following MENU branch) or confirm the function.
↑	Move the cursor one item up.
↓	Move the cursor one item down.
←	Move the cursor one item left.
→	Move the cursor one item right.

LED	Meaning
OFF ON	Printer state: ✳ (solid green): on, ✳ (solid red): off (standby mode), • (off): power plug **3a** (see *Fig. 3 on page 26*) is detached from the electric mains or power switch **POWER** (**5**; see *Fig. 5 on page 28*) on accessories connector plate **4** is in the "**O**" position.
INK ON/OFF	Ink jet state in the printhead: ✳ (solid green): the jet is enabled, ✳ (blinking green): the jet is in the process of being enabled / disabled, • (off): the jet is disabled.
READY	Readiness-for-printing status of the printer: ✳ (solid yellow): the printer is ready for printing, ✳ (blinking yellow): working parameters of the printer are being set; printing cannot start, • (off): printing cannot start.
PRINT ON/OFF	Printing state: ✳ (solid green): printing started, ✳ (blinking green): high voltage error, • (off): printing paused.
CLEAR ALARM	Alarm state: ✳ (blinking red): alarm, • (off): no alarm.

3.3.2. ALPHANUMERICAL KEYBOARD

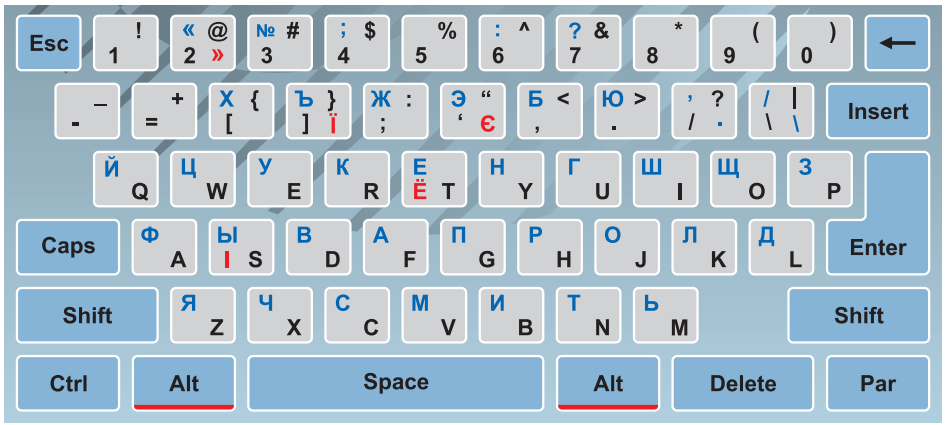
The Latin character keyboard is the basic version of alphanumerical keyboard **1d** (see *Fig. 20 on page 57*).



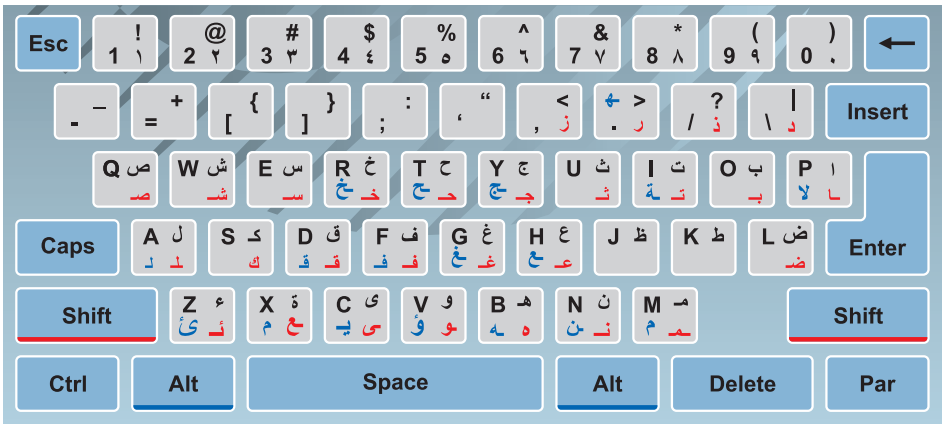
Button	Function
Esc	Move one level up in the MENU or abandon the function.
Caps	Allow / disallow typing in capitals.
Alt	Select a language.
Par	Access parameters, *e.g.* while texts are edited.
Enter	Move one level down in the MENU (to the following MENU branch) or confirm the function.

The other versions of alphanumerical keyboard **1d** are available and they include:

– Cyrillic characters,



– Arabic characters.



3.3.3. FUNCTION BUTTONS

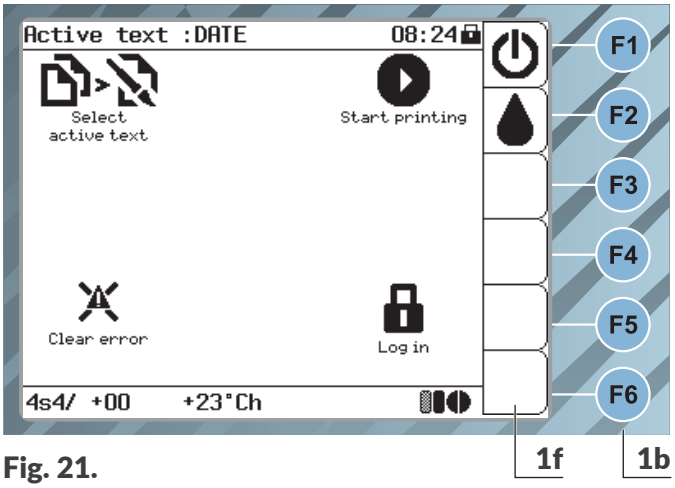


Fig. 21.

1b	Function buttons.
1f	Function identification icons bar.

The functions of function buttons **1b**, namely of F1, F2, F3, F4, F5, F6 (see *Fig. 20 on page 57* and *Fig. 21*), correspond to the functions of the icons currently displayed on function identification icons bar **1f**. Therefore, operation of function buttons **1b** depends on the content of the screen currently displayed. For example, the main screen contains the following, as standard:

Button	Icon	Function
F1	⏻	Shut the printer down.
F2	💧 / 💧	Disable / enable ink jetting in the printhead.
F3		None; Define a user shortcut (see *"3.4.1.2. Defining User Shortcuts"*).
F4		None; Define a user shortcut (see *"3.4.1.2. Defining User Shortcuts"*).
F5		None; Define a user shortcut (see *"3.4.1.2. Defining User Shortcuts"*).
F6		None; Define a user shortcut (see *"3.4.1.2. Defining User Shortcuts"*).

3.4. LCD TOUCH SCREEN

3.4.1. GRAPHICS MENU

The graphics menu consists of icons. It allows the user to operate the printer in a convenient way and offers access to most of the printer functions. Only certain advanced service functions are unavailable; but they are available in the textual menu.

Press ▶ ▶ to start the textual menu.

*The function is not available to the **OPERATOR** .*

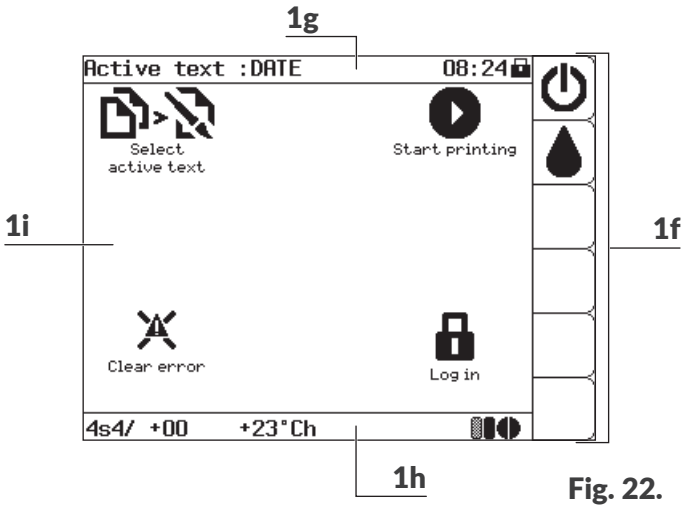


Fig. 22.

1f	Function identification icons bar.
1g	Information bar.
1h	Printer status bar.
1i	Working window.

3.4.1.1. NAVIGATION

You can navigate across the menu with:

- function identification icons, *e.g.* ; the icons are in working window **1i** (see ***Fig. 22 on page 61***),
- function folder icons; the icons are marked with , *e.g.* ; the icons are in working window **1i**,
- : to move to a higher level in the menu tree; the icon is in working window **1i**,
- : to return to the main screen; the icon is on function identification icons bar **1f**,
- : to move from the main screen to the recently used menu level; the icon is on function identification icons bar **1f**.

The graphics menu can be operated with:

- the touch screen,
- buttons.

The icons situated in working window **1i** (see ***Fig. 23***) can be selected with hot keys. Working window **1i** is divided into **9 sections**. a digit on alphanumerical keyboard **1d** corresponds to one of the nine sections; the digit is used as a hot key.

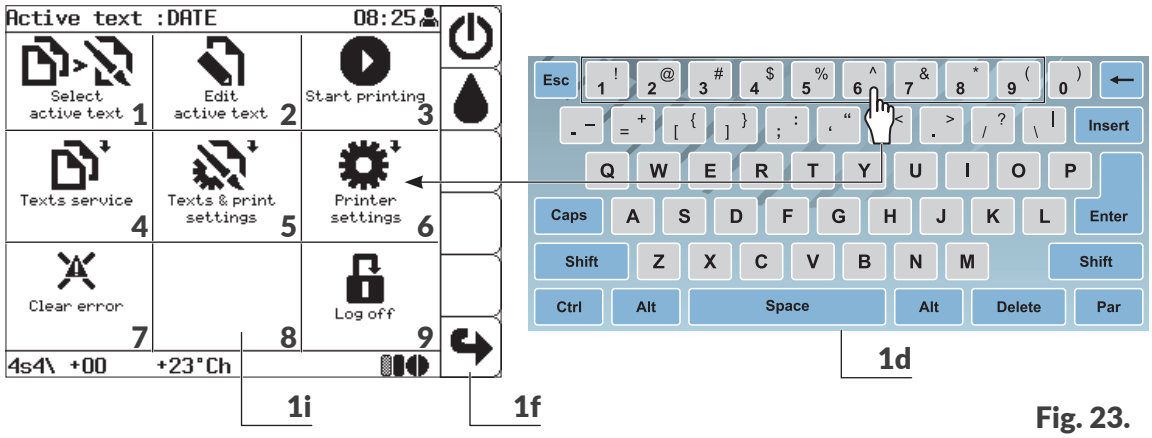


Fig. 23.

*If there is no icon in a given section of working window **1i**, then no operation is performed when the corresponding hot key is pressed on alphanumerical keyboard **1d**.*

The icons situated on function identification icons bar **1f** can be selected with function buttons **1b** (see ***"3.3.3. Function Buttons"***).

3.4.1.2. DEFINING USER SHORTCUTS

*The function is not available to the **OPERATOR** .*

Shortcuts can be created on function identification icons bar **1f** (see ***Fig. 24 on page 63*** and ***Fig. 25 on page 63***) in order to customize the interface. The shortcuts offer immediate access to most frequented menu branches.

To create a shortcut:

1. Move to the menu branch for which you wish to create a shortcut,
   e.g. ⚙ ▶ 🔧 ▶ ⚙💧.
2. Press any of the ? icons on function identification icons bar **1f**, this icon will be defined as the shortcut for the chosen menu branch.

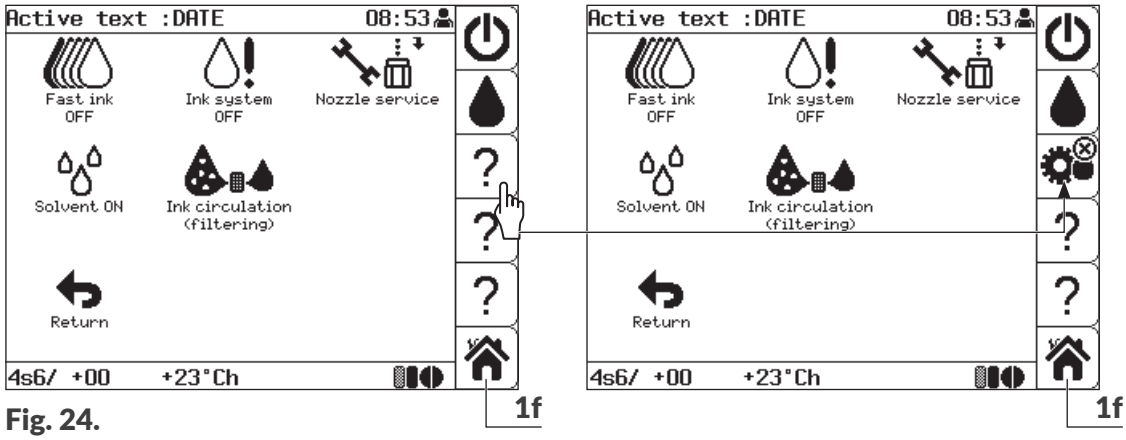


Fig. 24.

*The ? icon on function identification icons bar **1f** means that there is no user shortcut icon in a given position.*

3. Press 🏠 to move to the main screen.
   The ⚙💧 icon on function identification icons bar **1f** is the icon shortcut to ⚙ ▶ 🔧 ▶ ⚙💧.

To delete a shortcut:

1. Press ⚙💧 on function identification icons bar **1f** to move to the menu branch that the icon identifies.

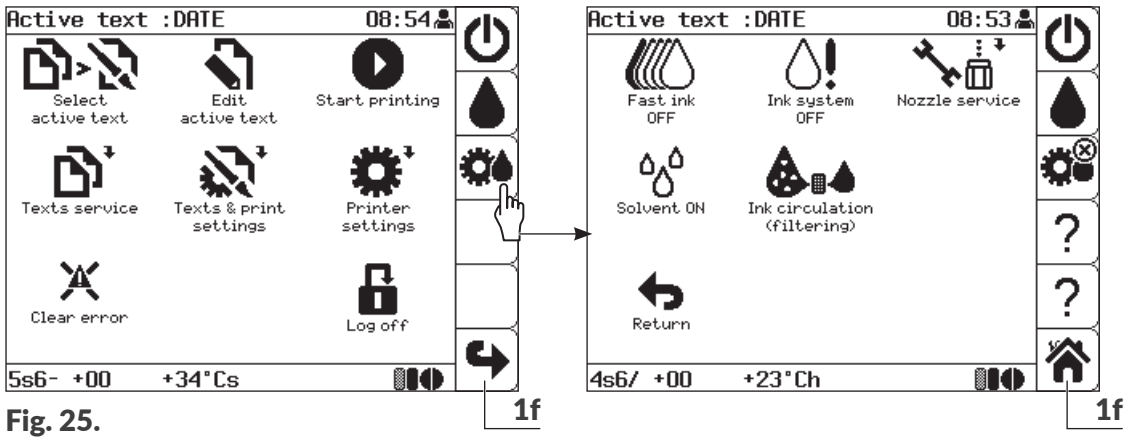


Fig. 25.

An additional symbol ⊗ is displayed in the menu branch that the shortcut identifies; the symbol means that the shortcut can be deleted.

2. Press ⚙⊗.
   The shortcut icon on function identification icons bar **1f** is replaced with the ? icon.
   The user shortcut is deleted.

3.4.1.3. MENU STRUCTURE

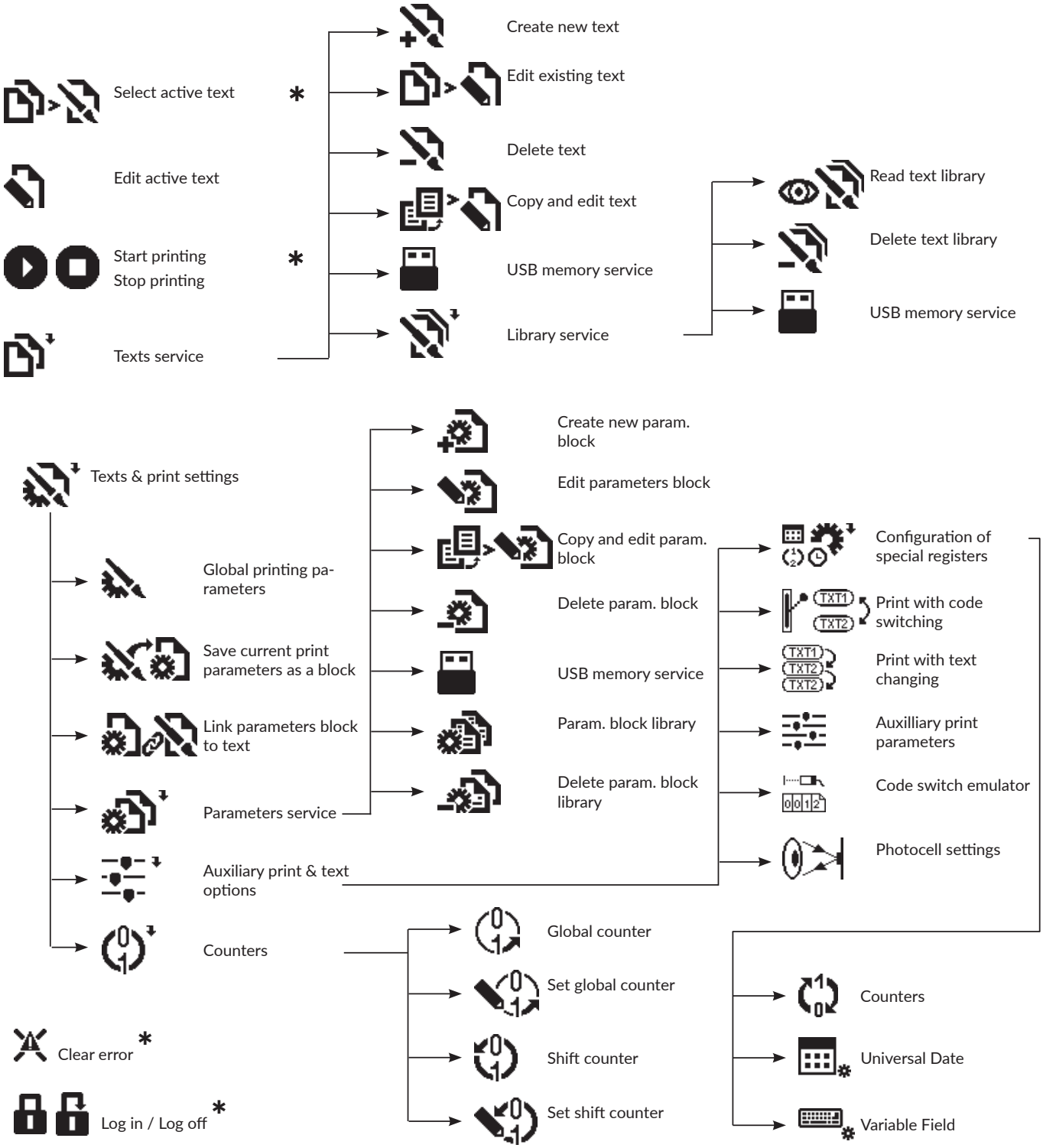


Fig. 26.

* available to **OPERATOR**

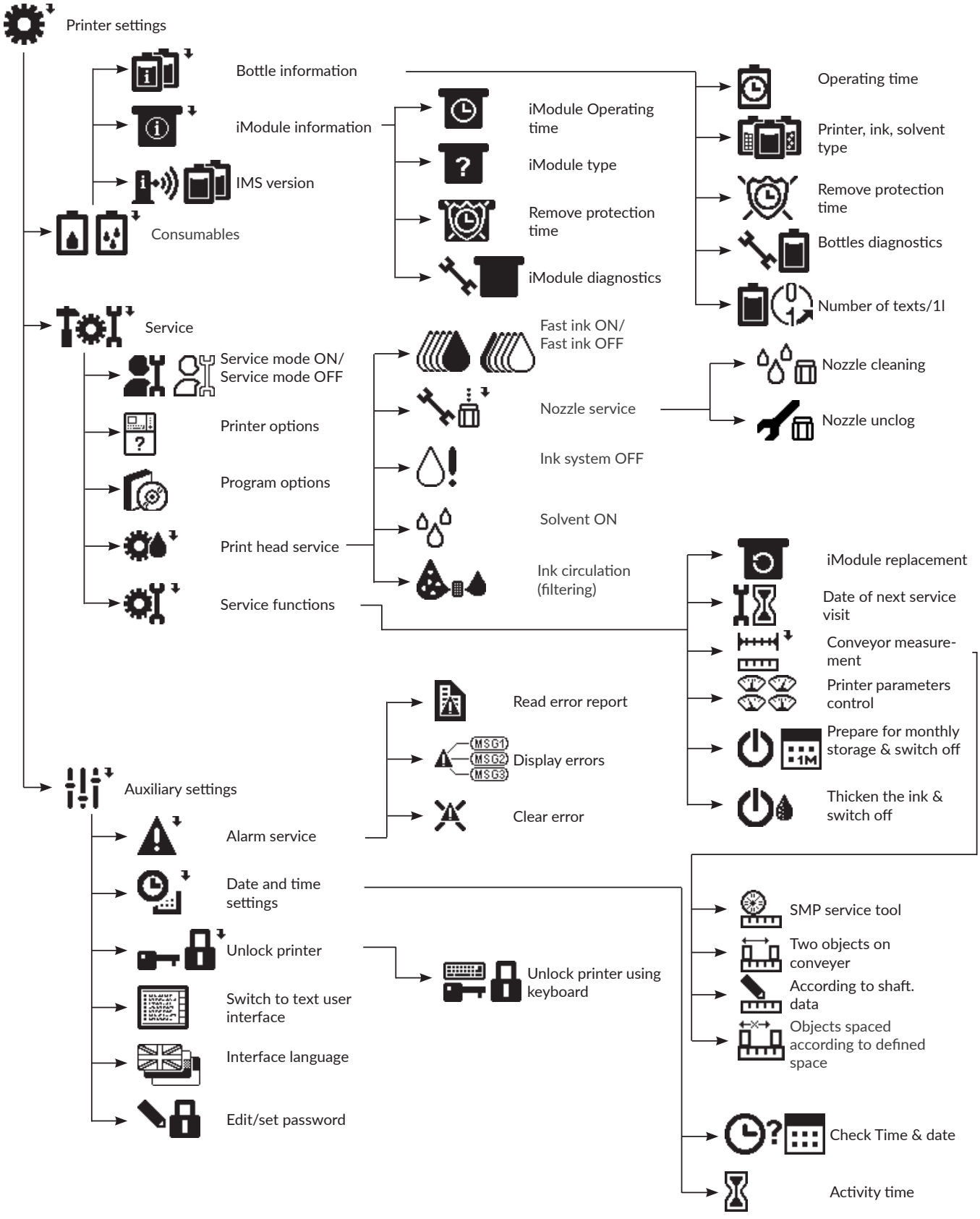


Fig. 27.

* available to **OPERATOR**

3.4.2. TEXTUAL MENU

The textual menu consists of textual commands; it is mostly designed for advanced users for whom the graphics menu may be insufficient. The textual menu includes all of the printer functions.
Press **GRAPHIC MENU** ▶ ↵ ENTER to return to the graphics menu.

The textual menu is not described in this manual.

3.5. INNER PANEL

Inner panel **13** (see ***Fig. 4 on page 27***) consists of several clusters of **LED**s localized on electronic boards in the electronics compartment. It is designed for detailed status of the printer and for error signaling.
Signaling via inner panel **13** is not available to the user in normal usage of the printer. Whereas it can be useful for diagnostic and problem-solving purposes.

*For more details about the inner panel see **"10.1. Inner Panel"**.*

CHAPTER 4
OPERATION

4. OPERATION

4.1. STARTING THE PRINTER UP

To start up the printer:

1. Connect outlet plug **3a** (see *Fig. 3 on page 26*) to the electrical mains.
2. Set main power switch **POWER** (**5**; see *Fig. 5 on page 28*) that is on accessories connector plate **4** to the "|"position.

   The printer goes into standby mode.

   In this mode, the LED between the OFF and ON buttons illuminates red.

   The LCD screen is blank.
3. Press the ON button.

   The printer startup procedure begins; it lasts several minutes and consists of several stages:

   – The LED between the OFF and ON buttons illuminates green.

   – The startup screen is displayed; a few seconds later, the main screen is displayed.

> *When the startup procedure is followed, **iModule**® transport protection **14a** (see Fig. 10 on page 32) must be open. If you attempt to start up the printer when the **iModule**® transport protection is closed, an error message is displayed. In such a case:*
> *- clear the alarm with the CLEAR ALARM button,*
> *- open **iModule**® transport protection **14a**,*
> *- press the icon on function identification icon bar **1f** (see Fig. 22 on page 61) or the INK ON/OFF button to continue the startup procedure.*

   – The icon is displayed on function identification icon bar **1f**; ink flow in the printhead is disabled.

   – The LED above the PRINT ON/OFF button illuminates green for a few seconds and then goes out; HV circuit is pretested.

   – The counter on printer status bar **1h** starts counting down the time to the end of the startup procedure.

> *If during the startup procedure the printer displays an additional informational message or a message that is not related to the procedure, read the message and press ENTER.*
>
> *If the message says that a routine service is needed, contact an authorized representative.*
>
> *If the printer cannot start up properly due to an error, follow the procedures described in "10. Service" and "11. Troubleshooting" or contact an authorized representative.*

   – The LED above the INK ON/OFF button blinks green; ink flow in the printhead is in the process of being enabled.

   – The LED above the INK ON/OFF button illuminates green; the icon on function identification icon bar **1f** is replaced with the icon; ink flow in the printhead is enabled.

   – The **READY** LED blinks yellow; the printer is in the process of being prepared to reach readiness for printing.

- The **READY** LED illuminates yellow; the printer is started up and ready to print; the **OPERATOR** privileges are available by default.

The active text whose name is displayed on information bar **1g** is ready for printing.

4.2. SHUTTING THE PRINTER DOWN

The printer can be shut down regardless of the state it is in, *e.g.* during printing. In such a case, printing pauses.

*The time (given in minutes) over which the printer has been shut down can be viewed by pressing ▶ ▶ ▶ (the **PrOFF** item). The function is not available to the **OPERATOR**.*

4.2.1. SHUTTING DOWN IN REGULAR MODE

By shutting the printer down in regular mode you ensure appropriate cleanness of the printhead interior and faultless operation of the printer. It is the only recommended shutdown mode during normal operation of the printer.

*When shut down in regular mode, the printer can remain shut down for a period **not longer than 1 week**.*

To shut down the printer in regular mode:

1. Press the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) or the OFF button.

   The OFF button should be pressed and held down for at least 1 second.

2. If you use the icon, additionally press ENTER to continue. No additional confirmation is needed when the OFF button is used.

   The printer shutdown procedure begins; it lasts several minutes and consists of several stages:
   - If the printer is in the ready state, the yellow **READY** LED goes out.
   - The LED above the INK ON/OFF button blinks green; ink flow in the printhead is in the process of being disabled.
   - The message is displayed: **SWITCHING THE PRINTER OFF .....**
3. Press ENTER to confirm.
   - The counter on printer status bar **1h** starts counting down the time to the end of the shut-down procedure.
   - The printer shutdown procedure finishes when the LED between the OFF and ON buttons illuminates red and the screen is blank; the printer is in standby mode.

4. If you need to disconnect the printer from the electrical mains, set main power switch **POWER** (**5**; see ***Fig. 5 on page 28***), which is on accessories connector plate **4**, to the "**O**" position.
   or
   disconnect outlet plug **3a** (see ***Fig. 3 on page 26***) from the electrical mains.

If the printer is shut down in regular mode too frequently, the ink in the ink system may become excessively diluted.

4.2.2. SHUTTING DOWN IN SERVICE MODE

It is recommended that the printer be shut down in service mode only when a short-lasting maintenance or service operation needs performing, *e.g.* in the printhead.
It is also recommended that the printer be shut down in service mode when it must be started up and shut down frequently. This prevents the ink in the ink system from diluting excessively.

*When shut down in service mode, the printer can remain shut down for a period **not longer than 1 hour**.*

To shut down the printer in service mode:

1. Press and hold down the CLEAR ALARM button and press the OFF button.

   The OFF button should be pressed and held down for at least 1 second.

   The procedure for shutting the printer down in service mode begins; it lasts several minutes and consists of several stages:
   - If the printer is in the ready state, the yellow **READY** LED goes out.
   - The LED above the INK ON/OFF button blinks green; ink flow in the printhead is in the process of being disabled.
   - The message is displayed: **SWITCHING THE PRINTER OFF .....**
2. Press ENTER to confirm.
   - The counter on printer status bar **1h** (see ***Fig. 22 on page 61***) starts counting down the time to the end of the shutdown procedure.
   - The printer shutdown procedure finishes when the LED between the OFF and ON buttons illuminates red and the screen is blank; the printer is in standby mode.
3. If you need to disconnect the printer from the electrical mains, set main power switch **POWER** (**5**; see ***Fig. 5 on page 28***), which is on accessories connector plate **4**, to the "**O**" position
   or
   disconnect outlet plug **3a** (see ***Fig. 3 on page 26***) from the electrical mains.

*Before starting up the printer which has been shut down in service mode, it is recommended that nozzle **2e** (see **Fig. 8 on page 31**) in the printhead be sprayed with solvent.*

4.2.3. SHUTTING DOWN IN EMERGENCY SHUTDOWN MODE

The printer can be shut down in emergency shutdown mode only when a clear failure of the printer occurs and a few minutes' shutting down in regular mode could cause further damage, *e.g.* ink spill.

*When shut down in emergency shutdown mode, the printer can remain shut down for a period **not longer than 1 hour**.*

Press and hold down the CLEAR ALARM button and press the OFF button to shut down the printer in emergency shutdown mode.

*The printer can also be shut down immediately in emergency shutdown mode by setting main power switch **POWER** (**5**), which is on accessories connector plate **4**, to the "**O**" position, or by disconnecting outlet plug **3a** from the electrical mains.*

*Before starting up the printer which has been shut down in emergency shutdown mode, it is recommended that nozzle **2e** (see **Fig. 8 on page 31**) in the printhead be sprayed with solvent.*

The OFF button should be pressed and held down for at least 1 second.

*The printer is shut down in emergency shutdown mode in the same way as it is in service mode. For more details about shutting the printer down in service shutdown mode see **"4.2.2. Shutting down in Service Mode"**.*

4.2.4. SHUTTING DOWN AND PREPARING FOR STORING

The printer offers several shutdown modes with preparation for storage. Depending on the selected mode, the printer can remain shut down for up to **9 months**.

It is recommended that the printer be shut down and prepared for storing only when it really is to be transported or stored.

*For more details about the procedure see **"9.4. Storing and Transporting"**.*

4.2.5. SHUTTING DOWN AND INK THICKENING

*The function is not available to the **OPERATOR** .*

It is recommended that the printer be shut down and the ink be thickened only when the viscosity of the ink in the ink system is too low.

Press ▶ ▶ to shut down the printer and thicken the ink.

Shutting down in ink thickening mode may last much longer than shutting down in regular mode (even 1 hour).

4.3. PRINTING

4.3.1. SELECTING A TEXT FOR PRINTING

The name of the active text, or of the text currently selected for printing, is displayed on information bar **1g** (see *Fig. 22 on page 61*).

During printing, the name of the text that is in the process of being printed is displayed on information bar **1g**.

To change the text for printing (the active text):

1. Press or the name of the active text on information bar **1g**.

   The function is not available during printing.

   The text library is displayed.
2. Select a required text from the library.

   A fragment of the selected text is displayed in the lower part of the window.
3. Press ENTER to confirm that you want to select the text.

   The name of the selected text is displayed on information bar **1g**.

   The selected text is the active text.

4.3.2. STARTING PRINTING

Printing can start only when the printer is in the ready state, *i.e.* the **READY** LED illuminates yellow.

You can start printing in two ways:

- quick start printing of the active text,
- start printing any text selected from the library.

*If the factory conveyor travel speed, settable in printing parameters (parameter **Cnv spd m/min** or **Cnv sp.ft/min**), exceeds a maximum travel speed, then the printer prints at the maximum travel speed of that conveyor, and this fact is confirmed by the message **Conveyer speed set In PRINTING PARAMETERS is too high!! Conveyer speed is reduced to the maximum allowable value!!**.*

*The first printing after the **Print height** printing parameter has been changed can start in a dozen or so seconds, because the additional procedure for changing the printing algorithm needs following.*

Quick start printing of the active text

Press the PRINT ON/OFF button.

Quick start of printing is possible when a correct text is selected as active.

Printing of the active text is started.

The LED above the PRINT ON/OFF button illuminates green.

The letter "**p**" and print height, given as a number of dots, are displayed on printer status bar **1h** (see ***Fig. 22 on page 61***); the printer is printing.

Start printing a selected text

1. Press ▶.
2. Type in the name of a text to be printed

   or

   press ALT to select a text from the library.
3. Press ↵ ENTER to confirm that you want to select the text.

   Printing of the selected text is started.

   The LED above the PRINT ON/OFF button illuminates green.

   The letter "**p**" and print height, given as a number of dots, are displayed on printer status bar **1h** (see ***Fig. 22 on page 61***); the printer is printing.

   The name of the text that is in the process of being printed is displayed on information bar **1g**.

4.3.3. PAUSING PRINTING

You can pause printing in two ways:

- quick pause printing,
- pause printing after printing of the current text finishes.

Quick pause printing

Press the PRINT ON/OFF button.

Printing of the text is paused.

The LED above the PRINT ON/OFF button goes out.

The letter "**s**" is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***); the printer is ready to print.

Pause printing after printing of the current text finishes

1. Press ■.
2. Press ↵ ENTER to continue.

   Printing of the text is paused.

   The LED above the PRINT ON/OFF button goes out.

   The letter "**s**" is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***); the printer is ready to print.

4.3.4. CODE SWITCH PRINTING

*The function is not available to the **OPERATOR** 🔒.*

Code Switch **CS** printing is recommended when texts to be printed are to be changed frequently.

There are two variants of code switch:

- a code switch emulated by the printer,
- a hardware code switch; an external device connected to the printer (optionally).

The description of how to use an optional hardware code switch is given in a separate document.

*For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

To start printing with an emulated code switch:

1. Make appropriate texts ready for printing.

   Texts to be code switch printed must meet the following requirements:

   - the names of texts must consist of only digits (0, ... , 9) in the first four name positions; the other text-name positions must remain empty,
   - the text contents must be defined in such a way that the text can be printed correctly with once set global printing parameters,

– if different printing parameters are needed for various texts, then every text should have an appropriate parameter block prepared for it (and then linked with it).

Before code switch printing starts, it is advisable to start printing the prepared texts consecutively to check for correct prints at the selected settings of the global parameters. For more details see ***"4.3.2. Starting Printing"****.*

The description of how to create texts is given in ***"5.7. Text Handling"****. The description of how to create parameter blocks is given in* ***"5.9. Parameter Block Handling"****. The description of how to link texts with parameter blocks is given in* ***"4.5.4. Linking a Text with a Parameter Block"****.*

2. Press  .
   The LED above the PRINT ON/OFF button illuminates green.
   The letter "**p**" and print height, given as a number of dots, are displayed on printer status bar **1h** (see ***Fig. 22 on page 61***); "**1**" is displayed until a text is selected; the printer waits for the selection of a text for printing.
3. Press 0|0|1|2 to select a text for printing.
4. Type in the 4-character name of a text for printing.
5. Press ENTER to confirm that you want to select the text.

   Error messages can be displayed when:
   - a text with the given name does not exist,
   - printing parameters for the currently selected text are incorrect.

   Printing of the selected text is started.
   The name of the selected text is displayed on information bar **1g**.
   The height (given as a number of dots) of the text that is in the process of being printed is displayed on printer status bar **1h**.
6. Repeat the operations given in steps from ***3*** to ***5*** to successively select texts for printing prepared in advance.

4.3.5. TEXT SWAP PRINTING

The function is not available to the ***OPERATOR*** 🔒.

Text swap printing enables you to print automatically up to **36** texts without pausing and starting printing before successive texts are selected.

To start printing swapping texts:

1. Make appropriate texts ready for printing.
   Texts for text swap printing must meet the following requirements:
   – the names of successive texts must consist of:
   a fixed, up to 3-character element (*e.g.* TXT) and
   a one-character index that is a digit or a capital letter (successively: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z), e.g. TXT1, TXT2, ..., TXT9, TXT0, TXTA, TXTB, ..., TXTX, TXTY, TXTZ,

- the text contents must be defined in such a way that the text can be printed correctly for once set global printing parameters,
- if different printing parameters are needed for various texts, then every text should have an appropriate parameter block prepared for it (and then linked with it).

Before text swap printing starts, it is advisable to start printing the prepared texts consecutively to check for correct prints at the selected settings of the global parameters. For more details see ***"4.3.2. Starting Printing"****.*

The description of how to create texts is given in ***"5.7.1. Creating a New Text"****. The description of how to create parameter blocks is given in* ***"5.9. Parameter Block Handling"****. The description of how to link texts with parameter blocks is given in* ***"4.5.4. Linking a Text with a Parameter Block"****.*

2. Press  .
3. Type in the number of successive texts to be printed (1 - 36).
4. Press ENTER to continue.
5. Type in the short text name, which is a fixed, up to 3-character element of text names.
6. Press ENTER to continue.

Error messages can be displayed when:
- the text with a given short name and the index of "1" does not exist,
- indexes of successive texts are incorrect,
- the number of defined texts is smaller than the number of texts for printing,
- texts do not exist in the library or the text names are incorrect,
- printing parameters for the currently selected text are incorrect.

If the number of texts with a given fixed element in their names is greater than the typed in number of texts for printing, then the excessive texts are omitted.

When the last text is printed, printing starts from the beginning.

Text swap printing is started; the text whose name contains the index of "1" is **ALWAYS** printed as the first.

The name of the text that is in the process of being printed is displayed on information bar **1g** (see ***Fig. 22 on page 61***).

The height (given as a number of dots) of the text that is in the process of being printed is displayed on printer status bar **1h**.

Printing of the text whose name contains the successive index starts when the photodetector detects an object.

To start printing texts with consecutive indexes correctly:
- the setting of the ***Text rpt.*** *printing parameter must be different from* **CONTIN.***, for more details see* ***"4.5. Managing Printing Parameters"****,*
- the photodetector must be configured correctly; for more details see ***"8.5. Configuring the Photodetector"****.*

4.4. PREVIEWING A TEXT TO BE PRINTED

You can preview the text that is in the process of being printed by pressing the name of the text on information bar **1g** (see *Fig. 28*).

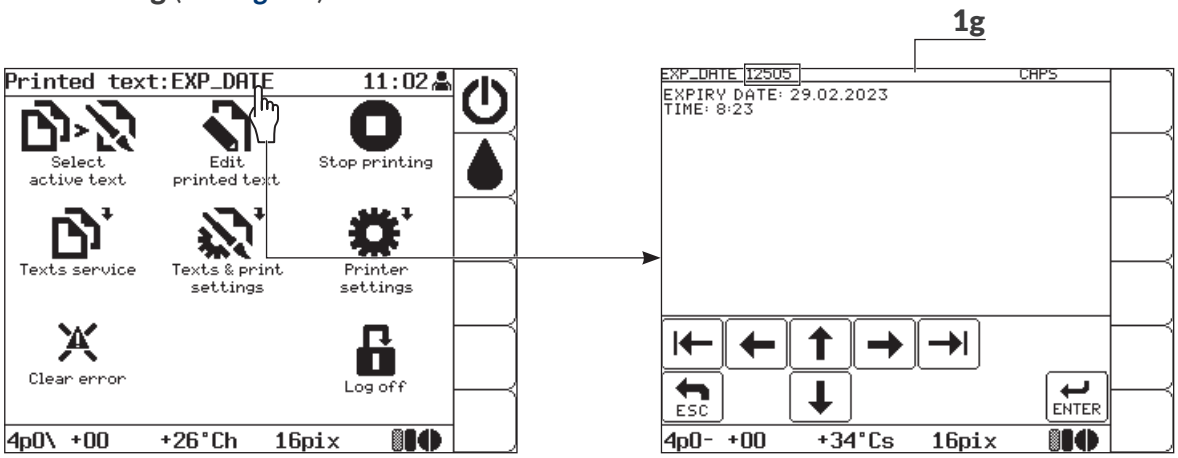


Fig. 28.

The preview window can be displayed automatically immediately after start of printing. (This also applies to code switch printing and text swap printing). The function can be enabled by pressing ▶ ▶ ▶ **Aut. Disp Txt**.

The setting of the shift counter can be displayed on information bar **1g** in the text preview window. The function can be enabled by pressing ▶ ▶ ▶ **Disp Sft.Cnt.**.

For more details on counters see "7.1. Labeled Object Counter".

4.5. MANAGING PRINTING PARAMETERS

*Printing parameters cannot be managed by the **OPERATOR** .*

The global printing parameters have a direct impact on the appearance of printed texts. Owing to them, prints can be customized.

When set, the global printing parameters are saved in printer memory and impact on every successively printed text.

When a text to be printed changes, it frequently happens that global printing parameters need modifying. Therefore, it is recommended that the printing parameters be saved as a parameter block, and then linked with a text. In such a case, when a text associated with a parameter block is selected for printing, the printing parameters are read in automatically. The parameters can be modified, if needed.

If printing parameters out of the parameter block linked with a given text are modified on a temporary basis and the modifications are not saved in a block, then the parameters contained in the block are applied when printing starts.

For more details on how to manage parameter blocks see "5.9. Parameter Block Handling".

4.5.1. EDITING GLOBAL PRINTING PARAMETERS

Global printing parameters can be modified at any time but only selected printing parameters can be modified during printing.

To modify global printing parameters:

1. Press  .
2. Set printing parameters following the below given descriptions.

In the following descriptions, the column marked with "" gives the indication weather a given printing parameter can be modified during printing or not.*

Printing parameter	Range of settings	*
Active text		**NO**

The name of the active / printed text.

The active text can be changed by pressing the ←, → or ALT icon.

*When you select the active text with which a parameter block is linked (see the description of the **Linked param.** parameter), printing parameters are read in from the linked parameter block.*

The parameter is inactive when a parameter block is created / edited.

Linked param.	**Informational parameter**	**NO**

The name of a parameter block linked with the active text.

If the active text is not linked with a parameter block, no parameter setting is displayed.

The parameter is inactive when a parameter block is created / edited.

Height (pix)	**Informational parameter**	**NO**

The height of the active / printed text; it is given as a number of dots.

*If no active text is selected (e.g. the text has been deleted), then the information that the text does not exist is displayed in place of the setting of the **Height (pix)** parameter.*

The parameter is inactive when a parameter block is created / edited.

Matrix height	**SMALL, MIDDLE, LARGE**	**NO**

A rough adjustment of print height by selecting one of the predefined height settings.

A precise adjustment of print height should be made by modifying the distance between the printhead face and an object to be labeled.

*If the distance between the printhead face and an object to be labeled is too long, print quality may suffer. The maximum distance is **30 mm** and print quality needs assessing each time the distance increases.*

*If print height is too great although **Matrix height** = **SMALL** and the distance between the printhead face and an object to be labeled is reduced as much as possible, it can additionally be reduced to a certain extent with the **Print height** parameter.*

Print heights can additionally be reduced through the application of "supertiny" profiles, but if such profiles are used, the maximum printing speed reduces significantly.

Printing parameter	Range of settings	*
Print height	**(the range of settings depends on the printing algorithm selected)**	**NO**

An additional adjustment of print height; it enables, among other things:

- a reduction in height when **Matrix height** = **SMALL** and a maximum reduction of the distance between the printhead face and an object to be labeled fails to ensure that prints are low enough,
- an increase in height when **Matrix height** = **LARGE**; if the distance between printhead face and an object to be labeled increases, print quality reduces.

*The parameter should be set to **100%**, by default. The ranges of settings and the corresponding print heights for various printing algorithms are given in the tables in **"8.6.2. Summary of the Printing Speeds"**.*

*The first printing after the **Print height** printing parameter has been changed can start in a dozen or so seconds, because the additional procedure for changing the printing algorithm is taking place.*

Speed Level	SLOW, MIDDLE, FAST	NO

The speed level:

SLOW - to obtain best quality prints,

MIDDLE - a balanced algorithm,

FAST - to ensure a maximum printing speed.

The parameter also displays (after "<") a maximum conveyor travel speed (in m/min or ft/min) achievable for the printing algorithm selected.

If printing is timed by an internal generator (**Generator** = **GEN**), this value is a maximum settable value of the **Cnv spd m/min** or **Cnv sp.ft/min** parameter.

The maximum travel speed of the conveyor is not displayed while a parameter block is created / edited.

*If **Speed Level** = **FAST**, then for most text profiles:*
*- the active text must not contain **BAR CODE**-type subtexts,*
- if a text includes characters that are over 12 dots in height, character matrices whose names begin with "Fast" should be used,
- if bold lettering is used in the active text, the maximum travel speed of a given conveyor will be reduced,
*- If the active text contains a **GRAPHICS**-type subtext, the resolution setting for the horizontal direction cannot be guaranteed for the fragment that contains the subtext.*
*For more details see the tables in **„8.6.2. Summary of the Printing Speeds"**.*

*If the above given criteria are not satisfied, an error message is displayed. In such a case modify the text contents or select another speed level (with the **Speed Level** parameter).*

Printing parameter	Range of settings	*
Generator	SHAFT, GEN	NO

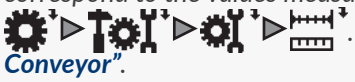
The source of timing signals, or the signals that determine when consecutive columns of a text are printed:

- **SHAFT** - printing is timed by an encoder; it is recommended when conveyor travel speed is not stable;
- **GEN** - printing is timed by an internal generator; it is recommended when conveyor travel speed is stable.

The parameter also displays (after "=") the current conveyor speed (in m/min or ft/min), which is:

- similar to the setting of the **Cnv spd m/min** or **Cnv sp.ft/min** parameter, when printing is timed by an internal generator (**Generator** = GEN);
- measured travel speed of a given conveyor, when printing is timed by an encoder (**Generator** = SHAFT).

The current speed is not displayed while a parameter block is created / edited.

The conveyor travel speed is displayed correctly provided that the settings of:
*- **Cnv spd m/min** or **Cnv sp.ft/min** when printing is timed by an internal generator (**Generator** = GEN) or*
*- **Enc const p/m** or **En.const p/in** when printing is timed by an encoder (**Generator** = SHAFT)*
correspond to the values measured / calculated by means of the functions available after pressing  *. For more details see "7.2. Determining Parameters of a Factory Conveyor".*

Resol. dot/cm or **Resol. dot/in**	**1 - 100 dot/cm or 2.5 - 254 dot/in.**	**YES**

The setting of print resolution in the horizontal direction, *i.e.* the number of text columns per unit of length (1 cm or 1 inch).

*If printing is timed by an encoder (**Generator** = SHAFT), the parameter also displays real resolution and the difference between the resolution setting and real resolution (in %). The difference between the resolution setting and real resolution depends on the quality of the encoder applied. Additional data is not displayed while a parameter block is created / edited.*

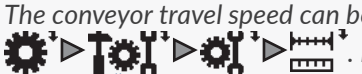
*If printing is timed by an internal generator (**Generator** = GEN), real resolution equals the resolution setting.*

Cnv spd m/min or **Cnv sp.ft/min**	**≤ maximum conveyor speed (see the description of the Speed Level parameter)**	**YES**

*The parameter is available only when printing is timed by an internal generator (**Generator** = GEN).*

Factory conveyor travel speed.

The parameter setting should equal the measured travel speed of a given conveyor.

The conveyor travel speed can be measured with the functions that are available after pressing  *. For more details see "7.2. Determining Parameters of a Factory Conveyor".*

Printing parameter	Range of settings	*
Enc const p/m or **En.const p/in**	50 - 300000 i/m or 1 - 7620 i/in. (this applies to virtual encoder constant)	YES

*The parameter is available only when printing is timed by an encoder (**Generator** = **SHAFT**).*

The real (and virtual, or calculated by the application of the **Shaft multipl** parameter) number of pulses transferred by the encoder per unit of length (1 meter or 1 inch); it is the so called encoder constant.

The parameter setting should equal the measured / calculated constant of the applied encoder.

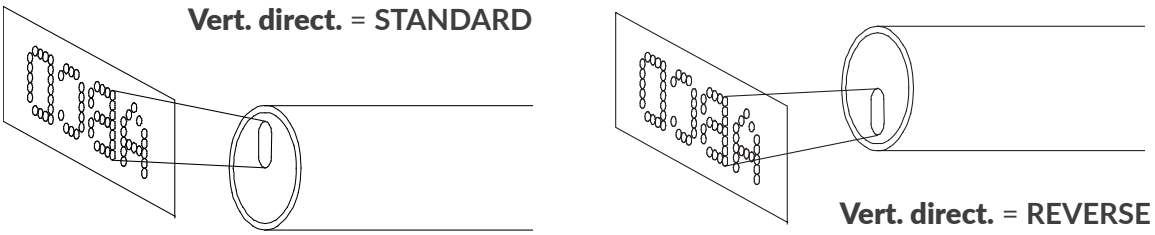
While a parameter block is created / edited, the real and virtual constants are equal.

*The setting of the **Shaft multipl** parameter can be modified by pressing . For more details see **"8.4. Configuring the Encoder"**.*

*The encoder constant can be measured / calculated with the functions that are available after pressing . For more details see **"7.2. Determining Parameters of a Factory Conveyor"**.*

Vert. direct.	STANDARD, REVERSE	YES

Vertical direction of printing.



*The recommended setting is: **STANDARD**.*

*The **REVERSE** setting is recommended only when the lower part of an object (near the conveyor surface) needs labeling and a print made at **Vert. direct.** = **STANDARD** would be placed too high.*

Space	0.0 - 6553.5 mm or 0.0 - 258.01 in.	YES

Space (in mm or in inches) between the beginning of an object (a point detected by a photodetector) and the beginning of the print.

The space is measured correctly provided that the settings of:
*- **Cnv spd m/min** or **Cnv sp.ft/min** when printing is timed by an internal generator (**Generator** = **GEN**) or*
*- **Enc const p/m** or **En.const p/in** when printing is timed by an encoder (**Generator** = **SHAFT**) correspond to the values measured / calculated by means of the functions that are available after pressing . For more details see **"7.2. Determining Parameters of a Factory Conveyor"**.*

Space2	0.0 - 6553.5 mm or 0.0 - 258.01 in.	YES

This parameter is optional and active only for the **ROBOT** software option.

*For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

Printing parameter	Range of settings	*
Text rpt.	1, 2, 3, ..., 65534, CONTIN.	YES

The number of reprints of a text on an object.

*If **Text rpt.** > 1, then the distance between the beginnings of consecutive reprints is defined by the **Rpt.dist.** parameter.*

*If **Rpt.dist.** = 0.0, then consecutive reprints are printed without any space between them, and the number of reprints is limited to 6, even if the setting of the **Text rpt.** parameter is greater than 6.*

*To obtain a required number of reprints on objects (especially when **Text rpt.** = CONTIN.) it is important for the photodetector parameters to be set up appropriately. For more details see "8.5. Configuring the Photodetector".*

Rpt.dist.	0.0 - 6553.5 mm or 0.0 - 258.01 in.	YES

*The parameter is active only when **Text rpt.** > 1.*

Distance (in mm or in inches) between the beginnings of successive reprints.

*If the setting of the **Rpt.dist.** parameter is smaller than the length of a given text, then successive reprints are separated by four empty columns.*

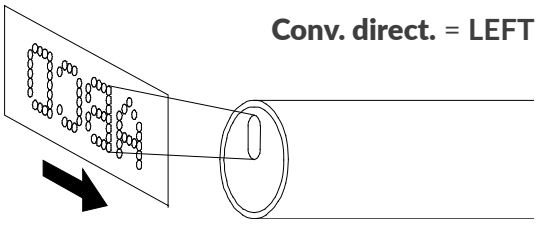
*If **Rpt.dist.** = 0.0, then consecutive reprints are printed without any space between them, and the number of reprints is limited to 6, even if the setting of the **Text rpt.** parameter is greater than 6.*

The distance is measured correctly provided that the settings of:
*- **Cnv spd m/min** or **Cnv sp.ft/min** when printing is timed by an internal generator (**Generator** = GEN) or*
*- **Enc const p/m** or **En.const p/in** when printing is timed by an encoder (**Generator** = SHAFT)*
correspond to the values measured / calculated by means of the functions that are available after pressing . For more details see "7.2. Determining Parameters of a Factory Conveyor".

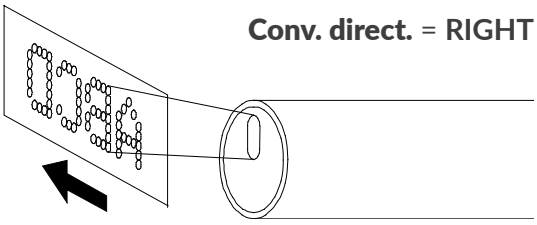
Conv. direct.	LEFT, RIGHT	YES

The direction in which objects move in front of the printhead.

Conv. direct. = LEFT



Conv. direct. = RIGHT



Offset interv	Day, Week, Month, Year	YES

A unit by which the date to be printed is shifted relative to the current date.

The parameter is used to print a so called expiration date by the application of the special register **Date+offs.**.

Printing parameter	Range of settings	*
Offset	**(the range of settings depends on the setting of the printing parameter Offset interv)**	YES

A value by which the date to be printed is shifted relative to the current date; it is given in units selected with the printing parameter **Offset interv**.

The parameter is used to print a so called expiration date by the application of the special register **Date+offs.**.

RollTimeHH:MM	00:00 - 23:59	YES

Setting forward the time at which the date change occurs, from noon to another time during the day, *e.g.* to the time when a work shift starts; when **RollTimeHH:MM** = **06:00**, the date changes at **6:00** a.m.

The parameter is used to print the date by means of the special register **WILL Date**.

Counter delta	1 - 9	YES

Increment for an incremental counter or decrement for a decremental counter.

The parameter is used when automatically generated, successive object numbers are printed by means of two special registers, **Up counter** or **Down count.**.

Row repetit.	1 - 10	YES

The number of reprints of every column of a text.

Print every n	1 - 50	NO

The parameter is active only for the **IGNORE** software option.

*For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

Mode	NORMAL, TEST	NO

*The setting of the parameter can only be modified by the **SERVICEMAN** .*

Startup of printing mode at a maximum speed (**Mode** = **TEST**); this mode can be used by the **SERVICEMAN** to set up the printer in a workplace.

*Not every combination of the **Matrix height**, **Speed Level** and **Height (pix)** parameters is permitted. If an inappropriate setting combination for the above parameters occurs, a fragment of an error message is displayed on printer status bar **1h** (see **Fig. 22 on page 61**). To display the entire message, press , and then modify the settings of the printing parameters indicated in the message.*

If you find it difficult to set the global printing parameters, it is recommended that the default parameter settings be applied by pressing the icon. Most of texts can be printed at the default settings of the printing parameters.

3. Press ENTER to confirm that you want to modify printing parameters.
   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ENTER to save the global parameters to a parameter block or press ESC to abandon.

5. If the parameters are to be saved in to a block, type in a block name or press ALT to select an existing block and overwrite it.
6. Press ENTER to confirm that you want to save the printing parameters to the block.
   The parameter block with a given name is saved in the library.

4.5.2. DEFAULT SETTINGS OF PRINTING PARAMETERS

The printer has a set of default printing parameters to enable you to start printing as simply as possible. You can use the parameters to start printing most of your texts and as a basis for further modification of printing parameters to customize your prints.

The set of the default printing parameters can be inappropriate to print certain specific (e.g. very long) texts.

To set the default settings of printing parameters:

1. Press  in the window where the printing parameter are set.
2. Press ENTER to confirm.
   The default printing parameters are set.

4.5.3. SAVING GLOBAL PRINTING PARAMETERS TO A PARAMETER BLOCK

The global printing parameters can be saved to a parameter block immediately after modification by pressing  .
The global printing parameters can also be saved to a parameter block at any time.

To save the global printing parameters to a parameter block:

1. Press  .
2. Type in the name of a block or press ALT to select an existing parameter block and to overwrite it.

   *Every parameter block can have an up to 8-character name consisting of capital letters, digits and certain characters, but not a space, a dot and the characters , / \ ; : * ? " < > | [ ] { } = +.*

3. Press ENTER to confirm that you want to save the printing parameters to the block.
   The global printing parameters are saved to the block with a given name.

4.5.4. LINKING A TEXT WITH A PARAMETER BLOCK

A parameter block usually contains the printing parameters that concern a specific text. To ensure that a selected text is accompanied by the printing parameters that apply to it, the block containing the parameters should be linked with the text.

Every parameter block can be linked with a greater number of texts.

To obtain the information about which texts saved in the text library are linked with parameter blocks, press  . *The function can also be used for linking texts with parameter blocks and for unlinking parameter blocks from texts.*

A parameter block can be linked with a text (the parameter block linked with a text can be changed) in two ways:

- by pressing  .
- by pressing the 🔗 icon while the text library is displayed.

> *The text library can be displayed by pressing*  . *For more information see* ***"5.8.1. Previewing the Text Library"***.

To link a parameter block with a text / to replace the linked parameter block with another block:

1. Press  .
   The text library is displayed.
2. Select a text from the library.
3. Press ENTER to confirm that you want to select the text.
   The parameter block library is displayed.
4. Select a parameter block from the library.
5. Press ENTER to confirm that you want to select the parameter block.
   The parameter block is linked with the text.

OR

1. Press  .
   The text library is displayed.

   > *The texts in the library are displayed in the following format:*
   > *TEXT NAME : LINKED PARAMETER BLOCK NAME.*

2. Select the following from the library:
   - a text linked with a parameter block, if you want to replace the linked block,
   - a text to which no parameter block is linked, if you want to link a parameter block with this text.
3. Press 🔗.
   The parameter block library is displayed.
4. Select a parameter block from the library.
5. Press ENTER to confirm that you want to select the parameter block.
   The selected parameter block is linked with the text.

4.5.5. UNLINKING A PARAMETER BLOCK FROM A TEXT

To unlink a parameter block from a text:

1. Press .
   The text library is displayed.

   The texts in the library are displayed in the following format:
   TEXT NAME : LINKED PARAMETER BLOCK NAME.

2. Select a text linked with a parameter block.
3. Press .
   The parameter block is unlinked from the selected text.

When a parameter block is unlinked from a text, the text is printed by the application of the global printing parameters.

4.6. REPLACING CONSUMABLES

4.6.1. REPLACING THE INK / SOLVENT BOTTLE

*After the end of the service life of the ink / solvent bottle, do not dispose of it with household waste. Treat the used bottle as hazardous waste and deliver it to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

While replacing bottles, be careful not to get wounded with the needles that are part of the bottle connections. Avoid manipulations near the connection needles. The location of the needles is shown on the warning label that is stuck on to the consumables compartment back wall, beneath the bottle connection.



Components required and protective equipment:
*- a new solvent bottle **15** (see **Fig. 9 on page 32**) where the solvent is consistent with that previously used*
OR
*- a new ink bottle **16** where the ink is consistent with that previously used,*
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



The upcoming need for replacing either bottle is announced by the message:

- **Solvent bottle almost empty** or **LOW SOLVENT** if the solvent bottle needs replacing
  or
  Ink bottle almost empty or **LOW INK** if the ink bottle needs replacing.

Contact your representative to order a new bottle with an appropriate type of solvent or ink. The indispensable data can be read from the label of the bottle installed in the printer.

The need for replacement is indicated by:

- the message: **SOLVENT LACK** or **SOLVENT**: **EMPTY BOTTLE** if the solvent bottle needs replacing

or

the message: **INK LACK** or **INK**: **EMPTY BOTTLE** if the ink bottle needs replacing,

- a sound signal,
- the **ERROR** LED on operator panel **1** (see *Fig. 20 on page 57*) illuminating blinking red,
- the display background illuminating blinking red.

*The bottle should be replaced immediately after the above indications have occurred. This operation can also be conducted during printing. Otherwise, if correct ink parameters cannot be maintained or if ink level in **iModule**® lowers too much, printing is paused and the printer is shut down.*

Ink / solvent consumption indicators in graphic format are displayed on printer status bar **1h** (see *Fig. 22 on page 61*):

Ink level indicator					
Solvent level indicator					
Still remains [%]	100-76	75-63	62-38	37-12	<12

For the detailed information about the bottles installed in the printer press .

For more details see "7.9.1. Bottle Information".

Fig. 29 shows how to replace an ink bottle as an example.

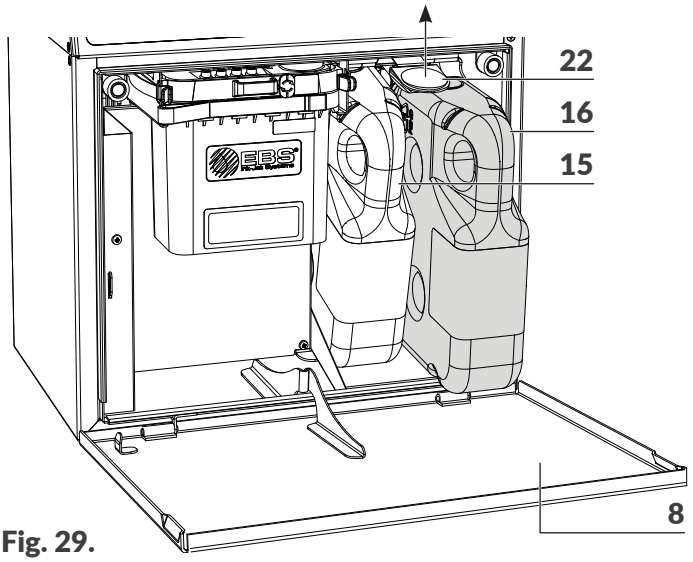


Fig. 29.

8	Consumables compartment door.
15	Solvent bottle (with a white cap).
16	Ink bottle (with a black cap).
22	Latch fastener for bottles.

*The instructions on how to replace an ink / solvent bottle can be watched on a You Tube - **ebsinkjetsystems** video (see a QR code with the link).*

To replace a bottle:

1. Open the consumables compartment door **8** (see ***Fig. 29***).
2. Lift latch **22** that fastens the bottles.
3. Pull empty solvent bottle **15** or ink bottle **16** out of the printer.

   The following message may be displayed:

   SOLVENT: **NO BOTTLE** for solvent bottle **15**

   or

   INK: **NO BOTTLE**. for the ink bottle **16**.
4. Lift again latch **22** that fastens the bottles.
5. Insert a new bottle in place of the empty one, pressing it to the limit.
6. Lower the latch fastener **22** so that it rests in the bottle groove.

   The message **CODE VERIFYING: WAIT 10 SECONDS PLEASE** is displayed.
7. Wait a few seconds.

   The message **BOTTLE ACCEPTED** is displayed.

   The new bottle is installed.

   A bottle can be used in one printer only. There is no possibility of putting an accepted bottle into another printer.

   Dispose of the empty bottle following the selective collection principles.
8. Close consumables compartment door **8**.

4.6.2. REPLACING IMODULE®

*After the end of the service life of the iModule®, do not dispose of it with household waste. Treat the used iModule® as hazardous waste and deliver it to an authorized local waste collection facility for safe recycling, in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

*The procedure is not available to the **OPERATOR** .*

*Components required (included in the complete **iModule®** replacement kit):*
*- a new **iModule®** and protective equipment,*
*- 4 transport-protection plugs type **I** (see the drawing on the right, Part No. **P581158**),*
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



Periodic replacement of **iModule®** ensures faultless operation of the printer; **iModule®** must be replaced when the printer signals the need to do so. The failure to replace at the set date will make printing impossible.

A graphic indicator of how much **iModule®** is worn out is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***):

Indicator									
Still remains [%]	100-88	87-76	75-63	62-51	50-38	37-26	25-13	12-1	<1

*For the detailed information about **iModule®** installed in the printer press* .
*For more details see **"7.9.2. iModule® Information"**.*

The upcoming date of **iModule®** replacement is signaled with one of the following messages:

- **iModule running time is below 10% CALL SERVICE PLEASE**,
- **iModule running time expires in less than 300 hours CALL SERVICE PLEASE**,
- **iModule expires within 1 month CALL SERVICE PLEASE**.

The above messages are displayed in a cyclical pattern, and also each time the printer is started up.

Contact your representative to order a new, appropriate **iModule®**. The indispensable data on **iModule®** used in the printer can be read from the label of the **iModule®** unit installed in the printer.

*An instructional video on replacing the **iModule®** is available on the company's YouTube channel, **ebsinkjetsystems**. See the QR code for the link.*

To replace the **iModule®**:

1. Start up the printer and wait until it is ready to print.
   The printer is started up and ready to print when the **READY** LED illuminates yellow.
2. Press .
   The message is displayed:
   iModule replacement procedure.
   ARE YOU SURE (Y,N)?
   (Y=ENTER, N=ESC).
3. Press ENTER to continue.
   The message is displayed:
   Prepare a new iModule. Make sure that there is minimum 3cm of ink in the bottle ENTER - continue, ESC - abort.
4. Make a new **iModule®** ready.
5. Remove transport-protection plugs type **I** **21** from the connectors of the new **iModule®** (see *Fig. 12 on page 34*).
6. Open consumables compartment door **8**.
7. Make sure that the amount of ink in the bottle is sufficient to fill in the new **iModule®**.

*The level of the ink in the bottle must indicate a minimum of **3 cm**.*

8. Press ENTER to continue.

   The message is displayed:

   iModule replacement procedure in progress. iModule is under pressure !! Do not remove iModule. Wait for relevant message.

9. Wait for a successive message, conducting no operations.

   The message is displayed:

   While the printer is running: -Push the iModule latches apart using your thumbs -Slowly disconnect the iModule pulling the strap. Keep the iModule in the vertical position during the whole process.

10. Tilt sideways the catches **27** that fasten **iModule®** (see ***Fig. 30***).
11. Use strap-holder **14c** to pull **iModule®** slowly out of the printer.

*In order to ensure that the ink is sucked out of the **iModule®** connector completely, pull out **iModule®** slowly and leave transport protection **14a** open. If **iModule®** is pulled out too quickly or the transport protection was closed before pulling out, a small amount of ink may leak out of the **iModule®** connector.*

*Keep the **iModule®** in the upright position when pulling it out.*

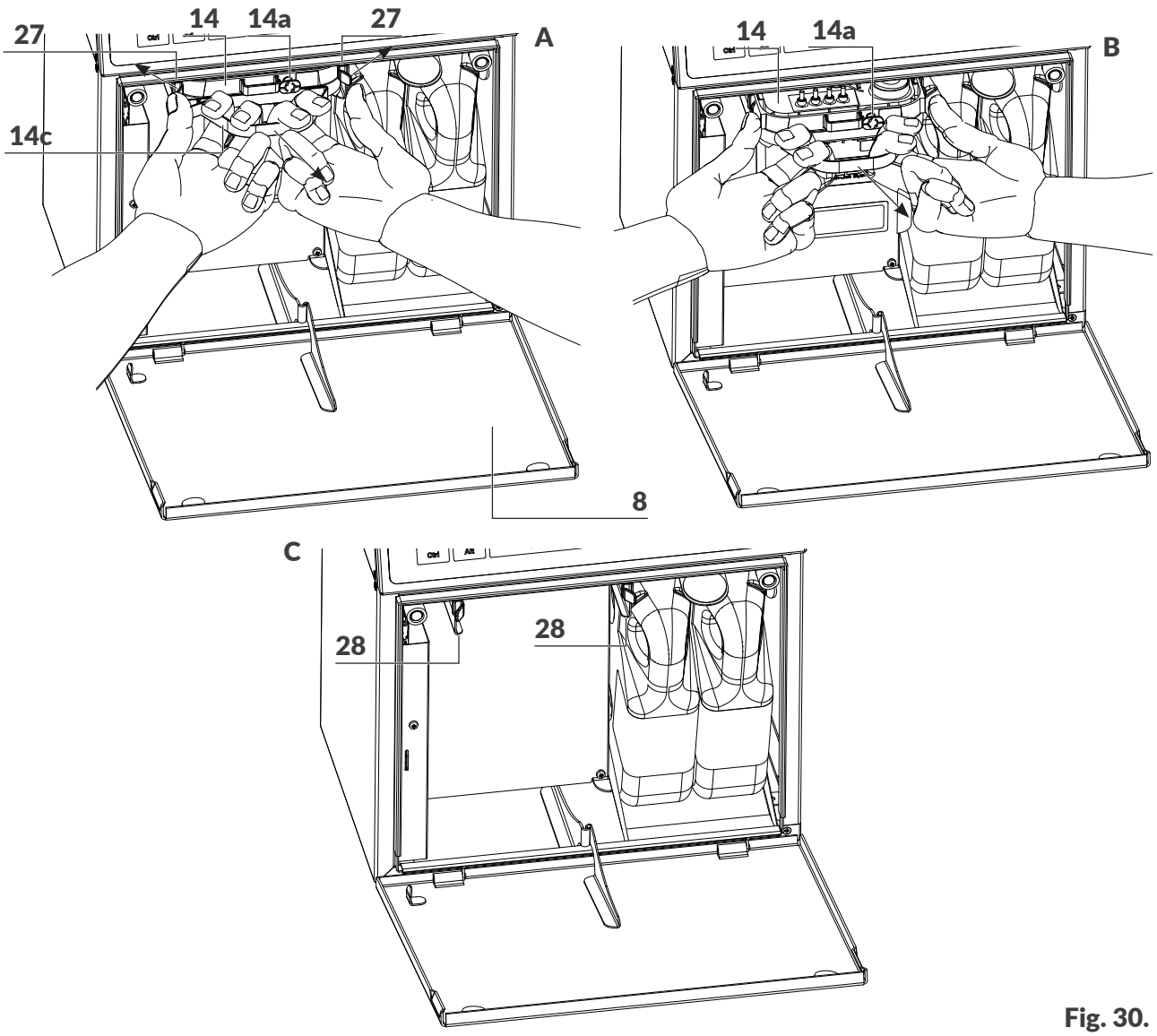


Fig. 30.

8	Consumables compartment door.
14	**iModule®**.

14a	Transport protection of **iModule®**.
14c	Strap-holder.
27	Catches that fasten **iModule®**.
28	**iModule®** guides.

The message is displayed:

-Install the four protection caps supplied on the connectors of the removed iModule -Put the transport valve in the transport position -Moisten !!! the iModule connec- tion on the printer with solvent -Install the new iModule and wait for the next message.

*If no **iModule®** is installed in the printer, short sound signals are generated.*

12. Secure connections **14b** (see ***Fig. 10 on page 32***) of the **iModule®** that you are removing, with transport protection plugs type **I** **21** which are supplied together with the new the **iModule®**.
13. Close transport protection **14a** of **iModule®** you are removing, *i.e.* rotate the protection through 90° and press to the limit.



*For more information about **iModule®** and transport protection plugs see **"2.2.4.2. iModule®"**.*

14. Spray solvent on to the O-rings that are part of **iModule®** connector **26** in the printer. This will facilitate the insertion of a new **iModule®**.
15. Install the new **iModule®** by inserting it **horizontally** along guides **28** until catches **27** are heard clicking.

*A new **iModule®** should be installed as soon as possible after the worn out **iModule®** has been removed.*

The data on the detected **iModule®** is displayed and followed by the inquiry

Do you really want to install it? (Y,N)?

(Y=ENTER, N=ESC).

16. Press ENTER to continue.

The message is displayed:

CODE VERIFYING: WAIT 10 SECONDS PLEASE

and then:

Open transport protection, and then press ENTER.

17. Open transport protection **14a** of the new **iModule®**, *i.e.* pull it out to the limit and rotate through 90°.



18. Press ENTER to continue.

    The message is displayed:

    Filling iModule... Transport protection must be open !! Please wait.

19. Wait for a successive message, conducting no operations.

    *Depending on properties of the ink in the bottle, it may take even 10 minutes to fill in **iModule®**!*

    The message is displayed:

    iModule replaced & accepted

    Press ENTER...

20. Press ENTER to continue.

    The message is displayed:

    iModule

    iModule accepted

    Press ENTER...

    ***iModule®** can be applied to one printer only. There is no possibility of putting an accepted **iModule®** into another printer.*

21. Press ENTER to finish the **iModule®** replacement procedure.

    The printer is started up and ready to print when the **READY** LED illuminates yellow.

    *When the **iModule®** replacement procedure is finished, the printer enters service mode.*

    The service mode can be disabled by means of 

    *Dispose of the removed **iModule®** following the selective collection principles.*

22. Close consumables compartment door **8**.

G2025/06/150_1EN

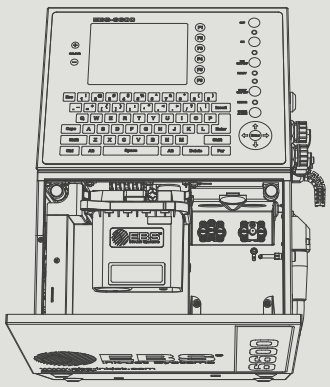
EBS® Ink-Jet Systeme

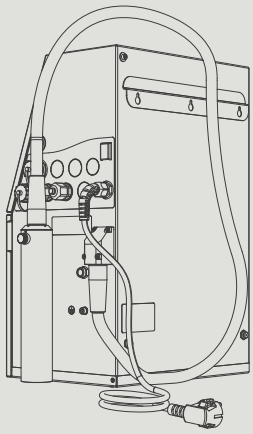
Boltmark®II

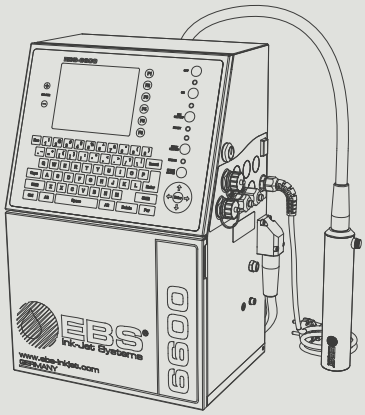
EBS-6600 / EBS-6900

USER MANUAL

Industrial CONTINUOUS INK-JET Printers
Original Instructions







EN

Part 2 of 3

You can find our user manuals at:
manual.ebs-inkjet.de

2026.08.20

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CHAPTER 5
EDITING

5. EDITING TEXTS AND PRINTING PARAMETER BLOCKS

*The functions described in this section are not available to **OPERATOR** .*

5.1. TEXT EDITOR

The text editor is started by every editor function:

Icons	Function
	Create a new text.
	Edit an existing text.
	Edit the active / printed text.
	Copy and edit a text.

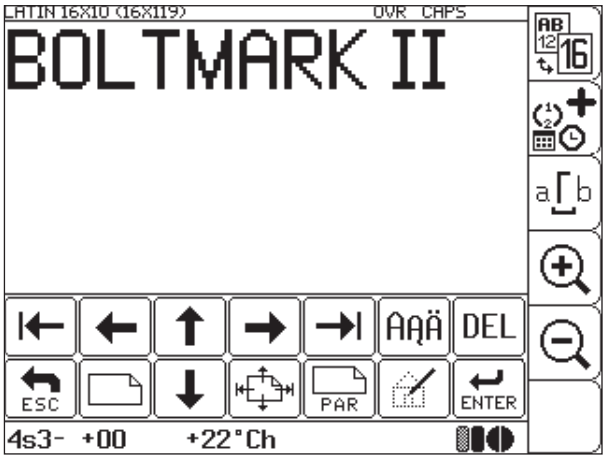
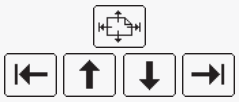
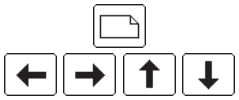


Fig. 31.

The following icons are available in the text editor window:

Icon / Icons	Function
	Navigate within a selected subtext or among subtexts. *If a text exceeds the preview area in the editor window, the arrows can also be used for shifting the entire text within the editor window.*
	Set the cursor on the first or last character in a subtext. *The cursor position in a text can also be set by clicking on a required item in the text editor window.*

Icon / Icons	Function
	Shift a subtexts one row up or down. Move a subtexts one position left or right. *Restrictions associated with the selected text profile apply while a subtext is shifted. For more details see **"1.1. Configurability of the Boltmark®II-series Printers"**.* *For more details about subtext shifting see **"5.4.7. Changing the Subtext Position in a Text"**.*
	Create a new subtext by showing its position relative to the current subtext. *Restrictions associated with the selected text profile apply while a subtext is created. For more details see **"1.1. Configurability of the Boltmark®II-series Printers"**.* *For more details on how to create subtexts see **"5.4. Creating / Editing a Subtext"**.*
	Edit parameters of the current subtext, *e.g.* change the type of subtext. *For more details about the types and parameters of subtexts see **"5.4. Creating / Editing a Subtext"**.*
	Add national characters to Latin character matrices or alternative characters to certain other matrices. Each time the icon is pressed, another language is selected out of those available on the printer. The active language identifier is displayed on information bar **1g** (see ***Fig. 22 on page 61***); *e.g.* **K:POL**, **K:ESP**, **K:GREEK**. *After selecting the Chinese character matrix (**Char. set** = **China 11** or **China 16** for **CHARACTER STRING**-type subtexts), the ÅąÄ icon is replaced with the 拼音 icon, which is used for typing in Chinese characters in phonetic mode (so called "**PINYIN**"). For more details on how to add Chinese characters see **"5.4.3.3. Typing in Chinese Characters"**.*
	Start the graphics editor. *The function is active, if the current subtext is a **GRAPHICS**-type subtext. For more details see **"5.4.4. Creating / Editing a GRAPHICS-type Subtext"**.*
	Delete the current character in a **CHARACTER STRING**-type subtext. Delete an entire **GRAPHICS**, **BAR CODE** or **TEXT NAME**-type subtext. *An entire subtext is deleted after confirmation.*

Icon / Icons	Function
	Information on the text profile currently selected (highlighted in the list). Information on text profiles unrecommended for the given printer (the profiles are marked with "-" in the profile list). Change the text profile.  *For more details about text profiles see **"1.1. Configurability of the Boltmark®II-series Printers"**.*
	Special register creator; to set up the selected subtext to make it a special register.  *The special register creator icon is available for the types of subtexts that can have dynamic contents, that is to the **CHARACTER STRING** and **BAR CODE** subtexts.* *The list of the special registers available via the creator depends on the type of subtext selected.* If the selected subtext is a special register, the icon representing the type of special register appears in place of the creator icon:
	 Up counter  Down count.  Time  Date  Spec. chan.  Univ.count.  Univ. date  Date+offs.  WILL Date  Variable Field  Text content  *The icon representing the type of special register can also be used to:* *- change the type of special register,* *- delete a special register from the subtext,* *- additionally configure a given special register - only when the special registers have the additional configuration option.*
	Change space display mode in the text editor window.  *Regardless of the display mode selected, spaces are always printed as empty character positions.*
	Increase / decrease the text preview scale in the editor window.  *The text preview scale set by the user is stored when the text editor is escaped, and it is restored when the editor is restarted.*
	Escape the text editor without saving any modifications.
	Escape the text editor and save the text to library.

The text editor window also offers access to additional functions that can only be started via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*):

Buttons	Function
Insert	Select character insertion mode in a **CHARACTER STRING**-type subtext: **INS** - to insert a character in the cursor position, **OVR** - to overwrite the character marked with the cursor. The insert mode indicator is displayed on information bar **1g** (see *Fig. 22 on page 61*). *The insert mode set by the user is stored when the text editor is escaped, and it is restored when the editor is restarted.*
Ctrl + Delete	Delete an entire subtext regardless of its type. *The subtext is deleted forthwith and without any confirmation.*

5.2. BASIC NOTIONS

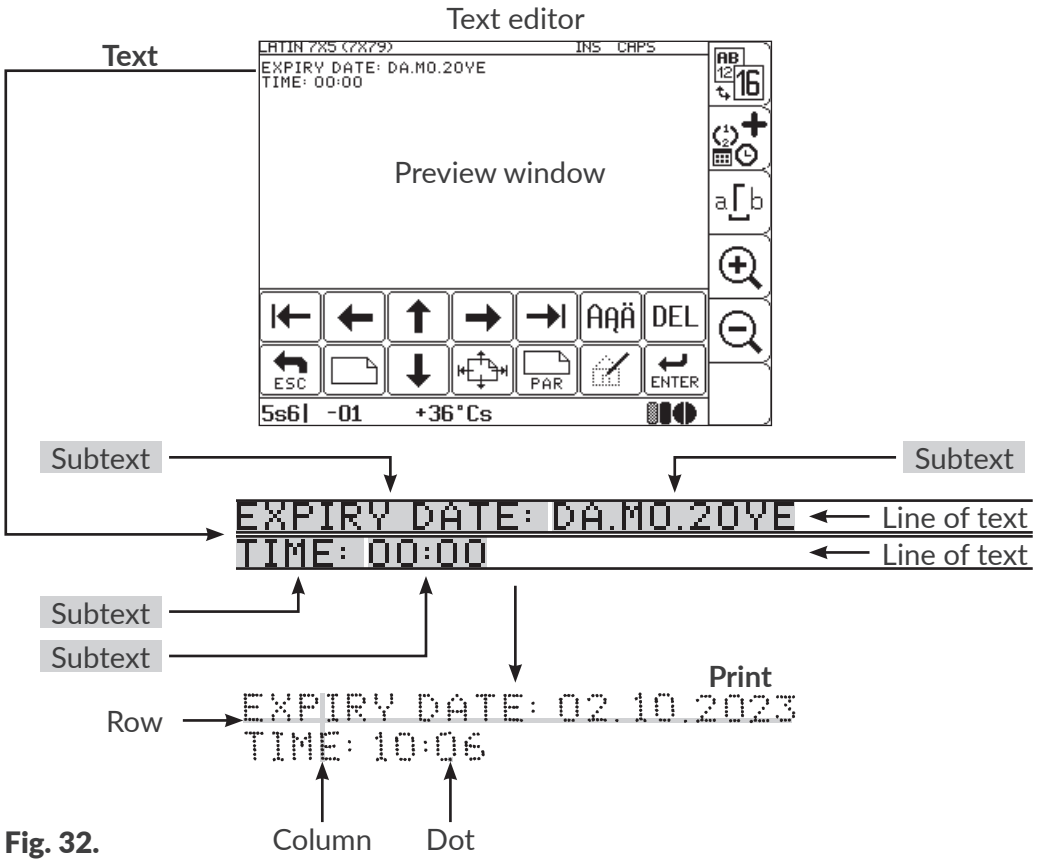


Fig. 32.

The basis notions and rules applied to text editing and printing:

- **A text** created / edited by the user with the **text editor**; it consists of **subtexts**.
- **The text** can consist of one **line**, many **lines** or be a complex text.
- After starting printing a prepared **text**, a **print** is made on an object.
- The appearance of a **print** on an object depends on **printing parameters** and **parameters of subtexts** that are part of a **text**.
- **The print** is made of **dots**.

- **Printed dots** form vertical things (**columns**) and horizontal things (**rows**).
- Vertical resolution of a **print** is defined as the number of **rows** (or **dots**) per a unit of height.
- Horizontal resolution of a **print** is defined as the number of **columns** (or **dots**) per a unit of length.
- For clear prints it is recommended that vertical resolution be equal to, or greater than, horizontal resolution.

5.3. TEXT PROFILES

You can define a text profile while creating a new text. You can also change it at any time while editing a text by pressing the icon in the text editor window. This icon is also used for displaying the information on:

- the text profile currently selected (highlighted in the list).
- text profiles unrecommended for the given printer (the profiles are marked with "**-**" in the profile list).

The text profiles available on the printer are divided into several groups.

- general application profiles; to edit any texts (one-line, multi-line or complex ones),
- profiles dedicated exclusively to multi-line texts,
- superfast profiles ("**SF**"),
- supertiny profiles ("**ST**"),
- fast profiles dedicated to bar / matrix codes ("**FB**").

General application profiles:

- **max height 5 dots**,
- **max height 7 dots**,
- **max height 11 dots**,
- **max height 16 dots**,
- **max height 25 dots**,
- **max height 32 dots**.

Profiles dedicated exclusively to multi-line texts:

- **2 lines x 7 dots**,
- **3 lines x 7 dots**,
- **4 lines x 7 dots**,
- **2 lines x 11 dots**.

Superfast profiles:

- **max height 16 dots, rapid**,
- **max height 32 dots, rapid**,
- **3 lines x 7 dots, rapid**.

Supertiny profiles:

- **max height 5 dots tiny**,
- **max height 7 dots tiny**,
- **max height 11 dots tiny**,
- **max height 16 dots tiny**.

Fast profiles dedicated to bar / matrix codes:

- **max 16 dots, high-speed barcode**,
- **max 25 dots, high-speed barcode**,
- **max 32 dots, high-speed barcode**.

*A so called **default profile** is assigned to texts imported to the printer with the import function, if no profile has been defined for such texts. For more details see **"8.2. Selecting the Default Profile for Imported Text"**.*

The list of profiles recommended for the given printer depends on the maximum text height that the printer can print. Unrecommended profiles, or the ones whose print height is too great for the given printer, are marked with "-" in the profile list.

*For the information on the maximum text height that the printer can print, press ▶▶▶. For more details see **"7.5. Printer Information"**.*

If an unrecommended profile, which is marked with "-", is used,

- the text can be edited but every operation related it results in a warning message,
- the text cannot be printed on the given printer; an attempt to start printing results in the message **TEXT TOO HIGH FOR YOUR PRINTER VERSION**.

It is essential to select an appropriate profile because the selected profile

- imposes certain restrictions on text editing,
- impacts on the maximum obtainable printing speed and on print quality.

*The printing algorithms applied to superfast ("**SF**") profiles are optimal for obtaining higher printing speeds at the cost of print quality. Therefore they are not recommended for standard applications.*

*The printing algorithms applied to supertiny profiles ("**ST**") are optimal for obtaining prints very small in height, at the cost of printing speed. Therefore they are not recommended for standard applications. To obtain printouts of a tiny height it is recommended that the **Matrix height** and **Print height** printing parameters be modified and that the distance between the printhead face and an object to be labeled be reduced as much as possible.*

If multi-line texts only are created, it is recommended that profiles dedicated to multi-line texts be used. For other texts (especially complex ones), it is recommended that general application profiles be used.

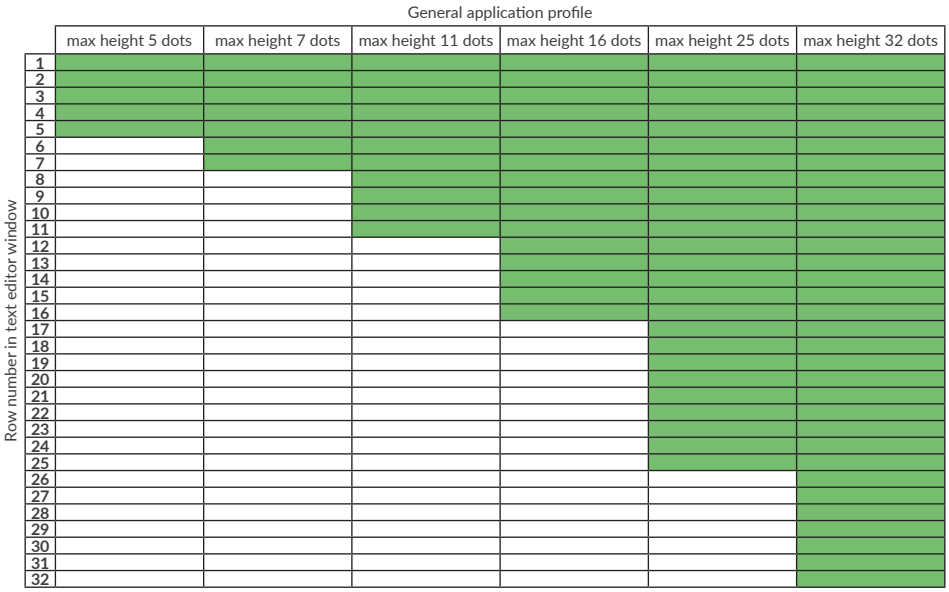
Restrictions on text editing imposed by a selected text profile:

- character matrices available to a **CHARACTER STRING**-type subtext are restricted to those whose height is not greater than the index given in the profile name (*e.g.* max 32 dots for the **max height 32 dots** profile or max 7 dots for the **4 lines x 7 dots** profile),

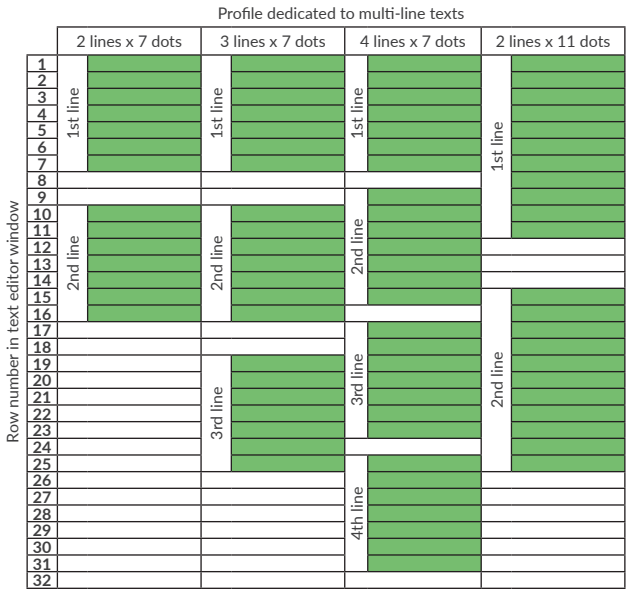
- the maximum height of **GRAPHICS** or **BAR CODE**-type subtexts must not be greater than the index given in the profile name (*e.g.* max 32 dots for the **max height 32 dots** profile or max 7 dots for the **4 lines x 7 dots** profile),
- the maximum height of a text called by name to a **TEXT NAME**-type subtext must not be greater than the index given in the profile name (*e.g.* max 32 dots for the **max height 32 dots** profile or max 7 dots for the **4 lines x 7 dots** profile),
- subtexts can be shifted within a text in the vertical direction among admissible rows only.

For more details about the types of subtexts see ***"5.4.1. Types of Subtexts"****.*

The admissible rows (in green) in the text editor window for the general application profiles:



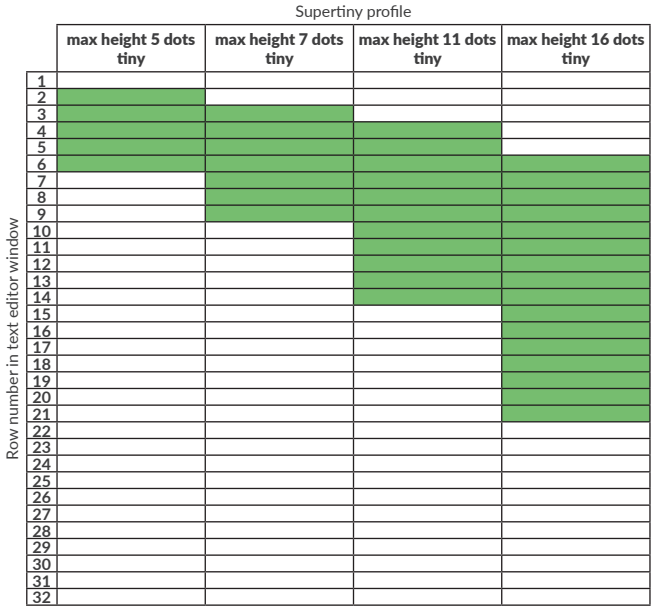
The admissible rows (in green) in the text editor window for the profiles that are dedicated to multi-line texts:



The admissible rows in the text editor window for the superfast profiles:

- for the **max height 16 dots, rapid** profile they are the same as for the **max height 16 dots** general application profile,
- for the **max height 32 dots, rapid** profile they are the same as for the **max height 32 dots** general application profile,
- for the **3 lines x 7 dots, rapid** profile they are the same as for the **3 lines x 7 dots** multi-line profile.

The admissible rows (green) in the text editor window for the supertiny profiles:



The admissible rows in the text editor window for fast profiles dedicated to bar / matrix codes:

- for the profile **max 16 dots, high-speed barcode** - the same as those for the general application profile **max height 16 dots**,
- for the profile **max 25 dots, high-speed barcode** - the same as those for the general application profile **max height 25 dots**,
- for the profile **max 32 dots, high-speed barcode** - the same as those for the general application profile **max height 32 dots**.

5.3.1. CHANGING THE TEXT PROFILE

To change the text profile:

1. Press AB 12 16 in the text editor window.
   The list of text profiles available is displayed.
   The text profile currently selected is highlighted.
   The unrecommended profiles are marked with "-".
2. Select a text profile.
3. Press ENTER to confirm.
   The text editor window is displayed.

The profile is changed.

If the text contents do not comply with the selected text profile, an attempt to save the text
- ends in an error message
and after the message has been accepted
- the cursor is placed on consecutive subtexts that do not comply with the profile.

In such a case, modify the contents / parameters of the subsequent subtexts so that they comply with the profile, or select another text profile.

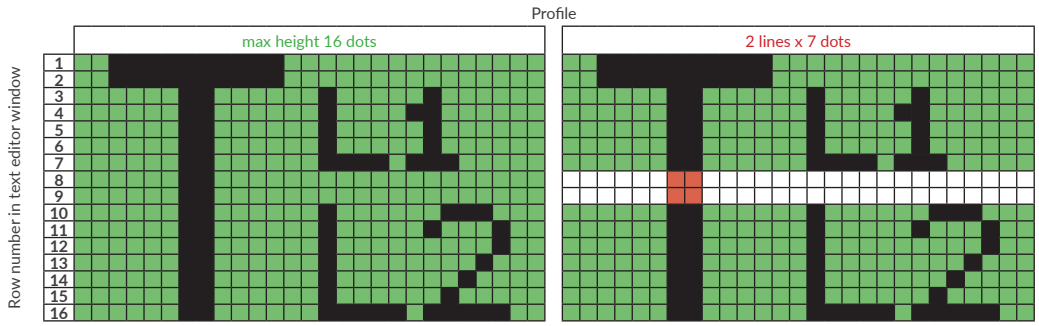
If a given subtext as a whole exceeds the range of rows that are admissible for the selected text profile, the subtext parameters cannot be edited. You can only delete it or shift it in the vertical direction so that it falls into the admissible range, and then modify its parameters.

5.3.2. EXAMPLES OF APPLICATIONS OF TEXT PROFILES

An example of the selection of an appropriate text profile for a text consisting of three subtexts:

- a **CHARACTER STRING**-type subtext containing “T“, 16 dots (rows) in height,
- a **CHARACTER STRING**-type subtext containing “L1“, 5 dots (rows) in height,
- a **CHARACTER STRING**-type subtext containing “L2“, 7 dots (rows) in height.

For more details about the types and parameters of subtexts see ***“5.4. Creating / Editing a Subtext”****.*



As the above text is a complex text, the general application profile **max height 16 dots** is the optimum selection.

The above text also complies with the ***max height 25 dots***, ***max height 32 dots***, ***max height 16 dots, rapid***, ***max height 32 dots, rapid***, ***max 16 dots, high-speed barcode***, ***max 25 dots, high-speed barcode***, ***max 32 dots, high-speed barcode*** *profiles but the application of any of them is not optimal for this text.*

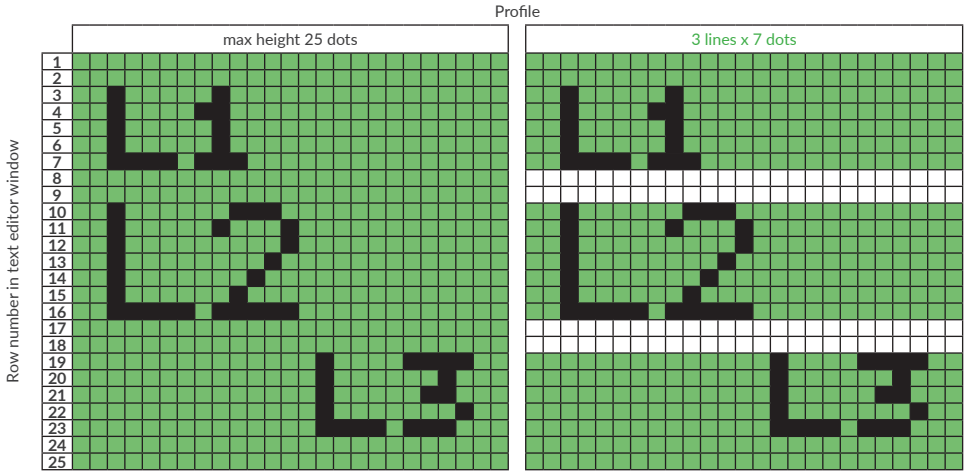
Any profile dedicated to multi-line texts (**2 lines x 7 dots** in the above example) cannot be selected as otherwise part of the text falls into the inadmissible rows (rows 8 and 9).

An example of the selection of an appropriate text profile to a multi-line text consisting of three subtexts:

- a **CHARACTER STRING**-type subtext containing “L1“, 5 dots (rows) in height,
- a **CHARACTER STRING**-type subtext containing “L2“, 7 dots (rows) in height,

– a **CHARACTER STRING**-type subtext containing “L3“, 5 dots (rows) in height.

*For more details about the types and parameters of subtexts see **“5.4. Creating / Editing a Subtext”**.*



As the above text is a multi-line text, the **3 lines x 7 dots** profile dedicated to multi-line texts is the optimum selection.

*The above text also complies with the **max height 25 dots** profile (shown in the illustration above) or with the **max height 32 dots**, **max height 32 dots, rapid**, **3 lines x 7 dots, rapid**, **max 25 dots, high-speed barcode**, **max 32 dots, high-speed barcode** profiles but the application of any of them is not optimal for this text.*

5.4. CREATING / EDITING A SUBTEXT

5.4.1. TYPES OF SUBTEXTS

Texts on the printer can consist of the following types of subtext:

– **CHARACTER STRING** (**Type** = **Text**),

– **GRAPHICS** (**Type** = **Graphic**),

– **BAR CODE** (**Type** = **Barcode**),

– **TEXT NAME**; another text from the text library, called by name (**Type** = **Ins. text**).

*The type of subtext is selected with the **Type** parameter, which is among the given subtext parameters available after pressing the PAR icon in the text editor window.*

5.4.2. SUBTEXT PARAMETERS

Every type of subtext has a group of configuration parameters assigned to it. Some of the parameters are common to several (or all) types of subtext, some apply to one type only.

The following table contains, in turn:

– subtext parameters,

– short names of the parameters, available in the text editor while subtexts are configured,

– the information on which subtext a given parameter applies to.

Parameter	Name	CHARACTER STRING	GRAPHICS	BAR CODE	TEXT NAME
Type of subtext	**Type**	■	■	■	■
Matrix based on which characters are generated	**Char. set**	■			
Appearance of text	**Typeface**	■			
Width of characters	**Chr. width**	■			
Space between characters	**Distance**	■			
Character rotation	**Rotation**	■			
Special register	**Spec. reg.**	■		■	
Spacing before	**Front dist**	■	■	■	■
Spacing after	**Back dist**	■	■	■	■
Height of subtext	**Height**		■	■	
Length of subtext	**Length**		■		
Type of bar code	**Code**			■	
Size of 2D code *	**Sym. size**			■	
Contents of bar code	**Contents**			■	
Repetition of 1D and 2D code columns *	**Elongat. X**			■	
Repetition of 1D and 2D code rows *	**Elongat. Y**			■	
Correction of bar code	**Corrector**			■	
Name of text called	**Text name**			■	■
Numerical caption of bar code	**Signature**			■	
Distance between caption and the bar code	**Sign. dist**			■	
Bar code in inverted colors	**Inversion**			■	

** The possibility of supporting 2-dimensional codes in each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the option.*

5.4.3. CREATING / EDITING A CHARACTER STRING-TYPE SUBTEXT

A **CHARACTER STRING**-type subtext is a set of alphabetic characters (including national characters), digits and additional characters which are available via alphanumerical keyboard **1d** (see ***Fig. 20 on page 57***).

*An example of how to create / print a text containing a **CHARACTER STRING**-type subtext is given in **"6.1. Editing and Printing a Simple Text"**.*

The characters are generated based on matrices (so called character generators).

The contents of a **CHARACTER STRING**-type subtext can be:

- static, *i.e.* the same on every print,
- dynamic, *i.e.* updated after every print based on **special registers**; for more details see *"5.6. Updatable Subtexts (Special Registers)"*.

To create a **CHARACTER STRING**-type subtext:

1. Press [▭] in the text editor window.
   The [←], [→], [↑], [↓] icons are highlighted; a subtext can now be created.
2. Press [←] or [→] or [↑] or [↓] to define the position of a new subtext relative to the current subtext.
   A new **CHARACTER STRING**-type subtext is created; its height is as great as possible for a selected text profile and it contains one space.
3. Press [PAR] to set subtext parameters.

Subtext parameter	Range of settings
Type	**Text**, Graphic, Barcode, Ins. text
Type of subtext.	
Char. set	**It depends on a text profile selected and on user settings.**
Character matrix (a character generator or typeface), which is the basis for generating subtext characters.	
For more details about character matrices see "5.4.3.1. Character Matrices in a CHARACTER STRING-type Subtext". *The list of character matrices displayed can be limited to those used most frequently. Press the [PAR] icon to reduce the list.*	
Typeface	**Bold**, Normal, Length *2 ... Length *15
Appearance of characters in a subtext. Characters can be printed in boldface or every column of a subtext can be printed repeatedly (2 - 15 times).	
*If the setting **Speed Level** = **FAST** is made in the printing parameters, the application of boldface reduces the maximum travel speed of the conveyor belt. For more details about printing parameters see "4.5. Managing Printing Parameters".*	
Chr. width	**Constant**, Proportional
Width of characters in a subtext. The character width can be constant or it can be proportional to the space the character takes.	
Distance	**0 - 15**
Space between characters in a subtext, given as a number of columns.	

Subtext parameter	Range of settings
Rotation	**None, Right, Upside down, Left**

Rotation of characters in a subtext.

The parameter is used for printing so called "towering characters", designed for labeling cables, among other things, *e.g.*



Not all matrices can be fully used to print towering characters. With certain matrices, wider characters (e.g. "M" or "W") can be omitted or truncated.

Spec. reg.	**None, Up counter, Down count., Time, Date, Spec. chan., Univ. count., Univ. date, Date+offs., WILL Date, Variable Field**

The parameter is used to decide whether the subtext contents are to be static or dynamic (i.e. a special register).

If dynamic contents are selected, the parameter is used for selecting a type of special register.

The creator icon in the text editor window can also be used to create a special register or to change the type of special register.

For more details about special registers see ***"5.6. Updatable Subtexts (Special Registers)"****.*

Front dist	**0 - 5000**

Spacing before a subtext, given as a number of empty columns.

Back dist	**0 - 5000**

Spacing after a subtext, given as a number of empty columns.

4. Press ENTER to save the subtext parameters.
5. Type in subtext contents via alphanumerical keyboard **1d** (see ***Fig. 20 on page 57***).

Type in national characters by pressing the ÅÄÄ icon.

The **CHARACTER STRING**-type subtext is created, its parameters are set and its contents are typed in.

5.4.3.1. CHARACTER MATRICES IN A CHARACTER STRING-TYPE SUBTEXT

Every **CHARACTER STRING**-type subtext consists of characters that are generated based on so called character matrices.

An appropriate matrix is selected with the **Char. set** parameter in the subtext parameters.

*The name of every matrix contains matrix characters height, given as a number of rows (e.g. Latin **7**x5, Spec **16**). The names of certain matrices also contain the average width of the matrix characters, given as a number of columns (e.g. Latin 16x**14**, Cyrillic 12x**7**).*

*The character matrices whose names begin with the prefix "Fast" (e.g. **Fast** Latin 16x9) are optimized so that higher travel speeds of the conveyor belt can be obtained when higher characters are printed. Such matrices must be used if:*
*- the setting **Speed Level** = **FAST** is made in the printing parameters,*
- characters of more than 12 dots in height need to be used in a subtext,
- the text has been created based on a different profile than a "fast profile dedicated to bar / matrix codes" or a "super fast" profile.
*For more details about printing parameters see **"4.5. Managing Printing Parameters"**.*

Latin character matrices

If the Latin character matrices listed in the below-given table are used, press the ĄĄÄ icon to type in national characters. The following national characters can be used:
*- **GER**: German,*
*- **POL**: Polish,*
*- **DAN**: Danish,*
*- **ESP**: Spanish,*
*- **SVE**: Swedish,*
*- **TUR**: Turkish,*
*- **POR**: Portuguese,*
*- **GREEK**: Greek,*
*- **CESKY**: Czech,*
*- **SLOVAK**: Slovak.*

*The selected language identifier is displayed on information bar **1g** (see **Fig. 22 on page 61**); e.g. **K:POL**.*

Char. set:	national characters available
Lat__5x5__ ABCDEFGHIJK12345678901abcdefghijk	none
Latin 5x5 ABCDEFGH12345678abcdef	none
Latin 7x4 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØñäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY
Latin 7x5 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØñäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK
Latin 9x5 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE, TUR, POR
Latin 9x7 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE
Latin 11x7 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE
Latin 12x6 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE, TUR, POR
Latin 12x7 ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØäöüąćęłńóśżøñ	GER, POL, DAN, ESP, SVE, TUR, POR

Char. set: national characters available

Latin 14x9 GER, POL, DAN, ESP, SVE, TUR, POR



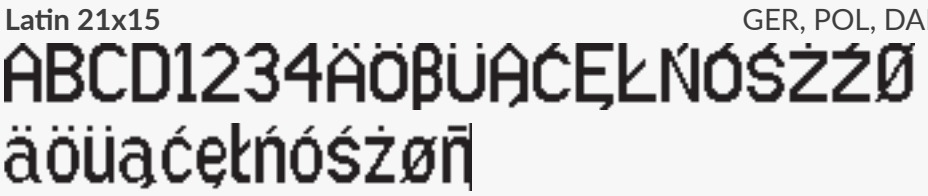
Latin 16x10 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



Latin 16x14 GER, POL, DAN, ESP, SVE



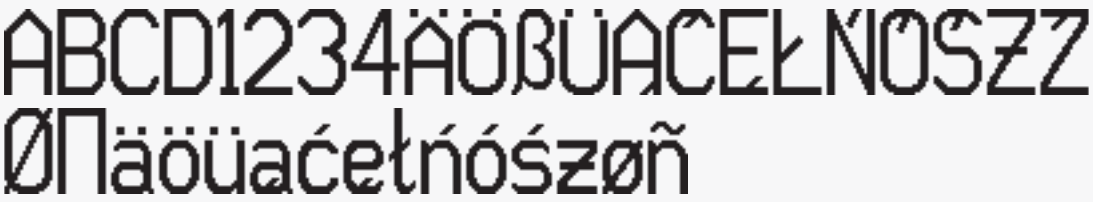
Latin 21x15 GER, POL, DAN, ESP, SVE, TUR, POR,



Latin 25x15 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



Latin 32x18 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



Fast Latin 16x9 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



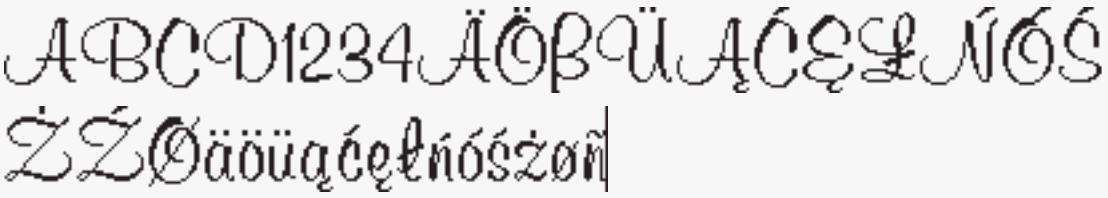
Fast Latin 25x15 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



Fast Latin 32x18 GER, POL, DAN, ESP, SVE, TUR, POR, GREEK, CESKY, SLOVAK



Script 32 GER, POL, DAN, ESP, SVE



Char. set:	national characters available
Styl 25x16	GER, POL, DAN, ESP, SVE, TUR, POR

ABCD1234ÄÖßÜĄĆĘŁŃÓŚŻŹØ
äöüąćęłńóśżøñ

Styl 32	GER, POL, DAN, ESP, SVE

ABCD1234ÄÖßÜĄĆĘŁŃÓŚ
ŻŹØäöüąćęłńóśżøñ

Cyrillic character matrices

If Cyrillic character matrices listed in the below-given table are used, press the ĄĄÄ icon to type in additional national characters. The following national characters can be used:
*- **CYRILLIC2**: Ukrainian,*
*- **KAZAKH**: Kazakh.*

*The selected language identifier is displayed on information bar **1g** (see **Fig. 22 on page 61**); e.g. **K:CYRILLIC2**.*

*The use of Cyrillic character matrices is recommended for printers equipped with the corresponding alphanumerical keyboard **1d** which contains Cyrillic characters. For more information about keyboards see **"3.3.2. Alphanumerical Keyboard"**.*

Char. set:	national characters available
Cyrillic 5x5	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234

Cyrillic 7x6	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 9x7	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 12x7	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 12x9	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 16x10	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 25x19	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234йцгшдлыфячи

Cyrillic 32x24	CYRILLIC2, KAZAKH

ШГУЦИЯЧИДЛЫФ1234
йцгшдлыфячи

Char. set:	national characters available
Fast Cyrillic 16 ЩГУЦЙЯЧИДЛЫФ1234йцгщдлыфячи	CYRILLIC2, KAZAKH
Fast Cyrillic 25 ЩГУЦЙЯЧИДЛЫФ1234йцгщдлыфячи	CYRILLIC2, KAZAKH
Fast Cyrillic 32 ЩГУЦЙЯЧИДЛЫФ1234 ЙЦГЩДЛЫФЯЧИ	CYRILLIC2, KAZAKH

Examples of Arabic character matrices

If Arabic character matrices listed in the below-given table are used, press the [AĄĂ] *icon to type in alternative characters. The identifier* ***K:ALT*** *is displayed on information bar* ***1g*** *(see* ***Fig. 22 on page 61****) in this mode.*

The use of Arabic character matrices is recommended for printers equipped with the corresponding alphanumerical keyboard ***1d*** *which contains Arabic characters. For more information about keyboards see* ***"3.4.2. Textual Menu"****.*

Char. set:
Arabic EG 7 ه ع ك ل ك ط ض ب ث ش ص ع ٣ ٢ ا ل ك ط ض ه ة ء ص ش س ث ب
Arabic EG 16 ه ع ك ل ك ط ض ب ث ش ص ع ٣ ٢ ا ل ك ط ض ه ة ء ص ش س ث ب

Arabic numeral matrices

If Arabic numeral matrices listed in the below-given table are used, the [AĄĂ] *icon is inactive.*

Char. set:
Arab.Dig.7 ١٢٣٤٥٦٧٨٩٠
Arab.Dig.9 ١٢٣٤٥٦٧٨٩٠
Arab.Dig.16 ١٢٣٤٥٦٧٨٩٠
Arab.Dig.25 ١٢٣٤٥٦٧٨٩٠

Special character matrices

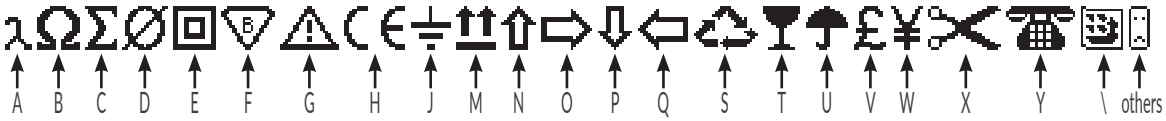
If special character matrices listed in the below-given table are used, the AĄÄ *icon is inactive.*
The following table also contains the information about buttons on alphanumerical keyboard ***1d*** *(see* ***Fig. 20 on page 57****), which are used for typing in special characters.*

Char. set:

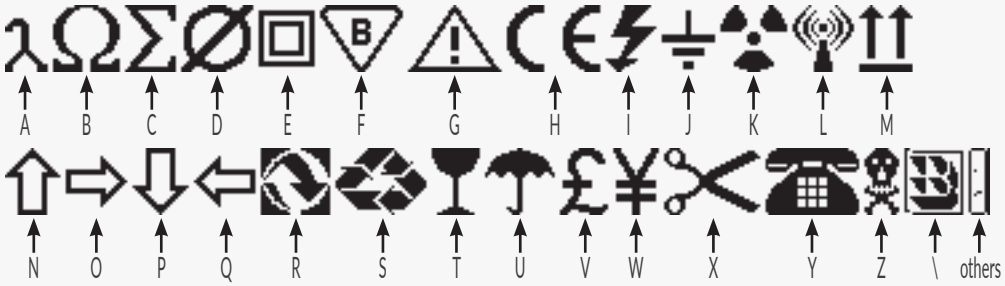
Spec 7



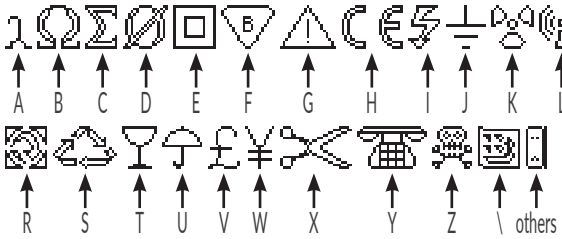
Spec 16



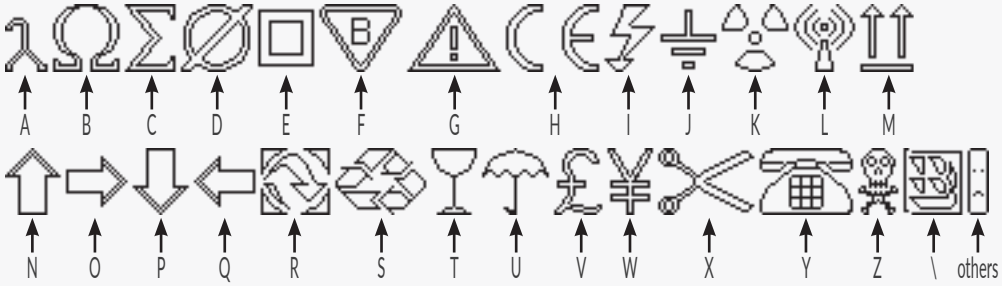
Spec 25



Fast Spec 16



Fast Spec 25



The number of character matrices available on the printer depends on printer software options. For more details about the available options see ***"5.3. Text Profiles"****.*

The number of character matrices available while the parameters of a ***CHARACTER STRING****-type subtext are set depends on a text profile selected. Additionally, the list of matrices displayed can be limited to those used most frequently. Press* PAR *on the* ***Char. set*** *parameter.*

Except for the character matrices presented in the above given tables, also other matrices can be available, such as:

- for Latin characters: **MePILF 12**, **Styl 25x16 pl**,
- for Armenian characters **Armenian 7**, **Armenian 16**,
- for Japanese characters: **Katakana &Kanji 7**, **Katakana &Kanji 9**, **Katakana &Kanji 10**, **Katakana &Kanji 12**, **Katakana & Kanji 16**, **Katakana & Kanji 25**, **Katakana & Kanji 32**,
- for Chinese characters: **China 11**, **China 16**.

*After the **China 11** or **China 16** matrix has been selected, the 拼音 icon is displayed in the text editor window. The icon is used for typing in Chinese characters in phonetic mode (so called "**PINYIN**"). For more details see **"5.4.3.3. Typing in Chinese Characters"**.*

5.4.3.2. NATIONAL CHARACTERS IN CHARACTER MATRICES

Most of Latin character matrices also contain national characters in selected languages.

To type in a national character in a required language:

1. Make sure that the character matrix in use contains national characters in the required language. If it does not, select an appropriate character matrix.

   *For more details about character matrices available on the printer see **"5.4.3.1. Character Matrices in a CHARACTER STRING-type Subtext"**.*

2. Press ĄĘÄ as many times as needed for the required language identifier (*e.g.* **K:ESP** for the Spanish language) to be displayed on information bar **1g** (see ***Fig. 22 on page 61***).
   The text editor is in national character typing in mode.
3. Press the corresponding button out of those shown in the following tables, to obtain a national character.
   The national character in the required language is typed in.
   The editor exits the national character typing in mode; the name of the character matrix in use is displayed on information bar **1g**.

The text editor stores the language in which a national character is typed in. Therefore before another national character is typed in, it is enough to press ĄĘÄ, to get the required language available.

German national characters (**K:GER**)

ÄĄÄ + the → button	A	O	U	S	$
= character	Ä	Ö	Ü	ß	€
ÄĄÄ + the → button	a	o	u	s	4
= character	ä	ö	ü	ß	€

Polish national characters (**K:POL**)

ÄĄÄ + the → button	A	C	E	L	N	O	S	X	Z	$
= character	Ą	Ć	Ę	Ł	Ń	Ó	Ś	Ź	Ż	€
ÄĄÄ + the → button	a	c	e	l	n	o	s	x	z	4
= character	ą	ć	ę	ł	ń	ó	ś	ź	ż	€

Danish national characters (**K:DAN**)

ÄĄÄ + the → button	A	E	O	$	
= character	Å	Æ	Ø	€	
ÄĄÄ + the → button	a		o	4	
= character	å		ø	€	

Spanish national characters (**K:ESP**)

ÄĄÄ + the → button				N	$
= character				Ñ	€
ÄĄÄ + the → button				n	4
= character				ñ	€

Swedish national characters (**K:SVE**)

ÄĄÄ + the → button	-	=	[	$	
= character	Å	Ä	Ö	€	
ÄĄÄ + the → button	_	+	{	4	
= character	å	ä	ö	€	

Turkish national characters (**K:TUR**)

ÄĄÄ + the → button	C	G	I	S	O	U	$
= character	Ç	Ğ	İ	Ş	Ö	Ü	€
ÄĄÄ + the → button	c	g	i	s	o	u	4
= character	ç	ğ	ı	ş	ö	ü	€

Portuguese national characters (**K:POR**)

ÄĄÄ + the → button	F	A	D	S	C	E	R	I	O	K	P	U	Y	$
= character	À	Á	Â	Ã	Ç	É	Ê	Í	Ó	Ô	Õ	Ú	Ü	€
ÄĄÄ + the → button	f	a	d	s	c	e	r	i	o	k	p	u	y	4
= character	à	á	â	ã	ç	é	ê	í	ó	ô	õ	ú	ü	€

Greek national characters (**K:GREEK**)

ÄĄÄ + the → button	C	D	F	G	J	L	Q	S	U	V
= character	Ψ (psi)	Δ (delta)	Φ (phi)	Γ (gamma)	Ξ (ksi)	Λ (lambda)	Π (pi)	Σ (sigma)	Θ (theta)	Ω (omega)

Czech national characters (**K:CESKY**)

AąÄ + the → button	A	C	D	E	Q	I	N	O	R	S	T	U	X	Y	Z	$
= character	Á	Č	Ď	É	Ě	Í	Ň	Ó	Ř	Š	Ť	Ú	Ů	Ý	Ž	€
AąÄ + the → button	a	c	d	e	q	i	n	o	r	s	t	u	x	y	z	4
= character	á	č	ď	é	ě	í	ň	ó	ř	š	ť	ú	ů	ý	ž	€

Slovak national characters (**K:SLOVAK**)

AąÄ + the → button	Q	P	A	C	D	E	W	I	N	O	S	T	U	Y	Z	L	K	R	$
= character	Ä	Ô	Á	Č	Ď	É	Ě	Í	Ň	Ó	Š	Ť	Ú	Ý	Ž	Ĺ	Ľ	Ŕ	€
AąÄ + the → button	q	p	a	c	d	e	w	i	n	o	s	t	u	y	z	l	k	r	4
= character	ä	ô	á	č	ď	é	ě	í	ň	ó	š	ť	ú	ý	ž	Í	ľ	ŕ	€

5.4.3.3. TYPING IN CHINESE CHARACTERS

To type in Chinese characters in phonetic mode:

1. In the **CHARACTER STRING**-type subtext parameters select a required character matrix; make the setting **Char. set** = **China 11** or **China 16**.
   The AąÄ icon is replaced with the 拼音 icon.
2. Press 拼音.
   Chinese character can be typed in phonetic mode (so called "**PINYIN**".
3. Type in the Latin text that corresponds to a required Chinese character (**A**) (see ***Fig. 33***) via alphanumerical keyboard **1d** (see ***Fig. 20 on page 57***). Latin characters can be deleted by pressing the ⌫ icon. The list of Chinese characters to match the Latin text is displayed.

   If the number of matching characters in Chinese is greater than 10, they can be scrolled with the ← and → icons.

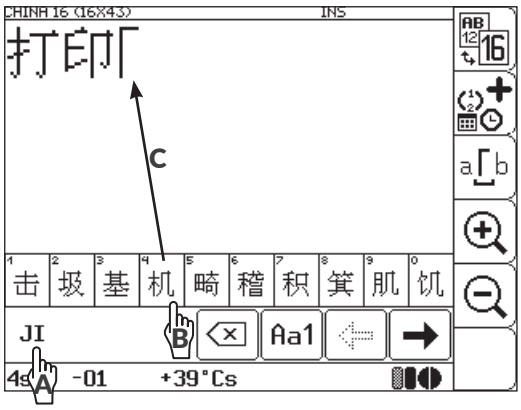


Fig. 33.

4. Select a required Chinese character (**B**).
   The selected character is inserted to the subtext contents (**C**).
5. Type in successive Chinese characters in a similar way.
6. Press Aa1 to exit phonetic mode.
   The standard text editor window is displayed.

5.4.4. CREATING / EDITING A GRAPHICS-TYPE SUBTEXT

A **GRAPHICS**-type subtext is a set of points (pixels), each of them set separately. The contents of a **GRAPHICS**-type subtext are generated with a graphics editor.

*If a **GRAPHICS**-type subtext is used in a text and **Speed Level** = **FAST**, then the set resolution in the horizontal direction is not guaranteed for that part of the text where the above-mentioned subtext is. For more details see **"4.5. Managing Printing Parameters"**.*

*An example of how to create / print a text containing a **GRAPHICS**-type subtext is given in **"6.5. Editing and Printing Graphics"**.*

To create a **GRAPHICS**-type subtext:

1. Press [ ] in the text editor window.
   The [←], [→], [↑], [↓] icons are highlighted; a subtext can now be created.
2. Press [←] or [→] or [↑] or [↓] to define the position of a new subtext relative to the current subtext.
   A new **CHARACTER STRING**-type subtext is created; its height is as great as possible for a selected text profile and it contains one space.
3. Press [PAR] to change the type of subtext to **GRAPHICS** (**Type** = **Graphic**) and set the subtext parameters.

Subtext parameter	Range of settings
Type	**Text**, **Graphic**, Barcode, Ins. text
Type of subtext.	
Height	**It depends on the text profile selected.**
Maximum height of a subtext, given as a number of rows.	
Length	**1 - 32767**
Maximum length of a subtext, given as a number of columns.	
Front dist	**0 - 5000**
Spacing before a subtext, given as a number of empty columns.	
Back dist	**0 - 5000**
Spacing after a subtext, given as a number of empty columns.	

4. Press [ENTER] to save the subtext parameters.
5. Press [ ] to start the graphics editor.

   *The description of how to use the graphics editor is given in **"5.4.4.1. Graphics Editor"**.*

6. Generate the subtext contents with the graphics editor.
7. Press [ENTER] to save the subtext contents.
   The **GRAPHICS**-type subtext is created, its parameters are set and its contents are typed in.

5.4.4.1. GRAPHICS EDITOR

Start the graphics editor by pressing the icon in the text editor window to create / edit **GRAPHICS**-type subtexts.

*The graphics editor can be used for creating / editing **GRAPHICS**-type subtexts only.*

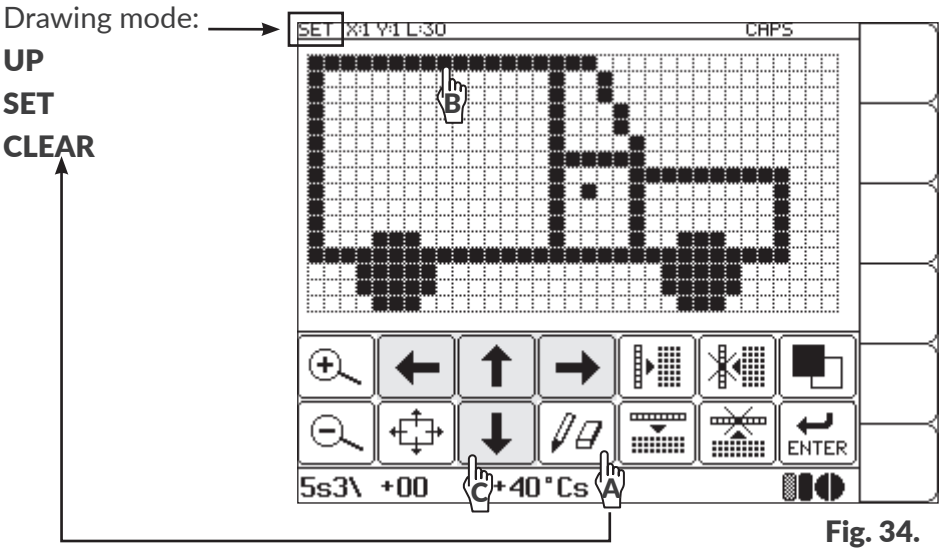


Fig. 34.

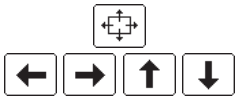
Follow the recommended method for creating graphics images:

- set drawing mode to **SET** by pressing the icon (**A**) (see *Fig. 34*),
- press directly successive points with a blunt tool, *e.g.* a stylus (**B**)

  or

  move the cursor with the icons (**C**).

The following function icons are available in the graphics editor window:

Icon / Icons	Function
	Increase / decrease the graphics preview scale in the editor window.
	Move the preview area by several points in an indicated direction. *The number of points to shift by depends on the preview scale.*
	Drawing mode: **UP** - it has two meanings: – to move the cursor with the ←, →, ↑, ↓ icons without changing the pixel states, – to negate the pixels pressed directly, **SET** - to set pixels, **CLEAR** - to clear pixels. *The identifier of the drawing mode selected is displayed on information bar **1g** (see **Fig. 34 on page 117**).*
	Move the cursor in an indicated direction considering the drawing mode selected. *If the cursor is shifted right (beyond the subtext length limit), new columns are added and the subtext length is modified.*
	Add an empty column by shifting the following columns right by one point.
	Clear the current column by shifting the following columns left by one point.
	Add an empty row by shifting the below lying rows down by one point (without changing the subtext height).
	Clear the current row by shifting the below lying rows up by one point (without changing the subtext height).
	Negate all the points that the graphics image consists of.
	Confirm modifications and return to the text editor.

The graphic editor window also offers access to additional functions that can only be started via the keyboard:

Buttons	Function
Space	Negate the point indicated by the cursor.
	Move the cursor by 8 points in an indicated direction.
Esc	Abandon the modifications and return to the text editor.

5.4.5. CREATING / EDITING A BAR CODE-TYPE SUBTEXT

A **BAR CODE**-type subtext is used for generating various types of 1-dimensional (1D) or 2-dimensional (2D) codes according to the applicable standards.

*If a **BAR CODE**-type subtext is used in a text, the setting of the **Speed Level** printing parameter must be different from **FAST**. This restriction does not apply to the texts created based on "fast profiles dedicated to bar / matrix codes or "super fast" profiles. For more details see **"4.5. Managing Printing Parameters"**.*

*The possibility of supporting 2-dimensional codes in each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the option.*

*An example of how to create / print a text containing a **BAR CODE**-type subtext is given in **"6.6. Editing and Printing a Bar Code"**.*

The contents if a **BAR CODE** subtext can be:

- static, or the same on every print,
- dynamic, or updated after every print based on **special registers**; for more details see ***"5.6. Updatable Subtexts (Special Registers)"***.

To create a **BAR CODE**-type subtext:

1. Press [▭] in the text editor window.
   The [←], [→], [↑], [↓] icons are highlighted; a subtext can now be created.
2. Press [←] or [→] or [↑] or [↓] to define the position of a new subtext relative to the current subtext.
   A new **CHARACTER STRING**-type subtext is created; its height is as great as possible for a selected text profile and it contains one space.
3. Press [PAR] to change the type of subtext to **BAR CODE** (**Type** = **Barcode**), set the subtext parameters and add subtext contents (the **Contents** parameter).

Subtext parameter	Range of settings
Type	**Text**, **Graphic**, **Barcode**, **Ins. text**
Type of subtext.	
Code	**It depends on printer software options**
Type of bar code.	

The number of bar codes available on the printer depends on printer software options. For information about available options, contact an authorized representative.

Contents	**It depends on the type of bar code.**
Contents to be included in a bar code. The contents must correspond to the selected type of bar code.	

*If the special register setting is **Spec. reg.** = **Text content**, the bar code contents are taken from another text called by name from library. In spite of that, the **Contents** parameter must contain a value; the value is needed for selecting a coding algorithm and defining the bar code length.*

Subtext parameter	Range of settings
Height	**It depends on the text profile selected.**

Maximum height of a 1-dimensional bar code, including a numerical caption, if any; it is given as a number of rows.



*For 2-dimensional codes, the **Height** parameter is replaced with the **Sym. size** parameter.*

Sym. size	It depends on the text profile selected.

Size (in height x width format) of a 2-dimensional bar code, given as numbers of rows and columns.



*For 2-dimensional codes, the **Sym. size** parameter replaces the **Height** parameter.*

Elongat. X	**1 - 16**

Number of reprints of every column of a 1 or 2-dimensional code.

Elongat. Y	**1 - 16** for **2D** codes (it depends on the text profile selected) **Not used** for **1D** codes

Number of reprints of every row of a 2-dimensional code.



*The **Elongat. X** and **Elongat. Y** parameters help improve the legibility of 2-dimensional bar codes. If **Elongat. X** = 1 and **Elongat. Y** = 1, one printing dot corresponds to one code point. If **Elongat. X** = 2 and **Elongat. Y** = 2, four printing dots correspond to one code point, which significantly improves code legibility but reduces the range of settings of the **Sym. size** parameter at the same time.*

SymbolsNo.	**1 - 16** for a **QR Code** (**2D**-type code) **Unused** for the other codes

Number of graphic symbols of a **QR Code**, which will be considered as a single logic symbol.

Corrector	**0**, **-1**, **-2**, **-3** (it depends on the setting of the **Elongat. X** parameter) for **1D** codes **Not used** for **2D** codes

Correction of the **Elongat. X** parameter setting for filled columns of a 1-dimensional code.



*If prints are made on absorbent surfaces, filled columns may melt away and thereby the proportions between filed and empty columns may become disturbed. In such a case, the use of the **Corrector** parameter may improve code legibility.*

Spec. reg.	**None**, **Up counter**, **Down count.**, **Spec. chan.**, **Text content**

The parameter is used to decide whether the subtext contents are to be static or dynamic (i.e. a special register).

If dynamic contents are selected, the parameter is used for selecting a type of special register.



The creator icon  in the text editor window can also be used to create a special register or to change the type of special register.

*For more details about special registers see **"5.6. Updatable Subtexts (Special Registers)"**.*

Subtext parameter	Range of settings
Text name	

Name of a library text that forms the contents of a bar code.

The text can be selected:

- by typing in its name via the keyboard,
- from the text library with the Alt button.

> *The **Text name** parameter is active only if **Spec. reg.** = **Text content**.*
>
> *If a text called by name forms the contents of a bar code, the text contents must comply with the selected type of bar code.*
>
> *Although the bar code contents are taken from a library text, the **Contents** parameter needs setting as well.*
>
> *For more details see **"5.6.5. Contents of a Text as the Bar Code Contents"**.*

Front dist	**0 - 5000**

The parameter has two meanings:

- a space before a subtext,
- a space before the code's successive graphic symbol, if **SymbolsNo.** > 1 (for a **QR Code** (**2D**-type code) only).

The parameter defines the number of empty columns.

Back dist	**0 - 5000**

Spacing after a subtext, given as a number of empty columns.

ErrCorrLev	**L (7%), M (15%), Q (25%), H (30%)** for a **QR Code** (**2D**-type code) **Not used** for **other** codes

Amount of correctable errors within the **QR Code** structure.

Signature	**5 pix**, **7 pix**, NO for 1D codes **Not used** for **2D** codes

Height of a numerical caption, if any, to be added below a 1-dimensional bar code.

> *A numerical caption is added only if the sum of the caption height (**Signature**), the spacing between the caption and the code (**Sign. dist**), and the minimum code height (of one row) is not greater than the maximum code height (**Height**).*

Sign. dist	**1 pix, 2 pix for 1D codes** **Not used for 2D codes**

Spacing between a 1-dimensional bar code and its numerical caption, given as a number of rows.

Subtext parameter	Range of settings
Inversion	YES, NO

Indication whether to print a bar code in inverted colors or not.

If a 1-dimensional bar code is printed in inverted colors, its filled columns are not printed at all, whereas its empty columns are printed. Filled areas are added before and after the bar code.

If a 2-dimensional code is printed in inverted colors, a negative of every point of the bar code is printed.

*A 2-dimensional bar code printed in inverted colors is legible only when the code is framed and the frame consists of **GRAPHICS**-type subtexts fully filled.*

Bar cod inversion is useful when prints are made with light ink on a dark surface, for example.

4. Press ENTER to save the subtext parameters.

   The bar code of the selected type is generated and its contents are input.

5.4.6. CREATING / EDITING A TEXT NAME-TYPE SUBTEXT

A **TEXT NAME**-type subtext is designed for calling (by name) a library text to use its contents as the contents of the subtext.

A text called by name must comply with the profile selected for the text which it is called to. Otherwise an error message is displayed.

*An example of how to create / print a text containing a **TEXT NAME**-type subtext is given in "6.7. Editing and Printing a Complex text".*

TEXT NAME-type subtexts can be used for creating a complex text consisting of the contents of many other library texts.

To create a **TEXT NAME**-type subtext:

1. Press ▭ in the text editor window.

   The ←, →, ↑, ↓ icons are highlighted; a subtext can now be created.
2. Press ← or → or ↑ or ↓ to define the position of a new subtext relative to the current subtext.

   A new **CHARACTER STRING**-type subtext is created; its height is as great as possible for a selected text profile and it contains one space.
3. Press PAR to change the type of subtext to **TEXT NAME** (**Type** = **Ins. text**), set the subtext parameters and select a library text (the **Text name** parameter) to generate the subtext contents.

Subtext parameter	Range of settings
Type	**Text**, **Graphic**, **Barcode**, **Ins. text**

Type of subtext.

Text name	

Name of a library text called to form the subtext contents.

The text can be selected:

- by typing in its name via the keyboard,
- from the text library with the Alt button.

Subtext parameter	Range of settings
Front dist	0 - 5000
Spacing before a subtext, given as a number of empty columns.	
Back dist	0 - 5000
Spacing after a subtext, given as a number of empty columns.	

4. Press [ENTER] to save the subtext parameters.
   The **TEXT NAME**-type subtext is created, its parameters are set and its contents are taken from an indicated text.

5.4.7. CHANGING THE SUBTEXT POSITION IN A TEXT

Restrictions associated with the selected text profile apply while a subtext is shifted within a text. For more details see ***"5.3. Text Profiles"****.*

If a subtext is shifted, the positions of other subtexts in the text may be affected because the subtexts are always pushed closer to the left.

To change the horizontal position of a subtext in a text:

1. Select a subtext whose position you wish to modify.
2. Press [⇹].
   The [⇤], [↑], [↓], [⇥] icons are highlighted; the subtext can now be shifted.
3. Press [⇤] or [⇥] each time you want to move a subtext by one subtext position left or right.
4. Press [⇹] again to switch off subtext shifting mode.
   The [⇤], [↑], [↓], [⇥] icons are not highlighted any longer.
   The subtext shifting mode is switched off.

The horizontal position of a subtext in a text is also impacted by the settings of the ***Front dist*** *and* ***Back dist*** *parameters of the subtext, which are available after pressing the [PAR] icon.*

To change the vertical position of a subtext in a text:

1. Select a subtext whose position you wish to modify.
2. Press [⇹].
   The [⇤], [↑], [↓], [⇥] icons are highlighted; the subtext can now be shifted.
3. Press [↑] or [↓] to shift the subtext point by point up or down.
4. Press [⇹] again to switch off subtext shifting mode.
   The [⇤], [↑], [↓], [⇥] icons are not highlighted any longer.
   The subtext shifting mode is switched off.

5.5. DELETING A SUBTEXT

To delete a subtext:

1. Select a subtext to be deleted.
2. Press the DEL icon or the Ctrl and Delete buttons.

> *The DEL icon is used to:*
> *- delete entire **GRAPHICS**, **BAR CODE** and **TEXT NAME**-type subtexts,*
> *- delete the current character in a **CHARACTER STRING**-type subtext.*

3. If the DEL icon is used (for **GRAPHICS**, **BAR CODE** and **TEXT NAME**-type subtexts), press ENTER to confirm.

   The selected subtext is deleted.

5.6. UPDATABLE SUBTEXTS (SPECIAL REGISTERS)

Special registers are a kind of **CHARACTER STRING** and **BAR CODE**-type subtexts whose contents are undated each time a print is made. After a **CHARACTER STRING** or **BAR CODE**-type subtext with static contents has been selected, the **special register creator** icon is displayed in the text editor window and can be used for creating a special register of a required type in an easy way.
After selection of the subtext whose contents are to be updated, the special register icon is replaced with the icon representing the type of the special register applied, and this icon can also be used to start the creator. The creator can also be used to:

- change the type of the special register applied,
- delete a special register from the subtext selected,
- additionally configure a given special register - only when the special registers have the additional configuration option.

> *Up to **6** special registers can be used in one text.*

The following table contains, in turn:

- the special registers that are available on the printer,
- the icon representing the type of the special register applied,
- the short name of the register, used in the special register creator,
- the information on the type of subtext where a given register can be used.

Special register	Icon	Spec. reg.	CHARACTER STRING	BAR CODE
Incremental counter of objects		**Up counter**	■	■
Decremental counter of objects		**Down count.**	■	■
Current time		**Time**	■	

Special register	Icon	Spec. reg.	CHARACTER STRING	BAR CODE
Current date		Date	■	
Data from an external device		Spec. chan.	■	■
Universal counter of objects		Univ.count.	■	
Universal time and date Work shift identifier		Univ. date	■	
Date set forward by a certain number of days (a so called expiration date)		Date+offs.	■	
Date shifted by a certain number of hours and minutes (a so called shifted date)		WILL Date	■	
Subtext whose contents are added when printing starts		Variable Field	■	
Contents of any text, added to a bar code		Text content		■

5.6.1. OBJECT COUNTER

5.6.1.1. INCREMENTAL COUNTER

The **Up counter** special register is used for printing a successive number on every object to be labeled. The numbering changes in ascending order, and every subsequent number is greater than the previous one by the setting of the **Counter delta** parameter, which is settable in the printing parameters.

For more details about printing parameters see ***"4.5. Managing Printing Parameters"***.

An example of how to create / print a text containing the ***Up counter*** *special register is given in* ***"6.4. Editing and Printing Automatic Numbering"***.

The incremental counter can be:

- a **CHARACTER STRING**-type subtext; printed explicitly,
- a **BAR CODE**-type subtext; printed in bar code format.

To create the **Up counter** special register:

1. In the text editor window, select a **CHARACTER STRING** or **BAR CODE**-type subtext with static contents; the subtext should be created in advance.

   The description of the parameters of a ***CHARACTER STRING****-type subtext is given in* ***"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"***.

   The description of the parameters of a ***BAR CODE****-type subtext is given in* ***"5.4.5. Creating / Editing a BAR CODE-type Subtext"***.

2. Press to start the special register creator.
3. Select the **Up counter** item.

4. Press ENTER to confirm the selection of the type of special register and to return to the text editor window.

   *If the **Up counter** special register is used in a **CHARACTER STRING**-type subtext, additional configuration is needed to select counting mode:*
   *- **Counter type**: **DEC** - for decimal counting,*
   *- **Counter type**: **HEX** - for hexadecimal counting.*

   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Up counter** special register.
5. For the **BAR CODE**-type subtext set the PAR ▶ **Contents** parameter

   or

   for the **CHARACTER STRING**-type subtext add subtext contents.

   The entered value serves two roles:
   - sets the initial setting of the counter,
   - sets the range of counting, e.g. if the string 056 is set, three-digit numbers are counted.

   *Example: if the string 056 is set, counting proceeds as follow (**Counter delta** = **1**):*
   056, 057, 058, ... , 999, 000, 001, 002, ... , 999, 000, 001, 002, etc.

   The **Up counter** special register is created.
6. Press ENTER to save the text and to exit the text editor.
7. Press ▶ ▶ **Counter delta** to set a counter increment.

5.6.1.2. DECREMENTAL COUNTER

The **Down count.** special register is used for printing a successive number on every object to be labeled. The numbering changes in descending order, and every successive number is smaller than the previous one by the setting of the **Counter delta** parameter, which is settable in the printing parameters.

*For more details about printing parameters see **"4.5. Managing Printing Parameters"**.*

The decremental counter can be:

- a **CHARACTER STRING**-type subtext; printed explicitly,
- a **BAR CODE**-type subtext; printed in bar code format.

To create the **Down count.** special register:

1. In the text editor window, select a **CHARACTER STRING** or **BAR CODE**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

   *The description of the parameters of a **BAR CODE**-type subtext is given in **"5.4.5. Creating / Editing a BAR CODE-type Subtext"**.*
2. Press to start the special register creator.
3. Select the **Down count.** item.

4. Press ENTER to confirm the selection of the type of special register and to return to the text editor window.
   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Down count.** special register.
5. For the **BAR CODE**-type subtext set the PAR ▶ **Contents** parameter
   or
   for the **CHARACTER STRING**-type subtext add subtext contents.

   The entered value serves two roles:
   - sets the initial setting of the counter,
   - sets the range of counting, e.g. if the string 056 is set, three-digit numbers are counted.

   *Example: if the string 056 is set, counting proceeds as follow (**Counter delta** = 1):*
   056, 055, 054, ... , 000, 999, 998, 997, ... , 000, 999, 998, 997, etc.

   The **Down count.** special register is created.
6. Press ENTER to save the text and to exit the text editor.
7. Press ▶ ▶ **Counter delta** to set a counter decrement.

5.6.1.3. UNIVERSAL COUNTER

The **Univ.count.** special register is designed for setting automatic numbering according to the user's needs and for printing the relevant numbers on every object to be labeled.

The **Univ.count.** special register consists of two segments:

- main counter (counter number 1),
- auxiliary counter (counter number 2).

The main counter is always printed, whereas the auxiliary counter does not need to be printed.

*The auxiliary counter counts even if it is not printed. Its current state can be viewed in the register parameters (the **Cnt.value 2** parameter).*

Principle of operation of the universal counter in basic configuration (**Mode**: **Standard**)

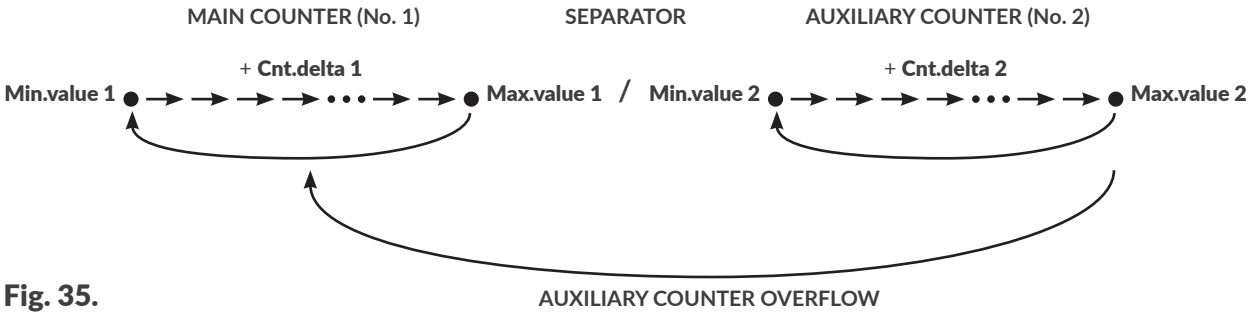


Fig. 35.

- the auxiliary counter counts all the time,
- the main counter changes its state when the auxiliary counter overflows,

– if **Min.value 2** = **Max.value 2**, the universal counter operates as if counting were performed by the main counter only.

The information about main or auxiliary counter overflow can be optionally linked with an output signal to control an external device. Contact an authorized representative for the information on the options available.

Contents requirement of the **Univ.count.** special register:

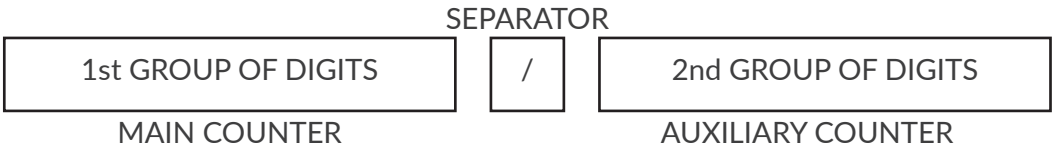


Fig. 36.

– they may consist of one group of digits (when the main counter is printed only) or two groups of digits (when two segments are printed),
– when two groups of digits are printed, they must be distinguished with one separator,

A separator is any character that is different from digits and space.

*The separator is always visible while the register contents are edited but it can be omitted during printing (the **Separ.supp.** parameter).*

– the number of digits in one group determines the counter length. For example, 3 digits mean that the counter can count up to 999,
– the groups of digits at which the counters are set, are the initial settings from which counting is performed when printing starts for the first time.

To create the **Univ.count.** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents, the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Univ.count.** item.
4. Press ENTER to confirm the selection of the type of special register.

5. Configure the special register with the following parameters:

Register parameter	Range of settings
Mode	**Standard**, **Special**

Operation modes of the universal counter:

Standard - standard mode; the updated main counter and the auxiliary counter (if printable) are printed on every object,

Special - extended mode; with it you additionally can:

- print unmodified contents on a defined number of objects; *e.g.* to match common numbering of objects placed in a collective package,
- skip certain items in counting performed by the main counter; *e.g.* to number objects stored on pallets.

0 suppress	**YES**, **NO**

Conceal meaningless zeros in both of the universal counter segments.

Separ.supp.	**YES**, **NO**

Conceal the separator during printing.

Print beg.1	**CONTINUE**, **BEG.VALUE**, **MIN/MAX**

Set the main (number 1) counter after resuming printing:

CONTINUE - counting continues,
BEG.VALUE - counting starts from the initial setting given in the **Beg.value 1** parameter (if **Mode** = **Standard**) or from the setting given in the subtext contents (if **Mode** = **Special**),
MIN/MAX - counting starts from the setting given in the **Min.value 1** parameter (for an incremental counter) or in the **Max.value 1** parameter (for a decremental counter).

Beg.value 1	**0 - 4,294,967,295**

*The **Beg.value 1** parameter is active only if **Mode** = **Standard**.*

Initial setting of the main counter after resuming printing, if **Print beg.1** = **BEG.VALUE.**

Min.value 1	**0 - 4,294,967,295**

The parameter has two meanings:

- The minimum setting of the main counter, from which counting starts each time an overflow occurs, if the main counter is an incremental counter.
- The initial setting of the main counter after resuming printing, if **Print beg.1** = **MIN/MAX** (for an incremental counter).

Register parameter	Range of settings
Max.value 1	**0 - 4,294,967,295**

The parameter has two meanings:

- The maximum setting of the main counter, from which counting starts each time an overflow occurs, if the main counter is a decremental counter.
- The initial setting of the main counter after resuming printing, if **Print beg.1** = **MIN/MAX** (for a decremental counter).

*If **Max.value 1** > **Min.value 1**, the main counter is an incremental counter.*

*If **Max.value 1** < **Min.value 1**, the main counter is a decremental counter.*

Cnt.delta 1	**0 - 255**

Main counter decrement.

A value that is added to the incremental main counter or that is deducted from the decremental main counter each time a given action occurs.

Print beg.2	**CONTINUE, BEG.VALUE, MIN/MAX**

Set the auxiliary (number 2) counter value after resuming printing:
CONTINUE - counting continues,
BEG.VALUE - counting starts from the initial setting given in the **Beg.value 2** parameter (if **Mode** = **Standard**) or from the setting given in the subtext contents (if **Mode** = **Special**),
MIN/MAX - counting starts from the setting given in the **Min.value 2** parameter (for an incremental counter) or in the **Max.value 2** parameter (for a decremental counter).

Beg.value 2	**0 - 65,535**

*The **Beg.value 2** parameter is active only if **Mode** = **Standard**.*

Initial setting of the auxiliary counter after resuming printing, if **Print beg.2** = **BEG.VALUE.**

Min.value 2	**0 - 65,535**

The parameter has two meanings:

- The minimum setting of the auxiliary counter, from which counting starts each time an overflow occurs, if the auxiliary counter is an incremental counter.
- The initial setting of the auxiliary counter after resuming printing, if **Print beg.2** = **MIN/MAX** (for an incremental counter).

Register parameter	Range of settings
Max.value 2	0 - 65,535

The parameter has two meanings:

- The maximum setting of the auxiliary counter, from which counting starts each time an overflow occurs, if the auxiliary counter is a decremental counter.
- The initial setting of the auxiliary counter after resuming printing, if **Print beg.2** = MIN/MAX (for a decremental counter).



*If **Max.value 2** > **Min.value 2**, the auxiliary counter is an incremental counter.*

*If **Max.value 2** > **Min.value 2**, the auxiliary counter is a decremental counter.*

Cnt.delta 2	0 - 255

Auxiliary counter decrement.

A value that is added to the incremental auxiliary counter or that is deducted from the decremental auxiliary counter each time a given action occurs.

Cnt.value 2	**Information parameter**

Current value of the auxiliary counter.



*If the auxiliary counter is printed, the value of the **Cnt.value 2** parameter equals the auxiliary counter value currently printed.*

*If the auxiliary counter is not printed, the only possibility to learn the current value of that counter is to view the **Cnt.value 2** parameter.*

Spc.Md.max	0 - 65,535



*The **Spc.Md.max** parameter is active only if **Mode** = **Special**.*

Number of objects to be labeled with unmodified contents, *i.e.* the number of objects for which the values of the main and auxiliary counters are not changed.

Counter of objects that are labeled with unmodified label contents, *e.g.* when the objects are are stored in a collective package.

Spc.Md.cnt	0 - 65,535



*The **Spc.Md.cnt** parameter is active only if **Mode** = **Special**.*

Initial setting of the counter of unmodified-label objects, *i.e.* the value of the **Spc.Md.max** parameter, after resuming printing.

Pal.countr	0 - 65,535



*The **Pal.countr** parameter is active only if **Mode** = **Special**.*

Number of objects / packages on a pallet.

The value that the main counter skips, *e.g.* while objects on pallets are labeled; counting mode of the main counter depends on whether the counter is an incremental or decremental counter.

6. Press ENTER to continue and return to the text editor window.
   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Univ.count.** special register.
7. Add subtext contents.

   The rules for adding subtext contents are described at the beginning of this section.

   The **Univ.count.** special register is created.
8. Press ENTER to save the text and to exit the text editor.

Example 1

Assumptions:

- objects labeled are stored on pallets, 20 objects on every pallet, in order **A**▶**B** (see ***Fig. 37***),
- the pallets are stored on racks, 4 pallets on every rack (one pallet on top of the other),
- object numbering on every rack is the same (*i.e.* when all objects to be stored on one rack are labeled, counting starts from the beginning),
- the following are to be printed on every object:
  - pallet number (1 to 4),
  - object number on the pallet (1 to 20),
  - in pallet number / object number format (including meaningless zeros and a separator),
- if printing is paused and then resumed, the successive number is printed.

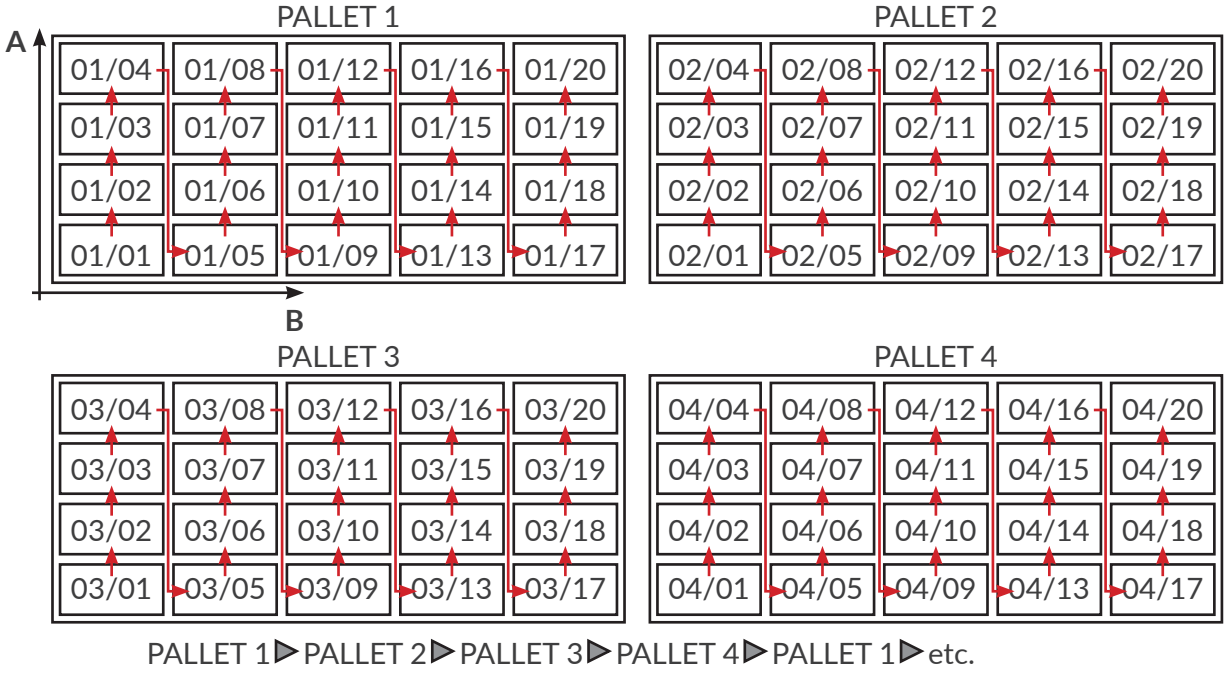


Fig. 37.

Universal counter settings:

- general settings:
  - **Mode** = **Standard**
  - **0 suppress** = **NO**
  - **Separ.supp.** = **NO**
- main counter (pallet counter) settings
  - **Print beg.1** = **CONTINUE**
  - **Beg.value 1** = **1**
  - **Min.value 1** = **1**
  - **Max.value 1** = 4
- **Cnt.delta 1** = **1**
- auxiliary counter (palleted object counter) settings:
  - **Print beg.2** = **CONTINUE**
  - **Beg.value 2** = **1**
  - **Min.value 2** = **1**
  - **Max.value 2** = 20
  - **Cnt.delta 2** = **1**
  - **Cnt.value 2** = **1**
- subtext contents:
  - **01/01**

Consecutive prints on objects (in pallet number / object number format):

PALLET 1

01/01, **01/02**, ..., **01/20**

▶PALLET 2

02/01, **02/02**, ..., **02/20**

▶PALLET 3

03/01, **03/02**, ..., **03/20**

▶PALLET 4

04/01, **04/02**, ..., **04/20**

COUNTER RESET, ▶PALLET 1

01/01, **01/02**, ..., etc.

Example 2

Assumptions:

- objects to be labeled are placed in type **I** collective packages, 4 objects in one package; the numbering of all four objects in a package is the same,
- type I packages are placed in a type **II** collective package, 64 packages in one collective package; in 4 x 4 x 4 arrays, in descending order (64 ▶ 63 ▶ ... ▶ 1),
- type II packages are stored on pallets, 20 packages on every pallet, in order **A** ▶ **B** (see ***Fig. 38***),
- the pallets are stored on racks, 3 pallets on every rack (one pallet on top of the other),
- object numbering on every rack is the same (*i.e.* when all objects to be stored on one rack are labeled, counting starts from the beginning),
- the following are to be printed on every object:
  - type **II** package number on the rack (1 to 60, considering the layout of type **II** packages on pallets),
  - type **I** package number in a type **II** package (1 to 64),
  - in type **II** package / pallet number / type **I** package number format (including meaningless zeros and a separator),
- if printing is paused and then resumed, the subsequent number is printed.

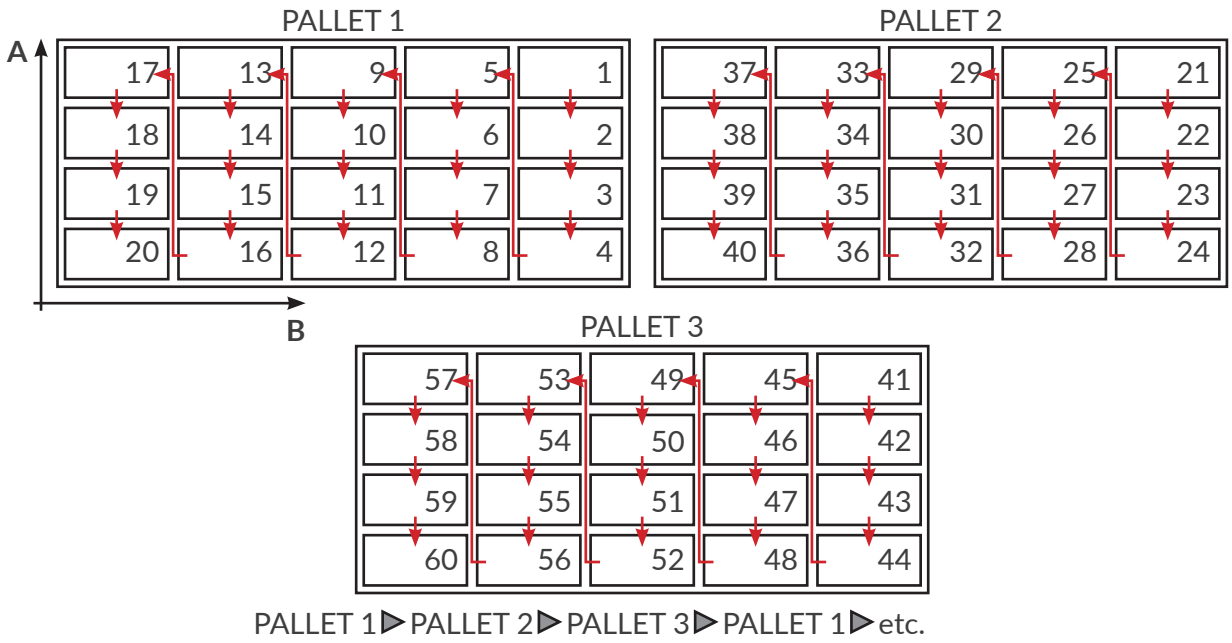


Fig. 38.

Universal counter settings:

- general settings:
  - **Mode** = **Special**
  - **0 suppress** = **NO**
  - **Separ.supp.** = **NO**
- settings for the main counter (the type **II** package counter with 20-package skips):
  - **Print beg.1** = **CONTINUE**
  - **Min.value 1** = **1**
  - **Max.value 1** = **60**
  - **Cnt.delta 1** = **1**
  - **Pal.countr** = **20**
- settings for the auxiliary counter (the descending counter of type **I** packages in type **II** packages):
  - **Print beg.2** = **CONTINUE**
  - **Min.value 2** = **64**
  - **Max.value 2** = **1**
  - **Cnt.delta 2** = **1**
  - **Cnt.value 2** = **1**
- settings for reprints on all 4 objects in type **I** packages:
  - **Spc.Md.max** = **4**
  - **Spc.Md.cnt** = **1**
- subtext contents:
  - **20/64**

Successive prints on objects (in type **II** package number / type **I** package number format, 4 the same prints on objects in a type **I** package):

PALLET 1

20/64, **20/64**, **20/64**, **20/64**, **20/63**, ..., **20/02**, **20/01**, **20/01**, **20/01**, **20/01**, **19/64**, **19/64**.

19/64, **19/64**, **19/63**, ..., **01/02**, **01/01**, **01/01**, **01/01**, **01/01**

▶ PALLET 2 (type **II** package numbering skipped forward by 20)

40/64, **40/64**, **40/64**, **40/64**, **40/63**, ..., **40/02**, **40/01**, **40/01**, **40/01**, **40/01**, **39/64**, **39/64**.

39/64, **39/64**, **39/63**, ..., **21/02**, **21/01**, **21/01**, **21/01**, **21/01**

▶ PALLET 3 (type **II** package numbering skipped forward by 20)

60/64, **60/64**, **60/64**, **60/64**, **60/63**, ..., **60/02**, **60/01**, **60/01**, **60/01**, **60/01**, **59/64**, **59/64**.

59/64, **59/64**, **59/63**, ..., **41/02**, **41/01**, **41/01**, **41/01**, **41/01**

COUNTER RESET, ▶ PALLET 1

20/64, **20/64**, **20/64**, **20/64**, **20/63**, ..., etc.

5.6.2. DATE AND TIME

5.6.2.1. CURRENT TIME

The **Time** special register is designed for printing the current time (hour, minute, second) in 24-hour system on every object to be labeled.

*If the time needs to be printed in a more extended format, use the **Univ. date** special register. For more details see **"5.6.2.3. Universal Date and Time, Work Shift Identifier"**.*

*An example of how to create / print a text containing the **Time** special register is given in **"6.2. Editing and Printing the Current Date and Time"**.*

To create the **Time** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Time** item.
4. Press ENTER to confirm the selection of the type of special register and to return to the text editor window.

   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Time** special register.
5. Add subtext contents.

   The subtext contents must meet the following requirements:
   - a maximum of 8 meaningful characters in the following format: 2 undateable characters, 1 separator, 2 updatable characters, 1 separator, 2 updatable characters,
   - updating always starts from the left-hand side (in order: hour, minute, second), from the first character different from space to the end of the subtext or to a space,
   - if the subtext contents are shorter than 8 characters, the time is truncated from the right.

   Examples:
   00:00:00 or 12/34/56 - hour (separator) minute (separator) second,
   00:00 or 12/34 - hour(separator) minute,
   00 or 12 - hour.

   The **Time** special register is created.
6. Press ENTER to save the text and to exit the text editor.

5.6.2.2. CURRENT DATE

The **Date** special register is designed for printing the current date (day, month, two last digits of the year) in leap-year system on every object to be labeled.

*If the date needs to be printed in a more extended format, e.g. if all four digits of the year need printing, use the **Univ. date** special register. For more details see **"5.6.2.3. Universal Date and Time, Work Shift Identifier"**.*

*An example of how to create / print a text containing the **Date** special register is given in **"6.2. Editing and Printing the Current Date and Time"**.*

To create the **Date** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Date** item.
4. Press ENTER to confirm the selection of the type of special register and to return to the text editor window.

   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Date** special register.
5. Add subtext contents.

   The subtext contents must meet the following requirements:
   - a maximum of 8 meaningful characters in the following format: 2 undateable characters, 1 separator, 2 updatable characters, 1 separator, 2 updatable characters,
   - updating always starts from the right-hand side (in order: year, month, day), from the first character different from space to the end of the subtext or to a space,
   - if the subtext contents are shorter than 8 characters, the date is truncated from the left.

   Examples:
   00.00.00 or 12/06/24 - day (separator) month (separator) year,
   00.00 or 06/24 - month (separator) year,
   00 or 24 - year.

   The **Date** special register is created.
6. Press ENTER to save the text and to exit the text editor.

5.6.2.3. UNIVERSAL DATE AND TIME, WORK SHIFT IDENTIFIER

The **Univ. date** special register is designed for printing any elements of the current time and date and also a work shift identifier on every object to be labeled.

The time and date elements and the work shift identifier are coded in the subtext contents with the following characters:

The column "" in the below table confirms whether the coding of a given element can be changed by pressing or not.*

*For more details on how to change the coding of register elements and the work shift definition see **"8.1.7. Configuring Special Registers"**.*

Character	Date / time / work shift identifier elements	*
D	Tens of the 2-digit day number. *You can change the format of tens of the 2-digit day number by pressing **ADDITIONAL SETTINGS**. For more details see **"8.1.7. Configuring Special Registers"**.*	YES
A	Units of the 2-digit day number.	YES

Character	Date / time / work shift identifier elements	*
M	Tens of the 2-digit month number. *You can change the format of tens of the 2-digit month number by pressing ▶ ▶ ▶ ▶ **ADDITIONAL SETTINGS**. For more details see "8.1.7. Configuring Special Registers".*	YES
O	Units of the 2-digit month number.	YES
Y	Tens of the 2-digit year number.	YES
E	Units of the 2-digit year number.	YES
B	Tens of the 2-digit hour number.	YES
C	Units of the 2-digit hour number.	YES
I	Tens of the 2-digit minute number.	YES
J	Units of the 2-digit minute number.	YES
T	Tens of the 2-digit second number (option). *Contact an authorized representative for the information on the options available.*	YES
U	Units of the 2-digit second number (option). *Contact an authorized representative for the information on the options available.*	YES
W	Tens of the 2-digit number of a week in the year.	NO
K	Units of the 2-digit number of a week in the year.	NO
a	Number of a week in the year coded with one character.	YES
d	Number of a day of the month coded with one character.	YES
y	Tens of the 2-digit number of a year according to the number of a week in the year. *Example:* *If the 53rd week in the year ends on 5th January the following year, then the days from 1 to 5 belong to the previous year.*	NO
e	Units of the 2-digit number of a year according to the number of a week in the year. *Example:* *If the 53rd week in the year ends on 5th January the following year, then the days from 1 to 5 belong to the previous year.*	NO
m	Number of a month coded with one character.	YES
P	Hundreds of the 3-digit number of a day in the year.	NO
Q	Tens of the 3-digit number of a day in the year.	NO
S	Units of the 3-digit number of a day in the year.	NO
N	Number of a day of the week.	YES

Character	Date / time / work shift identifier elements	*
F	First letter of the 3-letter abbr. for the name of a month. *The abbreviation for the name of a month corresponds to the language in which the user interface is displayed.*	NO
G	Second letter of the 3-letter abbr. for the name of a month. *The abbreviation for the name of a month corresponds to the language in which the user interface is displayed.*	NO
H	Third letter of the 3-letter abbr. for the name of a month. *The abbreviation for the name of a month corresponds to the language in which the user interface is displayed.*	NO
b	Hour coded with one character.	YES
Z	Work shift identifier.	YES
j	First Roman digit of the 3-digit work shift identifier.	YES
k	Second Roman digit of the 3-digit work shift identifier.	YES
l	Third Roman digit of the 3-digit work shift identifier.	YES

*The character contained in the above table are also used in the **Date+offs.** and **WILL Date** special registers.*

To create the **Univ. date** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Univ. date** item.
4. Press ENTER to confirm the selection of the type of special register.
   In the window displayed, you can type in the subtext contents.

The special register creator offers two modes for adding coding characters to the contents of the **Univ. date**-type special register; the modes are started with the icons:



- add single coding characters from list,
- add one out of several predefined date and time templates.

Date templates

mm/dd/yy	mm/dd/yyyy	dd/MMM/yy	dd/MMM/yyyy

dd - day of the current date,
mm - month of the current date,
yy - year of the current date (the last two digits),
yyyy - year of the current date,
MMM - 3-letter abbreviation of the name of the current month.

Time templates

hh:mm	hh:mm:ss

hh - current hour,
mm - current minute,
ss - current second.

The templates enable the users to create a date and time in the most popular formats and no single coding characters need to be known.

The format of a template depends on the language of the printer interface.

*The templates containing seconds (**ss**) are available only when the relevant software option is active. Contact an authorized representative for the information on the options available.*

5. Press ENTER to confirm the introduction of a coding character or a template to subtext contents and to return to the text editor window.
   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Univ. date** special register.

If date and time templates are used, the subtext contents are built according to the selected template by the application of the relevant coding characters given in the table above.

Press to re-start the creator in order to add other coding characters or templates to the contents of the selected subtext.

   The **Univ. date** special register is created.
6. Press ENTER to save the text and to exit the text editor.

While a text containing the **Univ. date** special register is being printed:

- the characters given in the table above are replaced with the corresponding elements of the current time, **current date** or with the work shift identifier,
- the other characters remain unchanged.

5.6.2.4. EXPIRATION DATE

The **Date+offs.** special register is designed for printing an expiration date (the current date set forward by a certain number of days, weeks, months or years) on every object to be labeled.
A unit of date shift is defined with the printing parameter **Offset interv**, whereas a shift value is defined with the printing parameter **Offset**.

For more details about printing parameters see ***"4.5. Managing Printing Parameters"***.

An example of how to create / print a text containing the ***Date+offs.*** *special register is given in* ***"6.3. Editing and Printing Expiration Dates"***.

To create the **Date+offs.** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   The description of the parameters of a ***CHARACTER STRING****-type subtext is given in* ***"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"***.

2. Press to start the special register creator.
3. Select the **Date+offs.** item.
4. Press ENTER to confirm the selection of the type of special register.
   In the window displayed, you can type in subtext contents.
   The special register creator offers two modes for adding coding characters to the contents of the **Date+offs.**-type special register; the modes are started with the icons:

   - add single coding characters from list,
   - add one out of several predefined date and time templates.

Date templates

mm/dd/yy	mm/dd/yyyy	dd/MMM/yy	dd/MMM/yyyy

dd - day of expiration date,
mm - month of expiration date,
yy - year of expiration date (the last two digits),
yyyy - year of expiration date,
MMM - 3-letter abbreviation of the name of the month of expiration date.

Time templates

hh:mm	hh:mm:ss

hh - current hour,
mm - current minute,
ss - current second.

The templates enable the users to create a date and time in the most popular formats and no single coding characters need to be known.

The format of a template depends on the language of the printer interface.

*The templates containing seconds (**ss**) are available only when the relevant software option is active. Contact an authorized representative for the information on the options available.*

5. Press ENTER to confirm the introduction of a coding character or a template to subtext contents and to return to the text editor window.
   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Date+offs.** special register.

   If date and time templates are used, the subtext contents are built according to the selected template by the application of the relevant coding characters given in the table in ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"****.*

   Press to re-start the creator in order to add other coding characters or templates to the contents of the selected subtext.

   The **Date+offs.** special register is created.
6. Press ENTER to save the text and to exit the text editor.
7. Press ▶ ▶ **Offset interv** to set a unit of current-date shift.
8. Press ▶ ▶ **Offset** to set a value of current-date shift.

While a text containing the **Date+offs.** special register is being printed:

- the characters given in the table in ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"*** are replaced with the corresponding elements of the current time, **expiration date** or with the work shift identifier,
- the other characters remain unchanged.

5.6.2.5. SHIFTED DATE

The **WILL Date** special register is designed for printing a date that is shifted by a defined number of hours and minutes on every object to be labeled. The shift time is defined in the **RollTimeHH:MM** parameter, which can be set in the printing parameters. Owing to the application of the shifted date feature, the date change can occur not at midnight but at any other time, for example when a work shift starts.

For more details about printing parameters see ***"4.5. Managing Printing Parameters"****.*

To create the **WILL Date** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   The description of the parameters of a ***CHARACTER STRING****-type subtext is given in* ***"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"****.*
2. Press to start the special register creator.
3. Select the **WILL Date** item.
4. Press ENTER to confirm the selection of the type of special register.
   In the window displayed, you can type in the subtext contents.

The special register creator offers two modes for adding coding characters to the contents of the **WILL Date**-type special register; the modes are started with the icons:

- add single coding characters from list,
- add one out of several predefined date and time templates.

Date templates

mm/dd/yy	mm/dd/yyyy	dd/MMM/yy	dd/MMM/yyyy

dd - day of shifted date,
mm - month of shifted date,
yy - year of shifted date (the last two digits),
yyyy - year of shifted date,
MMM - 3-letter abbreviation of the name of the month of shifted date.

Time templates

hh:mm	hh:mm:ss

hh - current hour,
mm - current minute,
ss - current second.

The templates enable the users to create a date and time in the most popular formats and no single coding characters need to be known.

The format of a template depends on the language of the printer interface.

*The templates containing seconds (**ss**) are available only when the relevant software option is active. Contact an authorized representative for the information on the options available.*

5. Press ENTER to confirm the introduction of a coding character or a template to subtext contents and to return to the text editor window.
   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **WILL Date** special register.

   *If date and time templates are used, the subtext contents are built according to the selected template by the application of the relevant coding characters given in the table in **"5.6.2.3. Universal Date and Time, Work Shift Identifier"**.*

   Press to re-start the creator in order to add other coding characters or templates to the contents of the selected subtext.

   The **WILL Date** special register is created.
6. Press ENTER to save the text and to exit the text editor.
7. Press ▶ ▶ **RollTimeHH:MM** to set the number of hours and minutes to shift by.

While a text containing the **WILL Date** special register is being printed:

- the characters given in the table in ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"*** are replaced with the corresponding elements of the current time, **shifted date** or with the work shift identifier,
- the other characters remain unchanged.

5.6.3. DATA FROM AN EXTERNAL DEVICE

The **Spec. chan.** special register is designed for printing data received from an external device (a computer, a bar code reader, scales, etc.) on every object to labeled. Data can be received via the RS-232 interface or via the Ethernet interface within a local managed network.

For security reasons, all external interfaces (RS-232, Ethernet) through which data can be sent to the printer are inactive in the factory default state. To enable data reception, the relevant communication interface must be activated, which can be done only by SERVICEMAN.

*For the information on how to connect external devices see **"2.2.1.2. Accessories Connector Plate"**.*

The data received from an external device can take the form of:

- a **CHARACTER STRING**-type subtext; printed explicitly,
- a **BAR CODE**-type subtext; printed in bar code format.

To create the **Spec. chan.** special register:

1. In the text editor window, select a **CHARACTER STRING** or **BAR CODE**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

   *The description of the parameters of a **BAR CODE**-type subtext is given in **"5.4.5. Creating / Editing a BAR CODE-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Spec. chan.** item.
4. Press ENTER to confirm the selection of the type of special register and to return to the text editor window.

   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Spec. chan.** special register.
5. For the **BAR CODE**-type subtext set the PAR ▶ **Contents** parameter

   or

   for the **CHARACTER STRING**-type subtext add subtext contents.

   The entered number of characters defines the "register length" and should equal the number of characters received from an external device. The contents of a subtext can consist of any characters and is the default contents of a subtext if the printer receives no external data.

   If the "register length" is smaller than number of the data received, the rightmost characters of the data are truncated to match the register length.

   *If the "register length" is greater than number of data received, the missing rightmost characters are supplemented with spaces to match the register length. Optionally, the data can be supplemented with spaces from the left-hand side. For more information on the available options see **"5.3. Text Profiles"**.*

   The **Spec. chan.** special register is created.
6. Press ENTER to save the text and to exit the text editor.

Additional information on a greater number of special registers in a text

If there are more **Spec. chan.** special registers in a text, the data transferred to the printer must be in the following format:

- data portions to be allocated to successive special registers should be separated from each other with the **<TAB>** (09 hex) character,
- transmission must end with the **<ENTER>** (0D hex) character.

Data portions transferred from an external device are inserted to successive subtexts from left to right, and if the subtexts are arranged one below the other, the data is inserted to the topmost subtext first. When it receives the end-of transmission character **<ENTER>**, the printer sends the confirmation character **<ACK>** (06 hex).

*If the amount of data portions received is greater than the number of the **Spec. chan.** special registers in a text, then the excessive data is ignored up to the **<ENTER>** character.*

*If the amount of data portions received is smaller than the number of the **Spec. chan.** special registers in a text, then the unoccupied registers are filled with spaces.*

5.6.4. CONTENTS ADDED WHEN PRINTING STARTS

The **Variable Field** special register is designed for printing contents added when printing starts on every object to be labeled.

The contents can be added once or (if contents are checked for correctness) twice. The checking of contents for correctness can be enabled by pressing

 **Rpt. Var.Fld.**.

*For more details see **"8.1.7. Configuring Special Registers"**.*

To create the **Variable Field** special register:

1. In the text editor window, select a **CHARACTER STRING**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **CHARACTER STRING**-type subtext is given in **"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"**.*

2. Press  to start the special register creator.
3. Select the **Variable Field** item.
4. Press  to confirm the selection of the type of special register.

5. Configure the special register with the following parameters:

   Field name - name of the register,

   Default content - default contents.

   The register name does not need to be unique, i.e. more registers can have the same name in a text.

   Naming a register and setting default contents in the register is not obligatory.

   The length of the register name must not exceed 16 characters.

   The sum of the register name length and the default contents length must not exceed 27 characters.

6. Press ENTER to continue and to return to the text editor window.

   The special register creator icon is replaced with the icon, which means that the selected subtext contains the **Variable Field** special register.

7. Add subtext contents.

   The entered number of characters defines the "register length" and it should equal the number of characters to be inserted when printing starts. The contents of a subtext can consist of any characters.

   If the "register length" is smaller than number of the inserted characters, the rightmost characters are truncated to match the register length.

   If the "register length" is greater than number of the inserted characters, the missing rightmost characters are supplemented with zeros to match the register length.

   The **Variable Field** special register is created.

8. Press ENTER to save the text and to exit the text editor.

5.6.4.1. PRINTING A TEXT CONTAINING A **VARIABLE FIELD** SPECIAL REGISTER

While starting printing a text containing a **Variable Field** special register(s), the following are given in the window displayed:

- special register number, assigned automatically,
- special register name given while the register is created,
- default contents added while the register is created; the contents can remain unchanged or new contents of not more than 63 characters in length can be added.

If checking for correctness is enabled, the contents should be inserted twice.

*If a text contains several **Variable Field** special registers, then - when printing starts - the window for inserting register contents is displayed; the contents are inserted from the left to the right-hand side of the text; if subtexts are placed one below the other, the contents are inserted to the topmost register first.*

Printing starts when the contents of all **Variable Field** special registers included in the text are inserted.

5.6.5. CONTENTS OF A TEXT AS THE BAR CODE CONTENTS

The **Text content** special register is designed for labeling every object with a bar code whose contents come from a library text.

To create the **Text content** special register:

1. In the text editor window, select a **BAR CODE**-type subtext with static contents; the subtext should be created in advance.

   *The description of the parameters of a **BAR CODE**-type subtext is given in **"5.4.5. Creating / Editing a BAR CODE-type Subtext"**.*

2. Press to start the special register creator.
3. Select the **Text content** item.
4. Press ENTER to confirm the selection of the type of special register.
5. Enter the name of a library text that is to be the contents of the bar code.

   A text can be fetched for the text library by pressing the Alt button.

   The contents of a text fetched to form the bar code contents must meet the requirements of a selected type of bar code.

   The contents of subtexts of the following types are fetched to form the bar code contents:
   *- **CHARACTER STRING** (also the one that uses special registers),*
   *- **TEXT NAME**.*
   *The contents of **GRAPHICS** and **BAR CODE**-type subtexts are omitted.*

6. Press ENTER to continue and to return to the text editor window.
   The special register creator icon is replaced with the ABC icon, which means that the selected subtext contains the **Text content** special register.
7. Set the PAR ▶ **Contents** parameter.

   *The entered number of characters defines the "register length". During printing, the characters contained in the **Contents** parameter are replaced with the characters fetched from another text and form the bar code contents. The contents of a subtext can consist of any characters, but must meet the requirements of the selected type of bar code.*

   If the "register length" is smaller than number of the characters fetched from another text, the rightmost characters are truncated to match the register length.

   If the "register length" is greater than number of the characters fetched from another text, the rightmost characters are supplemented with spaces to match the register length.

   The **Text content** special register is created.
8. Press ENTER to save the text and to exit the text editor.

5.7. TEXT HANDLING

*Every text can have an up to 8-character name consisting of capital letters, digits and certain other characters excluding a space, a dot, and such characters as , / \ ; : * ? " < > | [ ] { } = +.*

5.7.1. CREATING A NEW TEXT

With this function you can create a new text and save it in the text library.

To create a new text:

1. Press  .
2. Type in a text name.

   If the name of an existing file is typed in, the file opens to edit.

3. Press ENTER to confirm.

   The list of text profiles is displayed.

4. Select a text profile that is optimal for a given text.

   In case of doubt about which profile is optimal, use the default profile which is highlighted in the profile list.

   Using a profile marked with "-" in the profile list is not recommended because the text created based on such a profile cannot be printed on the given printer.

   For more details about text profiles see ***"5.3. Text Profiles"****.*

5. Press ENTER to confirm.

   The text editor window is displayed, where you can prepare required text contents.

   For details on how to use the text editor see ***"5.1. Text Editor"****.*

6. Draw up required text contents.
7. Press ENTER to finish drawing up the text.

   The created text is saved in the text library.

The description of how to create various types of texts is given in ***"6. Examples of Text Editing and Printing"****.*

5.7.2. EDITING A TEXT

With this function you can edit any text stored in the text library.

To edit an existing text:

1. Press  .
   The text library is displayed.

   *The texts with the read-only attribute attached to them are marked with "+" and can be edited only by **SERVICEMAN** ⚙.*

2. Select a text from the library.
   A fragment of the selected text is displayed in the lower part of the window.
3. Press ENTER to confirm that you want to select the text.
   The text editor window is displayed, where you can edit text contents and parameters.

   *For details on how to use the text editor see **"5.1. Text Editor"**.*

4. Modify text contents or parameters.
5. Press ENTER to finish editing the text.
   The modified text is saved in the text library.

5.7.3. EDITING THE ACTIVE / PRINTED TEXT

With this function you can edit the active text and also the text that is currently printed without the need for pausing printing.

The name of the active / printed text is displayed on information bar **1g** (see ***Fig. 22 on page 61***).

To edit the active / printed text:

1. Press  .

   *If the active / printed text has the read-only attribute attached to it, it can be edited only by **SERVICEMAN** ⚙.*

   The text editor window is displayed, where you can edit text contents and parameters.

   *For details on how to use the text editor see **"5.1. Text Editor"**.*

2. Modify text contents or parameters.
3. Press ENTER to finish editing the text.
   The active / printed text is modified.
   If the currently printed text is modified, printing continuous but with modified text contents.

5.7.4. COPYING AND EDITING A TEXT

With this function you can copy any text (also that with the read-only attribute attached to it) in the text library under another name and then edit it.

To copy and edit an existing text:

1. Press  .
   The text library is displayed.
2. Select a text to be copied from the library.
   A fragment of the selected text is displayed in the lower part of the window.
3. Press ENTER to confirm that you want to select the text.
4. Type in a name of the new text.
   The text editor window is displayed, where you can edit text contents and parameters.

   *For details on how to use the text editor see **"5.1. Text Editor"**.*

5. Modify text contents or parameters.
6. Press ENTER to finish editing the text.
   The copied and modified text is saved to the text library with the new name.

5.7.5. DELETING A TEXT

With this function you can irretrievably delete a text selected from the text library.

*If a greater number of library texts need deleting, it is recommended that the **USB** memory functions be used. The functions can be used for highlighting and deleting a greater number of texts. For more details see **"8.7. Importing / Exporting Files"**.*

*If you need to delete all texts in the library, press  . For more details see **"5.8. Text Library Handling"**.*

To delete a text:

1. Press  .
   The text library is displayed.

   *The texts with the read-only attribute attached to them are marked with "+" and can be deleted only by **SERVICEMAN** ⚙.*

2. Select a text from the library.
   A fragment of the selected text is displayed in the lower part of the window.
3. Press ENTER to confirm that you want to select the text.
   The request to confirm that you want to delete the text is displayed.
4. Press ENTER to confirm that you want to delete the text.
   The selected text is irretrievably deleted in the library.

5.8. TEXT LIBRARY HANDLING

5.8.1. PREVIEWING THE TEXT LIBRARY

Press ▶ ▶ to view the contents of the text library.

The contents of the text library are displayed in format:

TEXT NAME : LINKED PARAMETER BLOCK NAME.

> *The "+" sign before a text name indicates that the given text has the read-only attribute attached to it.*

Additional operations you can perform in the text library review window:

- unlink a parameter block from a text,

> *For more details see* ***"4.5.5. Unlinking a Parameter Block from a Text"****.*

- link parameter block with a text / replace the linked parameter block,

> *For more details see* ***"4.5.4. Linking a Text with a Parameter Block"****.*

/ / - change the read-only attribute for a selected text / texts.

5.8.1.1. CHANGING THE READ-ONLY ATTRIBUTE

> *The read-only attribute can be changed only by* ***SERVICEMAN*** *.*

With this function you can secure a selected text / texts against accidental modification / deletion by **OPERATOR** or **ADVANCED OPERATOR** .

- attach / remove the read-only attribute to / from a selected text,
- attach the read-only attribute to all texts in the library,
- remove the read-only attribute from all texts in the library.

5.8.2. DELETING THE TEXT LIBRARY

With this function you can delete irretrievably the text library, *i.e.* all texts stored in the library.

To delete all texts in the library:

1. Press ▶ ▶ .
   The request to confirm that you want to delete the text library is displayed.
2. Press ENTER to confirm that you want to delete the text library.
   The texts in the library are deleted irretrievably.

5.9. PARAMETER BLOCK HANDLING

5.9.1. CREATING A NEW PARAMETER BLOCK

With this function you can create a new parameter block and save it in the text library.

To create a new parameter block:

1. Press  .
2. Type in a parameter block name.

   If the name of an existing parameter block is typed in, the block opens to edit.

3. Press ENTER to confirm.

   In the window displayed you can modify printing parameters.

   *For details about printing parameters see **"4.5. Managing Printing Parameters"**.*

4. Make desired settings for printing parameters.

   The admissible settings of certain printing parameters depend on the contents of a text they apply to. While created, the parameter block is not linked with any text and therefore the settings are unverifiable.

5. Press ENTER to finish generating the parameter block.

   The generated parameter block is saved to the parameter block library.

*A parameter block can also be created based on global printing parameters. For more details see **"4.5. Managing Printing Parameters"**.*

5.9.2. EDITING A PARAMETER BLOCK

With this function you can edit any parameter block stored in the parameter block library.

To edit an existing parameter block:

1. Press  .

   The parameter block library is displayed.

   *The parameter blocks with the "read only" attribute attached to them are marked with "+" and can be edited only by **SERVICEMAN**.*

2. Select a parameter block from the library.
3. Press ENTER to confirm that you want to select the parameter block.

   In the window displayed you can modify printing parameters.

   *For details about printing parameters see **"4.5. Managing Printing Parameters"**.*

4. Modify desired settings for printing parameters.

   The admissible settings of certain printing parameters depend on the contents of a text they apply to. While created, the parameter block is not linked with any text and therefore the settings are unverifiable.

5. Press ENTER to finish editing the parameter block.

   The modified parameter block is saved to the parameter block library.

5.9.3. COPYING AND EDITING A PARAMETER BLOCK

With this function you can copy any parameter block (also that with the “read only“ attribute attached to it) in the parameter block library under another name and then edit it.

To edit an existing parameter block:

1. Press  .

   The parameter block library is displayed.

2. Select a parameter block to be copied from the library.
3. Press ENTER to confirm that you want to select the parameter block.
4. Type in a name of the new parameter block.

   In the window displayed you can modify printing parameters.

   *For details about printing parameters see **“4.5. Managing Printing Parameters”**.*

5. Modify desired settings for printing parameters.

   The admissible settings of certain printing parameters depend on the contents of a text they apply to. While created, the parameter block is not linked with any text and therefore the settings are unverifiable.

6. Press ENTER to finish editing the parameter block.

   The copied and modified parameter block is saved to the parameter block library with the new name.

5.9.4. DELETING A PARAMETER BLOCK

With this function you can delete irretrievably a parameter block selected from the parameter block library.

*If a greater number of parameter blocks need deleting in the library, it is recommended that the **USB** memory functions be used. The functions can be used for highlighting and deleting a greater number of parameter blocks. For more details see **“8.7. Importing / Exporting Files”**.*

*If you need to delete all parameter blocks in the library, press  . For more details see **“5.10. Handling the Parameter Block Library”**.*

To delete a parameter block:

1. Press  .
   The parameter block library is displayed.

   *The parameter blocks with the "read-only" attribute attached to them are marked with "+" and can be deleted only by **SERVICEMAN** .*

2. Select a parameter block from the library.
3. Press ENTER to confirm that you want to select the parameter block.
   The request to confirm that you want to delete the parameter block is displayed.
4. Press ENTER to confirm that you want to delete the parameter block.
   The selected parameter block is irretrievably deleted in the library.

5.9.5. LINKING A PARAMETER BLOCK WITH A TEXT

With this function you can link a parameter block with a text.

Press  to link a parameter block with a text.

*For more details see **"4.5.4. Linking a Text with a Parameter Block"**.*

5.10. HANDLING THE PARAMETER BLOCK LIBRARY

5.10.1. PREVIEWING THE PARAMETER BLOCK LIBRARY

Press  to view the contents of the parameter block library.

The contents of the parameter block library are displayed.

The "+" sign before a parameter block name indicates that the given parameter block has the read-only attribute attached to it.

In the parameter-block library preview window you can also change the read-only attribute for a selected parameter block / blocks.

5.10.1.1. CHANGING THE READ-ONLY ATTRIBUTE

*The read-only attribute can be changed only by **SERVICEMAN** .*

With this function you can secure a selected parameter block / blocks against accidental modification / deletion by **OPERATOR** or **ADVANCED OPERATOR** .

- attach / remove the read-only attribute to / from a selected parameter block,
- attach the read-only attribute to all parameter blocks in the library,
- remove the read-only attribute from all parameter blocks in the library.

5.10.2. DELETING THE PARAMETER BLOCK LIBRARY

With this function you can delete irretrievably the parameter block library, *i.e.* all blocks stored in the library.

To delete all parameter blocks in the library:

1. Press .
   The request to confirm that you want to delete the parameter block library is displayed.
2. Press ENTER to confirm that you want to delete the parameter block library.
   Parameter blocks are irretrievably deleted in the library.

*The parameter blocks with the "read-only" attribute attached to them can be deleted only by **SERVICEMAN** .*

CHAPTER 6
EXAMPLES OF TEXT EDITING AND PRINTING

6. EXAMPLES OF TEXT EDITING AND PRINTING

This section shows the examples of how to

- prepare a text for printing,

  The function is not available to ***OPERATOR***

- set printing parameters,

  The function is not available to ***OPERATOR***

- select a text for printing and start printing.

Assumptions:

- the user has read and understood this manual and safety rules,
- the printer is installed in its workplace and configured properly,
- the printer is started up and ready to print; the **READY** LED illuminates yellow.

In every example printing is timed by the internal generator (▶ ▶ **Generator** = **GEN**). If such a case prints can be made on an object (or a sheet of paper) moved manually in front of the printhead; but then set resolution and a required height are difficult to achieve. If no object moves in front of the printhead, the ink jet is directed to one spot and a vertical bar is printed.

To obtain prints of set resolution and a required height:

- place an object (or a sheet of paper) on the conveyor belt at an appropriate distance from the printhead face,

  The recommended distances are given in each of the examples.

- measure the conveyor-belt travel speed,

  For more details see ***"7.2. Determining Parameters of a Factory Conveyor"****.*

- use the measured conveyor-belt travel speed as the setting for the ▶ ▶ **Cnv spd m/min** printing parameter.

If the traveling speed of the conveyor belt is unstable, it is recommended to time printing with the encoder.

In such a case:

- make the following setting for all examples: ▶ ▶ **Generator** = **SHAFT,**
- measure / calculate encode constant,

  For more details see "7.2. Determining Parameters of a Factory Conveyor".

- use the measured / calculated constant as the setting for the **Enc const p/m** printing parameter.

6.1. EDITING AND PRINTING A SIMPLE TEXT

The static text **MY FIRST TEXT** is to be printed on objects.

To prepare the text:

MY FIRST TEXT

1. Press ▶
2. Type in the text name: **TEXT**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 7 dots**.
5. Press ENTER to continue.
6. Type in the text contents via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*):
   MY⌂FIRST⌂TEXT

   The character ⌂ means a space.

7. Press ENTER to save the text to the library.
   The text called **TEXT** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 20 on page 57*).
2. Select the text called **TEXT** from the library.
3. Press ENTER to confirm that you want to select the text.
   The name of the selected text is displayed on information bar **1g**.
   The selected text is the active text.

To set printing parameters:

1. Press  .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	**TEXT**	
Linked param.		Not used in the example.
Height (pix)	**7**	Information parameter.
Matrix height	**LARGE**	
Print height	**100%**	
Speed Level	**SLOW**	To obtain best quality prints.
Generator	**GEN**	Timing by internal generator.
Resol. dot/cm	**15**	Recommended resolution for printing algorithm **No. 4**; see tables in ***"8.6.2. Summary of the Printing Speeds"***.
Cnv spd m/min	**10**	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	**STANDARD**	
Space	**2.0mm**	
Space2	**---**	Parameter connected with a program option.
Text rpt.	**1**	To make one print after the photodetector triggers.
Rpt.dist.	**---**	Not used in the example.
Conv. direct.	**LEFT**	
Offset interv	**Day**	Not used in the example.
Offset	**0**	Not used in the example.
RollTimeHH:MM	**00:00**	Not used in the example.
Counter delta	**1**	Not used in the example.
Row repetit.	**1**	
Print every n	**---**	Parameter connected with a program option.
Mode	**NORMAL**	

3. Press ENTER to confirm that you want to modify printing parameters.
   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.



The recommended distance from the object to the printhead for printing algorithm ***No. 4*** *is* ***5 mm****. For more details see tables in* ***"8.6.2. Summary of the Printing Speeds"****.*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, one print is made on the object to be labeled.

MY FIRST TEXT

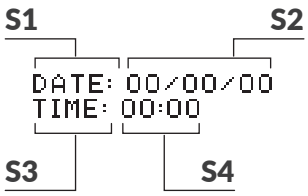
To stop printing, press the PRINT ON/OFF button again.

6.2. EDITING AND PRINTING THE CURRENT DATE AND TIME

The text to be printed contains two lines:

- current date,
- current time.

To prepare the text:



1. Press
2. Type in the text name: **DATETIME**.
3. Press ENTER to confirm.
4. Select the text profile: **2 lines x 7 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for subtext **S1**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 7x5**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**None**	Static contents subtext.
Front dist	**0**	
Back dist	**0**	

7. Press ENTER to continue.
8. Type in the contents of subtext **S1** via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*).
   DATE:⌂

> *The character ⌂ means a space.*

9. Press and then → to create subtext **S2** on the right of the previous one.
10. Press to start the special register creator.
11. Select the **Date** item.

12. Press [ENTER] to confirm the selection of the type of special register.
    The special register creator icon is replaced with the icon, which means that the subtext **S2** contains the **Date** special register.
13. Press [PAR] to set parameters for subtext **S2**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 7x5**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**Date**	Dynamic contents subtext; the current date. The parameter is set by the special register creator.
Front dist	**0**	
Back dist	**0**	

14. Press [ENTER] to continue.
15. Type in the contents of subtext **S2** via alphanumerical keyboard **1d**:
    00/00/00

> *The digits are replaced with current date elements (day / month / year) during printing.*

16. Press [ ] and then [↓] to create subtext **S3** below the previous one.
17. Press [PAR] to set parameters for subtext **S3**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 7x5**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**None**	Static contents subtext.
Front dist	**0**	
Back dist	**0**	

18. Press [ENTER] to continue.
19. Type in the contents of subtext **S3** via alphanumerical keyboard **1d**:
    TIME:⌂

> *The character ⌂ means a space.*

20. Press [ ] and then [→] to create subtext **S4** on the right of the previous one.
21. Press to start the special register creator.
22. Select the **Time** item.

23. Press ENTER to confirm the selection of the type of special register.
    The special register creator icon is replaced with the icon, which means that the subtext **S4** contains the **Time** special register.
24. Press PAR to set parameters for subtext **S4**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 7x5**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**Time**	Dynamic contents subtext; the current time. The parameter is set by the special register creator.
Front dist	**0**	
Back dist	**0**	

25. Press ENTER to continue.
26. Type in the contents of subtext **S4** via alphanumerical keyboard **1d**:
    00:00

    The digits are replaced with current time elements (hour:minute) during printing.

27. Press ENTER to save the text to the library.
    The text called **DATETIME** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **DATETIME** from the library.
3. Press ENTER to confirm that you want to select the text.
   The name of the selected text is displayed on information bar **1g**.
   The selected text is the active text.

To set printing parameters:

1. Press .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	**DATETIME**	
Linked param.		Not used in the example.
Height (pix)	**16**	Information parameter.
Matrix height	**LARGE**	
Print height	**100%**	
Speed Level	**SLOW**	To obtain best quality prints.

Parameter	Setting	Comments
Generator	GEN	Timing by internal generator.
Resol. dot/cm	20	Recommended resolution for printing algorithm **No. 10**; see tables in *"8.6.2. Summary of the Printing Speeds"*.
Cnv spd m/min	10	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	STANDARD	
Space	2.0mm	
Space2	---	Parameter connected with a program option.
Text rpt.	1	To make one print after the photodetector triggers.
Rpt.dist.	---	Not used in the example.
Conv. direct.	LEFT	
Offset interv	Day	Not used in the example.
Offset	0	Not used in the example.
RollTimeHH:MM	00:00	Not used in the example.
Counter delta	1	Not used in the example.
Row repetit.	1	
Print every n	---	Parameter connected with a program option.
Mode	NORMAL	

3. Press ENTER to confirm that you want to modify printing parameters.
   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

> *The recommended distance from the object to the printhead for printing algorithm **No. 10** is **15 mm**. For more details see tables in "8.6.2. Summary of the Printing Speeds".*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, one print is made on the object.
   An example of a print made on 17.06.2023 at 13:10:

```
DATE: 17/06/23
TIME: 13:10
```

To stop printing, press the PRINT ON/OFF button again.

6.3. EDITING AND PRINTING EXPIRATION DATES

An expiration date, or the current date set forward by a defined number of days, weeks, months or years, can be printed on objects. In this example the offset is **90 days**.

To prepare the text:



1. Press
2. Type in the text name: **EXPDATE**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 16 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for subtext **S1**.

Parameter	Setting	Comments
Type	Text	
Char. set	Latin 7x5	
Typeface	Bold	
Chr. width	Proportional	
Distance	2	
Rotation	None	
Spec. reg.	None	Static contents subtext.
Front dist	0	
Back dist	0	

7. Press ENTER to continue.
8. Type in the contents of subtext **S1** via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*).

   Best⌂before:⌂

   The character ⌂ means a space.

9. Press and then several times ↓ to move the subtext to the lowest position (for the selected text profile).
10. Press and then → to create subtext **S2** on the right of the previous one.
11. Press to start the special register creator.
12. Select the **Date+offs.** item.

13. Press ENTER to confirm the selection of the type of special register.
    In the window displayed, you can type in subtext contents.

> *The special register creator offers two modes of adding coding characters to the contents of the **Date+offs.** special register:*
> *- adding single coding characters from list,*
> *- selecting one out of several predefined date and time templates.*
>
> *The creator starts running in the mode that was recently selected by the user.*

14. If the creator is in the mode of adding coding characters from list, press BC:IJ / ABCDE to enter the date and time template mode.
15. Select the **mm/dd/yy** template.

> *The format of the date and time templates available depends on the user interface language selected for the printer. The template shown in the example is available when the user runs the interface in English. If another language version of the user interface is used, any other date template can be applied to this example.*

16. Press ENTER to confirm the selection of the template and to return to the text editor window.
    While the system returns to the text editor window, the subtext contents are built in accordance with the selected template by the application of the relevant coding characters. For the template selected in step ***15*** above, the contents of the subtext **S2** look like as follow:
    MO/DA/YE

> *The coding characters are replaced with expiration date elements during printing.*
>
> *Although built based on a template, the contents of the subtext **S2** can be freely modified to meet the user's requirements.*

17. Press PAR to set parameters for subtext **S2**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 16x10**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**Date+offs.**	Dynamic contents subtext; an expiration date. The parameter is set by the special register creator.
Front dist	**0**	
Back dist	**0**	

18. Press ENTER to continue.
19. Press ENTER to save the text to the library.
    The text called **EXPDATE** is saved to the text library.

To select the created text for printing:

1. Press  or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **EXPDATE** from the library.
3. Press ENTER to confirm that you want to select the text.

   The name of the selected text is displayed on information bar **1g**.

   The selected text is the active text.

To set the printing parameters:

1. Press  .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	**EXPDATE**	
Linked param.		Not used in the example.
Height (pix)	**16**	Information parameter.
Matrix height	**LARGE**	
Print height	**100%**	
Speed Level	**SLOW**	To obtain best quality prints.
Generator	**GEN**	Timing by internal generator.
Resol. dot/cm	**20**	Recommended resolution for printing algorithm **No. 10**; see tables in *"8.6.2. Summary of the Printing Speeds"*.
Cnv spd m/min	**10**	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	**STANDARD**	
Space	**2.0mm**	
Space2	**---**	Parameter connected with a program option.
Text rpt.	**1**	To make one print after the photodetector triggers.
Rpt.dist.	**---**	Not used in the example.
Conv. direct.	**LEFT**	
Offset interv	**Day**	**Unit of current-date shift.**
Offset	**90**	**Value of current-date shift.**
RollTimeHH:MM	**00:00**	Not used in the example.
Counter delta	**1**	Not used in the example.
Row repetit.	**1**	
Print every n	**---**	Parameter connected with a program option.
Mode	**NORMAL**	

3. Press ENTER to confirm that you want to modify printing parameters.

   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.

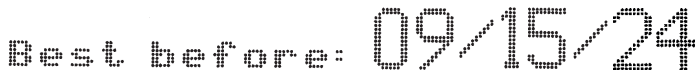
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

   *The recommended distance from the object to the printhead for printing algorithm **No. 10** is **15 mm**. For more details see the tables in **"8.6.2. Summary of the Printing Speeds"**.*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, one print is made on the object.
   An example of a print made on 17.06.2024 including the 90-day offset:

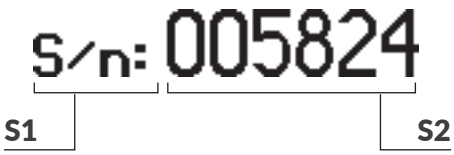


To stop printing, press the PRINT ON/OFF button again.

6.4. EDITING AND PRINTING AUTOMATIC NUMBERING

Successive numbers (increased by 1) are to be printed on objects. They are 6-digit numbers, and decimal counting should start from number **005824**.

To prepare the text:



1. Press
2. Type in the text name: **NUMBER**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 25 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for subtext **S1**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 16x10**	
Typeface	**Bold**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**None**	Static contents subtext.
Front dist	**0**	
Back dist	**0**	

7. Press ENTER to continue.
8. Type in the contents of subtext **S1** via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*).

   S/n:⌂

   The character ⌂ means a space.

9. Press and then several times ↓ to move subtext **S1** to the lowest position (for the selected text profile).
10. Press and then → to create subtext **S2** on the right of the previous one.
11. Press to start the special register creator.
12. Select the **Up counter** item.
13. Press ENTER to confirm the selection of the type of special register.

14. Set the **Counter type** parameter at **DEC**.
15. Press ENTER to continue and to return to the text editor window.
    The special register creator icon is replaced with the icon, which means that the subtext **S2** contains the **Up counter** special register.
16. Press PAR to set parameters for subtext **S2**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 25x15**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**Up counter**	Dynamic contents subtext; an incremental counter. The parameter is set by the special register creator.
Front dist	**0**	
Back dist	**0**	

17. Press ENTER to continue.
18. Type in the contents of subtext **S2** via alphanumerical keyboard **1d**:
    005824

    The value typed in is the initial setting of the counter.

19. Press ENTER to save the text to the library.
    The text called **NUMBER** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **NUMBER** from the library.
3. Press ENTER to confirm that you want to select the text.
   The name of the selected text is displayed on information bar **1g**.
   The selected text is the active text.

To set printing parameters:

1. Press  .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	**NUMBER**	
Linked param.		Not used in the example.
Height (pix)	**25**	Information parameter.
Matrix height	**LARGE**	
Print height	**100%**	
Speed Level	**SLOW**	To obtain best quality prints.
Generator	**GEN**	Timing by internal generator.
Resol. dot/cm	**20**	Recommended resolution for printing algorithm **No. 13**; see tables in ***"8.6.2. Summary of the Printing Speeds"***.
Cnv spd m/min	**10**	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	**STANDARD**	
Space	**2.0mm**	
Space2	**---**	Parameter connected with a program option.
Text rpt.	**1**	To make one print after the photodetector triggers.
Rpt.dist.	**---**	Not used in the example.
Conv. direct.	**LEFT**	
Offset interv	**Day**	Not used in the example.
Offset	**0**	Not used in the example.
RollTimeHH:MM	**00:00**	Not used in the example.
Counter delta	**1**	**Counter increment.**
Row repetit.	**1**	
Print every n	**---**	Parameter connected with a program option.
Mode	**NORMAL**	

3. Press ENTER to confirm that you want to modify printing parameters.

   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.

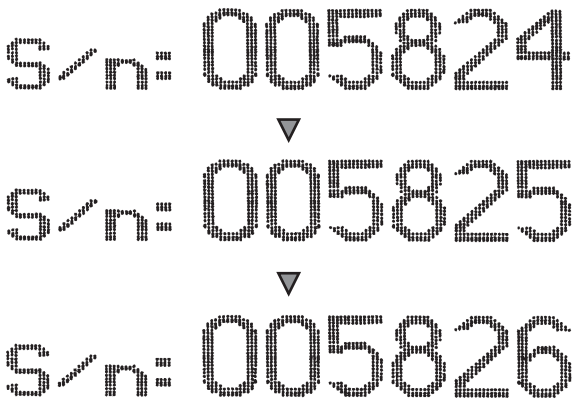
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

   *The recommended distance from the object to the printhead for printing algorithm **No. 13** is **30 mm**. For more details see tables in **"8.6.2. Summary of the Printing Speeds"**.*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, successive prints containing automatic numbering are made on objects:



To stop printing, press the PRINT ON/OFF button again.

6.5. EDITING AND PRINTING GRAPHICS

Graphic images defined by the user are to be printed on objects.

To prepare the text:

1. Press
2. Type in the text name: **WARNING**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 25 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for the subtext.

Parameter	Setting	Comments
Type	Graphic	
Height	25	The height is determined by the text profile applied.
Length	25	
Front dist	0	
Back dist	0	

7. Press ENTER to continue.
8. Press to start the graphics editor.
9. Use the graphics editor to create a graphic image.

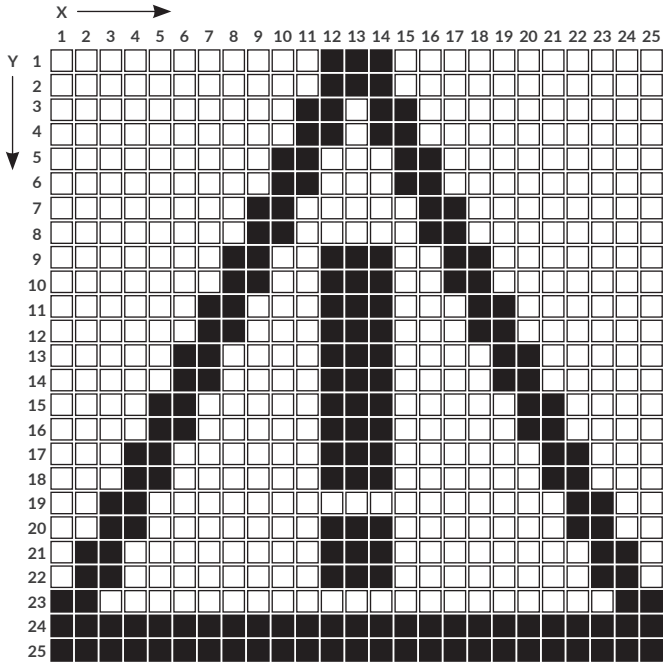


Fig. 39.

For more details see ***"5.4.4.1. Graphics Editor"****.*

10. Press ENTER to save the text to the library.

    The text called **WARNING** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **WARNING** from the library.
3. Press ENTER to confirm that you want to select the text.

   The name of the selected text is displayed on information bar **1g**.

   The selected text is the active text.

To set printing parameters:

1. Press .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	WARNING	
Linked param.		Not used in the example.
Height (pix)	25	Information parameter.
Matrix height	LARGE	
Print height	100%	
Speed Level	SLOW	To obtain best quality prints.
Generator	GEN	Timing by internal generator.
Resol. dot/cm	20	Recommended resolution for printing algorithm **No. 13**; see tables in *"8.6.2. Summary of the Printing Speeds"*.
Cnv spd m/min	10	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	STANDARD	
Space	2.0mm	
Space2	---	Parameter connected with a program option.
Text rpt.	1	To make one print after the photodetector triggers.
Rpt.dist.	---	Not used in the example.
Conv. direct.	LEFT	
Offset interv	Day	Not used in the example.
Offset	0	Not used in the example.
RollTimeHH:MM	00:00	Not used in the example.
Counter delta	1	Not used in the example.
Row repetit.	1	
Print every n	---	Parameter connected with a program option.
Mode	NORMAL	

3. Press ENTER to confirm that you want to modify printing parameters.
   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

> *The recommended distance from the object to the printhead for printing algorithm* ***No. 13*** *is* ***30 mm****. For more details see tables in* ***"8.6.2. Summary of the Printing Speeds"****.*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, one print is made on the object to be labeled.



To stop printing, press the PRINT ON/OFF button again.

6.6. EDITING AND PRINTING A BAR CODE

The bar code to be printed on objects is:

- 1-dimensional,
- of the EAN-13 type,
- provided with a 7 dot-high numerical caption at a distance of 1 dot from the code,
- defined by the user.

To prepare the text:



1. Press 
2. Type in the text name: **BARCODE**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 25 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for the subtext.

Parameter	Setting	Comments
Type	Barcode	
Code	EAN-13	
Contents	5007463006216	The EAN-13 code requires that 12 characters are typed in, the thirteenth character is calculated automatically.

Parameter	Setting	Comments
Height	25	The height is determined by the text profile applied.
Elongat. X	1	
Elongat. Y	Not used	Only for 2D codes.
Corrector	0	
Spec. reg.	None	Static contents subtext.
Text name	Not used	Not used in the example.
Front dist	0	
Back dist	0	
Signature	7 pix	A 7dot-high numerical caption is enabled.
Sign. dist	1 pix	Distance between caption and the bar code.
Inversion	NO	

7. Press ENTER to continue.
8. Press ENTER to save the text to the library.

   The text called **BARCODE** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **BARCODE** from the library.
3. Press ENTER to confirm that you want to select the text.

   The name of the selected text is displayed on information bar **1g**.

   The selected text is the active text.

To set printing parameters:

1. Press .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	BARCODE	
Linked param.		Not used in the example.
Height (pix)	25	Information parameter.
Matrix height	LARGE	
Print height	100%	
Speed Level	SLOW	To obtain best quality prints.
Generator	GEN	Timing by internal generator.
Resol. dot/cm	20	Recommended resolution for printing algorithm **No. 13**; see tables in *"8.6.2. Summary of the Printing Speeds"*.
Cnv spd m/min	10	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	STANDARD	
Space	2.0mm	
Space2	---	Parameter connected with a program option.
Text rpt.	1	To make one print after the photodetector triggers.
Rpt.dist.	---	Not used in the example.

Parameter	Setting	Comments
Conv. direct.	**LEFT**	
Offset interv	**Day**	Not used in the example.
Offset	**0**	Not used in the example.
RollTimeHH:MM	**00:00**	Not used in the example.
Counter delta	**1**	Not used in the example.
Row repetit.	**1**	
Print every n	**---**	Parameter connected with a program option.
Mode	**NORMAL**	

3. Press ENTER to confirm that you want to modify printing parameters.
   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.
   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.
   The printer is in the printing state and waits until the photodetector triggers.
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

> *The recommended distance from the object to the printhead for printing algorithm **No. 13** is **30 mm**. For more details see tables in **"8.6.2. Summary of the Printing Speeds"**.*

3. Trigger the photodetector by shading it with a hand.
   Each time the photodetector triggers, one print is made on the object to be labeled.



To stop printing, press the PRINT ON/OFF button again.

6.7. EDITING AND PRINTING A COMPLEX TEXT

The complex text to be printed on objects consists of:

- subtexts definable directly in the created text,
- texts prepared in advance and called by name to subtexts:
  DATETIME; the text prepared in *"6.2. Editing and Printing the Current Date and Time"*,
  WARNING; the text prepared in *"6.5. Editing and Printing Graphics"*.

To prepare the text:



1. Press .
2. Type in the text name: **COMPLEX**.
3. Press ENTER to confirm.
4. Select the text profile: **max height 25 dots**.
5. Press ENTER to continue.
6. Press PAR to set parameters for subtext **S1**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 16x10**	
Typeface	**Bold**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**None**	Static contents subtext.
Front dist	**0**	
Back dist	**0**	

7. Press ENTER to continue.
8. Type in the following contents of subtext **S1** (see *Fig. 20 on page 57*) via alphanumerical keyboard **1d**:
   EBS⌂INK-JET⌂SYSTEMS

   The character ⌂ means a space.

9. Press and then ↓ to create subtext **S2** below the previous one.

10. Press [PAR] to set parameters for subtext **S2**.

Parameter	Setting	Comments
Type	**Text**	
Char. set	**Latin 7x5**	
Typeface	**Normal**	
Chr. width	**Proportional**	
Distance	**2**	
Rotation	**None**	
Spec. reg.	**None**	Static contents subtext.
Front dist	**5**	To shift right by 5 dots.
Back dist	**0**	

11. Press [ENTER] to continue.
12. Type in the contents of subtext **S2** via alphanumerical keyboard **1d**:

    Manufacturer⌂of⌂INK-JET⌂Printers

    The character ⌂ means a space.

13. Press [ ] and then [→] to create subtext **S3** on the right of the previous one.
14. Press [PAR] to set parameters for subtext **S3**.

Parameter	Setting	Comments
Type	**Ins. text**	
Text name	**WARNING**	The **WARNING** text called by name.
Front dist	**3**	
Back dist	**3**	

15. Press [ENTER] to continue.
16. Press [ ] and then [→] to create subtext **S4** on the right of the previous one.
17. Press [PAR] to set parameters for subtext **S4**.

Parameter	Setting	Comments
Type	**Ins. text**	
Text name	**DATETIME**	The **DATETIME** text called by name.
Front dist	**0**	
Back dist	**0**	

18. Press [ENTER] to continue.
19. Press [ENTER] to save the text to the library.

    The text called **COMPLEX** is saved to the text library.

To select the created text for printing:

1. Press or the name of the active text on information bar **1g** (see *Fig. 22 on page 61*).
2. Select the text called **COMPLEX** from the library.
3. Press ENTER to confirm that you want to select the text.

   The name of the selected text is displayed on information bar **1g**.

   The selected text is the active text.

To set printing parameters:

1. Press .
2. Set the printing parameters as follows:

Parameter	Setting	Comments
Active text	COMPLEX	
Linked param.		Not used in the example.
Height (pix)	25	Information parameter.
Matrix height	LARGE	
Print height	100%	
Speed Level	SLOW	To obtain best quality prints.
Generator	GEN	Timing by internal generator.
Resol. dot/cm	20	Recommended resolution for printing algorithm **No. 13**; see tables in *"8.6.2. Summary of the Printing Speeds"*.
Cnv spd m/min	10	An example; it should equal the real conveyor-belt travel speed.
Vert. direct.	STANDARD	
Space	2.0mm	
Space2	---	Parameter connected with a program option.
Text rpt.	1	To make one print after the photodetector triggers.
Rpt.dist.	---	Not used in the example.
Conv. direct.	LEFT	
Offset interv	Day	Not used in the example.
Offset	0	Not used in the example.
RollTimeHH:MM	00:00	Not used in the example.
Counter delta	1	Not used in the example.
Row repetit.	1	
Print every n	---	Parameter connected with a program option.
Mode	NORMAL	

3. Press ENTER to confirm that you want to modify printing parameters.

   The printer displays the question whether to save the parameters to a parameter block or not.
4. Press ESC to abandon the saving.

   The printing parameters are set.

To start printing the active text:

1. Press the PRINT ON/OFF button.

   The printer is in the printing state and waits until the photodetector triggers.

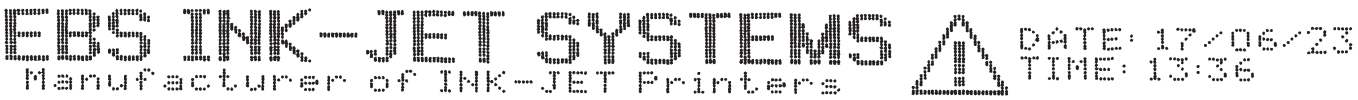
2. Place an object to be labeled (or a sheet of paper) at an appropriate distance from the printhead face.

   > *The recommended distance from the object to the printhead for printing algorithm* ***No. 13*** *is* ***30mm****. For more details see tables in* ***"8.6.2. Summary of the Printing Speeds"****.*

3. Trigger the photodetector by shading it with a hand.

   Each time the photodetector triggers, one print is made on the object.

   An example of a print made on 17.06.2023 at 13:36 PM:



To stop printing, press the PRINT ON/OFF button again.

G2025/06/150_1EN

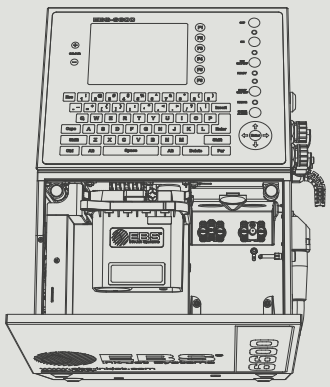
EBS® Ink-Jet Systeme

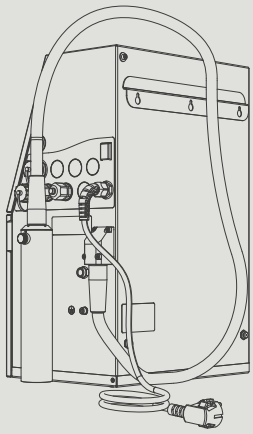
Boltmark®II

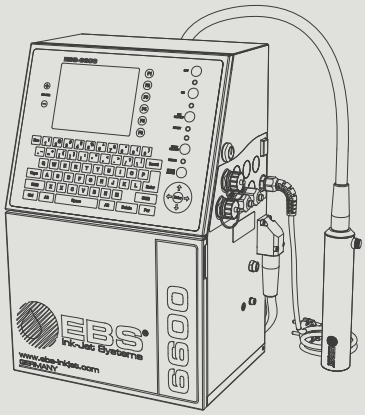
EBS-6600 / EBS-6900

USER MANUAL

Industrial CONTINUOUS INK-JET Printers
Original Instructions







EN

Part 3 of 3

You can find our user manuals at:
manual.ebs-inkjet.de

2026.08.20

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CHAPTER 7
INFORMATION

7. INFORMATION

The functions described in this section are not available to ***OPERATOR*** .

7.1. LABELED OBJECT COUNTER

The printer uses two independent object counters:

- a shift counter,
- a global counter.

7.1.1. SHIFT COUNTER

The counter can be used, *e.g.* for counting objects labeled during one work shift.

The shift counter can also be displayed on information bar ***1g*** *(see* ***Fig. 22 on page 61****) in the printing preview window. For more details see* ***"4.4. Previewing a Text to be Printed"****.*

Press ▶ ▶ to view the shift counter contents.

To modify / clear the shift counter:

1. Press ▶ ▶ .
2. Type in a desired setting ("**0**" to clear).
3. Press ENTER to confirm.
   The shift counter is modified.

7.1.2. GLOBAL COUNTER

The counter can be used, *e.g.* for counting objects labeled over a certain period, *e.g.* 1 week.

Press ▶ ▶ to view the global counter contents.

To modify / clear the global counter:

1. Press ▶ ▶ .
2. Type in a desired setting ("0" to clear).
3. Press ENTER to confirm.
   The global counter is modified.

7.2. DETERMINING PARAMETERS OF A FACTORY CONVEYOR

By determining conveyor parameters such as:

- conveyor travel speed,
- encoder constant, or the number of pulses released by the encoder per a given unit of length,

you can set printing parameters more precisely.

The parameters can be determined by means of:

- two objects placed on the conveyor at a specified or freely selected distance apart,
- an **SMP** meter (tachometer),
- the data read from the encoder nameplate.

Only encoder constant can be read from the encoder nameplate.

7.2.1. MEASURING CONVEYOR PARAMETERS WITH TWO OBJECTS PLACED AT A SPECIFIED DISTANCE APART

Tools required:
*- any two objects (placed **20 cm** or **8 inches** apart),*
- a photodetector,
- an encoder (optionally).

To measure the conveyor parameters:

1. Connect a photodetector to the printer, to measure travel speed of the conveyor belt.

   *For more details see **"2.3.8.1. Connecting a Photodetector"**.*

2. Connect an encoder to the printer, to measure encoder constant.

   *For more details see **"2.3.8.2. Connecting an Encoder"**.*

3. Place two objects on the conveyor belt when it does not move. Make sure that:
   - the objects are within photodetector reach,
   - the distance between the beginnings of the objects is **20 cm** (**8 inches**),
   - they do not move in front of the photodetector until the conveyor belt reaches its target, stable speed.
4. Press ▶ ▶ ▶ ▶ .
   The measurement is started.

5. Start up the conveyor so that the objects move in front of the photodetector.

– Measurements of the following parameters are displayed:
  – **Encoder const. pulses/m** or **Encoder const. pulses/in**,
  – **Conveyor velocity m/min** or **Conveyor velocity ft/min**.

> *To measure conveyor travel speed, it is enough to connect a photodetector.*
>
> *Units of measurement (mm / inch) can be changed in the printer by **SERVICEMAN** only.*

In addition, the question whether to save the measurement of encoder constant to the **Enc const p/m** or **En.const p/in** parameter in global printing parameters is displayed.

6. Press ENTER to save the encoder constant

or

press ESC to finish measurement without saving.

7.2.2. MEASURING CONVEYOR PARAMETERS WITH TWO OBJECTS PLACED AT ANY DISTANCE APART

> *Tools required:*
> *- any two objects (placed at any distance apart, up to a maximum of **6553.5 mm**),*
> *- a photodetector,*
> *- an encoder.*

To measure the production conveyor parameters:

1. Connect the photodetector to the printer to measure the production conveyor speed.

> *For more details see **"2.3.8.1. Connecting a Photodetector"**.*

2. Connect the encoder to the printer to determine the encoder constant.

> *For more details see **"2.3.8.2. Connecting an Encoder"**.*

3. Position the photodetector so that the moving objects are within its detection range.
4. Press → → → → .

Before the measurement starts, a prompt will be displayed asking for the spacing of the objects on the conveyor, expressed in mm. Enter the distance between the leading edges of the objects.

> *The spacing value is entered in millimeters if Unit system is set to Metric, or in inches if Unit system is set to Imperial. The maximum spacing value is **6553.5 mm** (**258.01 inches**).*
>
> *For low encoder constant values, the object spacing must not be too small, because the calculated value may be too low.*
>
> *The minimum object spacing can be calculated using the following formula:*
> *Spacing [mm] = **1,000,000** / Encoder constant [**imp/m**].For example, for an encoder with a constant of **10,000 imp/m**, the minimum object spacing is **100 mm**.*

5. The measured parameter values will be displayed:
   - **Encoder const. pulses/m** or **Encoder const. pulses/in**,
   - **Conveyor velocity m/min** or **Conveyor velocity ft/min**.

   In addition, the question whether to save the measured encoder constant to the **Enc const p/m** or **En.const p/in** parameter in global printing parameters is displayed.
6. Press ENTER to save the encoder constant

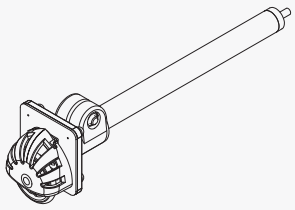
   or

   press ESC to finish the measurement without saving.

7.2.3. MEASURING CONVEYOR PARAMETERS WITH AN SMP METER

*Conveyor parameters can be measured with an **SMP** meter only for the printers where the main control program runs in version **38_2A** at least. The version of the main control program can be viewed by pressing ⚙ ▶ 🔧 ▶ 🖩. For more details see **"7.5. Printer Information"**.*

Tools required:
- any two objects (placed at any distance apart),
- a key for unlocking the electronics compartment door,
*- an **SMP** meter; this tachometer (see the drawing on the right) is available in two versions:*
*Part No. **P930069**, for the printers that have a cable strain relief on the accessories connector plate, or*
*Part No. **P930068**, for the printers that have a photodetector quick connector on the accessories connector plate,*
- an encoder (optionally).



To measure the conveyor parameters:

1. Connect an **SMP** meter to the printer, to measure travel speed of the conveyor belt.

   *Connect the **SMP** meter to the printer in the same way as you connect a photodetector. For more details see **"2.3.8.1. Connecting a Photodetector"**.*

2. Connect an encoder to the printer, to measure encoder constant.

   *For more details see **"2.3.8.2. Connecting an Encoder"**.*

3. Place the **SMP** roller on the conveyor belt; the roller must have good contact with the belt, that is, it must not skid.
4. Start the conveyor to make the **SMP** roller roll over.
5. Wait until the conveyor belt reaches its target, stable speed.

6. Press ▶ ▶ ▶ ▶
   The measurement is started.
   Measurements of the following parameters are displayed:
   - **Encoder const. pulses/m** or **Encoder const. pulses/in**,
   - **Conveyor velocity m/min** or **Conveyor velocity ft/min**.

   *Units of measurement (mm / inch) can be changed in the printer by **SERVICEMAN** only.*

   In addition, the question whether to save the measurement of encoder constant to the **Enc const p/m** or **En.const p/in** parameter in global printing parameters is displayed.
7. Press ENTER to save the encoder constant
   or
   press ESC to finish measurement without saving.

7.2.4. DETERMINING ENCODER CONSTANT BASED ON ENCODER DATA

Tools required:
- an encoder,
- an instrument for measuring wheel diameter, e.g. a ruler, a Vernier caliper (if the circumference is not known).

To calculate the encoder constant based on encoder and measuring wheel data:

1. Press ▶ ▶ ▶ ▶
2. Type in the number of pulses per rotation you find on the encoder plate.
3. Press ENTER to continue.
4. Select the encoder wheel dimension that you wish to type in:
   0) - measuring wheel circumference,
   1 ! - measuring wheel diameter.
5. Type in the measuring wheel dimension (in millimeters or inches) you selected in step 4.
6. Press ENTER to continue.
   The calculated value of the **Encoder const. pulses/m** or **Encoder const. pulses/in** parameter is displayed.

   *Units of measurement (mm / inch) can be changed in the printer by **SERVICEMAN** only.*

   In addition, the question whether to save the calculated encoder constant to the **Enc const p/m** or **En.const p/in** parameter in global printing parameters is displayed.
7. Press ENTER to save the encoder constant
   or
   press ESC to finish measurement without saving.

7.3. MONITORING BASIC PRINTER PARAMETERS

Press ▸ ▸ ▸ to obtain information on basic parameters of printer operation.

This function gives you access to the following printer parameters:

Parameter [unit]	Meaning
HV [kV]	Current value of high voltage.
SHAFT	State of encoder. *An encoder state is reflected by the inner panel **SHA** LED (**12d**; see **Fig. 45 on page 234**).*
FOTOPHOTO	State of photodetector and the number of all signals generated by the photodetector (**A** + **N**). *By checking the state of the photodetector (i.e. whether the photodetector can detect an object before the printhead front or not) you can make sure whether the photodetector is correctly connected to the printer or not.* *Correct photodetector states:* *- for **NPN** (**N/C**), **PNP** (**N/C**) photodetectors:* ***0** - no object in front of the photodetector,* ***1** - an object within photodetector reach,* *- for **NPN** (**N/O**), **PNP** (**N/O**) photodetectors:* ***1** - no object in front of the photodetector,* ***0** - an object within photodetector reach.* *A photodetector state is the reverse of the state of the inner panel **PHOT** LED (**12d**; see **Fig. 17 on page 44**).*
A	Number of accepted photodetector signals.
N	Number of rejected photodetector signals.
S	Number of initiated printouts.
F	Number of completed printouts.
PQF	Number of photodetector trigger operations after printing of the previous text has finished. This field is reset by the command that starts printing. *This parameter is available for the **PhotoQueue** option.* *For more details about hardware options, see the Hardware, Software and Accessories Options Catalog for **Boltmark®II**-series printers. The current catalog version is **2020/03/05_OPTv2.1**.*
O	Number of photodetector trigger operations registered while the previous text was being printed. This field is reset by the command that starts printing. *This parameter is available for the **PhotoQueue** option.* *For more details about hardware options, see the Hardware, Software and Accessories Options Catalog for **Boltmark®II**-series printers. The current catalog version is **2020/03/05_OPTv2.1**.*
p [bar/psi]	Current pressure of the ink in the ink system.
v [bar/psi]	Current vacuum in the ink system.

Parameter [unit]	Meaning
ac	Head position correction tag. *The procedure for correcting head position:* *- is recommended only when the vertical position of the printhead relative to printer position changes,* *- can be performed by **SERVICEMAN** only.*
ROB	Status of the **ROBOT** input.
RES	Status of the **ZERLICZ.** input.
PrOFF [min]	Time over which the printer has been shut down (until the moment when it is restarted).
ToF(intake)	"Ink composition indicator"; time of flight of ink drops in the printhead; it is proportional to temperature-dependent ink viscosity. The value of the parameter determines whether ink or solvent is added to the ink system.
ToF(p100%)	"Ink viscosity indicator"; time of flight of ink drops in the printhead; it is proportional to ink viscosity at a given temperature.
Th [ºC/ºF]	Temperature in the printhead. *Printhead temperature and electronic compartment temperature are alternately displayed on printer status bar **1h** (see **Fig. 22 on page 61**).* *If the maximum temperature is exceeded, an error message is displayed.*
Ts [ºC/ºF]	Temperature in the electronic compartment. *Printhead temperature and electronic compartment temperature are alternately displayed on printer status bar **1h** (see **Fig. 22 on page 61**).* *If the maximum temperature is exceeded, an error message is displayed.*
Dist t [ms]	Time between the moments when a photodetector signal is generated and printing starts; this applies to the recently printed text.
Txt t [ms]	Is shows for how long the recently printed text was printed.
IRQ t [µs]	Time between consecutive printing of columns of the recently printed text.

7.4. DATE OF PERIODIC SERVICE

Press ▸ ▸ ▸ to obtain information about a periodic service.

The function gives access to the following information:

Parameter	Meaning
LAST SERVICE VISIT	Date of the previous service.
NEXT SERVICE VISIT	Date of the next service.
WORK TIME LEFT	Number of run hours to the next service.

*The above data is entered by **SERVICEMAN** during a periodic service.*

7.5. PRINTER INFORMATION

Press ▸ ▸ to obtain information about the printer.

The function gives access to the following information:

Parameter	Meaning
PrinterNo/Pix	Printer serial number / maximum text height (given in rows) that can be printed by the printer. The parameter also determines how many times: – the printer identifier can be modified, – printer run hours can be limited, – program options can be activated / deactivated.
Stroboscope	Type of synchronization of a stroboscope.
HV type	Type of high voltage (HV) block.
Piezo freq.	Frequency of signals for breaking ink jet into drops.
Phasing volt.	Phasing voltage.
Ink pressure	Pressure of the ink in the ink system.
Ink sys. type	Type of ink system.
Main ---- **Bootloader** **Ink RKM --** **Ink PSA --** **FLASH correct** **CORRECToption** **CORRECT ink** **CORRECT min.** **CORRECTstruct**	Versions of, and additional information about, printer software (main control program, bootloader, ink control program, correction tables).

7.6. PROGRAM OPTION INFORMATION

To get the information about main control program options:

1. Press ▸ ▸ .
2. Press ↓ (or ENTER) / ↑ to display consecutive / previous screens containing the information about the options offered by the main control program.

After all of the software options screens have been viewed, the window is exited.

The first screen contains the list of active software options selected from among all those options that can be activated remotely. For more details about the available options see ***"1.1. Configurability of the Boltmark®II-series Printers"****. Contact an authorized representative to obtain the detailed information on the available options.*

7.7. VIEWING CURRENT DATE AND TIME

Press ▸ ▸ ▸ ?

or

the time displayed on information bar **1g** (see ***Fig. 22 on page 61***)

to obtain information about the current date and time set in the printer.

The current time can be changed by ***ADVANCED OPERATOR***

The current date can be changed by ***SERVICEMAN*** *only.*

For more information see ***"8.1.6. Setting the Current Date and Time"***.

7.8. VIEWING PRINTER RUN HOURS

Press ▸ ▸ ▸ to obtain information on the total number of hours over which the printer has been in use.

With the function you can also view the number of hours the printer can operate by the end of a time limit, if such a limit has been set by an authorized representative.

7.9. CONSUMABLES

7.9.1. BOTTLE INFORMATION

*A bottle of solvent has a capacity of **900 ml**.*

*A bottle of ink has a capacity of **900 ml**.*

Press ▶ ▶ ▼

Icon	Meaning
	Information about bottles in use: – ink bottle expiration date, – number of hours the printer can still work with the ink jet enabled (**Operating time** [hh:mm]), number of hours the printer can run with the ink jet disabled (**Idle** [gg:mm]) and working temperature (**Tav** – average, **Lo** - minimum, **Hi** – maximum) for the solvent bottle currently installed, – number of hours the printer worked with the ink jet enabled (**LastSol** [hh:mm]), number of hours the printer ran with the ink jet disabled (**Idle** [hh:mm]) and working temperature (**Tav** - average, **Lo** - minimum, **Hi** – maximum) for the solvent bottle previously installed, – information about bottles protection times, if any, – information on how many times (**x**) a protection time has been assigned to a given bottle and on the limit (**y**) on the number of such assignments (**Lim:x/y**).
	Detailed information about the types of solvent and ink to use.
	Cancellation of bottle protection time, if such a time is set. Protection time is a time over which the bottle transponders are not checked, *e.g.* when an error occurs.
	Diagnostic information about the transponders of the bottles in use.
	Estimated number of printouts of the currently printed text, which could be printed with 1 liter of ink at the set printing parameters. *This function is available only when the printer is printing.* *Optionally, the function can show the number of all ink drops jetted out by the printer.*

7.9.1.1. INK / SOLVENT LEVEL INDICATOR

Ink / solvent consumption indicators in graphic format are displayed on printer status bar **1h** (see *Fig. 22 on page 61*):

Ink level indicator					
Solvent level indicator					
Still remains [%]	100-76	75-63	62-38	37-12	<12

*If a protection time limit is applied to bottles, then the characters "**X**" are displayed in place of ink and solvent level indicators.*

7.9.2. IMODULE® INFORMATION

Press ▶ ▶ ▽

Icon	Meaning
	Information about the **iModule®** in use: – **iModule®** run time still available [hh:mm], – **iModule®** expiration date, – date by which **iModule®** must be installed in a printer, – how many times a given **iModule®** has been installed in the printer (“**C**”), – information on how many times (**x**) a protection time has been assigned to a given **iModule®** and on the limit (**y**) on the number of such assignments (**Lim:x/y**). The function also offers access to additional information intended for the service staff.
	Detailed information about the type of **iModule®** installed.
	Cancellation of **iModule®** protection time, if such a time is set. Protection time is a time over which the **iModule®** transponder is not checked, *e.g.* when an error occurs.
	Diagnostic information about the transponder of **iModule®** in use.

7.9.2.1. IMODULE® WEAR INDICATOR

An **iModule®** wear indicator in graphic format is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***):

Indicator									
Still remains [%]	100-88	87-76	75-63	62-51	50-38	37-26	25-13	12-1	<1

*If a protection time limit is applied to **iModule®**, then the character “**X**” is displayed in place of the **iModule®** wear indicator.*

7.9.3. INFORMATION ON THE VERSION OF IMS SOFTWARE

Press ▶ ▶ to obtain information about the version of the Ink Monitoring System (**IMS**) software in use.

7.10. PRINTER STATUS

The printer status is displayed on printer status bar **1h** on an on-going basis (see *Fig. 22 on page 61*):



The printer status consists of:

A	Printhead status.
B	Alternately displayed: – temperature [in °C / °F] in the printhead; marked as "**h**", – temperature [in °C / °F] in the electronic compartment; marked as "**s**".
C	Height of the currently printed text; it is displayed only when the printer is printing.
D	Bottled agents and **iModule®** consumption indicators: *For more details on indicators see "7.9. Consumables".* *If the printer is equipped with the optional **ACPS®** anti-clogging power supply system, the bottle and **iModule®** wear indicators are displayed alternately with the charge indicator of the **ACPS®** system modules.*
	Certain error / warning messages at the time of occurrence.
	Information about currently followed procedures.

*Printer status bar **1h** is also used as a progress bar in certain procedures, for example, for starting up or shutting down the printer. The progress bar shows a user the procedure phase the printer is currently in and how much remains to the end.*

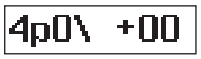
7.10.1. PRINTHEAD STATUS

The printhead operates properly when:

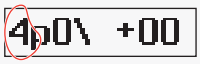
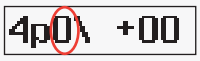
- a continuous ink jet flows from the printer to printhead **2** (see *Fig. 8 on page 31*) where the ink is broken into drops via gun **2d** and nozzle **2e**,
- drops are charged in the electric field generated by charging electrode **2f**,
- charged drops are deflected in the electric field generated by deflecting electrode **2g**, to create a column of ink drops on a labeled object,
- uncharged drops (which are not used for making a print) are not deflected and fall into absorbing gutter **2h** while flying over measuring electrode **2i**, owing to which a so called **phasing signal** is obtained and then used in a **phasing** process.

***Phasing**: an automatic process of controlling ink drop charging via a phasing signal. The position of the point where a continuous ink jet is broken into drops slightly varies with time. For this reason, the control system must update time relations between charging of ink drops and breaking a jet into drops on an on-going basis.*

The **phasing signal** is used for generating **printhead status**, which is displayed on printer status bar **1h** (see *Fig. 22 on page 61*), and for assessing whether the printhead operates correctly or not.



The printhead status consists of:

Position	Meaning
	Phasing process quality indicator. Range of values: **2**, **3**, **4**, **5**, **6**, **7**; optimal value: **4**, **5**. *Not very frequent and small (±1) variations in parameter values with time are normal.*
	Modes of printhead operation: **r** (for **restart**) - printhead restart is in progress; printing cannot start, **s** (for **stop**) - the printhead is ready to print, **p** (for **print**) - the printhead is printing, **b** (for **breaking**) - the printhead is printing; printhead parameters (*e.g.* breaking voltage) are additionally calibrated during a process downtime, **v** (for **service**) - the printhead in service mode; maintenance operation can be performed within the printhead; printing can start, *Service mode is also switched to automatically when the printhead cover is removed. In such a case printing cannot start.* *For more information see "10.2.1. Service Mode".*
	**c** (for **cover**) - removed printhead cover; printing cannot start. *When the printhead cover is removed, mode "**c**" is activated automatically when service mode ("**v**") is turned off by pressing*  *For more information see "10.2.1. Service Mode".* *The printhead cover may be removed during printer operation only by **instructed** or **skilled persons**.* *If the protection (the detecting of the removed printhead cover) is disabled by **SERVICEMAN**  , and thereby dangerous voltages are accessible inside the printhead, then after the startup of the printer:* *- the warning message **Printhead unprotected** and the  icon are displayed cyclically on printer status bar **1h** (see **Fig. 22 on page 61**),* *- the color of the display background changes to yellow.* *For more details see "10.2.8. Handling Printhead Cover Sensor".*
	Number of the best phase selected in a phasing process. Range of values: **0**, **1**, **2**, **3**, **4**, **5**, **6**, **7**. *Not very frequent and small (±1) variations in parameter values with time are normal.*
	Phasing process indicator. When the indicator rotates, it means that the phasing process is in progress.

Position	Meaning
	Time of flight (**ToF**) indicator. It determines the difference between physical and nominal properties of the ink drops flying through the printhead. Range of permissible values: **-02**, **-01**, **+00**, **+01**, **+02**. *Not very frequent and small (±1) variations in parameter values with time are normal.* *The following parameters are calculated based on **ToF** measurement:* *- **ToF(100%)** - ink viscosity indicator,* *- **ToF(intake)** - ink composition indicator; the value of that indicator determines whether ink or solvent is added to the ink system.* *The current values of the **ToF(p100%)** and **ToF(intake)** parameters can be viewed by pressing*  *For more details see* *"7.3. Monitoring Basic Printer Parameters"*.

CHAPTER 8
PRINTER CONFIGURATION

8. PRINTER CONFIGURATION

8.1. SETTING UP THE INTERFACE

8.1.1. CHANGING INTERFACE COLORS

There are a dozen or so color schemes on the printer to help the user fit his user-interface color preferences.

The color scheme can be changed by pressing the ⊕ and ⊖ buttons labeled **COLOUR** (**1e**) (see *Fig. 20 on page 57*) on operator panel **1**.

The color scheme can be changed at any time.

8.1.2. MUTING / AMPLIFYING THE SOUND

*Any operations that involve the opening of electronics compartment door **9** must be performed exclusively:*
- by the manufacturer's authorized service staff or a user trained by the manufacturer's authorized representatives in performing such operations,
- when the printer is disconnected from the electric mains.

Tools required:
- a key to unlock the electronics compartment door.

The click sound you can hear while using the touchscreen or the keyboard is amplified by default.

To mute:

1. Set main power switch **POWER** (**5**; see *Fig. 5 on page 28*) on accessories connector plate **4** to the "**O**" position.
2. Use the key to unlock electronics compartment door **9** (see *Fig. 40*).

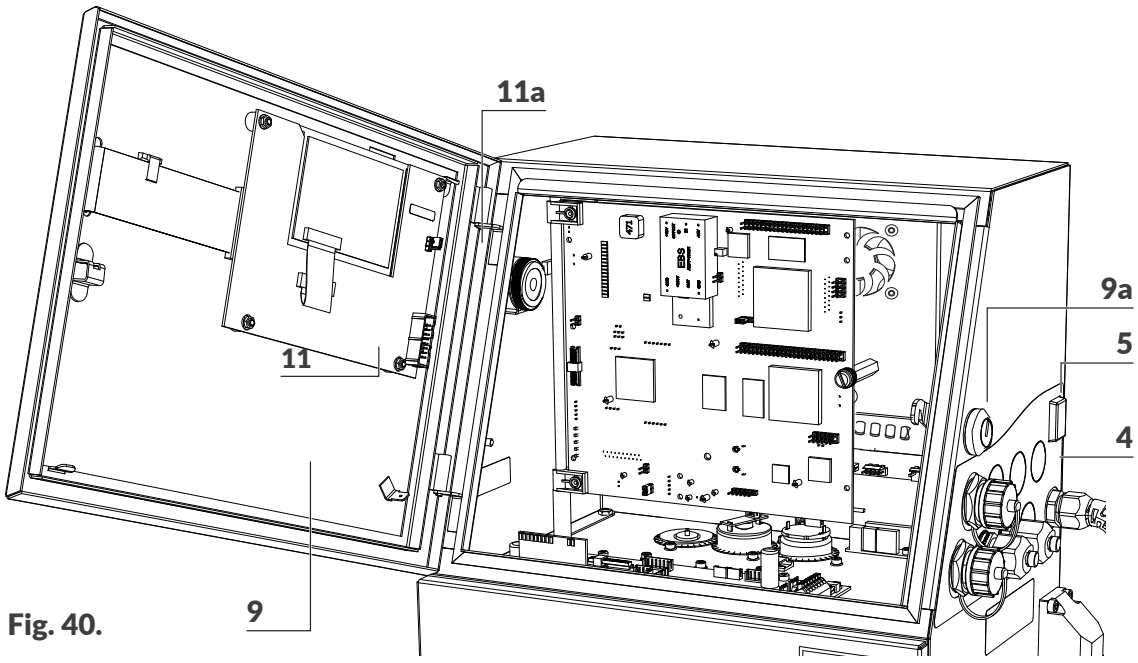


Fig. 40.

4	Accessories connector plate.
5	Power switch **POWER**; safety switch.

9	Electronics compartment door; equipped with key-operated lock **9a**.
11	Panel board **PK6K**.
11a	Jumper **Z1** for muting / amplifying clicks sounds.

3. Disconnect jumper **Z1** (**11a**) on the **PK6K board** (**11**), to mute the sound.
4. Use the key to lock electronics compartment door **9**.
   The sound is muted.

8.1.3. CHANGING THE INTERFACE LANGUAGE

*The function is not available to **OPERATOR** .*

To change the language of the interface:

1. Press ▶ ▶ .
2. Select a required language.
3. Press ENTER to confirm.
   The user interface is switched to the selected language.

The list of available languages depends on options offered by the main control program. For information about available languages, contact an authorized representative.

8.1.4. CHANGING THE SHAPE OF A ZERO

*The function is not available to **OPERATOR** .*

The shape of the digit zero can vary according to user requirements both while a text is edited in the text editor and while a text is printed.

The digit zero can be:

- 0 - slashed,
- 0 - unslashed.

Press ▶ ▶ ▶ **Zero Shape** to change the shape of a zero.

8.1.5. CONFIGURING ACCESS LEVELS / USERS

The following access levels (type of users) are available on the printer:

- **OPERATOR**,
- **ADVANCED OPERATOR**,
- **SERVICEMAN**.

OPERATOR *is not protected with a password.*

The default password of ***ADVANCED OPERATOR*** *is "EBS". After printer startup, the* Caps *button is active immediately, and then, capital letters can be typed in via the printer keyboard without the need for performing any additional operations.*

The ***ADVANCED OPERATOR*** *password can be changed by pressing:*

If the ***ADVANCED OPERATOR*** *password is not known, contact an authorized representative and change it by pressing . For more details see* ***"10.4.1. Deleting the ADVANCED OPERATOR Password"****.*

The access levels and the relevant privileges are defined on the printer and cannot be modified.

Only the password of **ADVANCED OPERATOR** can be modified.

For security reasons, you must change the default password for the ***ADVANCED OPERATOR*** *user type. Until you make any changes to user management, you should keep a record of the default password for the* ***ADVANCED OPERATOR*** *user type.*

8.1.5.1. CHANGING THE ADVANCED OPERATOR PASSWORD

The function is not available to ***OPERATOR***.

To change the password of **ADVANCED OPERATOR**:

1. Press .
   The current password coded with asterisks (*) is displayed.
2. Type in a new password.
3. Type in the new password again for verification.

   A password is subjected to verification only when it is different from the current password and is not empty.
4. Press ENTER to confirm.
   The **ADVANCED OPERATOR** password is changed / canceled.

8.1.6. SETTING THE CURRENT DATE AND TIME

8.1.6.1. SETTING THE CURRENT DATE

*The current date on the printer can be changed by **SERVICEMAN** only.*

8.1.6.2. SETTING THE CURRENT TIME

To change the current time on the printer:

1. Press the time displayed on information bar **1g** (see ***Fig. 22 on page 61***).

   ADVANCED OPERATOR can also change the current time by pressing

2. Type in the current time in **HH⌂MM⌂SS** format.

   The character ⌂ means a space.

3. Press ENTER to confirm.

   The current time is set.

8.1.7. CONFIGURING SPECIAL REGISTERS

*The function is not available to **OPERATOR**.*

The following additional parameters can be set by configuring special registers:

- counters (incremental, decremental and universal counters of objects),
- registers that use coding characters (expiration date, shifted date, universal date and time),
- those of a subtext whose contents are added when printing starts.

8.1.7.1. CONFIGURING COUNTERS

Press to configure additional counter parameters.

The function gives access to the following parameters:

Parameter	Meaning
Clr counters	Parameter connected with the program option **RES_LICZNIKI**. *For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*
Count Bgn Val	Parameter connected with the program option **RES_LICZNIKI**. *For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

8.1.7.2. CONFIGURING DATE ELEMENTS

The structures of the **Univ. date**, **Date+offs.**, **WILL Date** special registers include characters for coding date, time and work shift identifier elements. The characters can be replaced with the corresponding, freely modifiable values during printing. Owing to that, the registers can be fully customized.

For more details about special register elements see ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"****.*

To configure selected elements of special registers:

1. Press 
   The list of functions designed for configuring each of the special register elements is displayed.
2. Select an appropriate function (a register element you want to modify) from the following table.

   The below-given table contains the list of available functions and of characters whose coding can be changed by the functions.

   The meaning of characters is described in ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"****.*

Register elements	Function
D, A, M, O, Y, E, B, C, I, J, T, U	**DIGIT CODING**
b	**HOUR CODING (1 CHAR)**
m	**MONTH CODING (1 CHAR)**
a	**WEEK CODING (1 CHAR)**
N	**DAY OF THE WEEK CODING (1 CHAR)**
d	**DAY OF THE MONTH CODING (1CH)**

3. Modify selected elements of registers.
4. Press ENTER to save the modifications.
   The selected elements of the **Univ. date**, **Date+offs.**, **WILL Date** special registers are modified. Since then, if a coding character is used in a register, it is replaced with user-defined values during printing.

8.1.7.3. DEFINING WORK SHIFTS

The following can be defined on the printer:

- from 2 to 8 work shifts on work days,
- from 2 to 8 work shifts at weekends.

The definition of every work shift consists of:

- the time [hh:mm] at which the work shit begins,
- a work shift identifier, which can be any character.

A work shift ends a minute before the beginning of the subsequent work shift, if defined.

Every subsequent work shift should start at a later time than the preceding work shift.

*If the character "**X**" is typed in instead of the beginning time of a shift, it means that the given shift (and successive shifts) are not defined.*

*The work shift identifier can be printed by means of the **Univ. date**, **Date+offs.**, **WILL Date** special registers (the **Z**, **j**, **k**, **l** coding characters). For more details about special register elements see **"5.6.2.3. Universal Date and Time, Work Shift Identifier"**.*

To define work shifts:

1. Press ▶ ▶ ▶ ▶ **SHIFT DEFINITION**.
   The list of all work shifts definable on the printer is displayed.
2. Define required work shifts by specifying:
   - the time when the work shift begins,
   - the work shift identifier.
3. Type in the character "**X**" instead of the beginning time of the first undefined work-day shift.
4. Type in the character "**X**" instead of the beginning time of the first undefined weekend shift.
5. Press ENTER to save the modifications.
   The defined work shifts are saved. Since then, if work-shift coding characters (**Z**, **j**, **k**, **l**) occur in the **Univ. date**, **Date+offs.**, **WILL Date** special registers, user-defined vales are printed in place of these coding characters.

8.1.7.4. CONFIGURING A VARIABLE FIELD

The **Variable Field** special register can be additionally configured to verify the contents that is added when printing of a text containing the register starts.

To additionally configure a variable field:

1. Press ▶ ▶ ▶ ▶
2. Set the **Rpt. Var.Fld.** parameter to
   NO: the register contents are input just once when printing starts,
   YES: the register contents must be input twice for verification when printing starts.
3. Press ENTER to save the modifications.
   The **Variable Field** special register is configured.

8.1.7.5. ADDITIONAL SETTINGS

The additional settings define how to print:

- tens of the 2-digit number of a day (the character **D**),
- tens of the 2-digit number of a month (the character **M**),

contained in the **Univ. date**, **Date+offs.**, **WILL Date** special registers, if their values equal "**0**".

For more details about special register elements see ***"5.6.2.3. Universal Date and Time, Work Shift Identifier"***.

To modify the additional settings:

1. Press ▶ ▶ ▶ ▶ **ADDITIONAL SETTINGS.**
2. Select how to print zeros on the tens positions in days and months:
   STANDARD: zeros are printed,
   SPACE: zeros are replaced with spaces,
   SUPPRESSION: zeros are omitted; the other contents are shifted left and a space is added at the end to the full text length.
3. Press ENTER to save the modifications.
   The additional settings are saved.

8.2. SELECTING THE DEFAULT PROFILE FOR IMPORTED TEXT

The function is not available to ***OPERATOR***.

Every text created on the printer bears the information on the profile based on which it has been created.

For more information about text profiles see ***"5.3. Text Profiles"***.

The profile information is stored when texts are transferred between printers. It may however happen that a text with no defined profile is imported to the printer. Such a situation may occur when a text has been created on an older type of printer, where text profiles are not supported.
As the text profile is a vital text parameter, a so called "default profile" is added when non-profiled texts are imported.

To select the default profile for imported texts:

1. Press ▶ ▶ ▶ **Def.Txt Prof.**.
2. Press ALT to select a profile.
   The list of text profiles is displayed.
3. Select a text profile.
4. Press ENTER to confirm.
   The default profile for imported texts is set.

8.3. SELECTING CONVERSION MODE FOR IMPORTED PARAMETER BLOCKS

*The function is not available to **OPERATOR** .*

In the **Boltmark®II**-series printers, the format used for saving exported / imported parameter blocks differs from that used in older-type printers. Therefore, an appropriate conversion mode needs to be selected so that parameter blocks created with older type printers can be correctly imported to the **Boltmark®II**-series printer via a **USB** connector.

To change a conversion mode for parameter blocks imported:

1. Press → → → **Convers. Mode**.
2. Select a conversion mode according to the following table.

The selection of a conversion mode depends on:
- version of the main control program of the printer on which the parameter blocks have been created,
- unit of length (mm / inch) used on the printer where the parameter block have been created.

	<36_0A	<36_0A	≥36_0A	≥36_0A
	mm	inch	mm	inch
Convers. Mode	**Conversion from mm**	**Convers. from inch**	**None**	

3. Press ENTER to confirm.

   The conversion mode for imported parameter blocks is set.

*Each time the printer is switched on, the **Convers. Mode** parameter is set to None.*

8.4. CONFIGURING THE ENCODER

*The function is not available to **OPERATOR***.

If you use an encoder whose encoder constant is low, you can virtually increase the encoder constant (a number of pulses per unit of length) by increasing the setting of the **Shaft multipl** parameter. Owing to that the difference between the print resolution setting and the actual print resolution can be decreased.

*For more details on an encoder constant and printing resolution see **"4.5. Managing Printing Parameters"**.*

*It is recommended that the **Shaft multipl** parameter setting be increased only on a temporary basis for the encoders whose encoder constant is low. Otherwise, difficulties in keeping print resolution in a horizontal direction when conveyor travel speed fluctuates may occur. Apply a higher constant encoder as a target solution.*

To change the setting of the **Shaft multipl** parameter:

1. Press ▶ ▶ ▶ **Shaft multipl**.
2. Modify the parameter setting in the range from 1 to 16.

   The parameter should be set to 1 by default.

3. Press ENTER to confirm.

   The **Shaft multipl** parameter is set.

8.5. CONFIGURING THE PHOTODETECTOR

*The function is not available to **OPERATOR***.

To configure the photodetector:

1. Press ▶ ▶ ▶

2. Set operating parameters of the photodetector.

Operating parameter of the photodetector	Range of settings
Trigger	**Active Level**, **Edge**

*The below-given description of the settings of the **Trigger** parameter is based on the assumption that the type of the used photodetector is set correctly (the **Product Edge** parameter; see the description below); e.g. **Product Edge** = **Leading** for a standard **NPN (N/C)**-type photodetector.*

Printer reaction to a photodetector signal after starting printing:
Active Level: the printer starts printing as soon as the photodetector detects an object, and continues at most until the photodetector detects the end of the object, regardless of the set number of prints (the **Text rpt.** printing parameter);

Edge: the printer reaction depends on the setting of the **Text rpt.** printing parameter:

- when the setting of the **Text rpt.** printing parameter is different from **CONTIN.**: the printer starts printing as soon as the photodetector detects an object, and prints a defined number of prints (defined by the **Text rpt.** printing parameter) regardless of whether an object is still in front of the photodetector or not,
- when **Text rpt.** = **CONTIN.**: the printer starts printing as soon as the user initiates printing and prints until printing is paused by the user (so called "printing without releasing").

*"Printing without releasing" is recommended specially for those applications where the use of the photodetector is hindered or impossible, e.g. on cable lines. For such unreleased printing, the setting of the **Product Edge** parameter does not make any difference.*

*For more details about printing parameters see **"4.5. Managing Printing Parameters"**.*

Product Edge	**Leading**, **Trailing**

Mode of object detection by photodetector (the front edge of an object, the rear edge of an object); adjustment of print release to the type of photodetector.

To get a print released when the object's front edge is detected by the photodetector, set the following:

- **Leading**: for **NPN (N/C)** or **PNP (N/C)**-type photodetectors,
  Trailing: for **NPN (N/O)** or **PNP (N/O)**-type photodetectors.

The above-given setting ensures that prints are made at a constant distance from the front edge of every consecutive object.

To ensure that prints are made at a constant distance from the rear end of every consecutive object, the **Product Edge** parameter should be set conversely.

*If the **Product Edge** parameter is modified while the printer is in printing state, you have to pause and then resume printing to make the modification effective.*

*For more details about photodetectors see **"2.3.8.1. Connecting a Photodetector"**.*

3. Press ENTER to save the modifications.

   The photodetector settings are saved.

8.6. CONTROLLING PRINTING SPEED

8.6.1. TIMING MODES

Printing on an object is most frequently released with a photodetector.

Printing of successive columns of a print is timed with pulses generated by:

- an internal generator of the printer,
- a shaft rotation converter, a so called encoder.

*Timing mode cannot be changed by **OPERATOR** .*

8.6.1.1. INTERNAL GENERATOR

Printing of successive columns of a print is timed by the internal generator when **Generator**: **GEN**.

*For more details see **"4.5. Managing Printing Parameters"**.*

The internal generator generates pulses for timing printing of successive columns of a print regardless of how fast objects move in front of the printhead. For this reason it is used for conveyors whose belts travel at a defined and stable speed.
The following parameters impact on how fast print columns are timed by the internal generator (or on the printing speed):

- **Resol. dot/cm** or **Resol. dot/in**
- **Cnv spd m/min** or **Cnv sp.ft/min**

To achieve a user-defined print resolution in the horizontal direction (and also other print parameters that might have been set, such as the beginning space of a print or intervals between the beginnings of successive reprints), the setting of the **Cnv spd m/min** or **Cnv sp.ft/min** printing parameter should equal the conveyor-belt travel speed measured. Therefore, this parameter is described as the conveyor-belt travel speed.

*The conveyor-belt travel speed can be measured with the function available by pressing . For more details see **"7.2. Determining Parameters of a Factory Conveyor"**.*

The maximum conveyor-belt travel speed (the setting of the **Cnv spd m/min** or **Print height** parameter) varies with printing algorithms available, and it can be viewed in the **Speed Level** parameter. The maximum speed depends on:

- the active text, or
  - text height given in dots,
  - application of boldface in the text,
  - selected text profile,
- text height; the **Matrix height** parameter,
- selected speed level; the **Speed Level** parameter,
- horizontal resolution setting; the **Resol. dot/cm** or **Resol. dot/in** parameter.

The printer fully controls operation of the internal generator, and for this reason it is impossible to start printing at a conveyor-belt travel speed that exceeds the maximum traveling speed admissible with a given printing algorithm.

If the conveyor-belt travel speed (set in the **Cnv spd m/min** or **Cnv sp.ft/min** parameter) exceeds the maximum traveling speed, the printer switches to printing at the maximum traveling speed, and this is confirmed by the message

Conveyer speed set In PRINTING PARAMETERS is too high!! Conveyer speed is reduced to the maximum allowable value!!.

Any variations of the real traveling speed of the conveyor belt during printing cause the horizontal resolution of prints to vary.



If the conveyor belt does not move during printing and printing of print columns is timed by the internal generator, the entire print goes into one spot and a vertical bar is printed.

8.6.1.2. ENCODER

Printing of successive columns of a print is timed by an encoder, when **Generator**: SHAFT.



*For more details see **"4.5. Managing Printing Parameters"**.*

The shaft rotation converter, or the encoder, generates pulses for timing printing of successive print columns; the pulse frequency is proportional to the traveling speed of the conveyor belt, with which the encoder is coupled. For this reason, it is used for conveyors whose belts travel at a variable or unstable speed.

The following parameters impact on how fast print columns are timed by the encoder (or on the printing speed):

- **Resol. dot/cm** or **Resol. dot/in**,
- **Enc const p/m** or **En.const p/in**.

To achieve a user-defined print resolution in the horizontal direction (and also other print parameters that might have been set, such as the beginning space of a print or intervals between the beginnings of successive reprints), the setting of the **Enc const p/m** or **En.const p/in** printing parameter should equal encoder constant measured / calculated.

The encoder constant can be measured / calculated with the function that is available after pressing  *. For more details see* ***"7.2. Determining Parameters of a Factory Conveyor"****.*

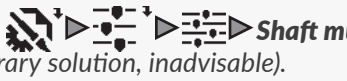
The maximum conveyor-belt travel speed varies with printing algorithms available, and it can be viewed in the **Speed Level** parameter.

The maximum speed depends on:

- the active text, or
  - text height given in dots,
  - application of boldface in the text,
  - selected text profile,
- text height; the **Matrix height** parameter,
- selected speed level; the **Speed Level** parameter,
- horizontal resolution setting; the **Resol. dot/cm** or **Resol. dot/in** parameter.

The real / measured conveyor-belt travel speed is given on an on-going basis as the value of the **Generator** parameter.

If the real conveyor-belt travel speed does not exceed the maximum traveling speed given in the **Speed Level** parameter, the printer ensures the same horizontal resolution for all prints.

The difference between the real and set horizontal resolutions of prints depends on the quality of the encoder applied, and thereby on its constant. The two resolutions and the difference [in %] between them are given as the values of the ***Resol. dot/cm*** *or* ***Resol. dot/in*** *parameter. To reduce the difference:*
- use the encoder whose constant is as high as possible
or
- increase the setting of the  ***Shaft multipl*** *parameter to virtually enlarge encoder constant (a temporary solution, inadvisable).*

If the real conveyor-belt travel speed (the ***Generator*** *parameter setting) increases above the maximum printing speed, which can be viewed in the* ***Speed Level*** *parameter, the printer switches to printing at the maximum speed. In this mode, prints are stretched horizontally and the resolution setting is not complied with.*

8.6.2. SUMMARY OF THE PRINTING SPEEDS

Printing algorithm No.	Printing parameters: Speed Level	Matrix height	Height (pix)	Recommended Resol. dot/cm	Active text profile	Recommended distance between the printhead and object [mm]	Print height: Minimum [mm]	(for Print height [%] printing parameter)	Standard [mm]	(for Print height [%] printing parameter)	Maximum [mm]	(for Print height [%] printing parameter)	Max printing speed [m/min]: (for a text without boldface)	(for a text with boldface)	Notes: BAR CODE-type subtexts can be used	"Fast" matrices must be used for over 12-dot characters
General application profiles and profiles dedicated exclusively to multi-line texts																
1	SLOW	LARGE	5	15	5	5	**3.1**	77	**4**	100	**4.5**	112	**125**	125	YES	-
2		MIDDLE	5	20	5	5	**2.3**	77	**3**	100	**3.4**	112	**66.9**	66.9		-
3		SMALL	5	30	5	5	**1.5**	77	**2**	100	**2.2**	112	**62.5**	62.5		-
4		LARGE	7	15	7	5	**5.2**	80	**6.5**	100	**7.3**	112	**89.2**	89.2		-
5		MIDDLE	7	20	7	5	**3.6**	80	**4.5**	100	**5**	112	**66.9**	66.9		-
6		SMALL	7	30	7	5	**2.4**	80	**3**	100	**3.4**	112	**44.6**	44.6		-
7		LARGE	11	15	11	10	**5.7**	82	**7**	100	**7.8**	112	**86.2**	86.2		-
8		MIDDLE	11	20	11	10	**4.1**	82	**5**	100	**5.6**	112	**49.3**	49.3		-
9		SMALL	11	25	11	10	**2.5**	82	**3**	100	**3.4**	112	**30.6**	30.6		-
10		LARGE	16	20	16/2x7	15	**6.8**	85	**8**	100	**9**	112	**29.2**	29.2		NO
11		MIDDLE	16	30	16/2x7	15	**5.1**	85	**6**	100	**6.7**	112	**19.5**	19.5		NO
12		SMALL	16	35	16/2x7	15	**3**	85	**3.5**	100	**3.9**	112	**10.1**	10.1		NO
13		LARGE	25	20	25/2x11/3x7	30	**9.1**	87	**10.5**	100	**11.8**	112	**14.3**	14.3		NO
14		MIDDLE	25	30	25/2x11/3x7	20	**7.7**	85	**9**	100	**10.1**	112	**10.8**	10.8		NO
15		LARGE	32	25	32	30	**9.9**	90	**11**	100	**12.3**	112	**6.0**	6.0		NO
16		LARGE	32	30	4x7	20	**8.1**	90	**9**	100	**10.1**	112	**11.1**	11.1		-
17	MIDDLE	LARGE	5	15	5	5	**3.1**	77	**4**	100	**4.5**	112	**227**	227	YES	-
18		MIDDLE	5	20	5	5	**2.3**	77	**3**	100	**3.4**	112	**188**	188		-
19		SMALL	5	35	5	5	**1.5**	77	**2**	100	**2.2**	112	**107**	107		-
20		LARGE	7	15	7	5	**5.2**	80	**6.5**	100	**7.3**	112	**179**	179		-
21		MIDDLE	7	20	7	5	**3.6**	80	**4.5**	100	**5**	112	**134**	134		-
22		SMALL	7	35	7	5	**2.4**	80	**3**	100	**3.4**	112	**76.5**	76.5		-
23		LARGE	11	20	11	5	**4.1**	82	**5**	100	**5.6**	112	**117**	117		-
24		MIDDLE	11	25	11	5	**3.3**	82	**4**	100	**4.5**	112	**68.1**	68.1		-
25		LARGE	16	20	16/2x7	10	**6**	85	**7**	100	**7.8**	112	**58.5**	58.5		NO
26		MIDDLE	16	30	16/2x7	10	**3.4**	85	**4**	100	**4.5**	112	**32.8**	32.8		NO
27		LARGE	25	25	25/2x11/3x7	20	**7.8**	87	**9**	100	**10.1**	112	**20.0**	20.0		NO
28		LARGE	32	30	32	20	**8.6**	90	**9.5**	100	**10.6**	112	**7.6**	7.6		NO
29		LARGE	32	35	4x7	15	**7.2**	90	**8**	100	**9**	112	**12.9**	12.9		-
30	FAST	LARGE	5	15	5	5	**3.1**	77	**4**	100	**4.5**	112	**500**	**430**	NO	-
31		MIDDLE	5	20	5	5	**2.3**	77	**3**	100	**3.4**	112	**375**	**323**		-
32		SMALL	5	35	5	5	**1.5**	77	**2**	100	**2.2**	112	**214**	**184**		-
33		LARGE	7	15	7	5	**5.2**	80	**6.5**	100	**7.3**	112	**357**	**307**		-
34		MIDDLE	7	20	7	5	**3.6**	80	**4.5**	100	**5**	112	**268**	**230**		-
35		SMALL	7	35	7	5	**2.4**	80	**3**	100	**3.4**	112	**153**	**132**		-
36		LARGE	11	20	11	5	**4.1**	82	**5**	100	**5.6**	112	**170**	**147**		-
37		MIDDLE	11	25	11	5	**3.3**	82	**4**	100	**4.5**	112	**88.2**	**75.8**		-
38		LARGE	16	20	16/2x7	10	**6**	85	**7**	100	**7.8**	112	**93.7**	**80.5**		YES
39		MIDDLE	16	30	16/2x7	10	**3.4**	85	**4**	100	**4.5**	112	**46.2**	**39.7**		YES
40		LARGE	25	25	25/2x11/3x7	20	**7.8**	87	**9**	100	**10.1**	112	**30.0**	**25.7**		YES
41		LARGE	32	30	32	20	**8.6**	90	**9.5**	100	**10.6**	112	**11.6**	**10.0**		YES
42		LARGE	32	35	4x7	15	**7.2**	90	**8**	100	**9**	112	**16.7**	**14.3**		-
"Super fast" (SF) profiles																
43	any	any	16	20	16 (SF)	10	**6**	85	**7**	100	**7.8**	112	**110**	110	YES	NO
44	SLOW	any	32	35	32 (SF)	15	**7**	88	**8**	100	-	-	**10.8**	10.8	YES	NO
45	MIDDLE			35		15	**7**	88	**8**	100	-	-	**10.8**	10.8		
46	FAST	any		35		15	**7.2**	90	**8**	100	**9**	112	**14.8**	14.8		

Printing algorithm No.	Printing parameters: Speed Level	Matrix height	Height (pix)	Recommended Resol. dot/cm	Active text profile	Recommended distance between the printhead and object [mm]	Print height: Minimum [mm]	(for Print height [%] printing parameter)	Standard [mm]	(for Print height [%] printing parameter)	Maximum [mm]	(for Print height [%] printing parameter)	Max printing speed [m/min]: (for a text without boldface)	(for a text with boldface)	Notes: BAR CODE-type subtexts can be used	"Fast" matrices must be used for over 12-dot characters
47	SLOW			30		20	**7.8**	87	**9**	100	**10.1**	112	**16.6**	16.6	YES	
48	MIDDLE	LARGE	25	35	3x7 (SF)	15	**7**	87	**8**	100	**9**	112	**25.5**	25.5	YES	-
49	FAST			35		15	**7**	87	**8**	100	**9**	112	**33.4**	**28.7**	NO	
					"Super tiny" (ST) profiles											
50	SLOW	LARGE	7	25	5 (ST)	1	**2**	80	**2.5**	100	**2.8**	112	**53.5**	53.5	YES	-
51		MIDDLE	7	30	5 (ST)	1	**1.4**	80	**1.8**	100	**2**	112	**44.6**	44.6		-
52		SMALL	7	35	5 (ST)	1	**1**	80	**1.3**	100	**1.5**	112	**38.2**	38.2		-
53		LARGE	9	20	7 (ST)	1	**2.1**	82	**2.5**	100	**2.8**	112	**64.6**	64.6		-
54		MIDDLE	9	25	7 (ST)	1	**1.6**	82	**2**	100	**2.2**	112	**39.4**	39.4		-
55		SMALL	9	30	7 (ST)	1	**1.2**	82	**1.5**	100	**1.7**	112	**25.5**	25.5		-
56		LARGE	16	25	11 (ST)	5	**4**	85	**4.7**	100	**5.3**	112	**23.4**	23.4		-
57		MIDDLE	16	30	11 (ST)	5	**3.1**	85	**3.6**	100	**4**	112	**19.5**	19.5		-
58		SMALL	16	35	11 (ST)	5	**2**	85	**2.4**	100	**2.7**	112	**10.1**	10.1		-
59		LARGE	25	30	16 (ST)	10	**4**	87	**4.6**	100	**5.2**	112	**9.5**	9.5		NO
60		MIDDLE	25	35	16 (ST)	10	**3.1**	85	**3.6**	100	**4**	112	**9.3**	9.3		NO
61	MIDDLE	LARGE	7	25	5 (ST)	1	**2**	80	**2.5**	100	**2.8**	112	**107**	107	YES	-
62		MIDDLE	7	30	5 (ST)	1	**1.4**	80	**1.8**	100	**2**	112	**89.2**	89.2		-
63		SMALL	7	35	5 (ST)	1	**1**	80	**1.3**	100	**1.5**	112	**76.5**	76.5		-
64		LARGE	9	20	7 (ST)	1	**2.2**	82	**2.7**	100	**3**	112	**117**	117		-
65		MIDDLE	9	25	7 (ST)	1	**1.6**	82	**2**	100	**2.2**	112	**68.1**	68.1		-
66		LARGE	16	25	11 (ST)	5	**4**	85	**4.7**	100	**5.3**	112	**46.8**	46.8		-
67		MIDDLE	16	30	11 (ST)	5	**3.1**	85	**3.6**	100	**4**	112	**32.8**	32.8		-
68		LARGE	25	30	16 (ST)	10	**4**	87	**4.6**	100	**5.2**	112	**16.6**	16.6		NO
69	FAST	LARGE	7	25	5 (ST)	1	**2**	80	**2.5**	100	**2.8**	112	**214**	**184**	NO	-
70		MIDDLE	7	30	5 (ST)	1	**1.4**	80	**1.8**	100	**2**	112	**179**	**154**		-
71		SMALL	7	35	5 (ST)	1	**1**	80	**1.3**	100	**1.5**	112	**153**	**132**		-
72		LARGE	9	20	7 (ST)	1	**2.2**	82	**2.7**	100	**3**	112	**170**	**147**		-
73		MIDDLE	9	25	7 (ST)	1	**1.6**	82	**2**	100	**2.2**	112	**88.2**	**75.8**		-
74		LARGE	16	25	11 (ST)	5	**4**	85	**4.7**	100	**5.3**	112	**75.0**	**64.4**		-
75		MIDDLE	16	30	11 (ST)	5	**3.1**	85	**3.6**	100	**4**	112	**46.2**	**39.7**		-
76		LARGE	25	30	16 (ST)	10	**4**	87	**4.6**	100	**5.2**	112	**25.0**	**21.4**		YES
					Fast profiles dedicated to bar / matrix codes (FB)											
77	SLOW	LARGE	16	20	16 (FB)	15	**6.8**	85	**8**	100	**9**	112	**29.2**	29.2	YES	NO
78		MIDDLE	16	30	16 (FB)	15	**5.1**	85	**6**	100	**6.7**	112	**19.5**	19.5		
79		SMALL	16	35	16 (FB)	15	**3**	85	**3.5**	100	**3.9**	112	**10.1**	10.1		
80		LARGE	25	20	25 (FB)	30	**9.1**	87	**10.5**	100	**11.8**	112	**14.3**	14.3		
81		MIDDLE	25	30	25 (FB)	20	**7.7**	85	**9**	100	**10.1**	112	**10.8**	10.8		
82		LARGE	32	25	32 (FB)	30	**9.9**	90	**11**	100	**12.3**	112	**6.0**	6.0		
83	MIDDLE	LARGE	16	20	16 (FB)	10	**6**	85	**7**	100	**7.8**	112	**58.5**	58.5	YES	NO
84		MIDDLE	16	30	16 (FB)	10	**3.4**	85	**4**	100	**4.5**	112	**32.8**	32.8		
85		LARGE	25	25	25 (FB)	20	**7.8**	87	**9**	100	**10.1**	112	**20.0**	20.0		
86		LARGE	32	30	32 (FB)	20	**8.6**	90	**9.5**	100	**10.6**	112	**7.6**	7.6		
87	FAST	LARGE	16	20	16 (FB)	10	**6**	85	**7**	100	**7.8**	112	**93.7**	**80.5**	YES	NO
88		MIDDLE	16	30	16 (FB)	10	**3.4**	85	**4**	100	**4.5**	112	**46.2**	**39.7**		
89		LARGE	25	25	25 (FB)	20	**7.8**	87	**9**	100	**10.1**	112	**30.0**	**25.7**		
90		LARGE	32	30	32 (FB)	20	**8.6**	90	**9.5**	100	**10.6**	112	**11.6**	**10.0**		

The tables presented in this section contain the information about:

- maximum attainable printing speed, that is the conveyor-belt travel speed [m / min],
- print height [mm],

for every printing algorithm available in the printer.



*The printing algorithm is defined as a combination of the **Speed Level**, **Matrix height**, **Height (pix)** printing parameters. For more information about printing parameters see **"4.5. Managing Printing Parameters"**.*

The print height [mm] is each time given for the printhead relative to object distance [mm] that is recommended for a given printing algorithm. The recommended distances have been selected by experience to ensure best quality prints.



*For a given printing algorithm there is a range of print heights that can be obtained through a modification of the **Print height** printing parameter between its minimum and maximum values. A print height for the standard (**100%**) setting of the **Print height** parameter is also given; the height is the recommended value in most cases. For more information about printing parameters see **"4.5. Managing Printing Parameters"**.*

The maximum printing speed [m/min] is each time given for the print resolution in the horizontal direction [dot/cm] that is recommended for a given printing algorithm. The recommended horizontal resolutions have been selected in such a way that they are similar to vertical resolutions, to ensure best legibility prints.



*If boldface is applied to the active text for the printing algorithms in which **Speed Level** = **FAST**, the maximum traveling speed of the conveyor belt decreases. For more information about printing parameters see **"4.5. Managing Printing Parameters"**.*

8.7. IMPORTING / EXPORTING FILES

A **USB** flash drive can be used for transferring texts and parameter blocks among:

- the **Boltmark®II**-series printers,
- the **Boltmark®II**-series printers and older-type printers if these are equipped with a **USB** connector.

*If you import parameter blocks created with other printers than the **Boltmark®II**-series printer, you need to select an appropriate conversion mode. For more details see **"8.3. Selecting conversion mode for imported parameter blocks"**.*

8.7.1. MANAGING FILES VIA A USB CONNECTOR

The (**USB**) connector of the printer can be used for transferring texts and parameter blocks among printers and also among the printer and a PC.

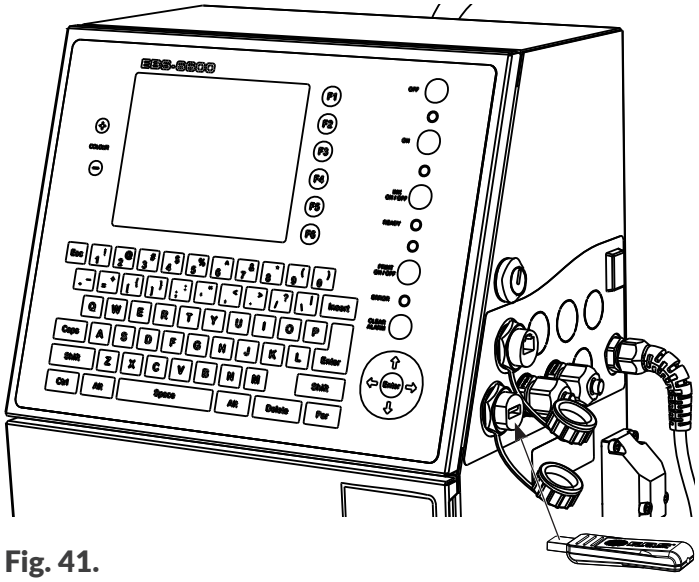


Fig. 41.

*The functions for managing files via a **USB** connector are not available to **OPERATOR** .*

*A **USB** flash drive connected to the printer's **USB** connector must be equipped with a **FAT** or **FAT32** file system. The current efficiency of the printer's **USB** connector is **300 mA**. It is recommended that the **USB** flash drive should be dedicated to printer support and should not contain too much data other than texts / parameter blocks as this may slow down printer operation.*

*For certain high-tech **USB** flash drives, the first operation can be very slow.*

Press



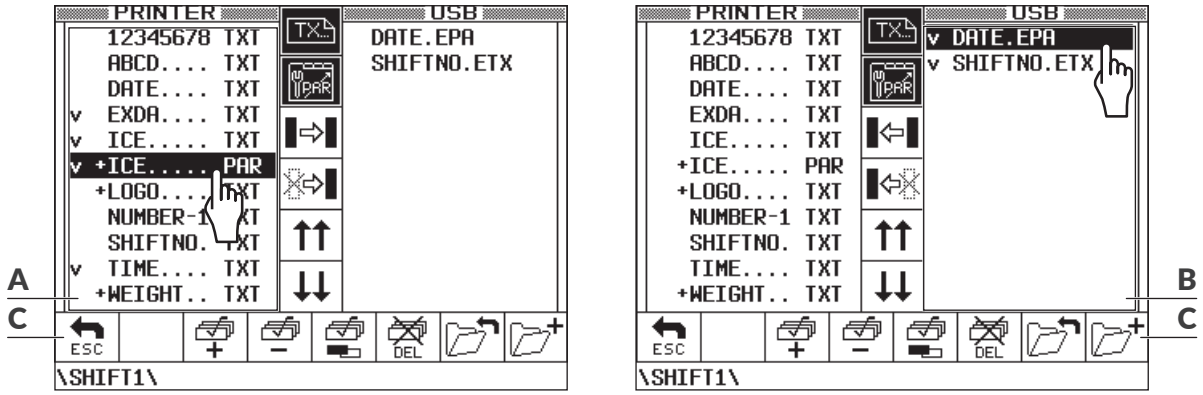
or



or



to gain access to file management via a **USB** connector in the manager window:



A	Printer memory window; the window shows: – texts; marked as **TXT**, – parameter blocks; marked as **PAR**. *The texts and parameter blocks marked with the "+" sign have the read-only attribute attached to them.*	**PRINTER**
B	**USB** flash drive window; the window shows: – texts; files with the extension *.**ETX**, – parameter blocks; files with the extension *.**EPA**, – structure of folders on the **USB** flash drive. *The files whose extensions are different from the above-mentioned are not displayed.* *The folder names displayed are shortened to 8 characters.*	**USB**
C	Set of function identification icons.	

*In windows **A**, **B** you can tick a greater number of texts / parameter blocks to be copied / transferred / deleted. They are marked with "**v**". a selected text / parameter block can be unticked / ticked by double-clicking on it.*

*Regardless of the active window, the bar at the bottom of the screen displays the current access path to **USB** flash drive files.*

The following function identification icons are available in the manager window:

Icon	Function
	Enable / disable texts to be displayed in manager windows **A**, **B**.
	Enable / disable parameter blocks to be displayed in manager windows **A**, **B**.
	**COPY** selected texts / parameter blocks from printer memory to a **USB** flash drive. – The texts copied to a **USB** flash drive are saved as files with the extension ***.ETX**. – The parameter blocks copied to a **USB** flash drive are saved as files with the extension ***.EPA**. *The icon is available when the cursor is in window **A**, i.e. window **a** is the active window.*

Icon	Function
	**TRANSFER** selected texts / parameter blocks from printer memory to a **USB** flash drive. – The texts transferred to a **USB** flash drive are saved as files with the extension ***.ETX**. – The parameter blocks transferred to a **USB** flash drive are saved as files with the extension ***.EPA**.  *The icon is available when the cursor is in window **A**, i.e. window **a** is the active window.*
	**COPY** selected texts / parameter blocks from a **USB** flash drive to printer memory. – The texts copied to printer memory are marked in window **a** as **TXT**. – The parameter blocks copied to printer memory are marked in window **a** as **PAR**.  *The icon is available when the cursor is in window **B**, i.e. window **B** is the active window.* *The names of texts / parameter blocks copied to printer memory must meet the same requirements as the names of texts / parameter blocks created / edited directly on the printer. For more information see **"5.7. Text Handling"**.* *If the number of the texts / parameter blocks that are being copied is greater than the maximum number of the items that can be saved in printer library, the excess items will not be copied.*
	**TRANSFER** selected texts / parameter blocks from a **USB** flash drive to printer memory. – The texts transferred to printer memory are marked in window **a** as **TXT**. – The parameter blocks transferred to printer memory are marked in window **a** as **PAR**.  *The icon is available when the cursor is in window **B**, i.e. window **B** is the active window.* *The names of texts / parameter blocks transferred to printer memory must meet the same requirements as the names of texts / parameter blocks created / edited directly on the printer. For more information see **"5.7. Text Handling"**.* *If the number of the texts / parameter blocks that are being transferred is greater than the maximum number of the items that can be saved in printer library, the excess items will not be transferred.*
	Scroll the contents of the active window one screen up (PAGE UP).
	Scroll the contents of the active window one screen down (PAGE DOWN).
	Tick all texts / parameter blocks in the active window.
	Untick all texts / parameter blocks in the active window.
	Reverse-tick all texts / parameter blocks in the active window.
	Delete selected texts / parameter blocks in the active window.
	Move one level up in the folder tree of the **USB** flash drive.  *The function is active regardless of which window is currently active.*

Icon	Function
	Create a folder at the current level of the **USB** drive folder tree.
	 *The function is active regardless of which window is currently active.*
	Escape the manager window.

If a text / parameter block copied / transferred already exists, additional icons may be displayed:

Icon	Function
	Overwrite the current text / parameter block.
	Overwrite all texts / parameter blocks.
	Skip the current text / parameter block.
	Skip all texts / parameter blocks.

8.7.1.1. IMPORTING PARAMETER BLOCKS FROM OTHER PRINTER MODELS

If parameter blocks created with other printers than the **Boltmark®II**-series printers need importing, it is required that an appropriate conversion mode be selected.

 *If conversion mode is set wrongly, the parameter blocks are saved incorrectly in printer memory.*

 *For more details see* ***"8.3. Selecting conversion mode for imported parameter blocks"****.*

CHAPTER 9
PERIODIC MAINTENANCE

9. PERIODIC MAINTENANCE

Maintenance operation	Interval
Checking the printhead for cleanness	From time to time (recommended every month). *If heavy pollution is found, it is recommended that it be removed from the printhead. For more details see **"9.1. Cleaning the Interior of the Printhead"**.*
Replacing **iModule®**	When the need to replace is signaled by the printer (on request). *For the description of how to replace **iModule®** see **"4.6.2. Replacing iModule®"**.*
Periodic inspection	Not less frequently than every **12 000 hours** of printer operation or every **3 years**. *The date of periodic inspection is set in the printer by the representative's authorized service staff; owing to that the printer will inform the user of the need for servicing.* *The date of the successive inspection can be viewed by pressing* 
Replacing ink filter in the printhead	Not less frequently than during periodic inspections. *If the printer is operated in a heavily polluted environment, the user may need to replace the ink filter in the printhead before the periodic inspection by himself. For the description of problems that may involve the need for replacing the filter see **"11.3. Problem Solving"**. For the description of how to replace the ink filter in the printhead see **"9.2. Replacing Ink Filter in the Printhead Periodically"**.*

9.1. CLEANING THE INTERIOR OF THE PRINTHEAD

*Any operations that require removing printhead cover **2b** (see **Fig. 8 on page 31**) during printer operation may be performed exclusively by **instructed** or **skilled persons**. An untrained user may remove printhead cover **2b** only when the printer is disconnected from the electrical mains.*

Tools and protective equipment required:
- a sprayer with solvent,
- a compressed air gun (optionally),
- a drip pan of metal or absorbent material,
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



To clean the interior of the printhead:

1. Press on the main screen to halt ink flow in the printhead.
   The message is displayed:
   Ink ON/OFF
   ARE YOU SURE (Y,N)?
   (Y=ENTER, N=ESC).
2. Press ENTER to continue.
3. Wait until the procedure for halting ink flow finishes.
   The procedure finishes when the green LED above the INK ON/OFF button stops blinking.
4. Unscrew bolt **2c** (see **Fig. 8 on page 31**) that fastens printhead cover **2b**.
   The message is displayed:
   Head cover removed
   Press ENTER...
5. Press ENTER o continue.
6. Pull the printhead out of the cover.
7. Make sure that the interior of the printhead is clean, especially near gutter **2h**.

   *If the interior of the printhead does not need cleaning, go to step **11** of this procedure. Otherwise, follow the successive steps.*

8. Put the printhead into a drip pan of metal or on absorbent material.
9. Spray solvent onto the interior of the printhead with a sprayer.
10. Remove dirt and other matter from the interior with a compressed air gun or absorbent material.
11. Insert the printhead into cover **2b**.
12. Screw tight screw **2c** to fasten the printhead cover.
13. Press on the main screen to restart ink flow in the printhead.
    The message is displayed:
    Ink ON/OFF
    ARE YOU SURE (Y,N)?
    (Y=ENTER, N=ESC).

14. Press ENTER to continue.

    Ink flow of is enabled when the LED above the INK ON/OFF button illuminates green and the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) is replaced with the icon.

    The printer is ready to print when the **READY** LED illuminates yellow.

> *On resuming ink flow, the printer moves to service mode. Service mode can be disabled by pressing → → . The function is not available to **OPERATOR** .*

9.2. REPLACING INK FILTER IN THE PRINTHEAD PERIODICALLY

> *After the end of the service life of the ink filter, do not dispose of it with household waste. Treat the used filter as hazardous waste and deliver it to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

> *Any operations that require removing printhead cover **2b** (see ***Fig. 8 on page 31***) during printer operation may be performed exclusively by **instructed** or **skilled persons**. An untrained user may remove printhead cover **2b** only when the printer is disconnected from the electrical mains.*

> *Tools and protective equipment required:*
> *- a new ink filter (see the drawing on the right, Part No. **P513072**),*
> *- a **T15 Torx**-type screwdriver,*
> *- a drip pan of metal or absorbent material,*
> *- safety goggles,*
> *- protective gloves that are resistant to ink / cleaner,*
> *- protective clothing.*





The ink filter (see ***Fig. 42 on page 222***) in the printhead should be replaced by the qualified service staff when the printer is periodically inspected.

If the printer is used in a polluted (dusty) environment, the user may have to replace the filter by himself.

> *For the description of the problems that may involve the need for replacing the ink filter in the printhead see ***"11.3. Problem Solving"**.*

To replace the ink filter in the printhead:

1. Press on the main screen to halt ink flow in the printhead.

   The message is displayed:

   Ink ON/OFF

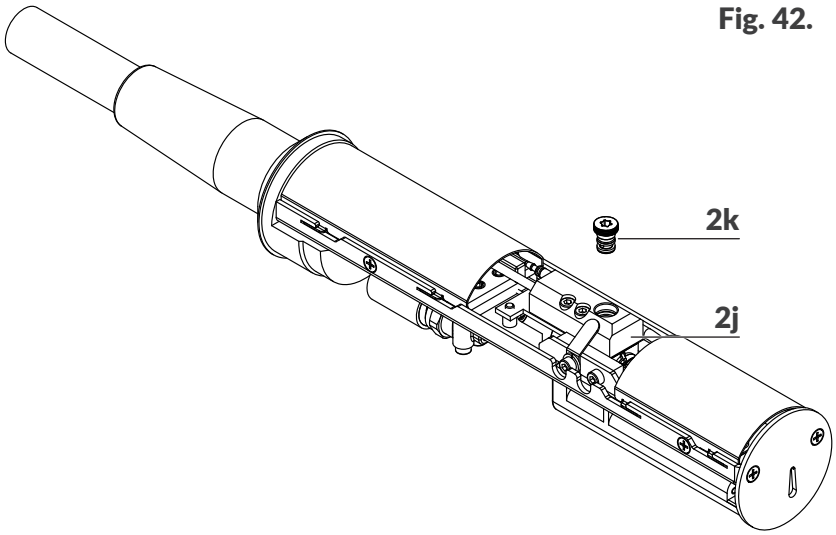
   ARE YOU SURE (Y,N)?

   (Y=ENTER, N=ESC).
2. Press ENTER to continue.
3. Wait until the procedure for halting ink flow finishes.

   The procedure finishes when the green LED above the INK ON/OFF button goes off.

4. Loosen bolt **2c** (see *Fig. 8 on page 31*) that fastens printhead cover **2b**.
   The message is displayed:
   Head cover removed
   Press ENTER...
5. Press ENTER to continue.
6. Pull the printhead out of cover **2b**.
7. Place a drip pan of metal or absorbent material under the printhead.

Fig. 42.



2j	Connector.
2k	Ink filter fitting.

8. Use a **T15 Torx**-type screwdriver, to screw ink filter fitting **2k** out of connector **2j**.
9. Use a **T15 Torx**-type screwdriver, to screw a new ink filter fitting **2k** into connector **2j**.
10. Insert the printhead into the cover.
11. Screw tight screw **2c** to fasten the printhead cover.
12. Press on the main screen to restart ink flow in the printhead.
    The message is displayed:
    Ink ON/OFF
    ARE YOU SURE (Y,N)?
    (Y=ENTER, N=ESC).
13. Press ENTER to continue.
    Ink flow of is enabled when the LED above the INK ON/OFF button illuminates green and the icon on function identification icon bar **1f** (see *Fig. 22 on page 61*) is replaced with the icon.
    The printer is ready to print when the **READY** LED illuminates yellow.

If the jet does not hit the gutter after the ink filer has been replaced, the nozzle cleaning procedure needs following. For more details see "10.2.6. Clearing the Nozzle".

On resuming ink flow, the printer moves to service mode. Service mode can be disabled by pressing

9.3. PERIODIC INSPECTION

Every periodic inspection of the printer should be performed by the qualified service staff not less frequently than every **12 000 hours** of printer operation or every **3 years**. Such inspections are necessary for ensuring continuous, faultless operation of he printer.

The upcoming periodic inspection date is signaled by one of the following messages:

- **Less than 300 hours to SERVICE VISIT: CALL YOUR LOCAL SERVICE PLEASE.**,
- **Less than 1 month to SERVICE VISIT: CALL YOUR LOCAL SERVICE PLEASE.**.

The above messages are displayed in a cyclical pattern, and also each time the printer is started up.

When the date of periodic inspection expires, the following message is displayed each time the printers starts up:

SERVICE VISIT REQUIRED. CALL YOUR LOCAL SERVICE PLEASE.

Press ENTER...

Contact your representative to fix the date for a periodic inspection.

Press ▸ ▸ ▸ to obtain information about periodic inspection.

*The information about periodic inspection is not available to **OPERATOR** .*

*The data is entered by **SERVICEMAN** during periodic inspection.*

*For more details see **"7.4. Date of Periodic Service"**.*

9.4. STORING AND TRANSPORTING

9.4.1. STORING THE PRINTER

The procedure for preparing the printer for storing depends on the period over which the printer is planned to be shut down.

There are three types of preparation for storing:

- for a period of **up to 1 week**,
- for a period of **up to 1 month**,
- for a period of **over 1 month**.



If the printer is shut down in emergency or service shut down mode, then you need to:
- switch the printer on,
- follow the preparation procedure that corresponds to the period over which the printer is planned to remain shut down.

If the printer is shut down in emergency or service shut down mode and is left in such condition for more than 1 hour, the risk of printer failure occurs.

Environmental conditions and permissible mechanical hazards in storage:

- storage temperature: **from -5°C to +50°C (from +23°F to +122°F)**,
- relative humidity: **up to 90% without condensation**,
- shocks: **max 1 g, max 2 ms**.

9.4.1.1. STORING FOR UP TO 1 WEEK

In order to prepare the printer for storing over a period of **up to 1 week**, shut down the printer in regular mode.



*For more details about shutting down the printer see **"4.2. Shutting the Printer down"**.*

After shutting down the printer it is recommended that its interior be sprayed with solvent.

After an **up to 1 week** period of storage, the printer can be started up directly and no additional operations are required.



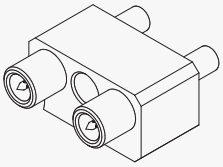
*For more details about starting the printer up see **"4.1. Starting the Printer up"**.*

9.4.1.2. STORING FOR UP TO 1 MONTH

*While following the procedure for preparing the printer for storing for up to **1 month** be careful not to get wounded with the needles that are part of the bottle connection and of the adapter.*

*The procedure is not available to **OPERATOR** .*

Accessories and protective equipment required:
*- an adapter (Part No. **P511772**) for connecting a solvent bottle to ink connector,*
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing,
Contact an authorized representative for information about the adapter.



To prepare the printer for storing over a period of **up to 1 month**:

1. Press ▸ ▸ ▸ 1M.
   The message is displayed:
   SWITCH OFF WITH V3 WASH
   ARE YOU SURE (Y,N)?
   (Y=ENTER, N=ESC).
2. Press ENTER to continue.
   The printer shuts down in regular mode.

   *For more details about shutting down the printer see **"4.2. Shutting the Printer down"**.*

3. Do not perform any operations and wait until the message
   With a use of an adapter plug a solvent bottle in the ink bottle connector. Then press ENTER
   is displayed and accompanied by an audible signal.

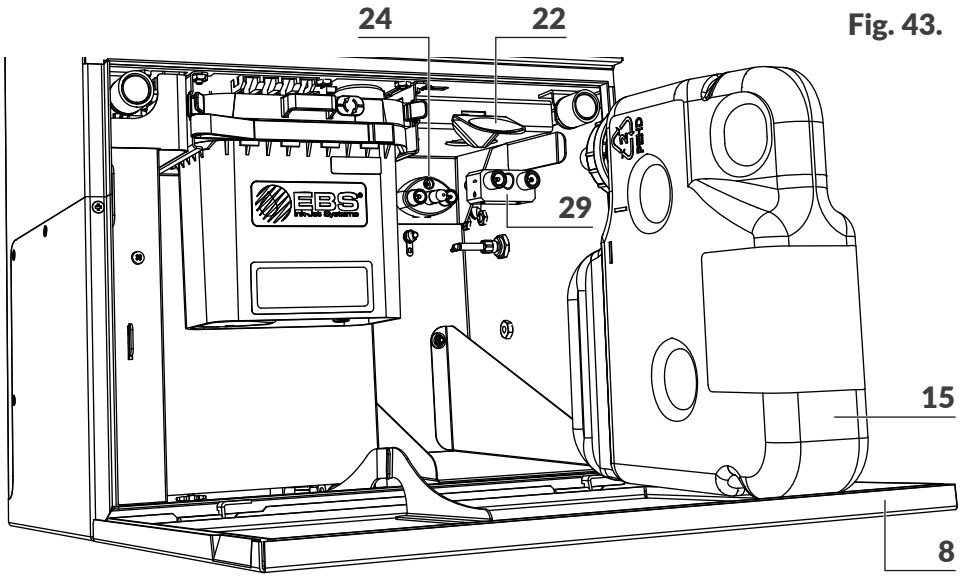


Fig. 43.

8	Consumables compartment door.

15	Solvent bottle.
22	Latch fastener for bottles.
24	Connector (black) for an ink bottle.
29	Adapter.

4. Open consumables compartment door **8** (see ***Fig. 43***).
5. Lift latch **22** that fastens the bottles.
6. Pull solvent bottle **15** and ink bottle **16** out of the printer (see ***Fig. 6 on page 29***).
7. Connect adapter **29** to black connector **24** on the right-hand side.
8. Connect solvent bottle **15** equipped with a white cap to adapter **29**.
9. Lower latch fastener **22**.
10. Press ENTER to continue.
    The shutting down procedure is continued.
    The printer shutdown procedure finishes when the LED between the OFF and ON buttons illuminates red and the screen is blank; the printer is in standby mode.
11. Lift latch **22** that fastens the bottles.
12. Pull solvent bottle **15** out of the printer.
13. Lower latch **22** that fastens the bottles.
14. Detach adapter **29** from black connector **24** in the consumables compartment.
15. Lift latch **22** that fastens the bottles.
16. Connect the bottles to their corresponding connectors, pressing them to the limit:
    - solvent bottle **15** equipped with a white cap - to white connector **23** on the left-hand side,
    - ink bottle **16** equipped with a black cap - to black connector **24** on the right-hand side.
17. Lower the latch fastener **22** so that it rested in the bottle grooves.
18. Close the consumables compartment door **8**.

After shutting down the printer it is recommended that its interior be sprayed with solvent.

After the **up to 1 month** period of storage expires, the printer can be started up directly and no additional operations are required.

*For more details about starting the printer up see **"4.1. Starting the Printer up"**.*

9.4.1.3. STORING FOR OVER 1 MONTH

*The battery that backs up printer memory ensures that text files, parameter blocks and the user's other settings are stored for **about 1 month**. Therefore it is essential that the following is done at least once a month:*
- the printer is started up for a minimum of 8 hours
or
- the battery charging procedure is followed.

There are two procedures (**A**, **B**) for preparing the printer for storing for a period of over 1 month:

A

The procedure that requires the printer to be started up every month for a minimum of 8 hours.

The procedure consists in the preparation of the printer for storing over a period of **up to 1 month** on a monthly basis.

*The procedure can be followed by **ADVANCED OPERATOR**.*

*For more details about the procedure see **"9.4.1.2. Storing for up to 1 month"**.*

B

*The procedure can only be followed by **SERVICEMAN**.*

*If the printer needs preparing for storing over a period of **more than 1 months**, contact an authorized representative.*

*The printer prepared for storing according to procedure **B** requires that the battery be charged every month. This operation can be performed by ordinary user. The description of the battery charging procedure is given further in this section.*

To charge the battery:

*The procedure can be followed by **ordinary user**.*

1. Connect power plug **3a** (see ***Fig. 3 on page 26***) to the electrical mains.
2. Set the main power switch **POWER** (**5**; see ***Fig. 5 on page 28***) on accessories connector plate **4** to the "**I**" position.
   The printer goes into standby mode.
   In this mode, the LED between the OFF and ON buttons illuminates red.
   The LCD screen is blank.
3. Do not perform any operations and leave the printer in standby mode for **at least 8 hours**.
4. Set the main power switch **POWER** (**5**) on accessories connector plate **4** to the "**O**" position to finish charging.
   The printer is shut down.
   The LED above the OFF and ON buttons goes out.
5. Detach power plug **3a** from the electrical mains.
6. Repeat the battery charging procedure at least once a month.

When the **over 1 month** storage period expires, you can do the following:

– if the printer has been prepared for storing under procedure **A**, you can start it up without any additional operations,

– if the printer has been prepared for storing under procedure **B**, it can be started up only by SERVICEMAN.

9.4.2. MODES FOR MAINTAINING READINESS FOR PRINTING

If the printer does not have the functionalities described below, contact an authorized representative for additional information.

The procedures described in this section are not available to the OPERATOR.

In order to ensure faultless startup after a break in operation, the printer has dedicated storage modes:

– Parking Mode - in this mode, the printer can remain shut down for up to 3 months. Its purpose is to keep the device in a condition that allows it to start up correctly after a longer period of standstill.

*For more details see **"9.4.2.1. Parking Mode"**.*

– Readiness Mode - in this mode, the printer can remain for a maximum of **9 months** or until the solvent in the bottle is used up. Its purpose is to keep the printer in a condition that enables faultless startup of the equipment and quick readiness for printing, while maintaining the ink parameters within a range that allows correct prints to be made immediately after the printer is started up.

*For more details see **"9.4.2.2. Readiness Mode"**.*

The above-mentioned modes allow the printer to be maintained in a condition that ensures correct startup without additional service operations.

	Parking Mode	Readiness Mode
Shutdown Time	up to 3 months	up to 9 months (or until the solvent in the bottle is used up)
Estimated ink consumption	approx. 0.3 bottles per year	approx. 1 bottle per year
Protection of components against drying out	YES	YES
Maintaining ink parameters that ensure correct prints after startup	NO	YES
Requirement to place the printhead in the cleaning station	YES	YES
Requirement for continuous connection to the electrical mains	YES	YES
Requirement for the user to confirm the end of storage	NO	YES

9.4.2.1. PARKING MODE

During storage in Parking Mode:
*-the printer must be kept under appropriate conditions (see **"9.4.1. Storing the Printer"**),*
- the printhead, with its cover removed, must be placed in the cleaning station,*
- the power cable must be connected to the electrical mains,
*- the main power switch **POWER** on the accessories connector plate must be set to the "**I**" position.*

** For information about the cleaning station, contact an authorized representative (Part No. **P910210**).*



This mode is intended for storing the **Boltmark®II** printer in a condition that ensures trouble-free startup after a period of standstill.

To prepare the printer for storage in Parking Mode:

1. Press ▶ ▶ to start the textual mode.
2. Press **SERVICE** ▶ **SERVICE COMMANDS** ▶ **SWITCH TO PARKING MODE to continue**.
   Selecting the above command will shut the printer down and cause the following operations to be performed cyclically every 168 hours (1 week):
   - starting up the device,
   - enabling ink mixing / flow in the internal circuits in order to prevent the valves from drying out,
   - rinsing the gun and nozzle with solvent,
   - automatic shutdown of the device.

   The estimated time required to perform the above-mentioned operations is approximately 15 minutes.

The printer will remain in Parking Mode until this mode is deactivated (by switching the printer on using the ON). During the next startup of the equipment, the printer will display a message informing the user that the printer was previously shut down in Parking Mode, as well as a reminder that the printhead must be properly secured.

To start up the printer after storage in Parking Mode:

1. Check the cleanliness of the printhead interior and clean it if necessary.
2. Place the printer on the production line.
3. Start up the printer.
4. Make several test prints to assess print quality.
5. If the quality is incorrect, leave the printer switched on until appropriate printing parameters are obtained.

Parking Mode does not guarantee that the ink parameters required for making correct prints will be maintained. Several test prints must be made. If print quality is insufficient, the printer must be left switched on until appropriate ink parameters are obtained.

9.4.2.2. READINESS MODE

During storage in Readiness Mode:
*- the printer must be kept under appropriate conditions (see **"9.4.1. Storing the Printer"**),*
- the printhead, with its cover removed, must be placed in the cleaning station,*
- the power cable must be connected to the electrical mains,
*- the main power switch **POWER** on the accessories connector plate must be set to the "I" position,*
- the solvent bottle must contain an appropriate amount of solvent (it is recommended to use a full bottle).

** For information about the cleaning station, contact an authorized representative (Part No. **P910210**).*



This mode is intended to keep the **Boltmark®II** printer ready for printing.

To prepare the printer for storage in Readiness Mode:

1. Press ▶ ▶ to start the textual mode.
2. Press **SERVICE ▶ SERVICE COMMANDS ▶ SET READINESS MODE to continue**.
3. Activate Readiness Mode by selecting "YES".
4. Shut the printer down using the button OFF.

   Selecting the above command will cause the following operations to be performed automatically every 168 hours (1 week):

   - automatic startup of the device,
   - enabling ink mixing in the internal circuits in order to prevent the valves from drying out,
   - enabling the jet and reaching readiness for printing,
   - performing operations that pump ink back into and draw ink from the bottle, forcing ink flow, which prevents the ink from drying out and keeps the ink supply system clear,
   - automatic shutdown of the device with rinsing of the gun and nozzle with solvent,
   - suction of fluids from the gutter until it is completely emptied.

   The estimated time required to perform the operations described above is approximately 120 minutes.

To start up the printer after storage in Readiness Mode:

1. Check the cleanliness of the printhead interior and clean it if necessary.
2. Place the printer on the production line.
3. Start up the printer.
4. Press **SERVICE ▶ SERVICE COMMANDS ▶ SET READINESS MODE to deactivate Readiness Mode**
5. Deactivate "Readiness Mode" by selecting "NO".

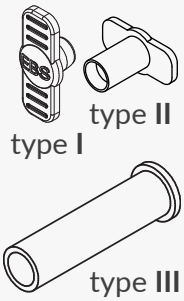
Deactivation of Readiness Mode is confirmation by the user that the device is at the workstation and is prepared for printing. Without performing this operation, printing cannot be started.

9.4.3. TRANSPORTING THE PRINTER

While following the procedure for preparing the printer for transporting be careful not to get wounded with the needles that are part of the bottle connection.

Accessories required:
*- a set of transport-protection plugs (Part No. **P512678**), consisting of:*
7 transport-protection plugs type I,
5 transport-protection plugs type II,
3 transport-protection plugs type III.
There are more plugs in the set than required; the set contains also spare plugs of each of the above-mentioned types.

For more information about transport-protection plugs contact your representative.



To prepare the printer for transporting:

1. Prepare the printer for storing for a period when the printer is planned to remain shut down.

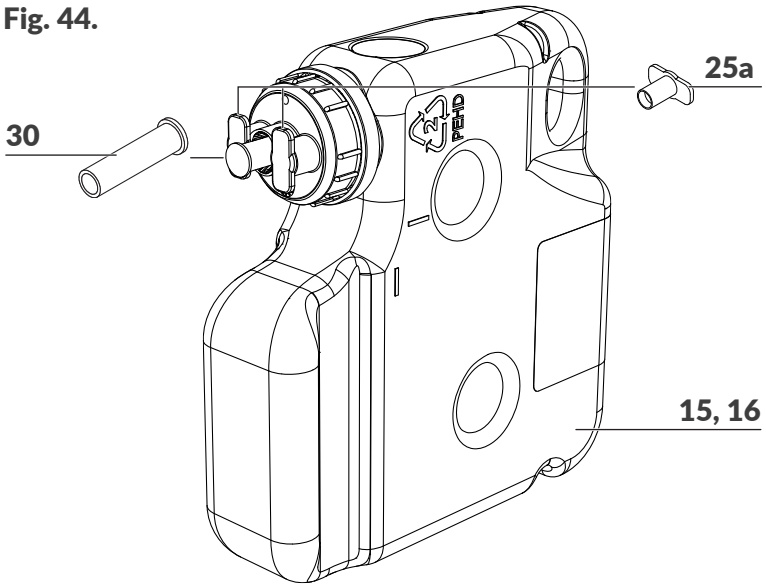
   *For more details about preparing the printer for storing see **"9.4.1. Storing the Printer"**.*

2. Detach power plug **3a** (see ***Fig. 3 on page 26***) from the electrical mains.
3. Open consumables compartment door **8** (see ***Fig. 11 on page 33***).
4. Set transport protection **14a** of **iModule®** to the close position, *i.e.* rotate the protection through 90° and press to the limit.



5. Lift latch **22** that fastens the bottles.
6. Pull solvent bottle **15** and ink bottle **16** out of the printer (see ***Fig. 44***).
7. Put transport-protection plugs type **I**  **21** onto the bottle connectors in the printer:
   - **three** plugs onto white connector **23** on the left-hand side,
   - **two** plugs onto black connector **24** on the right-hand side; only on outer pipe studs.
8. Secure the bottles:
   - solvent bottle **15** with **two** transport-protection plugs type **II**  **25a** and **one** transport-protection plug type **III**  **30**,
   - ink bottle **16** with **two** transport-protection plugs type **II**  **25a**, only on external pipe studs.

Fig. 44.



15	Solvent bottle.
16	Ink bottle.
25a	Transport-protection plug type **II**.
30	Transport-protection plug type **III**; only for solvent bottle **15**.

9. Close consumables compartment door **8**.
10. Pack the printer and the bottles to a package that will protect them against mechanical damage.

The printer must be transported in its regular working position only.

*While the printer or **iModule®** itself is transported, transport protection **14a** of **iModule®** must be in the closed position. The transport protection should not be opened until the printer is positioned in its workplace.*

Permissible mechanical hazards inside the package:

– shocks: **max 1 g, max 2 ms**.

CHAPTER 10
SERVICE

10. SERVICE

10.1. INNER PANEL

*Any operations that require opening electronics compartment door 9 may be performed exclusively by **instructed** or **skilled persons**.*

*To gain access to the inner panel, open electronics compartment door **9** with a lock key. If the printer operates with the electronics compartment door opened, be particularly careful not to damage electronic boards and not to receive an electric shock.*

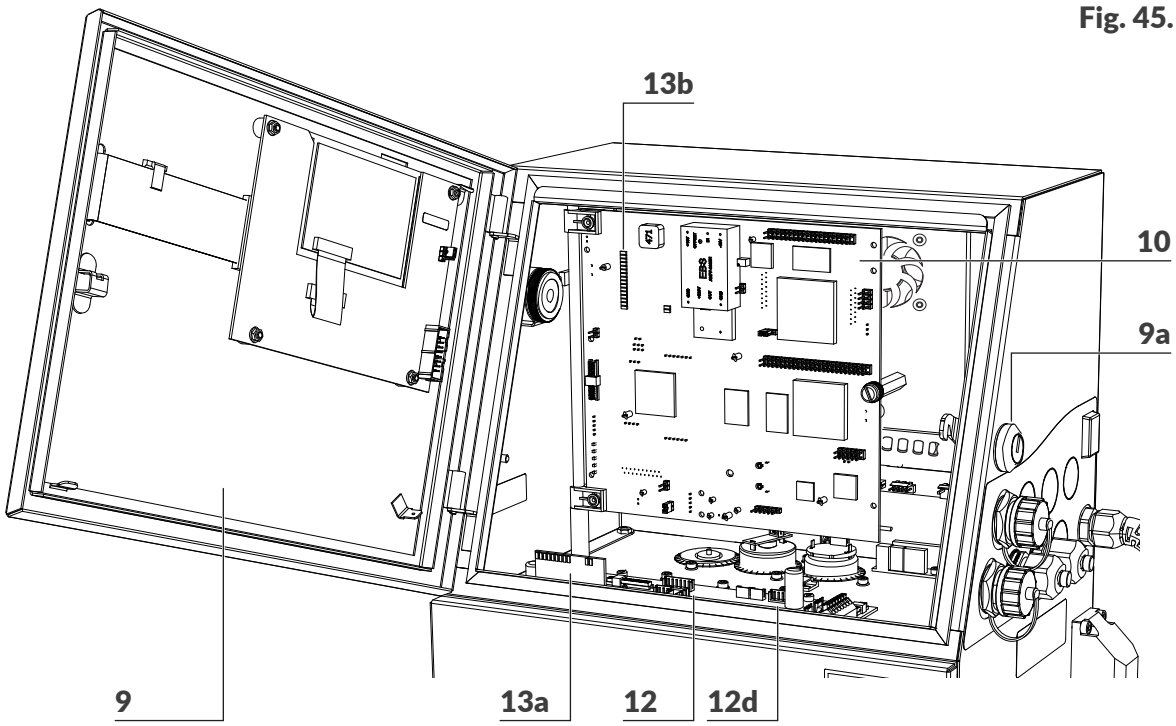
Tools required:
- a key to unlock the electronics compartment door.

Inner panel **13** (see ***Fig. 4 on page 27***) consists of several sets of LEDs (**13a**, **13b**, **12d**; see ***Fig. 45***) situated on electronic boards in the electronics compartment; it is designed for extended signaling of:

- printer state,
- errors.

The signaling with the inner panel LEDs can be useful when the printer is subjected to diagnostic procedures or printer problems need solving.

Fig. 45.



9	Electronics compartment door; equipped with key-operated lock **9a**.
10	Main board **RKM**.
12	Ink system control board **PSA6K**.
12d	Inner panel LEDs; to signal states of photodetectors and encoder.
13a	Inner panel LEDs; to signal states of valves and pumps.
13b	Inner panel LEDs; to signal the printer status and errors.

10.1.1. SIGNALING STATES OF VALVES AND PUMPS

Meaning of inner panel LEDs (**13a**; see *Fig. 45 on page 234*):

Name / Color	Meaning
V0	State of valve **V0**.
V1	State of valve **V1**.
V2	State of valve **V2**.
V3	State of valve **V3**.
V4	State of valve **V4**.
V5	State of valve **V5**.
V6	State of valve **V6**.
V7	State of valve **V7**.
V8	State of valve **V8**.
INK	State of ink pressure pump (a so called ink pump).
VAC	State of vacuum pump.

Valve combinations for selected printer procedures:

V0	V1	V2	V3	V4	V5	V6	V7	V8	Procedure
■	■								Flow of ink to the printhead.
	■	■							Drawing from gun in the printhead.
			■		■				Supplementing the ink system with ink from a bottle.
				■					Supplementing the ink system with solvent from a bottle.
					■				Priming a pump with solvent from a bottle.
					■	■			– Rinsing the solvent pump. – Filtering the ink in the ink system.
						■		■	Rinsing the printhead with solvent.
							■		Rinsing the vacuum pump with solvent.

10.1.2. SIGNALING PRINTER STATES AND ERRORS

Meaning of inner panel LEDs (**13b**; see *Fig. 45 on page 234*):

Name / Color	Meaning
300V_ERR	+300V error (high voltage is used in ink drop charging process).
STAB_ERR	Ink pressure stabilizer error (*e.g.* clogged stabilizer).
PRESS_ER	– The LED blinks - instantaneous ink pressure rise above 120% of set value, – The LED illuminates solid - ink pressure circuit error (*e.g.* a drop of ink pressure, ink pump timeout, ink pressure exceeded, a problem with ink pressure transducer).
PH_ERR	Phasing error (in the printhead).
VAC_ERR	Vacuum error (*e.g.* choked gutter circuit, problems with drawing ink from gutter, vacuum transducer fault).
PUMP_ERR	Blow pump error.
INK_LACK	– No ink in ink bottle. – Ink bottle expiration date exceeded. – Ink bottle transponder error.
SOL_LACK	– No solvent in solvent bottle. – Solvent bottle time limit expired. – Solvent bottle transponder error.
HV_ON	– The LED blinks - high voltage error (high voltage is used in ink drop deflecting process). – The LED illuminates solid - high voltage is applied to the printhead: it indicates printing state or high voltage test. *The LED duplicates the LED above the PRINT ON/OFF button on the operator panel.*
READY	- The LED blinks - the printhead is in the process of being prepared for printing. - The LED illuminates solid - the printer is ready to print. *The LED duplicates the **READY** LED on the operator panel.*
OVERFLOW	High ink level indicator for **iModule®**; **iModule®** overflow.
BOTTOM	Low ink level indicator for **iModule®**; supplementing ink system with ink / solvent from a bottle started.
EMPTY	**iModule®** completely empty.
NO_TANK	No **iModule®**.
+VIS_SOL	– The LED blinks - value of the **ToF(intake)*** parameter fluctuates near the nominal value; ink system is supplemented with solvent from bottle. – The LED illuminates solid - value of the **ToF(intake)*** parameter is greater than the nominal value; ink system is supplemented with solvent from bottle.

Name / Color	Meaning
-VIS_INK	Value of the **ToF(intake)*** parameter is smaller than the nominal value; ink system is supplemented with ink from bottle. *If the **+VIS_SOL** and **-VIS_INK** LEDs alternatively illuminate blinking, this means that ink viscosity in the system is not measured; ink system is supplemented with solvent from bottle.*
POW_ON	– The LED blinks - the printer is in standby mode; the LED between the OFF and ON buttons on the operator panel illuminates red. – The LED illuminates solid - the printer is started up; the LED between the OFF and ON buttons on the operator panel illuminates green.
ALARM	Any error. *The LED duplicates the **ERROR** LED on the operator panel.*

** The **ToF(intake)** parameter is an ink composition indicator.*

*The contents of the **ToF(intake)** parameter can be viewed by pressing* . For more details see ***"7.3. Monitoring Basic Printer Parameters"***.

10.1.3. ADDITIONAL SIGNALING

Meaning of inner panel LEDs (**12d**; see ***Fig. 45 on page 234***):

Name / Color	Meaning
PHOT	Object has been detected by photodetector **A**.
SHA	Encoder impulses; conveyor belt has moved.
SHAB	Encoder impulses used for sensing backward movement of the conveyor belt (an option).
PHOTB	Object has been detected by photodetector **B** (an option).

10.2. PRINTHEAD SERVICE

*Any operations that require removing printhead cover **2b** (see **Fig. 8 on page 31**) during printer operation may be performed exclusively by **instructed** or **skilled persons**. An untrained user may remove printhead cover **2b** only when the printer is disconnected from the electrical mains.*

*The functions described in this section are not available to **OPERATOR** .*

10.2.1. SERVICE MODE

If the printer is in service mode, maintenance and service operations can be performed within the printhead. No phasing error is signaled, when the printer is in service mode.

Press ▸ ▸ to enter service mode.

The character "**v**" is displayed on printer status bar **1h** (see **Fig. 22 on page 61**).

The printhead is in service mode.

Printing can start in service mode.

*If printing stops, service mode is exited automatically and the printer is ready to print, which is indicated with the character "**s**" on printer status bar **1h**.*

Service mode is entered automatically, when:

- the printhead cover is removed,
- the protection release procedure has been completed,
- **iModule**® has been replaced,
- ink flow in the printhead is stopped / started.

Press ▸ ▸ to exit service mode.

The character "**s**" is displayed on printer status bar **1h**.

The printhead is ready to print.

If service mode is entered automatically because the printhead cover is removed, then when the cover is reinstalled, service mode is automatically exited.

10.2.2. STOPPING / STARTING INK FLOW IN THE PRINTHEAD

There are two modes for stopping / starting ink flow in the printhead:

- full procedure for stopping / starting ink flow and rinsing the printhead,
- quick procedure for stopping / starting ink flow.

10.2.2.1. STOPPING / STARTING INK FLOW AND RINSING THE PRINTHEAD

The procedure for stopping ink flow and rinsing the printhead is similar to the printhead shut-down procedure. With this function ink flow can be stopped for a period not longer than 48 hours. This ink flow stopping procedure ensures that:

- the printhead circuit is rinsed thoroughly,
- the printhead circuit is protected against drying.

If ink flow is stopped / started and the printhead is rinsed at the same time too frequently, the ink in the ink system may become diluted or the ink system may be overflown.

Stopping ink flow and rinsing the printhead cannot be followed if the printer is in printing state.

To perform a maintenance / service operation within the printhead, it is recommended that the quick stop procedure be followed.

To stop ink flow and rinse the printhead:

1. Press the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) or the INK ON/OFF button.
2. If you use the icon, additionally press ENTER to continue. No additional confirmation is needed when the INK ON/OFF button is used.
   The ink flow stopping procedure begins; it may last up to several minutes and consists of a few stages:
   - If the printer is ready to print, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** is replaced with the icon.
   - The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being stopped.
   - The ink flow stopping procedure finishes when the LED above the INK ON/OFF button goes off.

To start ink flow and rinse the printhead:

1. Press the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) or the INK ON/OFF button.
2. If you use the icon, additionally press ENTER to continue. No additional confirmation is needed when the INK ON/OFF button is used.
   The ink flow starting procedure begins; it may last up to several minutes and consists of a few stages.
   - The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being started.
   - The LED above the INK ON/OFF button illuminates green, indicating that ink flow in the printhead in started; the icon on function identification icon bar **1f** is replaced with the icon.
   - The **READY** LED blinks yellow.
   - The printer status is displayed on printer status bar **1h**.

– The ink flow starting procedure finishes when the **READY** LED illuminates yellow; the printer is ready to print.

On restarting ink flow, the printer is in service mode. Service mode can be exited by pressing ▶ ▶

10.2.2.2. QUICK STOPPING / STARTING INK FLOW

The quick procedure for stopping ink flow in the printhead is advisable when the maintenance / ervice operation to be performed within the printhead takes not longer than 15 minutes. If this time is exceeded, the printer shuts down automatically without rinsing the printhead.

To stop ink flow in the printhead in quick mode:

Press ▶ ▶ ▶ .

When the procedure starts, the message is displayed
IN 15 MIN. THE INK STREAM HAS TO BE ON !!
Press ENTER... *and counting of a 15-minute period starts. You can accept the message at any time by pressing* ENTER.

One minute before the end of the period an additional warning message is displayed and an audible signal is generated.

If ink flow is not restarted within 15 minutes, the printer shuts down without rinsing the printhead.

The quick ink flow stopping procedure begins; it lasts several seconds and consists of a few stages:

– If the printer is ready for printing, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) is replaced with the icon.
– The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being stopped.
– The quick ink flow stopping procedure finishes when the LED above the INK ON/OFF button goes off.

If the printer shuts down automatically without rinsing the printhead circuit, than do the following after 15 minutes:
- spray the printhead interior with solvent,
- restart the printer as soon as possible.

If you leave unattended the printer that has been shut down but the printhead circuit has not been rinsed, the ink left inside the printhead circuit may dry.

To start ink flow in the printhead in quick mode:

Press ▶ ▶ ▶ .

The quick ink flow starting procedure begins; it lasts several dozen seconds and consists of a few stages:

– The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being started.

- The LED above the INK ON/OFF button illuminates green, indicating that ink flow in the printhead in started; the icon on function identification icon bar **1f** (see *Fig. 22 on page 61*) is replaced with the icon.
- The **READY** LED blinks yellow.
- The printer status is displayed on printer status bar **1h**.
- The quick ink flow starting procedure finishes when the **READY** LED illuminates yellow; the printer is ready to print.

On restarting ink flow, the printer is in service mode. Service mode can be exited by pressing

10.2.3. DISABLING THE INK SYSTEM

The function causes the ink system to be disabled regardless of what procedure is currently followed. The function can be used to stop procedures such as:

- nozzle rinsing,
- solvent flow in the printhead,
- ink filtering.

The ink system cannot be disabled when the printer is in printing state.

To disable the ink system:

Press

When the procedure starts, the message is displayed
IN 15 MIN. THE INK STREAM HAS TO BE ON !!
Press ENTER... *and counting of a 15-minute period starts. You can accept the message at any time by pressing* ENTER.

One minute before the end of the period an additional warning message is displayed and an audible signal is generated.

If ink flow is not restarted within 15 minutes, the printer shuts down without rinsing the printhead.

The ink system disabling procedure begins; it lasts several seconds and consists of a few stages:

- If the printer is ready to print, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** (see *Fig. 22 on page 61*) is replaced with the icon.
- The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being stopped.
- The quick ink flow stopping procedure finishes when the LED above the INK ON/OFF button goes off.

If the printer shuts down automatically without rinsing the printhead circuit, than do the following after 15 minutes:
- spray the printhead interior with solvent,
- restart the printer as soon as possible.

If you leave unattended the printer that has been shut down but the printhead circuit has not been rinsed, the ink left inside the printhead circuit may dry.

10.2.4. RINSING THE NOZZLE

Accessories and protective equipment required:
- a drip pan of metal or absorbent material,
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



The function is used for rinsing the nozzle when ink jet does not hit the gutter.
By following the procedure you may avoid the need for unscrewing the nozzle to clear it or for a service intervention.

The nozzle rinse procedure can be followed up to two times in turn.

To start the nozzle rinse procedure:

1. Place a drip pan of metal or absorbent material under the printhead outlet.
2. Press ▶ ▶ ▶ ▶ .
   The nozzle rinse procedure begins; it lasts several dozen seconds and consists of a few stages:
   - If the printer is ready to print, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) is replaced with the icon.
   - The LED above the INK ON/OFF button goes off, indicating that ink flow in the printhead is stopped.
   - The LED above the INK ON/OFF button blinks green, indicating that the nozzle is rinsed and then ink flow in the printhead is restarted.
   - The LED above the INK ON/OFF button illuminates green, indicating that ink flow in the printhead in started; the icon on function identification icon bar **1f** is replaced with the icon.
   - The **READY** LED blinks yellow.
   - The printer status is displayed on printer status bar **1h**.
   - The nozzle rinse procedure finishes when the **READY** LED illuminates yellow; the printer is ready to print.

The nozzle rinse procedure may need to be followed by removal of dirt from the printhead. For more details see ***"9.1. Cleaning the Interior of the Printhead"****.*

If the nozzle rinse procedure is carried out once or twice and the problem is still unsolved, do the following in turn:
- start solvent flow following the procedure described in ***"10.2.5. Starting Solvent Flow"****,*
- clear the nozzle following the procedure described in ***"10.2.6. Clearing the Nozzle"****,*
- contact an authorized service point.

The nozzle rinse procedure can be shortened by using the ink system disabling function.
Press ▶ ▶ ▶ to finish the nozzle rinse procedure at any time.

Ink flow in the printhead can be restarted at any time during the procedure.
Press ▶ ▶ ▶ to start ink flow in the printhead.

10.2.5. STARTING SOLVENT FLOW

Accessories and protective equipment required:
- a drip pan of metal or absorbent material,
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



The function is used for starting a flow of solvent in the printhead to rinse printhead circuits.
It is advisable to use the function when:

- ink jet fails to hit the gutter due to uncleared nozzle and the nozzle rinse procedure does not solve the problem,
- ink pours out of the gutter, which may indicate that the gutter circuit is clogged.

To start solvent flow in the printhead:

1. Place a drip pan of metal or absorbent material under the printhead outlet.
2. Press ▶▶▶▶.
   The procedure for starting solvent flow in the printhead begins; it lasts several dozen seconds and consists of a few stages:
   - If the printer is ready to print, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) is replaced with the icon.
   - The LED above the INK ON/OFF button blinks green, indicating that ink flow in the printhead is in the process of being stopped and solvent flow is being started.
   - The LED above the INK ON/OFF button goes off, indicating that solvent flow is stopped.

The function can be performed for a limited time of up to 20 seconds to avoid ink being diluted excessively or the ink system being overflown.

*The procedure may need to be followed by removal of dirt from the printhead. For more details see **"9.1. Cleaning the Interior of the Printhead"**.*

If a flow of solvent through the printhead does not solve the problem, do the following in turn:
*- clear the nozzle following the procedure described in **"10.2.6. Clearing the Nozzle"**,*
- contact an authorized service point.

Ink flow in the printhead can be stopped at any time by using the ink system disabling function.
Press ▶▶▶▶ to stop solvent flow in the printhead.

Ink flow in the printhead can be restarted at any time during the procedure or after the procedure has been completed.
Press ▶▶▶▶ to start ink flow in the printhead.

10.2.6. CLEARING THE NOZZLE

*This function should be performed by an **instructed user**.*

Tools and protective equipment required:
- a #4 open ended spanner,
- a #2 hex (Allen) key,
- a sprayer with solvent,
- a compressed air gun,
- a drip pan of metal or absorbent material,
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



The nozzle should be unscrewed for clearing only when the procedures for:

– rinsing the nozzle,

*The description of the procedure is given in **"10.2.4. Rinsing the Nozzle"**.*

– starting a flow of solvent,

*The description of the procedure is given in **"10.2.5. Starting Solvent Flow"**.*

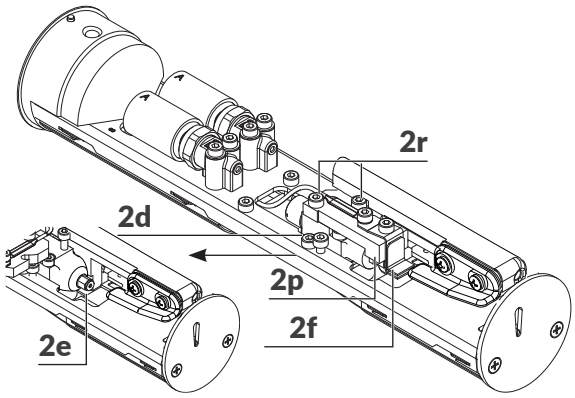
prove ineffective.

To clear the nozzle:

1. Press 
   The message is displayed:
   Function: Nozzle purging
   IN 15 MIN. THE INK STREAM HAS TO BE ON !!
   ARE YOU SURE (Y,N)?
2. Press ENTER to continue.
   The message is displayed:
   Switching the ink off
   and then:
   Remove the nozzle, place the print head in the drip pan of metal, then press ENTER and wait for next message.
3. Loosen bolt **2c** (see *Fig. 46 on page 245* / *"Fig. 8." on page 31*) that fastens printhead cover **2b**.

4. Pull the printhead out of cover **2b**.
5. Place a drip pan of metal or absorbent material under the printhead.

Fig. 46.



2d	Gun.
2e	Nozzle.
2f	Charging electrode.
2p	Charging electrode holder.
2r	Screws for fixing charging electrode holder **2p**.

6. Use the #2 hex key to loosen two screws **2r** (see ***Fig. 46***) that fasten holder **2p** of charging electrode **2f** to gun **2d**.
7. Tilt holder **2p** of charging electrode **2f** by about 90° to one side according to ***Fig. 46***.
8. Use the #4 open ended wrench to screw out nozzle **2e**.
9. Press ENTER to continue.
   The message is displayed:
   Gun rinsing

   At this stage of the procedure, solvent jets of short duration are thrown out of the gun under a high pressure; be careful not to get splashed.

   and then:
   Clean the nozzle with the use of solvent and compressed air, mount the nozzle, press ENTER.
10. Wash nozzle **2e** throughly with solvent. It is advisable to blow the nozzle through with compressed air in the opposite direction to the direction of flow of ink.
11. Use the #4 open ended wrench to re-install nozzle **2e**. Screw home nozzle **2e** to the reasonable limit.
12. Restore holder **2p** of charging electrode **2f** to its working position.
13. Use the #2 hex key to screw home two screws **2r** that fasten holder **2p** of charging electrode **2f** to gun **2d**.
14. Press ENTER to continue.
    The message is displayed:
    Head cover removed
    Press ENTER...

15. Press ENTER to acknowledge the message.

    The ink flow starting procedure begins; it may take several dozen seconds.

    The nozzle clearing procedure finishes when the **READY** LED illuminates yellow.

    The printer enters service mode; the character "**v**" is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***).

16. Insert the printhead into cover **2b**.
17. Screw tight screw **2c** to fasten printhead cover **2b**.

    The printer is ready to print; the character "**s**" is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***).

The nozzle clearing procedure may need to be followed by removal of dirt from the printhead. For more details see ***"9.1. Cleaning the Interior of the Printhead"****.*

If the nozzle is still clogged although all recommended procedures have been followed, contact an authorized representative.

10.2.7. FILTERING INK

It is advisable to use the function when:

- the ink in the ink system is dirty,
- there are symptoms of air inside the ink system; *e.g.* ink pressure drops or lower print quality, after **iModule®** has been replaced or after a service intervention in the ink system.

To start the ink filtering procedure:

Press ▸ ▸ ▸

The ink filtering procedure begins; it lasts about 15 minutes and consists of several stages:

- If the printer is ready to print, the yellow **READY** LED goes off; the icon on function identification icon bar **1f** (see ***Fig. 22 on page 61***) is replaced with the icon.
- The LED above the INK ON/OFF button blinks green, indicating that ink filtering is in progress and then that ink flow in the printhead is in the process of being restarted.
- The LED above the INK ON/OFF button illuminates green, indicating that ink flow in the printhead in started; the icon on function identification icon bar **1f** is replaced with the icon.
- The **READY** LED blinks yellow.
- The printer status is displayed on printer status bar **1h**.
- The ink filtering procedure finishes when the **READY** LED illuminates yellow; the printer is ready to print.

If the ink filtering procedure starts when ink flow is stopped, then no ink flow starts after the procedure has finished.

If the ink filtering procedure starts after ink flow has been stopped in quick mode, then the printer shuts down when the procedure finishes.

Ink filtering can be stopped at any time by using the ink system disabling function.
Press ▶ ▶ ▶ to finish the ink filtering procedure.

Ink flow in the printhead can be restarted at any time during the procedure.
Press ▶ ▶ ▶ to start ink flow in the printhead.

10.2.8. HANDLING PRINTHEAD COVER SENSOR

Printhead **2** (see ***Fig. 46 on page 245***) is equipped with a sensor whose objective is to detect whether the printhead cover is removed or not.
Dangerous voltages can occur inside the printhead during printing, therefore when the printhead cover is removed:

- printing cannot start,
- if the printer is printing, the printing is interrupted,
- in addition, the printer enters service mode to enable maintenance / service operations to be performed in the printhead.

In exceptional cases, *e.g.* when a damaged or faulty sensor makes printing impossible, the protection can be released on a temporary basis until the sensor is repaired by an authorized service person.

*The protection can be temporarily released only by **SERVICEMAN** . For that purpose contact an authorized representative.*

When the protection is temporarily released, then:

- printing can start; regardless of the state of the sensor,

  *If you want to start printing when the protection is disabled, you should DEFINITELY reinstall printhead cover **2b** and screw home screw **2c** to fasten the printhead cover!*

  If the protection is disabled, then a warning message is displayed each time before printing starts.

- because a user can have access to dangerous voltages inside the printhead:
  - the warning message **Printhead unprotected** and the icon are displayed cyclically on printer status bar **1h** (see ***Fig. 22 on page 61***),
  - the color of the display background changes to yellow,
  - additionally - if the printhead cover is removed - the **ERROR** LED on operator panel **1** (see ***Fig. 20 on page 57***) blinks red.

10.2.9. POSITIONING A JET IN THE GUTTER

The jet positioning function can be used when:

- ink jet does not hit gutter **2h** (see ***Fig. 47 on page 249*** and ***Fig. 48 on page 249***) although the nozzle clearing procedure has been followed,
- a lower part of prints (consisting of ink drops flying very close to the gutter (**2h**) is cut off.

Jets can be positioned in the gutter in two ways:

- rough positioning,
- precise positioning.

10.2.9.1. ROUGH POSITIONING A JET IN THE GUTTER

*This function should be performed by an **instructed user**.*

Tools and protective equipment required:
- a flat tip screwdriver,
- a #2 hex (Allen) key,
- a drip pan of metal or absorbent material,
- safety goggles,
- protective gloves that are resistant to ink / cleaner,
- protective clothing.



If a jet does not hit the gutter, carry out in turn the following procedures:

- the procedure for rinsing the nozzle,

  *The description of the procedure is given in **"10.2.4. Rinsing the Nozzle"**.*

- the procedure for starting flow of solvent,

  *The description of the procedure is given in **"10.2.5. Starting Solvent Flow"**.*

- the procedure for clearing the nozzle.

  *The description of the procedure is given in **"10.2.6. Clearing the Nozzle"**.*

If a jet still fails to hit the gutter although the above-mentioned procedures have been followed, you can make rough adjustment of the jet position in the gutter.

To make rough adjustment of a jet in gutter **2h** (see ***Fig. 47*** and ***Fig. 48***):

1. Loosen bolt **2c** (see ***Fig. 46 on page 245***) that fastens printhead cover **2b**.
   The message is displayed:
   Head cover removed
   Press ENTER...
2. Press ENTER to continue.
3. Pull the printhead out of cover **2b**.
   The printer enters service mode; the character "**v**" is displayed on printer status bar **1h** (see ***Fig. 22 on page 61***).

   *For more details about service mode see **"10.2.1. Service Mode"**.*

4. Place a drip pan of metal or absorbent material under the printhead.
5. If ink flow is not started, press ▶ ▶ ▶ to start it.

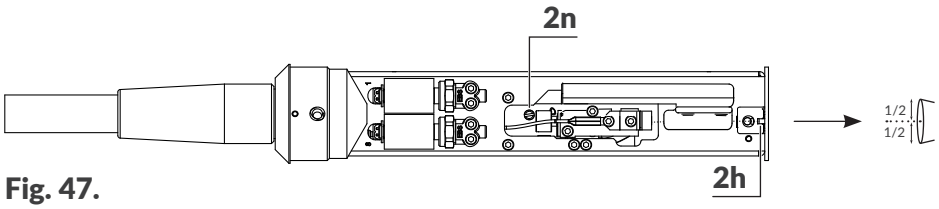


Fig. 47.

2h	Gutter.
2n	Circular cam for adjustment.

6. Use a flat tip screwdriver to adjust a jet in gutter **2h** in a horizontal position. The jet position in the horizontal direction is adjustable with circular cam **2n**.
   If you look from the top, the jet should fall into gutter **2h** exactly in the middle of the inlet width.

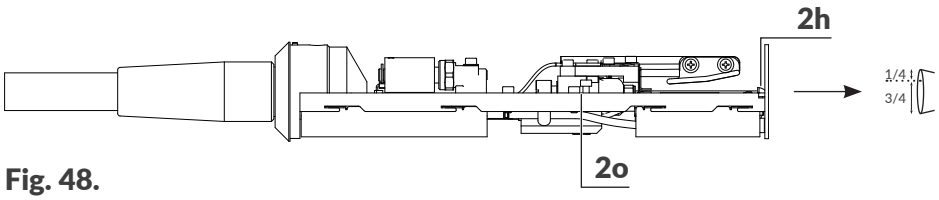


Fig. 48.

2h	Gutter.
2o	Adjustment screws.

7. Use a #2 hex key to position a jet in gutter **2h** in the vertical direction. The jet position in the vertical direction is adjustable with two adjustment screws **2o**.
   If you look from a side, the jet should fall into the gutter at 1/4 of the distance from the upper edge of the gutter inlet.
   On positioning the jet, screw home the adjustment screws so that the set position of the jet in gutter **2h** is retained.
8. Insert the printhead into cover **2b**.
9. Screw tight screw **2c** to fasten printhead cover **2b**.

Rough adjustment of the jet position in the gutter must be verified with specialist tools during a periodic inspection.

The jet positioning procedure may need to be followed by removal of dirt from the printhead. For more details see ***"9.1. Cleaning the Interior of the Printhead"****.*

If the rough adjustment procedure does not solve the problem, contact an authorized service point for precise adjustment with specialist tools.

10.2.9.2. PRECISE POSITIONING A JET IN THE GUTTER

The procedure can only be followed by ***SERVICEMAN*** ⚙.

10.3. CALIBRATING TOUCH SCREEN

The touch screen can be calibrated only by ***SERVICEMAN*** ⚙.

10.4. RELEASING PROTECTIONS

*The function is not available to **OPERATOR** .*

The occurrence of certain errors on the printer may result in:

- impossibility to start printing,
- restricted access to certain printer functions (no possibility to log in to a higher access level).

It is possible to release the above-mentioned protections till a service intervention is made or till a new bottle or a new **iModule®** is purchased.

To release a selected protection you need to contact an authorized representative.

The protection release function enables you to do the following:

- delete the password of **ADVANCED OPERATOR** ,
- remove the run time limit imposed on the printer,
- expand the run time limit assigned to the printer,
- assign additional 50 run hours without validating bottles and an **iModule®**; enable printing until a new bottle or **iModule®** is installed (a so called protection time),
- change the type or color of ink used in the printer,
- activate selected software options.

To release protections:

1. Press
   A screen with a one-off code shown on it is displayed.

   Additional information is also displayed, namely:
   - printer serial number / maximum text height (given in rows) that can be printed by the printer,
   - current date,
   - current time.

2. Contact an authorized representative.
3. Give the one-off code displayed on your printer to the representative, together with a description of the operation you want to perform.
   The representative generates a return code.
4. Type in the return code obtained from the representative via alphanumerical keyboard **1d** (see *Fig. 20 on page 57*).

5. Press ENTER to continue.

   The required protection is released.

> *Do not exit the screen where a one-off code is displayed during this procedure, as otherwise the code becomes invalid.*
>
> *When the protection release procedure is finished, the printer is in service mode. Service mode can be exited by pressing ⚙ ▶ 🔧 ▶ 👤.*
>
> *If an incorrect return code is typed in 10 times, the printer has to be restarted and the protections remain active.*

10.4.1. DELETING THE ADVANCED OPERATOR PASSWORD

If the **ADVANCED OPERATOR** 👤 password is not known, it can be deleted.

> *Contact an authorized representative to follow the procedure for deleting **ADVANCED OPERATOR** 👤*

To deleted the unknown password of **ADVANCED OPERATOR** 👤:

1. Press 🔒.

   The request to type in a password is displayed.

2. Press ▬ on function identification icon bar **1f** (see *Fig. 22 on page 61*).

   The message is displayed:

   Did you forget your password (Y,N)?

   (Y=ENTER, N=ESC)

3. Press ENTER to continue.

   The message is displayed:

   CALL EBS GmbH GERMANY. Phone: +49 2293 939 0

   Press ENTER...

4. Contact an authorized representative.

5. Press ENTER to continue.

   A screen with a one-off code shown on it is displayed.

> *Additional information is also displayed, namely:*
> *- printer serial number / maximum text height (given in rows) that can be printed by the printer,*
> *- current date,*
> *- current time.*

6. Give the representative the one-off code obtained from the printer screen and inform him of your wish to delete the **ADVANCED OPERATOR** 👤 password.

   The representative generates a return code.

7. Type in the return code obtained from the representative via alphanumerical keyboard **1d**.

8. Press ENTER to continue.

The **ADVANCED OPERATOR** password is deleted.

Do not exit the screen where a one-off code is displayed during this procedure, as otherwise the code becomes invalid.

When the password deletion procedure is finished, the printer is in service mode. Service mode can be exited by pressing ▸ ▸ .

If an incorrect return code is typed in 10 times, the printer has to be restarted and the password remains undeleted.

After deleting an unknown password, a new password must be assigned for security reasons. For more details see ***"8.1.5.1. Changing the ADVANCED OPERATOR Password"***.

CHAPTER 11
TROUBLESHOOTING

11. TROUBLESHOOTING

11.1. ALARM SIGNALING

Errors / warnings can be signaled in the printer as alarms in a few ways:

- the **ERROR** LED on operator panel **1** (see ***Fig. 20 on page 57***) blinks red,
- the display background blinks red,
- an audible signal is generated,
- an alarm message is displayed in working window **1i** (see ***Fig. 22 on page 61***) or on printer status bar **1h**.

*Extended alarm signaling, which enables the service staff to diagnose the printer, is available on the printer's inner panel. For more information see **"10.1. Inner Panel"**.*

*The occurrence of an alarm can optionally be signaled by an external signaler or it can be linked with additional operations, such as stoppage of the conveyor belt. For more details about the available options see **"1.1. Configurability of the Boltmark®II-series Printers"**.*

11.1.1. ALARM MESSAGE HISTORY

*The function is not available to **OPERATOR** .*

The printer stores the history of alarm messages that have **not** been **cleared** with the CLEAR ALARM button. The history shows what happens to the printer before and while an alarm occurs.

To view alarm message history:

1. Press 

   If the history contains no alarm messages, nothing happens when the icon is pressed.

2. Press ENTER to display successive alarm messages.
   When the last alarm message is viewed, the history window closes.

11.1.2. EVENT REPORT

*The function is not available to **OPERATOR** .*

Alarms, statuses and many other events that may occur on the printer are saved to printer memory in report format. Owing to that the printer can be throughly diagnosed by the authorized service staff.

To view an event report:

1. Press 
2. Press [↓] / [↑] to display the information about consecutive / previous events.

   Every entry in an event report contains:

   - the date and time of the first occurrence of an event,
   - the number of occurrences of a given event,
   - the date and time of the last occurrence of an event,
   - the event code,
   - alarm messages, if any, linked explicitly with a given event.

   Each time you press the [ENTER] button, a successive, event-related alarm message is displayed; when all messages for a given event are displayed, the printer displays messages for the subsequent event.

When the information about the last event is displayed, the printer exits the report window.

For more details about an event report see a separate document.

The data available in an event report is designed for the authorized service staff, who has appropriate tools for decoding the alarm codes.

11.2. CLEARING ALARM SIGNALING

The clearing of alarm signaling consists in stopping sound and light signaling if an alarm occurs.

If you clear alarm signaling, it does not mean that the problem is solved. If the alarm signaling appears again, make an attempt to locate the fault following the description given further in the section, or contact an authorized service point.

To clear alarm signaling:

1. Find the reason for the alarm.
2. Press 

   or

   the CLEAR ALARM button.

   ADVANCED OPERATOR *can also clear alarm signaling by pressing* 

   As soon as alarm signaling is cleared, the error / warning message is removed from alarm message history.

   The alarm signaling is cleared.
3. Perform the operations that correspond to the alarm message, *e.g.* install a new bottle.
4. Press [ENTER] to confirm that you have read the error / warning message or performed the operation.

11.3. PROBLEM SOLVING

The printer does not start; the LED between the OFF and ON buttons does not illuminate.

To remove the fault perform the following in turn:

1. Check whether the main power switch **POWER** (**5**; see *Fig. 5 on page 28*) on accessories connector plate **4** is in the "**I**" position or not.
2. Check whether power cable **3a** (see *Fig. 3 on page 26*) is connected to the electrical mains or not.
3. Check the electrical mains for voltage.
4. Contact an authorized representative.

Bottle-related messages / problems:

- **Solvent bottle almost empty**
- **LOW SOLVENT**
- **Ink bottle almost empty**
- **LOW INK**
- **INK LACK**
- **INK: EMPTY BOTTLE**
- **SOLVENT LACK**
- **SOLVENT: EMPTY BOTTLE**
- **BOTTLE TOO OLD**

To remove the fault perform the following in turn:

1. Prepare / order an appropriate bottle.
2. Replace the bottle with a new one.



For more details see "4.6.1. Replacing the Ink / Solvent Bottle".

- **SOLVENT: NO BOTTLE**
- **INK: NO BOTTLE**

(the printer does not detect any bottle)

To remove the fault perform the following in turn:

1. Install an appropriate bottle.



For more details see "2.3.6. Installing Bottles".

- **INK REPLENISHMENT WARNING**
- **INK REPLENISHMENT ERROR**
- **SOLV. REPLENISHMENT WARNING**
- **SOLV. REPLENISHMENT ERROR**

(the printer cannot take any ink / solvent from the bottle)

To remove the fault perform the following in turn:

1. Correct the arrangement of the bottles in the consumables compartment; press the bottles to the limit.
2. Contact an authorized representative.

iModule®-related messages / problems:

- **iModule running time is below 10% CALL SERVICE PLEASE**
- **iModule running time expires in less than 300 hours CALL SERVICE PLEASE**
- **iModule expires within 1 month CALL SERVICE PLEASE**
- **iModule validity date expired**
- **iModule run time expired**
- **iModule shelf life expired**

To remove the fault perform the following in turn:

1. Prepare / order an appropriate **iModule®**.
2. Replace **iModule®** with a new one.

*For more details see **"4.6.2. Replacing iModule®"**.*

iModule not detected !!

(the printer does not detect **iModule®**)

To remove the fault perform the following in turn:

1. Correct the arrangement of **iModule®** in the consumables compartment; press **iModule®** to the limit.
2. Install **iModule®**.

*For more details see **"2.3.7. Installing iModule®"**.*

3. Contact an authorized representative.

iModule Overflow

(high level sensor in **iModule®** has detected too high an ink level)

To remove the fault perform the following in turn:

1. Check the printer position and correct it, if need be. The printer can work in the vertical position only.

*For more details see **"2.3. Printer Installation"**.*

2. Contact an authorized representative.

PHASE ERROR

To remove the fault perform the following in turn:

1. Clean the interior of the printhead.

*For more details see **"9.1. Cleaning the Interior of the Printhead"**.*

2. Start the nozzle rinsing procedure.

*For more details see **"10.2.4. Rinsing the Nozzle"**.*

PHASE ERROR

To remove the fault perform the following in turn:

3. Start solvent flow in the printhead.

   *For more details see **"10.2.5. Starting Solvent Flow"**.*

4. Check the jet position in the gutter and follow the jet setting procedure, if need be.

   *For more details see **"10.2.9. Positioning a Jet in the Gutter"**.*

5. Clear the nozzle.

   *For more details see **"10.2.6. Clearing the Nozzle"**.*

6. Replace ink filter in the printhead.

   *For more details see **"9.2. Replacing Ink Filter in the Printhead Periodically"**.*

7. Check whether protective ground is connected or not.

   *For more details see **"2.3.5. Connecting a Protective Ground Terminal"**.*

8. Contact an authorized representative.

Printing starting-related messages

- **UNIT NOT ACTIVE**
- **ToF correction not ready**

(an attempt to start printing or to set printing parameters although the printer is not ready to print yet)

To remove the fault perform the following in turn:

1. Wait until the printer is ready to print; the **READY** LED illuminates yellow.
2. Start printing again.

   *For more details see **"4.3.2. Starting Printing"**.*

TXT CHANGE ERROR

(an incorrect text during text swap printing)

To remove the fault perform the following in turn:

1. Create / import appropriate texts for text swap printing.

   *For more details see **"4.3.5. Text Swap Printing"**.*

2. Start text swap printing again.

TEXT TOO HIGH FOR YOUR PRINTER VERSION

(an attempt to start printing a text whose height exceeds the maximum text height that the printer can print)

To remove the fault perform the following in turn:

1. Correct the text contents.
   - Use a permissible profile.

     *For more details see **"5.3. Text Profiles"**.*

   - Reduce the text height.

     *For more details see **"5.7.2. Editing a Text"**.*
2. Contact an authorized representative.

Head cover removed

(the printhead cover removed / the bolt that fastens the printhead cover unscrewed)

To remove the fault perform the following in turn:

1. Check whether the printhead cover is installed or not and install it, if need be.
2. Screw home the bolt that fastens the printhead cover.
3. Contact an authorized representative.

Printing parameters-related messages / problems:

- **Increase PRINT.PARAM. Matrix height or decrease PRINT.PARAM Speed Level or decrease text height [dots].**
- **ERROR, USE OF BARCODE FORBIDDEN for param Speed Level=FAST**
- **ERROR, IMPROPER FONT for param Speed Level=FAST**

(an incorrect combination of printing parameters or incorrect contents of the active text)

To remove the fault perform the following in turn:

1. Correct the settings of the **Matrix height** and **Speed Level** printing parameters.

   *For more details see **"4.5. Managing Printing Parameters"**.*
2. Check the contents of the active text and correct them, if need be.

   *For more details see section **"5.7.2. Editing a Text"**.*

   *Every permissible combination of the **Matrix height**, **Speed Level** printing parameters and the information about restrictions on the active text contents are summarized in the table in **"8.6.2. Summary of the Printing Speeds"**.*

Text editing-related messages / problems:

- **Character generator too high or incorrect vertical position of subtext.**
- **Correct unacceptable vertical position of subtext.**

(the text contents do not correspond to the selected profile)

To remove the fault perform the following in turn:

1. Select an appropriate text profile.

   For more details see ***"5.3. Text Profiles"****.*

2. Correct subtexts positions and parameters so that they correspond to the selected text profile.

   For more details see ***"5.4. Creating / Editing a Subtext"****.*

3. Check the text contents and correct them, if need be.

   For more details see ***"5.7.2. Editing a Text"****.*

No character generator required.

To remove the fault perform the following in turn:

1. Check whether the character matrices are to be seen or not.

   For more details see ***"5.4.3. Creating / Editing a CHARACTER STRING-type Subtext"****.*

2. Contact an authorized representative.

Text / parameter block-related messages / problems:

- **NO TEXTS IN LIBRARY**
- **NO PARAM. BLOCKS IN LIBRARY**
- **TEXT NAME DOES NOT EXIST**

(no required text / parameter block or the text / parameter block library empty)

To remove the fault perform the following in turn:

1. Create / import a text / parameter block.

CHANNEL ACTIVE

(an attempt to start printing or perform another operation unauthorized during printing, when the printer is in printing state)

To remove the fault perform the following in turn:

1. Pause printing.

   For more details see ***"4.3.3. Pausing Printing"****.*

2. Start the required operation again.

Shaft encoder/generator error

(no timing pulses although printing has been released several times with the photodetector)

To remove the fault perform the following in turn:

1. Start the conveyor belt.
2. Check whether the encoder is connected to the printer or not.



*For more details see **"2.3.8. Integrating the Printer into a Production Line"**.*

3. Change the source of timing pulses to internal generator; **Generator** = **GEN**.



*For more details see **"4.5. Managing Printing Parameters"**.*

No prints although printing is started

To remove the fault perform the following in turn:

1. Set timing of printing to internal generator; **Generator** = **GEN**
   or
   if printing is timed with an encoder (**Generator** = **SHAFT**), check whether the conveyor belt moves or not.



*For more details see **"4.5. Managing Printing Parameters"**.*

2. Check whether the photodetector and the encoder are connected to the printer or not.



*For more details see **"2.3.8. Integrating the Printer into a Production Line"**.*

3. Check the configuration of the photodetector.



*For more details see **"8.5. Configuring the Photodetector"**.*

4. Check whether objects to be labeled are within photodetector reach or not.

Print height too high

To remove the fault perform the following in turn:

1. Reduce the setting of the **Matrix height** printing parameter.



*For more details see **"4.5. Managing Printing Parameters"**.*

2. Reduce the distance between the print head face and objects to be labeled.
3. Correct the text contents:
   - use lower character matrices,
   - use rotation (tower characters) for **CHARACTER STRING**-type subtexts.



*For more details see **"5.7.2. Editing a Text"**.*

Print height too high

To remove the fault perform the following in turn:

4. Reduce the setting of the **Print height** printing parameter.



For more details see ***"4.5. Managing Printing Parameters"****.*

Horizontal resolution of prints does not correspond to the setting

To remove the fault perform the following in turn:

1. Timing with an internal generator: set the **Cnv spd m/min** or **Cnv sp.ft/min** printing parameter to the measured traveling speed of the conveyor belt
   or
   timing with an encoder: set the **Enc const p/m** or **En.const p/in** printing parameter to the measured / calculated encoder constant.



For more details see ***"4.5. Managing Printing Parameters"*** *and* ***"7.2. Determining Parameters of a Factory Conveyor"****.*

2. Reduce the conveyor-belt travel speed.
3. Timing with an encoder: apply an encoder with a higher encoder constant
   or
   (temporarily) increase the setting of the **Shaft multipl** parameter.



For more details see ***"8.4. Configuring the Encoder"****.*

4. If a **GRAPHICS**-type subtext is used in a printed text, reduce the setting of the printing parameter **Speed Level**.



For more details see ***"4.5. Managing Printing Parameters"****.*

Prints do not hit the right places on objects

To remove the fault perform the following in turn:

1. Timing with an internal generator: set the **Cnv spd m/min** or **Cnv sp.ft/min** parameter to the measured traveling speed of the conveyor belt
   or
   timing with an encoder: set the **Enc const p/m** or **En.const p/in** parameter to the measured / calculated encoder constant.



For more details see ***"4.5. Managing Printing Parameters"*** *and* ***"7.2. Determining Parameters of a Factory Conveyor"****.*

2. Reduce the settings of the **Space**, **Rpt.dist.** printing parameters.



For more details see ***"4.5. Managing Printing Parameters"****.*

3. Check for the correct position of the photodetector on the conveyor belt.

Prints are made too high on objects

To remove the fault perform the following in turn:

1. Place the printhead as close to the conveyor belt surface as possible.
2. Rotate the printhead through 180°.
3. Change the setting of the printing parameter **Vert. direct.**



*For more details see **"4.5. Managing Printing Parameters"**.*

****HV-ERROR****

(an error connected with ink dot deflection voltage)

To remove the fault perform the following in turn:

1. Clean the interior of the printhead.



*For more details see **"9.1. Cleaning the Interior of the Printhead"**.*

2. Contact an authorized representative.

+300V ERROR

+300V on/off ERROR

(an error connected with ink dot charging voltage)

To remove the fault perform the following in turn:

1. Contact an authorized representative.

SERVICE VISIT REQUIRED. CALL YOUR LOCAL SERVICE PLEASE.

(the date of periodic inspection has come)

To remove the fault perform the following in turn:

1. Confirm that you have read the message.
2. Contact an authorized representative.

BATTERY DISCHARGED !! - MEMORY DAMAGED !!

(the memory backup battery discharged; the error can show many symptoms, *e.g.* the interface language may switch to English, texts and parameter blocks may be lost)

To remove the fault perform the following in turn:

1. Contact an authorized representative.

Deterioration of print quality

Increased value of the ToF parameter displayed on printer status bar 1h

To remove the fault perform the following in turn:

1. Replace ink filter in the printhead.

   For more details see ***"9.2. Replacing Ink Filter in the Printhead Periodically"****.*

2. Contact an authorized representative.

Lower parts of prints cut off

To remove the fault perform the following in turn:

1. Check the jet position in the gutter and follow the jet setting procedure, if need be.

   For more details see ***"10.2.9. Positioning a Jet in the Gutter"****.*

2. Contact an authorized representative.

Prints are crooked, wavy, jagged, unstable

To remove the fault perform the following in turn:

1. Fasten the printhead firmly.
2. Stabilize the conveyor.
3. Contact an authorized representative.

Ink pressure circuit failures:

- **INK PRESSURE DROP**
- **INK PUMP TIME-OUT**
- **MAX INK PRESSURE EXCEEDED**
- **PRESSURE TRANSDUCER ERROR**
- **BLOCKED PRESSURE STABILIZER !!**
- **INK PRESSURE NOT RELEASED**

To remove the fault perform the following in turn:

1. Contact an authorized representative.

Vacuum circuit failures:

- **VACUUM DOESN'T INCREASE, -Press solvent bottle to the limit -Check iModule transport protection and turn ink on**
- **WRONG INK SUCTION FROM GUTTER**
- **GUTTER CIRCUIT CLOGGED**
- **VACUUM TRANSDUCER ERROR**

To remove the fault perform the following in turn:

1. Check the **iModule®** transport protection, and open it, if need be.
2. Check the vapor outlet, and clear it, if need be.

Vacuum circuit failures:

- **VACUUM DOESN'T INCREASE, -Press solvent bottle to the limit -Check iModule transport protection and turn ink on**
- **WRONG INK SUCTION FROM GUTTER**
- **GUTTER CIRCUIT CLOGGED**
- **VACUUM TRANSDUCER ERROR**

To remove the fault perform the following in turn:

3. Check the jet position in the gutter and follow the jet setting procedure, if need be.

   For more details see ***"10.2.9. Positioning a Jet in the Gutter"***.

4. Contact an authorized representative.

STREAM DOESN'T FALL INTO GUTTER

To remove the fault perform the following in turn:

1. Clean the interior of the printhead.

   For more details see ***"9.1. Cleaning the Interior of the Printhead"***.

2. Start the nozzle rinsing procedure.

   For more details see ***"10.2.4. Rinsing the Nozzle"***.

3. Start solvent flow in the printhead.

   For more details see ***"10.2.5. Starting Solvent Flow"***.

4. Check the jet position in the gutter and follow the jet setting procedure, if need be.

   For more details see ***"10.2.9. Positioning a Jet in the Gutter"***

5. Clear the nozzle.

   For more details see ***"10.2.6. Clearing the Nozzle"***.

6. Replace ink filter in the printhead.

   For more details see ***"9.2. Replacing Ink Filter in the Printhead Periodically"***.

7. Contact an authorized representative.

If an error not listed above occurs, follow the instructions given in the alarm message; but if the problem remains unsolved, contact an authorized representative.

11.4. BEFORE CONTACTING AN AUTHORIZED REPRESENTATIVE

If the user is unable to solve a problem on his own, it is necessary to contact an authorized representative. If that is the case, collect the information that can help diagnose the malfunction or eliminate mistakes, if any, in printer operation.

Necessary information:

1. Printer name, type, options installed.
2. Kind or symptoms of the malfunction.
3. Printer state while the malfunction occurs.
4. The printer status displayed on printer status bar **1h** (see ***Fig. 22 on page 61***).

   *For more details see **"7.10. Printer Status"**.*

5. State of the inner panel LEDs.

   *For more details see **"10.1. Inner Panel"**.*

6. Alarm message history.

   *For more details see **"11.1.1. Alarm Message History"**.*

7. Event report.

   *For more details see **"11.1.2. Event Report"**.*

8. Printing parameters.

   *For more details see **"4.5. Managing Printing Parameters"**.*

9. Printer serial number and software versions.

   *For more details see **"7.5. Printer Information"**.*

10. Information on the bottles and **iModule®** installed in the printer.

    *For more details see **"7.9. Consumables"**.*

11. History of service operations performed.
12. Information on the text printed:
    - types and contents of subtexts,
    - text height in dots.

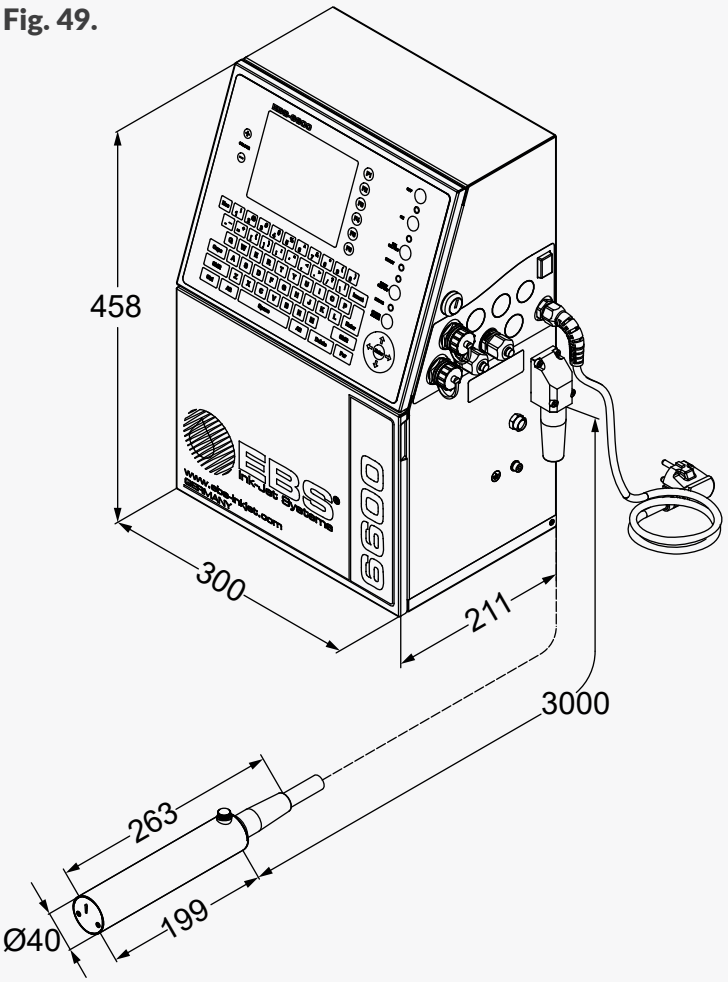
Use assistance of an authorized service point linked with your local printer representative. Ensure professional and quick assistance each time a printer malfunction occurs.

CHAPTER 12
TECHNICAL SPECIFICATIONS

12. TECHNICAL SPECIFICATIONS

*The availability of the options listed in this section for each of the **Boltmark®II**-series printer models depends on the individual country. Contact an authorized representative for more details about the options.*

Printer Specifications

Dimensions	**Fig. 49.**  – LCD: **5.7" / 144.8 mm** – Nozzle diameter: **57 µm** – Feeder cable length: **2,2 m**
Housing	– **Stainless steel**
Weight	– Complete printer (without bottles): about **12.5 kg** – Ink bottle: about **0.9 kg** (**900 ml**) – Solvent bottle: about **0.9 kg** (**900 ml**)
Ingress protection class	Printer casing (excluding the printhead): – **IP55** (standard) – **IP65** (optional; with external air supply)

*For more details see **"2.3.2. Preliminary Operations"**.*

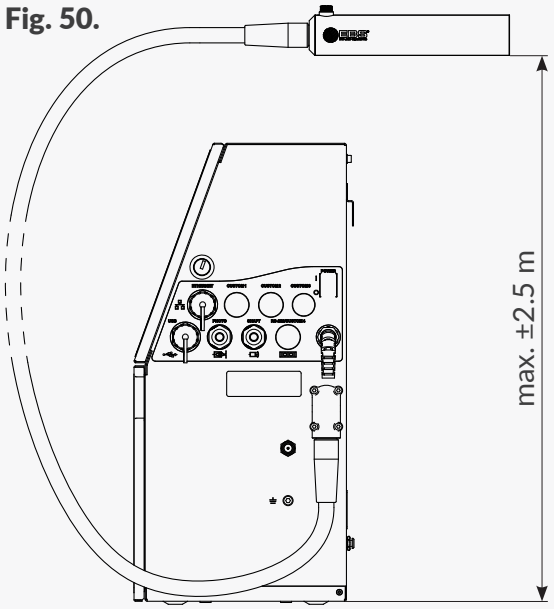
*To meet the **IP55** (or optionally **IP65**) class requirements for the printer casing, all unused connectors on accessories connector board **4** (see **Fig. 5 on page 28**) must be secured with plugs:*
*- Part No. **4810252**, for cable strain reliefs or*
*- Part No. **2240065**, for quick connectors designed to connect accessories.*

Printer Specifications

Printhead	– Number of heads: **1**
	– Head cable length: **3 m** (standard), **6 m** (optional)
	– Minimum cable bend radius:
	  – **75 mm** for static operation
	  – **150 mm** for dynamic operation
	– Maximum difference in height level between the printhead and the printer: **±2.5 m**

Type of ink	– **Black, dye (non-pigment) ink** that is based on methyl ethyl ketone (as standard) – Ethanol-based ink designed for foodstuffs (optional) – Thermochromatic ink (optional) – Other special inks (optional) – (for more information see the data sheets for the inks available)
Connections	– **USB**; current efficiency **300 mA** – **ETHERNET** – **PHOTO**: photodetector input – **SHAFT**: encoder input – **RS-232** (as standard / optional) – Other optional connections

Fig. 50.



*If the difference in height levels between the ink system and the printhead exceeds **±0.5 m**, it is required that the printhead position adjustment procedure be applied. This procedure can only be followed by **SERVICEMAN**.*

Printer Specifications

Parameters of the consumables monitoring system	– Working frequency: **13.56 MHz** – Magnetic field strength at **10 m** from the system: max **-78,6 dBµA/m**

*The **Boltmark®II** printer is a class 1 device according to Directive 2014/53/EU, Art.8.2.*

*The **Boltmark®II** printer may be used without any restrictions in EU, EEA and EFTA countries, in accordance with Article 8(1)(b) of Directive 2014/53/EU.*

Installation conditions

Printer position during printing	– **Vertical**
Printhead position during printing	– **Any**
Distance from the printhead to an object	– **0 mm to 30 mm**
Print release	– **Photodetector**
Timing of print columns	– **Internal generator** – **Encoder**
Power supply	– Supply voltage: **100 V to 240 V~, 50 / 60 Hz** – Max. current consumption (in normal working conditions): **0.6 A to 0.2 A** – Average power consumption: **19 W**

*If the printer is equipped with an optional anti-clogging power supply system (**ACPS®**) and it is started up while the **ACPS®** modules are completely discharged, current consumption may slightly exceed its quoted maximum for a short time.*

The power supply circuit of the printer must be secured with a cut-out device, whose rated current is:
*max **16 A** for **230 V~***
or
*max. **20 A** for **110 V~**.*

Working conditions	– Working temperature: **+5°C to +40°C (+41°F to +104°F)** for static operation **+15°C to +40°C (+59°F to +104°F)** for dynamic operation – Relative humidity: up to **90%** without condensation – Maximum height above sea level: **2000 m** – Vibration: **max.: 1 g, max 10 Hz** – Shocks: **max. 1 g, max 2 ms**
Storage conditions	– Storage temperature: **-5°C to +50°C (+23°F to +122°F)** – Relative humidity: up to **90%** without condensation – Shocks: **max. 1 g, max 2 ms**
Working environment - electromagnetic compatibility	The **Boltmark®II** printer series are class a devices as defined by **EN 61000-6-4** (an industrial environment). It can cause radio interference in a residential environment and in such cases, appropriate remedial measures can be demanded from its users.

Specifications

Print height	– **1 mm to 16 mm**
Maximum number of texts	– **100** (as standard / none) – **about 1000** (as standard / optional) – **about 2000** (optional)
Types of subtexts	– **CHARACTER STRING** – **GRAPHICS** – **BAR CODE** – **TEXT NAME** Subtexts whose contents are: – **static** – **dynamic** (so called special registers: counters, date, expiration date, time, shift identifier, external data, variable field, text contents)
Character matrices	– Latin: **5x5**, **7x4**, **7x5**, **9x5**, **9x7**, **11x7**, **12x6**, **12x7**, **14x9**, **16x9**, **16x10**, **16x14**, **21x15**, **25x15**, **32x18** (including national characters: German, Polish, Danish, Spanish, Swedish, Turkish, Portuguese, Greek, Czech, Slovak) – Cyrillic: **5x5**, **7x6**, **9x7**, **12x7**, **12x9**, **16x10**, **25x19**, **32x24** (including Ukrainian, Kazakh characters) – Arabic – special – Armenian – Japanese – Chinese *Any combination of the above-mentioned matrices can be used within the restrictions imposed by a selected text profile.* *Texts created with above-mentioned matrices can consist of:* *- 1 line,* *- 2 lines,* *- 3 lines,* *- 4 lines,* *- or be mixed.*
Bar codes	– 1-dimensional (**1D**) codes: **Datalogic**, **Matrix**, **2/5 5 Bars**, **2/5 IATA**, **Interleaved**, **Code 39**, **EAN-8**, **EAN-13**, **EAN-13 +EAN5**, **UPC-A**, **UPC-A EBS**, **UPC-E**, **Kod 128**, **EAN-128**, **Kod 128B**, **ITF8**, **ITF14** – 2-dimensional (**2D**) codes: **Data Matrix ECC-200, QR Code** (as standard / optional) – **GS1**-compliant codes
Graphics	– Edited with graphics editor – Its maximum height is determined by a selected text profile

Maximum printing speed

(for printing parameter:
Speed Level = **FAST**)

*In the column on the right, the symbol with quotation marks around it means the text profile used; "**SF**" stands for super fast. For more details see **"5.3. Text Profiles"** and **"8.6.2. Summary of the Printing Speeds"**.*

- 1 line 5x5 + 1-column space between characters: **2083 characters/s** (500 m/min at 15 dots/cm, "5")
- 2 lines 5x5 + 1-column space between characters: **1889 characters/s** (170 m/min at 20 dots/cm. "11")
- 3 lines 5x5 + 1-column space between characters: **974 characters/s** (33,4 m/min at 35 dots/cm, "3x7SF")
- 4 lines 5x5 + 1-column space between characters: **833 characters/s** (30 m/min at 25 dots/cm, "25")
- 5 lines 5x5 + 1-column space between characters: **525 characters/s** (10,8 m/min at 35 dots/cm, "32SF")
- 1 line 7x4 + 1-column space between characters: **1785 characters/s** (357 m/min at 15 dots/cm, "7")
- 2 lines 7x4 + 1-column space between characters: **1467 characters/s** (110 m/min at 20 dots/cm, "16SF")
- 3 lines 7x4 + 1-column space between characters: **1169 characters/s** (33,4 m/min at 35 dots/cm, "3x7SF")
- 4 lines 7x4 + 1-column space between characters: **779 characters/s** (16,7 m/min at 35 dots/cm, "4x7")
- 1 line 11x7 + 1-column space between characters: **708 characters/s** (170 m/min at 20 dots/cm, "11")
- 2 lines 11x7 + 1-column space between characters: **313 characters/s** (30 m/min at 25 dots/cm, "2x11")
- 1 line 16x9 + 1-column space between characters: **367 characters/s** (110 m/min at 20 dots/cm, "16SF")
- 1 line 25x15 + 1-column space between characters: **78 characters/s** (30 m/min at 25 dots/cm, "25")
- 1 line 32x18 + 1-column space between characters: **33 characters/s** (10.8 m/min at 35 dots/cm, "32SF")

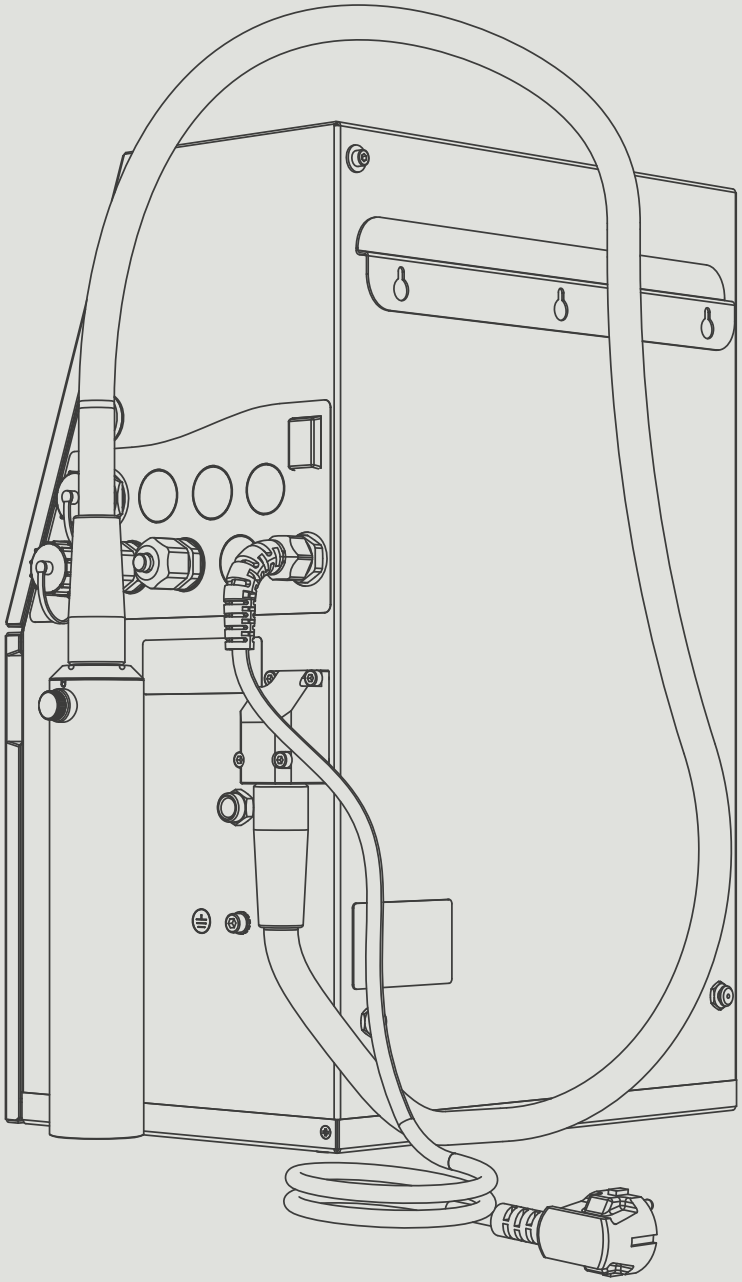
CHAPTER 13
VERSION REVIEW

13. VERSION REVIEW

Version	Date of publication	Version of main control program
2017/03/27#1.0EN	27.03.2017	36_0A
2017/03/30#1.1EN	30.03.2017	36_0A
2017/05/09#1.2EN	09.05.2017	36_0A
2017/11/09#2.0EN	21.11.2017	37_0B
2020/04/09#2.1EN	09.04.2020	39_2B
G2025/06/150_1EN	**20.08.2026**	**39_4N**

G2025/06/150_1EN

EN



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2026.08.20