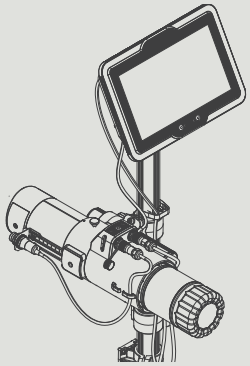
G2023/04/30_1EN

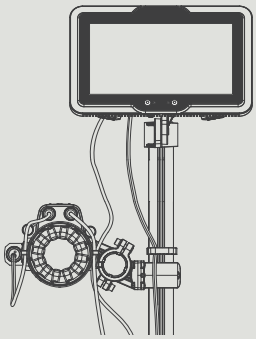
EBS® Ink-Jet Systeme

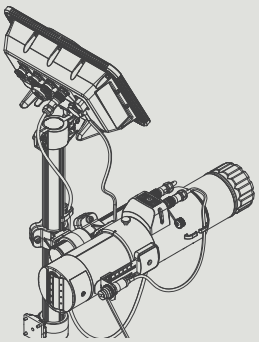
PicAS®II

EBS-1600 USER MANUAL

Industrial DROP ON DEMAND Printers
Original Instructions







EN

Part 1 of 3

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

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CHAPTER 1
GENERAL INFORMATION

Dear User,

Before using the PicAS® II EBS-1600 printer, please read carefully the documents attached to the printer, especially the Safety Manual and the material safety data sheets (MSDSs) of consumables in use.

The document, entitled **Safety and Important Information** (signature G2023/06/23_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 **1.02.20.0.**, 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.

1. GENERAL INFORMATION

The following symbols are used in the manual:

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

An important note, tip, piece of information on safety.

It is advisable to strictly follow the tips.

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

This User Manual applies to the **PicAS®II** EBS-1600 printer.

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.* **PicAS®II** EBS-1600),
- 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. Application"***),
-  - to press an icon or a function key,
-  - to wait before a successive operation can be carried out.

1.1. APPLICATION

The **PicAS®II** EBS-1600 printers make firm and clear prints on:

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

The **PicAS®II** EBS-1600 printers print with inks that are based on ethanol, acetone and methyl ethyl ketone (MEK).

*For detailed information about inks available for the **PicAS®II** EBS-1600 printers contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

CHAPTER 2
DESCRIPTION

2. DESCRIPTION

2.1. OVERVIEW

The **PicAS®II** EBS-1600 printer is an industrial, ink **DOD** (Drop-on-Demand) printer for labeling the following:

- Objects moving (traveling, rotating) in front of the immovable printhead,
- Stationary objects by the movable printhead (*e.g.* by means of a separate manipulator or a robot).

Fig. 1 shows how to make prints with a **DOD** printer.

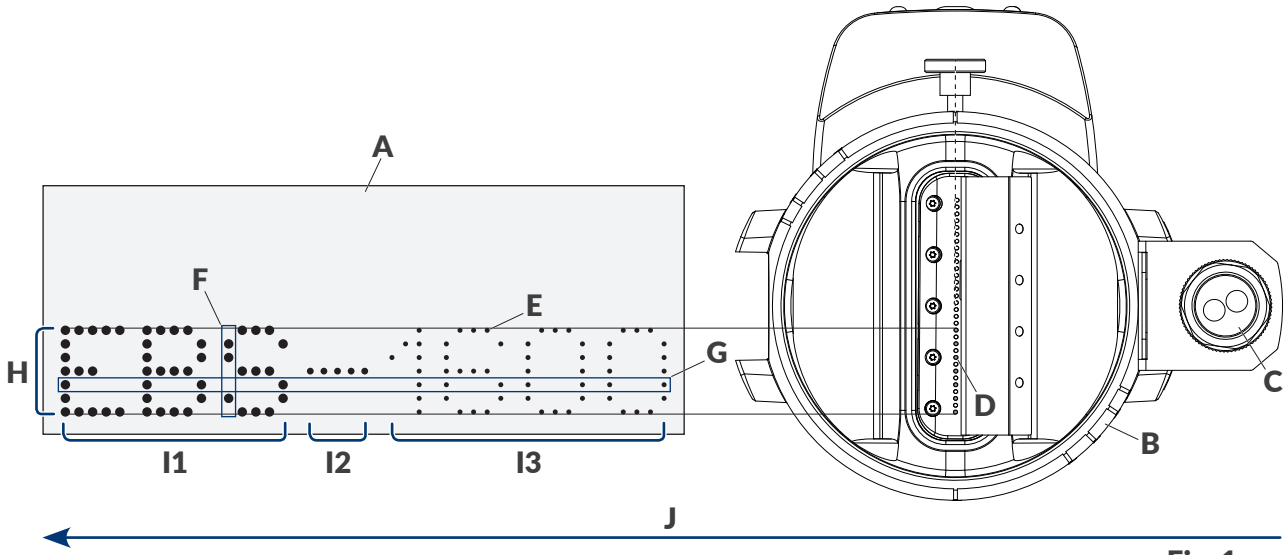


Fig. 1.

A	Object to be labeled.
B	Integrated printhead.
C	Photodetector.
D	Nozzle.
E	Print dot.
F	Vertical row (column) of a print.
G	Horizontal row of a print.
H	Line of a text.
Ix	Print intensity (dot size) for the indicated print fragment: **I1**: high, **I2**: medium, **I3**: low.
J	Direction in which objects move in front of the printhead; a horizontal direction of printing.

2.2. PRINTER STRUCTURE

This printer was designed to be user-friendly and to provide the user with easy access to the parts that are needed for daily use and routine maintenance. The other parts, to which access is necessary for carrying out maintenance operations, are protected and are accessible only by **instructed** or **skilled persons**.

2.2.1. FRONT VIEW

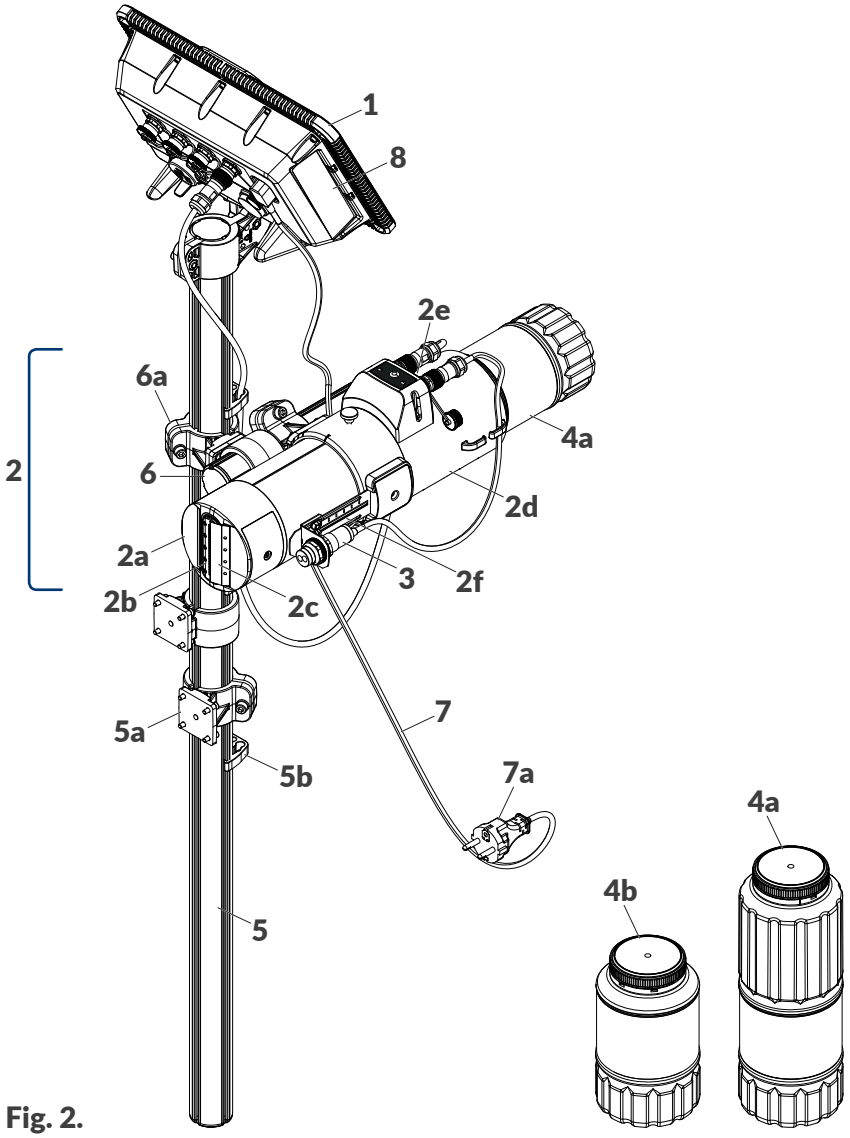


Fig. 2.

1	Control unit.
2	Integrated printhead (**2a**: printhead, **2b**: nozzle plate, **2c**: slide, **2d**: ink system in the body, **2e**: connections, **2f**: photodetector holder with adjustable distance between photodetector **3** and an object to be labeled).
3	Photodetector.
4x	**4a**: **1l** ink bottle; **4b**: **0.5l** ink bottle.
5	Printer support beam (**5a**: holder, **5b**: cable holder).
6	Integrated printhead support beam (**6a**: articulated holder).
7	Disconnectable power cord with plug **7a***.
8	Nameplate.
	Cabling.

** - depending on a given country, power plug **7a** may differ from that shown in **Fig. 2 on page 14***

2.2.2. BACK VIEW

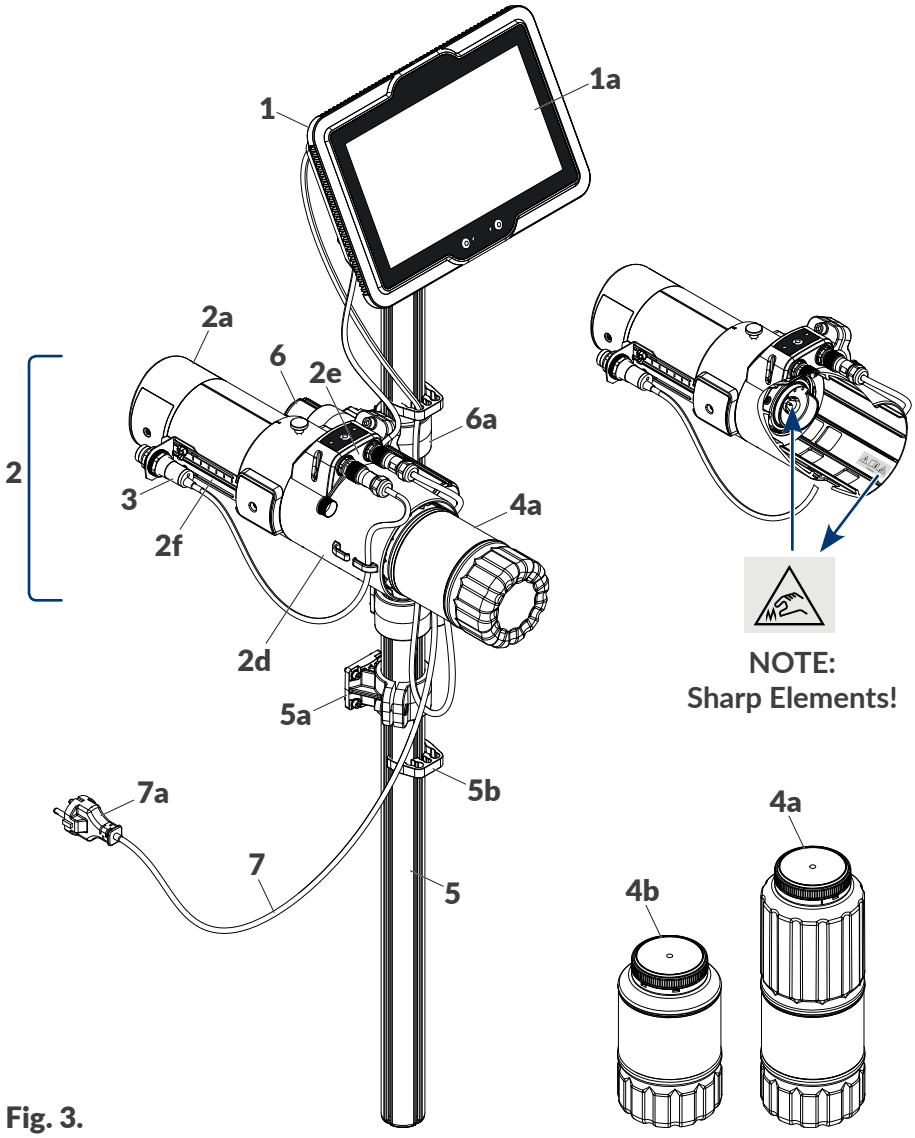


Fig. 3.

1	Control unit (**1a**: **10.1”/256.5 mm** LCD display).
2	Integrated printhead (**2a**: printhead, **2d**: ink system in the body, **2e**: connections, **2f**: photodetector holder with adjustable distance between photodetector **3** and an object to be labeled).
3	Photodetector.
4x	**4a**: **1l** ink bottle; **4b**: **0.5l** ink bottle.
5	Printer support beam (**5a**: holder, **5b**: cable holder).
6	Integrated printhead support beam (**6a**: articulated holder).
7	Disconnectable power cord with plug **7a***.
	Cabling.

** - depending on a given country, power plug **7a** may differ from that shown in **Fig. 3***

2.2.3. CONTROL UNIT

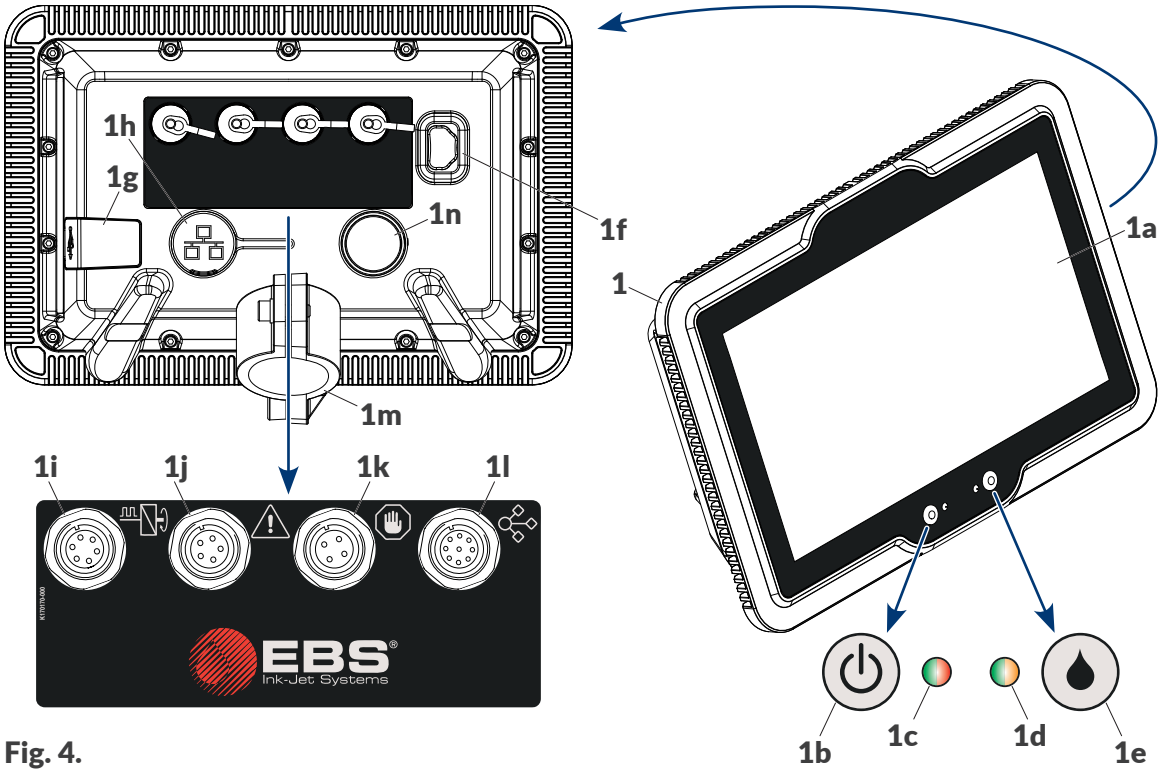


Fig. 4.

1	Control unit.	
1a	**10.1”/256.5 mm** LCD display.	
1b	Printer ON/OFF button.	
1c	Printer state LED indicator.	
1d	Printing status LED indicator.	
1e	Printing start/pause button.	
1f	Connector for power cord with a plug.	
1g	**USB** connector; secured with a rubber blanking plug.	
1h	**Ethernet** connector; secured with a rubber blanking plug.	
1i	Rotational speed sensor (encoder) input; secured with a blanking plug.	
1j	Status beacon output; secured with a blanking plug.	
1k	Conveyor stoppage output; secured with a blanking plug.	
1l	**eLink** connector; secured with a blanking plug.	
1m	Holder for fastening the control unit to the beam; with adjustable control unit angle on the beam.	
1n	Protruding element.	

2.2.3.1. EXTERNAL CONNECTIONS

USB connector

An appropriate **USB** memory device connected to **USB** connector **1g** (see ***Fig. 4***) can be used to:

- Import/export data to/from the printer,

– Update the printer software.

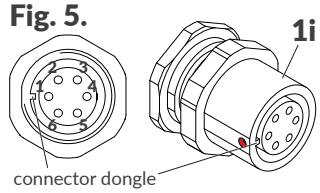
*For more information see **"7.7. Exchanging Data via a USB Port"**.*

The current efficiency of the **USB** connector is **500 mA**. The printer may not recognize a **USB** memory device whose power consumption is higher.
A **USB** memory device connected to the **USB** connector will be recognized by the printer if the memory is formatted with the **FAT, FAT32** or **NTFS** file system.

Rotational speed sensor (encoder) input

A rotational speed sensor (encoder) is designed to measure the speed at which objects to be labeled move on a factory conveyor. With it, the printing speed can be adjusted to a variable speed of objects on the conveyor belt. The encoder is connected to input **1i** (see ***Fig. 4 on page 16***).
If the conveyor belt travels at a constant speed, there is no need for using an encoder. Input **1i** can then be used for connecting a photodetector.
A description of 6-pin female connector **1i** (see ***Fig. 5***) of the rotational speed sensor is given in the following table.

Fig. 5.



1	**PE** (protective earth).
2	**+24 VDC** (power supply).
3	**GND** (ground).
4	Photodetector impulse input.
5	Encoder impulse input (printing direction signal).
6	Encoder impulse input (timing signal).

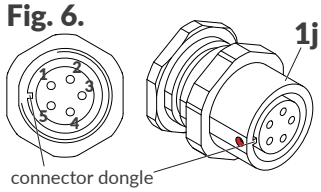
*The encoder constant and an external source of timing pulses need to be set for correct operation of the encoder. For more details see **"7.2. Printing Settings"**.*

Status beacon output

The status beacon is an external signaler of printer status that can be seen from a greater distance. The status beacon is connected to output **1j** (see ***Fig. 4 on page 16***).

A description of 5-pin female connector **1j** (see ***Fig. 6***) of the status beacon is given in the following table.

Fig. 6.



1	Error; open collector, max. 45 mA.
2	**+24 VDC** (power supply).
3	**PE** (protective earth).
4	Printing; open collector, max. 45 mA.
5	Warning; open collector, max. 45 mA.

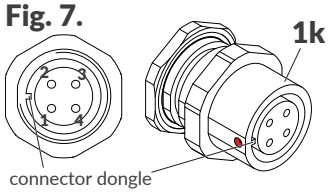
Conveyor stoppage output

The **PicAS® II** EBS-1600 printer offers an option of stopping the factory conveyor if an error occurs that makes printing impossible. If the option is used, the factory conveyor is connected to output **1k** (see ***Fig. 4 on page 16***).

> ***NOTE: Functional output!***
> *The conveyor stoppage output does not serve a safety function. This is a functional output.*

A description of 4-pin female connector **1k** (see ***Fig. 7***) for stopping a factory conveyor is given in the following table.

Fig. 7.



1	Conveyor stoppage; open collector, max. 100 mA.
2	**+24 VDC** (power supply).
3	**PE** (protective earth).
4	**GND** (ground).

The coil of a relay that controls operation of the factory conveyor should be connected between pins **1** and **2** of output **1k**.

eLink connector

*A description of the **eLink** interface is given in **"2.3. Installing the Printer"** ▶ **"2.3.2. Electrical connections"**.*

Ethernet connector

The **Ethernet** interface is designed to connect the printer to a network. Owing to that, the printer or networked printers can be controlled remotely. **Ethernet** can also be used for transferring data that can be printed by means of a **COMMUNICATIONS PORT**-type object / . Ethernet connector **1h** (see ***Fig. 4 on page 16***) is an **RJ45**-type connector.

Ethernet connector **1h** is secured with a rubber blanking plug. When a cable is connected to connector **1h**, the removed blanking plug can be put on protruding element **1n** on the back of the control unit housing.

*For the description of how to configure **Ethernet** see **"7.4.2. Ethernet"**.*

2.2.4. INTEGRATED PRINTHEAD

In the **PicAS®II** EBS-1600 printers, the printhead is integrated with the ink system.

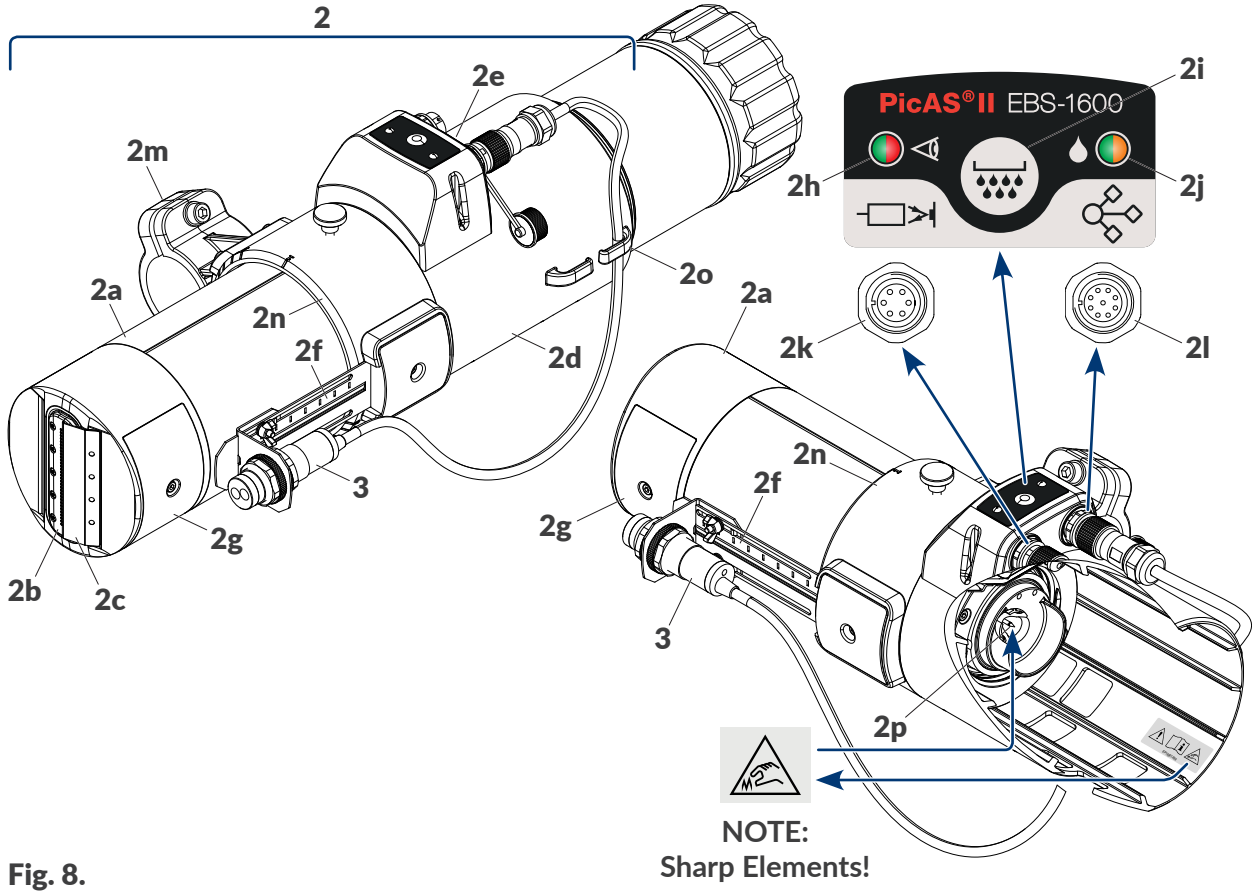


Fig. 8.

2	Integrated printhead.	
2a	Printhead.	
2b	Nozzle plate.	
2c	Slide.	
2d	Ink system.	
2e	Connections.	
2f	Photodetector holder; with adjustable distance between the photodetector and objects to be labeled.	
2g	Plate for blanking screws for tuning the printing unit.	
2h	LED indicator of printer and photodetector states.	
2i	Purge button.	
2j	Printing status LED indicator.	
2k	Photodetector input; secured with a blanking plug.	
2l	**eLink** connector; secured with a blanking plug.	
2m	Holder for fastening the integrated printhead to the beam.	
2n	Integrated printhead holder; with markers of an angle the printhead is turned through.	
2o	Cable holder.	
2p	Ink bottle connection.	
3	Photodetector.	

Types of printheads for the **PicAS® II** EBS-1600 printer:

Type of print-head	Number of nozzles	Distance between nozzles/dots		Maximum print height H	
		[mm]	[inch]	[mm]	[inch]
7N/13	7	1.8	0.07	13	0.51
7N/24	7	3.6	0.14	24	0.94
16N/29	16	1.8	0.07	29	1.14
16N/56	16	3.6	1.14	56	2.20
32N/58	32	1.8	0.07	58	2.28

The height of prints **H** (and the vertical distance between dots) can be reduced by turning the print-head.

Degree of turning	Turning angle [°]	Maximum print height H									
		7N/13		7N/24*		16N/29		16N/56		32N/58	
		[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
1	**0**	13	0.51	24	0.94	29	1.14	56	2.20	58	2.28
2	**36.5**	10	0.39	19	0.75	23	0.90	45	1.77	46	1.81
3	**45.9**	9	0.35	16	0.63	20	0.79	39	1.53	40	1.57
4	**56.4**	7	0.28	13	0.51	16	0.63	31	1.22	32	1.26
5	**63.5**	6	0.24	10	0.39	13	0.51	25	0.98	26	1.02

** The rule for reducing maximum print heights **H** by turning the printhead is presented in **Fig. 9** through **Fig. 13** where the **7N/24** printhead is used as an example. With the reduction of print heights, the distance between nozzles/dots decreases and thereby print resolution in the vertical direction increases.*

If the integrated printhead is turned (*i.e.* the degree of turning is different than **1**), it is advisable to set the **Length** parameter at its minimum value according to the below-given table; the parameter is available in the project editor window (see **8** on ***Fig. 54 on page 71***). If the setting of the **Length** parameter is lower than recommended, printout endings may not be printed at all when the distance between consecutively triggered prints is too small. To avoid such a problem and have printouts printed in full, the minimum distance between consecutively triggered prints must be determined empirically.

Degree of turning	Turning angle [°]	Minimum advisable value of the Length parameter		
		7N/13, 7N/24	16N/29, 16N/56	32N/58
1	**0**	-	-	-
2	**36.5**	7*	16*	32
3	**45.9**	14*	32	64
4	**56.4**	21*	48	96
5	**63.5**	28*	64	128

** The minimum setting of the **Length** parameter that can be saved is 30; therefore the recommendation for a given type of printhead and the selected degree of turning is automatically followed.*

Maximum print height H [mm/inch] for the 7N/24 printhead at various degrees of turning

(Slant = degree mark on the printhead housing)

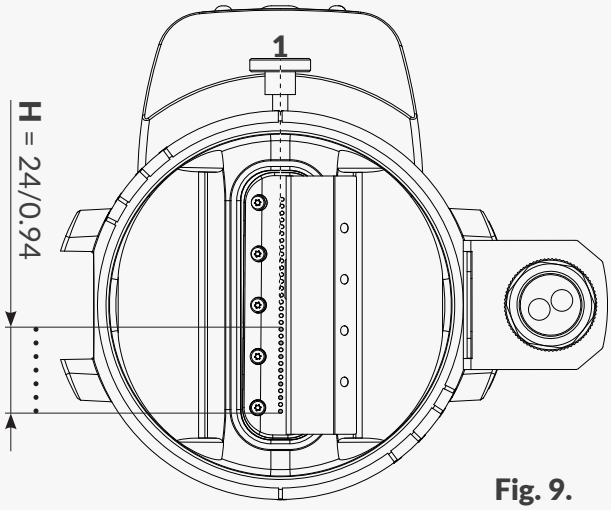


Fig. 9.

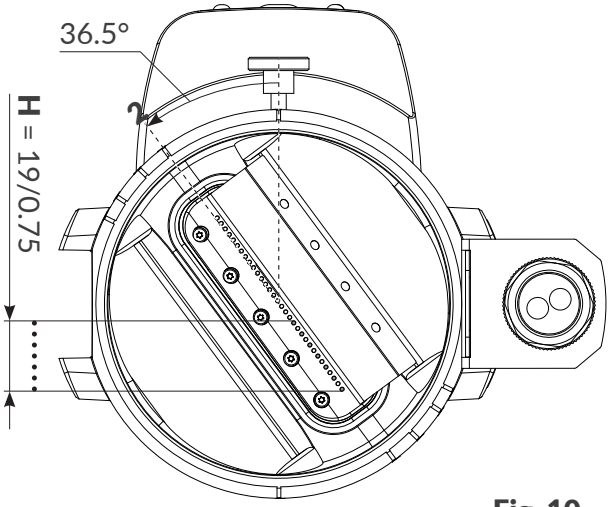


Fig. 10.

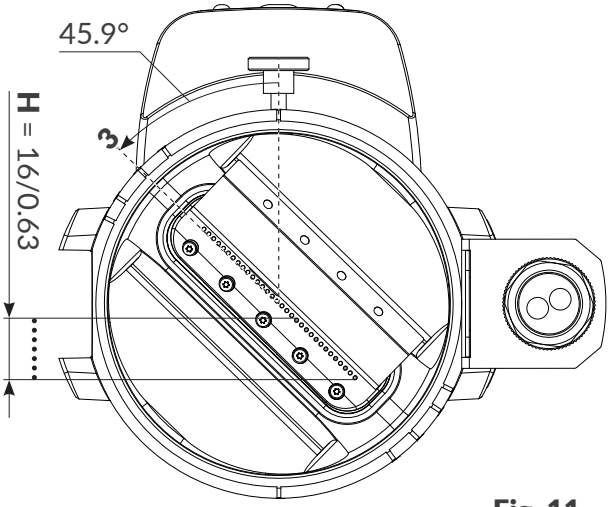


Fig. 11.

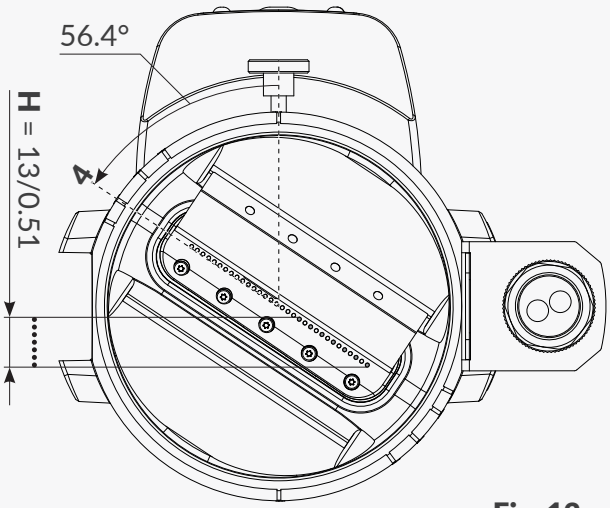


Fig. 12.

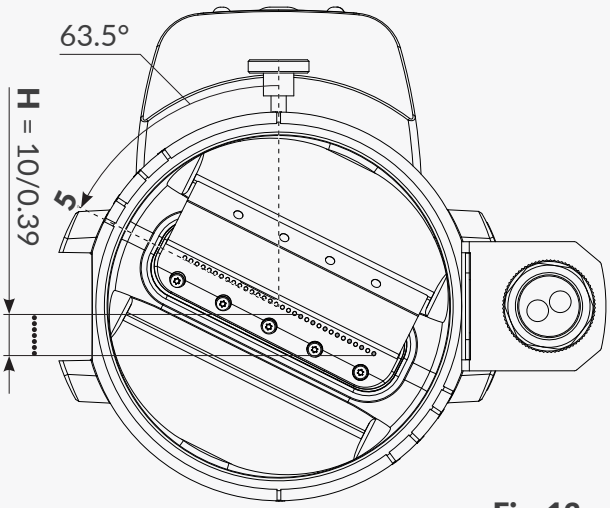


Fig. 13.

2.2.4.1. ELECTRICAL CONNECTIONS

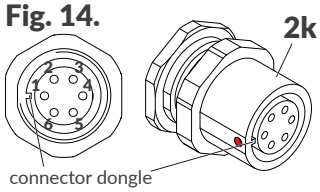
Photodetector input

The photodetector is intended for detecting an object to be labeled and thereby for releasing printing at an appropriate moment. The photodetector is connected to input **2k** (see ***Fig. 8 on page 19***).

> ***NOTE: A risk of misconnection!***
> *Although 6-pin connector **2k** for connecting a photodetector is the same as 6-pin connector **1i** in the control unit (see **Fig. 4 on page 16**) for connecting a rotational speed sensor, the encoder connected to connector **2k** in the integrated printhead will not work!*

A description of 6-pin female connector **2k** (see ***Fig. 14***) of the photodetector is given in the following table.

Fig. 14.



1	Not used.
2	**+24 VDC** (power supply).
3	**GND** (ground).
4	Photodetector impulse input.
5	Not used.
6	Not used.

The **PicAS® II** EBS-1600 printer is designed to work with an **NPN N/C** (Normally Closed) photodetector by default. The photodetector shall be provided with an appropriate connector and a cable whose length is 0.4m / 15.7 inch (as standard) or 5m / 196.8 inch (optionally).
The printer can also work with photodetector of other types.

> *The photodetector will operate correctly if:*
> *- a so-called **configuration space** is entered into the printer; the space is a physical distance in a horizontal direction between the photodetector selected as the source of the trigger signal and integrated printhead nozzles; for more details see **"7.3. Configuring Parts of the Printing System"**,*
> *- the printing parameters that relate to the trigger signal are set; for more details see **"7.2. Printing Settings"**.*

eLink connector

> *A description of the **eLink** interface is given in **"2.3. Installing the Printer"** ▶ **"2.3.2. Electrical connections"**.*

2.2.4.2. INK/WASH-UP BOTTLE CONNECTION

Connection **2p** (see ***Fig. 8 on page 19***) is used for connecting an ink bottle to the printer. Owing to its construction, the connection ensures easy and "clean" replacement of the bottle, and the **IMS** (Ink Monitoring System), which is part of the connection, prevents the bottle of ink or wash-up that is incorrect or past expiration-date from being connected.

A needle is one of the elements of connection **2p**. As a risk of getting wounded exists, the connection is provided with the following warning label:

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

2.2.5. CONSUMABLES

2.2.5.1. INK BOTTLE

Ink bottles with the following capacities are intended for the **PicAS® II** EBS-1600 printers:

- 1 liter (**4a**; see ***Fig. 15***),
- 0.5 liter (**4b**).

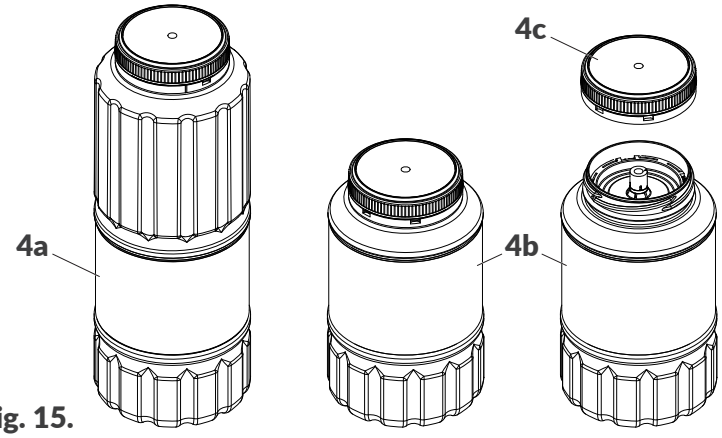


Fig. 15.

4a	**1l** ink bottle.
4b	**0.5l** ink bottle.
4c	Cap with a seal.

Every bottle is secured with cup **4c** with a seal. Before a bottle is installed in the printer, the cap needs unscrewing and thereby the seal will be broken.

A **0.5-liter** bottle and a **1-liter** bottle can be applied interchangeably provided that they contain an identical type of ink.

Weight of a 1l ink bottle: **about 1 kg (2.20 lbs)**.
Weight of a 0.5l ink bottle: **about 0.5 kg (1.10 lbs)**.

2.2.5.2. WASH-UP BOTTLE

If the **PicAS® II** EBS-1600 printer is not to be used for a period of more than 3 weeks, it should be emptied of ink and filled with wash-up. The type of wash-up should correspond to the type of ink used. The correspondence between the type of wash-up and the ink is check by the **IMS** system.

Wash-up bottles with the following capacities are intended for the **PicAS® II** EBS-1600 printers:

- 1 liter,
- 0.5 liter.

2.3. INSTALLING THE PRINTER

*The printer can be basically installed or relocated by an **instructed person** in accordance with the recommendations given in **The User Manual**.*

*Installation of advanced features (to use special types of ink, integrate the printer with a production line, work with external devices, etc.) can only be done by a **skilled person**, who will bear the full responsibility for the job.*

Five variants of the **PicAS® II** EBS-1600 printers are available and they differ in the type of printhead (**7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58**). The installation kits are almost identical for all variants. They can differ only in lengths of the **eLink** interface cable, which can be:

- **1m** / **39.4 inch** (standard),
- **3m** / **118.1 inch**, **5m** / **196.8 inch**, **10m** / **393.7 inch** (options).

Component part		Quantity
1	Control unit.	**1**
2	Integrated printhead.	**1**
3	Photodetector.	**1/2***
4x	**1l** ink bottle (**4a**) or **0.5l** ink bottle (**4b**).	**1**
5	Printer support beam with holders.	**1**
6	Integrated printhead support beam with holders.	**1**
7	Power cord, depending on the country the printer is destined for.	**1**
	A **USB** memory device containing user documentation in electronic format.	**1**
	Safety instructions in paper format.	**1**

The installation kit also includes all necessary screws, washers, nuts, etc.

** The **PicAS® II** EBS-1600 printer can be provided with up to 2 photodetectors but only one of the photodetectors can be selected as the source of the trigger signal.*

Important notes on installation of the **PicAS® II** EBS-1600 printer:

- Objects to be labeled must move in front of the face of the integrated printhead from the slide side. The position of the slide may be changed, and such a change will reverse the direction of movement,
- The printer can be installed in any position,
- The information on the configuration of the printer on the factory conveyor must be entered to printer memory with the printhead setup wizard after installation; the printing system setup wizard starts automatically when the printer is being started up for the first time.

Owing to a variety of potential configurations of the **PicAS®II** EBS-1600 printer on a factory conveyor, the description given in this chapter applies to an example of a configuration. Actual or optional components may differ from those depicted in illustrations. For information about a standard configuration and optional equipment for customized use contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

Before you start installing your printer, read carefully the information that is given at the beginning of this chapter and in **The Safety Instructions**.

To install the printer:

Tools required:
- a #5 angle hex (Allen) key,
- a #3 hex (Allen) key with a ball tip,
*- a #7 open ended spanner (optionally; for changing the position of articulated holder **6a**),*
*- a #22 open ended spanner (optionally; for tightening nut **3a** of photodetector **3**),*
- a drilling machine.

1. Prepare appropriate mounting holes in the conveyor frame (see ***Fig. 16***).

   NOTE: Firm fastening is required!
   Adjust the installation to the existing technical conditions to ensure that the printer is steadily fastened to the conveyor.

   Assort distance **L** (see ***Fig. 16***) depending on the amount of free space available on the conveyor and on the layout of printer components on printer support beam **5**.
2. Fasten holders **5a** to the belt conveyor and position them according to ***Fig. 16***. Tighten the screws in holders **5a** with the #3 hex key with a ball tip.

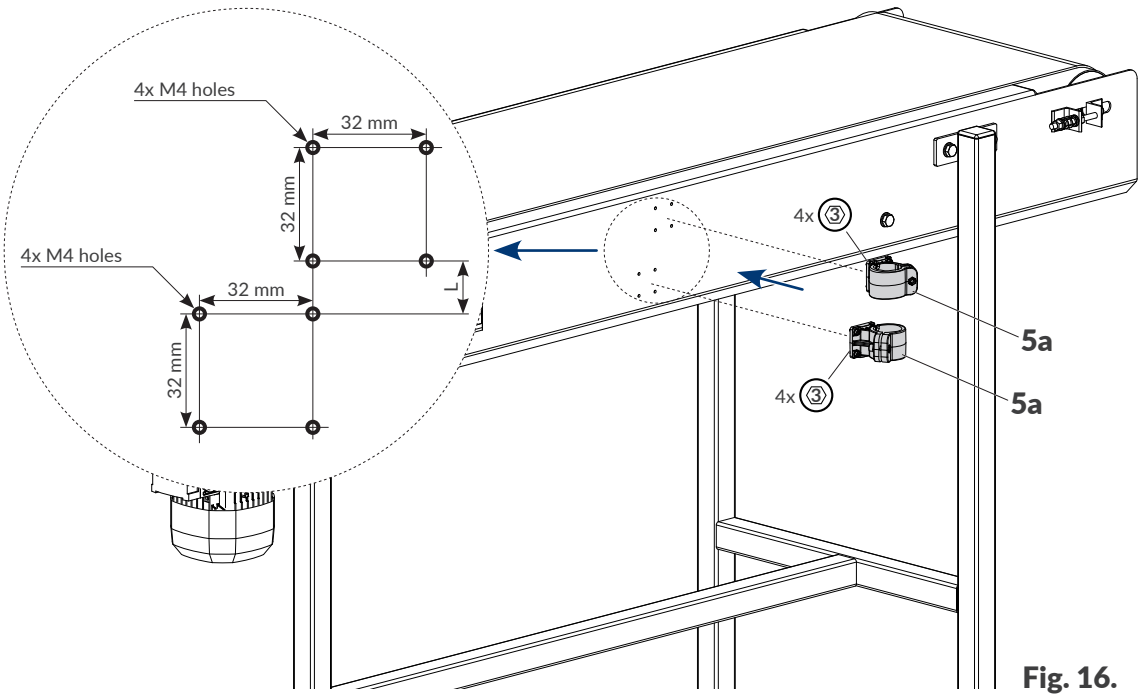


Fig. 16.

3. Install support beam **5** in holders **5a** by inserting it according to ***Fig. 17***. Use the #5 hex key to tighten the appropriate screws that are parts of holders **5a**, clamping the holders on support beam **5**.
4. Fasten articulated holder **6a** to printer support beam **5** (see ***Fig. 18***). Use the #5 angle hex key to tighten the screw in holder **6a**, clamping the holder to printer support beam **5**.

> *Articulated holder **6a** can be configured in 3 ways. For more details see **"2.3. Installing the Printer"** ▶ **"2.3.1. Additional Information"**.*

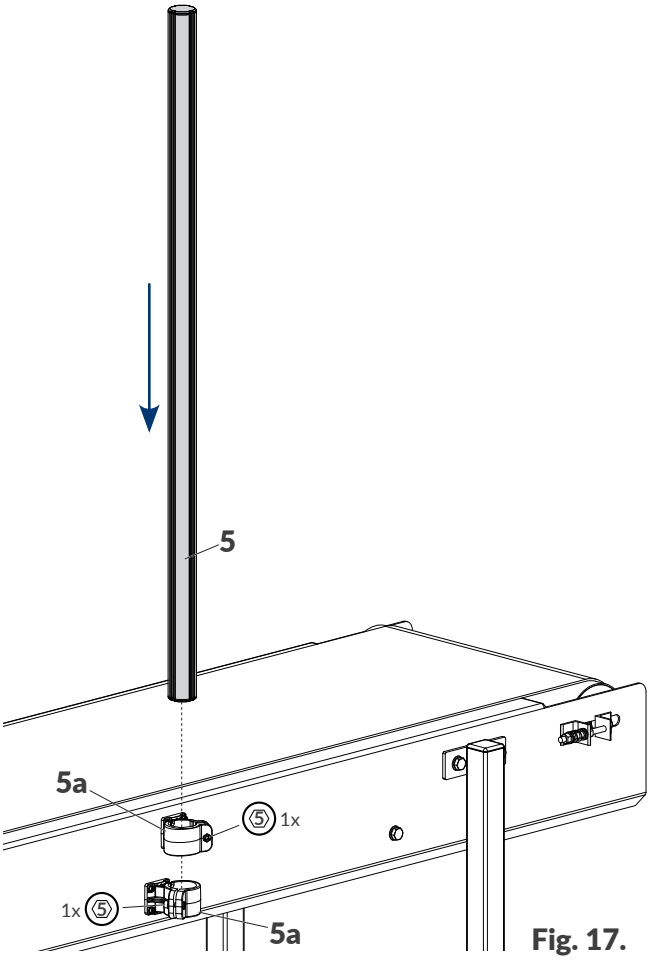


Fig. 17.

5. Install integrated printhead support beam **6** in articulated holder **6a**. Use the #5 angle hex key to tighten the appropriate screw in the holder, clamping the holder to integrated printhead support beam **6**.

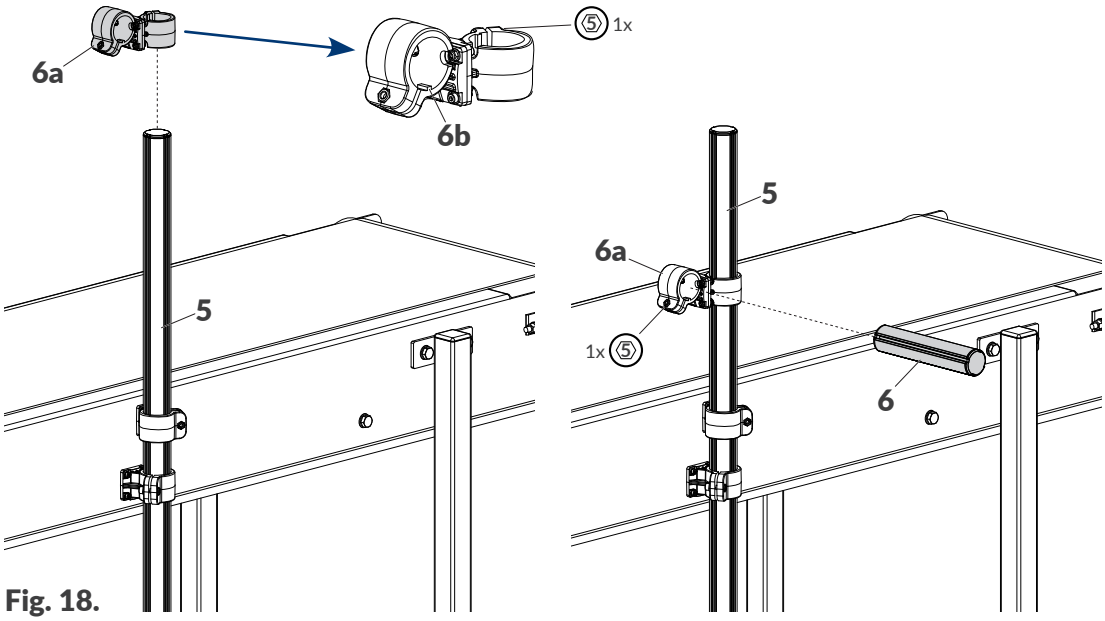


Fig. 18.

While installing the printer make sure that holder fins **6b** (see ***Fig. 18***) are properly put into the vertical grooves on the support beams.

6. Fasten integrated printhead **2** to support beam **6** (see ***Fig. 19***). Use the #**5** angle hex key to tighten the screw in holder **2m**, clamping the holder to integrated printhead support beam **6**.
   Change the degree of turning of the integrated printhead in holder **2n**, if need be.

For more details see ***"2.3. Installing the Printer"*** ▶ ***"2.3.1. Additional Information"***.

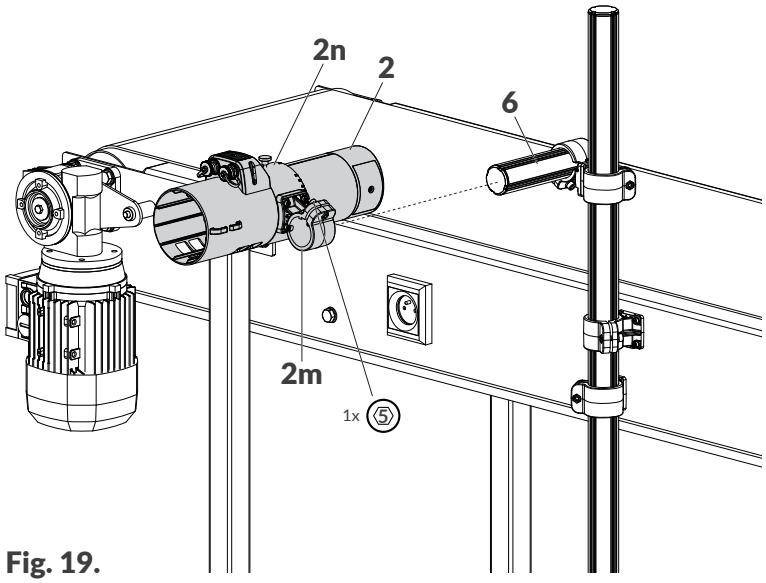


Fig. 19.

7. Fasten control unit **1** to support beam **5** (see ***Fig. 20***).
   Using the configuration capabilities of holder **1m**, adjust the control unit angle on the beam as required.
   Use the #**5** angle hex key to tighten the screw in holder **1m**, clamping the holder to support beam **5**.

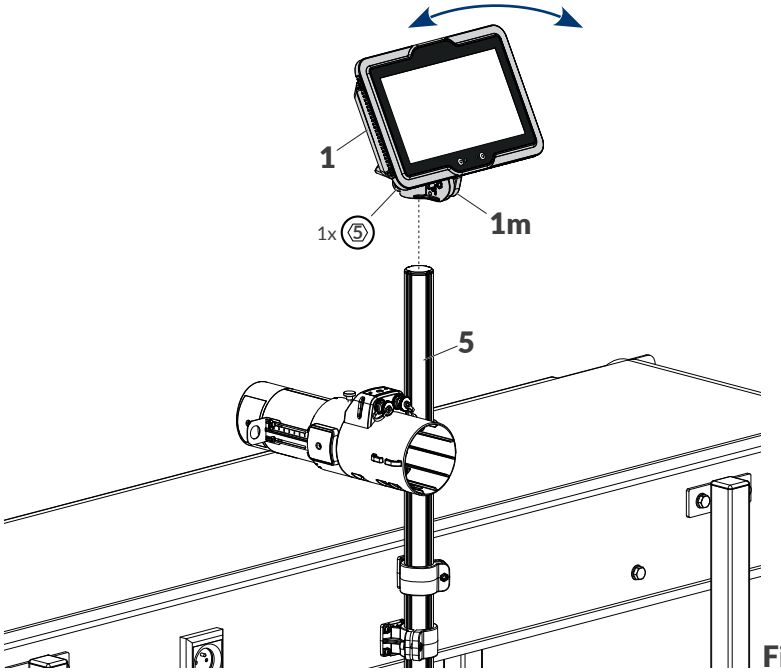


Fig. 20.

*Control unit **1** must be fastened to the support beam using holder **1m** . Other modes of fastening are unacceptable.*

8. Install photodetector **3** in holder **2f** (see ***Fig. 21***). Retaining nut **3a** can be sufficiently tightened with fingers. Use a #**22** open ended spanner, if need be. Connect photodetector **3** to integrated printhead **2**.

   Loosen two butterfly nuts in holder **2f** and set a distance between photodetector **3** and objects to be labeled. On adjusting the distance, tighten the butterfly nuts.
9. Connect integrated printhead **2** to terminal **1** via an **eLink** interface cable.

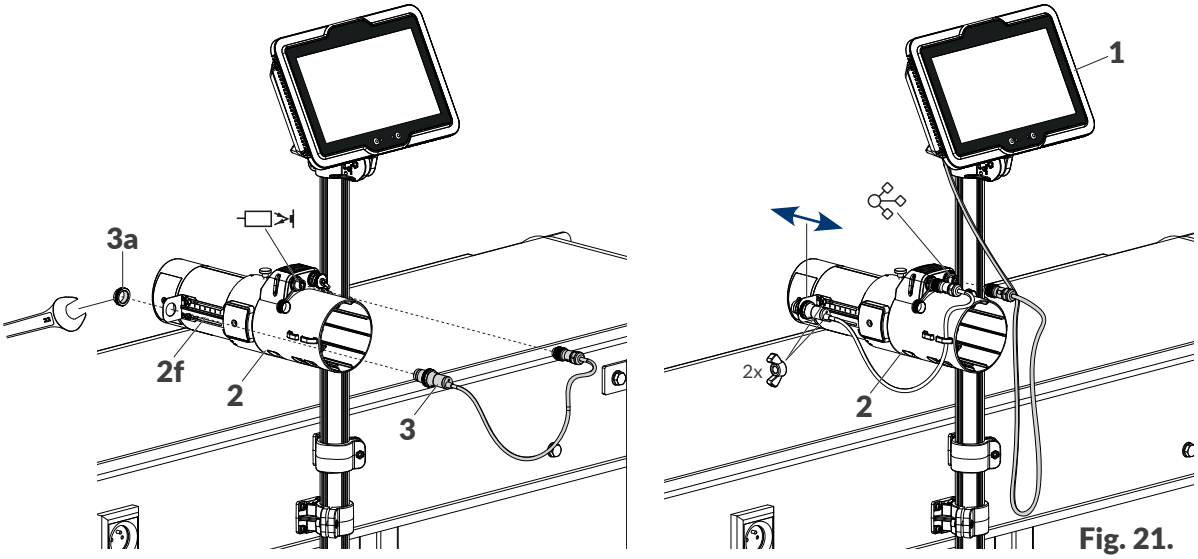


Fig. 21.

For more details on how to connect printer components see ***"2.3. Installing the Printer"*** ▶ ***"2.3.2. Electrical connections"***.

10. Remove the transport protection from the needle, which is part of the bottle connection.
11. Install a **1-liter** (**4a**; see ***Fig. 22***) or **0.5-liter** bottle of ink of an appropriate type.

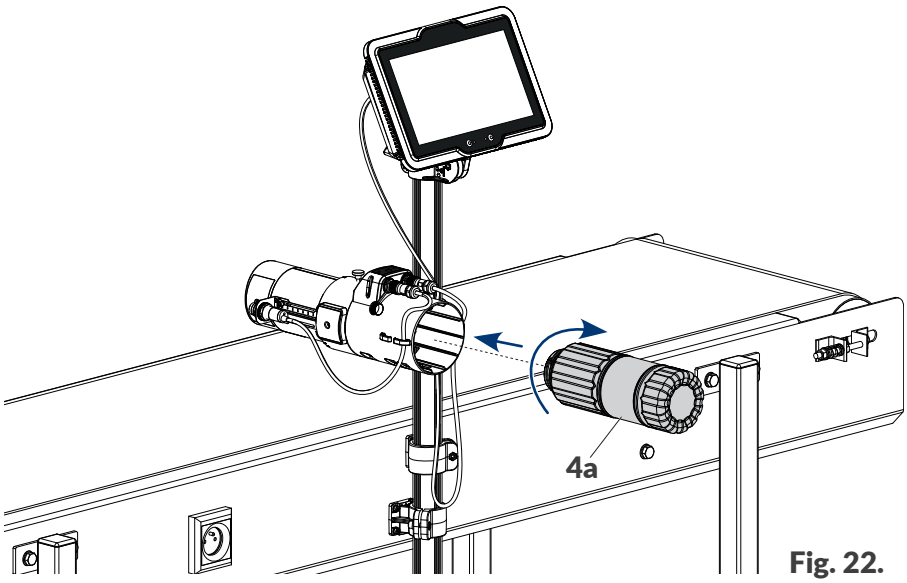


Fig. 22.

NOTE: Sharp Elements!
Be careful when installing a bottle not to get wounded with the needle that sticks out of the connection. ***Do not touch the needle!*** *Avoid manipulations near the needle.*

12. Connect power cord **7** to control unit **1** and to earth pin socket (see ***Fig. 23 on page 29***).

13. Fasten cable holders **5b** to support beam **5**.

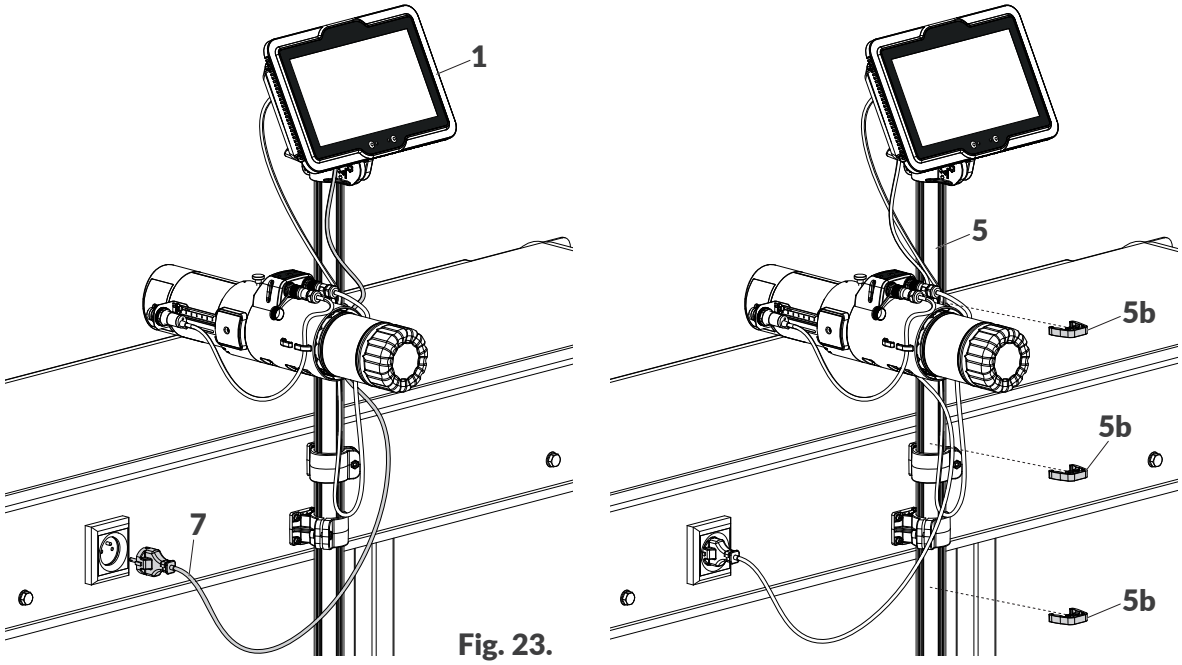


Fig. 23.

*The requirements for the electrical mains and location of the mains socket are given in **The Safety Instructions**.*

The printer is installed in its standard working position and ready for startup.

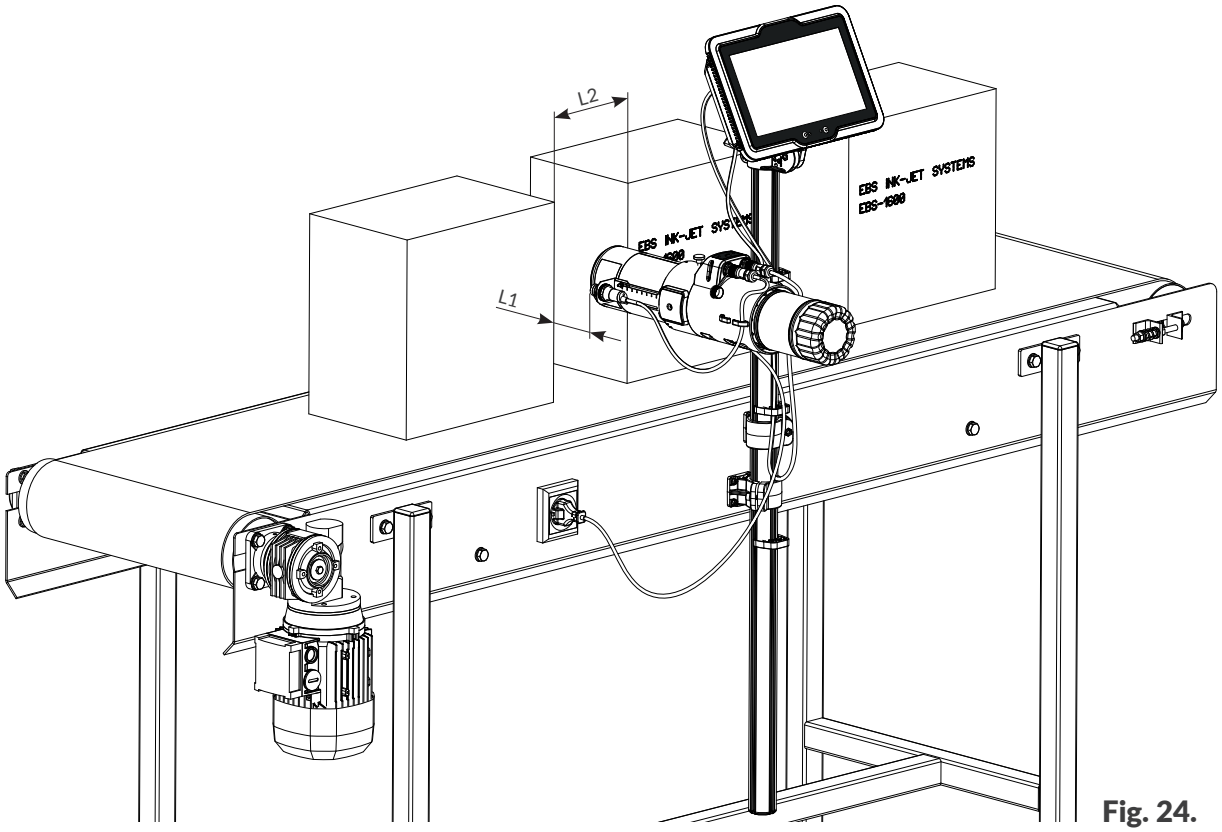


Fig. 24.

Objects to be labeled shall be within the reach of the photodetector that is selected as the source of the trigger signal.

Distance **L1** from the printhead face to objects to be labeled: **2 to 20 mm (0.08 to 0.8 inch)**.

The minimum distance **L2** between consecutive objects on a factory conveyor: **5 mm (0.2 inch)**.

2.3.1. ADDITIONAL INFORMATION

Articulated holder

Articulated holder **6a** (see ***Fig. 25***) in the installation kit offers 3 positions (**A**, **B**, **C**). Owing to that, the printer can be fastened to a factory conveyor and thereby customized in a variety of ways.

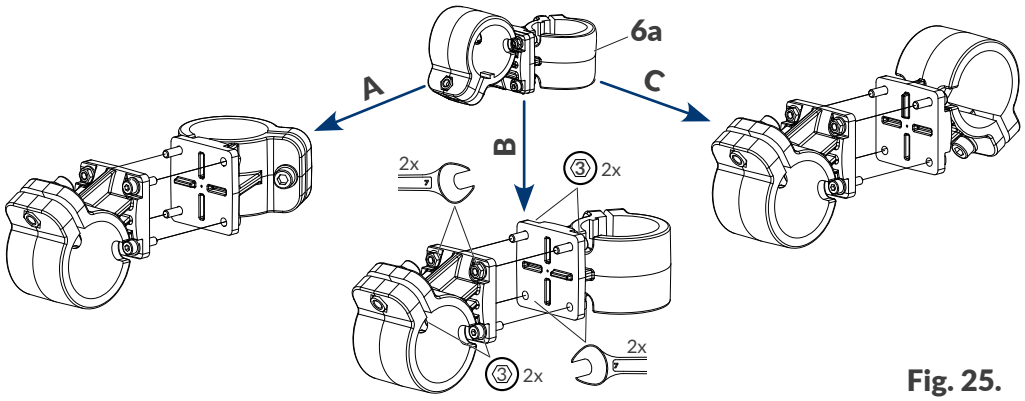


Fig. 25.

*A #7 open ended spanner and a #3 hex (Allen) key are necessary for changing the position of articulated holder **6a**.*

Complete integrated printhead holder

Owing to the structure of the complete holder for integrated printhead **2n** you can:

- Change the degree of turning of the integrated printhead (**2**, see ***Fig. 26***) to reduce print height. The degrees of turning are marked on holder **2n**.
- Rotate holder **2n** through 180° (see ***Fig. 27 on page 31***).
  You can rotate holder **2n** through 180° because the turning marks and the holes to screw handwheel **2r** in are both on top and bottom of the holder **2n**. If you rotate holder **2n** through 180°, you will swap places of holder **2m**, which is designed to fasten the printhead to the beam, and photodetector holder **2f**.

To change the degree of turning of integrated printhead **2**:

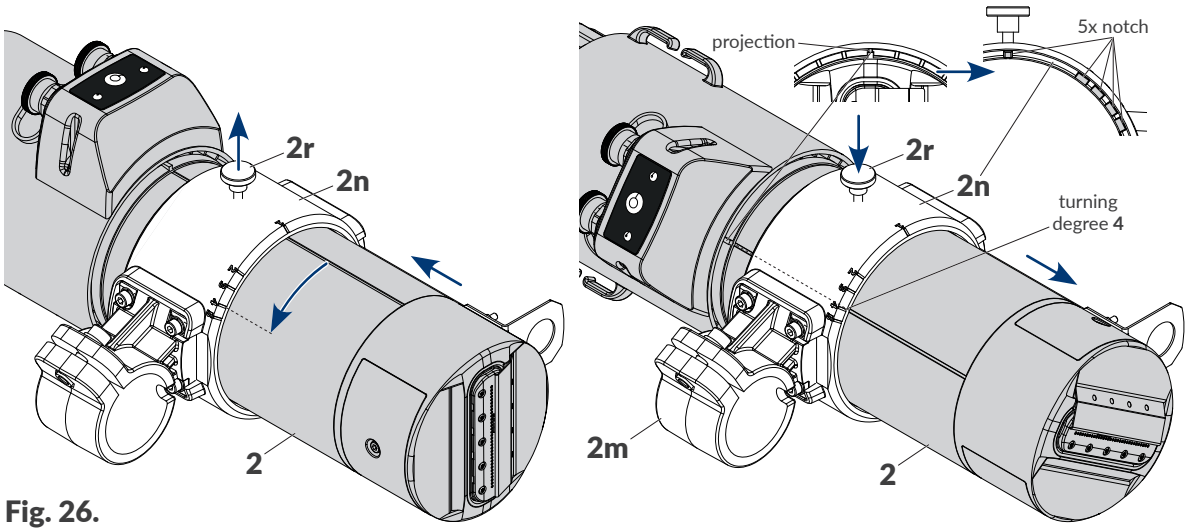


Fig. 26.

1. Loosen handwheel **2r** (see ***Fig. 26***).
2. Pull integrated printhead **2** out of holder **2n** slightly backward.

3. Turn the integrated printhead in holder **2n** in such a way that the projection on the printhead is aligned with the selected turning degree mark on holder **2n**.
   The degree of turning shown in ***Fig. 26 on page 30*** is 4.
4. Slide in the integrated printhead back to holder **2n** in such a way that the printhead projection fits into an appropriate positioning notch in holder **2n**.
   Holder **2n** has 5 positioning notches that correspond to all turning degrees available. Owing to that no degree of turning of integrated printhead **2** can be set incorrectly.
5. Tighten handwheel **2r**.
   The degree of turning of integrated printhead **2** is set.

*Correct operation of the printer requires that the turning degree you have set be entered into printer memory. For more details see **"7.3. Configuring Parts of the Printing System"**,*

To rotate holder **2n** through 180°:

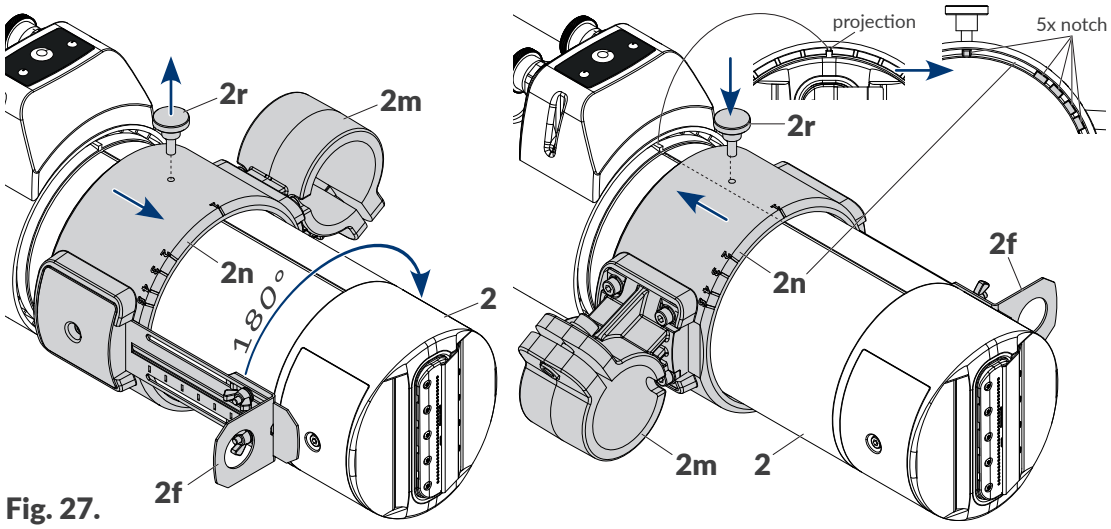


Fig. 27.

1. Unscrew handwheel **2r** completely.
2. Move holder **2n** slightly towards the face of integrated printhead **2**.
3. Rotate holder **2n** through 180° in such a way that the projection on the printhead is aligned with an appropriate turning degree mark on holder **2n**.
   The degree of turning shown in ***Fig. 27*** is **1** (the printhead is unturned).
4. Push holder **2n** towards the back of the printhead in such a way that the projection on the printhead fits into an appropriate positioning notch in holder **2n**.
   Holder **2n** has 5 positioning notches that correspond to all turning degrees available. Owing to that no degree of turning of integrated printhead **2** can be set incorrectly.
5. Screw handwheel **2r** into the hole in holder **2n** which you find on top after the holder will have been rotated.

Slide

Slide **2c** (see ***Fig. 28***) secures the nozzle plate against damage. It can be fastened to the face of an integrated printhead in two ways. Owing to that, the direction in which objects move in front of the printhead face can be easily changed.

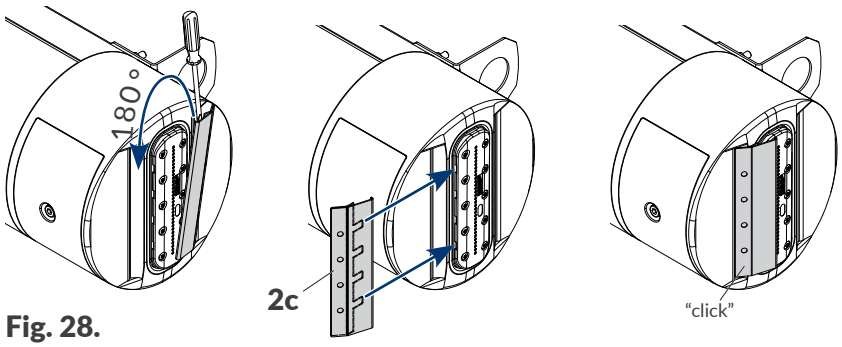


Fig. 28.

It is recommended that a flat tip screwdriver be used to reposition the slide.

Dedicated stands

Section ***"2.3. Installing the Printer"*** shows an example of how to install the **PicAS® II** EBS-1600 printer on a factory conveyor. In fact, the printer can be installed in many ways, also by means of dedicated stands such as:

- a legged stand (Part No. **P910214**; see ***Fig. 29***),
- a wheel stand (Part No. **P910208**; see ***Fig. 30***).

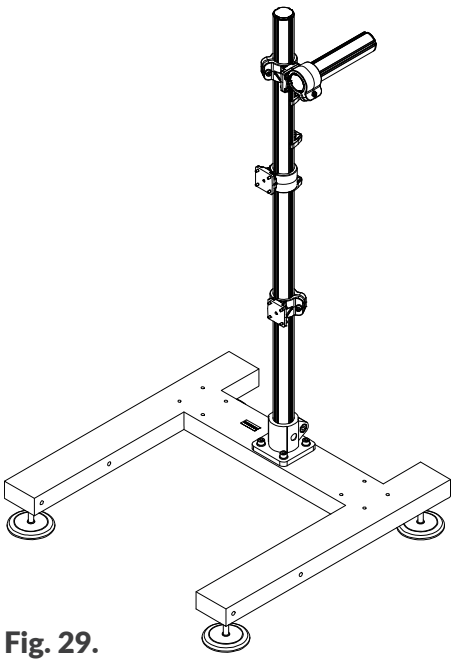


Fig. 29.

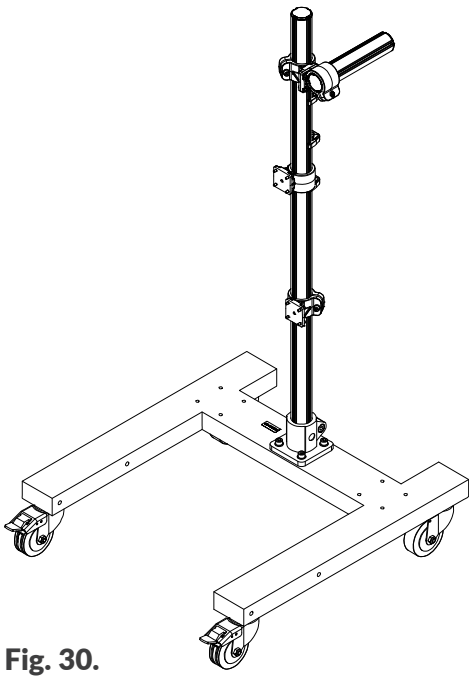


Fig. 30.

NOTE: The system needs to be checked for stability!
*The stability of the system where the printer is installed using the stands shown in **Fig. 29** and **Fig. 30** has been tested in the worst foreseeable scenario. However, due to the fact that the printer can be configured in many ways, it is required that system stability be confirmed each time the installation is complete. The stand with the printer fastened to it must not tilt or overturn.*
The stand with the printer fastened to it should be secured against shifting. If the printer is installed on a wheel stand, the brakes at the stand wheels must be put on.
*The use of stands other than the dedicated ones depicted in **Fig. 29** and **Fig. 30** does not guarantee required stability of the system, which may lead to personal injuries when the stand with the printer on it tilts or overturns.*

2.3.2. ELECTRICAL CONNECTIONS

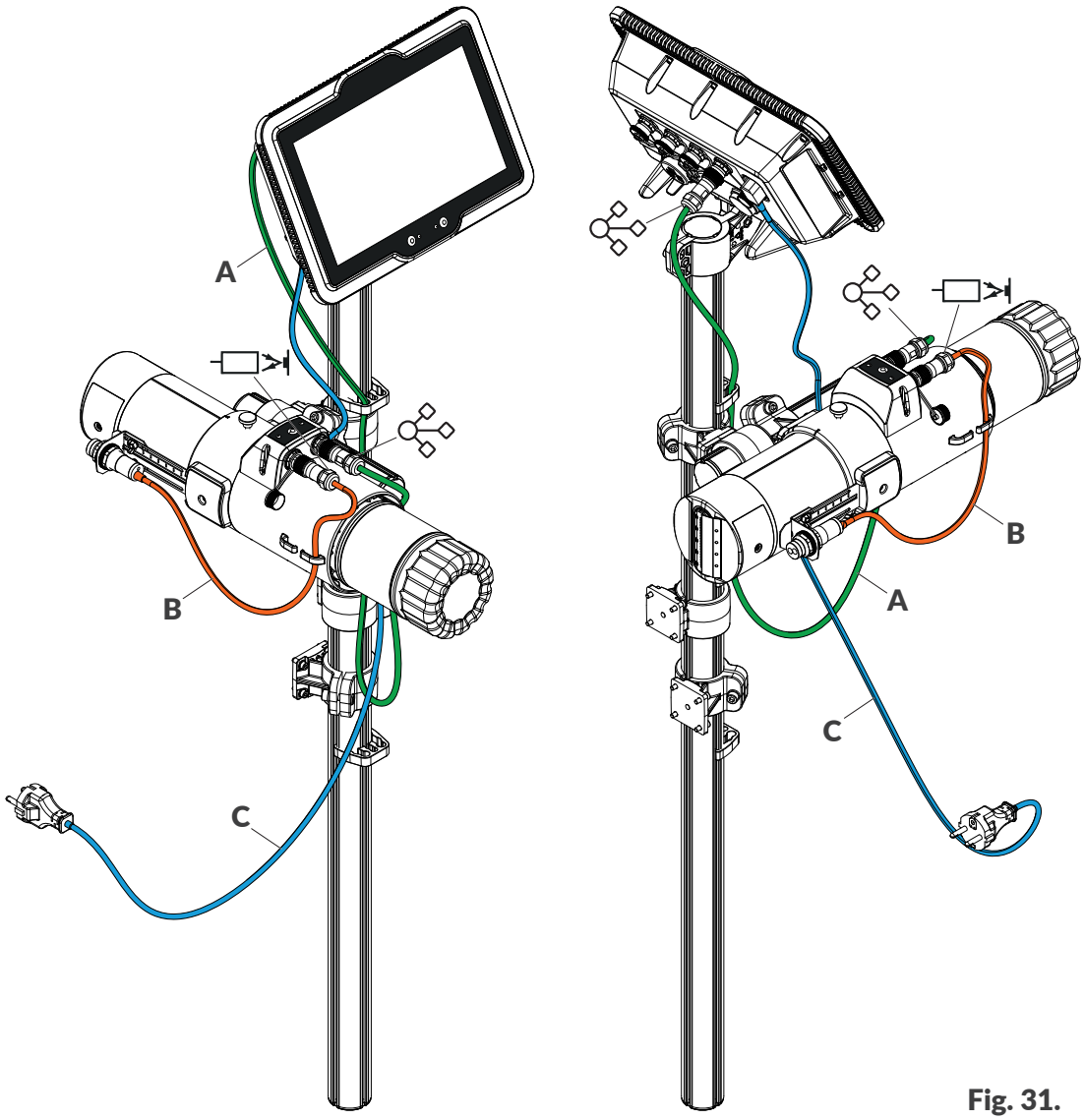


Fig. 31.

Cable		Color
A	**eLink**: Control unit ◀ ▶ Integrated printhead. Cable lengths available: **1m** (**39.4 inch**), **3m** (**118.1 inch**), **5m** (**196.8 inch**), **10m** (**393.7 inch**).	green
B	Photodetector ▶ Integrated printhead. Cable length: **0.4m** or **5m** (**15.7** or **196.8 inch**).	orange
C	Disconnectable power cord.	blue

The eLink

The **eLink** universal interface ensures communication among printer components. In the **PicAS® II** EBS-1600 printer, the **eLink** interface is used for communication among the control unit and the integrated printhead.

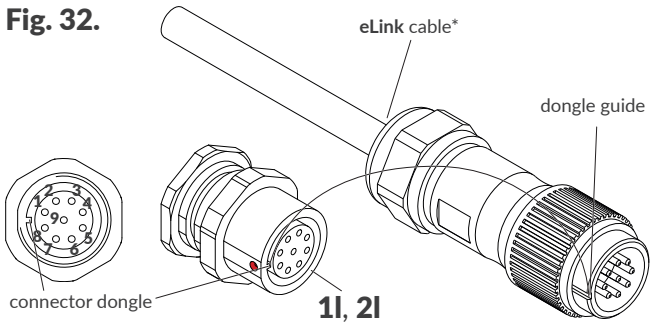
The above-mentioned components are provided with:

- Control unit: one 9-pin female connector **1I** (see ***Fig. 4 on page 16*** and ***Fig. 32***),
- Integrated printhead: one 9-pin female connector **2I** (see ***Fig. 8 on page 19*** and ***Fig. 32***).

The **eLink** connectors installed in printer components can be connected with interface cables provided with 9-pin male connectors. The following lengths of **eLink** interface cables are available:

- **1m / 39.4 inch** (standard),
- **3m / 118.1 inch**, **5m / 196.8 inch**, **10m / 393.7 inch** (options).

Fig. 32.



NOTE: A risk that the connector gets damaged!
*While connecting the e-link cable to the control unit or the printhead make sure that the guide in the cable connector is correctly positioned relative to the **eLink** dongle, which is marked with a red dot.*

** The **eLink** interface cable is symmetrical. It can be connected in any direction.*

2.3.3. INSTALLING ACCESSORIES

2.3.3.1. STATUS BEACON

The **PicAS®II** EBS-1600 printer can be optionally equipped with external status beacon **D** (see *Fig. 33*). The beacon uses colors to signal the printer statuses displayed on the screen:

Beacon color code		Meaning
Solid yellow.		A warning that does not pause printing but may require user intervention.
Solid red.		An error/fault that makes printing impossible.
Solid green.		The printer is printing.

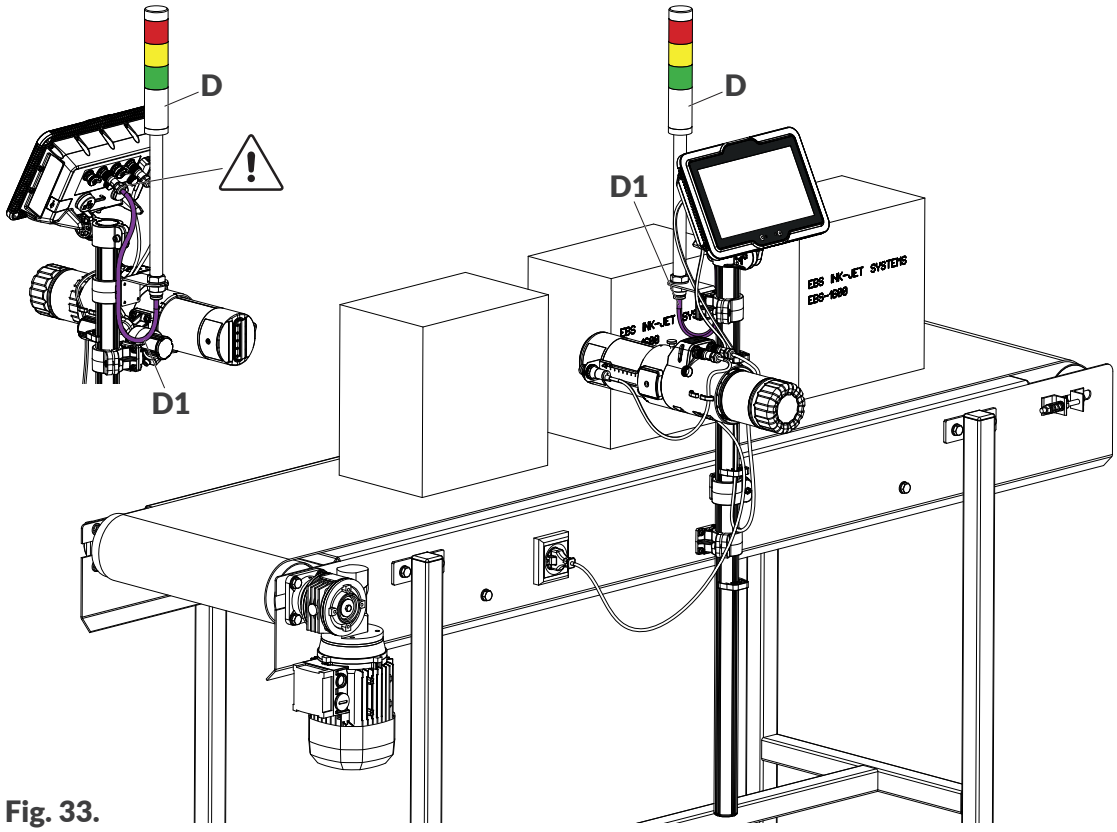


Fig. 33.

Cable		Color
D1	Status beacon ▶ Control unit.	violet

External status beacon **D** requires no additional setup. It operates properly immediately after it has been connected to the printer.

*A status beacon equipped with an alarm buzzer is also available. If such a beacon is used, the sound alarm is heard when an error occurs, that is when the beacon glows red. For more information about options available contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.3.3.2. ENCODER

The **PicAS®II** EBS-1600 printer may be provided with rotational speed sensor (encoder) **E** (see ***Fig. 34***), whose task is to adjust printing speed to a variable speed at which objects to be labeled move on a factory conveyor. If a conveyor belt moves at a stable speed, no encoder is needed. Printing can be timed by an internal generator.

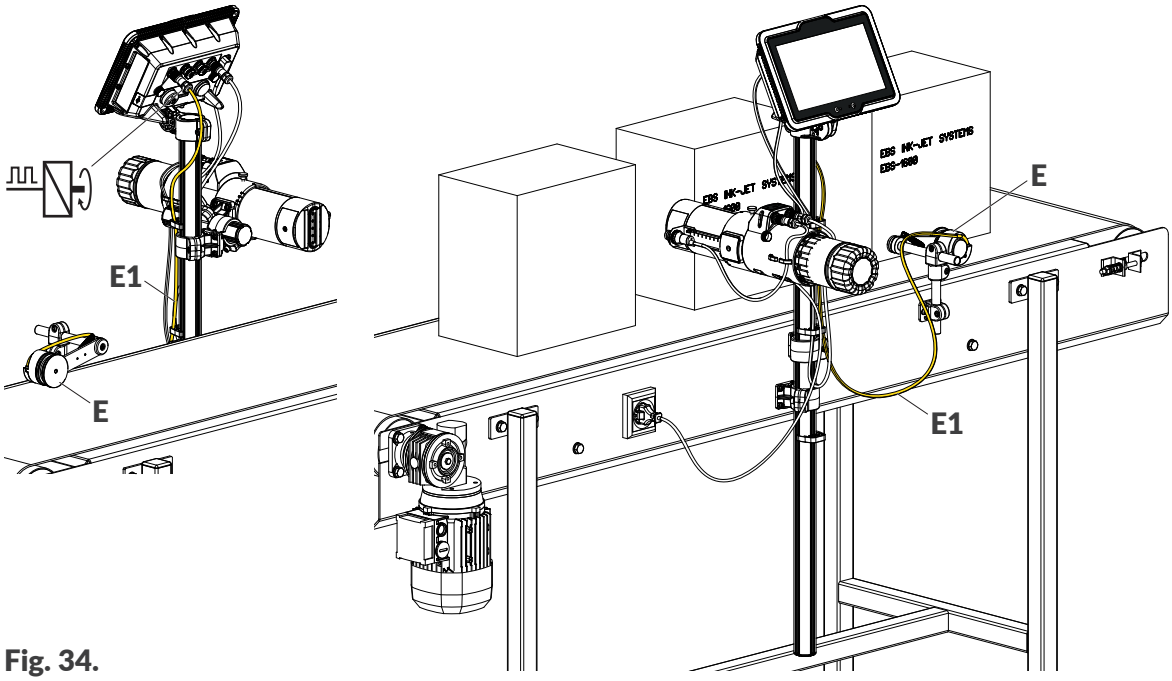


Fig. 34.

Cable		Color
E1	Encoder ▶ Control unit.	yellow

*Fig. 34 shows an example of an encoder. For more information about available encoders contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

*An encoder requires an additional configuration. For more information see **"7.2. Printing Settings"**.*

2.4. FIRST PRINTER STARTUP

To start the printer up:

1. Connect power plug **7a** (see ***Fig. 2 on page 14***) to the electrical mains.
2. Press the ⏻ button.

   The printer pre-setting wizard starts; it leads the user through the following steps:

- Setting the country and the interface language,
- Setting the current date and time,
- Starting the printing system setup wizard to enter the real system configuration on the conveyor to the printer,
- Setting printing parameters,

– Displaying information about the parts your printing system consists of and automatic part authorization.

The subassembly authorization procedure requires that a bottle of ink of the target type be connected to the printer.

*If there are problems with automatic part authorization, printing cannot start. The on-screen messages inform you of the problem and the printer signals an error. Contact an authorized representative of **EBS Ink Jet Systeme GmbH** for advice.*

3. Press ✓ to finish the pre-configuration and to complete the first printer startup.
The printer is started up and ready for printing when the LEDs:

–  in the control unit

and

 in the integrated printhead

illuminate orange.

2.4.1. TEST PRINTS

*The procedure is not available to **OPERATOR**-type users* 👤.

To make the first print:

1. Create/import a text project; it is advisable to create a very simple project which contains *e.g.* one **STATIC TEXT**-type text object T.

   *For more details on how to create projects see **"5.4. Creating a Project"**.*

   *For more details about importing projects see **"7.7.1. Exporting/Importing Projects"**.*

2. Open a project you have created/imported in order to print it.

   *For more details see **"4.4.1. Opening a Project for Printing"**.*

3. Start printing.

   *For more details see **"4.4.2. Starting Printing"**.*

4. Move a sheet of paper in front of the photodetector that is selected as the source of the trigger signal and in front of the face of the printhead to make prints.
5. Check whether the dots are identical in size or not. If they are not, follow the printing unit tuning procedure.

   *For more details see **"9.3.2. Tuning the Printing Unit"**.*

2.5. USER TRAINING

Many operations described in this Manual can be carried out by **instructed persons** only. Therefore, a local representative of **EBS Ink Jet Systeme GmbH** is obliged to deliver relevant training. Such training shall include at least the following topics:

- Safety requirements, potential risks,
- Basic installation of the printer,
- Operating the printer,
- Replacing consumables,
- Basis of printer configuration,
- Basic maintenance, diagnostic and service operations,
- Transporting and storing the printer.

CHAPTER 3
USER INTERFACE

3. USER INTERFACE

The user interface enables the user to operate the printer easily and intuitively. This applies to both project management (editing, setting project parameters, starting/pausing printing) and printer maintenance and servicing.

The user interface consists of the following elements:

- Control-unit panel (an LCD display with a touch panel, function buttons, LED indicators),
- Purge button and LED indicators in the integrated printhead.

3.1. CONTROL-UNIT PANEL

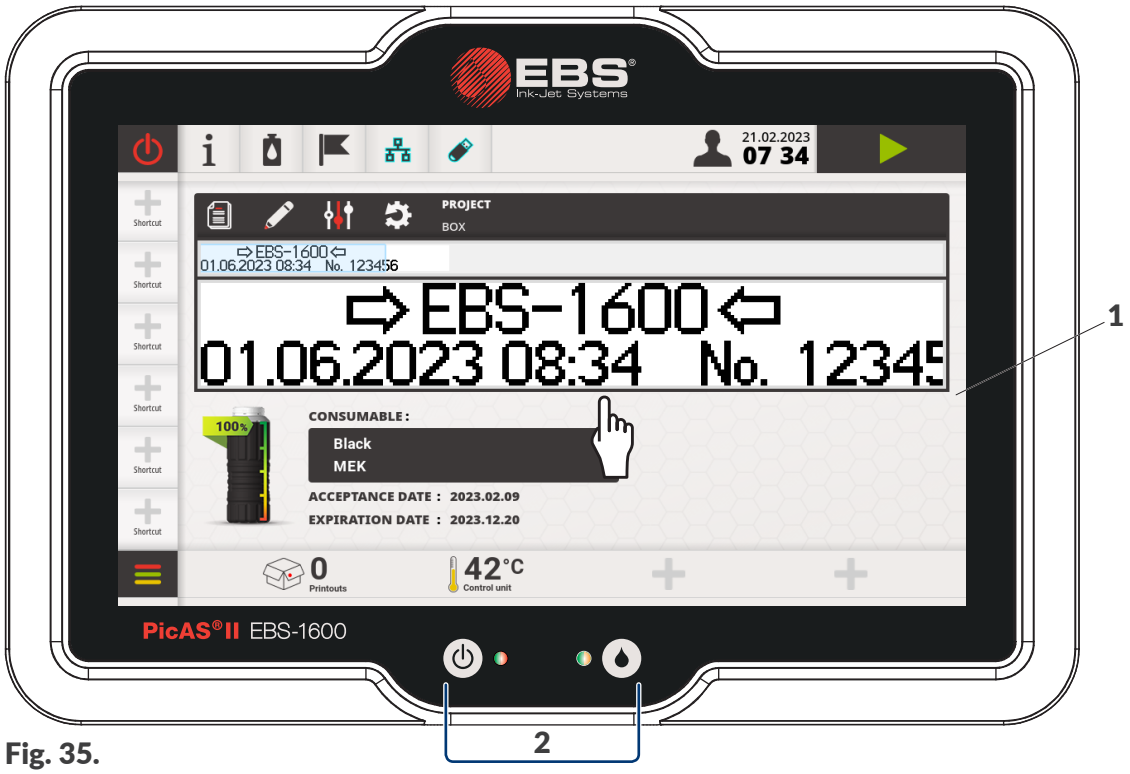


Fig. 35.

1	Graphic LCD display with a touch panel.
2	Function buttons and LED indicators.

3.1.1. MAIN SCREEN

The main screen on the LCD display is used for:

- Monitoring printer state,
- Starting/pausing/monitoring printing,
- Monitoring the level of the ink in the bottle,
- Signaling warnings and errors.
- Displaying basic information such as the current date, the current time,
- Displaying additional information with selected widgets,
- Previewing the project that is open for printing/being printed,

- Moving to the printer menu,
- Getting additional information or carrying out functions using predefined icons or user-defined shortcuts.

Sounds may be generated while the touchscreen is being used. The sounds can be enabled/disabled by pressing ▶ ▶ ▶ ▶ ***Tapping sound***.

The screen can be additionally configured (e.g. brightness can be modified) by pressing ▶ ▶ ▶ ▶.

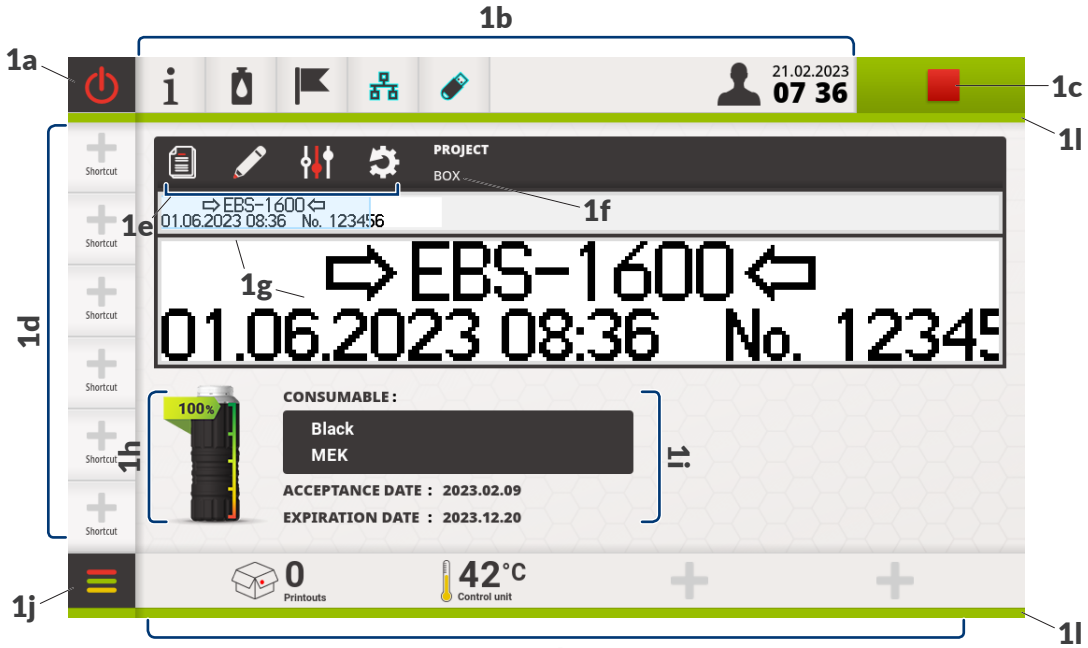


Fig. 36.

1a	Shut down/restart the printer.
1b	Colored icon bar. Printer status. Date/time.
1c	Start/pause printing. Printing status.
1d	Editable user shortcut bar.
1e	Function icons for the project that is open for printing/being printed: Open another project. Edit the project. Project parameters. Reset variable objects.
1f	Name of the project that is open for printing/being printed.
1g	Preview of the project that is open for printing/being printed.
1h	Ink level indicator.
1i	Additional information on the ink bottle installed in the printer.
1j	Move to the menu.
1k	Editable widget bar.
1l	Neon sign.

3.1.1.1. ICON BAR

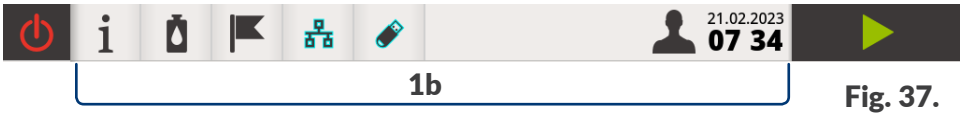
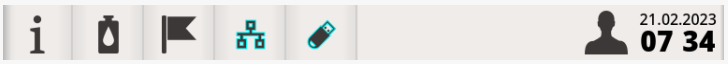


Fig. 37.

Colored icon bar **1b** (see ***Fig. 37***) is displayed at the top of the screen. With the bar icons, the user can carry out the selected operations regardless of what is displayed on the screen at a given moment.

The icon bar also provides access to the following information:

- Printer status (the color of the icon bar background),

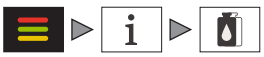
Regular. Grey.		
Warning. Solid yellow.		
Error. Blinking red.		

- The current date/time,

*The display format of the current date and time can be changed using the **Date format**, **Date separator** and **Time separator** parameters available in the menu*  .

- The information that is given when an icon changes its appearance (*e.g.* the type of user that is logged in).

Icons available on icon bar 1b

Icon	Meaning	Corresponding menu branch
	Printer information.	
	Consumables information. The  icon means that the printer has entered service mode (printing can continue over another **50 hours**).	
	Messages (notices, warnings, errors).	
	Information on the type of user currently logged in. Change in the type of user.	
	**Ethernet** connection status:  - the interface is inactive,  - the interface is active; the power cord is unplugged or no network is available,  - the interface is active; the printer is connected to **Ethernet**. **Ethernet** interface configuration.	

Icons available on icon bar 1b

Icon	Meaning	Corresponding menu branch
	Status of connection of a memory device to the **USB** port in the control unit: - no memory device is connected to the **USB** port, - an **inappropriate** memory device (*e.g.* formatted with a different file system than **FAT, FAT32** or **NTFS**) is connected to the **USB** port, - an **appropriate** memory device is connected to the **USB** port. Operation of a **USB** memory device.	▶

3.1.1.2. EDITABLE USER SHORTCUT BAR

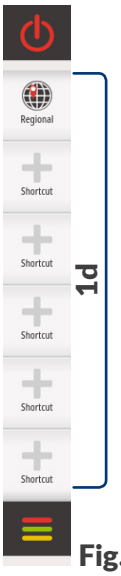


Fig. 38.

Editable user shortcut bar **1d** (see ***Fig. 38***) is located on the left-hand side of the screen.

The icons that are user shortcuts can lead to:

- A specific window, *e.g.* where printing parameters or settings are displayed,
- The selected menu branch.

Every icon displayed on user shortcut bar **1d** enables the user to immediately call the related window (or move to the related menu branch) regardless of what is displayed on the screen at a given moment.

Defining a user shortcut

To define a user shortcut:

1. Move to the menu branch to which a shortcut you wish to define or to the window that is to be called with a shortcut (*e.g.* ▶ ▶ ▶).
2. On shortcut bar **1d**, press any ➕ icon to which a shortcut to the current window will be assigned.
   The ➕ icon is replaced with a shortcut icon on which there is the additional ❌ sign.

   At this stage, you can delete the shortcut you are defining. To delete the shortcut icon on which there is the additional ❌ sign, press the icon and then acknowledge the operation.
3. Press to return to the main screen.
   The user shortcut to the local settings screen (▶ ▶ ▶) is defined (see ***Fig. 38***).

Deleting a user shortcut

To delete a user shortcut:

1. Press the user shortcut icon you wish to delete.
   The menu branch or the window the user shortcut points to is displayed.
   The selected user shortcut icon is replaced with an icon on which there is the additional ❌ sign.
2. Press the shortcut icon on which there is the additional ❌ sign to delete the user shortcut.
   A dialog box with the request to acknowledge the operation is displayed.
3. Press **Yes** to acknowledge.
   The user shortcut is deleted.

3.1.1.3. EDITABLE WIDGET BAR

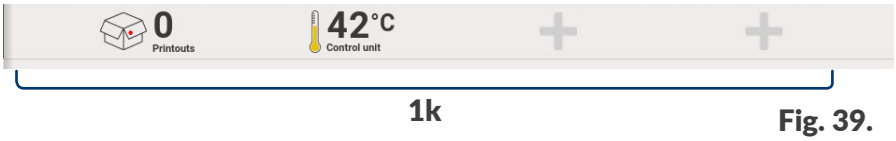


Fig. 39.

Editable widget bar **1k** (see ***Fig. 39***) is displayed at the bottom of the main screen. With the widgets, the user can monitor basic data about the printer and printing process directly from the main screen. The following can be monitored:

- Number of printouts completed during the selected time interval,
- Temperature in the selected printer module,
- The state of the selected photodetector,
- Counter of an estimated number of prints that can be made in ink remaining in the bottle

and the like.

To customize the widget bar, press either any + icon on the main screen or ▶ ▶ ▶ . For more details see ***"7.1.4. Setting up Widgets"***.

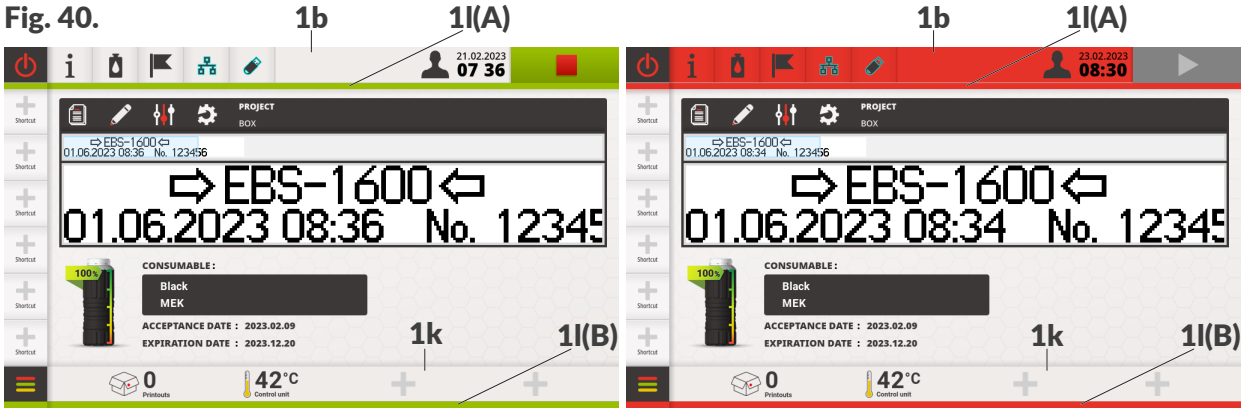
3.1.1.4. NEON SIGNS

Two neon signs **1l** (see *Fig. 40*) are located:

- **1l(A)** in the upper part of the screen, below icon bar **1b**,
- **1l(B)** in the lower part of the screen, below the icon and editable widget bar **1k**.

The neon signs (**1l**) are one of the elements that indicate printer status and are visible regardless of what is displayed on the screen at a given moment.

Fig. 40.



Colors of neon signs		Meaning
Blinking yellow.		Working parameters of the printer are being set.
Solid yellow.		No project is open for printing.
Blinking red.		An error during printer operation.
Solid red.		At least one of the printer modules has not been authorized.
Blinking green.		The nozzle plate in the integrated printhead is being purged.
Solid green.		Printing.

In the other states unlisted in the above-given table, neon signs **1l** are blank.

3.1.2. FUNCTION BUTTONS AND LED INDICATORS

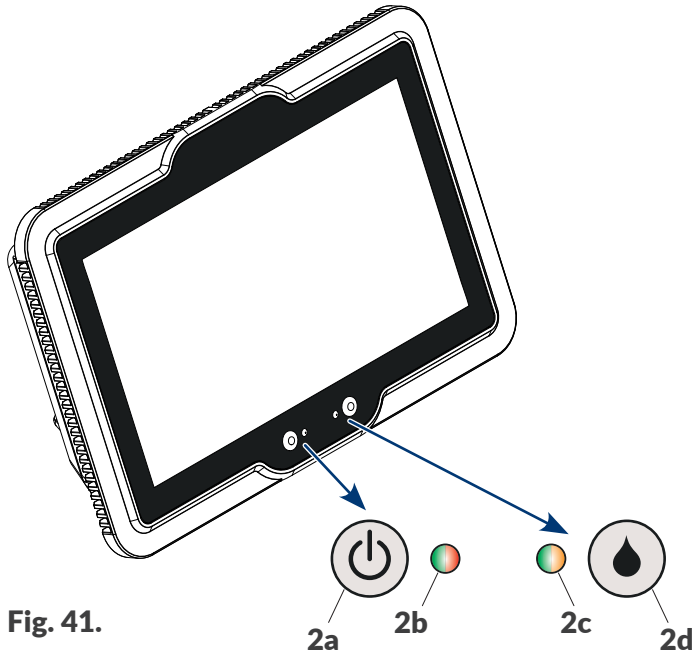
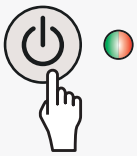
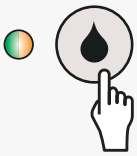


Fig. 41.

Button	Function	LED	Meaning
	Start/Shut down the printer.		Off. - The printer is not connected to the electrical mains.
			Solid green. - The printer is connected to the electrical mains and it is started. There are no errors and warnings.
			Blinking red. - A warning during printer operation. - The printer is in the process of being started/ shut down.
			Solid red. - An error during printer operation. - The printer is connected to the electrical mains but it is not started (it is in standby mode).
	Start/pause printing.		Off. Printing cannot start.
			Blinking orange. - Working parameters of the printer are being set. Printing cannot start.
			Solid orange. - Printer ready for printing.
			Blinking green. - The nozzle plate in the integrated printhead is being purged.
			Solid green. - Printing.

3.2. OTHER USER-INTERFACE ELEMENTS

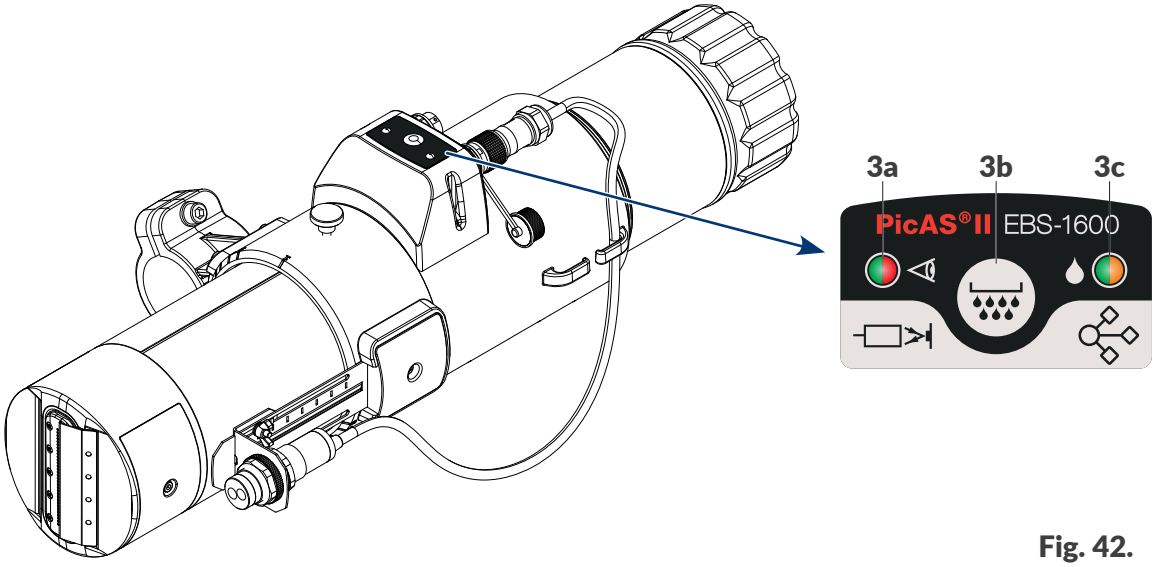


Fig. 42.

The button (**3b** in *Fig. 42*) on the integrated printhead is designed to start purging. LEDs **3a**, **3c** signal integrated printhead states.

Button	Function
	Start purging the nozzle plate in the integrated printhead. The plate is purged as long as the button is pressed; the time of purging is limited by the total sum of all purging cycles per every minute; the sum must not exceed 30 seconds. The purging of the nozzle plate is signaled with: - the LED in the integrated printhead blinking green, - the neon signs on the control unit screen blinking green, - the LED on the control unit blinking green. The function can be started provided that the printer is not in printing state.

LED	Meaning
	Off. - The printer is not connected to the electrical mains. - The printer is connected to the electrical mains but it is not started (it is in standby mode). - There are no errors or warnings.
	Blinking red. - A warning during printhead operation.
	Solid red. - An error/fault during printhead operation.
	Solid green. - The photodetector connected to connector in the integrated printhead is in active state; an object is within photodetector reach.

LED	Meaning
	Off. Printing cannot start.
	Blinking orange. - Working parameters of the printhead are being set. Printing cannot start.

LED	Meaning
	Solid orange. - The printhead is ready for printing.
	Blinking green. - The nozzle plate in the integrated printhead is being purged.
	Solid green. - Printing.

3.3. RULES FOR USING THE USER INTERFACE

3.3.1. NAVIGATION

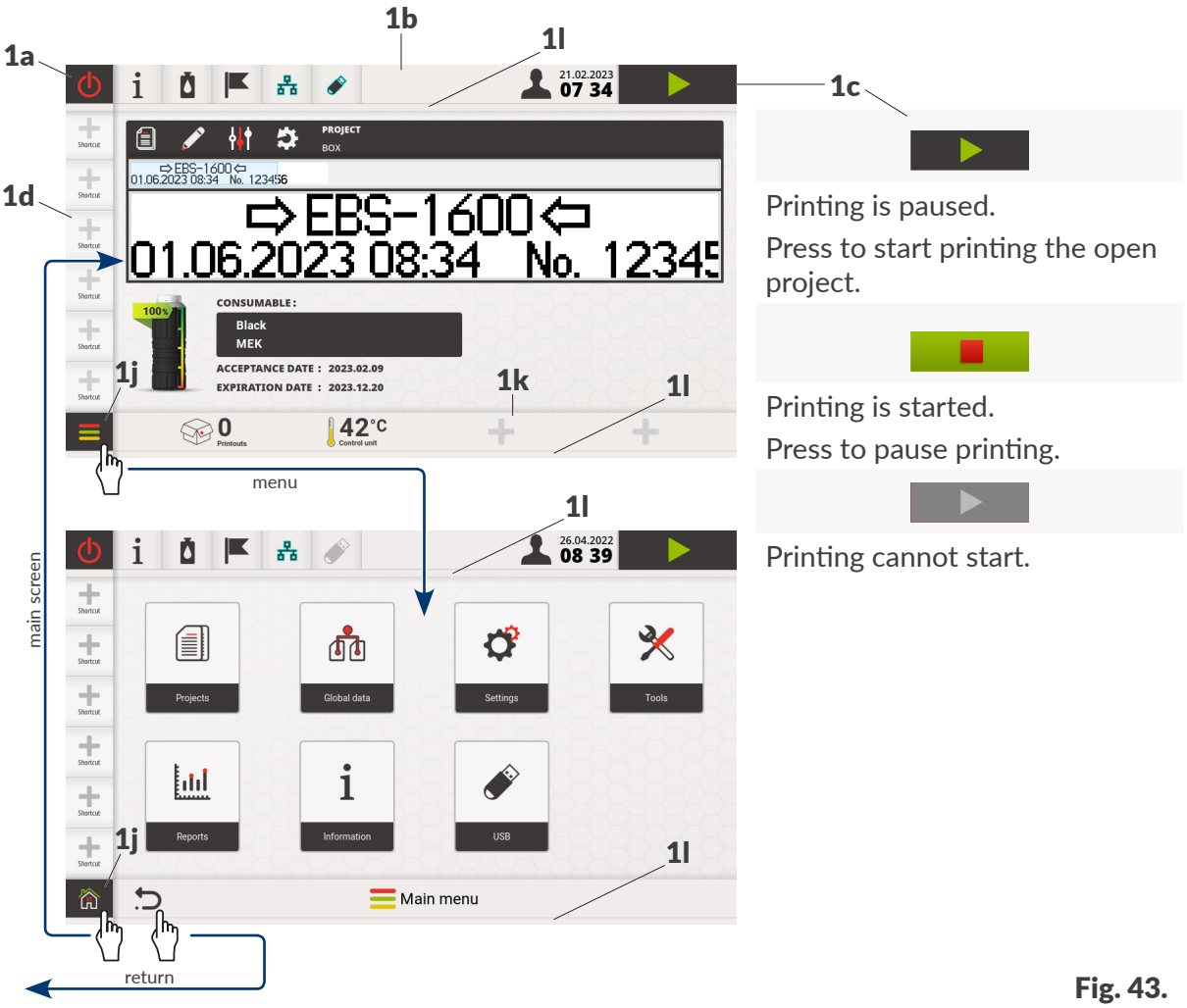


Fig. 43.

Icon bar **1b** (see ***Fig. 43***), editable user-shortcut bar **1d**, neon signs **1l** and also shutdown/restart icon **1a**, start/pause printing icon **1c** and menu call (or home screen) icon **1j** are visible regardless of what is displayed on the screen at a given moment.

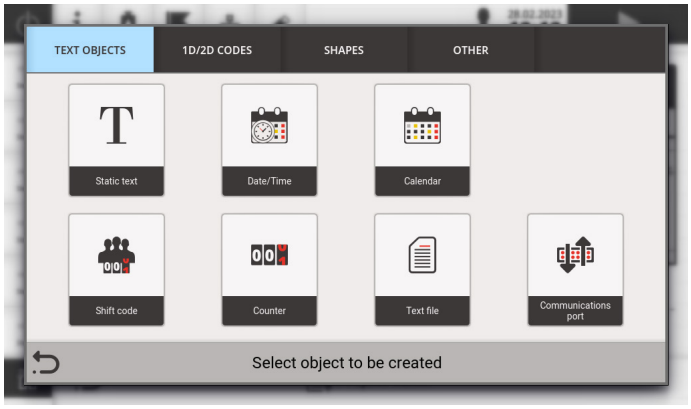
Editable widget bar **1k** is visible on the main screen only.

Access to the majority of printer functions is provided by icons in the menu called by icon  on the main screen, *e.g.*

After the menu has been called, the icon is replaced with the icon, which is used for returning to the main screen.
Additionally, the icon, which is used for returning to the previously displayed screen, is available in the menu.

In certain windows, the parameters/functions are divided into groups marked with sheet tabs. If you select a sheet tab, the tab will be enclosed in the characters "|", *e.g.* |**TEXT OBJECTS**|

The tab marking described above is used further in this document.



3.3.2. MENU STRUCTURE

The printer menu provides full access to all printer functions and settings but the access to some of them depends on the type of privileges the active user has.

The calling of the menu branches or functions that are used most frequently can be simplified by the application of shortcut icons which are available on the user shortcut bar. For more details see ***"3.1.1.2. Editable user shortcut bar"****.*

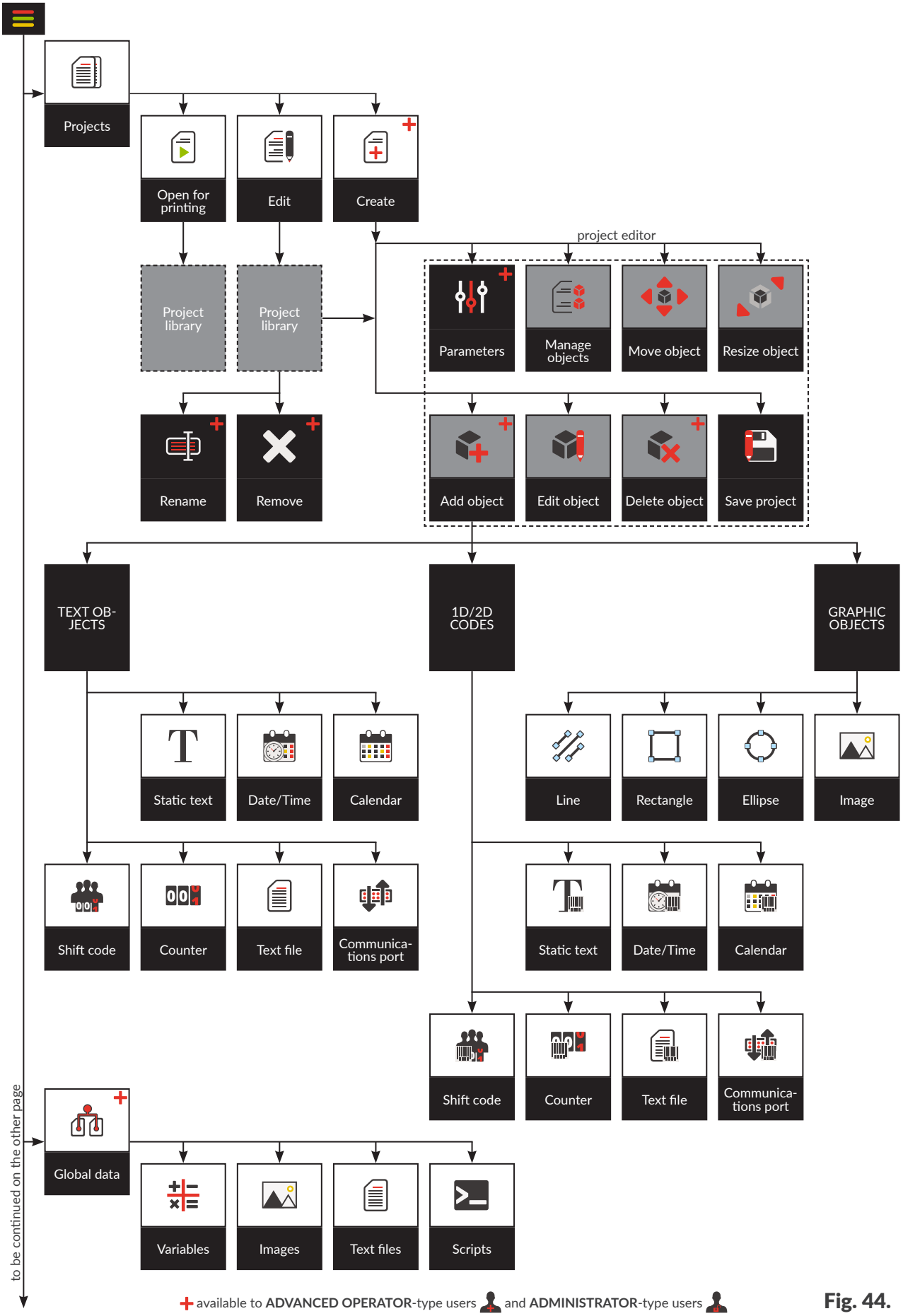
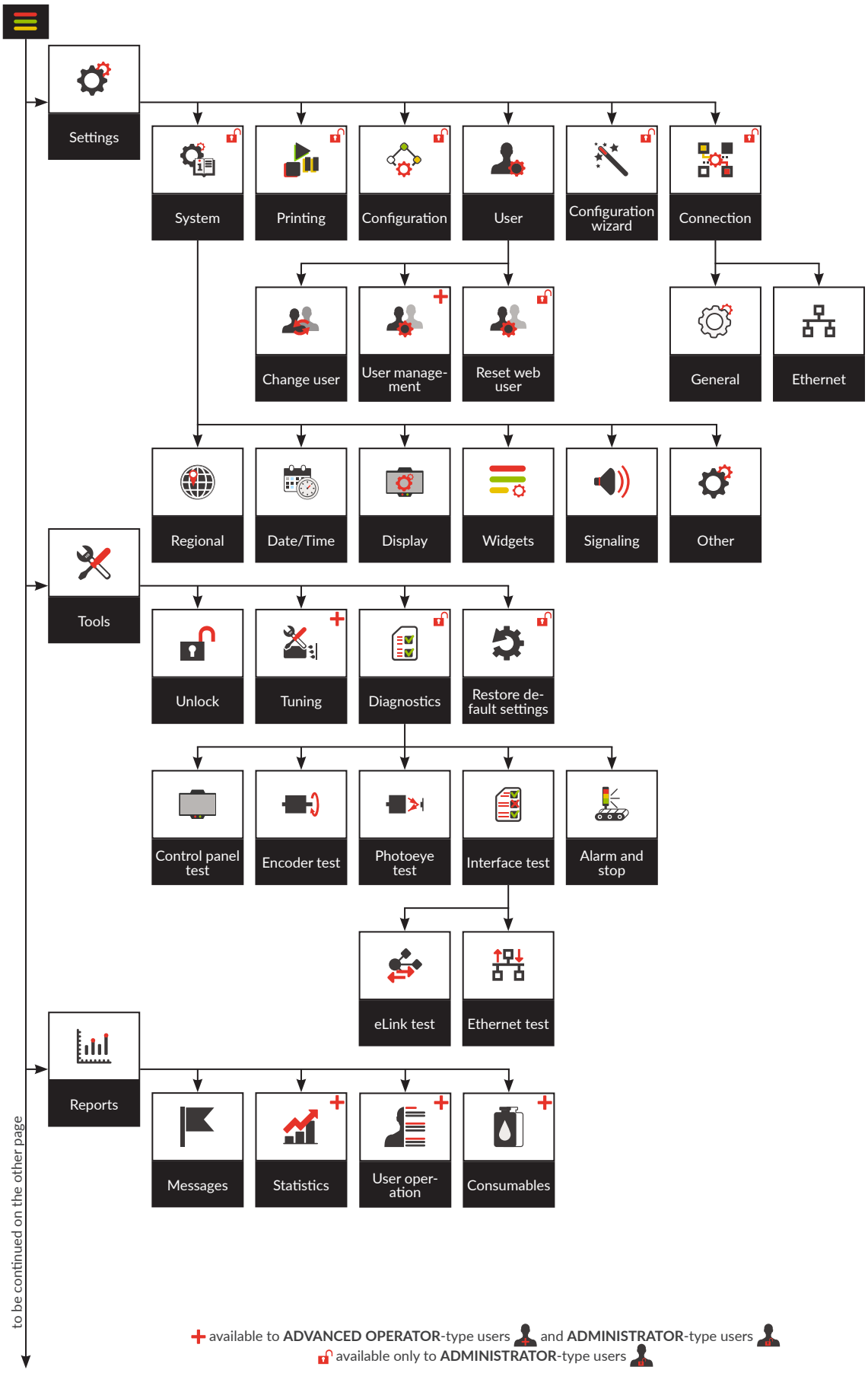
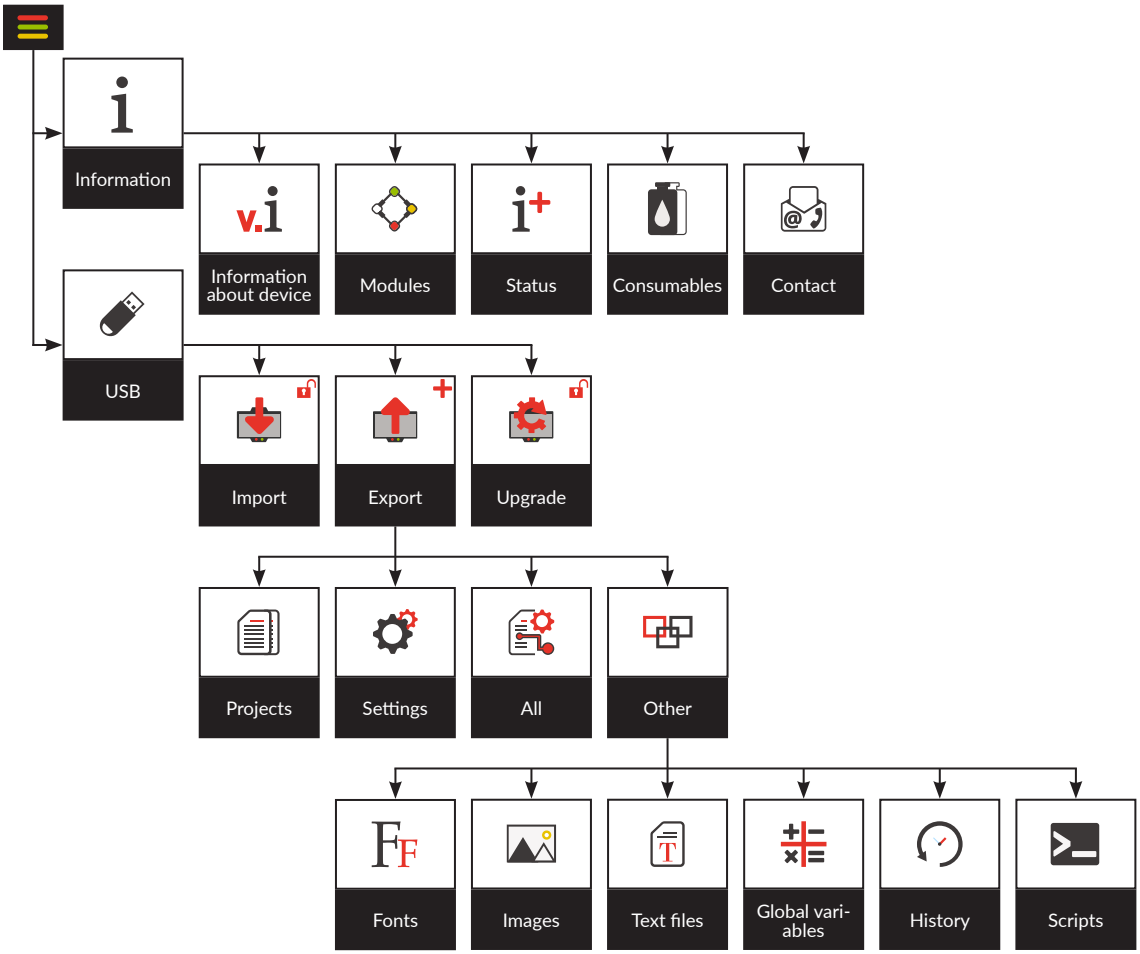

Projects
Open for printing
Edit
Create
project editor
Project library
Project library
Parameters
Manage objects
Move object
Resize object
Rename
Remove
Add object
Edit object
Delete object
Save project
TEXT OB-JECTS
1D/2D CODES
GRAPHIC OBJECTS
Static text
Date/Time
Calendar
Line
Rectangle
Ellipse
Image
Shift code
Counter
Text file
Communica-tions port
Static text
Date/Time
Calendar
Shift code
Counter
Text file
Communica-tions port
Global data
Variables
Images
Text files
Scripts
to be continued on the other page
+ available to ADVANCED OPERATOR-type users and ADMINISTRATOR-type users

Fig. 44.



+ available to **ADVANCED OPERATOR**-type users and **ADMINISTRATOR**-type users
available only to **ADMINISTRATOR**-type users

Fig. 45.



+ available to **ADVANCED OPERATOR**-type users and **ADMINISTRATOR**-type users
available only to **ADMINISTRATOR**-type users

Fig. 46.

3.3.3. DIALOG BOXES

Dialog boxes are displayed on the screen to provide the user with information or to request that a given operation be acknowledged (see ***Fig. 47***).

The appearance of a dialog box (the icon on the header bar, the background color) depends on the type of message (a notice, warning and error messages) displayed in the dialog box.

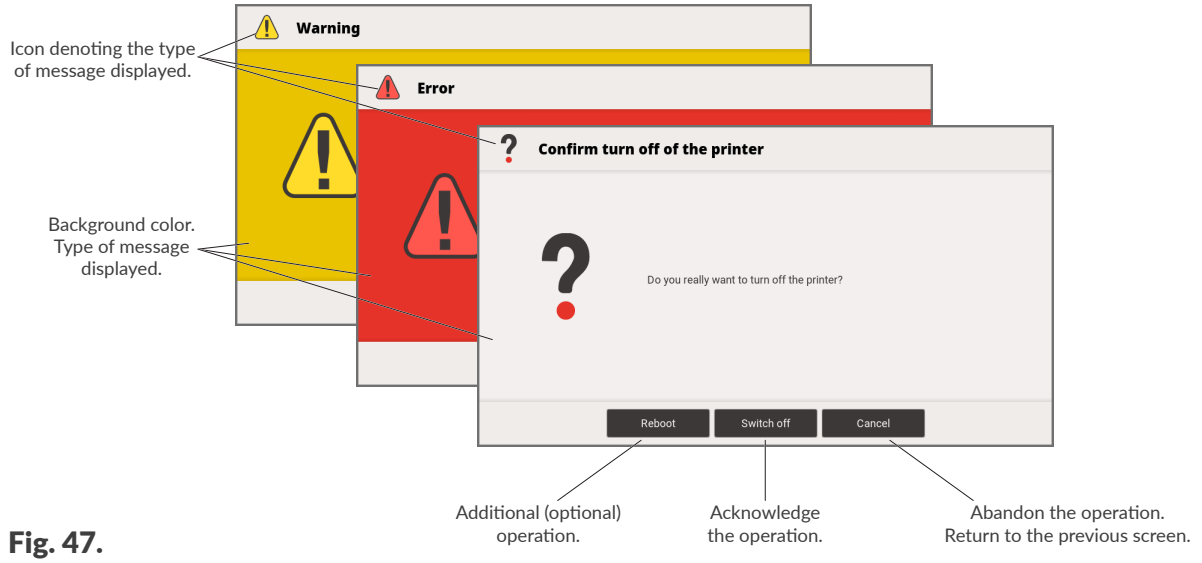
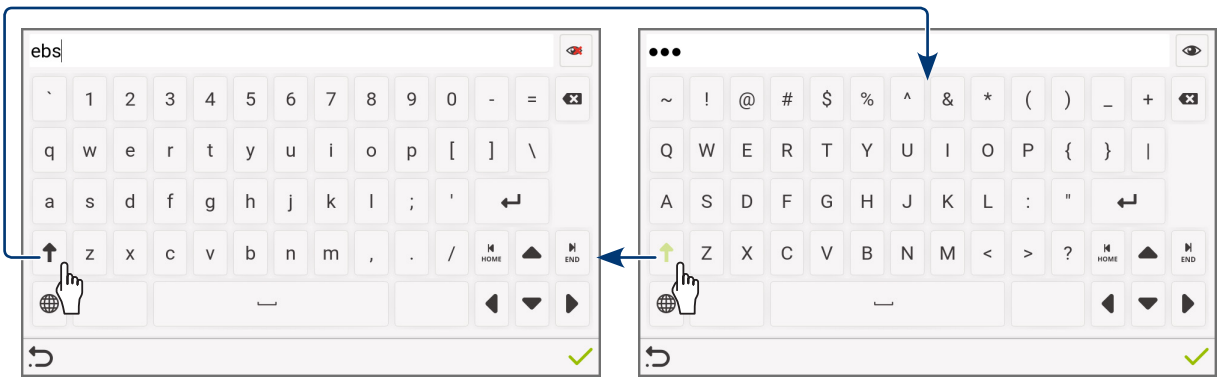


Fig. 47.

3.3.4. VIRTUAL KEYBOARD

The virtual keyboard is used for entering a text, values of parameters, etc. Capital and small letters, national characters, digits, symbols and special characters can be input via the virtual keyboard.



Icon	Function	Icon	Function
	Display the keyboard that contains capital letters, special characters and symbols.		Display the keyboard that contains small letters, digits and symbols.
	Hide characters while passwords are typed in; the characters in the text box are replaced with the character ●.		Display characters while passwords are typed in.

Icon	Function	Icon	Function

Change the language of the keyboard.

After the language has been changed, national characters of the selected language will appear on the keys in place of Latin characters.

For certain languages, the ① key is displayed on the keyboard and it can be used for selecting alternative character sets or for returning to the Latin character set.

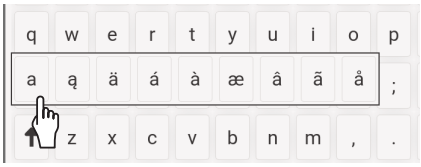
The following keyboard languages are available:

Arabic	Bengali	Bulgarian
Bulgarian (phonetic)	Chinese (pinyin)	Hindu (Dewanagari)
Farsi	Greek	Hebrew
Japanese (Hiragana, Kana, Katakana)		Korean
Latin (AZERTY, QWERTY, QWERTZ)		Russian
Serbian	Thai (Kedmanee, Pattachote)	
Ukrainian		

Close the keyboard without making any text changes.

Save the text contained in the text box and close the keyboard.

If a selected Latin character (*e.g.* e, r, t, y, u, i, o, a, s, d, g, l, z, c, n) is pressed and held, the list of diacritical characters (accents) associated with the selected Latin character becomes available.



If numerical values (*e.g.* values of selected parameters) are input, a numerical keyboard is displayed (see ***Fig. 48***).

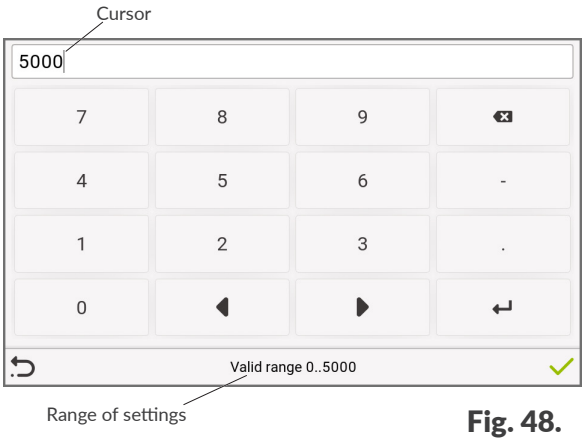


Fig. 48.

While a number is being entered via the numerical keyboard, a check is made to ensure that the number falls into the range of values applicable for a given parameter.

3.4. TYPES OF PRIVILEGES/USERS

Every user can have an individual access account that offers them access for project editing and printer settings; the access level varies according to the type of privilege.
The printer has three different types of privileges (types of users), each represented with a unique icon on the icon bar:

OPERATOR	ADVANCED OPERATOR	ADMINISTRATOR
		

OPERATOR-type users have the following privileges:
- Start/shut down the printer,
- Open a project for printing,
- Start/pause printing,
- Edit enabled objects,
- Access selected menu branches.

The accounts of **OPERATOR**-type users are not protected with a password by default. All accounts of **OPERATOR**-type users can be password protected except for the **OPERATOR**-type user called “Operator”, which is logged in automatically at printer startup.

Additional accounts of **OPERATOR**-type users can be defined with customized user names and passwords.

All accounts of **OPERATOR**-type users can be deleted except for the primary user.

ADVANCED OPERATOR-type users have all the privileges of **OPERATOR**-type users and the following additional privileges:
- Create/delete projects,
- Edit projects (except for global variables),
- Change the name of a project,
- Disable/enable objects in a project for **OPERATOR**-type users,
- Add/delete objects to/from a project,
- Tune printing units,
- Export data via a **USB** port,
- View global variables,
- Access any printer information,
- Define/edit/delete the account of an **OPERATOR**-type user and **ADVANCED OPERATOR**-type user.

The accounts of **ADVANCED OPERATOR**-type users are password protected.

One **ADVANCED OPERATOR**-type user called “Advanced” is defined in the printer by default.

Additional accounts of **ADVANCED OPERATOR**-type users can be defined with customized user names and passwords.

All accounts of **ADVANCED OPERATOR**-type users can be deleted.

ADMINISTRATOR-type users have all the privileges of **ADVANCED OPERATOR**-type users and the following additional privileges:

- Define, edit and delete global variables,
- Edit printer settings,
- Edit printing parameters,
- Import data via a **USB** port,
- Update software,
- Restore the default settings,
- Access diagnostic, maintenance and service functions,
- Full access to all menu branches,
- Clear print counters,
- Define/edit/delete the accounts of **OPERATOR**-type users, **ADVANCED OPERATOR**-type users and **ADMINISTRATOR**-type users.

The accounts of **ADMINISTRATOR**-type users are password protected.

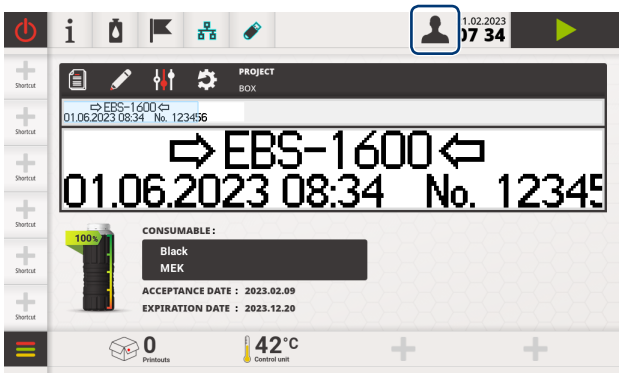
One **ADMINISTRATOR**-type user called “Administrator” is defined in the printer by default.

Additional accounts of **ADMINISTRATOR**-type users can be defined with customized user names and passwords.

All accounts of **ADMINISTRATOR**-type users can be deleted excluding that of the user called “Administrator”.

3.4.1. CHANGING A USER

An **OPERATOR**-type user called “Operator” is active at printer startup by default.
An icon of the logged-in user type is displayed on the icon bar (see drawing).



To change the user:

1. Press the / / icon on the icon bar
   or
   Press ▶ ▶ ▶ .
   The list of defined users is displayed, together with icons that inform about the type of privilege.
   The name of the active user is marked with >>... <<, *e.g.* >>Operator<<.
2. Select a different user.
   The icon displayed next to a user name means that the user has been deactivated because an incorrect user password was entered twenty times. Such a user can be activated by a user whose access level is the same or higher.
3. Enter the user password.
   The default password to activate an **ADVANCED OPERATOR**-type user called “Advanced” is “**ebs**”.
   The default password to activate an **ADMINISTRATOR**-type user called “Administrator” is “**ebs-admin**”.
   Passwords can be modified by pressing ▶ ▶ ▶ .
   The accounts of **OPERATOR**-type users do not have to be password protected.

   NOTE: The risk that the user will be disabled!
   If an incorrect password is entered twenty times, the user account is deactivated.

4. Press to acknowledge.
   The selected user is active.
   An icon corresponding to the type of active user is displayed on the icon bar.

3.4.2. IMPORTING/EXPORTING THE USER DATABASE

The user database defined in printer memory can be saved to a **USB** memory device and then imported to the same or another printer.

For more details see ***"7.7.2. Exporting/Importing Printer Settings"***.

CHAPTER 4
OPERATION

4. OPERATION

4.1. STARTING THE PRINTER UP

To start the printer up:

1. Connect power plug **7a** (see *Fig. 2 on page 14*) to the electrical mains.
   The printer goes into standby mode.
   The LED in the control unit glows red.
   The LCD display is blank.
2. Press the button in the control unit.
   The LED in the control unit glows blinking red.
   A test of all LEDs in the integrated printhead follows.
   The welcome screen is displayed on the LCD.
3. Wait a few seconds.
   The main screen is displayed on the LCD.
   In the control unit, the LED glows green and the LED glows blinking orange.
   The LED in the integrated printhead glows blinking orange.
   The neon signs on the LCD glow blinking yellow.
4. Wait a few seconds.
   The LED in the control unit and the LED in the integrated printhead glow orange.
   The printer is started up and ready to print the open project.
   The **OPERATOR**-type user called “Operator” is activated by default.

*For more details on how to change the active user see **“3.4.1. Changing a User”**.*

*Depending on the value of the parameter ▶ ▶ ▶ **Autostart***
- Printing of the open project begins immediately after the printer has started
or
- Printing has to be started manually.

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.

*When filled with ink, the printer can remain shut down for a period **not longer than 3 weeks**.*

4.2.1. SHUTTING DOWN IN REGULAR MODE

To shut down the printer in regular mode:

1. Press the icon or the button in the control unit.
   Press the button and hold it for at least 1 second but not longer than 4 seconds. If the button is held for at least 4 seconds, shutting the printer down in emergency shutdown mode is initiated.
   A dialog box with the request to acknowledge is displayed.
2. Press **Switch off** to acknowledge.

   If **Cancel** *is pressed, the shutdown procedure is canceled and the printer returns to the previous state.*

   If **Reboot** *is pressed, the printer restarts.*

   The goodbye screen is displayed on the LCD display.
   In the control unit, the LED goes off and the LED glows blinking red.
   The LED in the integrated printhead goes off.
3. Wait a few seconds.
   The LED in the control unit glows red.
   The LCD display is blank.
   The printer goes into standby mode.
4. Pull out power plug **7a** (see ***Fig. 2 on page 14***) from the electrical mains, if need be.

4.2.2. SHUTTING DOWN IN EMERGENCY SHUTDOWN MODE

The printer can be shut down in emergency shutdown mode only if a printer failure occurs, when a shutdown in regular mode, which lasts longer, could cause further damage, *e.g.* ink spilling.

The printer can be shut down in emergency shutdown mode in two ways.
Press the button in the control unit and hold it for 4 seconds
or
Disconnect power plug **7a** (see ***Fig. 2 on page 14***) from the electrical mains.

4.3. RESTARTING THE PRINTER

To restart the printer:

1. Press the icon or the button in the control unit.
2. Press **Reboot** to acknowledge
   The goodbye screen is displayed on the LCD display.
   In the control unit, the LED goes off and the LED glows blinking red.
   The LED in the integrated printhead goes off.
   The LCD display is blank.
3. Wait a few seconds.
   The LED in the control unit glows blinking red.

A test of all LEDs in the integrated printhead follows.

The welcome screen is displayed on the LCD.

4. Wait a few seconds.

The LED in the control unit and the LED in the integrated printhead glow orange.

The printer is started up and ready to print the open project.

The **OPERATOR**-type user called “Operator” is activated by default.

For more details on how to change the active user see ***“3.4.1. Changing a User”****.*

Depending on the value of the parameter ▶ ▶ ▶ ***Autostart***
- Printing of the open project begins immediately after the printer has started
or
- Printing has to be started manually.

4.4. PRINTING

The printer is ready for printing when:

- The required project is open for printing,
- The LED in the control unit and the LED in the integrated printhead glow orange,
- The start printing icon on the screen is active.

4.4.1. OPENING A PROJECT FOR PRINTING

The name and preview of the project that is open for printing are displayed on the main screen.

To open a project for printing:

1. Press on the main screen

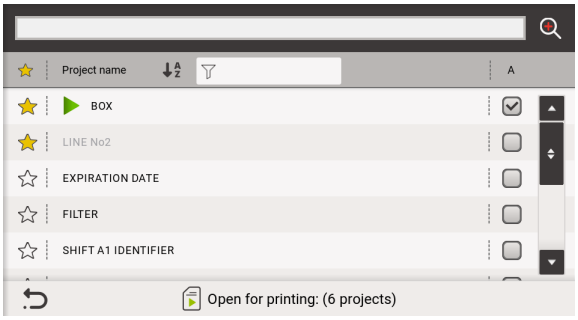
   or

   ▶ ▶ .

   The project library is displayed.

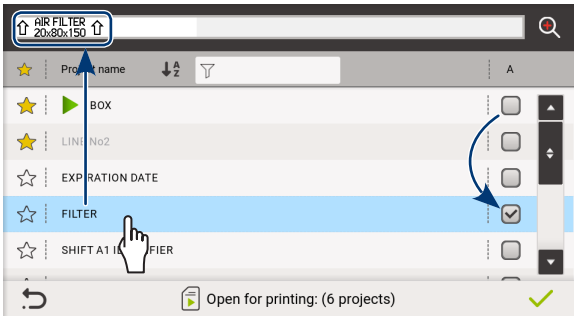
   The project that is open for printing is marked with the ▶ icon.

   Certain projects can be displayed in gray in the library. This means that they cannot be open for printing because their heights differ from the number of the nozzles that are installed in the integrated printhead in the printer.



For more details about the project library see ***“5.8. Managing Projects”****.*

2. Select a required project from the library.
The project is highlighted in blue, its preview is displayed in the upper part of the window and the ☑ icon is displayed in column **A**.



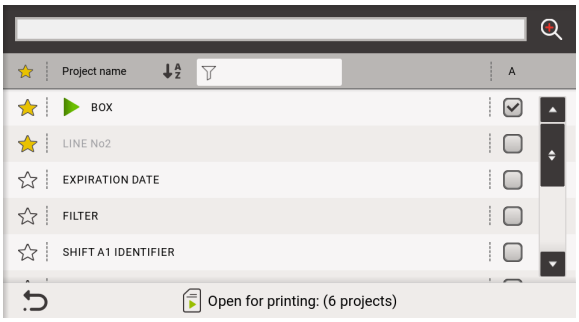
You can preview a selected project in a separate window by pressing 🔍. For more details see ***"4.5. Project Preview"****.*

An additional message is displayed if a selected project contains objects marked in yellow. If a project contains objects marked in red, the project must not be open for printing. For more details see ***"5.1. Project Editor"****.*

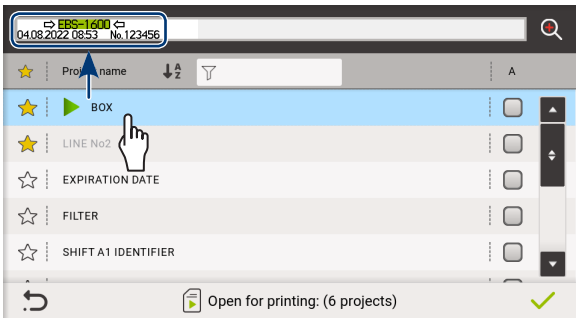
3. Press ✓ to acknowledge.
The selected project is open for printing.
If the printer is in printing mode, another message is displayed. When acknowledged, the project that is being printed is reloaded.
The main screen is displayed and it shows the preview of the project that is open for printing.

To close the project that is open for printing:

1. Press 📄 on the main screen
or
☰ ▶ 📄 ▶ 📄.
The project library is displayed.
The project that is open for printing is marked with the ▶ icon.



2. Select the project that is open for printing.
The project is highlighted in blue and its preview is displayed in the upper part of the window.
In column **A**, the ☐ icon is displayed in place of the ☑ icon.



3. Press ✓ to acknowledge.
The project that was open for printing is now closed.
The project that is open for printing must not be closed if the printer is in print mode.
The main screen without the preview of the project is displayed.
The neon signs glow yellow, thereby signaling that no project is open for printing.

NOTE: Printing cannot start!

If no project is open for printing, printing will not start.

4.4.2. STARTING PRINTING

To start printing the open project:

1. Press the  icon or the  button in the control unit.

   *If the **Edit before printing** parameter is active for any object in the project, the request to set initial values is displayed before printing starts.*

   The  icon is replaced with the  icon.

   The neon signs glow green.

   The  LED in the control unit and the  LED in the integrated printhead glow green.

   The printer enters printing mode where:

- **In signal-triggered printing mode**: it awaits a signal from the photodetector that is selected as the source of the trigger signal,
- **In non-triggered printing mode**: it immediately starts printing the project that is open for printing.

  *The printing mode can be changed by pressing  ▶  ▶  ▶ **Trigger signal source**.*

4.4.3. PAUSING PRINTING

To pause printing:

1. Press the  icon or the  button in the control unit.

   The  icon is replaced with the  icon.

   The neon signs go off.

   The  LED in the control unit and the  LED in the integrated printhead glow orange.

   Printing pauses and:

- **In pause-printing-immediately mode**: printing pauses and printing of the project is not finished,
- **In pause-printing-when-finished mode**: printing does not pause until the printhead finishes printing the project.

  The printing pausing mode can be changed by pressing
   ▶  ▶  ▶ ***Print till end***.

   The printer enters the ready state.

4.5. PROJECT PREVIEW

The preview of the project that is open for printing/being printed, enlarged to twice (200%) the actual size of the print, is available on the main screen.

If the length of a project exceeds the width of the preview window, the project can be shifted within the preview window (see ***Fig. 49 on page 65***).

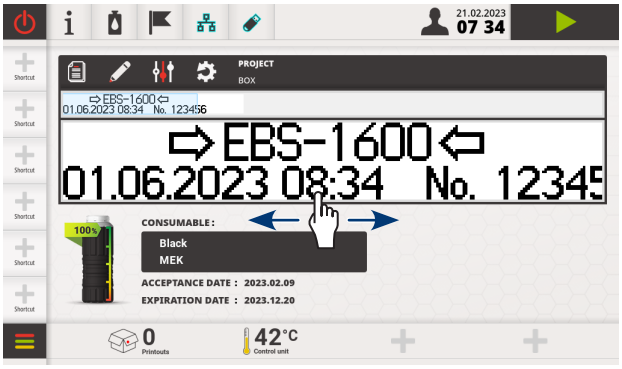


Fig. 49.

An additional preview window for a selected project (see ***Fig. 50***), where you can modify the scale of the preview, can be displayed by pressing the icon in the project library, which is called by pressing:

or

.

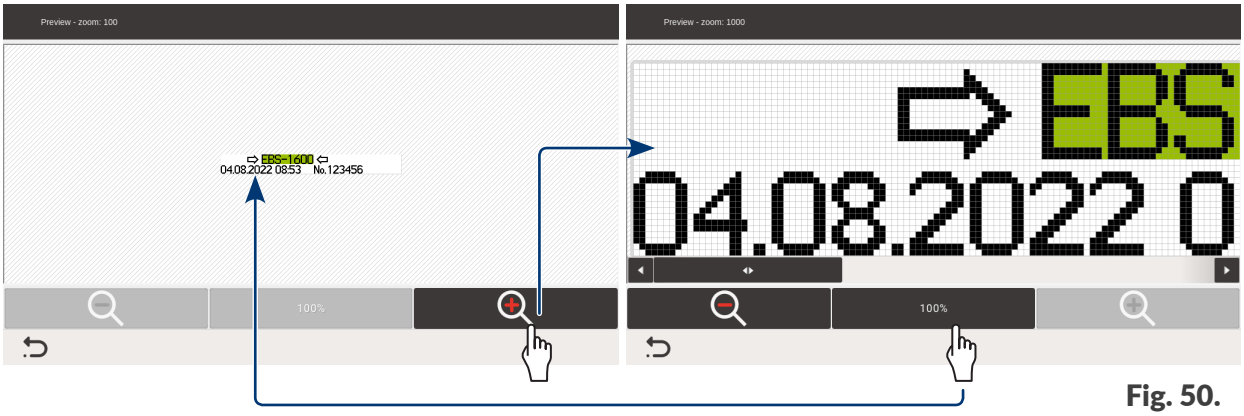


Fig. 50.

The minimum size is 100%, which corresponds to the actual size of the printout. The maximum size depends on the height of the project.

Icon	Function
	Decrease the scale of a preview.
	Increase the scale of a preview.
100%	Set the preview scale to 100%.

4.6. USING AN INK BOTTLE

Indicator **1h** (see ***Fig. 51 on page 66***) on the main screen offers access to the following information:

- An estimate of the ink remaining in the bottle,
- Warnings/errors concerning a low ink level in the bottle, no ink in the bottle, incorrect bottle, no bottle or concerning the **IMS** (Ink Monitoring System),
- Service mode (printing can continue over another 50 hours).

Next to indicator **1h**, you can see basic information **1i** on the installed bottle. This information includes:

- color of the ink,
- type of the ink,
- date when the bottle was installed,
- expiration date.

For detailed information on the ink bottle installed in the printer press indicator **1h** on the main screen or the icon on the icon bar.

Detailed information about the installed bottle is also accessible by pressing ▶ i ▶ or i ▶ .

Reports about bottle-related events are accessible by pressing ▶ ▶ .

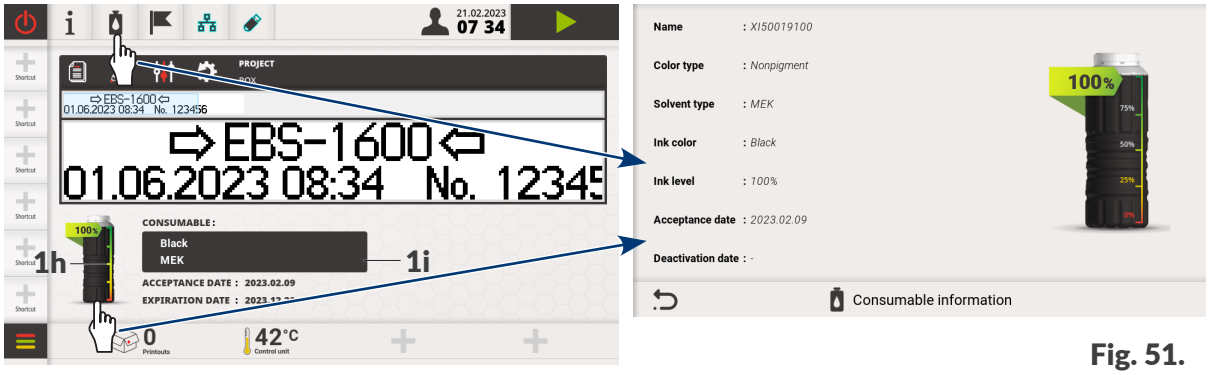
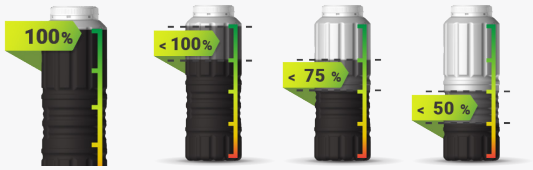
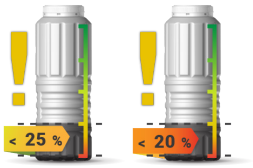
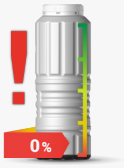


Fig. 51.

The time needed to use the ink contained in the bottle depends on the number of dots in the projects printed and on project parameters such as ink pressure, intensity.

Indicator	Information/Action
	Ink level OK.
	Low ink level in the bottle. Printing continues. Prepare a new bottle of ink.
	Empty ink bottle. An error is displayed. Printing is paused. Replace the ink bottle.
	Incorrect bottle of ink or the installed bottle cannot be identified. An error is displayed. Printing is paused. Replace the ink bottle with a correct one.

Indicator	Information/Action
	No bottle. The error is signaled. Printing is paused.
	Service mode* (printing can continue over 50 hours). The additional icon on the icon bar is replaced with the icon.

** If a **correct** bottle of ink is installed but the printer cannot identify it correctly, you can contact an authorized representative of **EBS Ink Jet Systeme GmbH** for advice on how to enter service mode. In this mode printing can continue over another 50 hours until a new bottle of ink is installed or a service intervention is made. For more information see **"9.3.3. Releasing Protections"**.*

A low ink level or empty bottle message is displayed in a dialog box. The dialog box is always displayed after printer start-up.

4.6.1. REPLACING THE INK BOTTLE

When the printer signals **low ink level** in the bottle, it is advisable to prepare an appropriate, new bottle of ink.

*Contact an authorized representative of **EBS Ink Jet Systeme GmbH** to order a new bottle of ink of an appropriate type. The required information is provided on the label of the bottle installed in the printer or by pressing ▶ i ▶ .*

When the printer signals **no ink in the bottle**, printing pauses and the ink bottle needs to be replaced with a new bottle.

To replace the bottle:

NOTE: Sharp Elements!
*Be careful when replacing a bottle not to get wounded with the needle that sticks out of the connection. **Do not touch the needle!** Avoid manipulations near the needle.*

1. If the printer is printing, pause printing by pressing the icon or the button in the control unit.

2. Screw out empty bottle **4a** (see *Fig. 52*).

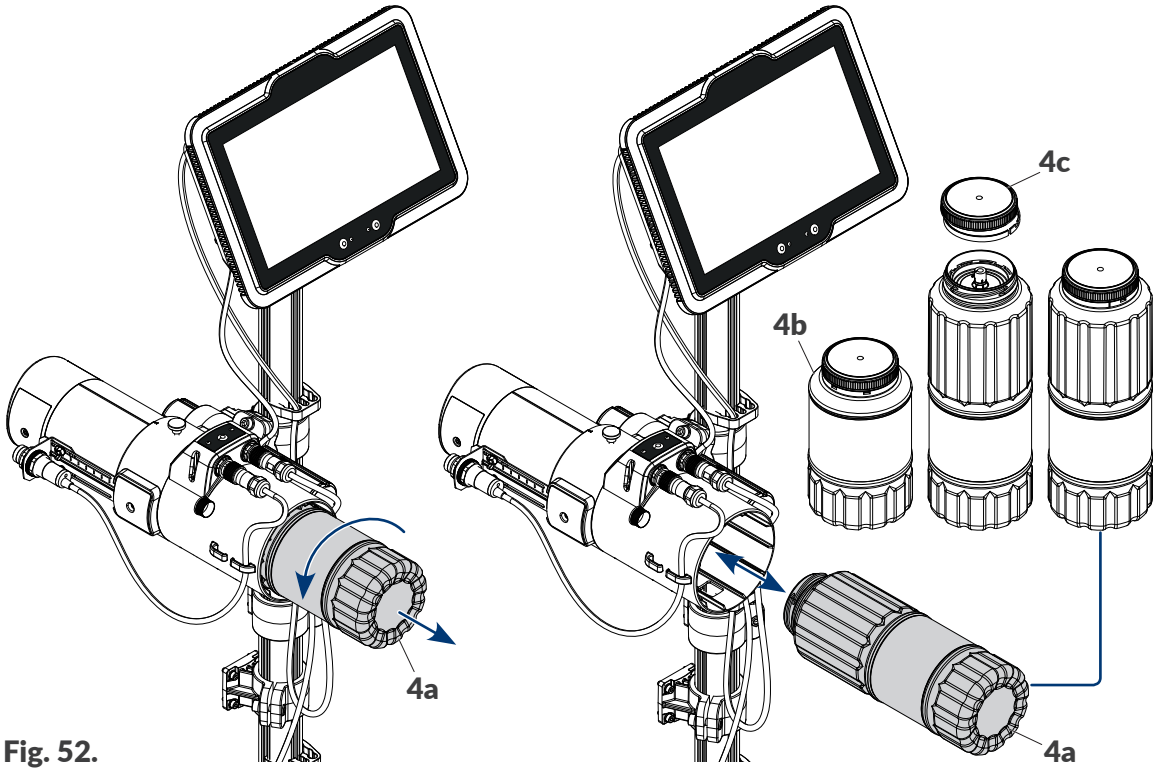


Fig. 52.

A no-bottle message may be displayed on the screen.

3. Remove cap **4c** from a new 1-liter bottle (**4a**) or a new 0.5-liter bottle (**4b**). Cap unscrewing involves security seal breaking.

   A 1-liter bottle and a 0.5-liter bottle can be applied interchangeably provided that they contain ink of an identical type.

4. Screw in the new ink bottle.

   The message is displayed.

5. Press OK to acknowledge.

   The new bottle is installed.

   Dispose of the empty bottle following the selective waste collection principles.

6. Press the ▶ icon or the button in the control unit to resume printing.

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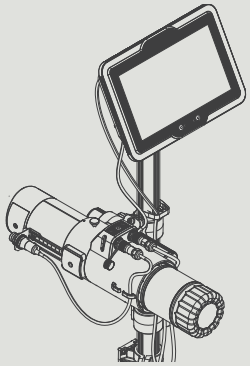
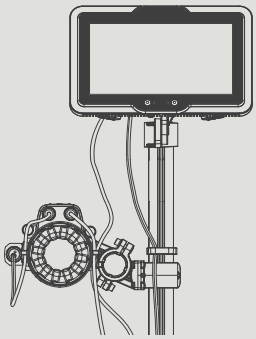
EBS® Ink-Jet Systeme

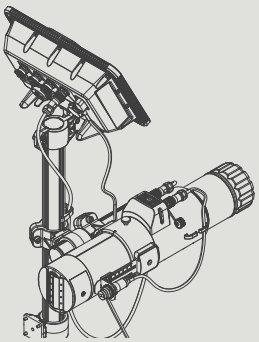
PicAS®II

EBS-1600 USER MANUAL

Industrial DROP ON DEMAND Printers
Original Instructions







EN

Part 2 of 3

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

2024.04.22

CHAPTER 5
EDITING

5. EDITING PROJECTS AND PROJECT PARAMETERS

5.1. PROJECT EDITOR

The project editor is started by every function that is designed to create/edit projects:

Icons	Function
	Create a new project.
	Edit an existing project.
	Edit the project that is open for printing/being printed.

The project editor window (access to selected functions) varies depending on the type of logged-in user.

OPERATOR

ADVANCED OPERATOR

ADMINISTRATOR

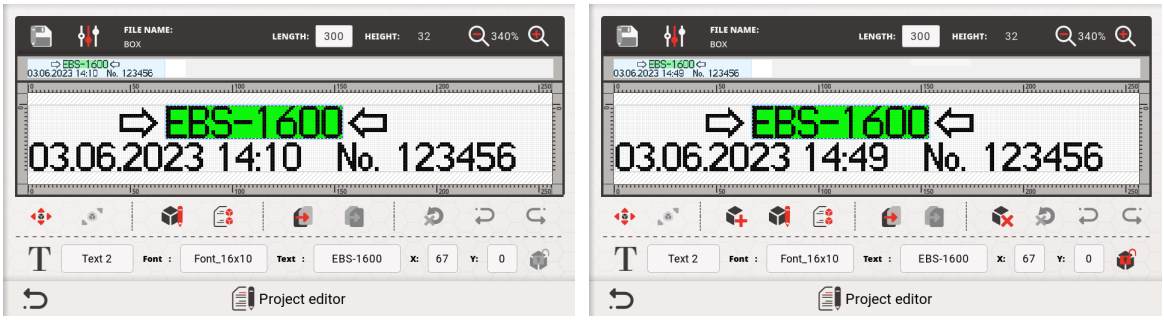


Fig. 53.

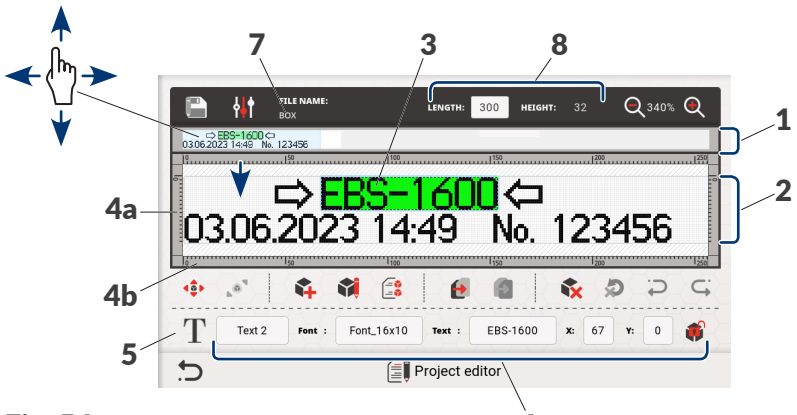


Fig. 54.

1	Preview of the entire project.
2	Preview of a project section selected with a movable, blue frame in window **1**.
3	Object. The currently selected object is framed in blue.
4x	Vertical ruler **4a** and horizontal ruler **4b**.
5	Type of object selected in the project.
6	Area where parameters of a selected project object can be “quickly edited”.
7	Project name.
8	Project size (length and height) edit area.

The following functions are available in the project editor window:

Icon	Function	Availability		
	Save the project with its existing name or a different name.	■	■	■
	Edit parameters of the project that is being edited.	▼	■	■
	Increase the scale of the project preview.	■	■	■
	Decrease the scale of the project preview.	■	■	■
	Change position of an object in the project.	●	■	■
	Change the size of an object.	●	■	■
	Add an object.	▼	■	■
	Edit the contents and parameters of the selected object.	●	■	■
	Object manager.	●	■	■
	Copy the selected object to the clipboard.	▼	■	■
	Paste the object from the clipboard.	▼	■	■
	Delete the selected object.	▼	■	■
	Restore an object from the trashcan to the project.	▼	■	■
	Undo the previous operation (restricted to 10 operations).	■	■	■
	Redo the canceled operation (restricted to 10 operations).	■	■	■
	Object disabled. Enable an object to be edited by **OPERATOR**-type users  .	▼	■	■
	Object enabled. Disable an object to be edited by **OPERATOR**-type users  .	▼	■	■
	Exit the project editor.	■	■	■
	Save the project with its exiting name and exit the project editor.	■	■	■

■ yes ▼ no ● yes (with restrictions)

Object size edit area

The following parameters are available in project size edit area **8** (see *Fig. 54 on page 71*):

Parameter	Range of settings
Length	30 to 40000

Project length.

*Examples of how to use the **Length** parameter are given in "7.2. Printing Settings".*

*Additional recommendations for setting the **Length** parameter are available in "2.2.4. Integrated Printhead".*

Height	**information parameter**

Project height.

The height of a project is defined while the new project is being created and it is not subject to modifications at a later time. For more information on how to create a project see "5.4. Creating a Project".

Color-coding in the project editor window

- The currently selected object is framed in blue (see *Fig. 55*).
- Objects highlighted in **green** (see *Fig. 55*) are enabled to be edited by **OPERATOR**-type users .
- Objects highlighted in **yellow** (see *Fig. 55*) exceed the project area or their content exceeds the object frame.

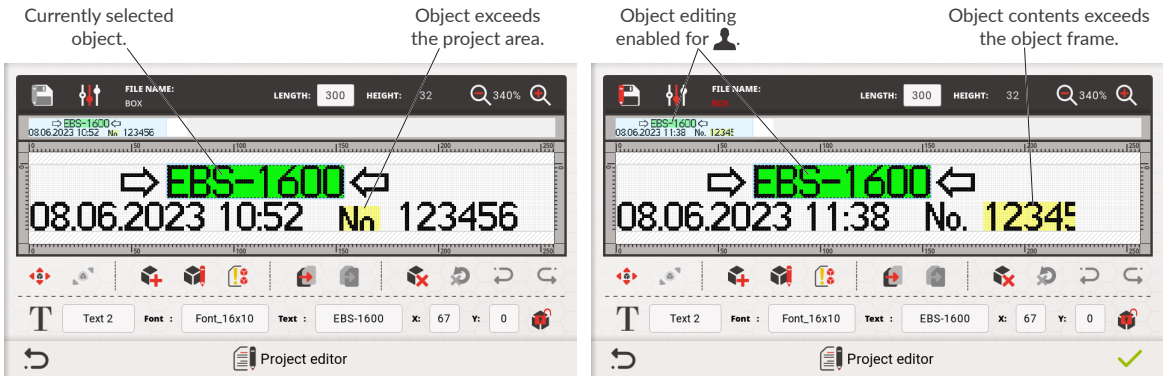


Fig. 55.

If at least one object in the project is displayed in yellow, the object manager icon is marked with a yellow exclamation point.

- Objects displayed in **red** (see *Fig. 56*) contain an error, for example they contain a non-existent (deleted) global variable, text file, image or font.

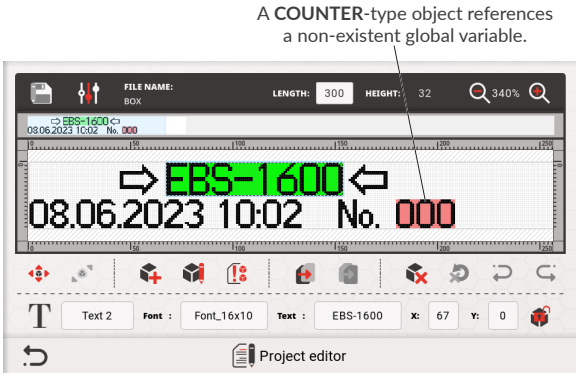


Fig. 56.

If at least one object in the project is displayed in red, the object manager icon is marked with a red exclamation point.

– Project name **7** (see ***Fig. 54 on page 71***) changes its color to red if project contents are modified in any way. After the project has been saved, its name changes back to white.

Basic notions and rules applied to project editing and printing

– A **project** is created/edited by the user with the **project editor**; it consists of **objects**.
– After starting printing a prepared **project**, a **printout** is made on an object**.**
– The appearance of a **printout** on an object depends on **printing parameters** and **parameters of the objects** that are included in the **project**.
– The **print** is made of **dots**.
– **Printed dots** form **columns** and horizontal **rows**.
– **Print** resolution in the vertical direction is defined as a number of **rows** (or **dots**) per unit of height.
– **Print** resolution in a horizontal direction is defined as a number of **columns** (or **dots**) per unit of length.
– For clear prints, it is recommended that vertical resolution be equal to, or greater than, horizontal resolution.

5.1.1. ADDING AN OBJECT

*The function is not available to **OPERATOR**-type users* .

To add an object to the project:

1. Press .
2. Select the object group that contains a required type of object:
   |**TEXT OBJECTS**| - text objects,
   |**1D/2D CODES**| - bar/matrix codes,
   |**GRAPHIC OBJECTS**| - shapes and images.
3. Select a type of object.

   *For more details about objects see **"5.2. Types and Parameters of Objects"**.*

4. Set the parameters that are relevant to a given type of object.
5. Press to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press to acknowledge the position of the object.
   The object is created in the indicated location.

5.1.2. EDITING THE SELECTED OBJECT

OPERATOR-type users can edit only the objects that are enabled to be edited.

To edit an object in the project:

1. Select an object you wish to edit in the project editor window.
   Certain object parameters can be edited directly in the project edit window, in the “quick editing” area.
2. Press .
3. Modify contents or parameters of the object.
   Contents or parameters of objects can also be edited by pressing ▶ |**OBJECTS**| ▶ in the object manager.
4. Press to acknowledge.
   The project editor is displayed.

5.1.2.1. QUICK EDITING THE SELECTED OBJECT

The contents and certain parameters (**Name**, **Font**, **X**, **Y**, **Text**) of the selected object can be modified directly in the project editor window, in “quick editing” area **6** (see *Fig. 54 on page 71*). In the “quick editing” area, you can also check whether **OPERATOR**-type users are disabled or enabled to edit the selected object. If you click the above-mentioned icons, object editing becomes enabled or disabled, respectively.

5.1.3. CHANGING THE POSITION OF AN OBJECT IN A PROJECT

OPERATOR-type users can change the positions only of objects that are enabled to be edited.

The position of an object in a project can be changed in two ways:

- by modifying the **X**, **Y** parameters, *i.e.* the coordinates of the left top corner of the object frame, the **X**, **Y** parameters are also available in the “quick editing” area in the project editor window,
- by using the function.

The position of an object in a project can be changed with the function within the project area only. No project can be extended beyond the project area.

To extend an object beyond the project area you need to modify the **X**, **Y** parameters. In such a case, the object will be displayed in yellow in warning.

To change the position of an object in a project:

1. Select an object whose position you wish to change in the project editor window.

2. Press  .
   Navigation icons are displayed:
    - to move the object by one pixel to the left,
    - to move the object by one pixel to the right,
    - to move the object by one pixel up,
    - to move the object by one pixel down.
3. Use navigation icons or indicate the position of the object directly in the project area.
4. Press  to acknowledge the position of the object.
   The position of the object is changed.

5.1.4. CHANGING THE SIZE OF THE OBJECT FRAME

OPERATOR-type users  *can change the size of the frame only of the objects that are enabled to be edited.*

The size of the frame of text objects, bar/matrix codes and **IMAGE**-type objects  can be changed only when the value of the |**GEOMETRY**| ▶ **Auto adjustment** parameter differs from **Fit frame to content**.

The size of the object frame can be changed in two ways:
- by modifying the **Width**, **Height** parameters of the object,
- by using the  function.

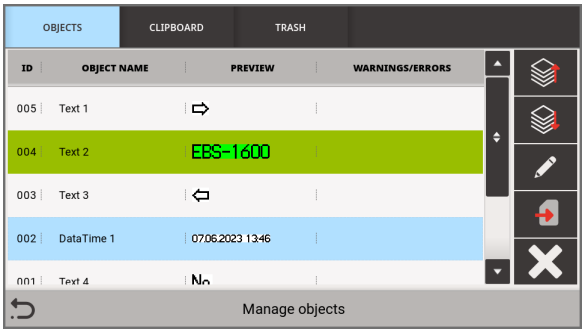
The object cannot be shifted beyond the project area while the size of the object frame is being changed.

To change the size of the object frame:
1. Select an object whose size you wish to change in the project editor window.
2. Press  .
   Navigation icons are displayed:
    /  - to move the left edge of the frame by one pixel to the left / right,
    /  - to move the right edge of the frame by one pixel to the left / right,
    /  - to move the top edge of the frame by one pixel up / down,
    /  - to move the bottom edge of the frame by one pixel up / down.
3. Use navigation icons or indicate the position of the right bottom corner of the object frame directly in the project area.
4. Press  to acknowledge the size of the object frame.
   The size of the object frame is changed.

5.1.5. USING THE OBJECT MANAGER

The object manager consists of three parts (tab sheets):

- List of all objects in the project,
- Clipboard,
- Trashcan.



Press  to start the object manager.

If the project contains objects displayed in yellow or red, the object manager icon  *is marked with the exclamation point in the respective color. For more details see* ***"5.1. Project Editor"****.*

List of objects

Press |**OBJECTS**| in the object manager window to display the object list.

The list contains all objects used in the project, including the objects that are invisible in the editor window because:

- Their position in the project expands beyond the editor window,
- They are hidden by objects whose transparency is not set.

The position of an object on the list relative to other objects defines whether the object is "on top" or "beneath".

The following functions are available on the list of objects in the object manager:

Icon	Function	Availability		
	Move the selected object on the list by one position up.	▼	■	■
	Move the selected object on the list by one position down.	▼	■	■
	Edit the contents or parameters of the selected object.	●	■	■
	Copy the selected object to the clipboard.	▼	■	■
	Delete the selected object.	▼	■	■

■ yes ▼ no ● yes (with restrictions)

Clipboard

Press |**CLIPBOARD**| in the object manager to display the clipboard.

The clipboard contains all objects that have been copied to it with the  function in the project editor. The clipboard has global reach, that is, it shows objects copied to any project. Owing to that, the clipboard can be used for copying objects from one project to another.
The clipboard is emptied automatically each time the printer is shut down.

The following functions are available in the clipboard:

Icon	Function	Availability		
	Paste the selected object in to the project.	▼	■	■
	Delete the selected object from the clipboard.	▼	■	■
	Empty the clipboard.	▼	■	■

■ yes ▼ no

Trashcan

Press |**TRASH**| in the object manager window to display the trashcan.

The trashcan contains all objects that have been deleted **from the currently edited project**.
The trashcan is automatically emptied when the project editor is exited.

The following functions are available in the trashcan:

Icon	Function	Availability		
	Restore the selected object from the trashcan to the project.	▼	■	■
	**Permanently** delete the selected object from the trashcan.	▼	■	■
	Empty the trashcan. **Permanently** delete all objects from the trash-can.	▼	■	■

■ yes ▼ no

5.1.6. DELETING AN OBJECT

OPERATOR-type users are not authorized to delete objects or to restore objects from the trash-can.

When an object is deleted, it is moved to the trashcan. This means that deletion is reversible; an object can be restored only by the time that the project editor is exited, the object is removed from the trashcan or the trashcan is emptied.

*For more details about trashcan management see **"5.1.5. Using the Object Manager"**.*

To delete an object from a project:

1. Select an object you wish to delete in the project editor window.
2. Press .
   A dialog box with the request to acknowledge the operation is displayed.
   An object can also be deleted by means of the ▶ |**OBJECTS**| ▶ function in the object manager.
3. Press **Yes** to acknowledge.
   The selected object is deleted (moved to the trashcan).
   The project editor is displayed.

5.1.6.1. RESTORING A DELETED OBJECT

The objects that were deleted while the project was being edited are stored in the trashcan. Therefore objects can be restored back to the project. An object can be restored only by time that the project editor is exited, the object is removed from the trashcan or the trashcan is emptied.

*For more details about trashcan management see **"5.1.5. Using the Object Manager"**.*

To restore a deleted object:

1. Press to restore the **last** object you have deleted. The icon is active only when there are objects in the trashcan.
   Objects can be restored also by pressing ▶ |**TRASH**| ▶ in the object manager; this function enables you to select any object from the trashcan and restore it to the project.
2. Indicate a location of the object in the project area.
3. Press to acknowledge the position of the object.
   The object is restored to the indicated location.

5.1.7. COPYING OBJECTS

*The function is not available to **OPERATOR**-type users .*

Owing to the clipboard, every object included in a project can be copied and pasted to the given or another project. Objects are stored in the clipboard until the printer is shut down. Therefore the object can be pasted from the clipboard by the time that the printer is shut down, the object is removed from the clipboard or the clipboard is emptied.

*For more details about clipboard management see **"5.1.5. Using the Object Manager"**.*

To copy an object:

1. Select an object you wish to copy in the project editor window.
2. Press .
   The object is copied to the clipboard.
   An object can also be copied to the clipboard by means of the ▶ |**OBJECTS**| ▶ function in the object manager.
3. Press to paste the **last** object that was copied to the clipboard. The icon is active only when there are objects in the clipboard.
   An object can be pasted from the clipboard to a project by pressing ▶ |**CLIPBOARD**| ▶ in the object manager ; the function can be used for selecting any object in order to paste it.
   A pasted object remains in the clipboard and can be pasted into the given or another project.
   The project editor is displayed in object positioning mode.
4. Indicate a location of the object to be pasted in the project area.
5. Press to acknowledge the position of the object.
   The copied object is pasted into the indicated location.

5.2. TYPES AND PARAMETERS OF OBJECTS

The objects that are available while projects are being edited fall into three groups:

Group	Object	
|TEXT OBJECTS|		STATIC TEXT
		DATE/TIME
		CALENDAR
		SHIFT CODE
		COUNTER
		TEXT FILE
		COMMUNICATIONS PORT
|1D/2D CODES|		STATIC TEXT
		DATE/TIME
		CALENDAR
		SHIFT CODE
		COUNTER
		TEXT FILE
		COMMUNICATIONS PORT
|GRAPHIC OBJECTS|		LINE
		RECTANGLE
		ELLIPSE
		IMAGE

5.2.1. COMMON PARAMETERS OF ALL OBJECTS

After pressing the  icon, the parameters of the selected object are available in the project editor window. The list of the parameters available depends on the type of object.

The following parameters are common to all types of objects:

Parameter	Range of settings
|GENERAL| ▶ Object name	
Name of an object, given automatically while the object is being created. It can be modified but it must be unique within the project. The parameter is also available directly in the project edit window, in the “quick editing” area.	

Parameter	Range of settings
|GENERAL| ▶ Editable by operator	✕ / ✓

Enable/disable editing of object contents and parameters to be done by **OPERATOR**-type users .

Every object added to the project is disabled to be edited by **OPERATOR**-type users by default.

The objects that are enabled to be edited by **OPERATOR**-type users are highlighted in green in the project editor window.

The editing of the selected object can also be enabled/disabled directly in the project editor window, in the "quick editing" area. The / icons are used for that purpose.

|GENERAL| ▶ Pre-print processing script	**No script, list of available scripts**

Select a script to process object contents before you print the project.

The parameter is not available for the graphic objects.

Before using a script in a project, you must:
- create/modify the script using the built-in script editor; for more details see ***"7.6.4. Scripts"***
or
- import the script to the printer; for more details see ***"7.7.3. Exporting/Importing Other Files"****.*

|GEOMETRY| ▶ Transparency	✕ / ✓

When this option is enabled for an object, the object is transparent, *i.e.* the objects that are under it can be seen.

The sequence of the objects in a project can be changed by means of the object manager ▶ **|OBJECTS|** ▶ / .

The parameter is not available to bar/matrix codes.

For more details see ***"5.1.5. Using the Object Manager"****.*

|GEOMETRY| ▶ X, Y [px]	**-40000 to +40000**

Coordinates of the left top corner of the frame of an object.

They can be modified manually or by means of the function in the project editor.

The parameter is also available directly in the project editor window, in the "quick edit" area.

|GEOMETRY| ▶ Auto adjustment	**Without scalling, Fit frame to content, Fit content to frame**

Mode of adjusting the size of the object frame to the frame contents.

The list of settings available to the parameter depends on other settings, *e.g.* the type of object or the selected font.

The parameter is not available to **LINE**-type objects , **RECTANGLE**-type objects and **ELLIPSE**-type objects .

|GEOMETRY| ▶ Width, Height [px]	**1 to 40000**

Size of the frame of an object.

The values can be modified manually or by means of the function in the project editor.

The size of the frame of text objects, bar/matrix codes and **IMAGE**-type objects can be changed only when the value of the **|GEOMETRY| ▶ Auto adjustment** parameter differs from **Fit frame to content**.

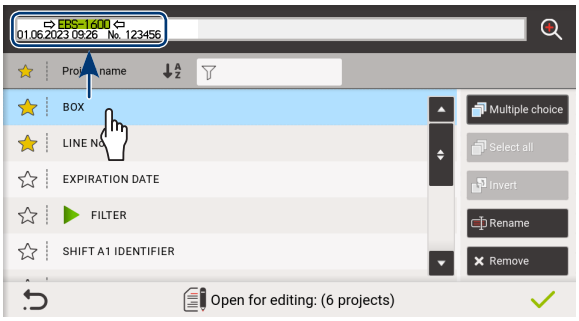
Parameter	Range of settings
|GEOMETRY| ▶ Rotation angle	**0, 90, 180, 270**

Rotation of an object through 90°.

5.3. EDITING A PROJECT

To edit any project that is stored in the project library:

1. Press ▶ ▶ .
   The project library is displayed.
   The project open for printing/being printed is marked with the ▶ icon.



> *For more details about the project library see "5.8. Managing Projects".*

2. Select the project that you wish to edit.
   The project is highlighted in blue and its preview is displayed in the upper part of the window.
3. Press ✓ to acknowledge.
   The project editor window is displayed; the selected project is opened and can be edited.

Press the icon on the main screen to edit the project that is open for printing/being printed.

If you save the project open for printing/being printed, this means that the project is reloaded, and you are informed of this fact in the message that is displayed in the dialog window. If you do not want to reload the project that is open for printing/being printed, you can save the project you are editing to the library with another name.

5.4. CREATING A PROJECT

> *The function is not available to **OPERATOR**-type users .*

To create a new project:

1. Press ▶ ▶ .
   Major project parameters can be seen in the window displayed.
2. Define parameters of the project you are creating, such as:

– Project name; if the name of the project you are creating is the same as the name of an existing project, then the new project replaces the existing project after acknowledgment,
– Project length, given in dots,

– Project height given in dots.

*An **ADVANCED OPERATOR**-type user can create a project whose height equals the number of nozzles in the integrated printhead installed in the printer. E.g. for the **16N/29** printhead, the height of created projects is 16 dots.*

*An **ADMINISTRATOR**-type user can create a project whose height equals the number of nozzles in any integrated printhead designed for the PicAS® II EBS-1600 printers, i.e. 7, 16 or 32 dots. Projects whose height is different than the number of nozzles in the integrated printhead installed in the printer cannot be selected for printing. They can be exported to another printer that is equipped with a printhead with a corresponding number of nozzles.*

3. Press ✓ to acknowledge.

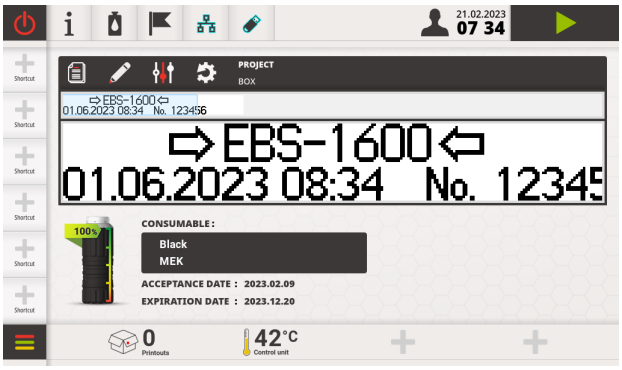
The project editor window is displayed; a new (empty) project is opened and can be edited.

5.4.1. PROJECT PARAMETERS

OPERATOR-type users can preview project parameters but cannot modify these parameters.

The project parameters can be accessed in two ways:

– (on the main screen; see the drawing on the right) - modify parameters of the **project that is open for printing/being printed**



– (in the project editor window) - modify parameters of the project that is being **edited**.

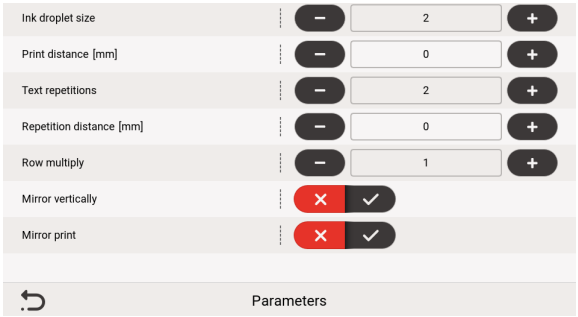


Fig. 57.

The values of project parameters are modified as follows:

Numerical parameters

The values can be modified using:

– the numerical keyboard available when you click on a value,

– the − / + icon to increase / decrease the values by 1.

Binary (bistable) parameters

The values can be modified by means of icons:

– ✕ / ✓ - the parameter is inactive; press ✓ to activate,

– ✕ / ✓ - the parameter is active; press ✕ to deactivate.

If the value of a given parameter is incorrect, it is highlighted on a red background and must be corrected before the parameter is saved.

Project parameter	Range of settings
Ink droplet size	**1 to 7**

Print intensity level.

Adjust print quality to the type (hygroscopicity) of surface to be printed on.

Print distance [mm] or [inch]	**0 to 5000** [mm] or **0 to 196.85** [inch]

Initial distance of a print.

The initial distance is part of a print and consists of empty columns that are added at the beginning of the print.

*For additional information about (and examples of) the **Print distance** parameter see "7.2. Printing Settings".*

Text repetitions	**1 to 10000**

Number of project repetitions which form a single printout.

Each of the reprints of the project being printed always contains identical contents, even if the project contains dynamic contents objects.

If **Text repetitions** > **1**, the distance between the consecutive project repetitions is set with the **Repetition distance** parameter.

To print continuously, you need to set the printing trigger parameters accordingly.

*For information about printing trigger parameters and for additional information about (and examples of) the **Text repetitions** parameter see "7.2. Printing Settings".*

Repetition distance [mm] or [inch]	**0 to 20000** [mm] or **0 to 787.4** [inch]

The parameter is available only when **Text repetitions** > **1**.

Distance (in mm or in inches) between the consecutive project repetitions that form a single printout.

*For additional information about (and examples of) the **Repetition distance** parameter see "7.2. Printing Settings".*

Row multiplicity	**1 to 10**

The number defining how many times every column of the project is repeated.

Mirror vertically	✕ / ✓

Printing in the vertical direction: normally (✕) or upside down (✓).

Project parameter	Range of settings
Mirror print	✕ / ✓

Printing in a horizontal direction: normally or backwards.

If an encoder is used to time printing, the possibility exists that printing can be enabled only when the encoder axle is turning in the active direction. It can be used as protection against printing when the conveyor belt moves backwards.

If the encoder axle is turning in the active direction, you can enable printing by pressing ▶ ▶ ▶ ***Encoder direction****. For more information see* *"7.2. Printing Settings"*.

5.4.2. CREATING/EDITING A TEXT OBJECT

Text objects are sets of alphabetic characters (including national characters), digits and additional characters.

5.4.2.1. COMMON PARAMETERS OF TEXT OBJECTS

The following parameters are common to text objects, including **STATIC TEXT**, **DATE/TIME**, **CALENDAR**, **SHIFT CODE**, **COUNTER**, **TEXT FILE** and **COMMUNICATIONS PORT**-type objects:

For **STATIC TEXT**-type objects and **COUNTER**-type objects only:

Parameter	Range of settings
|GENERAL| ▶ Edit before printing	✕ / ✓

Data can be entered immediately before the project is printed.

For all text objects:

Parameter	Range of settings
|STYLE| ▶ Font name	**List of available fonts**

The font used for generating a text object.

Text objects can be generated using the following fonts:

- **matrix fonts**; marked with ABC on the font list,
- **TrueType fonts**; marked with TT on the font list.

The parameter is also available directly in the project edit window, in the "quick editing" area.

The fonts that are used most frequently can be marked as "favorite" ★. Owing to that they will be displayed at the beginning of the list of the available font. Use the ★ icon to add/delete the selected font to/from the "favorite" list.

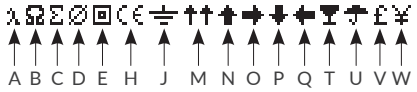
Additional fonts can be imported to the printer by pressing ▶ ▶ .

Parameter	Range of settings
|STYLE| ▶ Font size [px}	**4 to 32**
The parameter is available for TrueType fonts. Font height (given as a number of rows). To keep the dimensions in proportion, the font width is determined automatically.	
|STYLE| ▶ Font strech [%]	**80 to 120**
Stretch the font in a horizontal direction.	
|STYLE| ▶ Boldface	✕ / ✓
To make characters of the font look thicker.	
|STYLE| ▶ Line spacing [px}	**Depends on the font selected**
Space (a number of rows) between text lines within one text object.	
|STYLE| ▶ Letter spacing [px]	**0 to 1000**
Number of empty columns between characters within one text object.	
|STYLE| ▶ Row multiplicity	**1 to 10**
The number defining how many times every column in an object is to be repeated.	

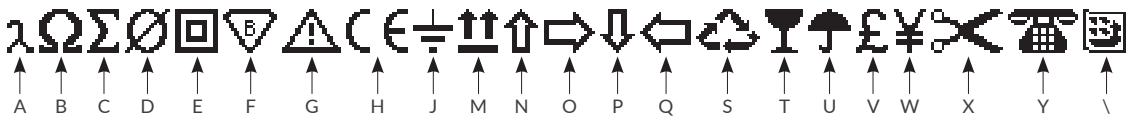
If matrix fonts are used for generating special characters (**Spec_7**, **Spec_16**, **Spec_25**), the creation of a given character requires that the capital letter corresponding to that character be entered while object contents are added.

The following table contains the list of special characters and corresponding letters.

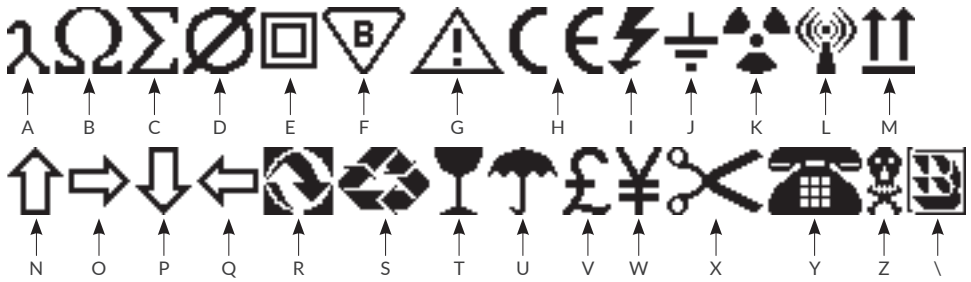
Spec_7



Spec_16



Spec_25



5.4.2.2. CREATING/EDITING A **STATIC TEXT**-TYPE TEXT OBJECT

A **STATIC TEXT**-type text object [T] enables the user to put an **ASCII** character text of invariable contents, into a project.

To create a **STATIC TEXT**-type text object [T]:

1. Press [+] ▶ |**TEXT OBJECTS**| ▶ [T].
2. Enter contents of the object (|**TEXT**| ▶ **Object content**).
3. Set object parameters.

> *For more details about the parameters that are common to all objects see* ***"5.2.1. Common Parameters of All Objects"****.*
> *For more details about the parameters that are common to text objects see* ***"5.4.2.1. Common Parameters of Text Objects"****.*

4. Press [✓] to acknowledge.
   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press [✓] to acknowledge the position of the object.
   The **STATIC TEXT**-type text object [T] is created in the indicated location.

5.4.2.3. CREATING/EDITING A **DATE/TIME**-TYPE TEXT OBJECT

The following can be put into a project with a **DATE/TIME**-type text object [📅]:

- The current date and/or time,
- A time that is set back or forward by a certain offset relative to the current time,
- A date that is shifted by a certain offset, or a so called **expiration date**.

To create a **DATE/TIME**-type text object [📅]:

1. Press [+] ▶ |**TEXT OBJECTS**| ▶ [📅].
2. Set the parameters that are specific to the **DATE/TIME**-type object [📅].

Parameter	Range of settings
|DATE/TIME| ▶ Object content	**see the description of the parameter**

Range of date and/or time object items and the order of occurrence.

Date and time: date (see **Date**) and time (see **Time**).

Time and date: time (see **Time**) and date (see **Date**).

Time: time (the current time or the time set forward/backward with the **Time offset [hours]** parameter) in the format defined with the **Time format** parameter.

Date: date (the current date or the date set forward/backward with the **Date offset [days]** parameter) in the format given with the **Date format** parameter.

User defined Advanced modification of date and time formats to customize the object using the **Formatting string** parameter.

Parameter	Range of settings
|DATE/TIME| ▶ Calendar type	**Gregorian, Julian, Hijri**

Type of calendar to be used to determine a date.

|DATE/TIME| ▶ Language	

The language in which the date or time items are generated.

|DATE/TIME| ▶ Country or region	

Precise identification of a country or a region, if a selected language (**Language**) is used in a greater number of countries.

|DATE/TIME| ▶ Date offset [days]	**-7300 to 7300**

Date offset relative to the current date (the expiration date definition).

If the value of 0 is entered, the current date will be printed.

|DATE/TIME| ▶ Time offset [hours]	**-23 to 23**

Time offset relative to the current time.

If the value of 0 is entered, the current time will be printed.

|DATE/TIME| ▶ Date formatting	**see the description of the parameter**

By language (default format), **By language (short format)**, **By language (long format)**: predefined date formats dependent on the selected language (**Language**).

User selected format: select one of predefined date formats.

|DATE/TIME| ▶ Date format	**see the description of the parameter**

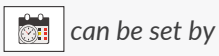
The parameter is available only if **Date formatting** = **User selected format**.

DD:MM:YY, **MM:DD:YY**, **DD:MM:YYYY**, **YYYY:DD:MM**, **YYYY:MM:DD**, **YY:DD:MM**, **YY:MM:DD**: predefined date formats independent of what language is selected; additionally a separator (**Date separator**) can be selected.

|DATE/TIME| ▶ Date separator	**"␣ (space)", "-", ".", ":"**

The parameter is available only if **Date formatting** = **User selected format**.

Character separating consecutive date items when you select one of predefined date formats (**Date format**) that are independent of the language.

*The default date separator for newly created **DATE/TIME**-type objects*  *can be set by pressing*  ▶ ***Date separator***.

|DATE/TIME| ▶ Time formatting	**see the description of the parameter**

By language (default format), **By language (short format)**, **By language (long format)**: predefined time formats dependent on the selected language (**Language**).

User selected format: select one of predefined time formats.

|DATE/TIME| ▶ Time format	**see the description of the parameter**

The parameter is available only if **Time formatting** = **User selected format**.

HH:MM:SS, **HH:MM**: predefined time formats independent of what language is selected; additionally a separator (**Time separator**) can be selected.

Parameter	Range of settings
|DATE/TIME| ▶ **Time separator**	"␣ (space)", ".", ":"

The parameter is available only if **Time formatting** = **User selected format**.

Character separating consecutive time items when you select one of predefined date formats (**Time format**) that are independent of the language.

*The default time separator for newly created **DATE/TIME**-type objects can be set by pressing ▶ ▶ ▶ ▶ **Time separator**.*

|DATE/TIME| ▶ **Formatting string**	

The parameter is available only if **Object content** = **User defined**.

With the **Date format** and **Time format** parameters, you can only select predefined date and/or time formats. A formatting string enables the user to precisely customize date and/or time formats using date and time items. The date and time items that can be used as part of formatting strings are described further in this chapter.

3. Set the other parameters of the text object.

*For more details about the parameters that are common to all objects see **"5.2.1. Common Parameters of All Objects"**.*

*For more details about the parameters that are common to text objects see **"5.4.2.1. Common Parameters of Text Objects"**.*

4. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press ✓ to acknowledge the position of the object.
   The **DATE/TIME**-type text object is created in the indicated location.

Formatting string: date and time items

A formatting string can consist of the date and time items described in the following table and of any other characters. The date and time items are replaced with relevant values during printing. The other characters are printed unchanged.

The names of days of the week and the names of months are printed in a language selected with the parameter |**DATE/TIME**| ▶ **Language**.

Item	Meaning
%a	3-letter abbreviation for the name of a day of the week (Mon, ..., Sun).
%A	Full name of a day of the week (Monday, ..., Sunday).
%b	3-letter abbreviation for the name of a month (Jan, ..., Dec).
%B	Full name of a month (January, ..., December).
%c	Date and time in the format: 3-letter abbreviation for the name of a day of the week, 3-letter abbr. for the name of a month, number of a day of the month, hours, minutes, seconds, a year.
%C	Number of a century.
%d	2-digit number of a day of the month (01, ..., 31).
%D	Date in mm/dd/yy format.
%e	Number of a day of the month (1, ..., 31).

Item	Meaning
%F	Date in yyyy-mm-dd format.
%g	Last two digits of the year.
%G	4-digit number of a year.
%h	3-letter abbreviation for the name of a month (Jan, ..., Dec).
%H	2-digit hour in 24-hour system (00 to 23).
%I	2-digit hour in 12-hour system (01 to 12).
%j	3-digit number of a day of the year (001, ..., 366).
%k	Hour in 24-hour system (0 to 23).
%l	Hour in 12-hour system (1 to 12).
%m	2-digit number of a month (01 to 12).
%M	2-digit minute (00 to 59).
%p	Local equivalent to AM or PM (empty for many languages).
%P	Local equivalent to am or pm (empty for many languages).
%r	Time in 12-hour system in the format of hh:mm:ss [AM] or [PM].
%R	Time in 24-hour system in hh:mm format.
%s	Unix timestamp, *i.e.* the number of seconds counted since the beginning of 1970.
%S	2-digit second (00, ..., 60); 60 means a leap second.
%T	Time in 24-hour system in hh:mm:ss format.
%u	Number of a day of the week (1, ..., 7); 1 means Monday.
%U	2-digit number of a week in the year (00, ..., 53); Sunday begins the week.
%V	2-digit number of a week in the year (01, ..., 53); Monday begins the week.
%w	Number of a day of the week (0, ..., 6); 0 means Sunday.
%W	2-digit number of a week in the year (00, ..., 53); Monday begins the week.
%x	Local representation of the date.
%X	Local representation of the time.
%y	Last two digits of the year; as for **%g**.
%Y	4-digit number of a year; as for **%G**.
%z	Time zone in numerical format (*e.g.* +0100).
%Z	Name of the time zone (*e.g.* EDT).

5.4.2.4. CREATING/EDITING A **CALENDAR**-TYPE TEXT OBJECT

A **CALENDAR**-type object  can be used for adding a user-required date to a project. Such a date:

- Has a defined format,
- Can be set back or forward by a certain offset relative to the current date,
- Can change with a set frequency, that is

  every day,

  every week,

  every month (with the option of rounding to full weeks),

  every year (with the option of rounding to full weeks).

A **CALENDAR**-type object can be:

- A local object, *i.e.* it applies to one project only,
- A global variable, *i.e.* it applies to every project in which it is used.

*Before it can be used in a project, a **CALENDAR**-type global variable must be:*
- created in advance; for more details see ***"7.6.1. Global Variables"***
or
- imported in advance to the printer; for more details see ***"7.7.3. Exporting/Importing Other Files"****.*

To create a **CALENDAR**-type text object:

1. Press ▶ **|TEXT OBJECTS|** ▶ .
2. Set the parameters that are specific to the **CALENDAR**-type object .

Parameter	Range of settings
|CALENDAR| ▶ Global variable	**No. The object is a local variable, List of CALENDAR-type global variables available**
Decide whether the object is to be local or global (a global variable). If a global variable is selected from the global variable list available in the printer, then the other object parameters provided in the **|CALENDAR|** tab sheet cannot be edited.	
|CALENDAR| ▶ Date format	
A user-required format of the date. *The default date format can be set by pressing* ▶ ▶ ▶ ▶ ***Date format***.	
|CALENDAR| ▶ Date separator	"␣ (space)", "-", ".", ":"
Character that separates consecutive date items from each other. *The default date separator can be set by pressing* ▶ ▶ ▶ ▶ ***Date separator***.	
|CALENDAR| ▶ Date offset [days]	**-365 to +365**
Shift the date printed on a given calendar date by a set number of days relative to the current date.	
|CALENDAR| ▶ Date offset [months]	**-12 to +12**
Shift the date printed on a given calendar date by a set number of months relative to the current date.	
|CALENDAR| ▶ Date offset [years]	**-100 to +100**
Shift the date printed on a given calendar date by a set number of years relative to the current date.	

Parameter	Range of settings
|CALENDAR| ▶ Date change frequency	**Day**, **Week**, **Month**, **Year**

The parameter defines a so called date change (offset) interval, that is the period over which an unmodified date is printed:

- **Day**: the date changes every day.
- **Week**: the date changes every week on the week day given with the parameter **Change date** (**Monday**, **Tuesday**, **Wednesday**, **Thursday**, **Friday**, **Saturday**, **Sunday**).
- **Month**: the date changes every month on the month day given with the parameter **Change date** (**1 to 31**).
- **Year**: the date changes every year on the first day of the month given with the parameter **Change date** (**January**, **February**, **March**, **April**, **May**, **June**, **July**, **August**, **September**, **October**, **November**, **December**).

|CALENDAR| ▶ Date rounding	**None**, **To previous**, **To closest**, **To next**

The parameter is available only if **Date change frequency** = **Month** or **Year**.

The parameter can be used for rounding the date change intervals (set with the parameter **Date change frequency**) to full weeks.

That means that the date change day determined by the setting of the parameter **Date change frequency** is shifted according to the setting of the parameter **Date rounding**, *i.e:*

- **None**: the date change day is not shifted and is consistent with the setting of the parameter **Date change frequency**.
- **To previous**: the date change day is shifted **to the previous**, selected day of the week (*e.g.* to the previous Tuesday).
- **To closest**: the date change day is shifted **to the nearest**, selected day of the week (*e.g.* to the nearest Tuesday, which may occur both before and after the date change day).
- **To next**: the date change day is shifted **to the following**, selected day of the week (*e.g.* to the following Tuesday).

Although the date change day is shifted, the date to be printed is always taken as the date determined by the setting of the parameter **Date change frequency**.

If the date change day determined by the setting of the parameter **Date change frequency** falls on the week day defined by the **Date rounding** parameter, no rounding is needed and the date change day is not shifted.

The preview of the calendar generated based on the set parameters is available in the **|CALENDAR PREVIEW|** tab sheet.

3. Set the other parameters of the text object.

For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"****.*

For more details about the parameters that are common to text objects see ***"5.4.2.1. Common Parameters of Text Objects"****.*

4. Press ✓ to acknowledge.

   The project editor is displayed in object positioning mode.

5. Indicate a location of the object in the project area.

6. Press ✓ to acknowledge the position of the object.
   The **CALENDAR**-type text object is created in the indicated location.

An example of how to create a calendar without rounding to full weeks

|CALENDAR| ▶

Date format: DD.MM.YYYY

Date separator: “.”

Date offset [days]: 0]

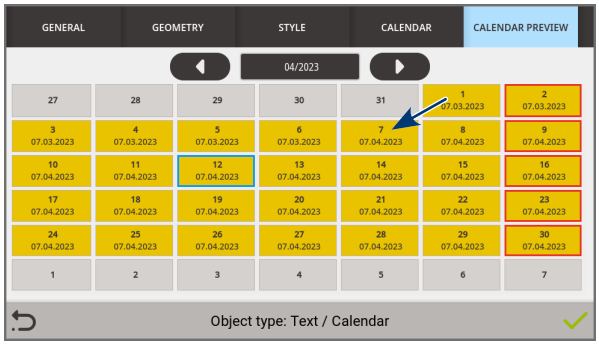
Date offset [months]: 0

Date offset [years]: 0

Date change frequency: **Month**

Change date: 7

Date rounding: None



In the above-given example:

- The current date is framed in blue.
- The **option of rounding to full weeks has not been applied** and an offset has not been used, therefore every seventh day of the month is the date change day and on that day the current date is set. The set date is printed until the following date change day occurs.

An example of how to create a calendar with rounding to full weeks

|CALENDAR| ▶

Date format: DD.MM.YYYY

Date separator: “.”

Date offset [days]: 0

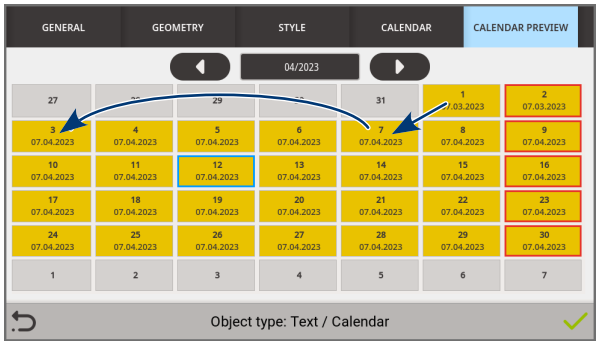
Date offset [months]: 0

Date offset [years]: 0

Date change frequency: **Month**

Change date: 7

Date rounding: To previous [Monday]



In the above-given example:

- The current date is framed in blue.
- The **option of rounding to full weeks has been applied** and an offset has not been used, therefore every date change day (set at the seventh day of the month) is shifted to the **previous Monday**. The months when the date change day falls on Monday are an exception. The date set on that day is taken as the date applicable to the seventh day of the month. The set date is printed by Monday before the following seventh day of the month or by the seventh day of the month if that day falls on Monday.

5.4.2.5. CREATING/EDITING A **SHIFT CODE**-TYPE TEXT OBJECT

With the **SHIFT CODE**-type text object you can provide a project with the codes that identify each of the everyday work shifts.

Each of the everyday work shifts is defined by giving:

- The time when the given work shift begins,
- The shift code contents that are printed during the given work shift.

The time when the shift finishes is set automatically at one minute to the beginning of the following shift.

A **SHIFT CODE**-type object can be:

- A local object, *i.e.* it applies to one project only,
- A global variable, *i.e.* it applies to every project in which it is used.

*Before it can be used in a project, a **SHIFT CODE**-type global variable must be:*
*- created in advance; for more details see **"7.6.1. Global Variables"***
or
*- imported in advance to the printer; for more details see **"7.7.3. Exporting/Importing Other Files"**.*

To create a **SHIFT CODE**-type text object:

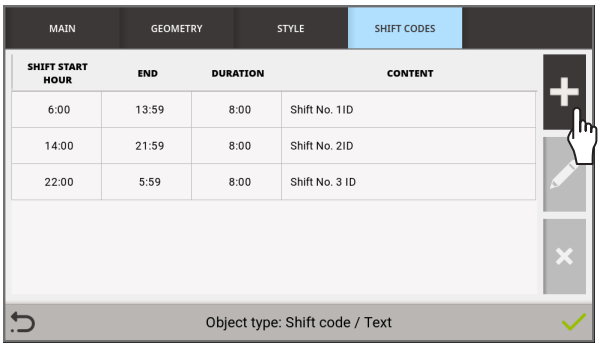
1. Press ▶ |**TEXT OBJECTS**| ▶ .
2. Set the parameters that are specific to the **SHIFT CODE**-type object .

Parameter	Range of settings
|**SHIFT CODE**| ▶ **Global variable**	**No.** The object is a local variable, **List of SHIFT CODE-type global variables** available

Decide whether the object is to be local or global (a global variable).
If a global variable is selected from the global variable list available in the printer, then the other object parameters provided in the |**SHIFT CODE**| tab sheet cannot be edited.

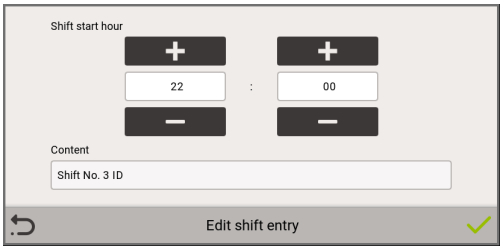
3. Define consecutive shift codes.

- Press |**SHIFT CODE**|.
- Press to define a work shift and assign a code to it.



The following functions are also available in the work shift window:

- edit the selected work shift,
- delete the selected work shift.



– Set parameters of the work shift.

Parameter	Range of settings
Shift start hour	**00:00** to **23:59**
The time when the work shift begins.	
Content	
The code that is to be printed during the given work shift.	

– Press ✓ to acknowledge the creation of the work shift.
The work-shift window is displayed and it shows the defined shift.
– Define consecutive shift codes.

4. Set the other parameters of the text object.

> *For more details about the parameters that are common to all objects see* ***"5.2.1. Common Parameters of All Objects"****.*
>
> *For more details about the parameters that are common to text objects see* ***"5.4.2.1. Common Parameters of Text Objects"****.*

5. Press ✓ to acknowledge.
The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press ✓ to acknowledge the position of the object.
The **SHIFT CODE**-type text object is created in the indicated location.

5.4.2.6. CREATING/EDITING A **COUNTER**-TYPE TEXT OBJECT

With a **COUNTER**-type text object you can provide a project with automatic customized numbering.

A **COUNTER**-type object can be:
– A local object, *i.e.* it applies to one project only,
– A global variable, *i.e.* it applies to every project in which it is used.

> *Before it can be used in a project, a* ***COUNTER****-type global variable must be:*
> *- created in advance; for more details see* ***"7.6.1. Global Variables"***
> *or*
> *- imported in advance to the printer; for more details see* ***"7.7.3. Exporting/Importing Other Files"****.*

To create a **COUNTER**-type text object :
1. Press ▶ |**TEXT OBJECTS**| ▶ .

2. Set the parameters that are specific to the **COUNTER**-type object .

Parameter	Range of settings
|COUNTER| ▶ Global variable	**No. The object is a local variable, List of COUNTER-type global variables available**

Decide whether the object is to be local or global (a global variable).

If a global variable is selected from the global variable list available in the printer, then the other object parameters provided in the **|COUNTER|** tab sheet and in the tab sheet in each of the sections cannot be edited.

|COUNTER| ▶ Number of counter sections	**1** to **3**

Number of counter sections.

|COUNTER| ▶ Invert section order	✗ / ✓

Sequence in which the counter sections are displayed/printed, where 1 is the least significant section:

- ✗: **SECTION 3 ← SECTION 2 ← SECTION 1**
- ✓: **SECTION 1 → SECTION 2 → SECTION 3**

Regardless of the display/printing sequence, the counting sequence (shown above with arrows) is always the same, that is the counting starts from the least significant section, *i.e.* section 1.

3. Set parameters of each of the counter sections (**|SECTION 1|** ▶, **|SECTION 2|** ▶, **|SECTION 3|** ▶).

A **COUNTER**-type object can consist of up to three sections. The quantity of counter sections is settable with the parameter **Number of counter sections**. Each section has an identical set of parameters which can be modified independently.

Section parameters can be modified for a local object only.

Parameter	Range of settings
Visible	✗ / ✓

Make the selected counter section visible/invisible.

Even if a given section is not displayed/printed, it still takes part in counting.

Min	**-999999999** to **Max-1**

The parameter has the following meanings:

- Value from which the incremental counter starts recounting (after an overflow),
- Value at which decremental counting finishes and the counter overflows,
- Value from which counting starts (also after the reset icon on the main screen has been used) if **Start mode** = **Min**.

Max	**Min+1** to **999999999**

The parameter has the following meanings:

- Value from which the decremental counter starts recounting (after an overflow),
- Value at which incremental counting finishes and the counter overflows,
- Value from which counting starts (also after the reset icon on the main screen has been used) if **Start mode** = **Max**.

Parameter	Range of settings
Start mode	**Last value**, **Start value**, **Min**, **Max**

Select a value to start counting from:

- **Min**: when a project is printed for the first time, when printing is resumed and when the reset icon on the main screen is used, the counting starts from the value given with the **Min** parameter.
- **Max**: when a project is printed for the first time, when printing is resumed and when the reset icon on the main screen is used, the counting starts from the value given with the **Max** parameter.
- **Start value**: when a project is printed for the first time, when printing is resumed and when the reset icon on the main screen is used, the counting starts from the value given with the **Start value** parameter.
- **Last value**: when a project is printed for the first time and when the reset icon on the main screen is used, the counting starts from the value given with the **Start value** parameter, and when printing is resumed, the counting continues.

Start value	**Min** to **Max**

The parameter is available only if **Start mode** = **Start value** or **Start mode** = **Last value**.

The parameter has the following meanings:

- Initial value of the counter if **Start mode** = **Start value**,
- Value from which counting starts when project printing starts for the first time if **Start mode** = **Last value**,
- Value from which counting starts after the reset icon on the main screen has been used, if **Start mode** = **Start value** or **Start mode** = **Last value**.

Counting direction	**Up**, **Down**

Select counting mode:

- **Up:** counting up (an incremental counter),
- **Down**: counting down (a decremental counter).

Step	**1** to **999999999**

Counting step of a counter section.

Fill character	**None**, **0**, **Space**

Character that replaces meaningless counter digits, *e.g.* “002” or “␣␣2” (the character ␣ means a space).

Suffix	

Any character string to be printed after the counter section.

4. Set the other parameters of the text object.

For more details about the parameters that are common to all objects see ***“5.2.1. Common Parameters of All Objects”***.

For more details about the parameters that are common to text objects see ***“5.4.2.1. Common Parameters of Text Objects”***.

5. Press to acknowledge.

   The project editor is displayed in object positioning mode.

6. Indicate a location of the object in the project area.
7. Press to acknowledge the position of the object.

   The **COUNTER**-type text object is created in the indicated location.

5.4.2.7. CREATING/EDITING A **TEXT FILE**-TYPE TEXT OBJECT

With a **TEXT FILE**-type text object you can put the contents of a text file into a project.

Before it can be used in a project, the text file shall be:
- created/modified by means of the built-in text file editor; for more details see "7.6.3. Text Files" or
- imported to the printer; for more details see "7.7.3. Exporting/Importing Other Files".

To create a **TEXT FILE**-type text object:

1. Press ▶ |**TEXT OBJECTS**| ▶ .
2. Set the parameters that are specific to the **TEXT FILE**-type object .

Parameter	Range of settings
|**TEXT FILE**| ▶ **File name**	

Indicate the name of a text file from among those available in the printer.

The preview of the selected text file is available in the |**TEXT PREVIEW**| tab sheet.

|**TEXT FILE**| ▶ **Start mode** — **Last value, Start line**

The setting indicating which text-file line is read in after printing has been resumed:

- **Last value**: printing continues.
- **Start line**: the line whose number is given with the **Start line** parameter is read in, *i.e.* printing starts from the beginning.

|**TEXT FILE**| ▶ **Start line** — **1** to **End line**

The parameter has the following meanings:

- Number of a line to be read in from a text file when project printing starts for the first time and after the reset icon on the main screen has been used regardless of the value of the **Start mode** parameter,
- Number of a line to be read in from a text file when the end of the file is reached or when the value of the **End line** parameter is reached if that value is smaller than the number of the lines in the file,
- Number of a line to be read in from a text file after printing resumption, if **Start mode** = **Start line**.

|**TEXT FILE**| ▶ **End line** — **1** to **the file's last line but not more than 1000000**

Number of the last text-file line to be printed.

|**TEXT FILE**| ▶ **Print all lines from start to end** — ✕ / ✓

If the ✓ value is selected, all text lines restricted with the values of the **Start line** and **End line** parameters are added to the object.

|**TEXT FILE**| ▶ **Step**

The parameter is available only if **Print all lines from start to end** = ✕.

Number of lines, by which the text file data shifts each time a consecutive print is made. If the value of the **Step** parameter is smaller than the value of the **Number of lines per printout** parameter, the data shifts by the value of the **Number of lines per printout** parameter.

|**TEXT FILE**| ▶ **Number of lines per printout** — **1 to the file's last line**

The parameter is available only if **Print all lines from start to end** = ✕.

Quantity of text lines added to an object from a text file.

3. Set the other parameters of the text object.

> *For more details about the parameters that are common to all objects see* ***"5.2.1. Common Parameters of All Objects"****.*
>
> *For more details about the parameters that are common to text objects see* ***"5.4.2.1. Common Parameters of Text Objects"****.*

4. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press ✓ to acknowledge the position of the object.
   The **TEXT FILE**-type text object is created in the indicated location.

5.4.2.8. CREATING/EDITING A **COMMUNICATIONS PORT**-TYPE TEXT OBJECT

With a **COMMUNICATIONS PORT**-type text object you can provide a project with data transferred from an external device via the **Ethernet** interface.

Data can be transferred from an external device to the printer when

- The device is connected to the **Ethernet** connector on the back of the control unit,
- The interface is correctly set up.

> *For more details on how to configure communications interfaces see* ***"7.4. Configuring Communications Interfaces"****.*

If there is a problem about transferring data via a communications interface, it is advisable to diagnose the problem by means of relevant functions.

> *For more details about the functions that are designed to diagnose communications interfaces see* ***"9.2.2. Testing Parts and Interfaces"****.*

To create a **COMMUNICATIONS PORT**-type text object :

1. Press ▶ |**TEXT OBJECTS**| ▶ .

2. Set the parameters that are specific to the **COMMUNICATIONS PORT**-type object .

Parameter	Range of settings
|COMMUNICATIONS PORT| ▶ Communication type	**Informational parameter**
Interface through which data is transmitted from an external device (**Ethernet**).	
|COMMUNICATIONS PORT| ▶ Port number	**5000 to 5009**
Port number of the selected TCP/IP socket that will be used for transmitting data via the **Ethernet** interface.	
*The information about **Ethernet** (such as the **IP** address of the printer) that is necessary for correct data transfer to the printer is available by pressing ▶ ▶ ▶ .*	
|COMMUNICATIONS PORT| ▶ Data output format	**Normal, Hex**
Format of data transferred from an external device: - **Normal**: data is transferred as **ASCII** codes. - **Hex**: data is transferred as hexadecimal codes.	
|COMMUNICATIONS PORT| ▶ Data buffering	✕ / ✓
Gather successive data portions received from an external device: - ✓: consecutive, complete data portions (see the description of the **Ready to print after** parameter) received from an external device are stored in printer buffer. The buffered data is printed in the order in which it was stored (the FIFO queue). When all buffered data is printed out, the printer behaves in conformity with the setting of the **No data action** parameter. - ✕: every consecutive, complete data portion (see the description of the **Ready to print after** parameter) received from an external device overwrites the previous data portion that has not been printed yet. If there are no successive data portions, the printer behaves in conformity with the setting of the **No data action** parameter.	
|COMMUNICATIONS PORT| ▶ Buffer size	**1 to 50**
The parameter is available only if **Data buffering** = ✓. Size of data buffer (the quantity of data portions buffered).	
|COMMUNICATIONS PORT| ▶ No data action	**Skip printout, Print a blank field, Print last message**
Response of the printer to the release of printing of a project containing a **COMMUNICATIONS PORT**-type object when no data has been received from an external device or the received data is incomplete (see the description of the **Ready to print after** parameter): - **Skip printout**: the project is not printed; the printer returns a warning. - **Print a blank field**: the project is printed; the **COMMUNICATIONS PORT**-type object remains empty. - **Print last message**: the project is printed; the **COMMUNICATIONS PORT**-type object is filled with the last, correct data portion, or if the project is printed for the first time, the object remains empty.	

Parameter	Range of settings
|COMMUNICATIONS PORT| ▶ Ready to print after	**Wait for packet, Wait for data Length, Wait for end character, Wait for end character [Hex]**

Mode by which the printer confirms whether a data portion received from an external device is complete or not:

- **Wait for packet**: the printer receives a data packet.
- **Wait for data Length**: the printer receives a data portion consisting of characters whose number is given with the **The amount of expected data [characters]** parameter (**1 to 5000**).
- **Wait for end character**: the printer is receiving a data portion until the character/characters string given with the **The character / string that terminates the data** parameter is obtained.
- **Wait for end character [Hex]**: the printer is receiving a data portion until the **Hex** character given with the **Character hex code that terminates the data** parameter is obtained.

|COMMUNICATIONS PORT| ▶ Received data processing script	**No script, list of available scripts**

Select a script to process data received by the communications interface.

Before using a script in a project, you must:
- create/modify the script using a built-in script editor; for more details see ***"7.6.4. Scripts"*** *or*
- import the script to the printer; for more details see ***"7.7.3. Exporting/Importing Other Files"****.*

|COMMUNICATIONS PORT| ▶ Prefix

Any character string to be printed before the data received from an external device.

|COMMUNICATIONS PORT| ▶ Suffix

Any character string to be printed after the data received from an external device.

|CALLBACKS| ▶ On print start	**Off, String, Hex**

Data that is sent from the printer to an external device when you **start printing** a project that contains a **COMMUNICATIONS PORT**-type object :

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On print start [string]** parameter,
- **Hex:** the printer sends the character defined with the **On print start [hex values]** parameter.

For more details on how to start printing see ***"4.4.2. Starting Printing"****.*

|CALLBACKS| ▶ On print stop	**Off, String, Hex**

Data to be sent from the printer to an external device each time **printing** of a project containing a **COMMUNICATIONS PORT** -type object **pauses**:

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On print stop [string]** parameter,
- **Hex:** the printer sends the character defined with the **On print stop [hex values]** parameter.

Printing can be paused by the user or is paused as the consequence of an error. For more details about pausing printing see ***"4.4.3. Pausing Printing"****.*

Parameter	Range of settings
|CALLBACKS| ▶ On data receive	**Off, String, Hex, Echo - resend received**

Data transferred from the printer to an external device directly after the receipt of a data portion, even if the data is not complete (see the description of the parameter **Ready to print after**):

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On data receive [string]** parameter,
- **Hex:** the printer sends the character defined with the **On data receive [hex values]** parameter**,**
- **Echo - resend received**: the printer sends back the same data it has received from the external device.

|CALLBACKS| ▶ On data ready to print	**Off, String, Hex, Echo - resend received**

Data transferred from the printer to an external device directly after the receipt of a complete data portion (see the description of the parameter **Ready to print after**):

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On data ready to print [string]** parameter,
- **Hex:** the printer sends the character defined with the **On data ready to print [hex values]** parameter,
- **Echo - resend received**: the printer sends back the same data it has received from the external device.

|CALLBACKS| ▶ On printout trigger	**Off, String, Hex, Echo - resend received**

Data that is sent from the printer to an external device when the printer **triggers a print** of a project containing a **COMMUNICATIONS PORT**-type object  :

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On printout trigger [string]** parameter,
- **Hex:** the printer sends the character defined with the **On printout trigger [hex values]** parameter,
- **Echo - resend received**: the printer sends back the same data it has received from the external device.

The moment when data is transferred from the printer is determined with the value of the printing parameter  ▶ ***Queuing print triggers***. *For more details see* *"7.2. Printing Settings"*.

|CALLBACKS| ▶ On prtinout finish	**Off, String, Hex, Echo - resend received**

Data transferred from the printer to an external device directly after every print of a project containing a **COMMUNICATIONS PORT**-type object  has been made:

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On prtinout finish [string]** parameter,
- **Hex:** the printer sends the character defined with the **On prtinout finish [hex values]** parameter,
- **Echo - resend received**: the printer sends back the same data it has received from the external device.

Parameter	Range of settings
|CALLBACKS| ▶ On buffer overflow	**Off, String, Hex, Echo - resend received**

The parameter is available only if **Data buffering** = ✓.

Data transferred from the printer to an external device directly after the data buffer has overflown, that is when a data portion received from an external device has not fitted into the buffer and is not printed:

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On buffer overflow [string]** parameter,
- **Hex:** the printer sends the character defined with the **On buffer overflow [hex values]** parameter,
- **Echo - resend received**: the printer sends back the same data it has received from the external device.

|CALLBACKS| ▶ On project close	**Off, String, Hex**

Data transferred from the printer to an external device directly after a project containing a **COMMUNICATIONS PORT**-type object has been closed for printing:

- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On project close [string]** parameter,
- **Hex:** the printer sends the character defined with the **On project close [hex values]** parameter.

3. Set the other parameters of the text object.

For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"****.*

For more details about the parameters that are common to text objects see ***"5.4.2.1. Common Parameters of Text Objects"****.*

4. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press ✓ to acknowledge the position of the object.
   The **COMMUNICATIONS PORT**-type text object is created in the indicated location.

5.4.3. CREATING/EDITING A BAR/MATRIX CODE

Every bar/matrix code object is intended for presenting the corresponding text object graphically as a 1-dimensional (**1D**) bar code or a 2-dimensional (**2D**) matrix code. Therefore the list of bar/matrix code objects is the same as the list of text objects.

The contents of bar/matrix codes are created in the same way as explicitly printed text objects; additionally they must meet the requirements of a given code type. Therefore the creation of contents shall be preceded by the selection of a required type of bar/matrix code.

For more details about text objects see ***"5.4.2. Creating/Editing a Text Object"****.*

5.4.3.1. COMMON PARAMETERS OF BAR/MATRIX CODES

Bar/matrix codes, to which **STATIC TEXT**-type objects, **DATE/TIME**-type objects, **CALENDAR**-type objects, **SHIFT CODE**-type objects, **COUNTER**-type objects, **TEXT FILE**-type objects and **COMMUNICATIONS PORT**-type objects belong, share the following parameters:

Parameter	Range of settings
|**1D/2D CODE**| ▶ **Code type**	**1D** codes, **2D** codes; see the description

Type of bar/matrix code:

- **1D** codes: GS1 Data Bar 14, GS1 Data Bar Limited, GS1 Data Bar Expanded,
- **2D** codes: QR Code, Data Matrix ECC200.

|**1D/2D CODE**| ▶ **Code height [px]**	**1** to **project height**

The parameter is available for 1D codes only.

Height of a 1D code; given in dots.

|**1D/2D CODE**| ▶ **Border type**	**None**, **Left and right**, **Top and bottom**, **Box**

Type of code frame:

- **None**: no frame,
- **Left and right**: frame lines on the left and right sides of the code only,
- **Top and bottom**: frame lines on the code top and bottom only,
- **Box**: linie frame lines around the code.

|**1D/2D CODE**| ▶ **Border size [px]**	**0** to **10**

The parameter is available only if **Border type** differs from **None**.

Thickness of the code frame lines; given as a number of dots.

|**1D/2D CODE**| ▶ **Scale [xN]**	**1 to 20**

Increase the size of a code, *i.e.* increase the number of printing dots per code point, to improve code readability.

If **Scale** = **1**, then one printing dot is jetted per every **1D** or **2D** code point.

If the size of a code increases:

- For **1D** codes: only the length of the given code is multiplied by the factor (*e.g.* if **Scale** = **2**, then every code point is printed with two printing dots),
- For **2D** codes: both the width and the height of the given code is multiplied by the factor (*e.g.* if **Scale** = **2**, then every code point is printed with four printing dots).

|**1D/2D CODE**| ▶ **Invert**	✕ / ✓

Define whether a code is to be displayed in the editor window and printer in an inverted color scheme or not.

*A code printed in inverted colors is legible if it is framed (the **Border type** parameter). Printing a code in an inverted color scheme can be useful when you print in light ink on a dark surface, for example.*

5.4.3.2. CREATING/EDITING A **STATIC TEXT**-TYPE CODE

With a **STATIC TEXT**-type code you can put a bar/matrix code consisting of invariable **ASCII**-character contents into a project.

To create a **STATIC TEXT**-type code:

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters.

   For more details see ***"5.4.3.1. Common Parameters of Bar/Matrix Codes"***.

3. Enter contents of the code (|**1D/2D CODE**| ▶ **Object content**). The code contents must meet the requirements applicable to the previously selected code type.
4. Set the other parameters of the object.

   For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"***.

5. Press to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press to acknowledge the position of the object.
   The **STATIC TEXT**-type code is created in the indicated location.

5.4.3.3. CREATING/EDITING A **DATE/TIME**-TYPE CODE

With a **DATE/TIME**-type code you can provide a project with a bar/matrix code whose contents consist of:

- The current date and/or the current time,
- A time that is set back or forward by a certain offset relative to the current time,
- A date that is shifted by a certain offset, or a so called **expiration date**.

To create a **DATE/TIME**-type code:

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   For more details see ***"5.4.3.1. Common Parameters of Bar/Matrix Codes"***.

3. Define contents of the **DATE/TIME**-type code in the |**DATE/TIME**| tab sheet. The code contents are defined in a way similar to that applied to a **DATE/TIME**-type text object ; in addition they must meet the requirements applicable to the previously selected code type.

   For more details see ***"5.4.2.3. Creating/Editing a Date/Time-type Text Object"***.

4. Set the other parameters of the object.

   *For more details about the parameters that are common to all objects see **"5.2.1. Common Parameters of All Objects"**.*

5. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press ✓ to acknowledge the position of the object.
   The **DATE/TIME**-type code is created in the indicated location.

5.4.3.4. CREATING/EDITING A **CALENDAR**-TYPE CODE

A **CALENDAR**-type code can be used for adding a user-required date to a project. Such a date:

- Has a defined format,
- Can be set back or forward by a certain offset relative to the current date,
- Can change with a set frequency, that is
  every day,
  every week,
  every month (with the option of rounding to full weeks),
  every year (with the option of rounding to full weeks).

A **CALENDAR**-type object can be:

- A local object, *i.e.* it applies to one project only,
- A global variable, *i.e.* it applies to every project in which it is used.

*Before it can be used in a project, a **CALENDAR**-type global variable must be:*
*- created in advance; for more details see **"7.6.1. Global Variables"***
or
*- imported in advance to the printer; for more details see **"7.7.3. Exporting/Importing Other Files"**.*

To create a **CALENDAR**-type code:

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   *For more details see **"5.4.3.1. Common Parameters of Bar/Matrix Codes"**.*

3. Define contents of the **CALENDAR**-type code in the |**CALENDAR**| tab sheet. The code contents are defined in a way similar to that applied to a **CALENDAR**-type text object ; in addition they must meet the requirements applicable to the previously selected code type.

   *For more details see **"5.4.2.4. Creating/Editing a Calendar-type Text Object"**.*

4. Set the other parameters of the object.

   *For more details about the parameters that are common to all objects see **"5.2.1. Common Parameters of All Objects"**.*

5. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press ✓ to acknowledge the position of the object.
   The **CALENDAR**-type code is created in the indicated location.

5.4.3.5. CREATING/EDITING A **SHIFT CODE**-TYPE CODE

With the **SHIFT CODE**-type code you can provide a project with a bar/matrix code whose contents consist of the codes that identify each of the everyday work shifts.

Each of the everyday work shifts is defined by giving:

- The time when the given work shift begins,
- The shift code contents that are printed during the given work shift.

The time when the shift finishes is set automatically at one minute to the beginning of the following shift.

A **SHIFT CODE**-type object can be:

- A local object, *i.e.* it applies to one project only,
- A global variable, *i.e.* it applies to every project in which it is used.

*Before it can be used in a project, a **SHIFT CODE**-type global variable must be:*
*- created in advance; for more details see **"7.6.1. Global Variables"***
or
*- imported in advance to the printer; for more details see **"7.7.3. Exporting/Importing Other Files"**.*

To create a **SHIFT CODE**-type code :

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   *For more details see **"5.4.3.1. Common Parameters of Bar/Matrix Codes"**.*

3. Define contents of the **SHIFT CODE**-type code in the |**SHIFT CODE**| tab sheet. The code contents are defined in a way similar to that applied to a **SHIFT CODE**-type text object ; in addition they must meet the requirements applicable to the previously selected code type.

   *For more details see **"5.4.2.5. Creating/Editing a Shift code-type Text Object"**.*

4. Set the other parameters of the object.

   *For more details about the parameters that are common to all objects see **"5.2.1. Common Parameters of All Objects"**.*

5. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press ✓ to acknowledge the position of the object.
   The **SHIFT CODE**-type code is created in the indicated location.

5.4.3.6. CREATING/EDITING A **COUNTER**-TYPE CODE

With the **COUNTER**-type code you can provide a project with a bar/matrix code whose contents consist of customized automatic numbering.

A **COUNTER**-type object can be:

- A local object, *i.e.* it applies to one project only,
- A global variable, *i.e.* it applies to every project in which it is used.

*Before it can be used in a project, a **COUNTER**-type global variable must be:*
*- created in advance; for more details see **"7.6.1. Global Variables"***
or
*- imported in advance to the printer; for more details see **"7.7.3. Exporting/Importing Other Files"**.*

To create a **COUNTER**-type code:

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   *For more details see **"5.4.3.1. Common Parameters of Bar/Matrix Codes"**.*

3. Define contents of the **COUNTER**-type code in the |**COUNTER**| tab sheet. The code contents are defined in a way similar to that applied to a **COUNTER**-type text object; in addition they must meet the requirements applicable to the previously selected code type.

   *For more details see **"5.4.2.6. Creating/Editing a Counter-type Text Object"**.*

4. Set the other parameters of the object.

   *For more details about the parameters that are common to all objects see **"5.2.1. Common Parameters of All Objects"**.*

5. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.

7. Press ✓ to acknowledge the position of the object.
   The **COUNTER**-type code is created in the indicated location.

5.4.3.7. CREATING/EDITING A **TEXT FILE**-TYPE CODE

With a **TEXT FILE**-type code you can provide a project with a bar/matrix code that contains the text file contents.

Before it can be used in a project, the text file shall be:
- created/modified by means of the built-in text file editor; for more details see ***"7.6.3. Text Files"*** *or*
- imported to the printer; for more details see ***"7.7.3. Exporting/Importing Other Files"****.*

To create a **TEXT FILE**-type code :

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   For more details see ***"5.4.3.1. Common Parameters of Bar/Matrix Codes"****.*

3. Define contents of the **TEXT FILE**-type code in the |**TEXT FILE**| tab sheet. The code contents are defined in a way similar to that applied to a **TEXT FILE**-type text object ; in addition they must meet the requirements applicable to the previously selected code type.

   For more details see ***"5.4.2.7. Creating/Editing a Text file-type Text Object"****.*

4. Set the other parameters of the object.

   For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"****.*

5. Press ✓ to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press ✓ to acknowledge the position of the object.
   The **TEXT FILE**-type code is created in the indicated location.

5.4.3.8. CREATING/EDITING A **COMMUNICATIONS PORT**-TYPE CODE

With a **COMMUNICATIONS PORT**-type code you can provide a project with a bar/matrix code whose contents consist of data received from an external device via the **Ethernet** interface.

Data can be transferred from an external device to the printer when

– The device is connected to the **Ethernet** connector on the back of the control unit,

– The interface is correctly set up.

For more details on how to configure communications interfaces see ***"7.4. Configuring Communications Interfaces"***.

If there is a problem about transferring data via a communications interface, it is advisable to diagnose the problem by means of relevant functions.

For more details about the functions that are designed to diagnose communications interfaces see ***"9.2.2. Testing Parts and Interfaces"***.

To create a **COMMUNICATIONS PORT**-type code :

1. Press ▶ |**1D/2D CODES**| ▶ .
2. Select a type of bar/matrix code and set code parameters in the |**1D/2D CODE**| tab sheet.

   For more details see ***"5.4.3.1. Common Parameters of Bar/Matrix Codes"***.

3. Define contents of the **COMMUNICATIONS PORT**-type code in the |**COMMUNICATIONS PORT**| tab sheet. The code contents are defined in a way similar to that applied to a **COMMUNICATIONS PORT**-type text object ; in addition they must meet the requirements applicable to the previously selected code type.

   For more details see ***"5.4.2.8. Creating/Editing a Communications port-type Text Object"***.

4. Set the other parameters of the object.

   For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"***.

5. Press to acknowledge.
   The project editor is displayed in object positioning mode.
6. Indicate a location of the object in the project area.
7. Press to acknowledge the position of the object.
   The **COMMUNICATIONS PORT**-type code is created in the indicated location.

5.4.4. CREATING/EDITING GRAPHIC OBJECTS

The group of graphic objects includes the following objects:

– **LINE** ,
– **RECTANGLE** ,
– **ELLIPSE** ,
– **IMAGE** .

5.4.4.1. CREATING/EDITING A **LINE**-TYPE GRAPHIC OBJECT

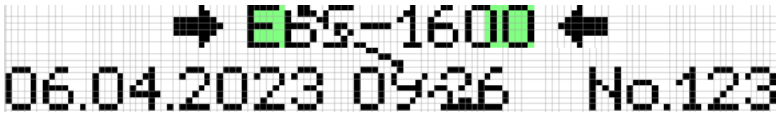
To create a **LINE**-type graphic object :

1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **LINE**-type object .

Parameter	Range of settings
|**SHAPE**| ▶ **Line width [px]**	**1** to **30**
Thickness of a line to be drawn; given as a number of dots.	
|**SHAPE**| ▶ **Inverted**	✕ / ✓
Determine whether the common parts of the line and the objects that are under the line are to be printed or not:	

- ✕.

- ✓.



3. Set the other parameters of the object.

> *For more details about the parameters that are common to all objects see* ***"5.2.1. Common Parameters of All Objects"****.*

4. Press ✓ to acknowledge.

   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press ✓ to acknowledge the position of the object.

   The **LINE**-type graphic object is created in the indicated location.

5.4.4.2. CREATING/EDITING A **RECTANGLE**-TYPE GRAPHIC OBJECT

To create a **RECTANGLE**-type graphic object :

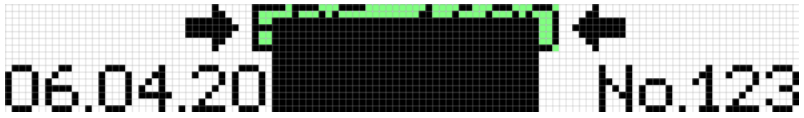
1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **RECTANGLE**-type object .

Parameter	Range of settings
|**SHAPE**| ▶ **Line width [px]**	**1** to **30**
The parameter is active only if **Filling** = ✕.	
Thickness of the rectangle outline; given as a number of dots.	
|**SHAPE**| ▶ **Filling**	✕ / ✓
Determine whether the rectangle is to be filled or its outline is to be printed only.	

Parameter	Range of settings
|SHAPE| ▶ Inverted	✕ / ✓

Determine whether the common parts of the rectangle and the objects that are under the rectangle are to be printed or not.

- ✕.



- ✓.

3. Set the other parameters of the object.

> *For more details about the parameters that are common to all objects see* ***"5.2.1. Common Parameters of All Objects"****.*

4. Press ✓ to acknowledge.

   The project editor is displayed in object positioning mode.
5. Indicate a location of the object in the project area.
6. Press ✓ to acknowledge the position of the object.

   The **RECTANGLE**-type graphic object is created in the indicated location.

5.4.4.3. CREATING/EDITING AN **ELLIPSE**-TYPE GRAPHIC OBJECT

To create an **ELLIPSE**-type graphic object:

1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **ELLIPSE**-type object .

Parameter	Range of settings
|SHAPE| ▶ Line width [px]	**1** to **30**

The parameter is active only if **Filling** = ✕.

Thickness of the ellipse outline; given as a number of dots.

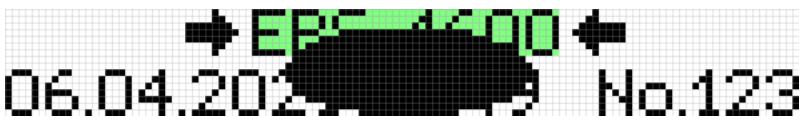
|SHAPE| ▶ Filling	✕ / ✓

Determine whether the ellipse is to be filled or its outline is to be printed only.

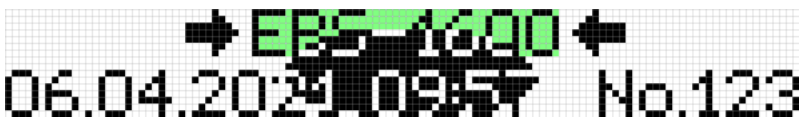
|SHAPE| ▶ Invert	✕ / ✓

Determine whether the common parts of the ellipse and the objects that are under the ellipse are to be printed or not.

- ✕.



- ✓.



3. Set the other parameters of the object.

   For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"***.

4. Press ✓ to acknowledge.

   The project editor is displayed in object positioning mode.

5. Indicate a location of the object in the project area.

6. Press ✓ to acknowledge the position of the object.

   The **ELLIPSE**-type graphic object ◯ is created in the indicated location.

5.4.4.4. CREATING/EDITING AN **IMAGE**-TYPE GRAPHIC OBJECT

With an **IMAGE**-type graphic object 🖼 you can put a graphics file containing any graphics, drawing or logo into a project.

Before it can be used in a project, the graphics file shall be:
- created/modified by means of the built-in graphics file editor; for more details see ***"7.6.2. Images"***
or
- imported to the printer; for more details see ***"7.7.3. Exporting/Importing Other Files"***.

Only a graphics file in e.g. ****.png, *.bmp, *.jpg,*.jpeg, *.gif*** *format can be put in a project. It is advisable to use a black and while graphics file to obtain good quality prints.*

To create an **IMAGE**-type graphic object 🖼:

1. Press ▶ |**GRAPHIC OBJECTS**| ▶ 🖼.
2. Select a graphics file from among those available in the printer (|**IMAGE**| ▶ **Image path**).
3. Press ✓ to acknowledge the selection of the graphics file.

   The preview of the selected graphics file is displayed.

4. Set the other parameters of the object.

   For more details about the parameters that are common to all objects see ***"5.2.1. Common Parameters of All Objects"***.

5. Press ✓ to acknowledge.

   The project editor is displayed in object positioning mode.

6. Indicate a location of the object in the project area.

7. Press ✓ to acknowledge the position of the object.

   The **IMAGE**-type graphic object 🖼 is created in the indicated location.

5.5. SAVING A PROJECT

The currently edited project can be saved in the editor in two ways:

 - save the project with its exiting name or a new name; the project editor is not exited,

 - save the project with its exiting name and exit the project editor.

Function  is available only when either the contents of the project or printing parameters have been modified. If modifications are made, the project name is displayed in red.

To save the project with a different name:

1. Press  in the project editor window.
   A virtual keyboard and the current project name are displayed.
2. Enter a new project name or leave the current name unchanged.
3. Press  to acknowledge.
   If a project is overwritten with an unchanged name, the operation needs acknowledging.
   The project editor window is displayed again.
   The project is saved with the selected name.

To save the project with its current name and exit the project editor:

1. Press  in the project editor window.
   The project editor is closed.
   The window from which the project editor was called is displayed.
   The project is saved with its current name.

If you save the project open for printing/being printed, this means that the project is reloaded, and you are informed of this fact in the message that is displayed in the dialog window. If you do not want to reload the project that is open for printing/being printed, you can save the project you are editing to the library with another name.

5.6. CHANGING A PROJECT NAME

*The function is not available to **OPERATOR**-type users .*

To change a project name:

1. Press ▶ ▶ .
   The project library is displayed.

   *For more details about the project library see **"5.8. Managing Projects"**.*

2. Select the project whose name you wish to change.
   You must not change the name of the project that is open for printing/being printed, if that project is marked with the ▶ icon in the project library.
   The project is highlighted in blue and its preview is displayed in the upper part of the window.
3. Press .
   A virtual keyboard and the current project name are displayed.
4. Enter a new project name.
   If the new name of the project is the same as the name of an existing project, then when acknowledged, the existing project is replaced with the current one.
   You must not name a project with the same name as that of the project that is open for editing/being printed.
5. Press ✓ to acknowledge.
   The project library is displayed again.
   The name of the selected project is changed.

5.7. DELETING A PROJECT

*The function is not available to **OPERATOR**-type users .*

The function is used for deleting permanently a selected project (or selected projects) from printer memory.

To delete a project (several projects):

1. Press ▶ ▶ .
   The project library is displayed.

   *For more details about the project library see **"5.8. Managing Projects"**.*

2. Select a project or projects that you wish to delete.
   You must not delete the project that is open for printing/being printed, if that project is marked with the ▶ icon in the project library.
   A project or projects can be selected in one out of two modes, which are switched over with the icon.

   Single selection mode

   In single selection mode, the selected project is highlighted in blue and its preview is displayed in the upper part of the window.

   Multiple selection mode

   In multiple selection mode, additional icons are active:
   - tick all library projects,
   - untick all library projects,
   - reverse the mark of each of the library projects.

   In this mode, the recently selected project is highlighted in blue and its preview is displayed in the upper part of the window. All selected projects are marked with the ☑ icon and the other projects are marked with the ☐ icon.

3. Press ✖.
   A dialog box with the request to acknowledge the operation is displayed.
4. Press OK to acknowledge.
   The project library is displayed again.
   The selected project/projects is/are permanently deleted from printer memory.

5.8. MANAGING PROJECTS

Project management is handled via the project library, which is called by pressing:

or

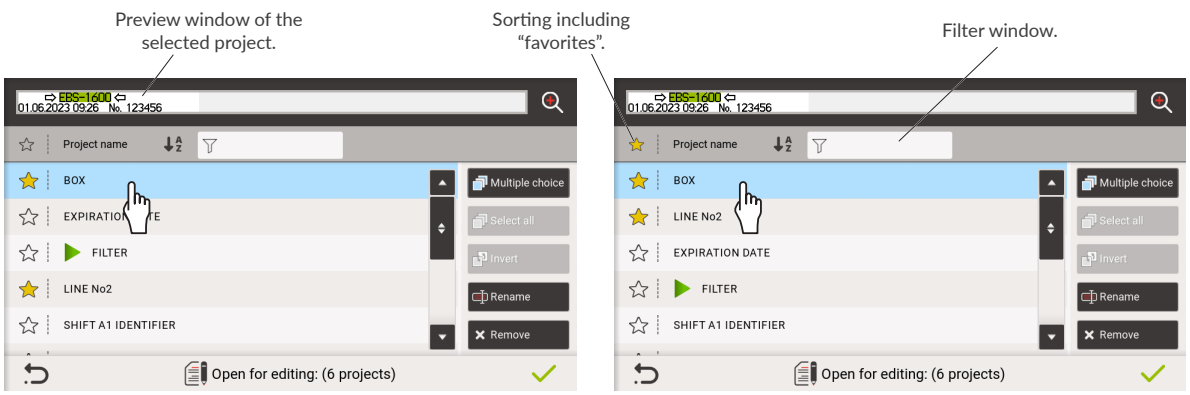


Fig. 58.

All projects stored in printer memory are displayed in the project library window.
The list of displayed projects can be restricted by means of a filter (see ***Fig. 58 on page 117***). If a text is input into the filter window, then only the projects whose names match the filter text are displayed in the library. The filter can be removed by pressing the ❌ icon in the filter window.
The projects that are used most frequently can be marked as “favorite”. Owing to that they can be displayed at the beginning of the project list regardless of the selected mode of sorting. You can add a project to the “favorite” list by pressing the ☆ icon next to the project name. You can remove a project from the “favorite” list by pressing the ⭐ icon next to the project name.
The order in which the projects are displayed in the library (sorting mode) can be selected with the A Z / Z A icons.

The project open for printing/being printed is marked with ▶.

Certain projects can be displayed in gray in the library. This means that they cannot be selected for printing because their heights differ from the number of the nozzles that are installed in the integrated printhead in the printer.

The other icons available in the project library are:
- display the preview for a selected project,
- change the project selection mode (single selection mode / multiple selection mode); the following additional icons are active in the multiple selection mode:
  - tick all library projects,
  - untick all library projects,
  - reverse the mark of each of the library projects,
- change the name of a selected project; you must not change the name of the project that is open for printing/being printed,
- delete a selected project (selected projects); you must not delete the project that is open for printing/being printed,
- exit the project library,
- acknowledge an operation (such as that to open a project for printing, edit a project).

CHAPTER 6
INFORMATION

6. INFORMATION

The information available in the printer falls into two categories:

- reports (on events, messages, operations),
- information (about parts, software, consumables in use).

6.1. REPORTS

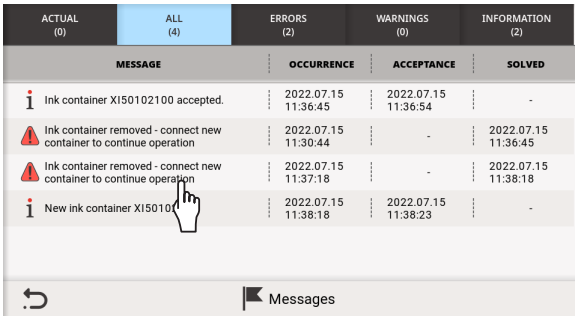
Every report can be saved in a **USB** memory device.

For more details see "7.7.3. Exporting/Importing Other Files".

6.1.1. MESSAGE HISTORY

To get access to message history:

1. Press ▶ ▶
   or
   Press on icon bar **1b** (see *Fig. 37 on page 42*).



2. Select the group of messages you wish to view.

– |**ACTUAL**|: unhandled messages.
– |**ALL**|: all messages.
– |**ERRORS**|: error messages.
– |**WARNINGS**|: warning messages.
– |**INFORMATION**|: informational messages.

Every entry contains the following information:

For more information about messages see "9.1. Message Handling".

– Type of message: an error, a warning, a notice,
– Unique message identifier independent of the selected interface language, *e.g.* E063 (available when you click on the selected message),
– Message contents displayed in the interface language,
– Date of the first occurrence of the message,
– Message acceptance date,
– Problem solving date (does not apply to unprocessed messages),
– How many times a message has occurred.

Message history can be sorted in ascending or descending order by contents, first occurrence date, acceptance date or problem fixing date. Press the heading of an appropriate column to sort. The current sorting order is indicated by the A Z or Z A icon in the heading of the selected column.

Select a message from the list to get additional information on it.

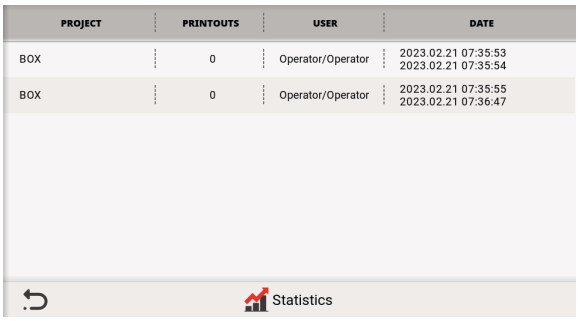
6.1.2. PRINTOUT STATISTICS

The function is not available to **OPERATOR***-type users*.

To get access to detailed printouts statistics:

1. Press ▶ ▶ .
   The following information is available in the window displayed:

- Name and type of the user who started printing,
- Project name,
- Number of prints made for a given project,
- Printing start date,
- Printing completion date.

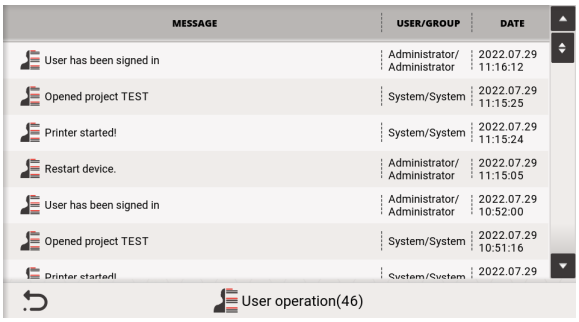


6.1.3. OPERATION HISTORY

The function is not available to **OPERATOR***-type users*.

To get access to operation history:

1. Press ▶ ▶ .



The function provides access to the record of all operations carried out by the user and the system. Every entry contains the following information:

- Description of the operation displayed in the interface language,
- Name and type of user who carried out the operation,
- Date when the operation was carried out.

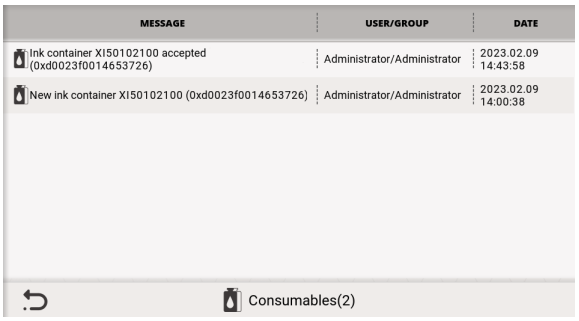
Operation history can be sorted in ascending or descending order by operation description, user name or date. Press the heading of an appropriate column to sort. The current sorting order is indicated by the A↓Z or Z↓A icon in the heading of the selected column.

6.1.4. CONSUMABLE HISTORY

The function is not available to **OPERATOR***-type users*.

To get access to message/operation history of consumables:

1. Press ▶ ▶ .



Every entry contains the following information:

- Message contents/description of the operation displayed in the interface language,
- Name and type of user who carried out the operation,
- Date when the message occurred/the operation was carried out.

Message/operation history of consumables can be sorted in ascending or descending order by message contents/operation description, user name or message/operation date. Press the heading of an appropriate column to sort. The current sorting order is indicated by the A↓Z or Z↓A icon in the heading of the selected column.

6.2. INFORMATION

6.2.1. PRINTER INFORMATION

To gain access to printer information:

1. Press ▶ i ▶ v.i

   or

   Press i ▶ v.i on icon bar **1b** (see *Fig. 37 on page 42*).

The function provides access to the following information about the software printer:

- Printer identifier,
- System version,

- Editor version,
- User interface version,
- Version of the **ePOS** program,
- Version of the control unit software,
- Version of the software of the integrated printhead.

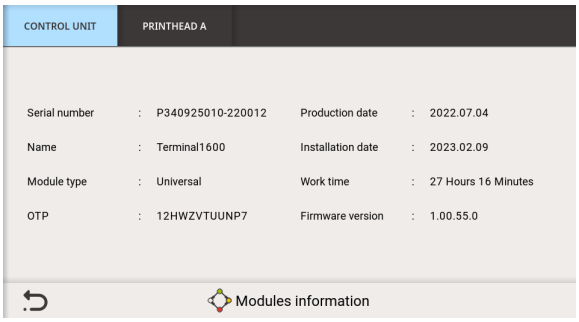
Press to generate the two-dimensional QR code that contains basic information about the printer. The code can be scanned and forwarded to the authorized service staff, if need be, which will significantly simplify a diagnostic process.

Press to get legal details about the license of the software in use.

6.2.2. INFORMATION ABOUT INSTALLED MODULES

To get access to information on installed modules:

1. Press ▶ ▶ ▶
   or
   Press ▶ ▶ on icon bar **1b** (see *Fig. 37 on page 42*).



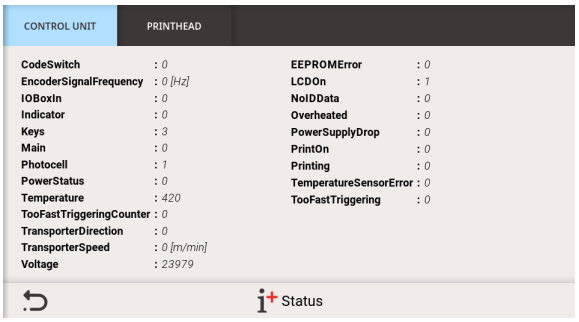
2. Select a part about which you wish to get information:
   |**CONTROL UNIT**|,
   |**PRINTHEAD**|.

The function provides access to the following information about modules:

- Serial number,
- Name,
- Type of module,
- Running time,
- Software version,
- Date of manufacture,
- Date of installation,
- Expiration date.

After replacement of a module, on a periodic basis or when the need arises, the information is automatically refreshed.

6.2.3. STATUS OF INSTALLED MODULES

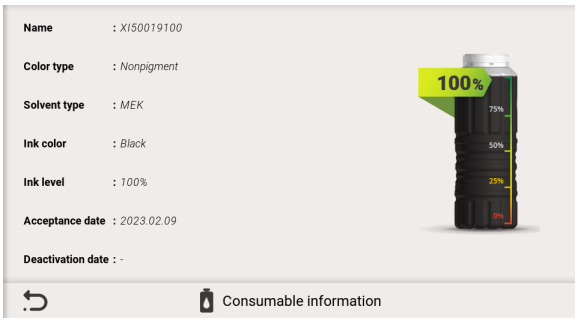


To get access to the status of an installed module:

1. Press ▶ i ▶ i+ ▶
   or
   Press i ▶ i+ ▶ on icon bar **1b** (see *Fig. 37 on page 42*).

2. Select a part about which you wish to get information:
   |**CONTROL UNIT**|,
   |**PRINTHEAD**|.
   The status data on each of the printer modules is available in the window displayed. The data can be used by the authorized service staff to diagnose the printer.

6.2.4. INFORMATION ABOUT CONSUMABLES IN USE



To get access to information about consumables in use (an ink/wash-up bottle):

1. Press ▶ i ▶
   or
   Press on icon bar **1b** (see *Fig. 37 on page 42*)
   or
   Press the ink level indicator on the main screen.

The function provides access to the following information about consumables:

- Consumable name,
- Color type,
- Solvent (base) type,
- Ink color,
- approximate ink level in the bottle [%],
- Acceptance date,
- Deactivation date,
- Expiration date.

6.2.5. CONTACT DATA

To get contact details of

EBS Ink Jet Systeme GmbH's authorized representative:

1. Press ▶ ▶
   or
   Press ▶ on icon bar **1b** (see *Fig. 37 on page 42*).

6.3. DETERMINING FACTORY CONVEYOR PARAMETERS

Tools required:
- any two objects,
- a photodetector,
- an encoder; to measure the encoder constant only.

The function is available to **ADMINISTRATOR***-type users only.*

The following conveyor data needs obtaining to set printing parameters correctly:

- Conveyor belt travel speed
  or
- Encoder parameters such as encoder constant, that is the number of impulses generated by the encoder per unit of length, and the active direction in which the encoder axle turns.

Printing parameters are settable by pressing ▶ ▶ ▶.

Conveyor belt travel speed

If the conveyor belt moves at a stable speed, no encoder needs using. In such a case:

- Printing is timed by means of an internal generator (▶ ▶ ▶ ▶ **Impulse generator source** = **Internal**),
- The printing speed (▶ ▶ ▶ ▶ **Product travel speed** [m/min] or [inch/min]) you set must be the same as the conveyor belt travel speed you have measured.

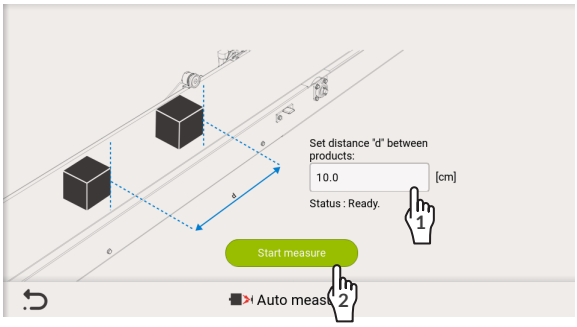
The procedure for measuring the conveyor belt travel speed requires that the printer be provided with a photodetector.

To measure the conveyor belt travel speed, it is required that two objects put on the conveyor at a known distance one from another move one after another in front of the photodetector that is selected as the source of the trigger signal when:

- The built-in measuring tool is started,
- The conveyor belt is traveling at a constant, target speed.

To measure the conveyor belt travel speed:

1. Make the setting: ▶ ▶ ▶ **Impulse generator source** = Internal.
2. Press **Auto measure**.
   A measuring tool is displayed (see the drawing on the right).



3. (1) Enter the distance that is between the beginnings of the objects you have put on the conveyor belt.
4. (2) Press **Start measure** to start measuring.
   The measured speed at which the conveyor belt moves is displayed in the measurement window (**Status**).
5. Press ✓ to acknowledge.
   In the dialog box displayed, you are requested to confirm whether the measured value should be used as the setting of printing parameters or not.
6. Press **Yes**.
   The conveyor belt travel speed measured with the measuring tool is entered as the printing speed setting (▶ ▶ ▶ **Product travel speed** [m/min] or [inches/min]).
   The measurement is finished.

If the above-mentioned procedure cannot be followed (*e.g.* when the printer is not equipped with a photodetector), the conveyor belt travel speed can be measured with a tachometer and entered as the value of the printing parameter ▶ ▶ ▶ **Product travel speed** [m/min] or [inches/min].

Encoder parameters

If the speed at which the conveyor belt moves is not stable, an encoder has to be used. In such a case:

- Printing is timed with impulses generated by the encoder (▶ ▶ ▶ **Impulse generator source** = External),
- The encoder constant shall be entered (▶ ▶ ▶ **Encoder constant** [impulses/m] or [impulses/100 inches]) to ensure that the encoder measures the conveyor belt travel speed correctly.
- If you wish to print only when the encoder axle is turning in the active direction, you shall decide which direction of turning is considered as active (▶ ▶ ▶ **Encoder direction**).

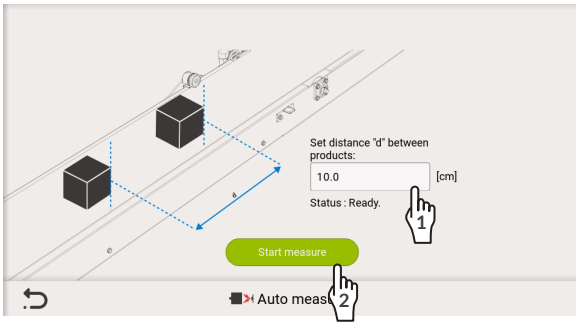
The procedure for measuring encoder parameters requires that the printer be equipped with a photodetector and an encoder.

To measure encoder parameters it is required that two objects put on the conveyor at a known distance one from another move one after another in front of the photodetector that is selected as the source of the trigger signal when:

- The built-in measuring tool is started,
- The encoder is measuring the conveyor belt travel speed.

To measure encoder parameters:

1. Make the setting: ▶ ▶ ▶ **Impulse generator source** = **External**.
2. Press **Auto measure**.
   The measuring tool is displayed (see the drawing on the right).



3. 1 Enter the distance that is between the beginnings of the objects you have put on the conveyor belt.
4. 2 Press **Start measure** to start measuring.
   The encoder constant that has been measured is displayed in the measurement window.
5. Press ✓ to acknowledge.
   In the dialog box displayed, you are requested to confirm whether the measured values should be entered into printing parameters or not.
6. Press **Yes**.
   The encoder parameters measured with the measuring tool are entered into the printer:
   - Encoder constant as the setting of the parameter ▶ ▶ ▶ **Encoder constant** [impulses/m] or [impulses/100 inches].

   The measurement is finished.

If the above-mentioned procedure cannot be followed (*e.g.* when the printer is not equipped with a photodetector), the encoder constant can be calculated on the basis of the following data:

- Number of impulses per rotation, given in the encoder data sheet,
- Diameter of the encoder roller.

The calculated figure shall be entered as the value of the printing parameter ▶ ▶ ▶ ▶ **Encoder constant** [impulses/m] or [impulses/100 inches].

The active direction of turning of the encoder axle can also be determined empirically and the determined value can be entered as the setting of the printing parameter ▶ ▶ ▶ **Encoder direction**.

To determine the active direction of turning of the encoder axle empirically:

1. Make the setting: ▶ ▶ ▶ **Impulse generator source** = **External**.
2. Make the setting: ▶ ▶ ▶ **Print with encoder direction** = .
3. Start printing.
4. Turn the encoder roller, modifying the value of the printing parameter ▶ ▶ ▶ **Encoder direction** at the same time.

   The value of the printing parameter **Encoder direction** at which the printer prints means the active direction of turning of the encoder axle.

   The procedure is finished.

CHAPTER 7
PRINTER CONFIGURATION

7. PRINTER CONFIGURATION

7.1. GENERAL SETTINGS

General settings can be saved on a **USB** memory device and then imported to the same or another printer.

For more details see ***"7.7.2. Exporting/Importing Printer Settings"****.*

All functions described in this section are available to ***ADMINISTRATOR****-type users only.*

7.1.1. LOCAL SETTINGS

To modify local settings:

1. Press ▶ ▶ ▶ .

The local settings involve the following parameters:

Parameter	Range of settings
Country	

The country of your choice.

If you change the setting of the **Country** parameter, the settings of the following parameters are adjusted automatically: **Language**, **Units** and **Temperature units**.

The country, user interface language and units are preliminarily set while the printer is started up for the first time. For more details see ***"2.4. First Printer Startup"****.*

Language	

The language in which the user interface is displayed.

Date separator	":", ".", "-", "␣ (space)"

The default date separator, or the character that separates successive date items in:

- text and code **DATE/TIME**-type objects / and **CALENDAR**-type objects / .
- dates displayed in the printer, *e.g.* the current date displayed on icon bar **1b** (see ***Fig. 37 on page 42***).

Date format	DD:MM:YY, MM:DD:YY, DD:MM:YYYY, MM:DD:YYYY, YYYY:DD:MM, YYYY:MM:DD, YY:DD:MM, YY:MM:DD

The default date format:

- text and code **DATE/TIME**-type objects / and **CALENDAR**-type objects / .
- dates displayed in the printer, *e.g.* the current date displayed on icon bar **1b** (see ***Fig. 37 on page 42***).

Time separator	":", ".", "-", "␣ (space)"

The default time separator, or the character that separates successive time items in:

- text and code **DATE/TIME**-type objects / and **CALENDAR**-type objects / .
- times displayed in the printer, *e.g.* the current time displayed on icon bar **1b** (see ***Fig. 37 on page 42***).

Parameter	Range of settings
Units	[m], [inch]
Units of measurement used in the printer.	
Temperature units	[°C], [°F]
Units of temperature used in the printer.	

2. Modify the selected parameter.
3. Press ✓ to acknowledge.

*If the value of the **Language** parameter has been modified, the user interface starts again as soon as the modifications are acknowledged with the ✓ icon. The restart of the user interface does not pause printing.*

The local settings are modified.

7.1.2. SETTING THE CURRENT DATE AND TIME

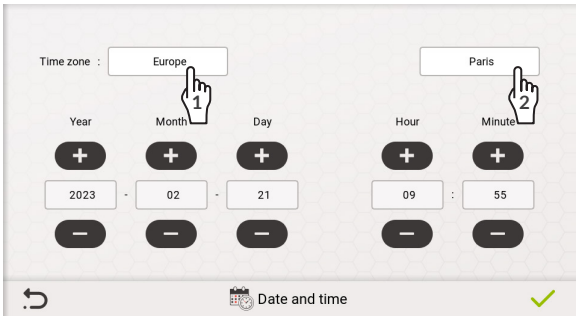
*The current date and time are preliminarily set while the printer is started up for the first time. For more details see **"2.4. First Printer Startup"**.*

To set the current date and time:

1. Press ☰ ▶ ⚙ ▶ ⚙ ▶ 📅

   or

   Press the clock on icon bar **1b** (see ***Fig. 37 on page 42***).



2. Set date and time items:

– by means of the − / + icons

or

– the numerical keyboard.

*No date preceding the currently defined date can be set. If the date needs setting back to be defined correctly, contact an authorized representative of **EBS Ink Jet Systeme GmbH**. For more details see **"9.3.3. Releasing Protections"**.*
*The display format of the current date and time can be changed with the **Date format**, **Date separator** and **Time separator** parameters available in the menu* ☰ ▶ ⚙ ▶ ⚙ ▶ 🌐.

3. Set a time zone. To this end:

– 1 Select a region or continent.

– 2 Select a city or town.

4. Press ✓ to acknowledge.

The date and time are set.

7.1.3. CONFIGURING THE DISPLAY

To configure the display:

1. Press ▶ ▶ ▶ .

   The following parameters need setting to configure the display:

Parameter	Range of values
Screen brightness [%]	30, ..., 100
The brightness of the screen during normal printer operation.	
Dim the screen after [s]	Off, 5, ..., 60
The idle time after which the display will be dimmed to the percentage given with the **Dimmed screen brightness [%]** parameter.	
Dimmed screen brightness [%]	It is dependent on the value of the **Screen brightness [%]** parameter.
The brightness of the screen after the expiration of the idle time given with the **Dim the screen after [s]** parameter.	
When you press any point on the screen, brightness returns to normal.	
Turn off display after [min]	Off, 1, ..., 30
The idle time after which the display is off.	

   If the printer is in an error state, the display is not turned off.

   If the printer enters an error state while the display is blank, the display is woken up.

   To wake up the display that is blank, press any button on the control unit or touch the display anywhere.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.

   The display is configured.

7.1.4. SETTING UP WIDGETS

The information displayed on the main screen of the control unit can be customized with widgets on editable widget bar **1k** (see *Fig. 39 on page 44*).

To customize the widget bar:

1. Press any ➕ icon on the main screen (on the widget bar)

   or

   ▶ ▶ ▶ .

   The widget setup window is displayed (see *Fig. 59*).

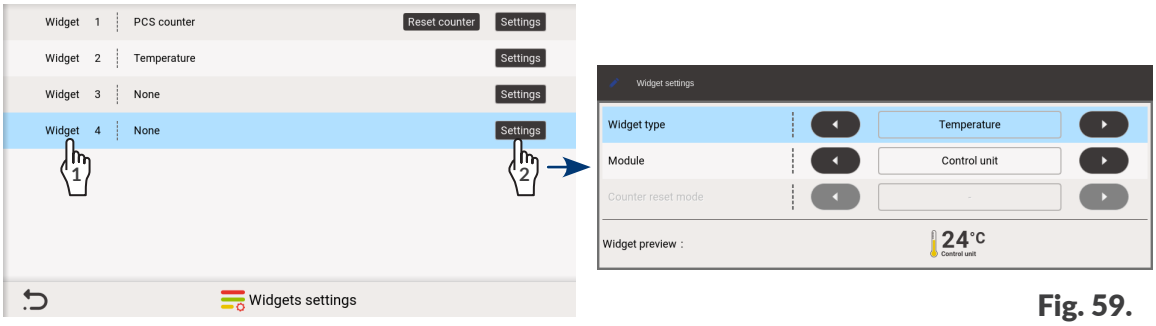


Fig. 59.

2. Select a numbered widget (an item on the main screen) you wish to create/modify.
   The selected widget is highlighted in blue.
3. Press to set up the selected widget.
   The widget setup window is displayed. Set the following in that window:

– Type of widget,
– For selected widgets: additional parameters, *e.g.* the printer module whose temperature is to be displayed or print counter reset mode.

4. Press ✓ to acknowledge.
5. Press ✓ to finish the setting up.
   The widgets are set up and the modifications you have introduced are visible on widget bar **1k** on the main screen.

7.1.5. SOUND SIGNAL SETTINGS

To modify sound signal settings:

1. Press ▶ ▶ ▶ .
   The sound signal settings involve the following parameters:

Parameter	Range of values
Sound level	**Off**, **25%**, **50%**, **75%**, **100%**

The parameter has two meanings:
- It disables sound signaling in the printer (**Off**).
- It enables sound signaling in the printer, setting volume (at **25%**, **50%**, **75%**, **100%**) at the same time.

The below-given parameters are active only when the setting of the **Sound level** parameter is different than **Off**:

Parameter	Range of values
Tapping sound	✗ / ✓

The sound signal generated while the touch screen is being used.

2. Set a value of the selected parameter.
3. Press ✓ to acknowledge.
   The sound signals are modified.

7.1.6. SETTINGS FOR SENDING DIAGNOSTIC REPORTS AFTER A CRASH

To modify report sending settings:

1. Press ▶ ▶ ▶ .
   Set the following parameters to transfer diagnostic reports:

Parameter	Range of values
Send diagnostic reports after a crash	✗ / ✓

Send diagnostic reports after a crash via the Internet or export a report to a **USB** memory device.

7.2. PRINTING SETTINGS

The printing parameters are preliminarily set while the printer is started up for the first time. For more details see ***"2.4. First Printer Startup"****.*

All the settings described in this section are available to ***ADMINISTRATOR****-type users only.*

The printing settings involve the parameters that have a direct impact on printing of the project.

To modify printing settings:

1. Press ▶ ▶ .

The printing settings involve the following parameters:

Parameter	Range of values
Impulse generator source	**Internal**, **External**
The source of timing signals, *i.e.* the signals that determine when consecutive columns of a text are printed: - **Internal**: print at a constant speed which is timed by the printer's internal generator. The printing speed is set with the **Product travel speed** parameter. This mode is recommended when the conveyor belt travel speed is known and steady. - **External**: print at a speed that depends on how fast the objects to be labeled move on the factory conveyor. Printing is timed by a shaft rotation converter (an encoder) connected to the control unit input . To adjust printing speed with an encoder correctly, it is required that the **Encoder constant** parameter be set. This mode is recommended when the conveyor belt travel speed is not steady.	
Product travel speed [m/min] or [inch/min]	**1 to 100** [m/min] / **39 to 3937** [inch/min] **1 to 200** [m/min] / **39 to 7874** [inch/min] (depending on the type of printhead)
The parameter is available only if **Impulse generator source** = **Internal**.	
Set printing speed. The speed setting must equal the real conveyor belt travel speed. The travel speed can be measured with a tool that is available after the **Auto measure** icon has been pressed.	
For more information see ***"6.3. Determining Factory Conveyor Parameters"****.*	
Encoder constant [impulses/m] or [impulses/100 inches]	**5000 to 50000** [impulses/m] or **12500 to 125000** [impulses/100 inches]
The parameter is available only if **Impulse generator source** = **External**.	
Encoder constant, *i.e.* a number of impulses generated by the encoder per unit of length (meter or inch). The constant of the encoder connected to the input in the control unit can be determined with a tool that is available after the **Auto measure** icon has been pressed.	
For more information see ***"6.3. Determining Factory Conveyor Parameters"****.*	

Parameter	Range of values
Print with encoder direction	✕ / ✓

The parameter is available only when **Impulse generator source** = **External**.

Printing is enabled only when the encoder axle turns in the active direction; the function can be used as protection against printing when the conveyor belt moves backwards.

- ✕: the printer is printing regardless of the direction in which the encoder axle turns.
- ✓: the printer is printing only when the encoder axle is turning in the active direction; it is used for preventing printing when the conveyor belt moves backwards.

  Use the parameters **Encoder direction** and **Encoder counting in reverse direction** for further setting up.

Encoder direction	Clockwise, Counter-clockwise

The parameter is available only when **Print with encoder direction** = ✓.

Set the active direction of turning of the encoder axle, that is the direction of turning in which the printer will print.

For a detailed description of how to set the active direction of turning of the encoder axle see ***"6.3. Determining Factory Conveyor Parameters"***.

Encoder counting in reverse direction	✕ / ✓

The parameter is available only when **Print with encoder direction** = ✓.

Activates/deactivates the counting of "reverse" impulses from the encoder while the conveyor belt moves backwards, *i.e.* while the encoder axle is not turning in the active direction:

- ✕ - "reverse" impulses from the encoder **are not** counted.

  If the conveyor belt starts moving backwards, printing pauses. When the conveyor belt starts moving in the proper direction, printing continues.
- ✓ - "reverse" impulses from the encoder **are** counted.

  If the conveyor belt starts moving backwards, printing pauses and the distance the conveyor belt has traveled backwards is measured out. When the conveyor belt starts moving in the proper direction, printing continues as soon as the conveyor returns to the point from which the backward movement started. Owing to that the printout is continuous even if the conveyor belt reverses.

Parameter	Range of values
Trigger signal source	**Start printing after pressing start**, **Photoeye: Printhead/Control unit** (depends on hardware configuration)

Printing trigger mode.

Select the source of the trigger signal.

Non-triggered printing mode

- **Start printing after pressing start**: printing is triggered as follows:

  for the first print: when printing is enabled by the user,

  for successive prints: when printing of the previous print is finished.

  For examples see ***Fig. 65 on page 141*** and ***Fig. 66 on page 141***.

Signal-triggered printing mode

- **Photoeye: Printhead/Control unit**: for both the first print and successive prints: printing is triggered when the beginning or the end of an object is detected by the photodetector selected as the source of trigger signal.

  Printing does not start until the so called configuration space is measured out.

  *For more information about configuration space see **"7.3. Configuring Parts of the Printing System"**.*
  *If the integrated printhead is turned (i.e. the degree of turning is set at a different value than **1**), a minimum distance between the moments when successive prints are triggered shall be ensured. For more details see **"2.2.4. Integrated Printhead"**.*

  For examples see ***Fig. 60 on page 138***, ***Fig. 61 on page 138***, ***Fig. 62 on page 139***, ***Fig. 63 on page 139*** and ***Fig. 64 on page 140***.

The trigger signal can be additionally configured with the **Trigger type** and **Product edge** parameters.

Trigger type	**Edge**, **Level**

The parameter is available only in signal-triggered printing mode, *i.e.* when the value of the **Trigger signal source** parameter is different than **Start printing after pressing start**.

The **Trigger type** parameter defines the printer's response to print trigger:

- **Edge**: when the beginning of an object is detected (and a configuration space is measured out), the printer makes one print consisting of a defined number of project reprints (the **Text repetitions** project parameter), and then waits until the beginning of another object is detected to make a successive print; this mode is dedicated to making one print on every object.

  For examples see ***Fig. 60 on page 138*** and ***Fig. 61 on page 138***.

- **Level**: when the beginning of an object is detected (and a configuration space is measured out), the printer starts making prints consisting of a defined number of project reprints (the **Text repetitions** project parameter) and continues making the prints as long as the object being labeled is within reach of the photodetector selected as the source of the trigger signal; this mode is dedicated to making many prints on one object or to labeling continuous objects, *e.g.* pipes.

  For examples see ***Fig. 62 on page 139***, ***Fig. 63 on page 139*** and ***Fig. 64 on page 140***.

Product edge	**Leading**, **Trailing**

The parameter is available only in signal-triggered printing mode, *i.e.* when the value of the **Trigger signal source** parameter is different than **Start printing after pressing start**.

Define which edge of objects to be labeled is intended to trigger prints:

- **Leading** - the leading edge of an object,
- **Trailing** - the trailing edge of an object.

Parameter	Range of values
Queuing print triggers	✕ / ✓

The parameter is available only in **signal-triggered printing mode**, *i.e.* when the value of the **Trigger signal source** parameter is different than **Start printing after pressing start**.

With this parameter you can:

- Put the photodetector a few objects before the integrated printhead; the number of objects that can be between the photodetector and the printhead is limited to 30,
- Impact on the moment when the print contents are decided (dynamic objects are updated).

- ✓: successive objects to be labeled **can** be detected between print triggering and the end of print.

  The print contents are decided (dynamic objects are updated) when the configuration space is measured out.
- ✕: successive objects **cannot** be detected between print triggering and the end of print. If a successive object to be labeled is detected during that time, the warning **Triggering too fast** is displayed.

  The print contents are decided (dynamic objects are updated) when a print is triggered.

Print till end	✕ / ✓

Pause-printing mode.

Printing can be paused in two ways: it is to be paused immediately (**pause-printing-immediately mode**) or the current print (all reprints) are to be completed (**pause-printing-when-finished mode**).

For examples see ***Fig. 65 on page 141*** and ***Fig. 66 on page 141***.

Autostart	✕ / ✓

Printing of the open project starts immediately after the printer starts working (✓) or it needs to be initiated manually (✕).

Examples of how to apply selected printing parameters and project parameters

In all presented examples:

- **A** - configuration space, or the distance in a horizontal direction between the photodetector that is selected as the source of the trigger signal and the integrated printhead,
- **B** - initial distance of a print (the **Print distance** project parameter),
- **C** - project length (the **Length** parameter is available in the project editor window - see **8** on ***Fig. 54 on page 71***),
- **D** - distance between the successive project reprints (the **Repetition distance** project parameter),
- the number of project reprints (the **Text repetitions** project parameter) is:

  3 - in ***Fig. 60***, ***Fig. 61***, ***Fig. 62***, ***Fig. 63***, ***Fig. 65*** and ***Fig. 66***,

  1 - in ***Fig. 64***.
- **Px** - project reprints (*e.g.* **P1**, **P1**, **P1**) have exactly identical contents.

Example 1

Fig. 60 and *Fig. 61* show the configuration in which:

- The printer runs in **signal-triggered printing mode** (the value of the **Trigger signal source** printing parameter differs from **Start printing after pressing start**), which means that when printing is enabled (↓) it awaits the detection of the beginning of an object (↓) (**Product edge** = **Leading**).
- **Trigger type** = **Edge**, which means that:

  When the beginning of an object is detected (↓), configuration space **A** is measured out, and then the printer makes **one** print consisting of initial distance **B** and three reprints **P1**. The entire print is made (including all reprints) even if the end of the object being labeled (↓) is detected while the print is being made.

  On completing the print, the printer waits until the beginning of an object (↓) is detected to, at first, measure out configuration space **A** and then make a successive, **single** print consisting of initial distance **B** and three reprints **Px**.

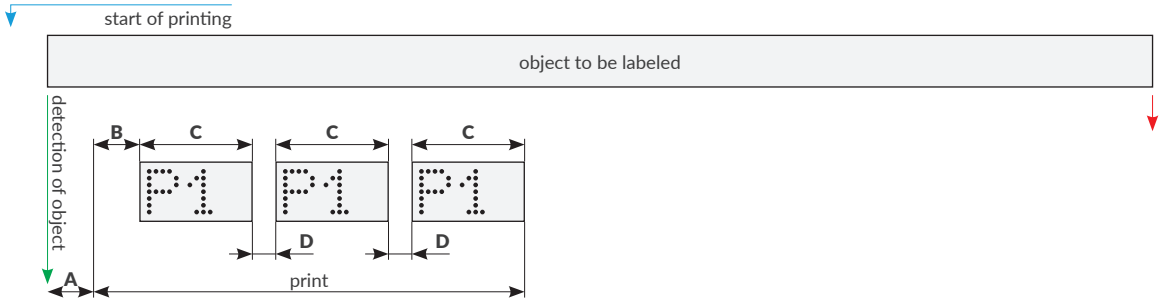


Fig. 60.

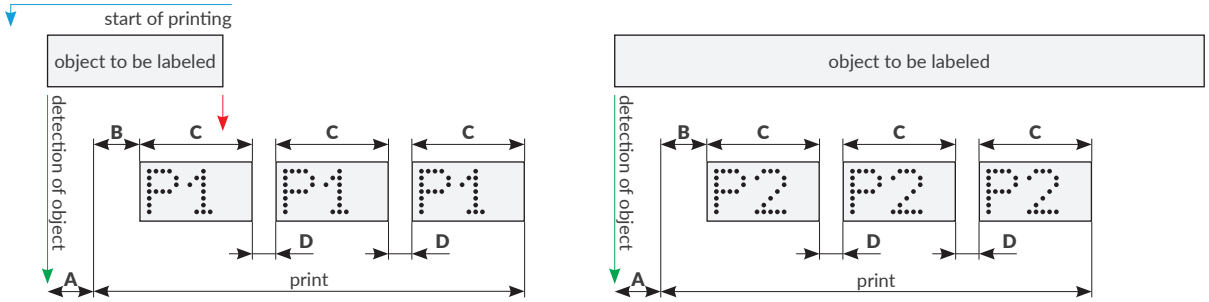


Fig. 61.

Example 2

Fig. 62 and *Fig. 63* show the configuration in which:

- The printer runs in **signal-triggered printing mode** (the value of the **Trigger signal source** printing parameter differs from **Start printing after pressing start**), which means that when printing is enabled (↓) it awaits the detection of the beginning of an object (↓) (**Product edge** = **Leading**).
- **Trigger type** = **Level**, which means that:
  When the beginning of an object (↓) is detected, configuration space **A** is measured out, and then the printer starts making successive prints consisting of initial distance **B** and three reprints **Px** each and keeps making the prints as long as the object being labeled is within reach of the photodetector selected as the source of trigger signal.
  If the end of an object (↓) is detected while a print is being made, the printer brings the current print to completion (including all reprints), and then waits until the beginning of another object (↓) is detected to, at first, measure out configuration space **A** and then start making successive prints consisting of initial distance **B** and three reprints **Px** each.
- If the distances between the beginnings of all repetitions (in all prints) are to be identical, the following condition must be met **B** = **D**.

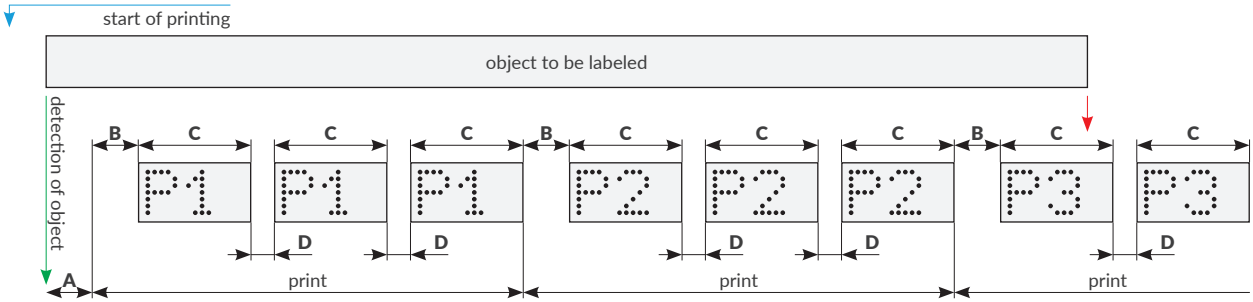


Fig. 62.

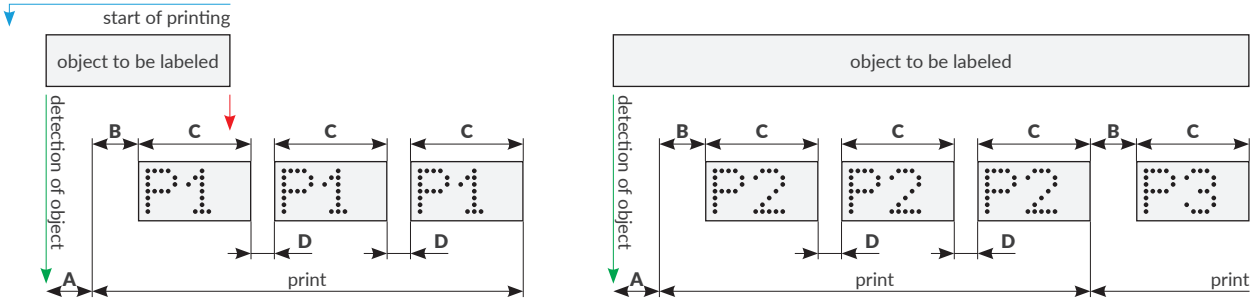


Fig. 63.

Example 3

Fig. 64 shows the configuration in which:

- The printer runs in **signal-triggered printing mode** (the value of the **Trigger signal source** printing parameter differs from **Start printing after pressing start**), which means that when printing is enabled (↓) it awaits the detection of the beginning of an object (↓) (**Product edge** = **Leading**).
- **Trigger type** = **Level**, which means that:

  When the beginning of an object (↓) is detected, configuration space **A** is measured out, and then the printer starts making successive prints consisting of initial distance **B** and one reprint **Px** each and continues making the prints as long as the object being labeled is within reach of the photodetector selected as the source of trigger signal.

  When the end of an object (↓) is detected while a print is being made, the printer brings the current print to completion and then waits until the beginning of another object (↓) is detected to, at first, measure out configuration space **A** and then start making successive prints consisting of initial distance **B** and one reprint **Px** each.

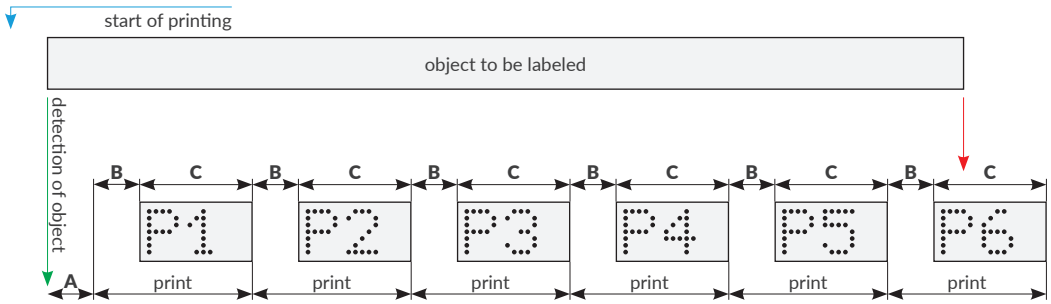


Fig. 64.

Example 4

Fig. 65 and *Fig. 66* show the configuration in which:

- The printer is in **non-triggered printing mode** (**Trigger signal source** = **Start printing after pressing start**), which means that immediately after printing has been enabled (↓) the printer starts making a print consisting of initial distance **B** and three reprints **P1**.
  The **Trigger type**, **Product edge** printing parameters are not available.
  If the printer is in printing mode, then the completion of a print is directly followed by making a successive print consisting of initial distance **B** and three reprints **Px**.
- If printing pauses (↓) while a print is being made, then:
  for **Print till end**: ✕ printing halts immediately (**pause-printing-immediately mode**),
  for **Print till end**: ✓ printing of the current print (including all reprints) continues and it does not pause until the print is completed (**pause-printing-when-finished mode**),
- If the distances between the beginnings of all reprints (in all prints) are to be identical, the following condition must be met **B** = **D**.

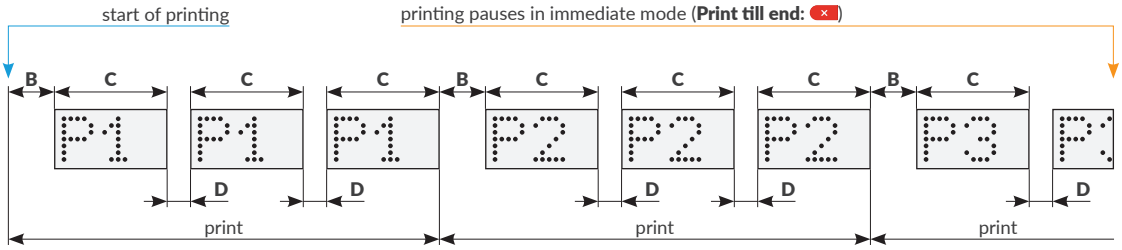


Fig. 65.

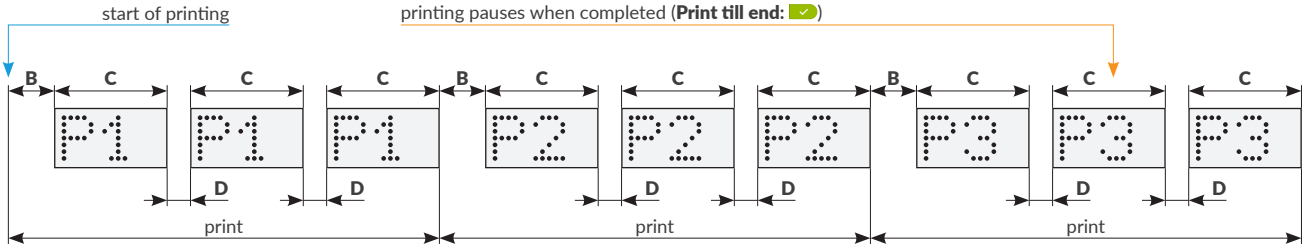


Fig. 66.

7.3. CONFIGURING PARTS OF THE PRINTING SYSTEM

*All functions described in this section are available to **ADMINISTRATOR**-type users only.*

After the printer parts have been installed on a factory conveyor (or their configuration on the conveyor has changed), the configuration data has to be entered in printer memory. The data can be entered:

- by means of the printing system configuration wizard,
- by the introduction/modification of parameters of each of the printing system parts manually.

The printing system parts are pre-configured with the wizard while the printer is started up for the first time.

*For more details see **"2.4. First Printer Startup"**.*

7.3.1. CONFIGURATION WIZARD

The printing system configuration wizard is activated while the printer is started up for the first time. The use of the wizard is also recommended after every major modification to the printing system configuration.

Minor changes to the configuration of individual parts can be entered in printer memory manually and the wizard is not needed.

1. Press ▶ ▶ to start the printing system configuration wizard.

   The following icons are available during wizard operation:

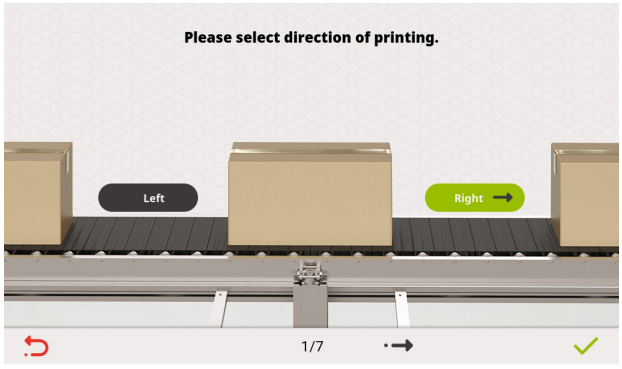
   - move to the next step; if settings made in a given step are incorrect, you are unable to move forward and the icon is inactive and displayed as ,
   - return to the previous step,
   - exit the wizard at any time and save or reject the settings you have made so far,
   - exit the wizard at any time and save the settings that have been made so far; the icon is available only if a modification has been made at any step.

2. Enter the real printing system setup on the factory conveyor to the printer, following the on-screen instructions.

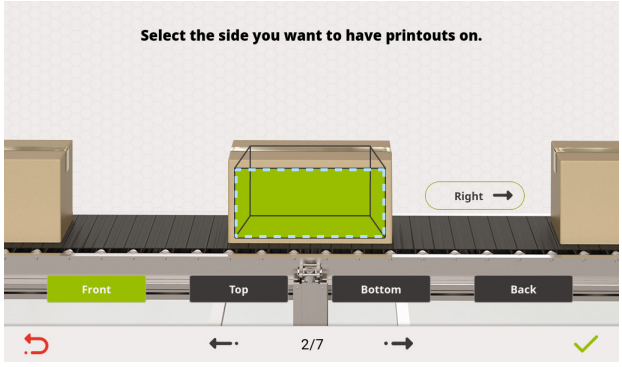
   The procedure for setting up a printing system with the wizard does not consist of a single set of operations. It depends of a number of printing system parameters.

The following parameters can be defined with the printing system configuration wizard:

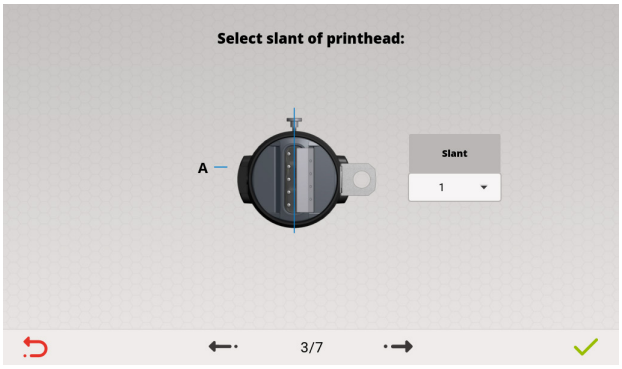
- The direction (right, left) in which the conveyor belt moves.



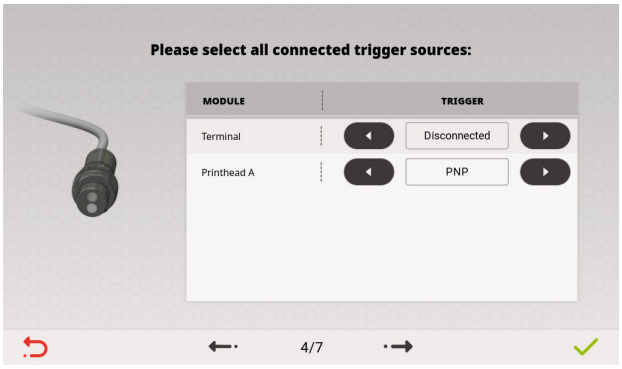
- The side (front, back, top, bottom) of an object to be labeled on which printouts are to be made.



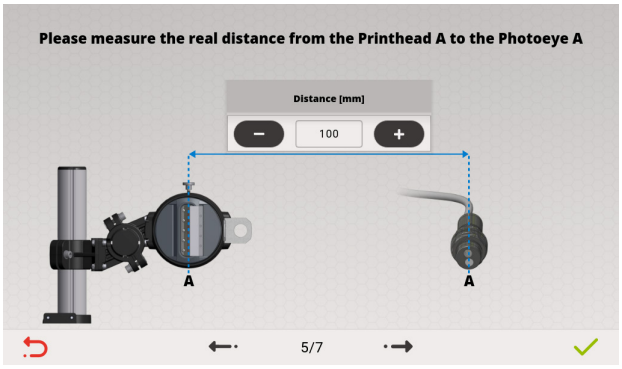
– Degree of turning of the integrated printhead.



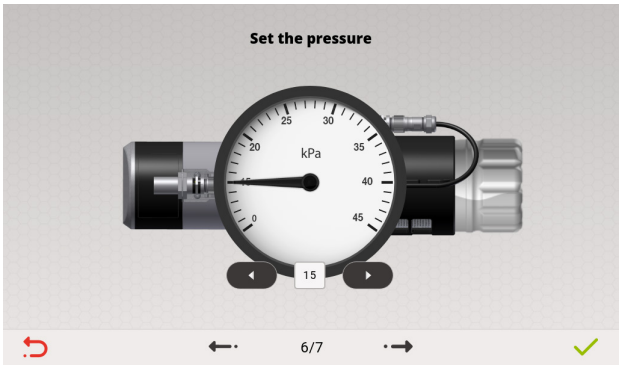
– The type (**NPN NO, PNP NO, NPN NC, PNP NC**) of trigger-signal source connected to the control unit and/or integrated printhead.



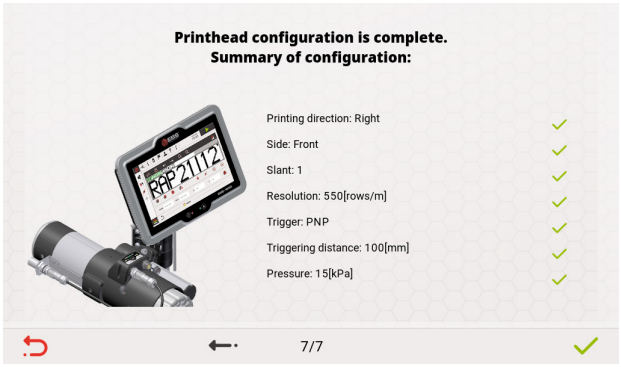
– Distance in a horizontal direction between a source (sources) of the trigger signal(s) and the integrated printhead.
For the photodetector that is set as the source of the trigger signal in printing parameters, this distance is a so-called **configuration space**.



– Pressure of the ink in the ink system, which is a part of the integrated printhead.



3. Press ✓ on the wizard's last screen to finish the setting up.
The real configuration of the printing system on the factory conveyor is entered in printer memory.



When the configuration of the printer using the wizard finishes or when you exit the wizard at any time having saved the settings you have made, the project that is currently open for printing closes.

7.3.2. CONFIGURING THE CONTROL UNIT

The control unit is configured while the printing system is being configured by means of the configuration wizard.

The function described in this chapter is designed to modify only the control unit setup without the use of the configuration wizard.

To modify control unit parameters:

1. Press ▶ ▶ ▶ |**CONTROL UNIT**|.

   The following parameters need setting to configure the control unit:

Parameter	Range of values
Direction of travel	**Left**, **Right**
The direction in which the conveyor belt moves.	
Trigger	**Disconnected**, **NPN NO**, **PNP NO**, **NPN NC**, **PNP NC**
The type of photodetector connected to the input in the control unit. A photodetector can be connected to the control unit only when no encoder is used. Otherwise the photodetector must be connected to the input in the integrated printhead.	
Trigger distance to Printhead %1 [mm] or [inch]	**0 to 5000 [mm]** or **0 to 195 [inch]**
The parameter is active if the setting of the **Trigger** parameter is different than **Disconnected**. Distance in a horizontal direction between the photodetector connected to the control unit and the integrated printhead. If the photodetector connected to the control unit is selected as the source of the trigger signal, this distance is a co-called **configuration space**.	

> *You can select the source of the trigger signal by pressing ▶ ▶ ▶ **Trigger signal source**. For more details see **"7.2. Printing Settings"**.*

2. Modify the selected parameter.
3. Press to acknowledge.

   The configuration of the control unit is completed.

7.3.3. CONFIGURING THE INTEGRATED PRINTHEAD

The integrated printhead is configured while the printing system is being configured by means of the configuration wizard.

The function described in this chapter is designed to modify only the printhead setup without the use of the configuration wizard.

To modify parameters of the integrated printhead:

1. Press ▶ ▶ ▶ |**PRINTHEAD**|.

   The following parameters need setting to configure the integrated printhead:

Parameter	Range of values
Trigger	**Disconnected**, **NPN NO**, **PNP NO**, **NPN NC**, **PNP NC**
The type of photodetector connected to the input in the integrated printhead.	
Trigger distance to first printhead [mm] or [inch/min]	**0 to 5000** [mm] or **0 to 195** [inch]
The parameter is active if the setting of the **Trigger** parameter is different than **Disconnected**.	

Distance in a horizontal direction between the photodetectorl connected to the integrated printhead and the printhead.
If the photodetector connected to the integrated printhead is selected as the source of the trigger signal, this distance is a so-called **configuration space**.

*You can select the source of the trigger signal by pressing ▶ ▶ ▶ **Trigger signal source**. For more details see "7.2. Printing Settings".*

Pressure [kPa]	**15 to 45**
Pressure of the ink in the ink system.	
Slant	**1**, **2**, **3**, **4**, **5**
Degree of turning of the integrated printhead.	

The parameter is used for reducing print height and increasing resolution in the vertical direction at the same time.

The value of the **Slant** parameter must be the same as the degree of turning of the integrated printhead in the holder (see the marker on the printhead holder).

For more details see "2.2.4. Integrated Printhead".

Parameter	Range of values
Resolution [rows/m] or [rows/100 inch]	**see the description of the parameter**

The number of dots (columns) per unit of length (1 meter or 100 inches).

The range of values of the **Resolution** parameter depends on the degree of turning of the printhead and on the type of the head:

If the type of integrated printhead is: **7N/13**, **16N/29**, **32N/58**:

- **Slant** = **1**: the value of the **Resolution** parameter changes smoothly (**200 to 800** [rows/m] or **559 to 2032** [rows/100 inch]); resolution of 550 [rows/m] (1397 [rows/100 inch]) is recommended, as it ensures that resolution in a horizontal direction equals that in the vertical direction.

  When **Slant** > **1**: the list of the available values of the **Resolution** parameter is limited to a few predefined values ([rows/m] / [rows/100 inch]):
- **Slant** = **2**: **938** / **2383***, **1875** / **4763**, **2813** / **7145**, **3750** / **9525**,
- **Slant** = **3**: **772** / **1961**, **1544** / **3922***, **2316** / **5883**, **3088** / **7844**,
- **Slant** = **4**: **668** / **1697**, **1336** / **3393**, **2004** / **5090***, **2673** / **6789**,
- **Slant** = **5**: **620** / **1575**, **1240** / **3150**, **1861** / **4727**, **2481** / **6302***.

> ** - this resolution is recommended for the selected degree of turning; resolution in a horizontal direction is close to that in the vertical direction.*

If the type of integrated printhead is: **7N/24**, **16N/56**:

- **Slant** = **1**: the value of the **Resolution** parameter changes smoothly (**100 to 400** [rows/m] or **254 to 1016** [rows/100 inch]); resolution of 275 [rows/m] (699 [rows/100 inch]) is advisable; it ensures that resolution in a horizontal direction equals that in the vertical direction.

  When **Slant** > **1**: the list of the available values of the **Resolution** parameter is limited to a few predefined values ([rows/m] / [rows/100 inch]):
- **Slant** = **2**: **466** / **1184***, **932** / **2367**, **1398** / **3551**, **1863** / **4732**,
- **Slant** = **3**: **386** / **980**, **772** / **1961***, **1158** / **2941**, **1544** / **3922**,
- **Slant** = **4**: **333** / **846**, **667** / **1694**, **1000** / **2540***, **1333** / **3386**,
- **Slant** = **5**: **310** / **787**, **620** / **1575**, **930** / **2362**, **1240** / **3150***.

> ** - this resolution is recommended for the selected degree of turning; resolution in a horizontal direction is close to that in the vertical direction.*

Side	Informational parameter

Side of an object to be labeled, on which the printhead will make prints.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.

   The configuration of the integrated printhead is completed.

7.4. CONFIGURING COMMUNICATIONS INTERFACES

*All functions described in this section are available to **ADMINISTRATOR**-type users only.*

7.4.1. GENERAL CONFIGURATION OF COMMUNICATIONS INTERFACES

To configure communications interfaces:

1. Press ▶ ▶ ▶ .

   Set the following parameters to generally configure communications interfaces:

Parameter	Range of values
Printer name	
The name that the printer uses for communication purposes. The printer name is also used as the default name of files while data is exported to a **USB** memory device.	

   *For more details see **"7.7. Exchanging Data via a USB Port"**.*

2. Modify the selected parameter.
3. Press to acknowledge.

   The general configuration of communications interfaces is finished.

7.4.2. ETHERNET

The printer can be connected to an **Ethernet** network via the connector in the control unit.

*For more details see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External connections".***

The **Ethernet** interface can be used, *e.g.* for controlling a device remotely or for receiving data from an external device; this data may then be entered to a project via a **COMMUNICATIONS PORT**-type (text or code) object / .

*For more details on how to create/edit a **COMMUNICATIONS PORT**-type text object see **"5.4.2.8. Creating/Editing a Communications port-type Text Object"**.*

*For more details on how to create/edit a **COMMUNICATIONS PORT**-type code see **"5.4.3.8. Creating/Editing a Communications port-type Code"**.*

To configure the **Ethernet** interface:

1. Press ▶ ▶ ▶

   or

   Press / / on icon bar **1b** (see *Fig. 37 on page 42*).

The following parameters need setting to configure the **Ethernet** interface:

Parameter	Range of values
Interface	**Enabled**, **Disabled**
Activate/deactivate the **Ethernet** interface.	
Wake On Lan	**Enabled**, **Disabled**
The parameter is active only when **Interface** = **Enabled**.	
To enable the LAN to activate/deactivate the printer.	
Operation Mode	**DHCP**, **Manual**
The parameter is active only when **Interface** = **Enabled**.	
Ethernet configuration mode: - **DHCP**: network connection parameters are set automatically while the connection is being established, - **Manual**: network connection parameters are set manually by means of the following parameters: **IP**, **Netmask**, **Gateway**, **DNS**. *For the information on how to set up your network connection manually contact your network administrator.*	
MAC	**Informational parameter**
MAC (Medium Access Control) address of a network device.	

2. Modify the selected parameter.
3. Press ✓ to acknowledge.

   The **Ethernet** interface is configured.

7.5. CONFIGURING USERS

The printer offers three types of privileges (types of users), each represented with a unique icon on the icon bar:

OPERATOR	ADVANCED OPERATOR	ADMINISTRATOR
		

*For more information about the types of users and on how to change the type of user see **"3.4. Types of Privileges/Users"**.*

*The functions described in this chapter are not available to **OPERATOR**-type users*  .

7.5.1. CHANGING THE USER PASSWORD

Every **ADVANCED OPERATOR**-type user  and **ADMINISTRATOR**-type user  can change their passwords and the password of every user who is at the same or lower access level. They can also secure with a password the accounts of **OPERATOR**-type users  except the primary **OPERATOR**-type user  called "Operator".

To change the user password:

1. Press  .
2. Select the user whose password you wish to change.
3. Press  .
   The inactive icon  means that you are not authorized to change the selected user's password.
4. Enter a new password.
5. Re-enter the password.
   When changing the password of the currently logged-in user, it is necessary to provide the current password for verification.
6. Press  to acknowledge.
   The password of the selected user is changed.

7.5.2. ADDING A USER

Every **ADVANCED OPERATOR**-type user  and **ADMINISTRATOR**-type user  can add a user who is at the same or lower access level.

To add a user:

1. Press  .
2. Press  .
3. Enter a name of the user.
   The user name must be different than any name of the users defined on the printer.

4. Select the type of user.
5. Enter a password.
6. Re-enter the password.
7. Press ✓ to acknowledge.
   The user is added.

7.5.3. DELETING A USER

Every **ADVANCED OPERATOR**-type user and **ADMINISTRATOR**-type user can delete every user who is at the same or lower access level except the primary **OPERATOR**-type user called “Operator”, the **ADMINISTRATOR**-type user called “Administrator” and the currently logged-in user.

To delete a user:

1. Press ☰ ▶ ⚙ ▶ 👤⚙ ▶ 👤⚙.
2. Select the user that you wish to delete.
3. Press ✕.
   The inactive icon ✕ means that you are not authorized to delete the selected user.
   In the dialog window displayed you are prompted to acknowledge the operation.
4. Press OK ,to acknowledge.
   The user is deleted.

7.5.4. CHANGING AN ACCESS LEVEL

Every **ADVANCED OPERATOR**-type user and **ADMINISTRATOR**-type user can change the access level of every user who is at the same or lower access level except the primary **OPERATOR**-type user called “Operator”, the **ADMINISTRATOR**-type user called “Administrator” and the currently logged-in user.
No access level can be changed to a higher level than the access level of the currently logged-in user.

To change an access level:

1. Press ☰ ▶ ⚙ ▶ 👤⚙ ▶ 👤⚙.
2. Select the user whose access level you wish to change.
3. Press ✎.
   The inactive icon ✎ means that you are not authorized to change name the selected user's settings.
4. Change the access level.
   If the change of an access level to a higher one applies to the account of the **OPERATOR**-type user but the account is not password-protected, than it is required that a password be created.

5. Press ✓ to acknowledge.
   The access level of the selected user is changed.

7.5.5. CHANGING THE USER NAME

Every **ADVANCED OPERATOR**-type user and **ADMINISTRATOR**-type user can change the name of every user who is at the same or lower access level except the primary **OPERATOR**-type user called “Operator” and the **ADMINISTRATOR**-type user called “Administrator”.

In order to change the user name:

1. Press ☰ ▶ ⚙ ▶ 👤 ▶ 👤.
2. Select the user whose name you wish to change.
3. Press ✎.
   The inactive icon ✎ means that you are not authorized to change the name of the selected user.
4. Enter a name of the user.
   The user name must be different than any name of the users defined on the printer.
5. Press ✓ to acknowledge.
   The name of the selected user is changed.

7.5.6. ACTIVATING A USER

If an incorrect user password is entered twenty times, access to the user’s account is disabled. The 🔓 icon appears next to the user’s name on the list of users.
Every **ADVANCED OPERATOR**-type user and **ADMINISTRATOR**-type user can activate every disabled user who is at the same or lower access level.
A new password must be created to activate a user.

To activate a disabled user:

1. Press ☰ ▶ ⚙ ▶ 👤 ▶ 👤.
2. Select a deactivated user who is marked with the 🔒 icon.
3. Press 🔓.
   The inactive icon 🔓 means that you are not authorized to activate the selected user.
4. Enter a new password.
5. Re-enter the password.
6. Press ✓ to acknowledge.
   The selected user is activated. The 🔓 icon displayed next to the user name disappears.

If the **ADMINISTRATOR**-type user called “Administrator” is deactivated and no other **ADMINISTRATOR**-type user is defined, and thereby there is nobody to follow the activation procedure, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

*For more details see **“9.3.3. Releasing Protections”**.*

7.6. GLOBAL DATA

*Global data cannot be processed by **OPERATOR**-type users.*

__ADVANCED OPERATOR__-type users can view global data but cannot modify it.

__ADMINISTRATOR__-type users have all the privileges to modify global data.

The global data used in the project that is open for printing/being printed is marked with the ▶ icon and it must not be modified/deleted.

7.6.1. GLOBAL VARIABLES

A global variable is a register that can be applied to every project that uses a text object or a matrix/bar code of a given type. The following types of global variables are available on the printer:

- **COUNTER**,
- **SHIFT CODE**,
- **CALENDAR**.

7.6.1.1. A **COUNTER**-TYPE GLOBAL VARIABLE

To create a **COUNTER**-type global variable:

1. Press ▶ ▶ .
   The global variable setup window is displayed.
2. Press ▶ .
3. Enter a name for the **COUNTER**-type global variable.
4. Configure the global variable.

   *For a detailed description of the parameters that are specific to **COUNTER**-type objects see **“5.4.2.6. Creating/Editing a Counter-type Text Object”**.*

5. Press to acknowledge.
   The **COUNTER**-type global variable is created and can be used in projects.

The following functions applicable to **COUNTER**-type global variables are also available in the setup window:

- edit the selected global variable,
- reset the selected global variable,
- delete the selected global variable.

7.6.1.2. A **SHIFT CODE**-TYPE GLOBAL VARIABLE

To create a **SHIFT CODE**-type global variable :

1. Press ▶ ▶ .
   The global variable setup window is displayed.
2. Press ▶ .
3. Enter a name for the **SHIFT CODE**-type global variable .
4. Configure the global variable.

   *For a detailed description of the parameters that are specific to **SHIFT CODE**-type objects see **"5.4.2.5. Creating/Editing a Shift code-type Text Object"**.*

5. Press to acknowledge.
   The **SHIFT CODE**-type global variable is created and can be used in projects.

The following functions applicable to **SHIFT CODE**-type global variables are also available in the setup window:

- edit the selected global variable,
- delete the selected global variable.

7.6.1.3. A **CALENDAR**-TYPE GLOBAL VARIABLE

To create a **CALENDAR**-type global variable :

1. Press ▶ ▶ .
   The global variable setup window is displayed.
2. Press ▶ .
3. Enter a name for the **CALENDAR**-type global variable .
4. Configure the global variable.

   *For a detailed description of the parameters that are specific to **CALENDAR**-type objects see **"5.4.2.4. Creating/Editing a Calendar-type Text Object"**.*

5. Press to acknowledge.
   The **CALENDAR**-type global variable is created and can be used in projects.

The following functions applicable to **CALENDAR**-type global variables are also available in the setup window:

- edit the selected global variable,
- delete the selected global variable.

7.6.2. IMAGES

An image is a graphics file in *e.g.* ***.png, *.bmp, *.jpg,*.jpeg, *.gif** formats. It can be applied to every project where an **IMAGE**-type graphic object is used.

Before they can be used in a project, graphics files shall be:

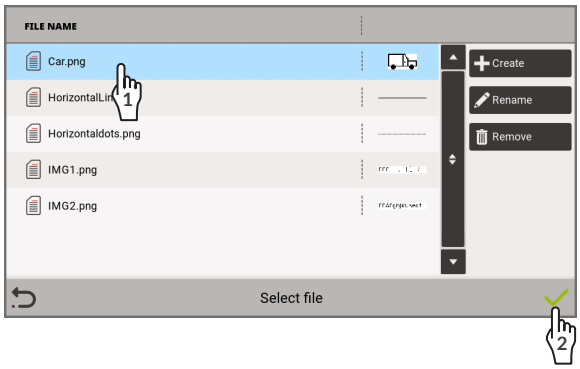
– Imported to the printer with the import function,

> *For more details see* ***"7.7.3. Exporting/Importing Other Files"***.

– Created/modified with the built-in graphics file editor.

To edit the selected graphics file:

1. Press ▶ ▶ .
   The list of graphics files available in printer memory is displayed.



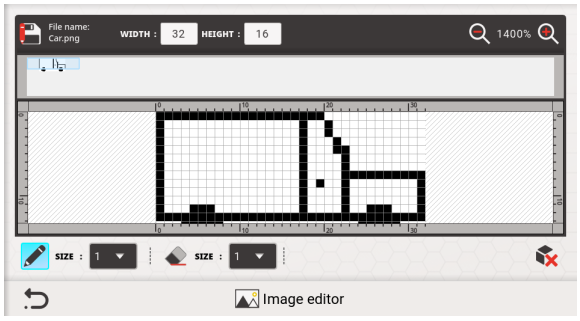
> *The graphics files used in the project that is open for printing/being printed are marked with the ▶ icon on the list and none of them can be edited/renamed/deleted.*

2. Select the graphics file that you wish to edit.
   The selected graphics file is highlighted in blue.

The following functions are available in the graphics file library:

- create a new graphics file,
- rename the selected graphics file,
- delete the selected graphics file,
- open the selected graphics file for editing.

3. Press to open the selected graphics file to edit it.
   The graphics file editor window is displayed.



The following functions are available in the graphics file editor window:

- add a point of the selected size to the graphics file,
- delete a point of the selected size from the graphics file,
- delete the whole contents of the graphics file,
- / - rescale the preview in the editor window,

Width, **Height** - set the size of the graphics file.

4. Modify the graphics file using the above mentioned functions.
5. Press ✓ to save the modifications and exit the editor window.
   The editing of the graphics file is completed.

7.6.3. TEXT FILES

A text file can be applied to every project where a **TEXT FILE**-type text object or matrix/bar code / is used.

Before they can be used in a project, text files shall be:

- Imported to the printer with the import function,

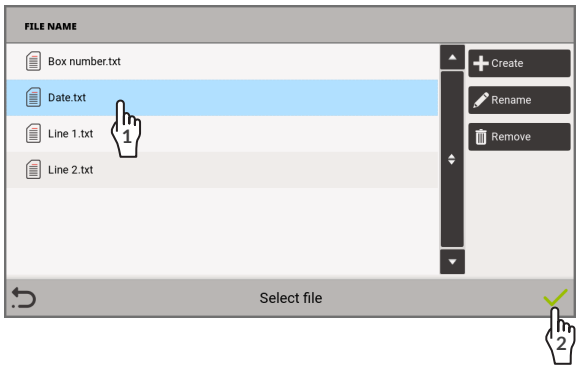
  For more details see "7.7.3. Exporting/Importing Other Files".

- Created/modified with the built-in text file editor.

To edit the selected text file:

1. Press ▶ ▶ .
   The list of text files available in printer memory is displayed.

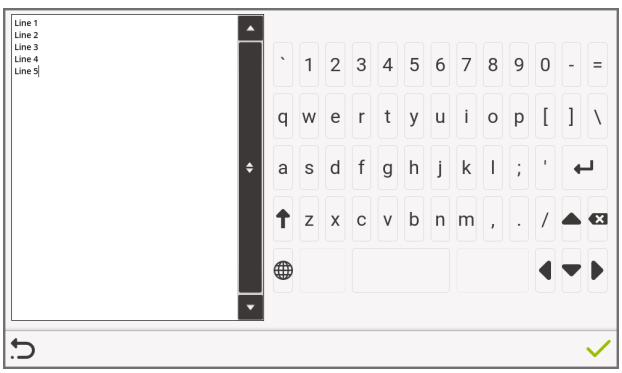
   The text files used in the project that is open for printing/being printed are marked with the ▶ icon on the list and none of them can be edited/renamed/deleted.



2. Select the text file that you wish to edit.
   The selected text file is highlighted in blue.

   The following icons are available in the text file library:
   - create a new text file,
   - rename the selected text file,
   - delete the selected text file,
   - open the selected text file for editing.

3. Press ✓ to open the selected text file to edit it.
   The text file editor window is displayed.



4. Modify contents of the text file.
5. Press ✓ to save the modifications and exit the editor window.
   The editing of the text file is finished.

7.6.4. SCRIPTS

A script can be applied to every text object or every matrix/bar code to:

- Process the object contents before a project is printed,
- Process data after it has been received by the communications interface (for **COMMUNICATIONS PORT** / only).

Before they can be used in projects, scripts shall be:

- Imported to the printer with the import function,

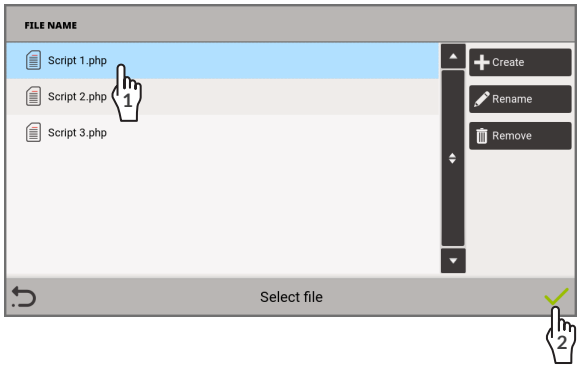
> *For more details see* ***"7.7.3. Exporting/Importing Other Files"***.

- Created/modified with the built-in script editor.

To edit the selected script:

1. Press ▶ ▶ .
   The list of scripts available in printer memory is displayed.

> *The scripts used in the project that is open for printing/bing printed are marked with the ▶ icon on the list and none of them can be edited/renamed/ deleted.*



2. Select the script you wish to edit.
   The selected script is highlighted in blue.

   The following functions are available in the script library:
   - create a new script,
   - rename the selected script,
   - delete the selected script,
   - open the selected script for editing.

3. Press ✓ to open the selected script to edit it.
   The script editor window it displayed. It is identical to the text file editor window (see ***"7.6.3. Text Files"***).
4. Modify the script.
5. Press ✓ to save the modifications and exit the editor window.
   The editing of the script is finished.

7.7. EXCHANGING DATA VIA A USB PORT

*No **data import** function can be carried out when the printer is in printing mode.*

*No **data export** functions are available to **OPERATOR**-type users .*

*The **data import** and **software update** functions are available only to **ADMINISTRATOR**-type users .*

Data can be exchanged between devices by means of an approved **USB** memory device plugged in to the connector in the control unit.

*For **USB** memory specifications see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External connections"**.*

Export files always have a filename extension of ***.zip** and are saved to the main folder in a **USB** memory device.

The default name of an export file complies with the name given to the printer with the parameter: ▶ ▶ ▶ ▶ **Printer name**.

Files can be imported from any folder.

You can import many files at the same time, but the imported files may include one ***.zip** file only.

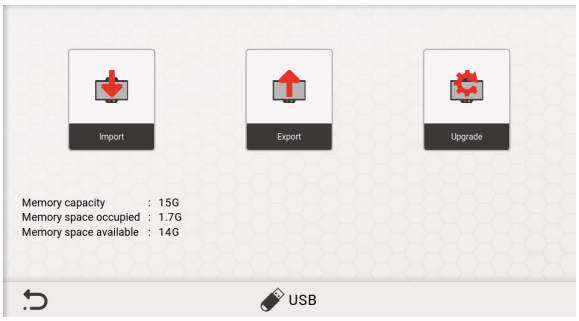
To get access to data exchange functions:

1. Plug in an approved **USB** memory device to the connector in the control unit.
   On icon bar **1b** (see ***Fig. 37 on page 42***) the icon is active.
2. Press the icon on the icon bar
   or
   Press ▶ .
   The **USB** memory window is displayed. The following function icons are available in the window:
   - **import data** such as:
   projects,
   printer settings (together with a user database),
   fonts,
   images,
   text files,
   global variables,
   scripts,
   all printer data.
   - **export data** such as:
   projects,
   printer settings (together with a user database),
   fonts,

images,
text files,
global variables,
scripts,
event history,
all printer data.
- **update the printer software**.

The following information is available in the **USB** memory window:

- **Device capacity**: total capacity of the **USB memory device**,
- **Memory space occupied**: occupied space of the **USB** memory,
- **Memory space available**: space available in **USB memory**.



7.7.1. EXPORTING/IMPORTING PROJECTS

Projects can be transferred between:

- printers,
- the printer and a **PC**.

If a project contains external objects such as an image, a text file, a script or a global data, the objects are imported/exported together with the project.
Regardless of the number of projects to be exported, one ***.zip** file is created while the projects are being exported.

To export projects to a **USB** memory device:

1. Press ▶ ▶ ▶ or ▶ ▶ ▶ .
2. Select projects to be exported to the **USB** memory device.
3. Press ✓ to acknowledge.
   The virtual keyboard and the default filename are displayed.

   The default name of an export file complies with the name given to the printer with ▶ ▶ ▶ ▶ ***Printer name***.

4. Enter a filename or leave the default name.
5. Press ✓ to acknowledge.
   The selected projects are exported to the **USB** memory device.
   A ***.zip** file is saved in the main folder.

To import projects from a **USB** memory device to the printer:

1. Press ▶ ▶ or ▶ .
2. Select the folder in the **USB** memory device and a file in ***.zip** format that contains projects to be imported to the printer.

   *If the import function is selected, the window of the **USB** memory device shows only the files whose formats are importable by the printer.*

   If you select a ***.zip** file that contains non-compliant data, the printer reports an error.
3. Press to acknowledge.

   If printer memory contains a project whose name is the same as that of an imported project, then subject to additional acknowledgment, the existing project can be overwritten or the imported project can be saved with another name.

   The selected projects are imported to the printer.

7.7.2. EXPORTING/IMPORTING PRINTER SETTINGS

A printer settings file contains the printer settings available in all of the menu branches ▶ , such as:

- general settings,
- printing settings,
- hardware setup,
- user database,
- communications interfaces configuration.

Owing to differences between the printers themselves, a hardware setup is imported only to the printer from which a given settings file has been exported. In other printers such a setup is ignored.

To export printer settings and the user database to a **USB** memory device:

1. Press ▶ ▶ ▶ or ▶ ▶ ▶ .

   The virtual keyboard and the default filename are displayed.
2. Enter a filename or leave the default name.
3. Press to acknowledge.

   The printer settings, together with the user database are exported to the **USB** memory device.

   A ***.zip** file is created in the main folder.

To import printer settings and the user database from a **USB** memory device to the printer:

While the settings import procedure is followed, the printer restarts.

1. Press ▶ ▶ or ▶ .

2. Select the folder and a file in ***.zip** format that contain the settings to be imported to the printer from the **USB** memory device.

   *If the import function is selected, the window of the **USB** memory device shows only the files whose formats are importable by the printer.*

   If you select a ***.zip** file that contains non-compliant data, the printer reports an error.
3. Press ✓ to acknowledge.
4. Follow the on-screen instructions.

   While the settings import procedure is followed, the printer restarts.

   The printer settings and the user database are imported to the printer.

   NOTE: A risk that the user database will be lost!
   After the printer settings have been imported to the printer, the user database in the imported settings file replaces the existing database.

7.7.3. EXPORTING/IMPORTING OTHER FILES

The following other files can be exported/imported via a **USB** memory device:

Font,
Images,
Text files,
Global variables (**COUNTER**-type variables, **SHIFT CODE**-type variables and **CALENDAR**-type variables)
Event history,

*Event history can be exported to a **USB** memory device, but it cannot be imported to the printer.*

Scripts.

*The above-given items (excluding event history) can be moved both among printers of the same type and among printers of various types, e.g. among the **PicAS® II** EBS-1600 and **bigJET®** EBS-1800 printers.*

Regardless of the number of projects to be exported, one ***.zip** file is created while the projects are being exported.

To export other files to a **USB** memory device:

1. Press ▶ ▶ ▶ ▶ or ▶ ▶ ▶ ▶.
2. Choose the type of file you wish to export:
   - fonts,
   - images,
   - text files,
   - global variables,
   - event history,
   - scripts.

3. Select data that you wish to export to a **USB** memory device.
   This does not apply to event history.
4. Press ✓ to acknowledge.
   The virtual keyboard and the default filename are displayed.

> *The default name of an export file complies with the name given to the printer with* ▶ ▶ ▶ ▶ ***Printer name***.

5. Enter a filename or leave the default name.
6. Press ✓ to acknowledge.
   The selected data is exported to the **USB** memory device.
   The ***.zip** file is created and saved to the main folder.

To import other files from a **USB** memory device to the printer:

1. Press ▶ ▶ or ▶ .
2. Select a folder in the **USB** memory device and a file/files:

- ***.zip** file containing items to be imported (up to 1 ***.zip** file),
- items imported directly, *e.g.* fonts (in ***.ttf**, ***.bdf**, ***.pcf** formats), images (in ***.png**, ***.bmp**, ***.jpg**, ***.jpeg**, ***.gif** formats), text files (in ***.txt** format) or scripts (in ***.php** format).

> *If the import function is selected, the window of the **USB** memory device shows only the files whose formats are importable by the printer.*

   If you select a ***.zip** file that contains non-compliant data, the printer reports an error.

3. Press ✓ to acknowledge.
   If printer memory contains an item whose name is the same as that of the imported item, then subject to additional acknowledgment, the existing item can be overwritten or the imported item can be saved with another name.
   The selected data is imported to the printer.

7.7.4. EXPORTING/IMPORTING ALL PRINTER DATA

This function is used to make a full backup copy of all printer data, including:

- Projects,
- Printer settings (including general settings, printing settings, a hardware setup, a user database, a communications interfaces configuration),
- Other files (fonts, images, text files, global variables, scripts),
- Event history.

> *Owing to differences between the printers themselves, a hardware setup is imported only to the printer from which a given settings file with full printer data has been exported. In other printers such a setup is ignored.*

To export all printer data to a **USB** memory device:

1. Press ▶ ▶ ▶ ▶ or ▶ ▶ ▶ .
   The virtual keyboard and the default filename are displayed.

The default name of an export file complies with the name given to the printer with ▶ ▶ ▶ ▶ ***Printer name***.

2. Enter a filename or leave the default name.
3. Press ✓ to acknowledge.

   The full backup copy of all printer data is exported to a **USB** memory device.

   The ***.zip** is created in the main folder.

To import all printer data from a **USB** memory device to the printer:

1. Press ▶ ▶ or ▶ .
2. Select the folder and an ***.zip** file that contains the data that is to be imported to the printer from the **USB** memory device.

   *If the import function is selected, the window of the **USB** memory device shows only the files whose formats are importable by the printer.*

   If you select a ***.zip** file that contains non-compliant data, the printer reports an error.
3. Press ✓ to acknowledge.

   The full backup copy of all printer data (excluding event history) is imported to the printer.

   NOTE: A risk that data will be lost!
   The existing printer data is replaced with the data from the imported file.

7.7.5. UPDATING SOFTWARE

The function is used for updating the system software to a newer version.

NOTE: A risk that the printer gets damaged!
The updating procedure must not be interrupted. Otherwise, the printer may get damaged.

Before you start updating the printer software:

- Check what the current software version is,

  The version of the printer software (system) can be viewed by pressing ▶ ▶ ▶ ***System*** *or* ▶ ▶ ▶ ***System***.

- Contact an authorized representative of **EBS Ink Jet Systeme GmbH** to obtain an update package; the update package is a file in ***.ebs** format,
- Export the full backup copy of all printer data to a **USB** memory device.

  For more details see ***"7.7.4. Exporting/Importing All Printer Data"***.

To update the printer software:

1. Copy the installation package to a **USB** memory device.
2. Plug in the **USB** memory device that contains the update package to the connector  in the control unit.

   The software update function is active.
3. Press  or .
4. Select the folder in **USB** memory and the ***.ebs** file that contains the update package.

   Files in other formats are not visible.
5. Press  to acknowledge.
6. Follow the on-screen instructions.

   The printer restarts as part of the updating procedure.

   The software update procedure is updated.

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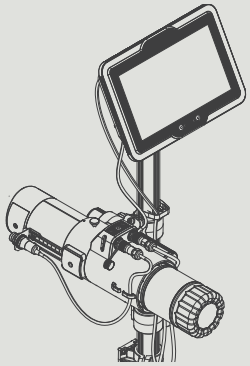
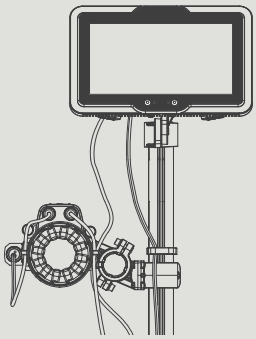
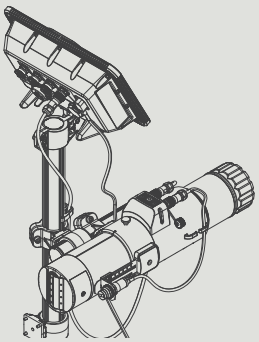
EBS® Ink-Jet Systeme

PicAS®II

EBS-1600 USER MANUAL

Industrial DROP ON DEMAND Printers
Original Instructions

EN

Part 3 of 3

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

2024.04.22

CHAPTER 8
PERIODIC MAINTENANCE

8. PERIODIC MAINTENANCE

The objective of periodic maintenance is to ensure reliable operation of the printer.

8.1. CLEANING THE NOZZLE PLATE

NOTE: A risk that the nozzle plate gets damaged!
No tools must be used while the nozzle plate is being cleaned as otherwise the plate may get damaged.

Tools required:
- protective gloves that are resistant to ink/wash-up,
- safety goggles,
- a sprayer with wash-up whose type is compatible with the type of ink in use,
- lint-free cloth,
- a metal vessel or absorbent material for collecting waste.

The nozzle plate in the integrated printhead shall be cleaned to remove dry ink residues and dirt, which may be the reason for impaired print quality.

To clean the nozzle plate:

1. If the printer is printing, press the icon or the button on the control unit to pause the printing.
2. Put a metal vessel for waste or absorbent material under the nozzle plate.
3. Spray wash-up on the nozzle plate (see ***Fig. 67***).

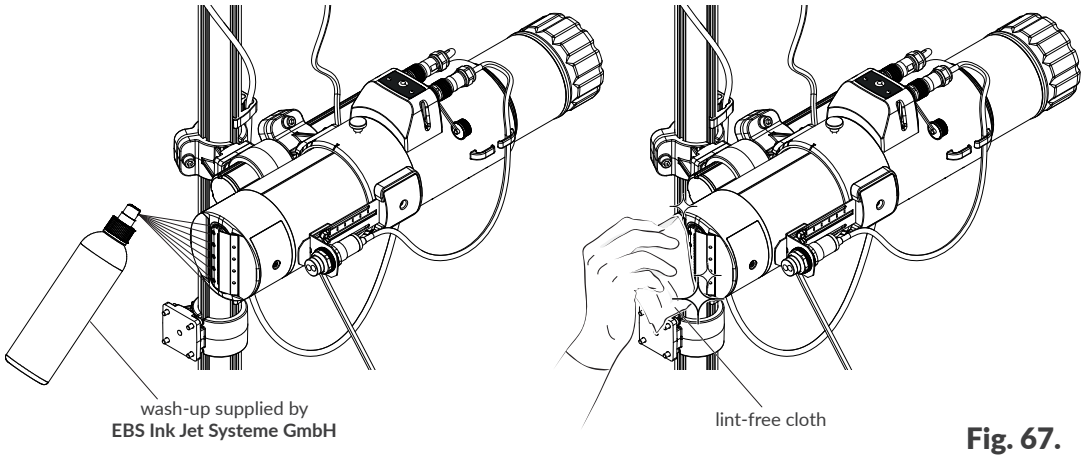


Fig. 67.

4. Use lint-free cloth to clean the nozzle plate.
5. Press the icon or the button on the control unit to resume printing.

8.2. PERIODIC REPLACEMENT/INSPECTION OF SUB-ASSEMBLIES

A periodic replacement or inspection of key sub-assemblies of the printing system is advisable to ensure reliable operation of the printer and meet the terms of warranty.

8.2.1. REPLACEMENT/INSPECTION OF INTEGRATED PRINTHEAD

The integrated printhead is designed for operation over **18 months*** of being installed in the printer. Therefore, when the aforementioned period expires, it is advisable to get the printhead replaced with a spare one or to take it in for a service. Informational messages will remind you of the necessity to get the integrated printhead replaced/inspected.

** A maximum time that may elapse from the installation of the integrated printhead in the printer to the recommended replacement/inspection as part of preventive maintenance depends on the type of ink in use.*

*The integrated printhead can be replaced by **instructed persons**.*

*For the information on how to deal with the integrated printhead after it has been removed and how to order an appropriate spare printhead, contact **EBS Ink Jet Systeme GmbH**'s authorized representative.*

The printer can be provided with a printhead of one out of five types: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58**.

The integrated printheads can be used interchangeably in a given printer on condition that they are intended for operation with one type of ink.

To obtain information about the integrated printhead installed in the printer:

1. Press  ▶  ▶  ▶ |**PRINTHEAD A**|

   or

   Press  ▶ ▶ |**PRINTHEAD A**| on icon bar **1b** (see ***Fig. 37 on page 42***).

To replace the integrated printhead:

NOTE: Sharp Elements!
*While disconnecting/connecting a bottle be careful not to get wounded with the needle that is part of the connection. **Do not touch the needle!** Avoid manipulations near the needle.*

Tools required:
- protective gloves that are resistant to ink/wash-up,
- safety goggles,
- a #5 angle hex (Allen) key,
*- a #22 open ended spanner (optionally; to tighten nut **3a** in photodetector **3**).*

1. Shut down the printer in regular mode.

*For more details see **"4.2.1. Shutting down in Regular Mode"**.*

2. Disconnect the power cord from the electrical mains.

3. Unscrew ink bottle **4a** (see ***Fig. 68***).

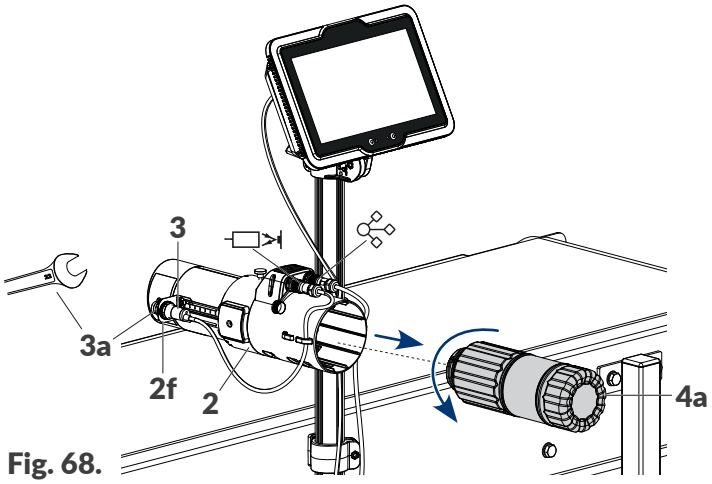


Fig. 68.

4. Disconnect the cables of integrated printhead **2**:

– the photodetector cable from the input ⊏⊐ - if the printing system is provided with a photodetector **3**,

– the **eLink** cable from the connector ⁂.

5. Unscrew nut **3a**, which fastens photodetector **3** in holder **2f**. Unscrew the nut with your fingers. Use the #**22** open ended spanner, if need be.
6. Remove photodetector **3**.
7. Use the #**5** angle hex (Allen) key to loosen the screw that is part of holder **2m**.
8. Remove integrated printhead **2** from beam **6**, together with holder **2m**.

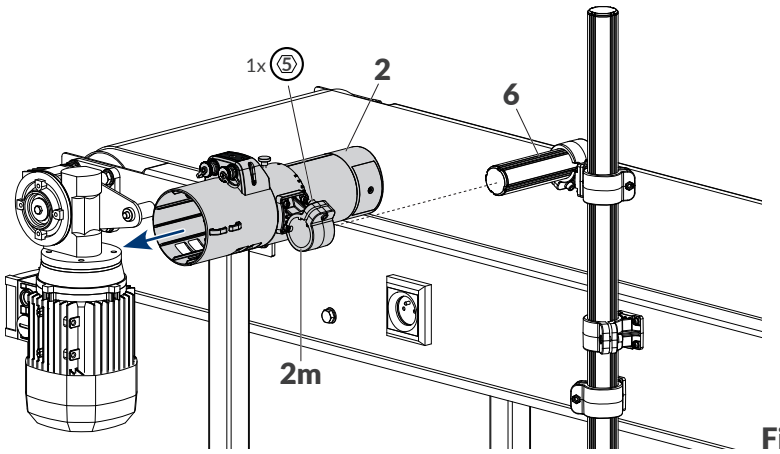


Fig. 69.

9. Install a spare/refurbished integrated printhead **2** on beam **6** (see ***Fig. 69***). Use the #**5** angle hex (Allen) key to tighten the screw that is part of holder **2m**, clamping the holder to integrated printhead beam **6**.
10. Connect the cables back to the integrated printhead **2**.
11. Connect ink bottle **4a** to the integrated printhead **2**.
12. Connect the power cord to a power outlet.
13. Start the printer.

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

As soon as the printer starts, the automatic authorization procedure for the spare/refurbished integrated printhead follows.

The sub-assembly authorization procedure requires that a bottle of ink of the target type be connected to the printer.

If the automatic authorization fails, printing cannot start, of which on-screen messages will inform you, and the printer signals an error. If that happens, contact ***EBS Ink Jet Systeme GmbH****'s authorized representative.*

The integrated printhead is replaced and active.

No printing can be enabled unless the integrated printhead is authorized. If no authorization is obtained, you will be informed of by on-screen messages and a printer error will be signaled.

After replacement, the printing system may need to be re-configured. This applies especially to the case when the spare printhead is of a different type than the removed printhead. For more details see ***"7.3. Configuring Parts of the Printing System"****.*

8.3. STORING AND TRANSPORTING

8.3.1. STORING THE PRINTER

The printer shall be stored in a dry place. It is recommended that the printer be stored in its original package.

The printer can be stored in any position.

Climatic conditions and permissible mechanical hazards in storage:

- temperature: **from 0°C to +50°C (from +32°F to +122°F)**,

  The use of certain inks may reduce the range of temperatures (see the technical data of a given ink).

- relative humidity: **from 10 to 90% without condensation**,
- impacts: **max. 1g, max 2 ms**.

The procedure for preparing the printer for storing depends on the period over which the printer is not to be used.

There are two types of preparation for storing:

- for a period of **up to 3 weeks**,
- for a period of **over 3 weeks**.

Storing for up to 3 weeks

To prepare the printer for storing during a period of **up to 3 weeks**:

1. Shut down the printer in regular mode.

   *For more details see **"4.2.1. Shutting down in Regular Mode"**.*

   No additional operations are required.

   Do not detach the ink bottle during the storage period.

When the printer that was planned to be stored over **up to 3 weeks** is taken out of storage, it can be restarted with no additional operations, but it is advisable to make a few test prints to assess print quality.

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

Storing for over 3 weeks

NOTE: Sharp Elements!
*While replacing a bottle be careful not to get wounded with the needle that is part of the connection. **Do not touch the needle!** Avoid manipulations near the needle.*

Tools required:
- protective gloves that are resistant to ink/wash-up,
- safety goggles,
- a metal vessel for collecting waste or absorbent material,
- a bottle of wash-up whose type is compatible with the type of ink in use.

*Only **instructed persons** can prepare the printer for storing over a period longer than 3 weeks.*

To prepare the printer for storing during a period of **over 3 weeks**:

1. Unscrew the ink bottle from the integrated printhead.
2. Connect a bottle of wash-up in place of the ink bottle you have removed and do not disconnect it during the whole storage period.
3. Put a metal vessel for waste or absorbent material under the nozzle plate.
4. Press and hold the button on the integrated printhead to start the purging procedure.
   Continue purging until wash-up starts flowing out of the nozzles instead of ink.
   The printer is filled with wash-up.
5. Shut down the printer in regular mode.

*For more details see **"4.2.1. Shutting down in Regular Mode"**.*

When an **over 3 weeks**' storage period expires, do the following:

1. Start the printer up.

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

2. Unscrew the wash-up bottle from the integrated printhead.
3. Connect a bottle of ink in place of the wash-up bottle you have removed.
4. Put a metal vessel for waste or absorbent material under the nozzle plate.
5. Press and hold the button on the integrated printhead to start the purging procedure.
   Continue purging until ink starts flowing out of the nozzles instead of wash-up.
   The printer is filled with ink.
6. Make a few test prints to assess print quality.

8.3.2. TRANSPORTING THE PRINTER

*The printer can be handled by **instructed persons**.*

The printer can be transported in any position.
Make sure that the nozzle plate, control unit screen, cables are not damaged during transport.
It is recommended that the printer be transported in its original package.

Permissible mechanical hazards inside the package:

- impacts: **max. 1g, max 2 ms**.

Total weight of printer with a 1l bottle of ink: about **7.6 kg** (**about 16.75 lbs**).

Weight of individual parts:

- control unit: about **2.3 kg** (**about 5.07 lbs**),
- integrated printhead with a photodetector (filled with ink): about **1.8 kg** (**about 3.97 lbs**),
- installation kit (beams, holders): about **2.5 kg** (**about 5.51 lbs**),
- bottle of ink with a capacity of:
  1 liter: about **1 kg** (**about 2.20 lbs**),
  0.5 liter: about **0.5 kg** (**about 1.10 lbs**),

CHAPTER 9
TROUBLESHOOTING

9. TROUBLESHOOTING

9.1. MESSAGE HANDLING

Three types of messages occur on the **PicAS® II** EBS-1600 printer:

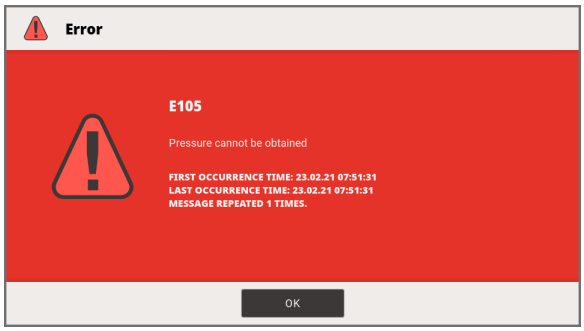
- Error messages ,
- Warning messages ,
- Informative messages .

All the types of messages are displayed in dialog boxes and saved in message history, which is available by pressing ▶ ▶ or the icon on the icon bar.

For more details see ***"6.1.1. Message History"***.

9.1.1. ERROR MESSAGES

Error messages (see the drawing on the right) are displayed in the dialog box when a fault or an error occurs.

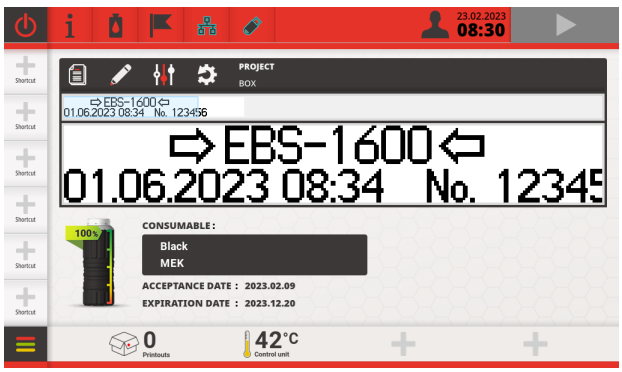


Error messages concern:

- Errors that make printing impossible, *e.g.* an empty bottle.
  The printer **enters** error condition.
- Errors arising from an operation currently being carried out by the user, *e.g.* incorrect parameter setting, a mistake in the project currently being edited.
  The printer **does not enter** error condition. Printing can continue.

If a message concerns an error that makes printing impossible, the printer automatically enters error condition where:

- The icon bar illuminates blinking red,
- The neon signs illuminate blinking red,
- The LED in the control unit illuminates red,
- The LED in the integrated printhead illuminates red,
- An optional status beacon illuminates red,
- The conveyor belt may stop moving.



If an error message is displayed, the handling procedure depends on the reason.

If an error message is displayed due to a fault in the printer (*e.g.* the empty ink bottle) and the printer automatically enters error condition:

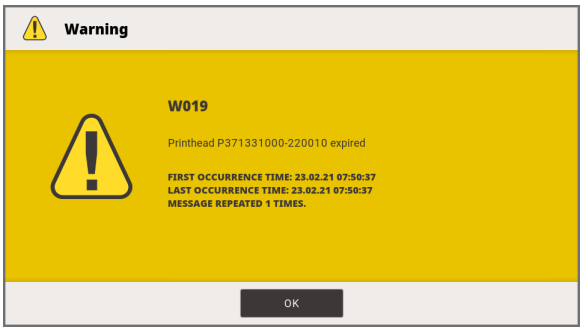
- View the contents of the error message.
- Press **OK** to acknowledge the message.
- Proceed with an action that is adequate for the message, *e.g.* install a new bottle of ink.
  The printer exits error condition.
- If the error pauses printing, re-enable printing.

If an error message is displayed due to an operation carried out by the user (*e.g.* wrong parameter setting):

- View the contents of the error message.
- Press **OK** to acknowledge the message.
- Carry out an operation adequately for the message (*e.g.* correct the wrong setting).

9.1.2. WARNING MESSAGES

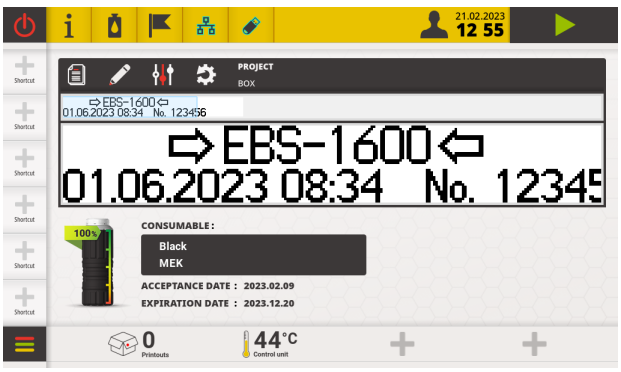
Warning messages (see the drawing on the right) are displayed in the dialog box when a condition that requires user intervention occurs.

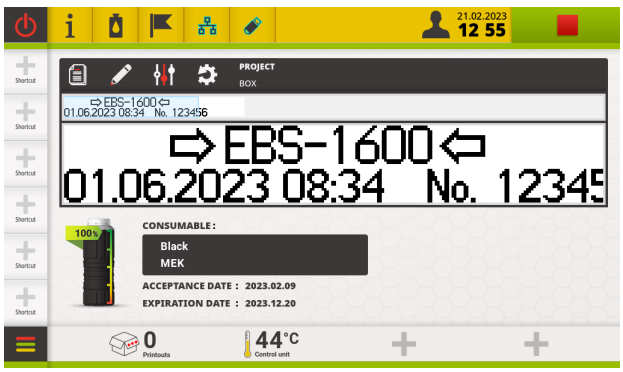


Warning messages concern:

- A situation that has occurred in the printer and requires user intervention, *e.g.* prints are triggered too fast.
  The printer **enters** warning condition.
- Situations arising from an operation currently being carried out by the user.
  The printer **does not enter** warning condition.

If a warning message is displayed due to a situation that has occurred in the printer, the printer automatically enters warning condition where:





- Printing may continue/be enabled,
- The icon bar illuminates yellow,
- The LED in the control unit illuminates blinking red,
- The LED in the integrated printhead illuminates blinking red,

– An optional status beacon illuminates yellow.

If a warning message is displayed, the handling procedure depends on the reason.

If a warning message is displayed due to a situation that has occurred in the printer and requires user intervention (*e.g.* when prints are triggered too fast) and the printer automatically enters warning condition:

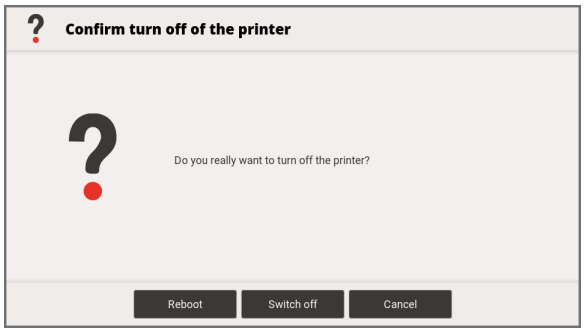
– View the contents of the warning message.
– Press **OK** to acknowledge the message.
– Proceed with an action that is adequate for the message, *e.g.* ensure an appropriate interval between the moments when successive prints are triggered.
  The printer exits warning condition.

If a warning message is displayed due to an operation carried out by the user:

– View the contents of the warning message.
– Press **OK** to acknowledge the message.
– Carry out an operation adequately for the message.

9.1.3. INFORMATIONAL MESSAGES

Informational messages (see the drawing on the right) are displayed in the dialog box when the necessity to inform the user of the existent situation arises or when the user is expected to decide on further actions.
Printing may continue/be enabled.
The printer does not change its status.



The handling of an informational message depends on whether the occurrence of the message involves the necessity for the user to decide on further actions or not.

If an informational message is displayed to inform the user of the existent situation:

– View the contents of the message.
– Press **OK** to acknowledge the message.

If an informational message is displayed to prompt the user to make the decision on further actions:

– View the contents of the message.
– Make a decision on further actions by pressing the relevant button, *e.g.* **Yes** or **No**.
– The printer carries out an appropriate operation, *e.g.* restarts itself.

9.1.4. LIST OF MESSAGES

The following table contains the list of all messages that can be displayed on the printer. Each of the messages has a unique identifier (**ID**) regardless of the selected language. The first letter of the identifier means the type of message:

- **E**: error message,
- **W**: warning message,
- **I**: informational message.

ID	Contents
	Error messages
E001	Incorrect ink container data received from IMS system.
E003	Ink out of date. Consumable rejected.
E004	Deactivated consumable
E006	Consumable %1 rejected. Incorrect solvent type. Proper consumable symbol: %2 where a, b, c are any characters
E007	Ink from a different manufacturer. Consumable rejected.
E008	Consumable %1 rejected. Incorrect color. Proper consumable symbol: %2 where a, b, c are any characters
E009	Consumable %1 rejected. Different Pigmentation type. Proper consumable symbol: %2 where a, b, c are any characters
E010	Consumable %1 rejected. Incorrect ink type. Proper consumable symbol: %2 where a, b, c are any characters
E011	Consumable %1 rejected. Different than previously used. Proper consumable symbol: %2 where a, b, c are any characters
E012	Image file missing.
E013	Font type missing.
E014	Text file missing.
E015	Global counter missing.
E016	Global shift code missing.
E017	Global calendar missing.
E018	Project loading failed.
E019	Project file does not exist.
E022	Missing object.
E023	Project file damaged.
E045	Barcode data is incorrect (unallowed characters detected for current barcode type)! Please correct the data.
E046	Barcode data length is incorrect! Please correct the data.
E048	Limit of invalid activation codes exceeded . Printer will switch off.
E049	Invalid activation code.
E066	Control unit overheated
E072	Printhead %1 is overheated
E100	Too many wrong answers for activation codes. New code will be generated.

ID	Contents
	Warning messages
W006	Ink level low
W009	Objects out of printing area.
W012	Truncated font.
W013	Triggering too fast
W014	Printing too fast
W019	Printhead %1 expired
W023	Option unavailable.
W024	Incorrect option.
W025	Maximum number of pending printouts exceeded
	Informational messages
I001	Printer enabled by unlock code. Remaining operating time: %1
I002	Ink expires on %1
I004	New ink container %1
I008	Improper shutdown detected which may cause data damage or device malfunction. Please always follow the correct shutdown procedure.
I010	No project opened
I016	Unlock code accepted.
I023	This operation is not allowed in tuning mode.

The data item %1, which occurs in some of the above-given messages, is replaced with corresponding data, e.g. a module number/symbol, while the message is being displayed.

9.2. DIAGNOSTIC

9.2.1. PRELIMINARY CHECKS

Before you proceed to locate a faulty component, it is advisable to conduct preliminary checks such as:

- Visual inspection, to detect problems such as dirty parts, ink leakage, or damaged/disconnected cables/tubes,
- Verification of messages, information about the printer, consumables and settings, which can help identify the source of the problem,
- Testing parts and interfaces.

*For more details see **"9.2.2. Testing Parts and Interfaces"**.*

9.2.1.1. VISUAL INSPECTION

Part to be checked	Potential problems
Integrated printhead.	- Dirty nozzle plate. - Ink leaks from the integrated printhead. - No bottle of ink. - Ink bottle is not screwed in completely.
Cabling/accessories.	- Damaged/detached cables. - Power cord detached from the mains electrical supply or from the control unit. - Dirty photodetector. - Detached photodetector connector.
Control unit.	- Damaged LCD.
Others.	- Objects to be labeled are beyond the reach of the photodetector that is selected as the source of the trigger signal. - Space between successive objects on the conveyor belt is too small. - Unsteady contact between the encoder roller and the conveyor belt. - Objects to be labeled move in front of the face of the integrated printhead from the wrong side (from the slide side).

9.2.1.2. VERIFICATION OF MESSAGES, INFORMATION AND SETTINGS

To facilitate diagnostic, verify the following:

- Contents of the project that is open for printing/being printed.
  You can start editing the project that is open for printing/being printed by pressing the  icon on the main screen.
- Parameters of the project that is open for printing/being printed.

You can start modifying parameters of the project that is open for printing/being printed by the icon on the main screen.

- Printing parameters.
  You can proceed to edit printing parameters by pressing ▶ ▶ .
- Printer settings.
  You can proceed to edit various groups of printer settings by pressing ▶ .
- Compliance of the printing system configuration entered into the printer with the real configuration of the printing system on the factory conveyor.
  The configuration of the printing system can be verified/modified by **ADMINISTRATOR**-type users by pressing ▶ ▶ .
- Messages.
  The list of messages can be displayed by pressing ▶ ▶ or on the icon bar.
- Information about the printer and consumables.
  You can gain access to various groups of information about the printer and consumables by pressing ▶ or the icon on the icon bar.

9.2.2. TESTING PARTS AND INTERFACES

*All functions described in this section are available to **ADMINISTRATOR**-type users only.*

9.2.2.1. TESTING THE STATUS BEACON

Status beacon **D** (see ***Fig. 70***) is subjected to a test to check whether the beacon connected to output in the control unit functions correctly or not.

*For more details see **"2.3.3.1. Status beacon"**.*

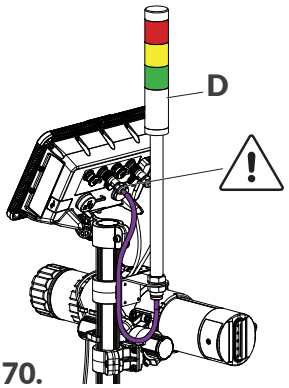
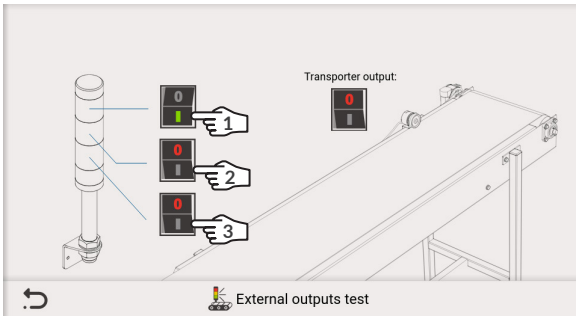


Fig. 70.

To test the status beacon:

1. Press ▶ ▶ ▶ .
   The diagnostic screen is displayed.
2. To test each of the beacon sections:

- Press to test the red section,



- Press to test the yellow section,
- Press to test the green section.

If the beacon section under test does not respond, the section or cabling may be damaged.

If none of the beacon sections responds, the beacon may be damaged or incorrectly connected to the control unit.

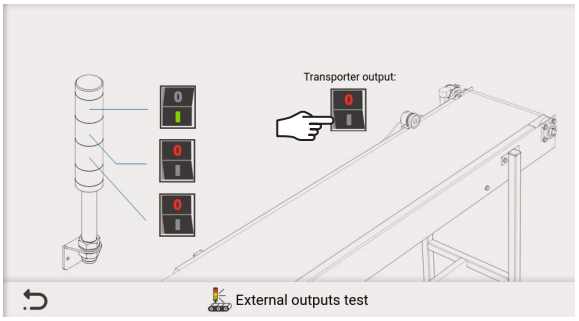
3. Press ⮌ to exit the diagnostic screen.

9.2.2.2. TESTING THE CONVEYOR STOPPAGE OUTPUT

The conveyor stoppage output is tested to check whether the factory conveyor connected to output ✋ in the control unit is correctly controlled or not, *i.e.* whether it stops if an error that prevents printing occurs.

To test the conveyor stoppage output:

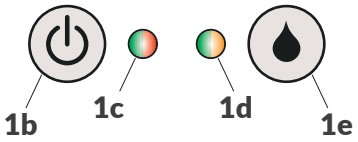
1. Press ☰ ▶ 🔧 ▶ 📄 ▶ 🚚.
   The diagnostic screen is displayed.
2. Press to test the output.
   If the factory conveyor does not respond, this may mean that it is incorrectly connected to the control unit or that the cable between the conveyor and the control unit is damaged.
3. Press ⮌ to exit the diagnostic screen.



9.2.2.3. TESTING THE CONTROL UNIT

The control unit is tested to check whether the following function correctly or not:

- LED indicators **1c**, **1d**,
- Buttons **1b**, **1e**,
- LCD display.

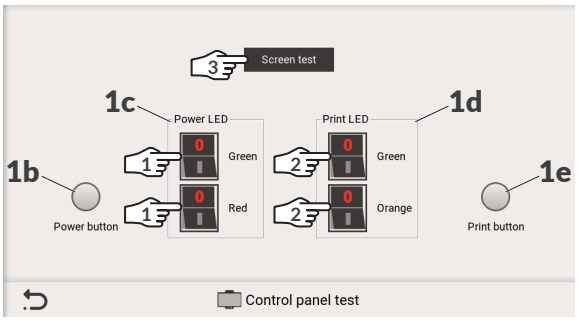


To test the control unit:

1. Press ☰ ▶ 🔧 ▶ 📄 ▶ 🖵.
   The diagnostic screen is displayed.

- Press to test LED indicator **1c** (for glowing green and red separately).
- Press to test LED indicator **1d** (for glowing green and orange separately).
  The diagnostic screen also shows the states of buttons **1b**, **1e**.
- Press to move to test the LCD display with one out of the test images available or with any image that is stored in **USB** memory.

2. Press ⮌ to exit the diagnostic screen.



9.2.2.4. TESTING THE ENCODER

Encoder **E** (see ***Fig. 71***) is tested to check whether the rotational speed sensor connected to output in the control unit functions correctly or not.

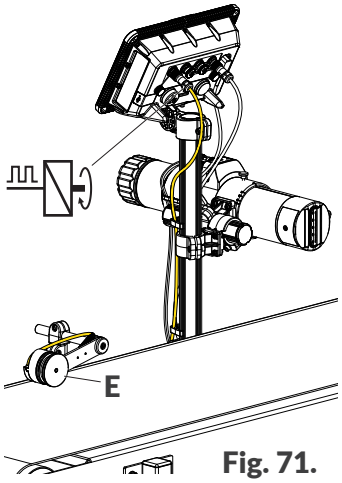
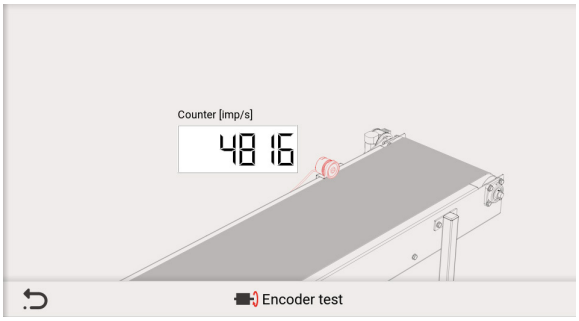


Fig. 71.

*For more details see **"2.3.3.2. Encoder"**.*

To test the encoder:

1. Press ▶ ▶ ▶ .
   The diagnostic screen is displayed.
   If the encoder axle is turning, the diagnostic screen displays the number of impulses generated by the encoder per second.



   If no number is displayed (while the encoder axle is turning), this may mean that the encoder is damaged or incorrectly connected to the control unit.
2. Press to exit the diagnostic screen.

9.2.2.5. TESTING A PHOTODETECTOR

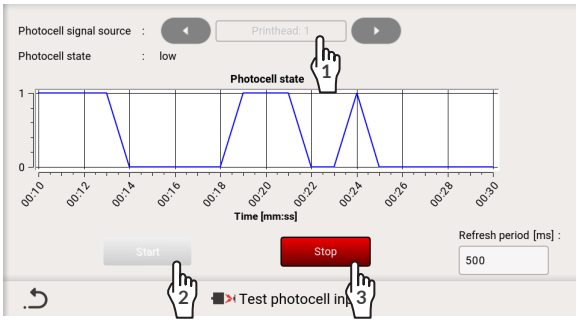
Photodetectors are tested to confirm whether the photodetectors connected to:

- input in the integrated printhead
  and/or
- optionally to input in the control unit if no encoder is connected)

function correctly or not.

To test a photodetector:

1. Press ▶ ▶ ▶ .
   The diagnostic screen is displayed.
2. Select the module to which the photodetector under test is connected.
3. Press to run the test.
4. Cover the photodetector under test with your hand, observing the chart on the diagnostic screen at the same time.
   No change of state of the photodetector on the diagnostic screen (although you cover the photodetector with your hand) may suggest that:



- The photodetector is damaged,

- The photodetector is incorrectly connected to the integrated printhead or to the control unit,
- The module to which the photodetector is connected is incorrectly indicated in the diagnostic window.

5. Press to finish the test.

On the diagnostic screen, you can also set test parameters such as Refresh period [ms].

6. Press to exit the diagnostic screen.

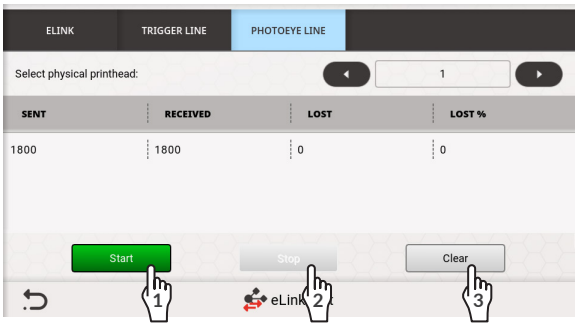
9.2.2.6. TESTING THE UNIVERSAL INTERFACE ELINK

The universal interface **eLink** is tested to verify correct operation (including continuity of the wires) of all the circuits that are part of this interface. *i.e.*:

- printing triggering circuit,
- printing timing circuit,
- data exchange circuit (**eLink-Ethernet**).

To test the printing triggering circuit:

1. Press ▶ ▶ ▶ ▶ ▶ |**PHOTOEYE LINE**|.
   The diagnostic screen is displayed.
2. Press to run the test.
   Transmission parameters are displayed.
3. Press to finish the test.



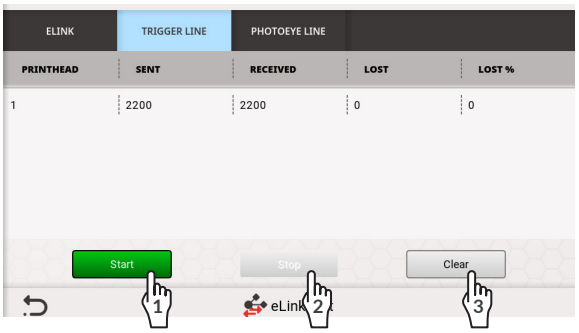
On the diagnostic screen, you also can:

- Clear the test results and start anew.

4. Press to exit the diagnostic screen.

To test the printing timing circuit:

1. Press ▶ ▶ ▶ ▶ ▶ |**TRIGGER LINE**|.
   The diagnostic screen is displayed.
2. Press to run the test.
   Transmission parameters are displayed.
3. Press to finish the test.



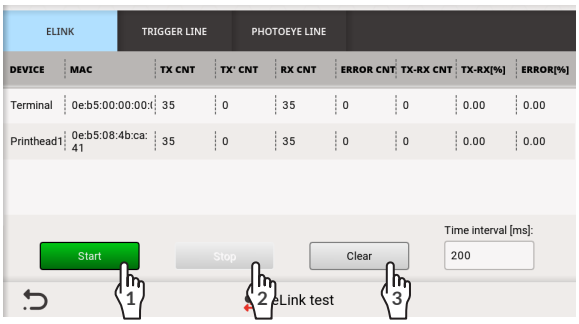
On the diagnostic screen, you also can:

- Clear the test results and start anew.

4. Press  to exit the diagnostic screen.

To test the data exchange circuit (**eLink-Ethernet**):

1. Press  ▶ |**ELINK**|.
   The diagnostic screen is displayed.
2. Press to run the test.
   Transmission parameters are displayed.
3. Press to finish the test.



On the diagnostic screen, you also can:

- Clear the test results and start anew,
- Set test parameters such as Time interval [ms] between data frames and the length of a data frame.

4. Press  to exit the diagnostic screen.

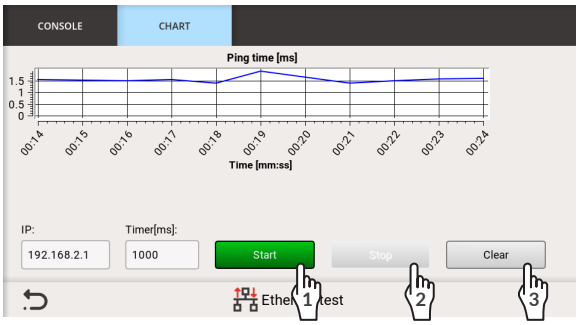
9.2.2.7. TESTING THE ETHERNET INTERFACE

The **Ethernet** interface is tested to check whether communication via the interface is effective or not.

The printer must be connected to **Ethernet** with a known **IP** address while a test is being carried out.

To test the **Ethernet** interface:

1. Press  .
   The diagnostic screen is displayed, where the test results are visualized in two modes:
   |**CONSOLE**|: text mode,
   |**CHART**|: timeline chart mode.
2. Press to run the test.
   PING parameters and the **IP** address are displayed.
3. Press to finish the test.



On the diagnostic screen, you also can:

- Clear the test results and start anew,
- Set test parameters such as the **IP** address and the time interval [ms] between test packets that are sent out (PING).

4. Press  to exit the diagnostic screen.

9.2.3. DIAGRAM FOR SOLVING PROBLEMS

The problem solving diagram contains a list of potential irregularities and a list of recommended actions that should be taken after a given irregularity has occurred.

Before you proceed with further diagnostic, it is necessary that preliminary checks be made.

*For more details see **"9.2.1. Preliminary checks"**.*

If the problem concerns a part or an interface that can be tested with tests available in the printer, it is advisable to carry out a test on the problematic part/interface.

*For more details see **"9.2.2. Testing Parts and Interfaces"**.*

Then, identify the irregularities on the list and take the actions that are given in the following diagram.
After solving the problem, acknowledge the message displayed.
If you have not managed to solve the problem by yourself, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

Irregularity	Recommended action
The LCD display in the control unit is blank. The LEDs in the control unit and in the integrated printhead do not emit any light.	- Check the power cord and whether it is connected to the mains electrical supply and to the control unit or not. - Check mains voltage.
Touch screen is not working.	- Contact an authorized representative of **EBS Ink Jet Systeme GmbH**.
Incorrect system time or date.	- Set the correct date and time in the printer. - Select the correct time zone. - If you have to set the date back to make it correct, contact an authorized representative of **EBS Ink Jet Systeme GmbH** and carry out the protection release procedure.
Printing cannot start.	- Wait until the printer is ready to print. - Select a correct project to print.

Irregularity	Recommended action
A font, image, text file, global variable, script used are not available. The object that contains an error is highlighted in red. No project can be open for printing.	- Import/create the missing item. or - Use a font that is available. or - Delete the project and create a new project using available fonts, images, text files, global variables.
Existing project is not shown in the project list.	- Make sure that no filter is active in the project library.
Incorrect project contents.	- Review and correct project contents.
Uneven print resolution in horizontal direction when printing is timed by the printer's internal generator, *i.e.*  **Impulse generator source = Internal**.	Conveyor belt travel speed is not steady. - Apply an encoder. - Change the source of timing signals to encoder, *i.e.*  **Impulse generator source = External**.
Prints are too pale or too bold.	- Adjust print legibility to the type of surface by setting the **Ink droplet size** project parameter.
Slant prints.	- Check whether the setting of the **Slant** parameter is the same as the degree of turning of the integrated printhead in the holder or not (see the mark on the printhead holder).
Blurred prints.	Objects move in front of the face of the integrated printhead from the wrong side. Contact between the object and the slide smudges the ink. - Change the position of the slide. - Change the direction in which objects move in front of the integrated printhead.
Some of the nozzles do not print.	Dirty nozzle plate in the integrated printhead. - Carry out the nozzle plate cleaning procedure. - Start the purging procedure. - Start the printing unit tuning procedure. - Contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

Irregularity	Recommended action
Irregular print distortions or fading.	Air locked in the integrated printhead. - Start the purging procedure. - Contact an authorized representative of **EBS Ink Jet Systeme GmbH**.
Prints are incorrectly positioned on objects.	- Review and correct project parameters and printing parameters. - Check whether the printing system setup entered into the printer is the same as the real setup on the factory conveyor or not.
Irregular splashes of ink around prints.	- Reduce the distance between the integrated printhead and objects to be labeled.
Empty ink bottle.	- Replace the ink bottle.
No prints although no error is signaled.	- Review and correct the contents of the project that is open for printing. - Check whether the photodetector selected as the source of the trigger signal is clean or not. - Check whether the objects to be labeled are within the reach of the photodetector that is selected as the source of the trigger signal. - Check the photodetector and encoder set-up, if the latter is in use. - Check the printing parameters that relate to print triggering. - Check whether the printing system setup entered into the printer is the same as the real setup on the factory conveyor or not. - Test the universal interface **eLink**. For more details see *"9.2.2.6. Testing the universal interface eLink"*. - Make a test print.
Some prints are skipped.	- Reduce printing speed. - Increase the space between objects to be labeled. - Queue print triggers by pressing ▶ ▶ ▶ **Queuing print triggers**: .

Irregularity	Recommended action
Print endings missing when the degree of turning of the integrated printhead is different than **1**.	- Increase the length of the project you are printing. - Increase the space between objects to be labeled (between the moments when successive prints are triggered).
Ink bottle or **IMS** (Ink Monitoring System) errors.	- Replace ink bottle with a correct one. - Contact an authorized representative of **EBS Ink Jet Systeme GmbH** to enter service mode (in which printing can continue over a period of 50 hours).
ADMINISTRATOR-type user cannot log in. Unknown password of the **ADMINISTRATOR**-type user called “Administrator”.	- Contact an authorized representative of **EBS Ink Jet Systeme GmbH** and carry out the protection release procedure to restore the default password for the **ADMINISTRATOR**-type user called “Administrator”.

9.2.4. SENDING DIAGNOSTIC REPORTS AFTER A CRASH

If a crash occurs and then the printer is restored to working order, you can send the crash report to the manufacturer.

The functionality is enabled if you set the parameter ▶ ▶ ▶ ▶ ***Send diagnostic reports after a crash*** *accordingly.*

To send the manufacturer the diagnostic report after a crash:

1. Read the privacy policy in the window that is displayed automatically.
2. Accept the privacy policy by ticking the box **I confirm privacy policy**.
3. Save the report to a **USB** memory device by pressing the button **Export to USB** or send the report to the manufacturer via the Internet by pressing the button **Send via internet.**
   The e-mail address to which the report can be sent is quoted in the privacy policy.
4. If the report is saved or sent correctly, the following message is displayed in the window: **Diagnostic data has been saved. Your notification ID: %1**.

9.3. SERVICING

9.3.1. PURGING THE INTEGRATED PRINTHEAD

*The integrated printhead should be purged by **instructed persons**.*

Tools required:
- protective gloves that are resistant to ink/wash-up,
- safety goggles,
- absorbent material or a metal vessel for collecting waste.

The integrated printhead is purged to:

- Clean clogged nozzles,
- Remove the air trapped in the printer,
- Fill the integrated printhead with cleaner/ink.
- Purge the printer, after prior connection of a bottle of cleaner.

The purging procedure should be carried out for the integrated printhead when:

- Some dots are missing on first prints made after an idle period,
- Dot sizes on prints vary.

Purging consists in opening of all nozzles and jetting of ink/cleaner through the nozzles under pressure at the same time.

To carry out the purging procedure for the integrated printhead:

1. If the printer is printing, press the icon or the button on the control unit to pause the printing.
2. Put absorbent material or a metal vessel for waste under the nozzle plate.
3. Press and hold the button on the integrated printhead to start the purging procedure. The plate is purged as long as the button is pressed; the time of purging is limited by the total sum of all rinsing cycles per minute; the sum must not exceed 30 seconds. While the nozzle plate is being purged, the LED illuminates blinking green.
4. Press the icon or the button on the control unit to resume printing.

You can also start purging the integrated printhead by pressing the **Purging** icon while the procedure for tuning the printing unit in the integrated printhead is being followed.

9.3.2. TUNING THE PRINTING UNIT

*The function is not available to an **OPERATOR**-type user .*

*The integrated printhead should be tuned by **instructed persons**.*

Tools required:
- protective gloves that are resistant to ink/wash-up,
- safety goggles,
*- a #**2.5** hex (Allen) key with a ball tip,*
*- a #**T6 Torx** screwdriver.*

Dirt on the nozzle plate or air trapped in the printer may impair print quality. Therefore, before tuning the printing unit in the integrated printhead, it is advisable to:

– Clean the nozzle plate in the integrated printhead

*For more details see **"8.1. Cleaning the Nozzle Plate"**.*

and

– Carry out the purging procedure for the integrated printhead for a short time.

*For more details see **"9.3.1. Purging the Integrated Printhead"**.*

Then test prints should be made and the impact of the cleaning and purging on print quality should be assessed.
Tune the printing unit in the integrated printhead only when the above-mentioned actions do not improve print quality. The tuning procedure should be carried out especially when the size of dots jetted by one of the nozzles is different than the size of dots jetted out by the other nozzles.
Fig. 72 shows an example of a print made by the printhead in which nozzle **number 6** needs tuning.

Fig. 72.

To carry out the tuning procedure for the printing unit in the integrated printhead:

1. Position the printhead in the starting position of the holder **2n** (rotation degree = **1**; see ***Fig. 73***). When the degree of turning of the integrated printhead in holder **2n** is temporarily set at **1**:

– You have easy access to adjustment screws,

– Test prints made in the process of tuning are not slant.

*For more details on how to change the degree of turning of the integrated printhead see **"2.3. Installing the Printer"** ▶ **"2.3.1. Additional Information"**.*

2. Check whether photodetector **3** restricts access to blanking plate **2g** (or to the adjustment screws that are blanked out by the plate but are needed at a further stage of the procedure) or not. The blanking plate and photodetector **3** are on the same side of the integrated printhead. If

access to blanking plate **2g** is free, skip this step. Otherwise, it is advisable to change the position of photodetector **3** by moving it towards the back of the integrated printhead.

To change the position of photodetector **3**:

- Remember or mark the position of photodetector **3** in holder **2f**; this will help you restore the original position of photodetector **3** after completion of the tuning procedure,
- Loosen two butterfly nuts that hold photodetector **3** in the correct position,
- Move the photodetector **3** towards the back of the integrated printhead as much as it is needed to gain access to the blanking plate **2g** and to the adjustment screws blanked out by the plate,
- Tighten the two butterfly nuts that hold the photodetector **3** in a temporary position,

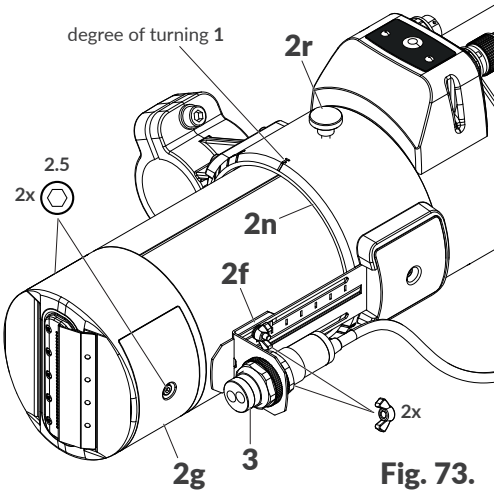


Fig. 73.

3. Use a #**2.5** hex key with a ball tip to loosen the screws that fasten blanking plates **2g** on both sides of the integrated printhead (see ***Fig. 73 on page 192***).

   The screws cannot be screwed out completely as they are part of the blanking plates.

4. Remove the blanking plates **2g** (see ***Fig. 74***).

   If blanking plates **2g** are removed, you will gain access to the slots where adjustment screws are.

   The number of the adjustment screws equals the number of nozzles in the integrated printhead, that is:

   7N/13, **7N/24**: 7 screws,

   16N/26, **16N/56**: 16 screws,

   32N/58: 32 screws.

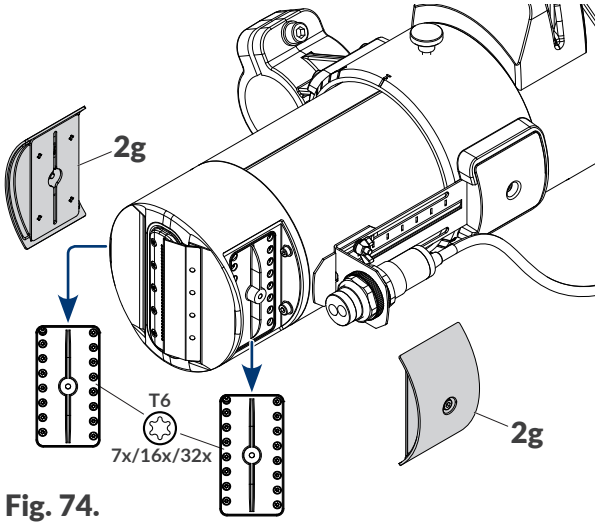


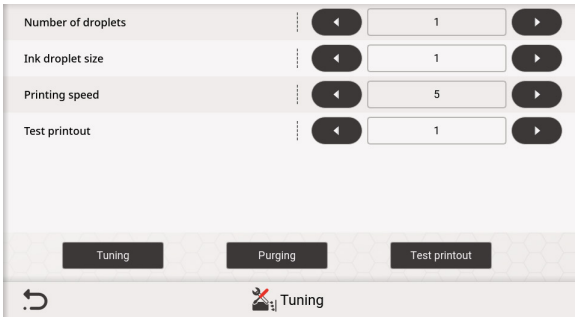
Fig. 74.

   The adjustment screw numbers are given on the stickers next to the slots. They correspond to the values of the **Number of droplets** parameter (which is available in the tuning window). The nozzles are numbered consecutively starting from the top.

5. Press  ▶ ▶ .

   The tuning window is displayed.

   If the printer is in the process of printing, then the printing pauses automatically.



The following functions and parameters are available in the tuning window:

Function/Parameter	Range of values
Tuning	

Enable / disable tuning, or printing with a selected nozzle (the **Number of droplets** parameter) and set the printing parameters **Ink droplet size** and **Product travel speed**.

Purging	

Enable / disable purging.

Test printout	

Enable / disable printing of a test printout defined by the settings of the printing parameters **Ink droplet size** and **Product travel speed**.

The **Ink droplet size** and **Product travel speed** parameters can be set manually or selected as a predefined range of settings established with the **Test printout** parameter.

Number of droplets	**1 to 7** for 7N/13, 7N/24 printheads **1 to 16** for 16N/29, 16N/56 printheads **1 to 32** for a 32N/58 printhead

The parameter is inactive if the **Purging** or **Test printout** function is being performed.

Number that identifies the nozzle to be tuned.

The sequence in which successive nozzles are selected for tuning with the ◂ and ▸ icons is aimed at ensuring that tuning is as convenient as possible, *i.e.* the nozzles situated on one side of the printhead are tuned at first and then those on the other side (following the adjustment screw sequence):

1, 2, 5, 6, 3, 4, 7 for a **7N/13** printhead,

1, 3, 5, 7, 2, 4, 6 for a **7N/24** printhead,

1, 2, 5, 6, 9, 10, 13, 14, 3, 4, 7, 8, 11, 12, 15, 16 for a **16N/29** printhead,

1, 3, 5, 7, 9, 11, 13, 15, 2, 4, 6, 8, 10, 12, 14, 16 for a **16N/56** printhead,

1, 2, 5, 6, 9, 10, 13, 14, 17, 18, 21, 22, 25, 26, 29, 30, 3, 4, 7, 8, 11, 12, 15, 16, 19, 20, 23, 24, 27, 28, 31, 32 for a **32N/58** printhead.

Ink droplet size	**1 to 7**

The parameter is inactive if the **Purging** function is being performed.

Intensity of prints made by the nozzle that is being tuned.

It is advisable to set the intensity with which prints are made most frequently.

Product travel speed [m/min] or [inches/min]	**1 to 100** [m/min] / **39 to 3937** [inches/min] **1 to 200** [m/min] / **39 to 7874** [inches/min] (depending on the type of printhead)

The parameter is inactive if the **Purging** function is being performed.

The speed at which ink is jetted by the nozzle that is being tuned or the speed at which a test print is made.

Function/Parameter	Range of values
Test printout	1 to 6

The parameter is inactive if the **Tuning** or **Purging** function is being performed.

Select the predefined set of parameters (**Ink droplet size** and **Product travel speed**) for making a test printout using **Test printout**. The **Ink droplet size** and **Product travel speed** parameters can be modified manually, if need be.

6. Put a sheet of paper in front of the nozzle outlet.

   NOTE: A risk of ink splashing!
   Ink is jetted out of nozzles under pressure while the tuning procedure is being followed. Be careful not to get splashed and not to soil the printer environment.

7. Press **Tuning**.
   The color of the icon changes to green.
   The nozzle whose number is given with the **Number of droplets** parameter can be tuned.
8. Set the **Ink droplet size** and **Product travel speed** parameters at values that are as close to the real working values as possible.
9. Use a **#T6 Torx** screwdriver to adjust the electromagnet that is responsible for correct operation of the nozzle whose number is given with the **Number of droplets** parameter. The number of the corresponding adjustment screw is given on the sticker next to the slot.
10. On assessing print quality, set the required dot size.
11. Repeat the tuning procedure for other nozzles, if need be, changing the value of the **Number of droplets** parameter.
    Finish the tuning when the drops jetted by each of the nozzles are identical in size.
12. Press **Test printout**.
    The color of the icon changes to green.
    The printer moves to print a test print and awaits a signal from the photodetector that is selected as the trigger source.
13. While triggering the photodetector selected as the trigger source, for example with your hand, move a sheet of paper in front of the face of the printhead to make a print.
14. Review the print and assess whether any of the nozzles need(s) additional tuning or not. If further tuning is needed, repeat the tuning procedure for the selected nozzle(s).
15. If the quality of the test print is satisfactory, finish the tuning procedure and re-install the blanking plates **2g** (see ***Fig. 74 on page 192***).

If the tuning procedure is preceded by modification of the degree of turning of the integrated printhead or the position of a photodetector, restore the original settings.

*If the tuning procedure does not result in prints of a satisfactory quality, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

9.3.3. RELEASING PROTECTIONS

By releasing protections of the printer with a one-off unlock code, **OTP** (One Time Password), and a one-off activation code, **OTA** (One Time Answer), the user can carry our basic service operations without serviceman intervention.

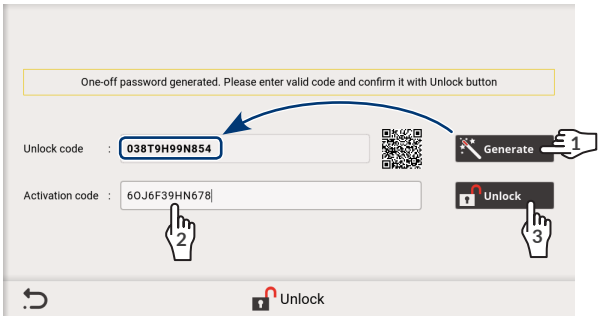
This function can be used for the following, among other things:

- Entering service mode (to continue printing over a period of **50 hours**),
- Restoring the default password for the **ADMINISTRATOR**-type user called “Administrator”.
- Setting the date that is earlier than the current date.

*To obtain a one-off activation code (**OTA**), contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

To release the selected protection:

1. Press ▶ ▶ .
   The protection release screen is displayed, together with an automatically generated one-off unlock code **OTP** (**Unlock code**).



2. If the need to generate a new **OTP** code (different than the code generated automatically) arises, press . Skip that step otherwise.
   The new **OTP** code is generated.
   The protection release window also shows a two-dimensional QR code (which contains the **OTP** code, inter alia). The QR code can be scanned and forwarded to an authorized representative of **EBS Ink Jet Systeme GmbH**. This will significantly simplify a selected protection release process.

*After the one-off unlock code **OTP** has been generated, you can exit the protection unlock window. The code remains valid until the printer is shut down or a new code is generated. When the protection unlock window is displayed again, the recently generated **OTP** code is shown automatically.*

3. Contact an authorized representative of **EBS Ink Jet Systeme GmbH** and then:

- Enter the one-off unlock code **OTP** that has been generated in the previous step or scan the QR code and find the website provided by the code.
- Describe the operation you wish to carry out (*e.g.* entering service mode to continue printing over a period of **50 hours**).
- The authorized representative of **EBS Ink Jet Systeme GmbH** generates a one-off activation code (**OTA**).

4. Enter the **OTA** (**Activation code**) code you have obtained.

NOTE: A risk that the OTP code becomes invalid!
*If an incorrect **OTA** code is entered three time, this one-off unlock code (**OTP**) becomes invalid. In such a case another **OTP** code needs generating and an authorized representative of **EBS Ink Jet Systeme GmbH** needs contacting again to obtain a new **OTA** code.*

5. Press  .
   The selected protection is released.

9.3.3.1. ENTERING SERVICE MODE

If a **correct** bottle of ink is installed but the printer cannot identify it correctly, printing cannot continue. In such a case, service mode can be entered and printing can continue over a period of 50 hours, until a new bottle of ink is installed or a service intervention is made.
The above-described situation is signaled with ink level indicators on the main screen (see the drawing on the right).

*For more details see **"4.6. Using an Ink Bottle"**.*

To enter service mode:

1. Follow the protection release procedure described in ***"9.3.3. Releasing Protections"***.
2. Contact an authorized representative of **EBS Ink Jet Systeme GmbH** and notify them that you want to enter service mode, that is, enable printing over a period of 50 hours.

After the above-given procedure has been followed:

- The ink level indicator, the additional icon  and a clock for counting down the 50-hour limit are displayed on the main screen,
- The  icon on the icon bar is replaced with the  icon.

To get the information on how many hours remain till the end of the alloted time for printing, press the ink level indicator on the main screen or the  icon on the icon bar.

The signaling of the allotted time for printing is displayed until a new, correct bottle of ink is installed or until the allotted time for printing elapses (and then the error is signaled again).

9.3.3.2. SETTING AN EARLIER DATE THAN THE CURRENT DATE

Owing to the necessity to ensure right properties of the ink in the ink bottle, the printer checks the expiration date on the bottle, among other things. To check the expiration date effectively, an earlier date than the current date cannot be set in the printer. If you have to set the date back to define it correctly, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

To set an earlier date than the current date:

1. Follow the protection release procedure described in ***"9.3.3. Releasing Protections"***.
2. Contact an authorized representative of **EBS Ink Jet Systeme GmbH** and notify them that you want to set the current date back.

Having followed the above-given procedure, carry out the date setting procedure described in *"7.1.2. Setting the Current Date and Time"* and set the correct date.

*The protection release procedure offers you a **one-off** possibility to set an earlier date than the date currently set.*

9.3.3.3. RESTORING THE DEFAULT PASSWORD FOR ADMINISTRATOR

One **ADMINISTRATOR**-type user called "Administrator" is defined in the printer by default and their default user password is "**ebs-admin**". This user cannot be deleted or renamed. However, their password can be changed. The password can be changed by every **ADMINISTRATOR**-type user. The **ADMINISTRATOR**-type user called "Administrator" can also change their password.

If the password of the **ADMINISTRATOR**-type user called "Administrator" has been changed but it is not known, it can be changed again by an **ADMINISTRATOR**-type user. However, if no other **ADMINISTRATOR**-type user is defined in the printer, the only possibility to log in is to restore Administrator's default password. For that purpose, you have to contact an authorized representative of **EBS Ink Jet Systeme GmbH**.
A similar situation occurs when the account of the **ADMINISTRATOR**-type user called "Administrator" is deactivated because an incorrect password has been entered twenty times. The account can be re-activated by another **ADMINISTRATOR**-type user. However, if no other **ADMINISTRATOR**-type user is defined in the printer, the only possibility to activate it is to restore Administrator's default password. For that purpose, you have to contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

To restore the password of the **ADMINISTRATOR**-type user called "Administrator" or re-activate their account:

1. Follow the protection release procedure described in *"9.3.3. Releasing Protections"*.
2. Contact an authorized representative of **EBS Ink Jet Systeme GmbH** and notify them that you want to restore the default password of the **ADMINISTRATOR**-type user called "Administrator" or to re-activate their account.

After the procedure has been finished, the password of the **ADMINISTRATOR**-type user called "Administrator" is again "**ebs-admin**" and if that user's account was deactivated, it is re-activated.

9.3.4. RESTORING THE DEFAULT SETTINGS

*The function is available to **ADMINISTRATOR**-type users only.*

The function restores all settings of the printer to their default values.

NOTE: User data will be lost!
When the default settings are restored, all projects, printer settings, user databases, history, statistics and imported files such as images, text files or user fonts are deleted.

*It is advisable to copy all printer data to a **USB** memory device before the system recovery procedure is followed. For more details see **"7.7.4. Exporting/Importing All Printer Data"**.*

The recovery procedure must not be interrupted. Otherwise, the printer may get damaged.

To restore the default settings:

1. Press ▶ ▶ .
   A dialog box with the request to acknowledge the operation is displayed.
2. Press **Yes** to acknowledge.
   The default settings are restored.
   The printer re-starts while the procedure is being carried out.
   After the default settings have been restored, the printer is started up in the same way as it was for the first time after installation, excluding automatic parts authorization.

*For more details see **"2.4. First Printer Startup"**.*

If all printer data had been copied to a **USB** memory device before the recovery procedure started, you can restore this data following the description given in ***"7.7.4. Exporting/Importing All Printer Data"***.

CHAPTER 10
TECHNICAL SPECIFICATIONS

10. TECHNICAL SPECIFICATIONS

Physical properties	
Weight	Complete printer with a 1-liter bottle of ink: - **about 7.6 kg (16.75 lbs)** Printer parts: - Control unit: **about 2.3 kg (5.07 lbs)** - Integrated printhead (filled with ink) with a photodetector: **about 1.8 kg (3.97 lbs)** - Installation kit (beams, holders): **about 2.5kg (5.51 lbs)** Bottle of ink: - 1-liter bottle: **about 1 kg (2.20 lbs)** - 0.5-liter bottle: **about 0.5 kg (1.10 lbs)**

Dimensions (control unit)

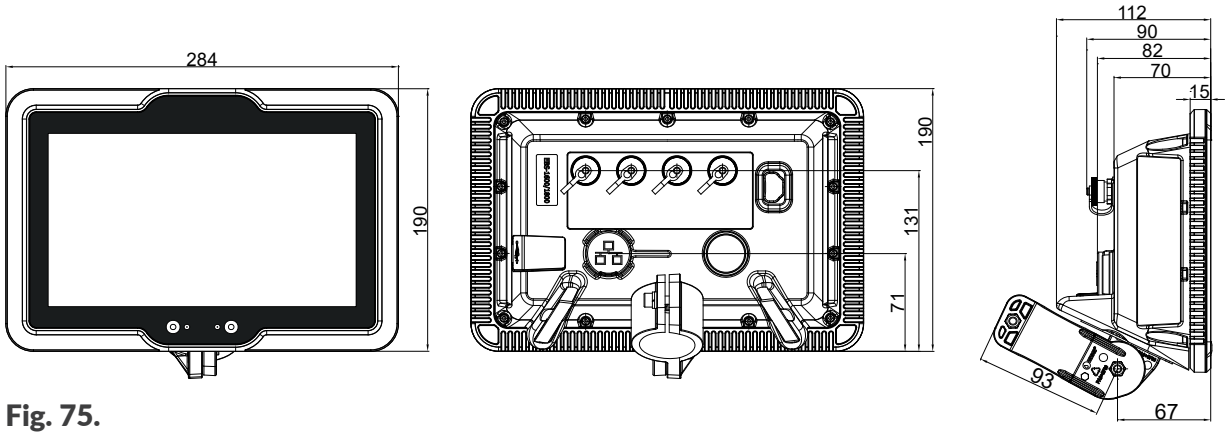


Fig. 75.

Dimensions (integrated printhead)

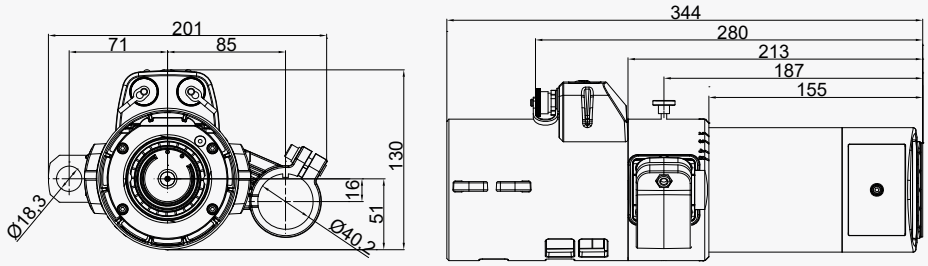
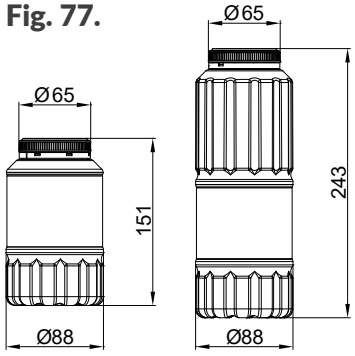


Fig. 76.

Dimensions (0.5-liter and 1-liter bottles with ink/wash-up)

Fig. 77.



Physical properties

Dimensions (fasteners)

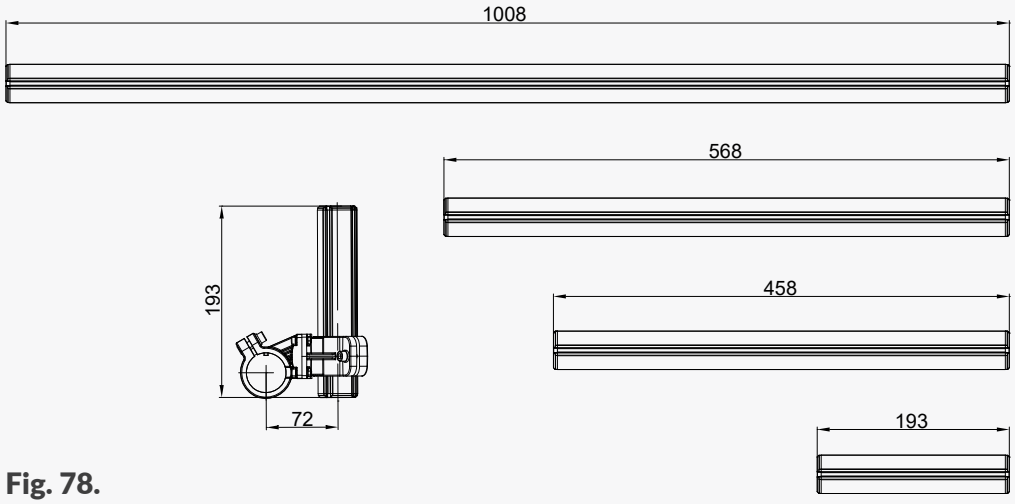


Fig. 78.

Dimensions (example of configuration)

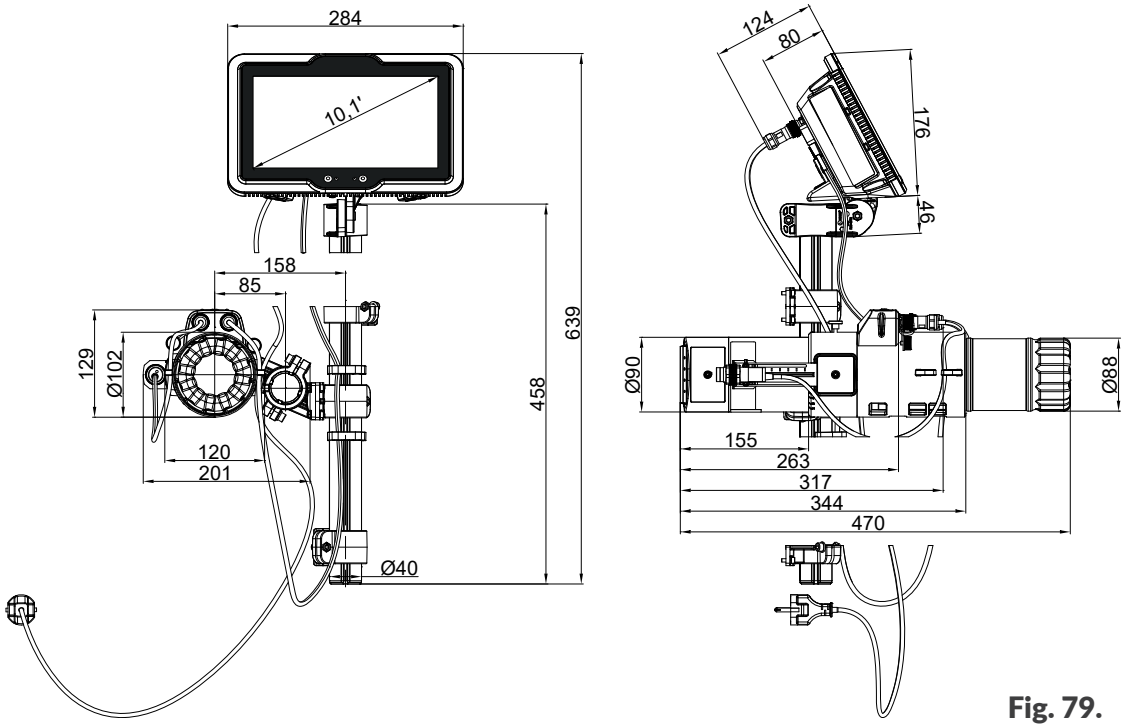


Fig. 79.

Material for housing:	Control unit, integrated printhead: - **Fire retardant polyamide**, **aluminum**

Technical data

Project parameters	- Maximum length of a printable project: **40000 columns**, or: **about 145.5m** (at 275 dot/m in horizontal direction) **4000 characters** (16x10 matrix) - Maximum number of text lines: **1 line of text** for 7N/13, 7N/24 printheads **2 lines of text** for 16N/29, 16N/56 printheads **4 lines of text** for 32N/58 printheads

Technical data

Maximum print height	- Maximum print height: **13 mm (0.51 in.)** for 7N/13 printhead **24 mm (0.94 in.)** for 7N/24 printhead **29 mm (1.14 in.)** for 16N/29 printhead **56 mm (2.20 in.)** for 16N/56 printhead **58 mm (2.28 in.)** for 32N/58 printhead - Adjustment to print height and resolution in vertical direction: **yes** (by turning the printhead)
Maximum speed (for unturned printhead)	- **100 m/min** (at resolution not higher than 550 dots/m in a horizontal direction) for 7N/13, 16N/29, 32N/58 printheads - **200 m/min** (at resolution not higher than 275 dots/m in a horizontal direction) for 7N/24, 16N/56 printheads
Integrated printhead	- Number of printheads: **1** - Type of printhead: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58** - Number of degrees of turning: **5** - Nozzle diameter/distance between nozzles: **150 µm/1.8 mm** for 7N/13, 16N/29, 32N/58 printheads **170 µm/3.6 mm** for 7N/24, 16N/56 printheads
eLink cable	- Length: **1m** / **39.4 in.** (standard) **3m** / **118.1 in.**, **5m** / **196.8 in.**, **10m** / **393.7 in.** (options) - Minimum bend radius: for 1m and 3m cables: **51 mm** / **2 in.** - for static operation **95 mm** / **3.7 in.** - for dynamic operation for 5m and 10m CMX-type cables: **32 mm** / **1.3 in.** - for static operation **59 mm** / **2.3 in.** - for dynamic operation
Ingress protection rating	Control unit: - **IP54** Integrated printhead: - **IP55** *To ensure the above-mentioned ingress protection levels:* *- All unused connectors must be secured with caps,* *- The power cord must be plugged in to the control unit.*
Ink pressure	- **0.15 to 0.45 bar (2.17 to 6.53 psi)**
Max. noise level	- **< 70 dBA**

Connections

	Control unit: - **USB**; current efficiency **500 mA** - Input for rotational speed sensor - Status beacon output - Conveyor stoppage output - **Ethernet** connector - **eLink** connector Integrated printhead: - Photodetector connector - **eLink** connector

Functions

Work modes	- Printing triggering: with a trigger signal without a trigger signal - Automatic printing after startup - Printing pausing: immediately when finished
	- Automatic part authorization for a new printer - Automatic authorization of spare/refurbished sub-assemblies

Power supply

	- **100 to 240V** ∿, **50/60 Hz**, max. **1.1 to 0.6A** - Maximum power consumption: **54W** - The power supply circuit of the printer shall be secured with a cut-out device whose rated current is: max. **16A** for **230V** ∿ or max. **20A** for **110V** ∿ - The printer is designed to be supplied from a **TN**-type supply system
Connection to the mains	- Pluggable equipment type **A**
Power cord	- Length: **180 cm (70.9 inch),** depends on a given country - Plug: depends on a given country - Type: portable power cord
Overvoltage category	- **II**
Electric shock protection class	- **I** (the printer must be connected to a ground pin socket)

Inks	
Types	- ethanol-based - acetone-based - methyl ethyl ketone (**MEK**)-based
Ink bottle capacity	- **1 liter** - **0.5 liter**

Working conditions	
Working position of the printer	- **Any**
Distance from the print-head to an object	- **2 to 20 mm**
Minimum distance between objects to be labeled	- **5 mm**
Print triggering	- **Photodetector** - **No triggering**
Timing	- **Internal Generator** - **Rotational speed sensor (encoder)**
Ambient conditions	- Working temperature: **+5 to +45°C (+41 to +113°F)** - Relative humidity: **10 to 90%** without condensation - Maximum altitude (above sea level): **2000m** - Vibration: **max. 1 g, max. 10 Hz** - Shocks: **max. 1 g, max. 2 ms** - Operation in tropical climates: **no**
Storage conditions	- Temperature: **0 to +50°C (+32 to +122°F)** - Relative humidity: **10 to 90%** without condensation - Shocks: **max. 1 g, max. 2 ms** - Position: **any**
Parameters of the IMS (Ink Monitoring System)	- Working frequency: **13.56 MHz** - Magnetic field strength at 10 m distance from the system: **max. -31 dBµA/m**
Working environment - electromagnetic compatibility	The **PicAS® II** EBS-1600 printer is a class **A** device as defined by **EN 55032:2015** (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	
Objects	- Text objects/codes: **static text**, **date/time**, **calendar**, **shift code**, **counter**, **text file**, **communications port** - Graphic objects: **line**, **rectangle**, **ellipse**, **image**

Specifications

Global variables	-	**counter**, **shift code**, **calendar**
Fonts	-	Types of fonts: **matrix**, **TrueType**
	-	Additional fonts in ***.ttf**, ***.bdf**, ***.pcf** formats can be installed
Bar/matrix codes	-	**1D** codes: GS1 Data Bar 14, GS1 Data Bar Limited, GS1 Data Bar Expanded,
	-	**2D** codes: QR Code, Data Matrix ECC200.
Graphics	-	Graphics files in ***.png**, ***.bmp**, ***.jpg**, ***.jpeg**, ***.gif** or some other formats can be imported
	-	They can be edited with the built-in graphics editor
Import/export via USB port	-	Projects
	-	Printer settings (including the user database)
	-	Fonts
	-	Images
	-	Text Files
	-	Global variables
	-	Scripts
	-	Event history (export only)
	-	All printer data

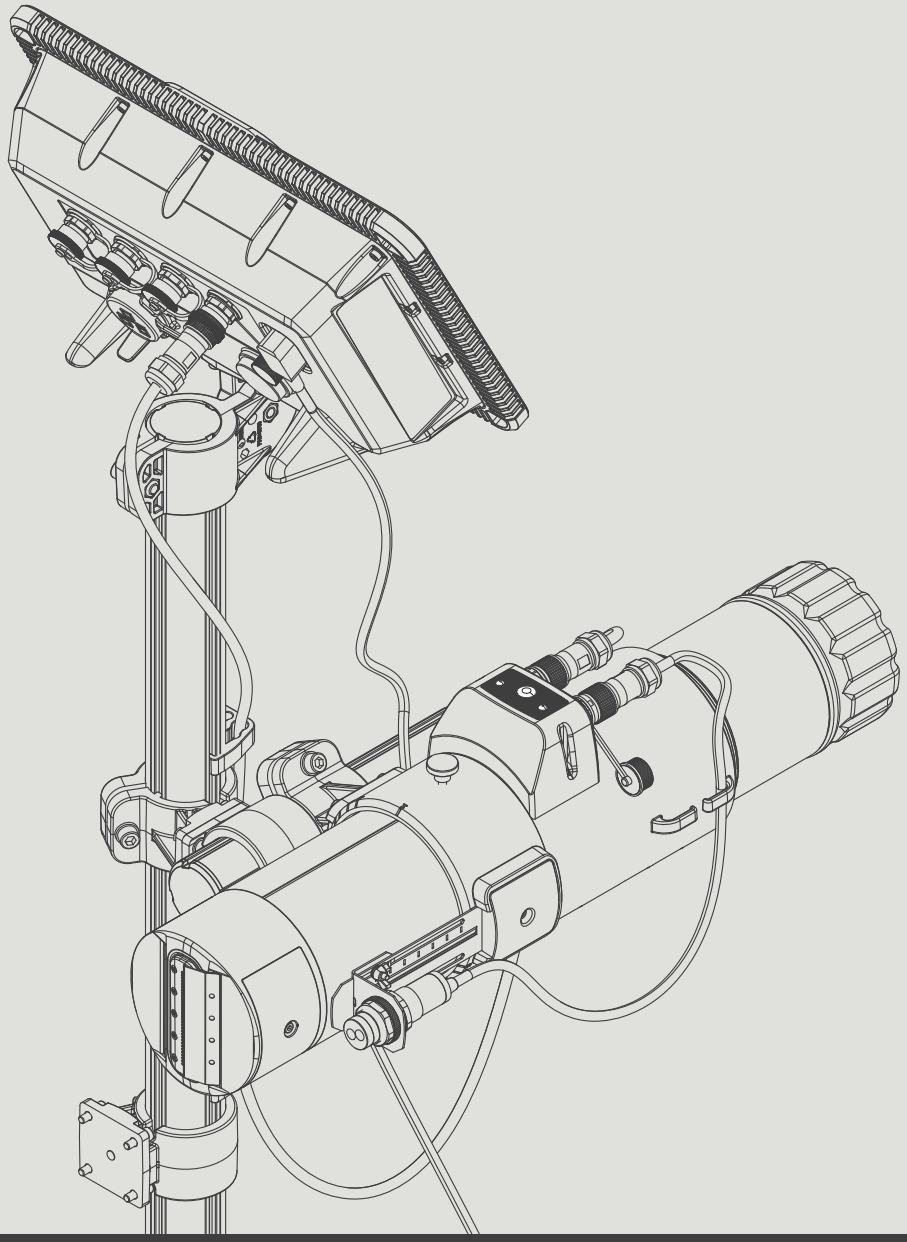
CHAPTER 11
VERSION CONTROL

11. VERSION CONTROL

Version of manual	Date of issue	System version
G2023/04/30_1EN	2023.05.10	1.02.20.0.
G2023/04/30_1EN	2023.10.12	1.02.20.0.
G2023/04/30_1EN	**2024.04.22**	**1.02.20.0.**

G2023/04/30_1EN

EN



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