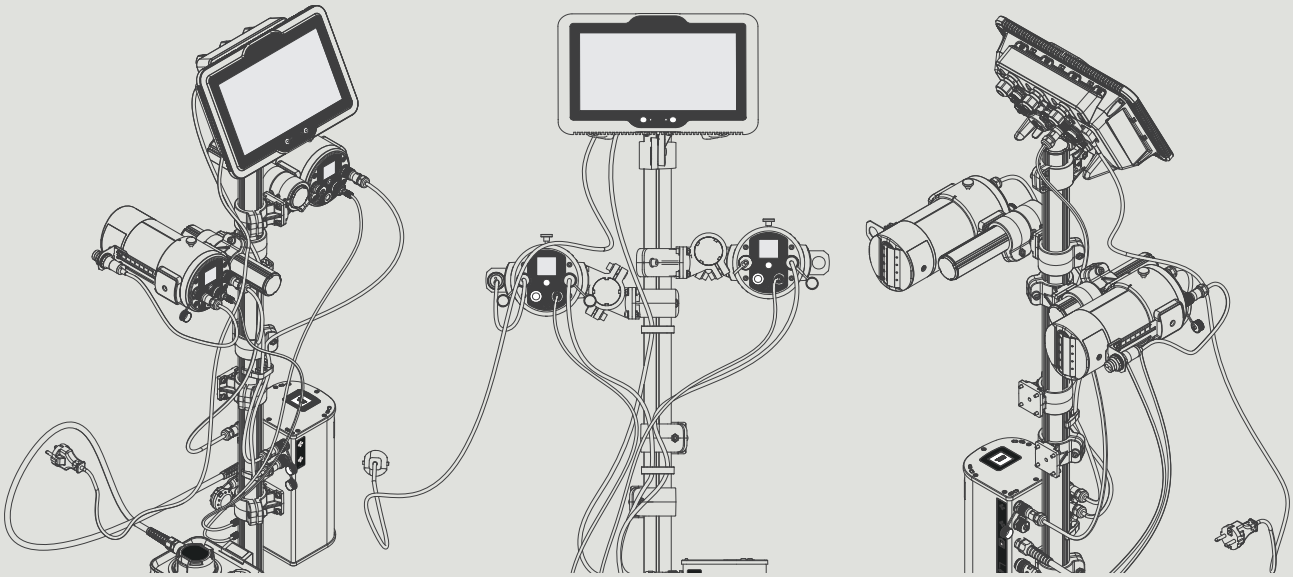
G2024/10/02_1EN

EBS® Ink-Jet Systeme

bigJET®

EBS-1800 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

2026.10.08

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CHAPTER 1
GENERAL INFORMATION

Dear User,

Before using the bigJET® EBS-1800 printer, please read carefully the documents attached to the printer, especially the Safety Manual and the material safety data sheets (SDSs) of consumables in use.





The document, entitled **Safety and Important Information** (signature **G2025/08/21_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 **1.04.16.0**, 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, system version and technical solutions. Therefore, no data, illustrations and descriptions contained in this User Manual shall make grounds for any claims. Should your printer be provided with the details of the equipment or software that are not illustrated or described in this User Manual or should you have additional queries after having read this Manual, please contact an authorized representative of **EBS Ink Jet Systeme GmbH** for more information.

The manufacturer shall not be liable for any damage caused to the printer by improper handling or operation, that is the failure to follow this User Manual, and by the consequences of editorial or publishing errors in the Manual.

The application and use of products are beyond our control and thus you apply and use the products exclusively on your own responsibility.

Original Instructions.

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

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This Manual is protected by copyright. No part of this Manual can be reproduced, translated into another language or transferred in any form without the copyright owner's written consent.

1. GENERAL INFORMATION

The following symbols may be used in the manual:



An important note, tip, piece of information on safety.
It is advisable to strictly follow the tips.



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



Wear safety goggles while conducting a given operation.



While conducting a given operation wear protective gloves that are resistant to ink / wash-up.



Wear protective clothing while conducting a given operation.



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



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



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

The following signs can be placed on the printer:

- a general warning sign:



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

- an example of a dedicated warning sign:



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

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



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

This manual applies to the **bigJET®** EBS-1800 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.* **bigJET®** EBS-1800),
- a part number in drawings (*e.g.* **3**),
- a message available in the printer interface (*e.g.* **an error message**),
- a reference to another section or drawing (*e.g.* see ***"1.2. Application"***),
-  - to press an icon or a function key,
-  - to wait before a successive operation can be carried out.

1.1. TRADEMARKS

Windows® is a registered trademark of Microsoft Corporation.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc..

Wi-Fi® is a registered trademark of Wi-Fi Alliance.

ZebraDesigner® is a registered trademark of Zebra Technologies Corporation.

ZPL™ is a trademark of Zebra Technologies Corporation.

Loftware **Designer**® (formerly **NiceLabel**®) is a registered trademark of Loftware, Inc..

Other product names or marks referred to in this document can be the trademarks or registered trademarks of other firms and are the property of their owners.

1.2. APPLICATION

The **bigJET®** 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 **bigJET®** EBS-1800 printers print with inks that are based on ethanol, acetone and methyl ethyl ketone (MEK).



For detailed information on the inks available for the **bigJET®** EBS-1800 *printers contact an authorized representative of* ***EBS Ink Jet Systeme GmbH***.

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

The printer is a device intended exclusively for professional use in an industrial setting.

CHAPTER 2
DESCRIPTION

2. DESCRIPTION

2.1. OVERVIEW

The **bigJET®** EBS-1800 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.

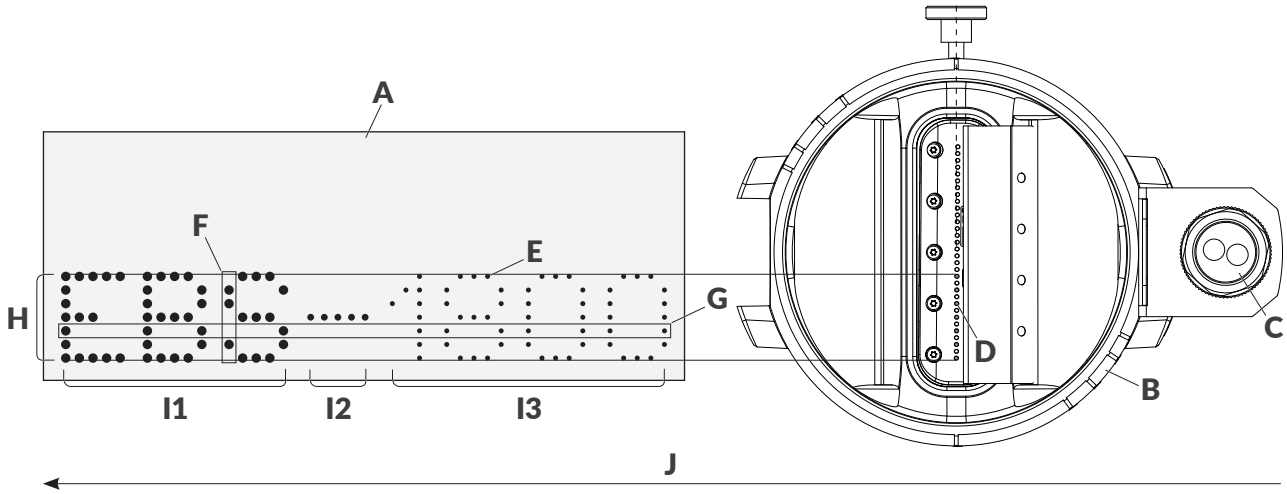


Fig. 1.

A	Object to be labeled.
B	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

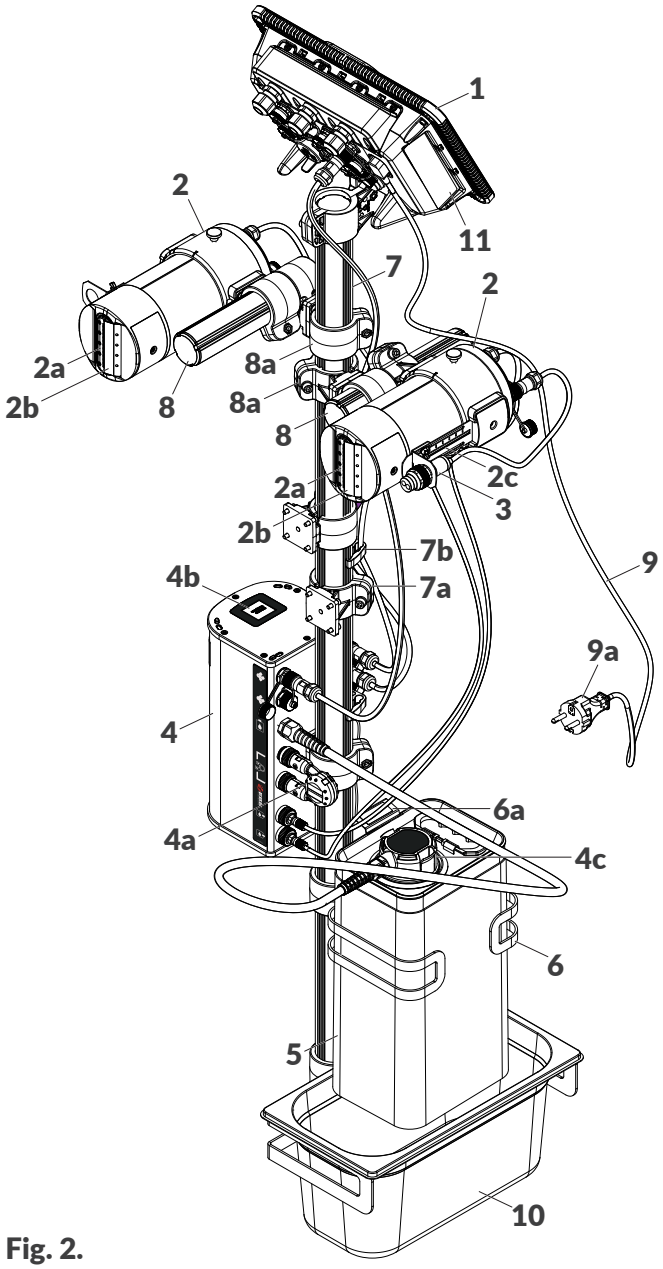


Fig. 2.

1	Control unit.
2	Printhead (**2a**: nozzle plate, **2b**: slide, **2c**: photodetector holder with adjustable distance between photodetector **3** and an object to be labeled).
3	Photodetector.
4	Ink system (**4a**: ink filter, **4b**: **1.44" / 36.6 mm** LCD display, **4c**: ink canister connection).
5	5-liter ink canister.
6	Ink canister cage (**6a**: clamp).

7	Printer support beam (**7a**: holder, **7b**: cable holder).
8	Printhead support beam (**8a**: articulated holder).
9	Disconnectable power cord with plug **9a***.
10	Sump tray#.
11	Nameplate.
	Cabling, tubes.

** Depending on a given country, power plug **9a** may differ from that shown in **Fig. 2 on page 15**.*
*\# The sump tray with holder (Part No. **P513427**) is not included in the installation kit. However, in order to collect potential leaks from a canister, a metal vessel with a minimum capacity of **5 liters** must be placed under each ink / wash-up canister. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.2.2. BACK VIEW

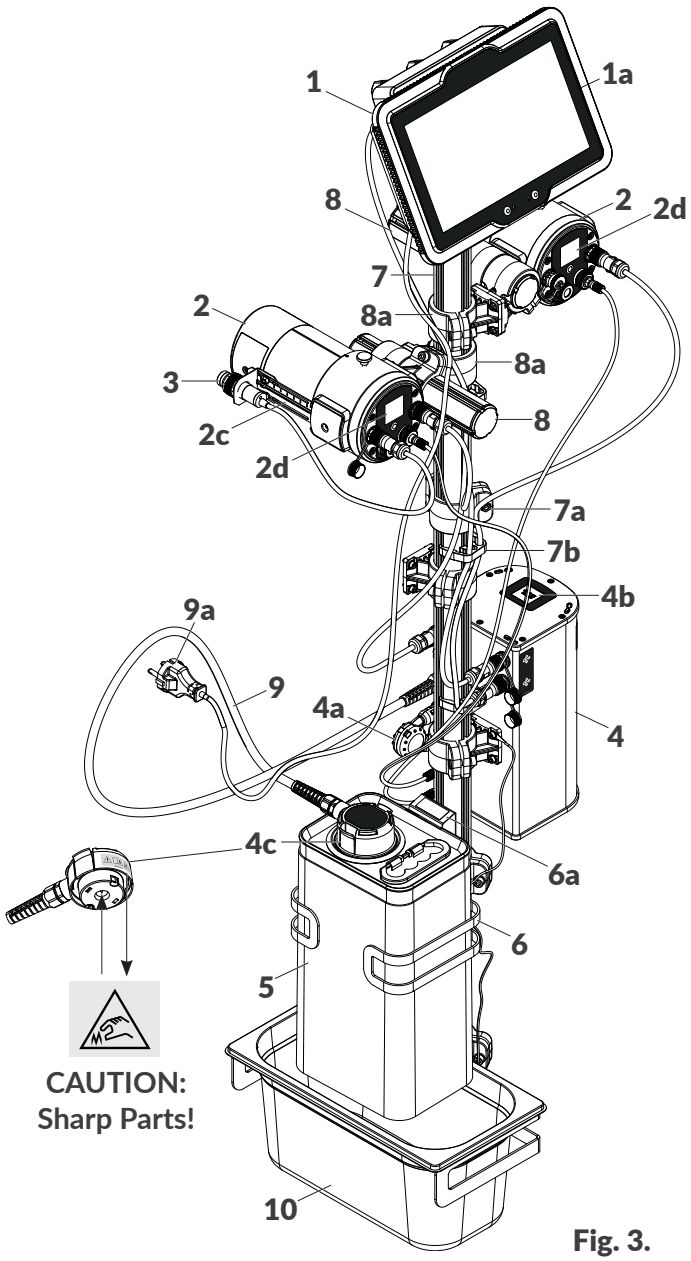


Fig. 3.

1	Control unit (**1a**: **10.1” / 256.5 mm** LCD display).
2	Printhead (**2c**: photodetector holder with adjustable distance between photodetector **3** and an object to be labeled, **2d**: **1.44” / 36.6 mm** LCD display).
3	Photodetector.
4	Ink system (**4a**: ink filter, **4b**: **1.44” / 36.6 mm** LCD display, **4c**: ink canister connection).
5	5-liter ink canister.
6	Ink canister cage (**6a**: clamp).
7	Printer support beam (**7a**: holder, **7b**: cable holder).
8	Printhead support beam (**8a**: articulated holder).
9	Disconnectable power cord with plug **9a***.
10	Sump tray#.
	Cabling, tubes.

** Depending on a given country, power plug **9a** may differ from that shown in **Fig. 3 on page 16**.*
*\# The sump tray with holder (Part No. **P513427**) is not included in the installation kit. However, in order to collect potential leaks from a canister, a metal vessel with a minimum capacity of **5 liters** must be placed under each ink / wash-up canister. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.2.3. CONTROL UNIT

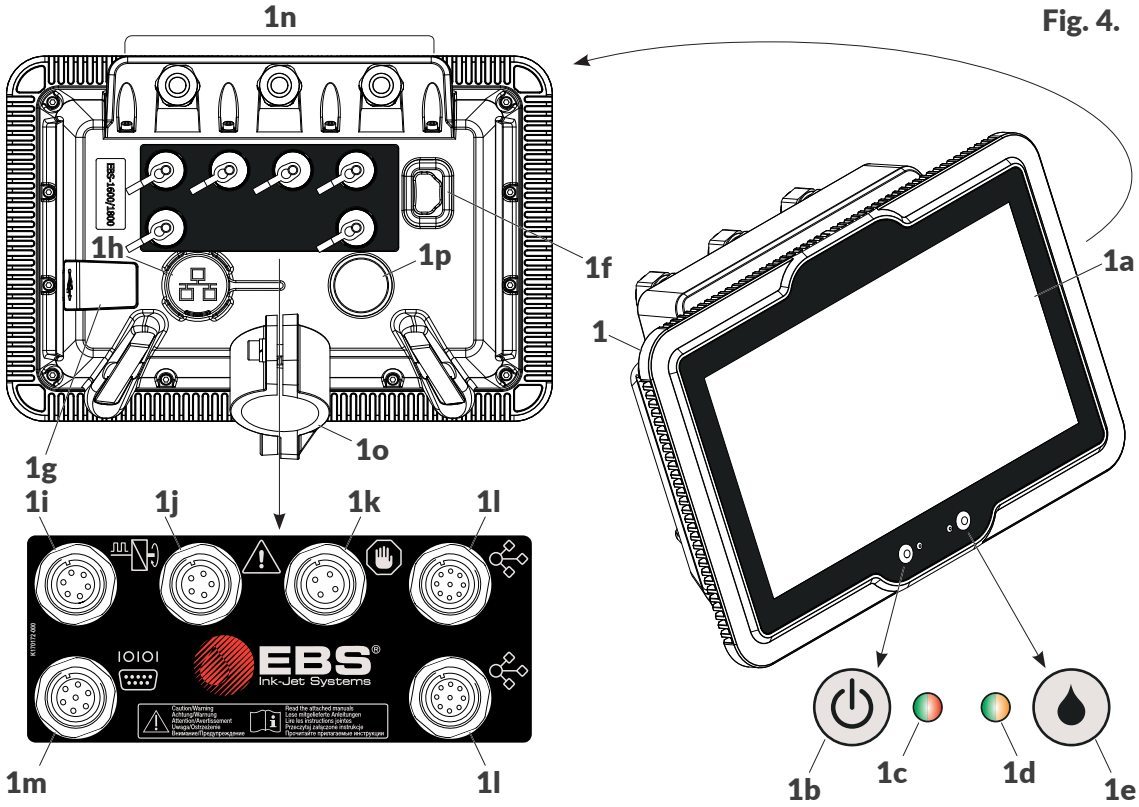


Fig. 4.

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 control output; secured with a blanking plug.	
1l	**eLink** connector; secured with a blanking plug.	
1m	**RS-232** connector; secured with a blanking plug.	
1n	Cover with strain reliefs, for securing the I/O module (**I/O BOX**).	
1o	Holder for fastening the control unit to the beam; with adjustable control unit angle on the beam.	
1p	Protruding part.	

2.2.3.1. EXTERNAL CONNECTIONS

USB connector 

An appropriate **USB** memory device connected to **USB** connector **1g** (see ***Fig. 4 on page 17***) 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.

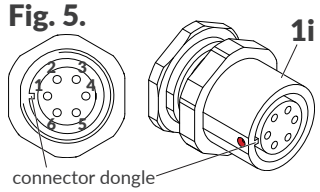
Rotational speed sensor (encoder) input 

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 17***).

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 V DC** (power supply).
3	**GND** (ground).
4	Photodetector impulse input.
5	Encoder impulse input (printing direction signal).
6	Encoder impulse input (timing signal).

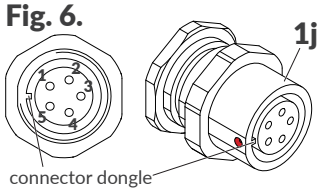
The encoder constant and an external source of timing pulses need to be set for correct operation of the encoder. For more details see ***"7.2. Printing Settings"****.*

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 17***).

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 V DC** (power supply).
3	**PE** (protective earth).
4	Printing; open collector, max. 45 mA.
5	Warning; open collector, max. 45 mA.

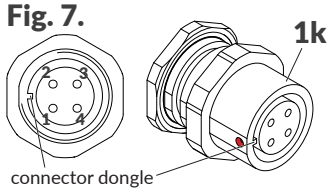
Conveyor control output

The **bigJET®** EBS-1800 printer is able to start / halt the conveyor. The conveyor belt may start moving as soon as the user initiates printing, while it stops moving when the user pauses printing or when an error that disables printing occurs. If the option is used, the factory conveyor is connected to output **1k** (see ***Fig. 4 on page 17***).

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

A description of 4-pin female connector **1k** (see ***Fig. 7***) used for controlling the conveyor belt is given in the table below.

Fig. 7.



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

Printing status	Relay connected to pins **1** and **2** at output **1k** (see ***Fig. 7***)
The printer **is not** in printing mode.	untuned
The printer **is** in printing mode.	tuned

eLink connector

*A description of the **eLink** interface is given in **"2.3. Installing the Printer"** ▶ **"2.3.3. Electrical Connections"** and **"2.3.4. Examples of Printing System Configurations"**.*

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 17***) 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 part **1p** on the back of the control unit housing.

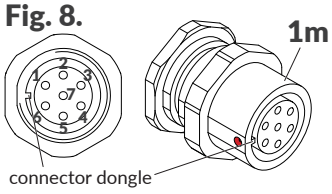
*For the description of how to configure **Ethernet** see **"7.4.2. Ethernet"**.*

RS-232 connector

The **RS-232** interface is designed to transfer data to the printer from external devices such as a bar / matrix code reader, scales. The data can be printed using a **COMMUNICATIONS PORT**-type object / . An external device can be connected to connector **1m** (see ***Fig. 4 on page 17***).

A description of 7-pin female connector **1m** (see ***Fig. 8***) of the **RS-232** is given in the following table.

Fig. 8.



1	**CTS** Input (Clear to Send).
2	**GND** (ground).
3	**PE** (protective earth).
4	**TXD** Output (Transmitted Data).
5	**RXD** Input (Received Data).
6	**RTS** Output (Request to Send).
7	**GND** (ground).

*For the description of how to configure the **RS-232** see **"7.4.1. RS-232"**.*

I/O BOX inputs / outputs

The integrated input / output module **1r** (a so called **I/O BOX**; see *Fig. 9*) is situated under cover **1n** (see *Fig. 10 on page 22*).

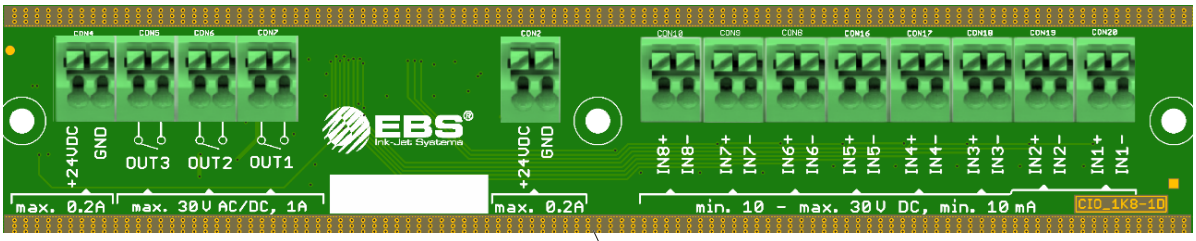


Fig. 9. **1r**

The module consists of:

- 8 pairs of terminals constituting binary inputs:
  IN1+, **IN1-**,
  IN2+, **IN2-**,
  IN3+, **IN3-**,
  IN4+, **IN4-**,
  IN5+, **IN5-**,
  IN6+, **IN6-**,
  IN7+, **IN7-**,
  IN8+, **IN8-**,
- 3 pairs of terminals constituting relay outputs:
  OUT1,
  OUT2,
  OUT3,
- 2 terminals constituting a **+24 V DC** power source:
  +24V,
- 2 ground terminals:
  GND.

To connect wires to **I/O BOX** inputs / outputs:

Tools required:
- a #2.5 hex (Allen) key,
- a flat tip screwdriver,
- a #21 open ended spanner.

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. Use the #**2.5** hex key to loosen 8 screws that fasten cover **1n** to the **I/O BOX**.

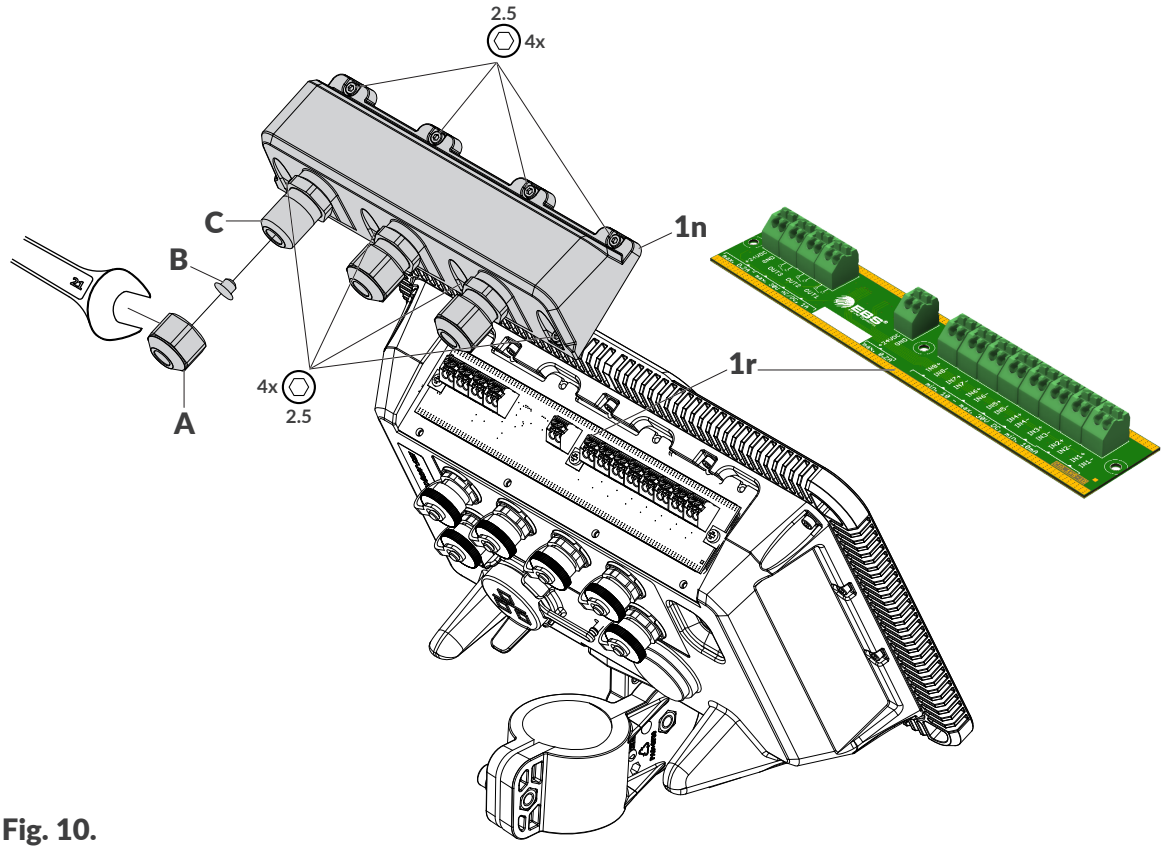


Fig. 10.

4. Remove the **I/O BOX** cover **1n**. You get access to terminal strip **1r** where the **I/O BOX** inputs / outputs are.
5. Use the #**21** open ended spanner to unscrew nut(s) **A** in strain relief **C** in the cover **1n**, you have removed. Remove blanking plug **B** from the strain relief.
6. Thread the wires that you wish to connect to **I/O BOX** inputs / outputs through strain relief(s) **C**.
7. Connect the wires to the corresponding **I/O BOX** inputs / outputs, pressing the strip push buttons with the flat tip screwdriver.

   From 0.2 to 1.5 mm² (22 to 16 AWG) wires should be connected to a terminal strip.
   The wire insulation should be removed along a length of 8.5 to 9.5 mm (0.33 to 0.37 in.).

8. Re-install the **I/O BOX** cover **1n**.
9. Use the #**2.5** hex key to tighten 8 screws to fasten the **I/O BOX** cover **1n**.

10. Use the #**21** open ended spanner to tighten the nut(s) **A** in the strain relief **C**, in the cover **1n**.
11. Connect the power cord to a power outlet.
12. Start the printer.

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

Additional information about the **I/O BOX**:

- permissible external voltage that can be applied to the terminals constituting binary inputs (**IN1±**, **IN2±**, **IN3±**, **IN4±**, **IN5±**, **IN6±**, **IN7±**, **IN8±**) ranges between **10 and 30 V DC**,
- minimum external current that enables the binary inputs (**IN1±**, **IN2±**, **IN3±**, **IN4±** , **IN5±**, **IN6±**, **IN7±**, **IN8±**) to be switched is **10 mA**,
- all the pairs of output terminals (**OUT1**, **OUT2**, **OUT3**) constitute the contacts of relays whose maximum switching parameters are as follow:
  - voltage: **30 V AC / DC**,
  - current: **1 A**,
- maximum current output of the **+24 V DC** power sources available on the **I/O BOX** terminal strip is **200 mA**.

An example of how to connect an I/O BOX binary input

The voltage for activating a selected binary input in the **I/O BOX** can be generated by:

- an external power source,
- a **+24 V DC** power source available on the **I/O BOX** terminal strip (see ***Fig. 11***).

> *The binary inputs circuits are protected against reversed polarity. Therefore, if wires are reversed, no damage to the binary input circuit is caused but the input will not work.*

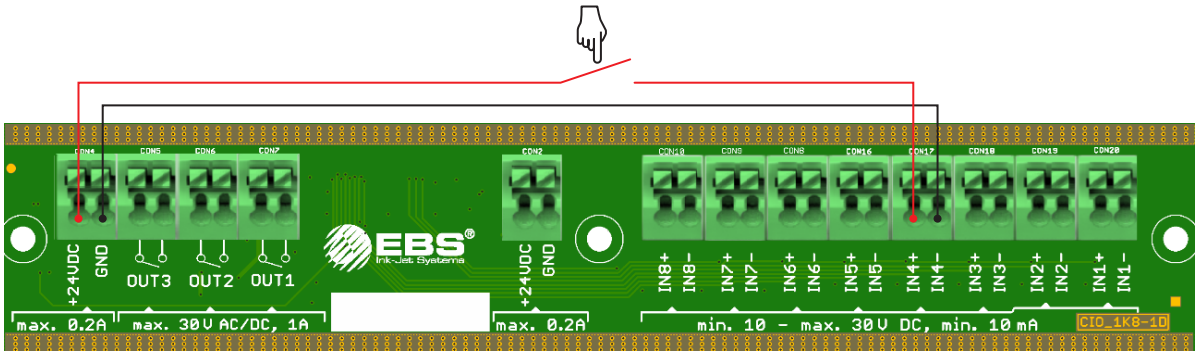


Fig. 11.

In the example shown in ***Fig. 11***, the functions to be performed when the switch-key closes / opens are defined by the user while the **I/O BOX** binary input **IN4** is being configured.

> *For a description of how to configure the* ***I/O BOX*** *see* ***"7.4.3. The I/O BOX Module"***.

2.2.4. PRINTHEADS

The **bigJET®** EBS-1800 printer can operate **up to 4 printheads** whose total number of nozzles **is not greater than 128**.

Further restrictions on the number of nozzles (and thereby supported printheads) are imposed by:

- current output of a single **eLink** connector **1l** (see ***Fig. 4 on page 17***) in the control unit: **max 64 nozzles per eLink connector**,
- ink system ink efficiency: **max 64 nozzles* per ink system**.

> ** The restriction applies to the **7N/13**, **16N/29**, **32N/58** printheads whose nozzles are **150 µm** in diameter; for the **7N/24** and **16N/56** printheads whose nozzles are **170 µm** in diameter (and the demand for ink is higher), the maximum number of nozzles can be smaller - in such a case it is advisable to assess print quality empirically and adjust printing system configuration, if need be.*

Various types of printhead can be applied to the printer. They can operate independently from each other, *i.e.* each of them can print a different project, but they can also be linked together and as a group they can print a single project. With a combination of printheads, significantly higher prints can be produced. Only the **identical** **16N/56**, **32N/58** printheads can be linked into groups. A mixed option is also available where some of the printheads operate independently and the other are linked together.

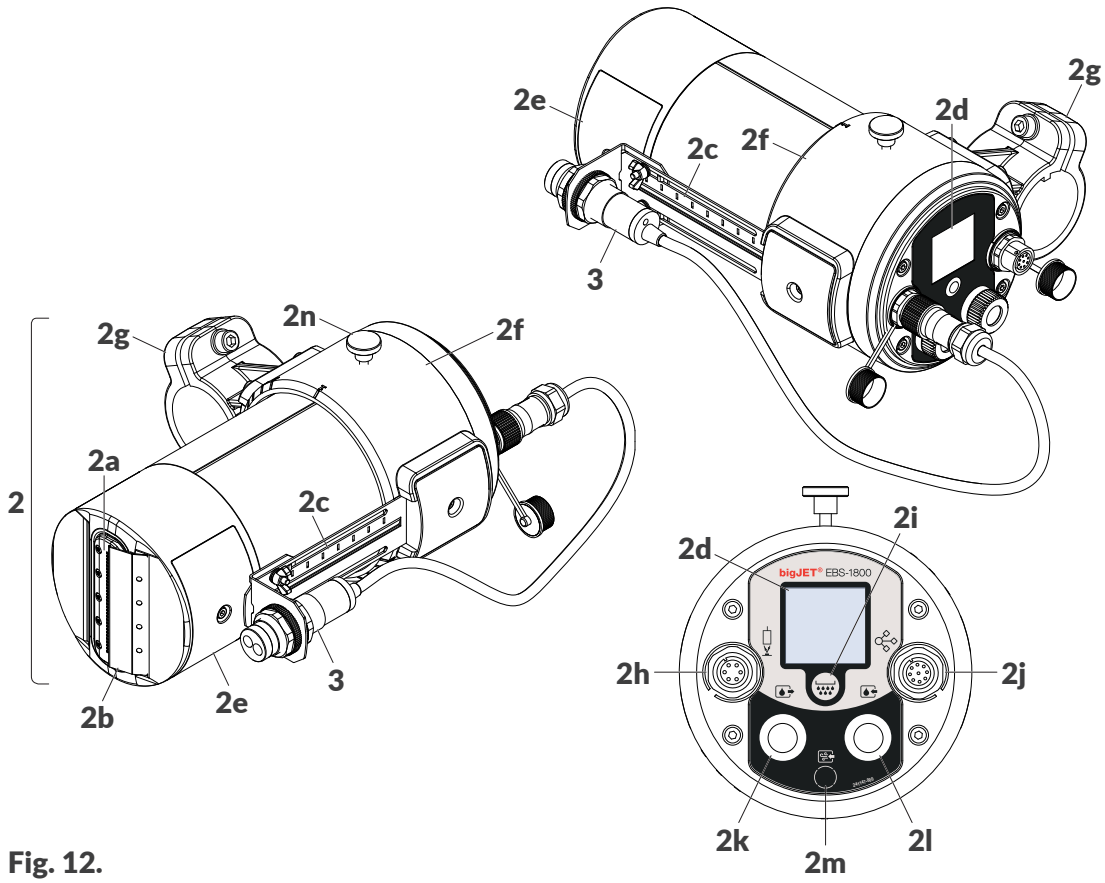


Fig. 12.

2	Printhead.	
2a	Nozzle plate.	
2b	Slide.	
2c	Photodetector holder; with adjustable distance between the photodetector and objects to be labeled.	
2d	**1.44" / 36.6 mm** LCD display.	
2e	Plate for blanking screws for tuning the printing unit.	
2f	Printhead holder; with markers of an angle the printhead is turned through.	
2g	Holder for fastening the printhead to the beam.	
2h	Photodetector input; secured with a blanking plug.	
2i	Purge button.	
2j	**eLink** connector; secured with a blanking plug.	
2k	Ink outlet from printhead; venting.	
2l	Ink inlet to printhead; from ink system.	
2m	External air blow; an option for operation in difficult conditions.	
2n	Handwheel.	
3	Photodetector.	

Printhead **2** is equipped with an LCD display **2d**, where basic information is displayed.

For more details about an LCD display see ***"3.2. Other User-Interface Elements"****.*

Types of printheads for the **bigJET®** EBS-1800 printer:

Type of printhead	Number of nozzles	Distance between nozzles / dots		Maximum print height H		Nozzle diameter
		[mm]	[inch]	[mm]	[inch]	[µm]
7N/13	7	1.8	0.07	13	0.51	150
7N/24	7	3.6*	0.14	24	0.94	170
16N/29	16	1.8	0.07	29	1.14	150
16N/56	16	3.6*	1.14	56	2.20	170
32N/58	32	1.8	0.07	58	2.28	150

** The **7N/24** and **16N/56** printheads are characterized by the nozzle spacing twice that of the other printheads. Therefore they are also marked with the symbol **DD** (Double Distance).*

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

*A degree of turning different than **1** may only be set for independent printheads configured to print separate projects.*

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. 13** through **Fig. 17** 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 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. 14 on page 27***). 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)

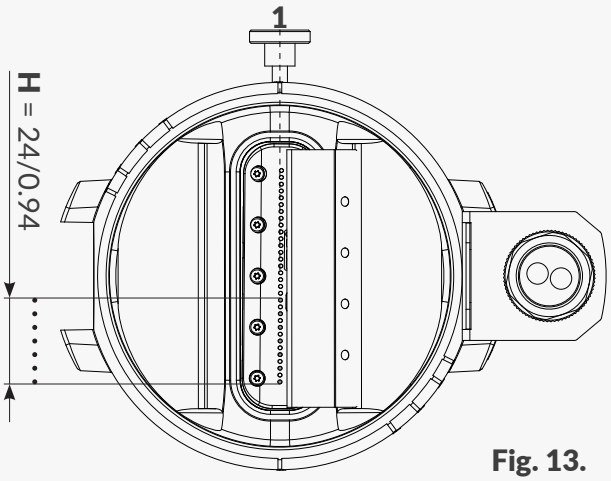


Fig. 13.

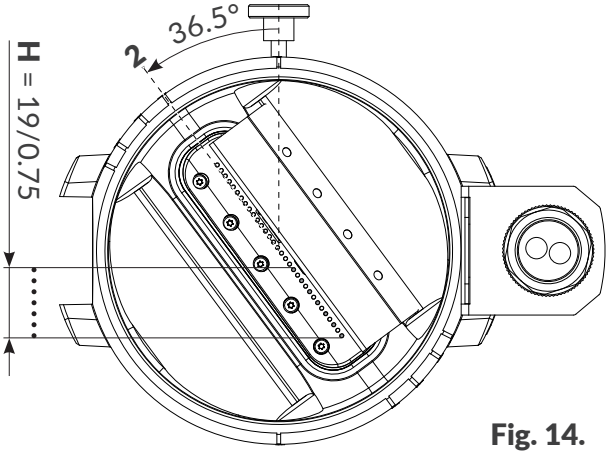


Fig. 14.

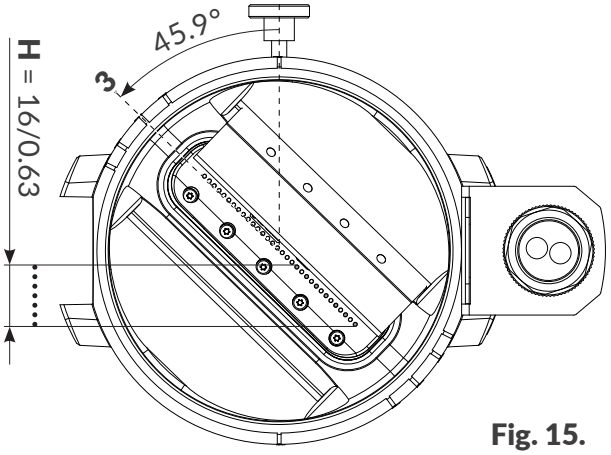


Fig. 15.

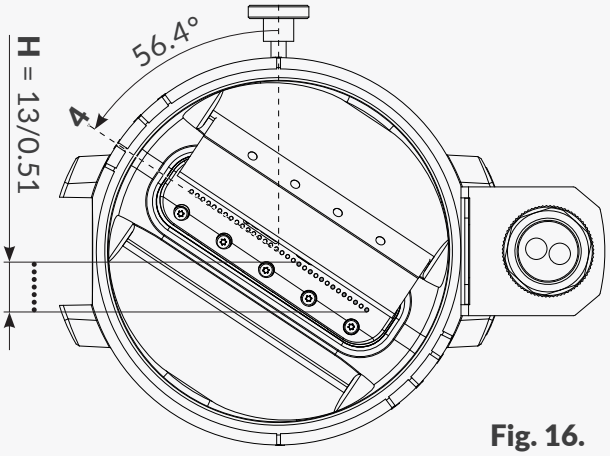


Fig. 16.

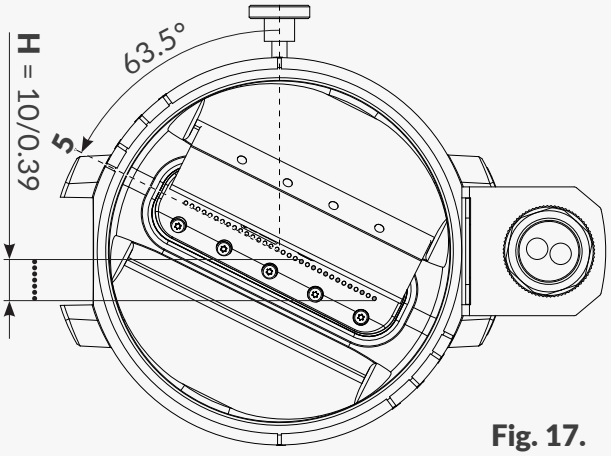


Fig. 17.

Fig. 18 shows two **32N/58** printheads linked together to print a single project in order to get prints of greater height.

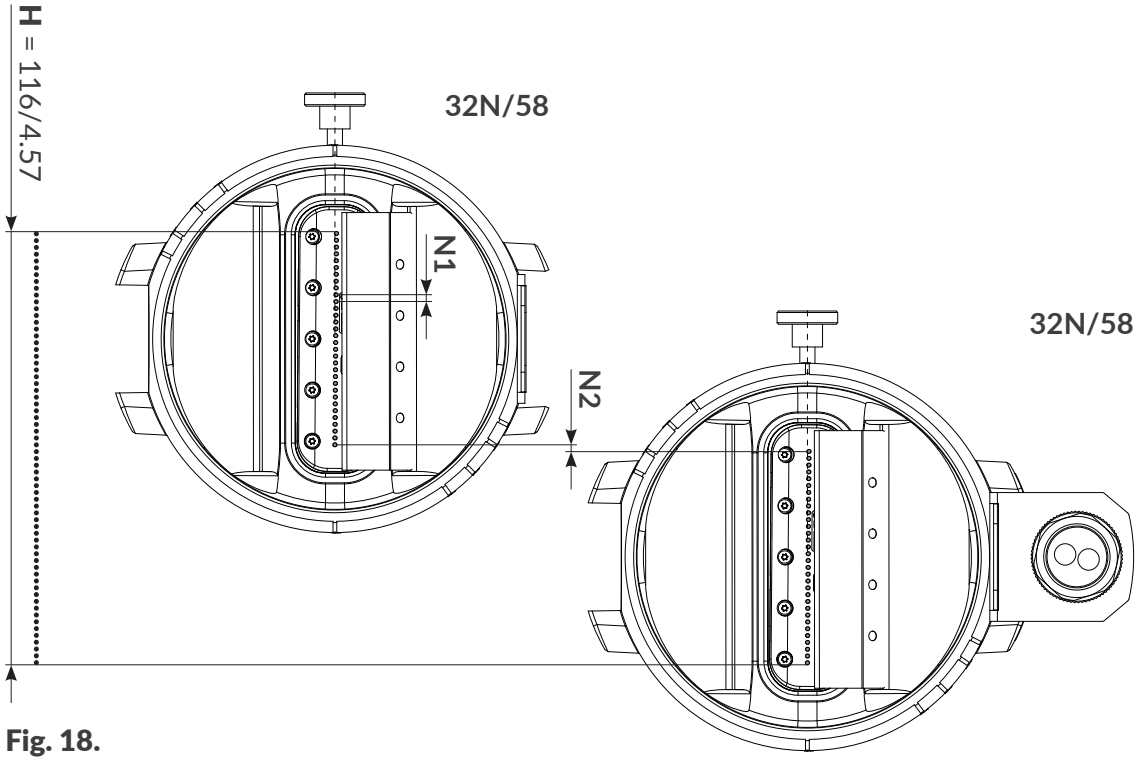


Fig. 18.

If **N1** = **N2**, the distance between consecutive dots in the printed columns is always the same.

2.2.4.1. ELECTRICAL CONNECTIONS

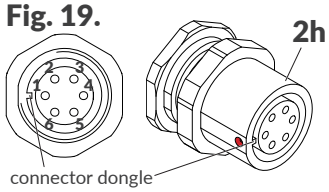
Photodetector input

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 **2h** (see *Fig. 12 on page 24*).

CAUTION: A risk of misconnection!
*Although 6-pin connector **2h** for connecting a photodetector is the same as 6-pin connector **1i** in the control unit (see Fig. 4 on page 17) for connecting a rotational speed sensor, the encoder connected to connector **2h** in the printhead will not work!*

A description of 6-pin female connector **2h** (see *Fig. 19*) of the photodetector is given in the following table.

Fig. 19.



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

The **bigJET®** EBS-1800 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 **0.4 m / 15.7 inch** (as standard) or **5 m / 196.8 inch** (optionally).
The printer can also work with photodetector of other types.

The photodetector will operate correctly if:
*- the so called **configuration space**, or the physical distance in the horizontal direction between the photodetector selected as the source of trigger and the nozzles of the printhead defined as the first is set in the printer; for more details see **"7.3. Configuring Parts of the Printing System"**,*
*- printing parameters related to triggering are set; for more details see **"7.2. Printing Settings"**.*

If a different trigger source is to be connected, it is necessary to use one of the **I/O BOX** inputs.

eLink connector

*A description of the **eLink** interface is given in **"2.3. Installing the Printer"** ▶ **"2.3.3. Electrical Connections"** and **"2.3.4. Examples of Printing System Configurations"**.*

2.2.4.2. HYDRAULIC CONNECTIONS

Printhead ink outlet

Ink outlet **2k** (see ***Fig. 12 on page 24***) is designed to vent the tube through which ink is fed to the printhead.

*For more details about printhead venting see **"2.4. First Printer Startup"**.*

Printhead ink inlet

Ink inlet **2l** (see ***Fig. 12 on page 24***) is designed to feed ink from an ink system to the printhead.
The ink system is connected to the printhead via tubes (together with appropriate connectors) whose lengths are:

- **1.5 m / 59.1 in.** (standard),
- **3.5 m / 137.8 in., 5.5 m / 216.5 in., 10.5 m / 413.4 in.** (options).

*For more details see **"2.3.2. Hydraulic Connections"** and **"2.3.4. Examples of Printing System Configurations"**.*

External air blow

External air inlet **2m** (see ***Fig. 12 on page 24***) is an optional inlet, which is used only when the printer operates in harsh conditions and is it intended for feeding air from an external compressor system.

*For more information about an option contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.2.5. INK SYSTEM

In its basic setup, the **bigJET®** EBS-1800 printer comes with:

- one ink system,
- two printheads.

A more sophisticated printing system containing two ink systems can be set up.

By the application of more than one ink system you can get prints in different colors, use various types of ink, and also increase the maximum number of nozzles that can be used in the printing system.

*For examples of printing systems containing a greater number of ink systems see **"2.3.4. Examples of Printing System Configurations"**.*

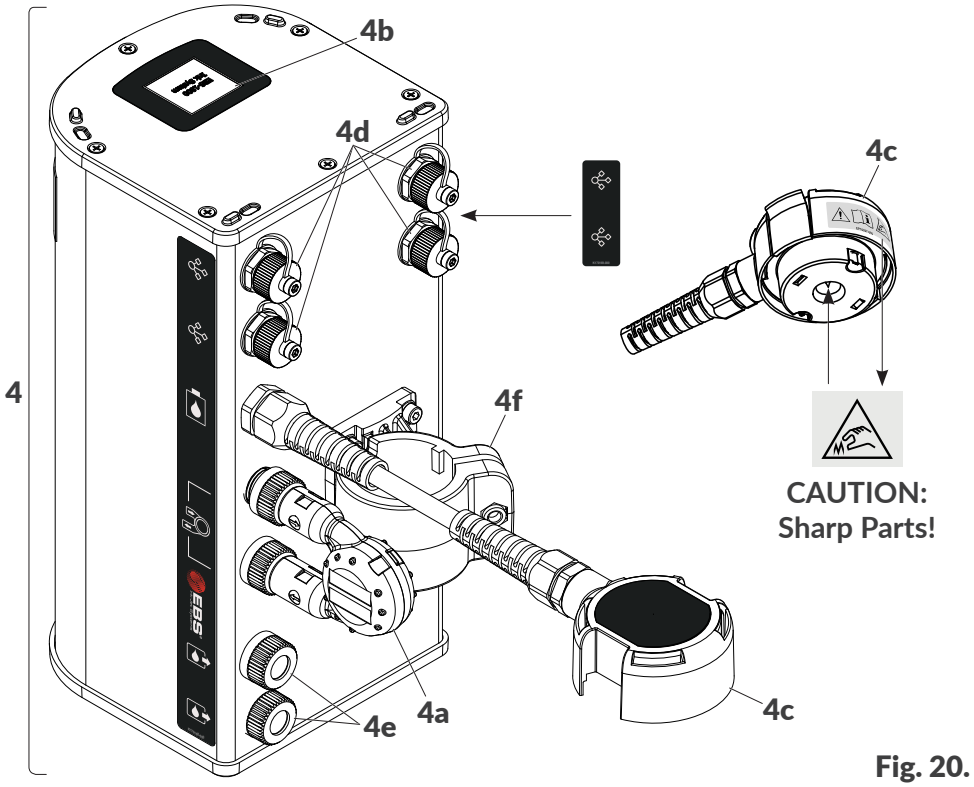


Fig. 20.

4	Ink system.	
4a	Ink filter.	
4b	**1.44" / 36.6 mm** LCD display.	
4c	Ink canister connection.	
4d	**eLink** connector; secured with a blanking plug.	
4e	Ink system ink outlets.	
4f	Ink system holder.	

Ink system **4** (see ***Fig. 20***) is equipped with an LCD display **4b**, where basic information is displayed.

*For more details about an LCD display see **"3.2. Other User-Interface Elements"**.*

2.2.5.1. ELECTRICAL CONNECTIONS

eLink connector

*A description of the **eLink** interface is given in **"2.3. Installing the Printer"** ▶ **"2.3.3. Electrical Connections"** and **"2.3.4. Examples of Printing System Configurations"**.*

2.2.5.2. HYDRAULIC CONNECTIONS

Ink system ink outlets

Two ink outlets **4e** (see ***Fig. 20 on page 30***) in the ink system are designed to feed ink to printheads.

With its ink efficiency (generated by both of outlets **4e** jointly), the ink system can support a **maximum of 64 nozzles***.

** The restriction applies to the **7N/13**, **16N/29**, **32N/58** printheads whose nozzles are **150 µm** in diameter; for the **7N/24** and **16N/56** printheads whose nozzles are **170 µm** in diameter (and the demand for ink is higher), the maximum number of nozzles can be smaller - in such a case it is advisable to assess print quality empirically and adjust printing system configuration, if need be.*

If a higher number of nozzles in the printing system is required, it is necessary to apply two ink systems.

If more than two printheads need to be connected to one ink system, appropriate T-connections (Part No. **P513195**; see ***Fig. 21***) should be used.

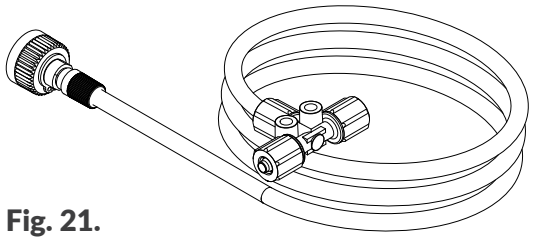


Fig. 21.

*For more details see **"2.3.4. Examples of Printing System Configurations"**.*

Ink / wash-up canister connection

Connection **4c** (see ***Fig. 20 on page 30***) is designed to connect an ink canister to the printer. The design of the connection ensures easy canister replacement, while the **IMS** (Ink Monitoring System), which is part of the connection, prevents a canister of unsuitable ink or wash-up or of ink or wash-up whose expiration date has passed from getting connected.

A needle is one of the parts of connection **4c**. As a risk of getting wounded exists, the connection is provided with the following warning label:

CAUTION: Sharp Parts!
*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.*

2.2.6. CONSUMABLES

CAUTION: The risk of leakage!
*A sump tray with a minimum capacity of **5 liters** should be placed under each ink / wash-up canister to collect potential leakages. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.2.6.1. INK CANISTER

The **bigJET®** EBS-1800 printer is fed with ink out of a **5 liter** canister **5** (see ***Fig. 22***).

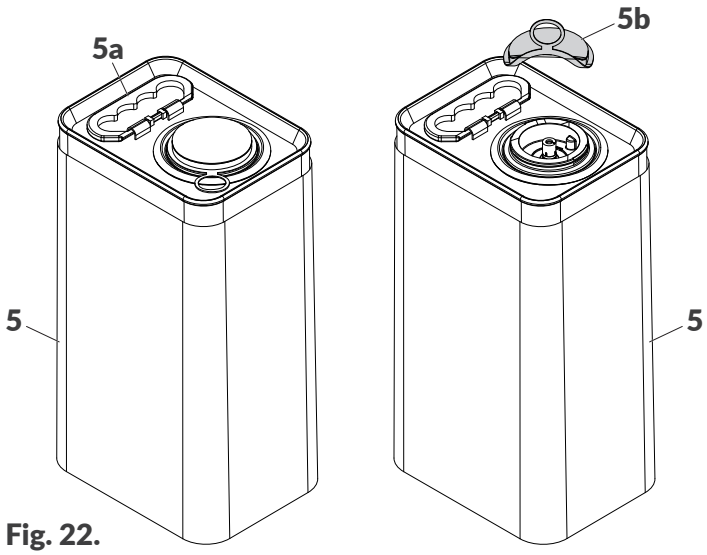


Fig. 22.

5	5-liter ink canister.
5a	Carrying handle.
5b	Cap.

Every canister is secured with a cap **5b**. The cap has to be removed before the canister is installed.

Weight of a 5-liter canister of methyl ethyl ketone-based ink: **approx 5.0 kg (11.0 lbs)**.

2.2.6.2. WASH-UP CANISTER

If the **bigJET®** EBS-1800 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.

The **bigJET®** EBS-1800 printer is fed with wash-up out of a **5-liter** canister.

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.*

The **bigJET®** EBS-1800 printer must be installed and operated exclusively in an industrial environment where physical and logical measures ensure that access is limited only to authorized personnel and devices. The printer should be installed by authorized personnel in a controlled area, *e.g.*, on a conveyor belt located within a restricted access zone. The customer is responsible for securing the installation site; however, access to the area where the printer is located must always be properly protected.
By default, the **bigJET®** EBS-1800 printer operates offline, without a connection to a local network. In rare cases where network connectivity is required, the printer must only be connected to a managed local network that includes safeguards against unauthorized access and Denial of Service (DoS) attacks, *e.g.*, by using firewall appliances.

The **bigJET®** EBS-1800 printer is available in many variants, which differ from each other in, among other things:

- the type of printheads applied: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58**,
- the number of printheads: **1** to **4**,
- the number of ink systems: **1** to **2**,
- the length of **eLink** cables: **1 meter** / **39.4 inch** (standard), **3 meters** / **118.1 inches**, **5 meters** / **196.8 inches**, **10 meters** / **393.7 inches** (option),
- the length of ink tubing: **1.5 meters** / **59.1 inches** (standard), **3.5 meters** / **137.8 inches**, **5.5 meters** / **216.5 inches**, **10.5 meters** / **413.4 inches** (options).

	Component part	Quantity
1	Control unit.	**1**
2	Printhead.	**1 / 2 / 3 / 4**
3	Photodetector.	**0 – 5***
4	Ink system.	**1 / 2**
5	5-liter ink canister.	**1 / 2**
6	Ink canister cage.	**0 / 1 / 2**
7	Printer support beam with holders.	**1 / 2**
8	Printhead support beam with holders.	**1 / 2 / 3 / 4**
9	Power cord, depending on the country the printer is destined for.	**1**
10	Sump tray.	**1 / 2**
	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 **bigJET®** EBS-1800 printer can be provided with up to 5 photodetectors but only one of the photodetectors can be selected as the trigger source.*

Important notes on installation of the **bigJET®** EBS-1800 printer:

- The printer is not designed to operate in explosive atmospheres.
- The printer must be installed indoors, in a ventilated place, away from sources of heat, radiation or sparks.
- Equipotential bonding must be carried out between each ink system and the accompanying canister.
- A metal sump tray with a minimum capacity of **5 liters** should be placed under every ink canister to collect potential leakages; the metal sump tray must be connected with parts of the ink canister via an equipotential bonding conductor.

> *The sump tray with holder (Part No. **P513427**) is not included in the installation kit. It is part of the optional stands (Part No. **P910220** and **P910219**) and can also be mounted to other standard stands. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

- With the current output of a single **eLink** connector in the control unit, a **maximum of 64 nozzles** can be operated per connector, or a **maximum of 128 nozzles** per control unit.
- With its ink efficiency, one ink system can support a **maximum of 64 nozzles*** assigned to that ink system.

> ** The restriction applies to the **7N/13**, **16N/29**, **32N/58** printheads whose nozzles are **150 µm** in diameter; for the **7N/24** and **16N/56** printheads whose nozzles are **170 µm** in diameter (and the demand for ink is higher), the maximum number of nozzles can be smaller - in such a case it is advisable to assess print quality empirically and adjust printing system configuration, if need be.*

- Objects to be labeled must move in front of the face of each of the printheads from the slide side. The position of the slide may be changed, and such a change will reverse the direction of movement.
- The ink systems and ink canisters must be installed in the vertical position; the other system parts (the control unit, the printheads, the beams) can be installed in any position.
- The difference of levels between the lower edge of an ink system and the lower edges of every printhead that is **fed with the ink out of that system**, must not be greater than **±1.5 m / 59.1 in. (see *Fig. 23*)**.
- The information on how the printer on the factory conveyor is configured 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.

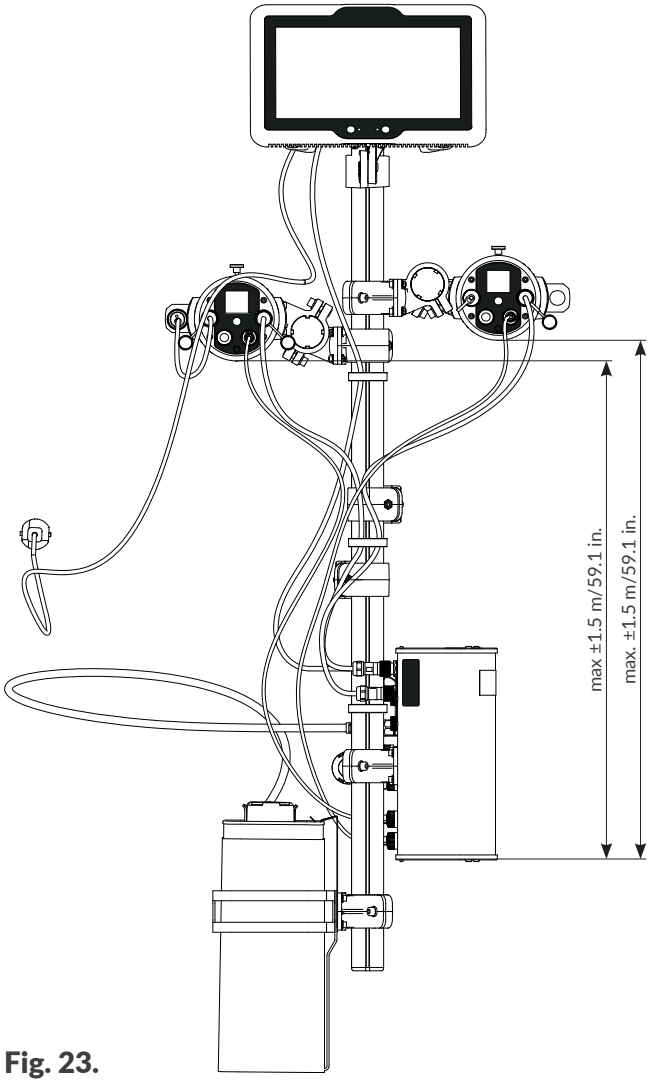


Fig. 23.

There are may ways of how to configure the **bigJET®** EBS-1800 printer on a factory conveyor, therefore the descriptions contained in this chapter apply to the configuration taken as an example and consisting of:

- one control unit,
- one ink system,
- one ink canister put into a cage,
- one support beam,
- two printheads.

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 in **Safety and Important Information** manual.

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 **8a**),*
*- 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. 24***).

   CAUTION: 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. 24***) depending on the amount of free space available on the conveyor and on the layout of printer components on printer support beam **7**.

2. Fasten holders **7a** to the belt conveyor and position them according to ***Fig. 24***. Tighten the screws in holders **7a** with the #3 hex key with a ball tip.

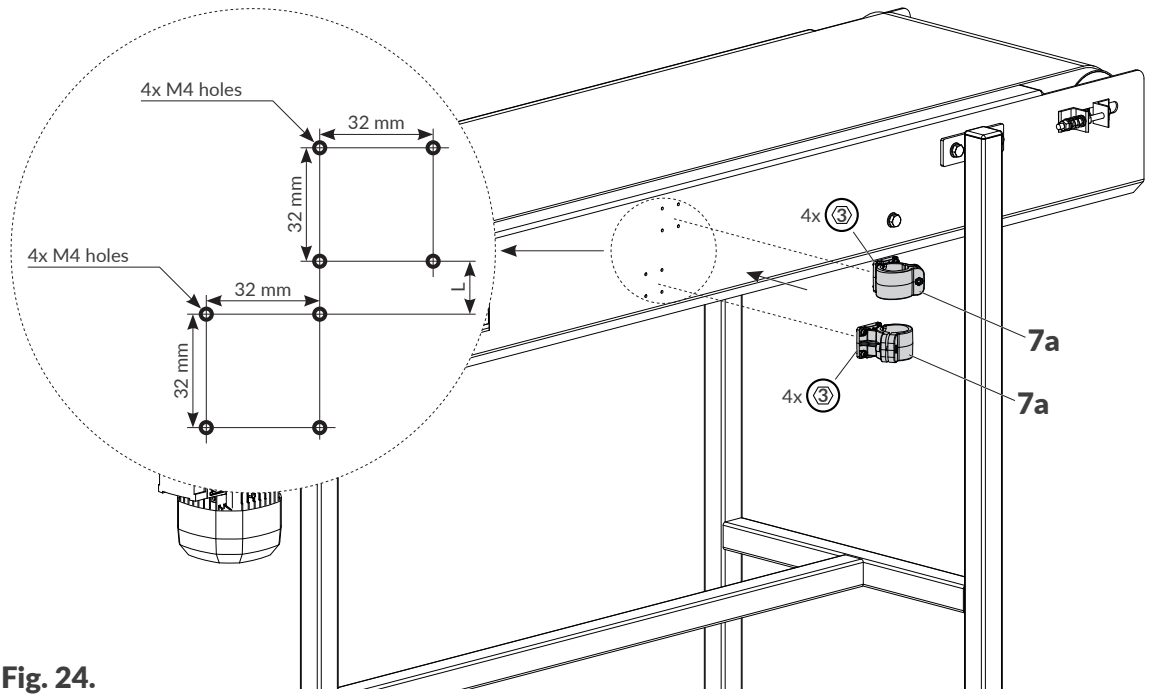


Fig. 24.

3. Install support beam **7** in holders **7a** by inserting it according to ***Fig. 25***. Use the #5 hex key to tighten the appropriate screws that are parts of holders **7a**, clamping the holders on the support beam **7**.
4. Install articulated holders **8a** on the support beam **7** (see ***Fig. 26***). Use the #5 angle hex (Allen) key to tighten the appropriate screws that are parts of the holders **8a**, clamping the holders on the support beam **7**.

> *Articulated holder **8a** can be configured in 3 ways. For more details see **"2.3. Installing the Printer"** ▶ **"2.3.1. Additional Information"**.*

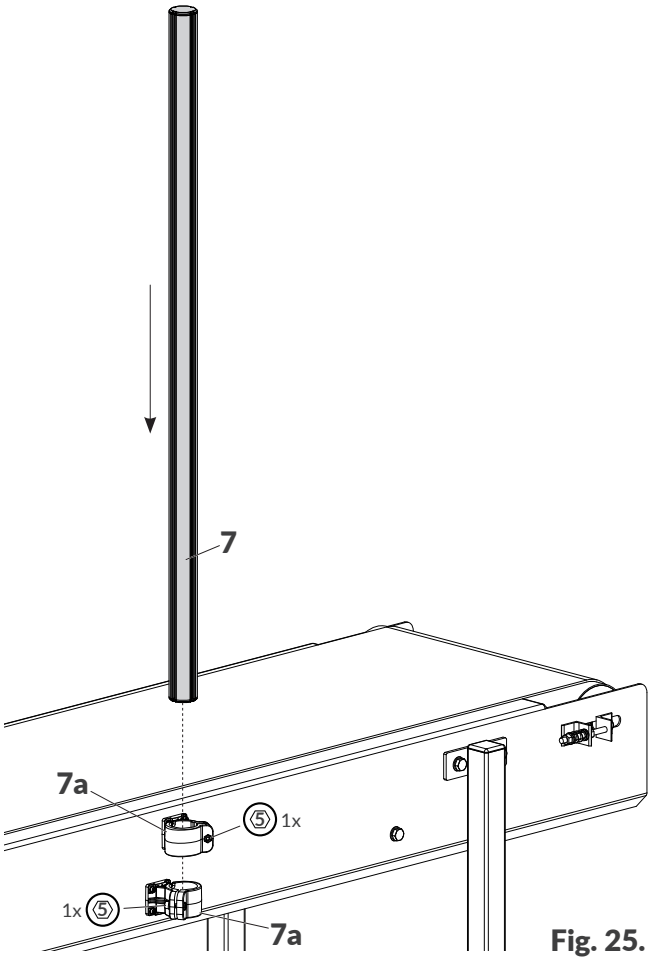


Fig. 25.

5. Install printhead beams **8** in the articulated holders **8a**. Use the #5 angle hex key to tighten the appropriate screws that are parts of the holders **8a**, clamping the holders on the printhead beams **8**.

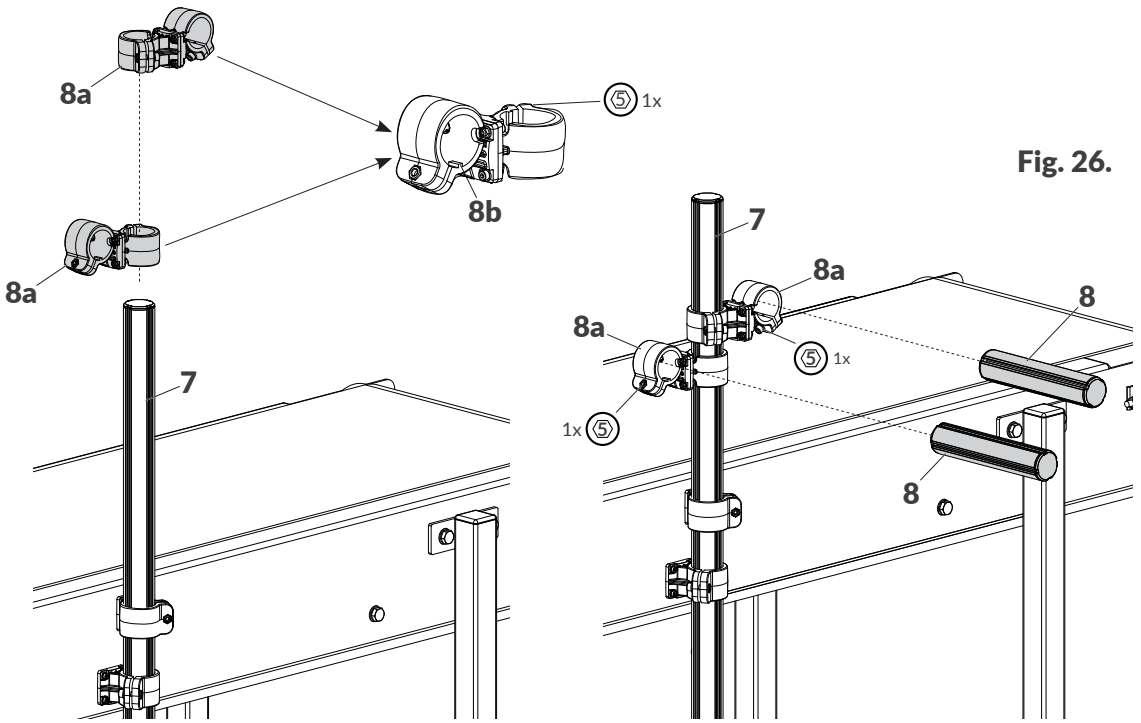


Fig. 26.

While installing the printer make sure that holder fins **8b** (see ***Fig. 26***) are properly put into the vertical grooves on the support beams.

6. Install printheads **2** on the printhead beams **8** (see ***Fig. 27***). Use the #5 angle hex key to tighten the screws in holders **2g**, clamping the holders on the printhead beams **8**.
   Adjust the degree of turning of a selected printhead in holder **2f**.

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

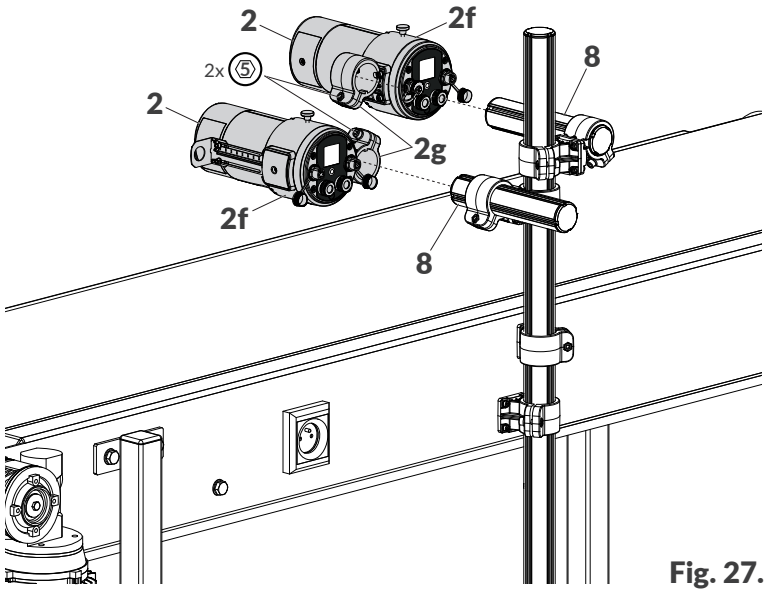


Fig. 27.

7. Install ink system **4** on the support beam **7** (see ***Fig. 28***). Use the #5 angle hex key to tighten the screw in holder **4f**, clamping the holder on the support beam **7**.

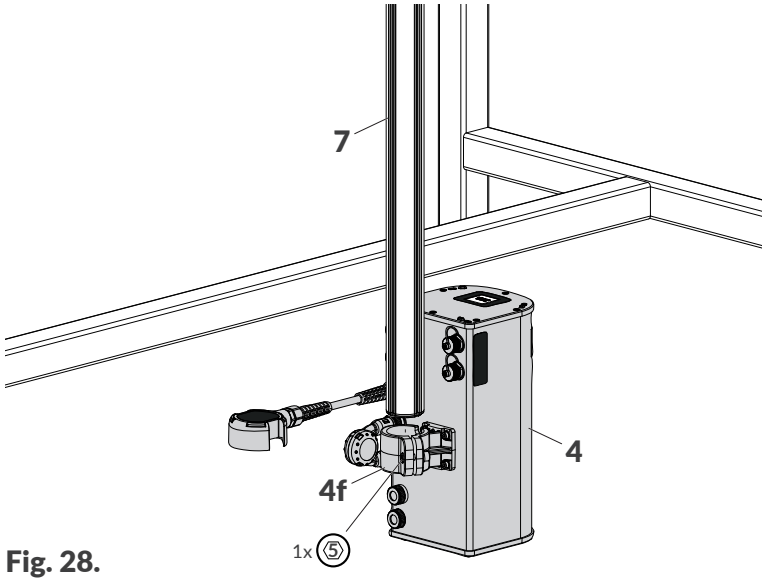


Fig. 28.

8. Connect the printheads **2**, to the ink system **4** using:
   - **eLink** ◯ cables,
   - ink tubing ● (see ***Fig. 29***).

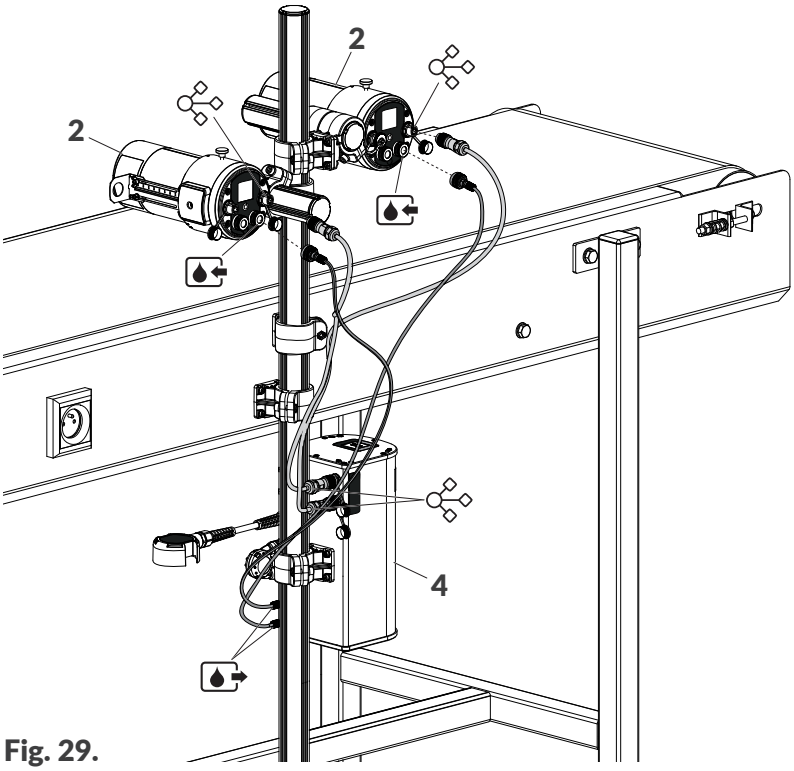


Fig. 29.

*For more details on how to join printer sub-assemblies see **"2.3. Installing the Printer"** ▶ **"2.3.2. Hydraulic Connections"**, **"2.3.3. Electrical Connections"** and **"2.3.4. Examples of Printing System Configurations"**.*

9. Install ink canister cage **6** on the support beam **7** (see ***Fig. 30***). Use the #**5** angle hex key to tighten the screw in holder **6b**, clamping the holder on the support beam **7**.

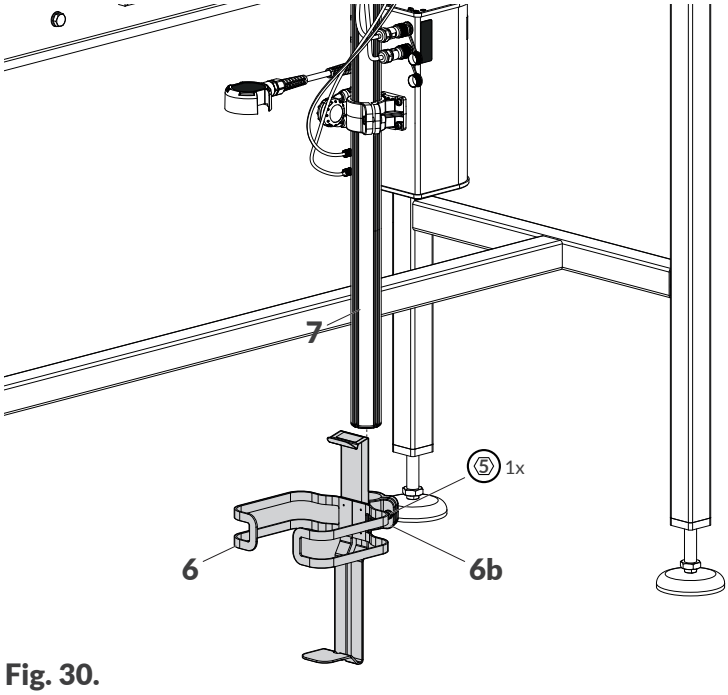


Fig. 30.

10. Install an equipotential bonding conductor between parts of the ink system and parts of the ink canister (see ***Fig. 31***). To do this, use a #**3** ball-end hex (Allen) key to loosen:
    - one of the four screws that fasten the holder **4f** to the ink system **4**

      and
    - one of the four screws that fasten the holder **6b** to the ink canister cage **6**.

    Insert the fork terminal of an equipotential bonding conductor, **1.5 m** in length, (Part No. **P381142**) between the washer and the spring washer of the screw that fastens the holder **4f** and tighten the screw. Insert the other terminal of the conductor between the washer and the spring washer of the screw that fastens the holder **6b** and tighten the screw.

    If your printing system contains two ink systems and two ink canisters, equipotential bonding must be carried out for either ink system and the accompanying canister.

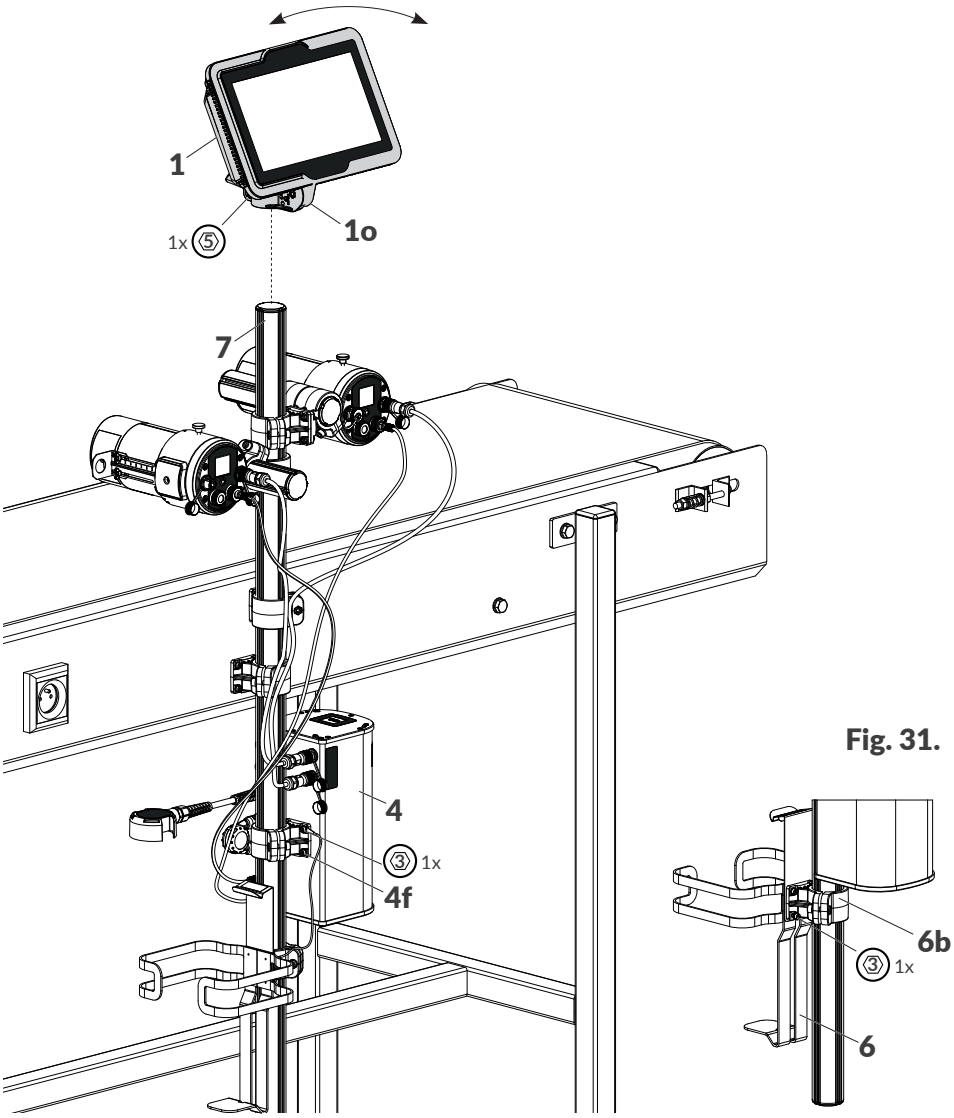


Fig. 31.

11. Fasten control unit **1** to the support beam **7** (see ***Fig. 31***).

    Using the configuration capabilities of holder **1o**, adjust the control unit angle on the beam as required.

    Use the #**5** angle hex key to tighten the screw in the holder **1o**, clamping the holder to the support beam **7**.

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

12. Install photodetector **3** in holder **2c** (see ***Fig. 32***). Retaining nut **3a** can be sufficiently tightened with fingers. Use a #**22** open ended spanner, if need be. Connect photodetector **3** to printhead **2**. Loosen two butterfly nuts in holder **2c** and set a distance between photodetector **3** and objects to be labeled. On adjusting the distance, tighten the butterfly nuts.
13. Connect the ink system **4**, to the control unit **1**, with the **eLink** cable.

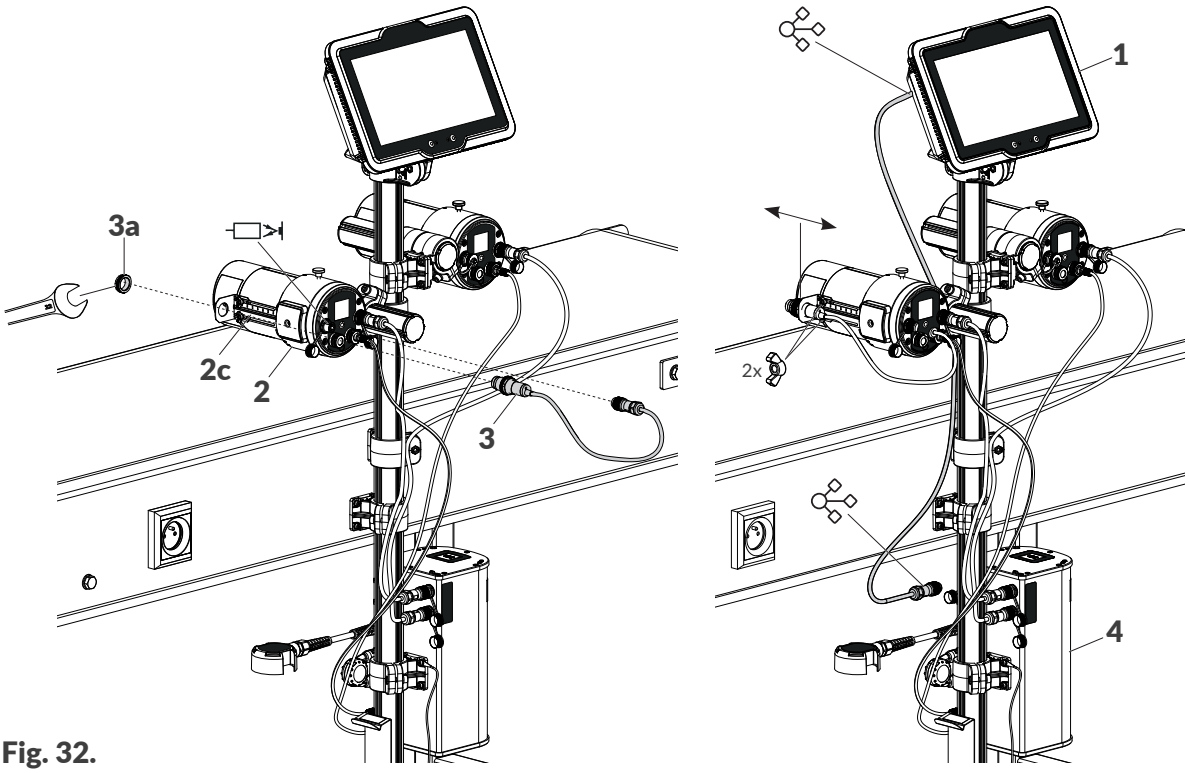


Fig. 32.

For more details on how to join printer sub-assemblies see ***"2.3. Installing the Printer"*** ▶ ***"2.3.2. Hydraulic Connections"***, ***"2.3.3. Electrical Connections"*** *and* ***"2.3.4. Examples of Printing System Configurations"***.

14. Put the sump tray **10** (see ***Fig. 33***), under the ink canister **5**, in such a way that the whole canister is above the tray. This ensures that potential leakage from the canister is caught by the tray, should a leak occur.

> *The sump tray with holder (Part No. **P513427**) is not included in the installation kit. It is part of the optional stands (Part No. **P910220** and **P910219**) and can also be mounted to other standard stands. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

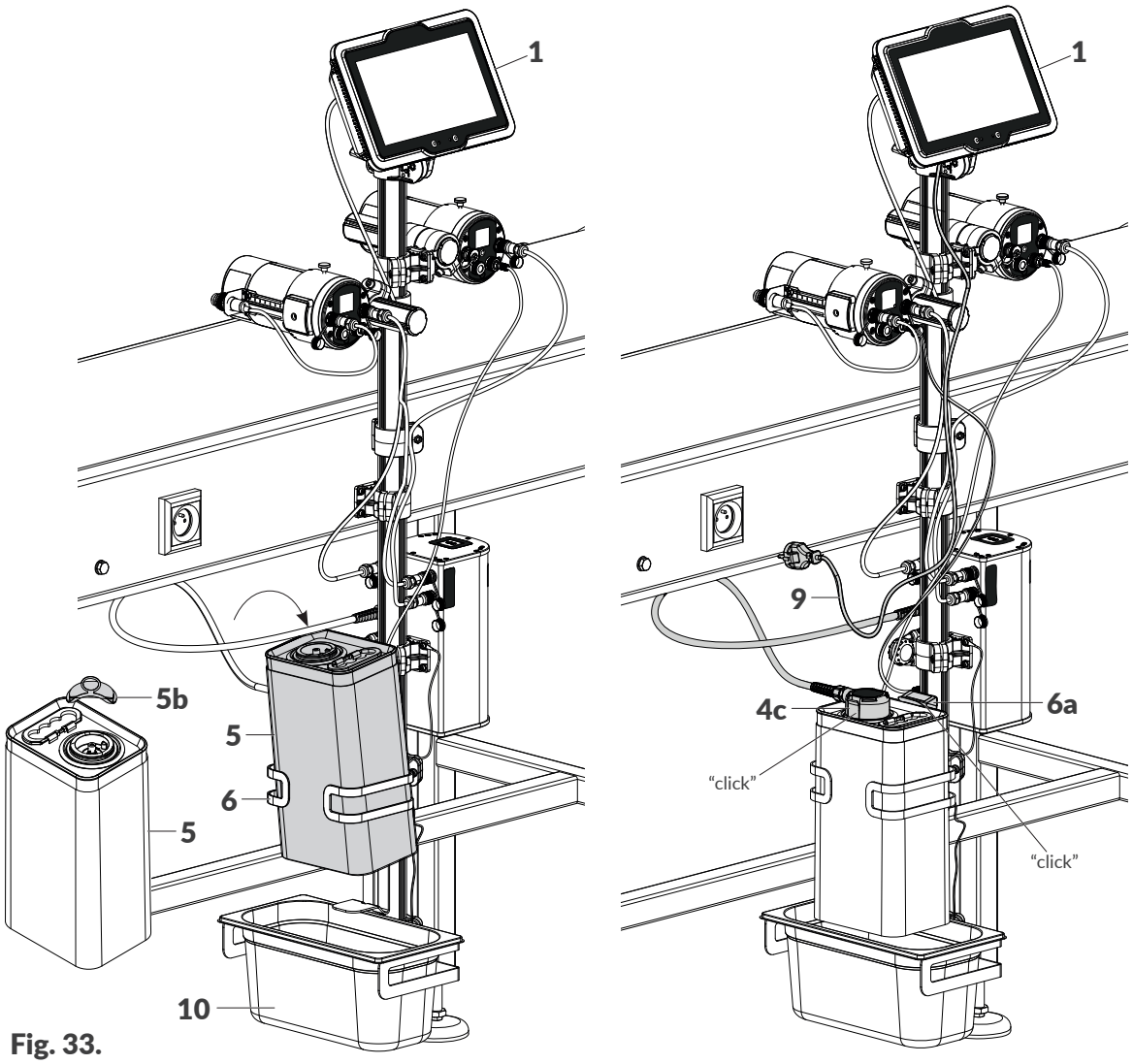


Fig. 33.

15. Install an equipotential bonding conductor between ink canister parts and sump tray parts (see *Fig. 34*). To do this, use a #**3** ball-end hex (Allen) key to loosen:
    - one of the four screws that fasten the holder **6b** to the ink canister cage **6**

      and
    - one of the four screws that fasten the holder **10b** to sump tray clamping ring **10a**.

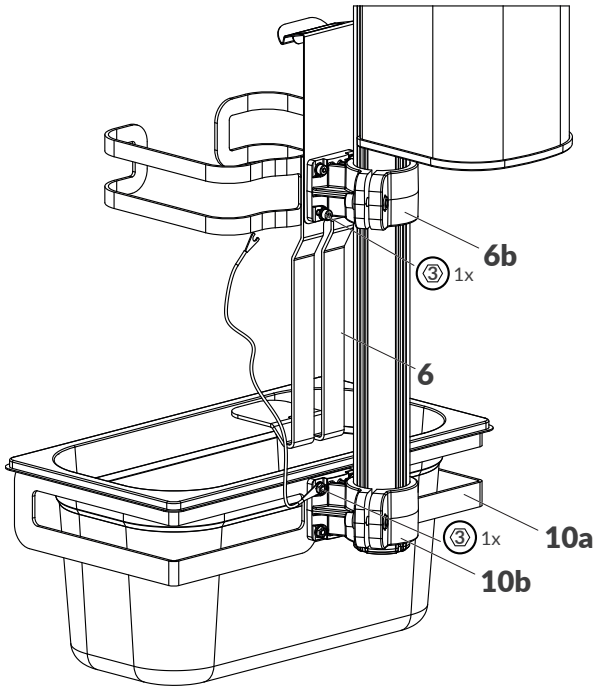


Fig. 34.

Insert the fork terminal of an equipotential bonding conductor, **0.5 m** in length, (Part No. **P381150**) between the washer and the spring washer of the screw that fastens the holder **6b** and tighten the screw. Insert the other terminal of the conductor between the washer and the spring washer of the screw that fastens the holder **10b** and tighten the screw.

If your printing system contains two ink canisters and two sump trays, equipotential bonding must be carried out between either canister and the accompanying sump tray.

16. Remove the transport protection from the needle that is part of the canister connection.
17. Install a canister **5** (see *Fig. 33 on page 41*) of ink of a proper type:
    - put the canister **5** in to the cage **6** making sure that clamp **6a** closes on the canister top edge,
    - remove the cap **5b** from the canister **5**,
    - install ink system connection **4c** on the canister **5**.

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

18. Connect power cord **9** to the control unit **1** and to the mains socket where the earth pin is wired (see *Fig. 33 on page 41*).

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

19. Fasten cable holders **7b** to the support beam **7** (see ***Fig. 35***).

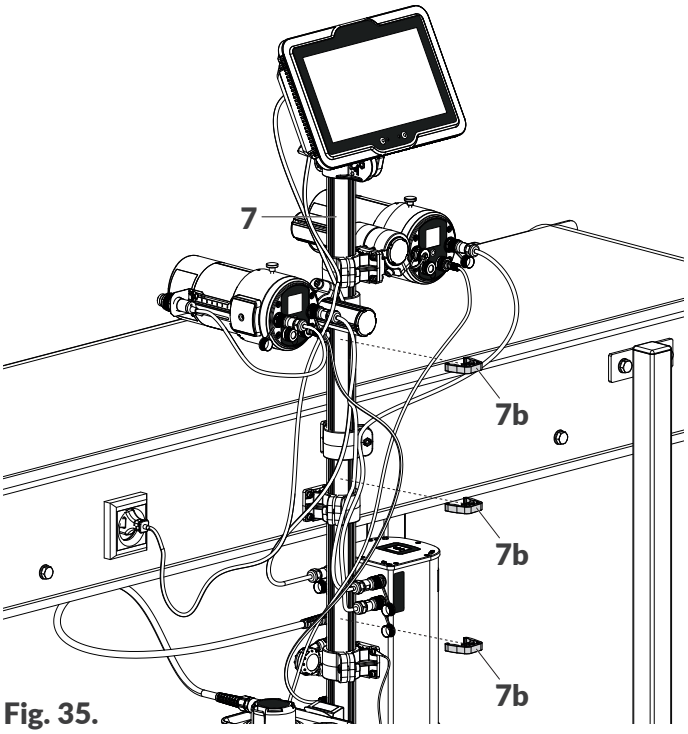


Fig. 35.

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

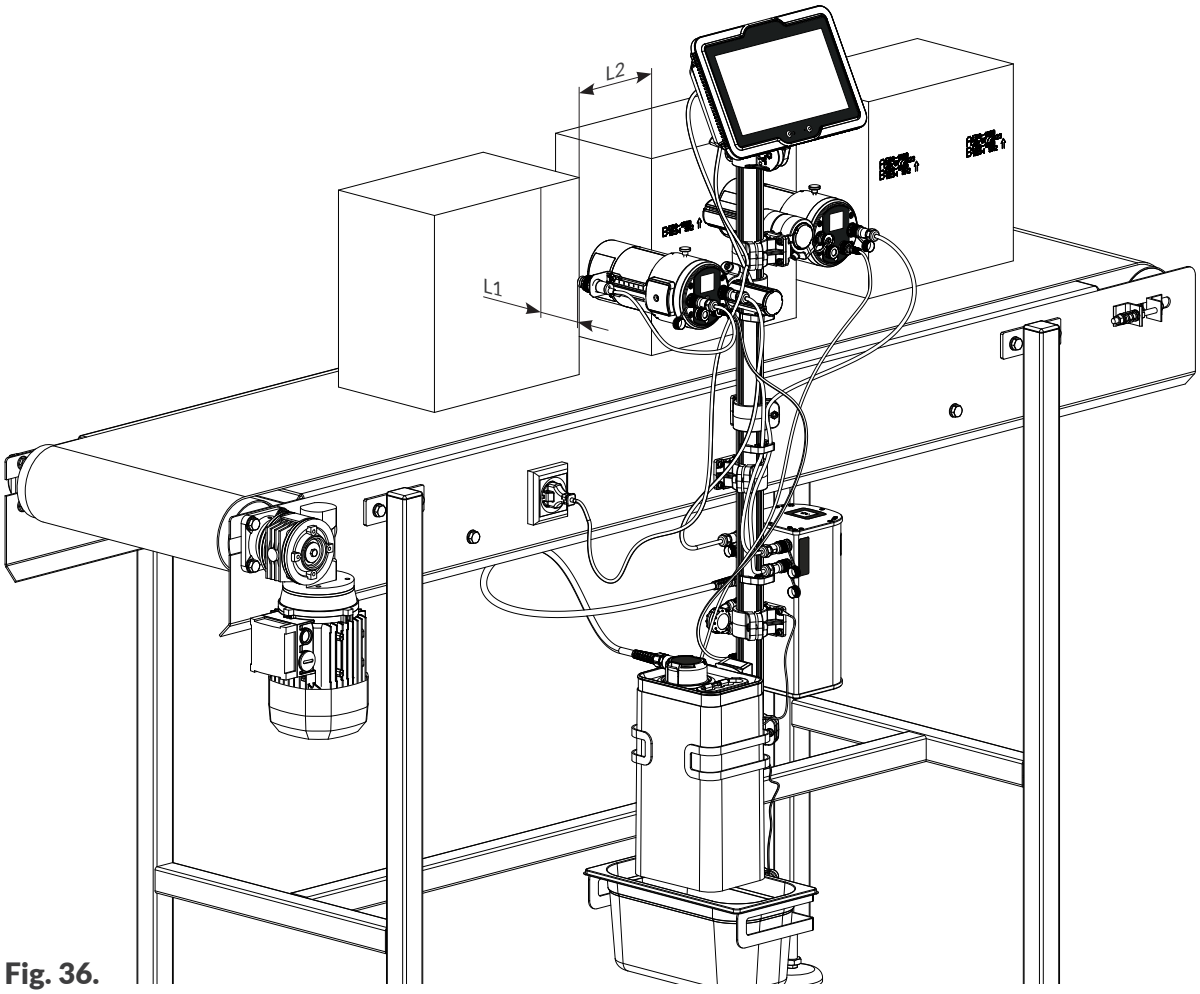


Fig. 36.

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

Space **L1** between the face of each of the printheads and objects to be labeled: **2 to 20 mm (0.08 to 0.8 in.)**.

Minimum distance **L2** between consecutive objects on a factory conveyor: **5 mm (0.2 in.).**

2.3.1. ADDITIONAL INFORMATION

Articulated holder

Articulated holders **6a** (see ***Fig. 37***) in the installation kit offer 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.

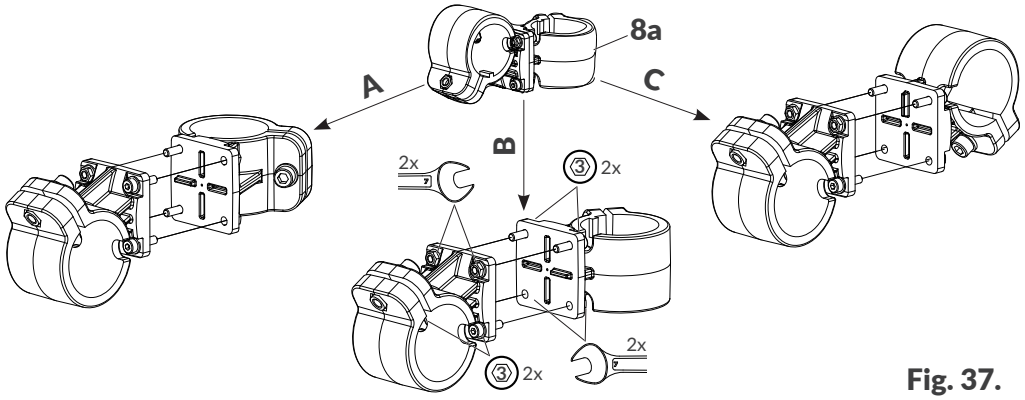


Fig. 37.

*A #7 open ended spanner and a #3 hex (Allen) key are necessary for changing the position of articulated holder **8a**.*

Complete printhead holder

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

- Change the degree of turning of the selected printhead **2** (see ***Fig. 38 on page 45***) to reduce print height.

  The degrees of turning are marked on holder **2f**.

  *A degree of turning different than **1** may only be set for independent printheads configured to print separate projects.*

- Rotate holder **2f** through 180° (see ***Fig. 39 on page 46***).

  You can rotate holder **2f** through 180° because the turning marks and the holes to screw handwheel **2n** in are both on top and bottom of the holder **2f**. If you rotate holder **2f** through 180°, you will swap places of holder **2g**, which is designed to fasten the printhead to the beam, and photodetector holder **2c**.

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

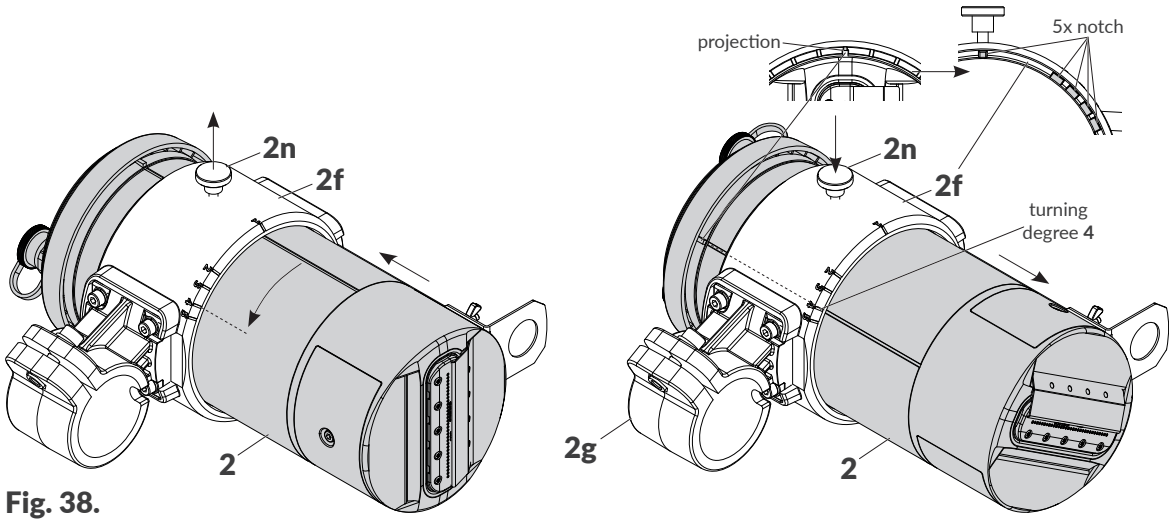


Fig. 38.

1. Loosen handwheel **2n** (see ***Fig. 38***).
2. Move holder **2f** slightly towards the face of printhead **2**.
3. Rotate holder **2f** through 180° in such a way that the projection on the printhead is aligned with an appropriate turning degree mark on holder **2f**.
   The degree of turning shown in ***Fig. 38*** is 4.
4. Push holder **2f** towards the back of the printhead in such a way that the projection on the printhead fits into an appropriate positioning notch in holder **2f**.
   Holder **2f** has 5 positioning notches that correspond to all turning degrees available. Owing to that no degree of turning of printhead **2** can be set incorrectly.
5. Tighten handwheel **2n**.
   The degree of turning of selected 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 **2f** through 180°:

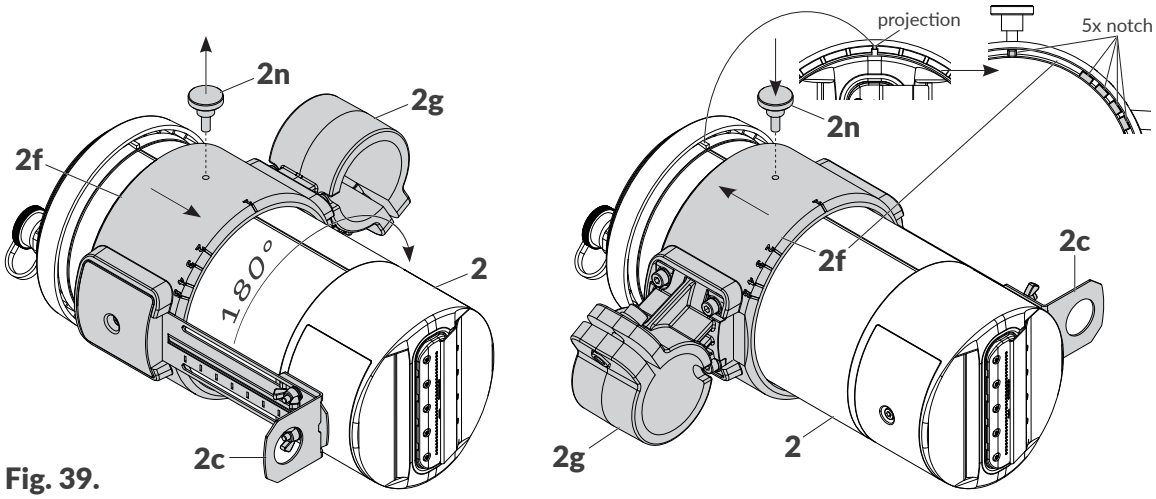


Fig. 39.

1. Unscrew handwheel **2n** completely.
2. Move holder **2f** slightly towards the face of printhead **2**.
3. Rotate holder **2f** through 180° in such a way that the projection on the printhead is aligned with an appropriate turning degree mark on holder **2f**.
   The degree of turning shown in ***Fig. 39*** is **1** (the printhead is unturned).
4. Push holder **2f** towards the back of the printhead in such a way that the projection on the printhead fits into an appropriate positioning notch in holder **2f**.
   Holder **2f** has 5 positioning notches that correspond to all turning degrees available. Owing to that no degree of turning of printhead **2** can be set incorrectly.
5. Screw handwheel **2n** into the hole in holder **2n** which you find on top after the holder will have been rotated.

Slide

Slide **2b** (see ***Fig. 40***) secures the nozzle plate against damage. It can be fastened to the face of a printhead in two ways. Owing to that, the direction in which objects move in front of the printhead face can be easily changed.

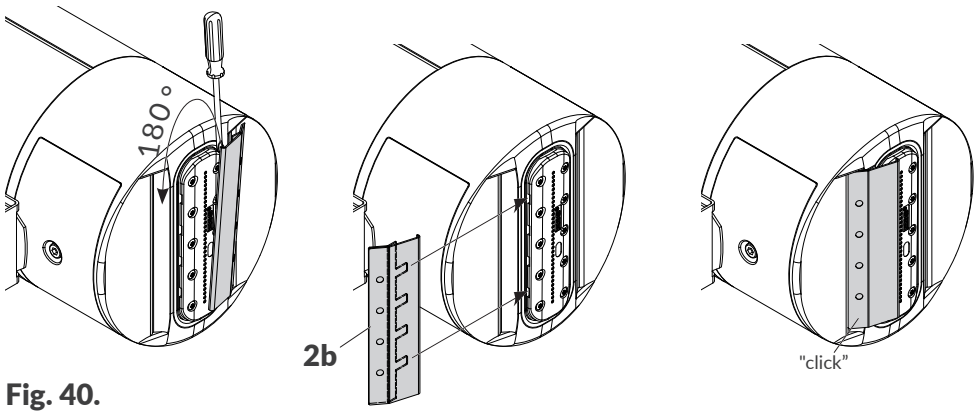


Fig. 40.

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

Dedicated stand

Section *"2.3. Installing the Printer"* shows an example of how to install the **bigJET®** EBS-1800 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 with one support beam (Part No **P910214**; see *Fig. 41*),
- a wheel stand with one support beam (Part No **P910208**; see *Fig. 42*),

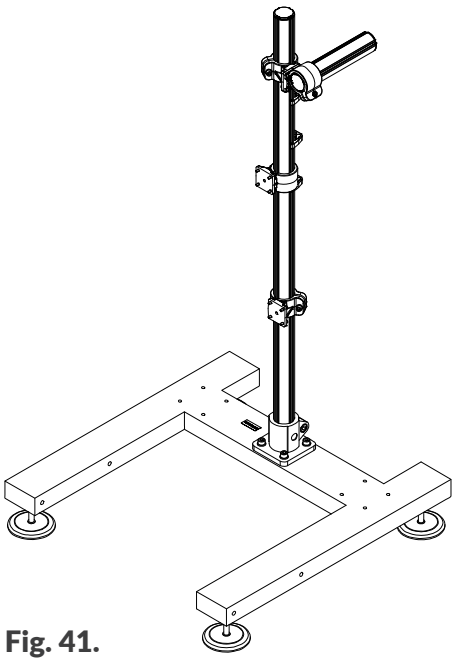


Fig. 41.

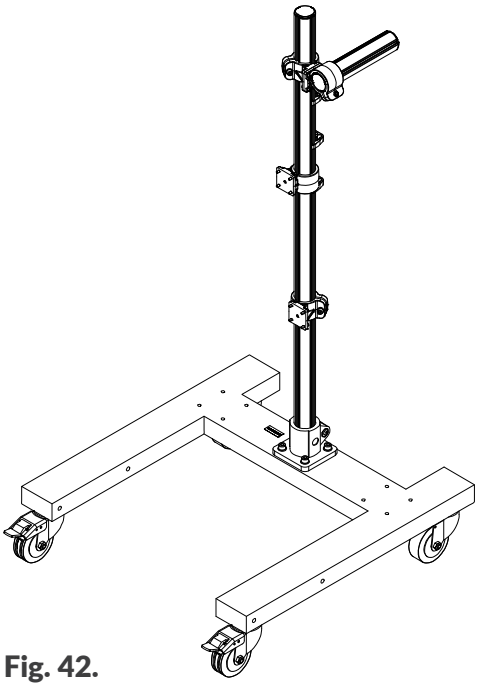


Fig. 42.

- a legged stand with two support beams (Part No **P910213**; see *Fig. 43*),
- a wheel stand with two support beams (Part No **P910209**; see *Fig. 44*).

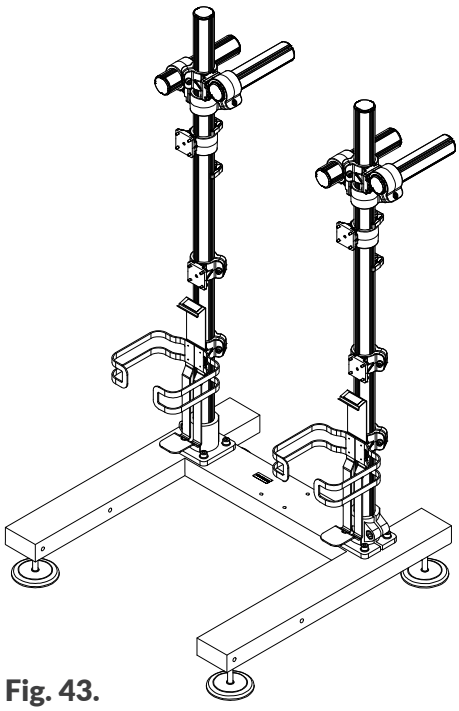


Fig. 43.

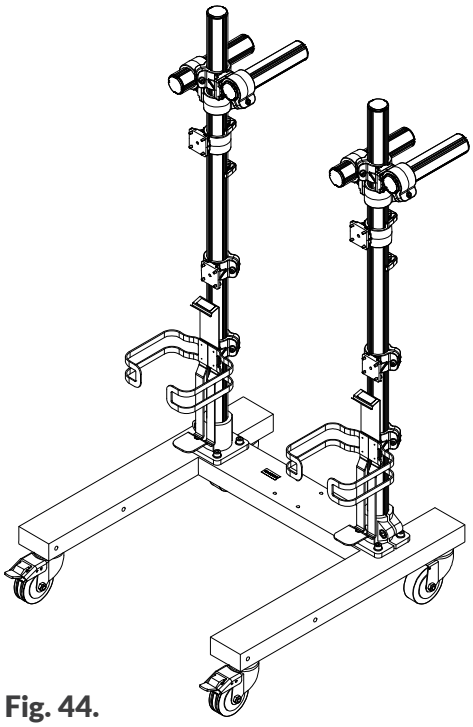


Fig. 44.

– a legged stand with two support beams and two sump trays (Part No **P910220**; see ***Fig. 45***),
– a wheel stand with two support beams and two sump trays (Part No **P910219**; see ***Fig. 46***).

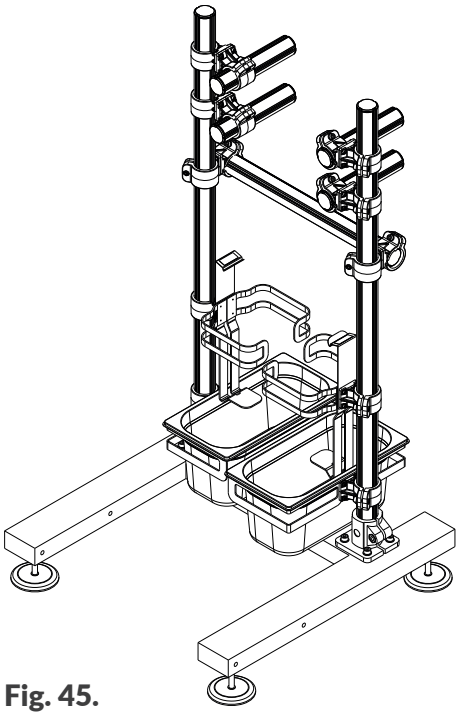


Fig. 45.

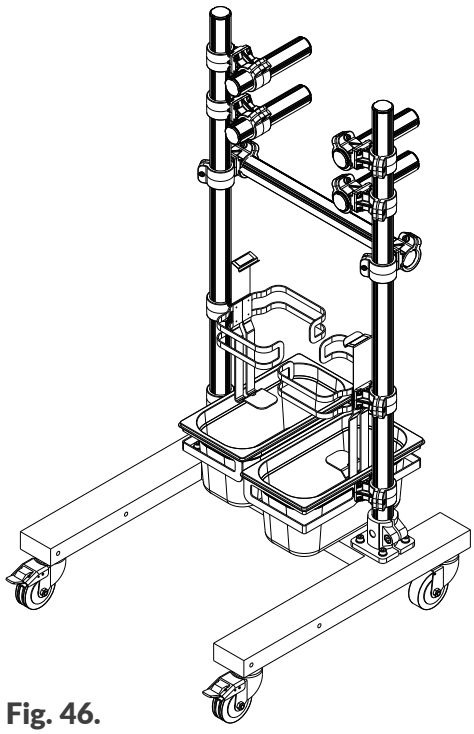


Fig. 46.

The application of stands where there is one support beam (see ***Fig. 41*** and ***Fig. 42 on page 47***) is recommended for uncomplicated printing systems that are equipped with one ink system. If more expanded printing systems, equipped with two ink systems, are installed it is recommended that two support beamed stands be used (see ***Fig. 43 on page 47*** through ***Fig. 46***).

CAUTION:
The system needs to be checked for stability!
*The stability of the system where the printer is installed using the stands shown in **Fig. 41** through **Fig. 46** 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.

Dedicated stands.
*The Part No stands **P910214**, **P910208**, **P910213**, **P910209**, **P910220** and **P910219** are intended for the **bigJET®** EBS-1800 printers by **EBS Ink Jet Systeme GmbH**.*

*The use of stands other than the dedicated ones listed above and shown in **Fig. 41** through **Fig. 46** does not guarantee required stability of the system. Instability of the system may lead to personal injuries or ink / wash-up spills (and thereby to making the printer environment impure or to the generation of the risk of a potential explosion) if the stand with the printer on it tilts or falls over.*

Sump trays

A sump tray with a minimum capacity of **5 liters** must be placed under each ink canister to collect potential leakages.

*The sump tray with holder (Part No. **P513427**) is not included in the installation kit. It is part of the optional stands (Part No. **P910220** and **P910219**) and can also be mounted to other standard stands. For more information about available accessories contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2.3.2. HYDRAULIC CONNECTIONS

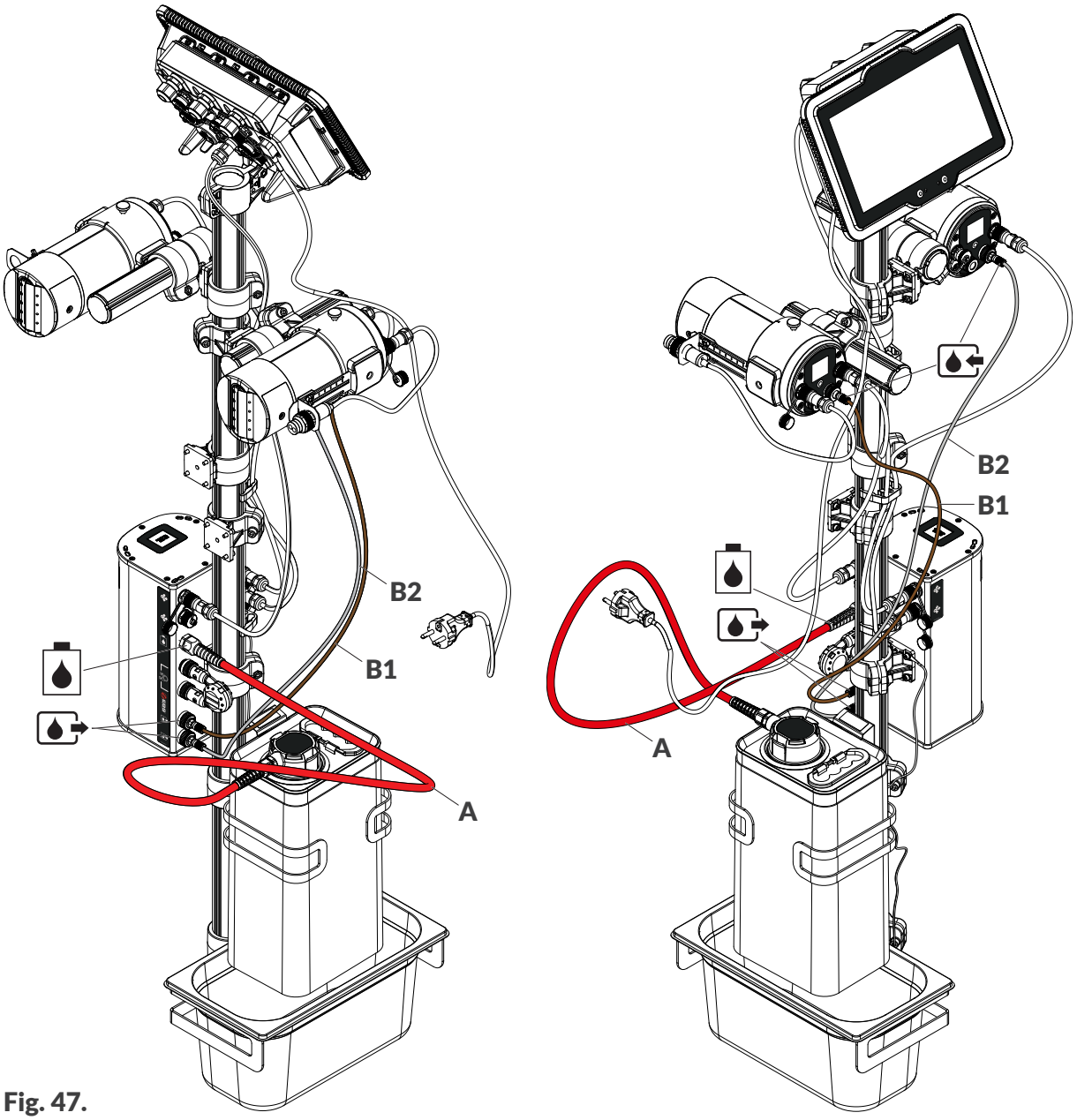


Fig. 47.

Tube		Color
A	Ink canister ▶ Ink system. Connection length: **1.5 m (59.1 in.)**.	red
B1	Ink system ▶ Printhead. Tube lengths available: **1.5, 3.5, 5.5, 10.5 m (59.1; 137.8; 216.5; 413.4 in.)**.	brown
B2		grey

Each of ink tubing **B1**, **B2** designed to feed the ink from the ink system to printheads can be connected to any ink system output .

Both the ink tubing and the hydraulic connections that are in printer sub-assemblies are equipped with cut-off valves. Thus, while the hydraulic connections are being disconnected, leakages are limited to a minimum.

2.3.3. ELECTRICAL CONNECTIONS

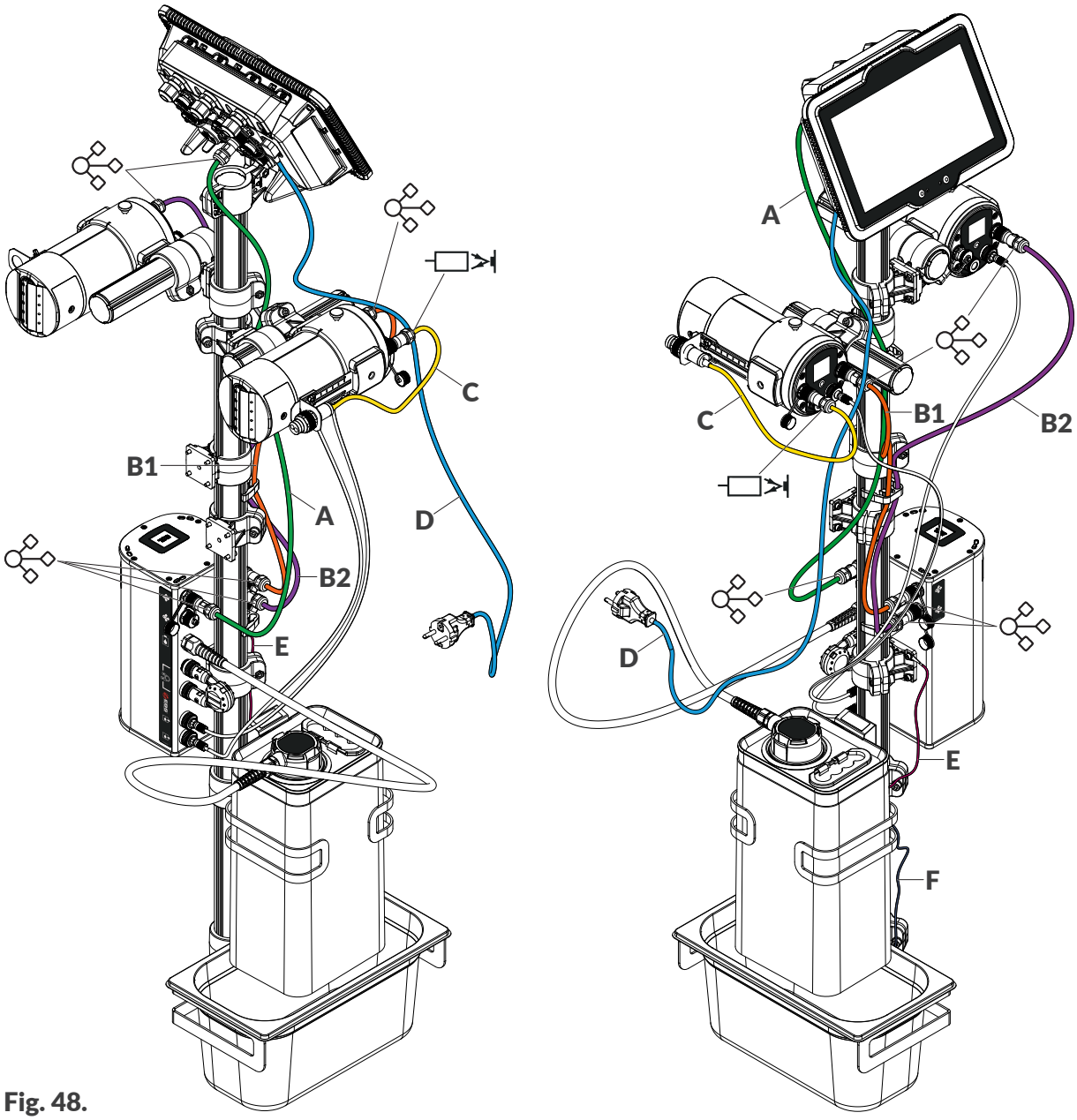


Fig. 48.

Cable		Color
A	**eLink**: Control unit ◀ ▶ Ink system. Cable lengths available: **1, 3, 5, 10 m (39.4; 118.1; 196.8; 393.7 in.)**.	green
B1	**eLink**: Ink system ▶ Printhead. Cable lengths available: **1, 3, 5, 10 m (39.4; 118.1; 196.8; 393.7 in.)**.	orange
B2		violet
C	Photodetector ▶ Printhead. Cable length: **0.4** or **5 m** (**15.7** or **196.8 in.**).	yellow
D	Disconnectable power cord.	blue
E	Equipotential bonding conductor, **1.5 meters (59.1 inches)**.	pink
F	Equipotential bonding conductor, **0.5 meter (19.7 inches)**.	navy

The eLink

The **eLink** universal interface ensures communication among printer components.

In the **bigJET®** EBS-1800 printer, the **eLink** interface is used for communication among the control unit, the ink system (systems) and the printheads.

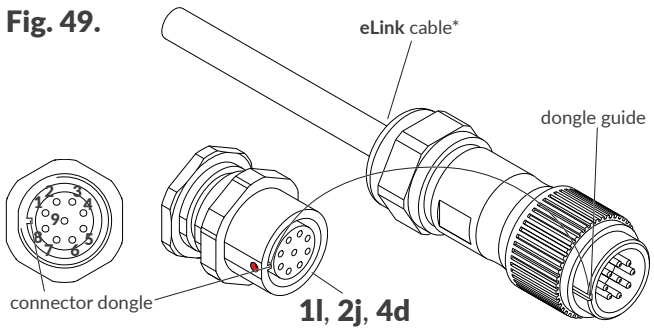
The above-mentioned components are provided with:

- Control unit: two 9-pin female connectors **1l** (see ***Fig. 4 on page 17*** and ***Fig. 49***),
- Printhead: one 9-pin female connector **2j** (see ***Fig. 12 on page 24*** and ***Fig. 49***),
- Ink system: four 9-pin female connectors **4d** (see ***Fig. 20 on page 30*** and ***Fig. 49***).

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

Fig. 49.



CAUTION: A risk that the connector gets damaged!
*While connecting the **eLink** 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.*

Additional information concerning the linking of sub-assemblies via the **eLink**:

- With current output of a single **eLink** connector (**1l**) in the control unit, a **maximum of 64 nozzles** per connector, or a **maximum of 128 nozzles** per control unit, can be operated,

  *The restriction on the maximum number of supported nozzles applies to both the printheads connected directly to an **eLink** connector in the control unit and to those connected indirectly, that is through an ink system(s).*

- The control unit can operate up to 4 printheads,
- At least one ink system must be connected to **eLink** connectors in the control unit,
- An ink system can support up to 3 printheads.

2.3.4. EXAMPLES OF PRINTING SYSTEM CONFIGURATIONS

Example 1

Fig. 50 shows a printing system that consists of:

- one control unit **1**,
- two printheads **2(A)**, **2(B)**,
- one ink system **4**.

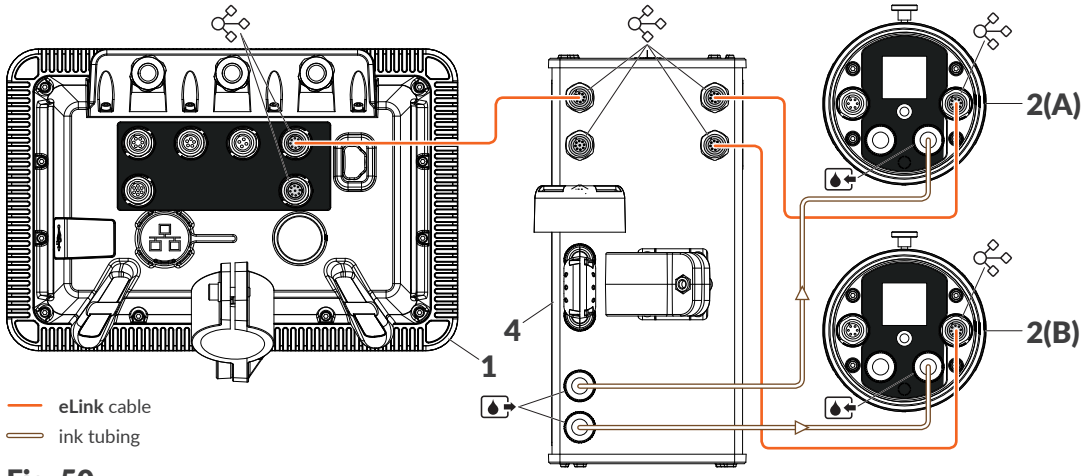


Fig. 50.

Electrical connections

Printheads **2(A)**, **2(B)** are connected (via ink system **4**) to one **eLink** connector in control unit **1**.
Current output of a single **eLink** connector in the control unit **1** restricts the maximum, total number of nozzles in the printheads **2(A)** and **2(B)** to **64**, which means that any two from among the available printheads can be applied.

Hydraulic connections

Printheads **2(A)**, **2(B)** are fed with ink by one ink system **4**.
Ink efficiency of the ink system restricts the maximum, total number of nozzles in the printheads **2(A)** and **2(B)** to **64**, which means that any two of the available printheads can be applied.

Conclusion

The restrictions on the number of nozzles which are imposed by current output and ink efficiency are identical. Therefore, the maximum, total number of nozzles in the printheads, **2(A)** and **2(B)**, is **64**.
Any two (the same or different) of the following printheads can be applied to the printing system shown in *Fig. 50*: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58**.

Example 2

Fig. 51 shows a printing system that consists of:

- one control unit **1**,
- four printheads **2(A)**, **2(B)**, **2(C)**, **2(D)**,
- one ink system **4**.

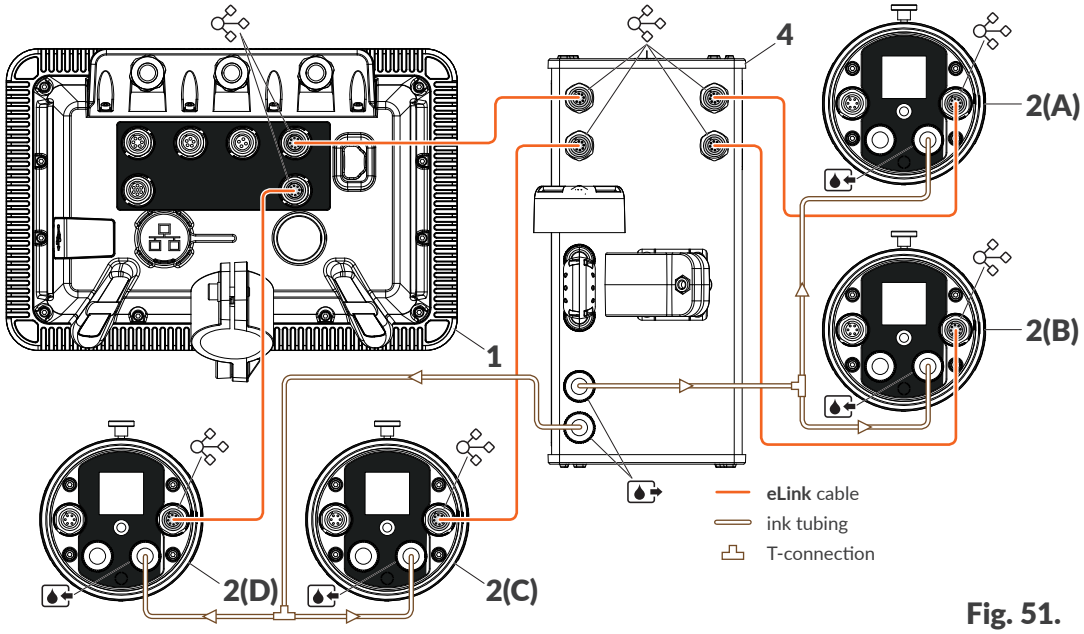


Fig. 51.

Electrical connections

Printheads **2(A)**, **2(B)**, **2(C)** are connected (via ink system **4**) to one **eLink** connector in control unit **1**. Printhead **2(D)** is connected directly to the other **eLink** connector in the control unit **1**.

Current output of a single **eLink** connector in control unit **1** restricts the maximum, total number of nozzles in the printheads **2(A)**, **2(B)** and **2(C)** to **64**. The number of nozzles in printhead **2(D)** is restricted to **64**, which means that any of the available printheads can be applied.

Hydraulic connections

Printheads **2(A)**, **2(B)**, **2(C)** and **2(D)** are fed with ink by one ink system **4**. The ink paths are separated with T-connections ⊥.

Ink efficiency of the ink system restricts the maximum, total number of nozzles in the printheads **2(A)**, **2(B)**, **2(C)** and **2(D)** to 64.

Conclusion

The restrictions on the number of nozzles which are imposed by ink efficiency are more restrictive. Therefore, the maximum, total number of nozzles in the printheads **2(A), 2(B)**, **2(C)** and **2(D)** is **64**.

Four **16N/29** or **16N/56*** printheads, for example, can be applied to the printing system shown in *Fig. 51*.

*Two T-connections ⊥ are used in the system shown in **Fig. 51** (see **Fig. 21 on page 31**). For more information about T-connections contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

** If the **16N/56** printheads are used, it is advisable to assess print quality empirically and adjust printing system configuration, if need be.*

Example 3

Fig. 52 shows a printing system that consists of:

- one control unit **1**,
- two printheads **2(A)**, **2(B)**,
- two ink systems **4(A)**, **4(B)**.

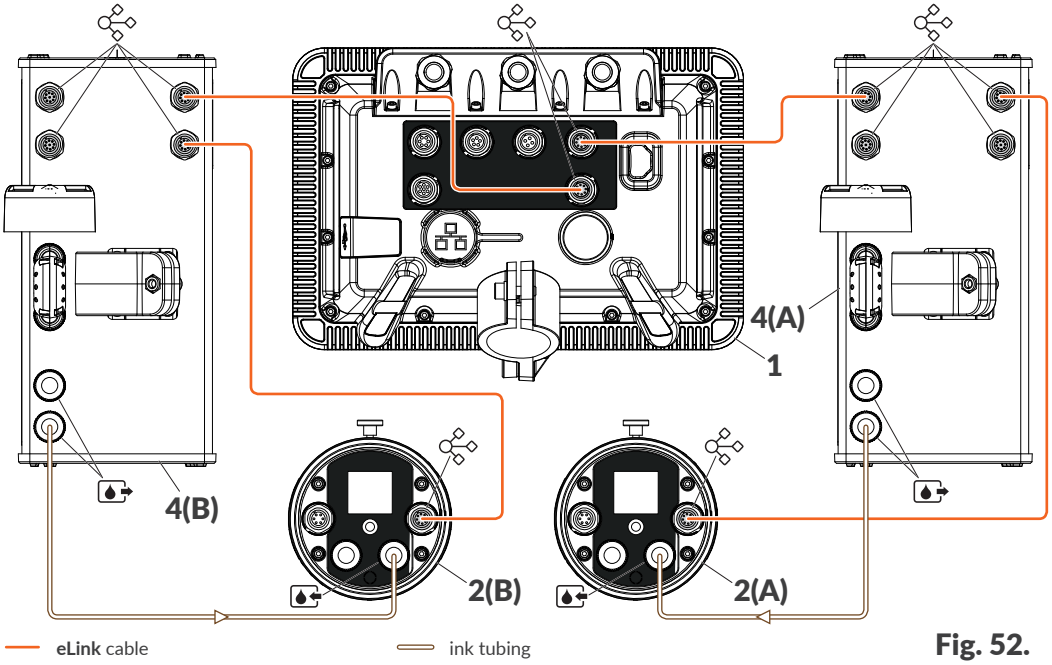


Fig. 52.

Electrical connections

Printhead **2(A)** is connected (via ink system **4(A)**) to one **eLink** connector in control unit **1**.

Printhead **2(B)** is connected (via ink system **4(B)**) to the other **eLink** connector in the control unit **1**.

Current output of a single **eLink** connector in the control unit **1** restricts the maximum number of nozzles in both the printhead **2(A)** and the printhead **2(B)** to **64** (a maximum of **128 nozzles** in both of the printheads). This means that any of the available printheads can be applied.

Hydraulic connections

Printhead **2(A)** is fed with ink by ink system **4(A)**. Printhead **2(B)** is fed with ink by ink system **4(B)**.

Ink efficiency of the ink systems restricts the maximum number of nozzles in both the printhead **2(A)** and the printhead **2(B)** to **64** (a maximum of **128 nozzles** in both of the printheads). This means that any of the available printheads can be applied.

Conclusion

The restrictions on the number of nozzles which are imposed by current output and ink efficiency are identical. Therefore, the maximum, total number of nozzles in the printheads **2(A)** and **2(B)** is **128**.

Any two (the same or different) of the available printheads can be applied to the printing system shown in *Fig. 52*: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58**.

2.3.5. INSTALLING ACCESSORIES

2.3.5.1. STATUS BEACON

The **bigJET®** EBS-1800 printer can be optionally equipped with external status beacon **D** (see *Fig. 53*). 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.

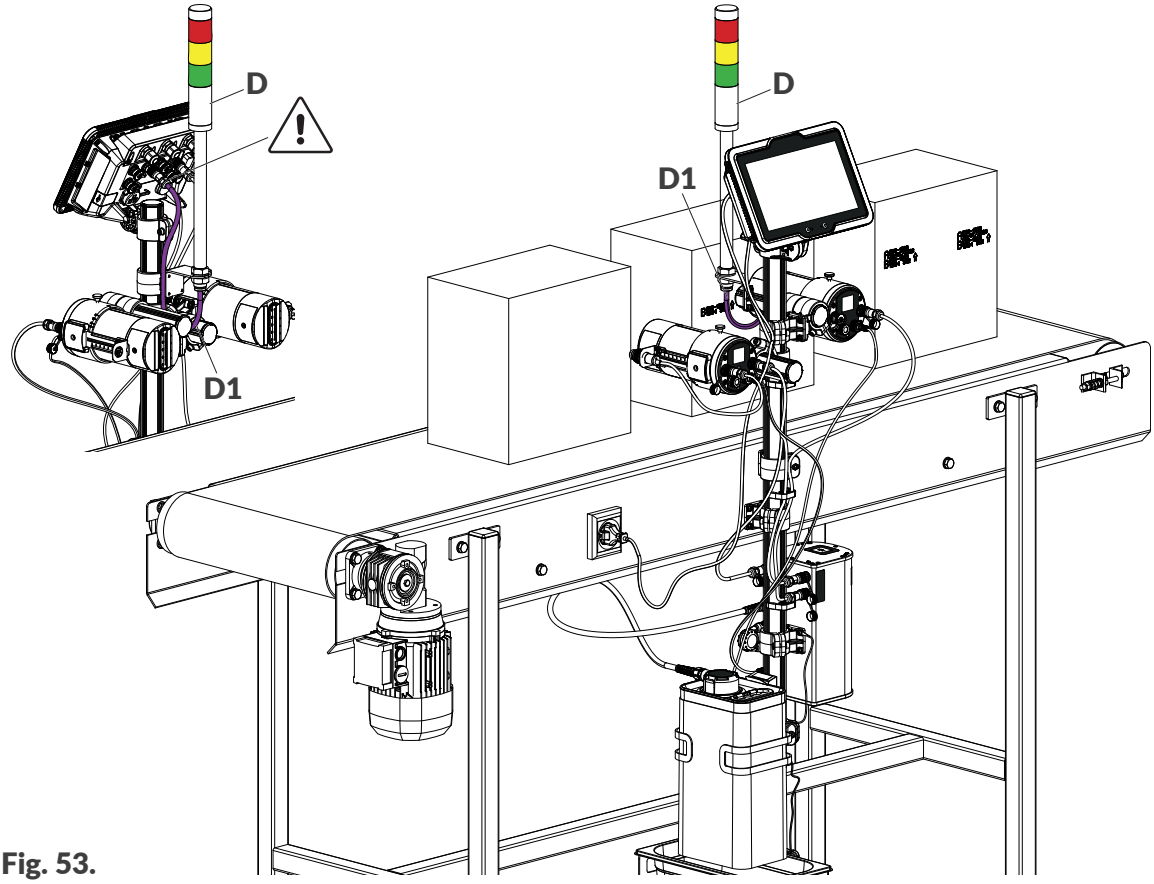


Fig. 53.

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**.*

2.3.5.2. ENCODER

The **bigJET®** EBS-1800 printer may be provided with rotational speed sensor (encoder) **E** (see *Fig. 54*), 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.

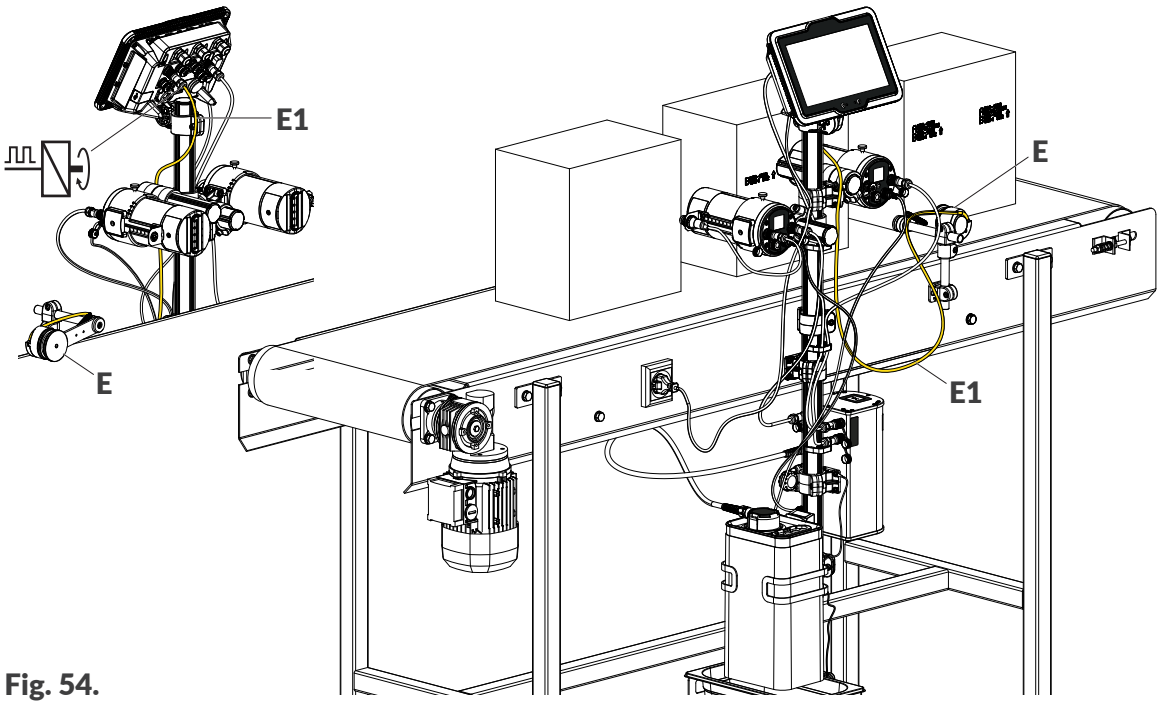


Fig. 54.

Cable		Color
E1	Encoder ▶ Control unit.	yellow

*Fig. 54 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

Before the printer is started, it is necessary to check it for leaks. If a leak is detected, the printer must not be started.

*Absorbent material contaminated with ink, or any ink that have leaked during printer startup, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

*The printer should be started for the first time by an **instructed person**.*

*For security reasons, after starting the printer for the first time, you must change the default password for the "Administrator" user to a password of your own choosing. For more information see **"7.5.1. Changing the User Password"**.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- a metal vessel or absorbent material for collecting waste.



To start the printer up:

1. Connect power plug **9a** (see ***Fig. 2 on page 15***) 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 part authorization procedure requires that a canister(s) of ink(s) of the type(s) to be used 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 LED in the control unit glows orange

     and
   - the statuses displayed on the printheads and ink system(s) LCDs indicate readiness to print.
4. Carry out the venting procedure to remove the air from the tubes that feed ink to the printheads and from the printheads themselves. To do that, follow the purging procedure (for each printhead included in the printing system, in turn).

   *For more details see **"9.3.1. Purging the Selected Printhead"**.*

   Keep purging each printhead until the ink begins flowing from nozzles.

5. Make test prints. Assess print quality.

*For more details see **"2.4.1. Test Prints"**.*

If print quality is not satisfactory, repeat the purging procedure.

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. For each of the printheads in turn:
   - Open a project you have created / imported in order to print it,

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

   - Start printing,

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

   - Move a sheet of paper in front of the photodetector that is selected as the trigger source and in front of the face of the printhead to make prints,
   - Make sure that the dots generated by the printhead are the same size; if they are not, follow the printing unit tuning procedure for the failing printhead.

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

2.5. DECOMMISSIONING

After the end of the service life of the **bigJET®** EBS-1800 *printer, do not dispose of the printer with household waste. Treat the used printer as hazardous waste and deliver it to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

*The decommissioning procedure shall be carried out by **instructed persons**.*

To withdraw the printer from service:

1. Follow the resetting procedure to delete user files and settings.

   *For more details see **"9.3.4. Restoring the Default Settings"**.*

2. Shut the printer down.

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

3. Unplug the power plug **9a** (see ***Fig. 2 on page 15***).
4. Drain and recycle all the remains of consumable materials following the local waste management regulations.
5. Remove the printer and its accessories following the installation procedure but in reverse order.

   *For more details see **"2.3. Installing the Printer"**.*

2.6. 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 and risk factors (*e.g.* a chance that flammable substances pick up static electricity),
- 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 buttons and LED indicators in the printheads,
- LCD display in the ink system(s).

3.1. CONTROL-UNIT PANEL

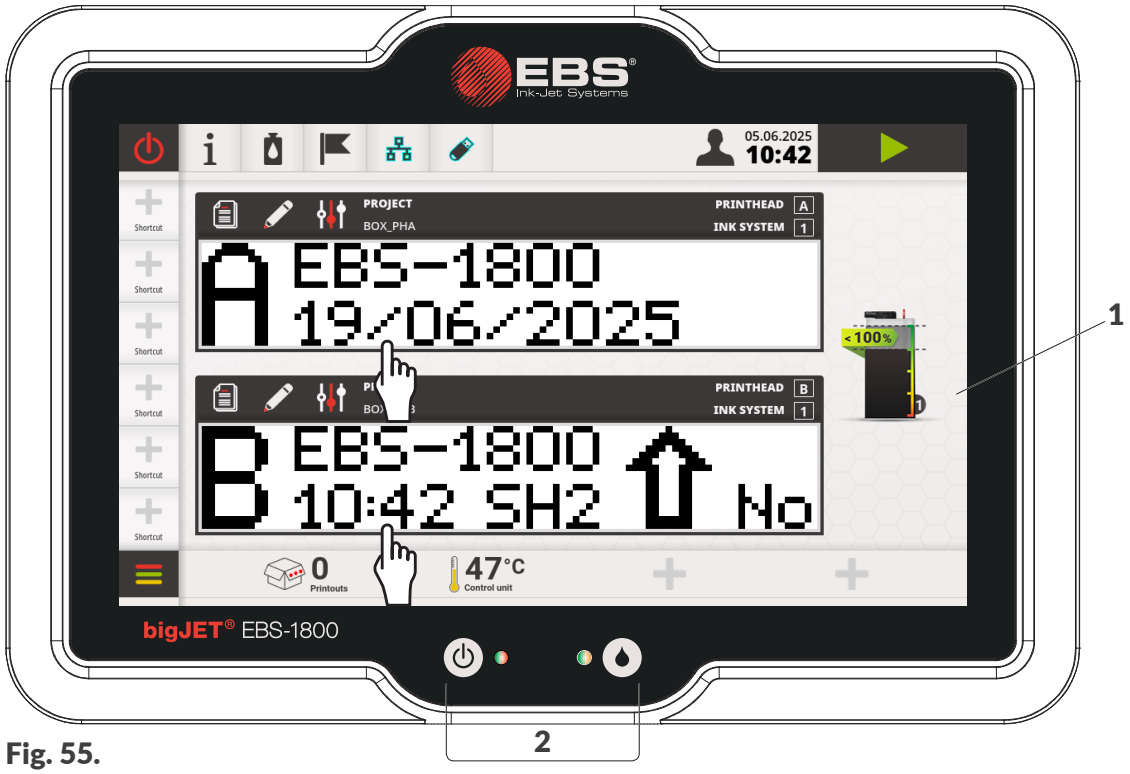


Fig. 55.

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 canister (canisters),
- Signaling warnings and errors.
- Displaying basic information such as the current date, the current time,
- Displaying additional information with selected widgets,
- Previewing the projects that are 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 ▶ ▶ ▶ ▶.

3.1.1.1. THE MAIN SCREEN WHERE TWO PROJECTS ARE PREVIEWED

The screen where two projects are previewed applies to the printer that has:

- Two active printheads configured to print separate projects,
- Three or four active printheads of which some are connected in groups in such a way that the printer is configured to print two projects.

The main screen where two projects are previewed is shown by default further in this document. A configuration of printheads can be changed by ***ADMINISTRATOR****-type users by pressing* ▶ ▶ ▶.

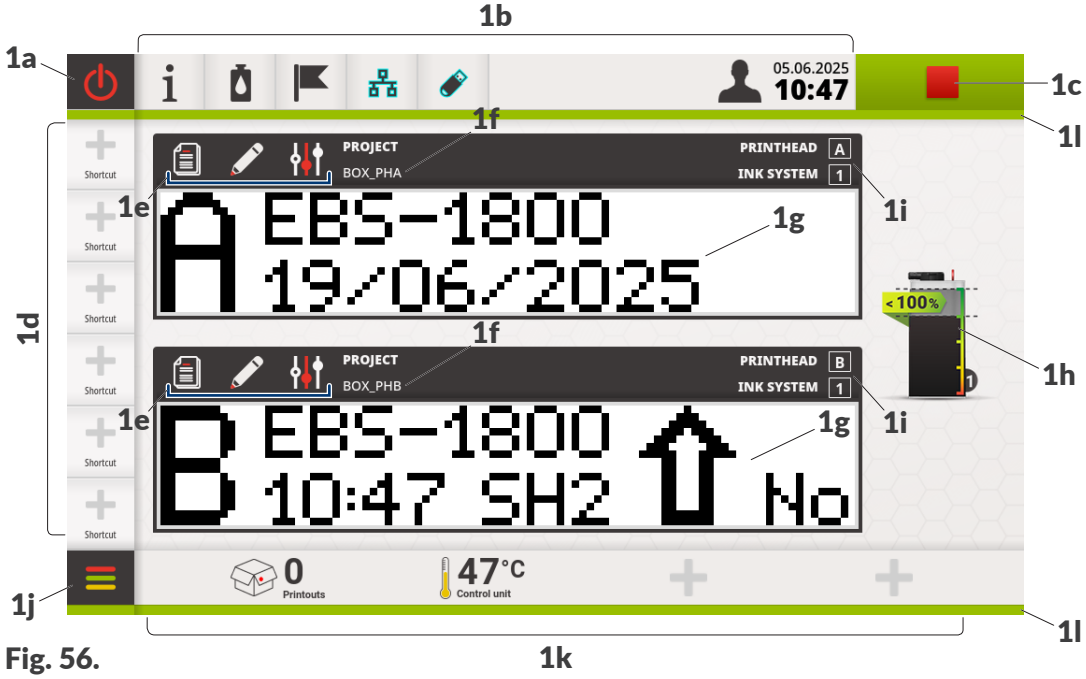


Fig. 56.

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*. ** The icon is available only when a given project contains at least one **COUNTER**-type object / , **TEXT FILE**-type object / or **COMMUNICATIONS PORT**-type object / (a text or a code).*
1f	Name of the project that is open for printing / being printed. *By pressing the name of a project you open another project for printing or close the project that is currently open for printing.*
1g	Preview of the project that is open for printing / being printed.
1h	Ink level indicator.
1i	Information about the printhead or the group of printheads that is printing a given project and about the ink system to which such a printhead or group of printheads is connected hydraulically.
1j	Move to the menu.
1k	Editable widget bar.
1l	Neon sign.

3.1.1.2. OTHER MAIN SCREEN VARIANTS

The main screen where two projects are previewed is the basic screen shown in this manual. Other variants of the main screen are also available in the **bigJET®** EBS-1800 printer and they depend on the number of active printheads and printhead configurations. They are as follow:

- Main screen where one project is previewed.
- Main screen where three projects are previewed.
- Main screen where four projects are previewed.

All the main screen variants differ from each other only in the number of preview windows for projects open for printing / bring printed **1g** (see ***Fig. 56 on page 62***) and in the number of project-related elements **1e**, **1f**, **1i**. The other elements on the main screen remain unchanged. Moreover, if the printing system is equipped with more than one ink system, an adequately higher number of ink level indicators **1h** may be displayed.

3.1.1.3. ICON BAR

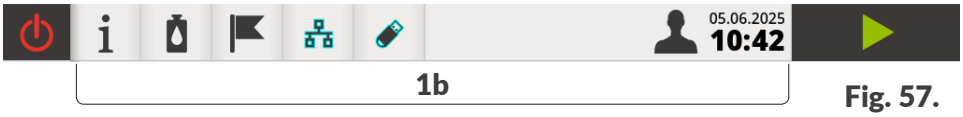
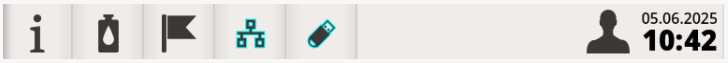


Fig. 57.

Colored icon bar **1b** (see *Fig. 57*) 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 depends on the **Country** parameter settings 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.	

3.1.1.4. EDITABLE USER SHORTCUT BAR

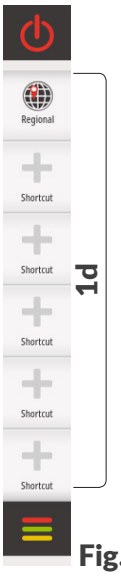


Fig. 58.

Editable user shortcut bar **1d** (see ***Fig. 58***) 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.
3. 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.
4. Press to return to the main screen.
5. The user shortcut to the local settings screen (▶ ▶ ▶) is defined (see ***Fig. 58***).

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.

3.1.1.5. EDITABLE WIDGET BAR

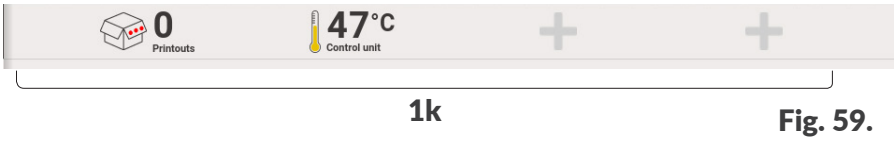


Fig. 59.

Editable widget bar **1k** (see ***Fig. 59***) 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 canister

and the like.

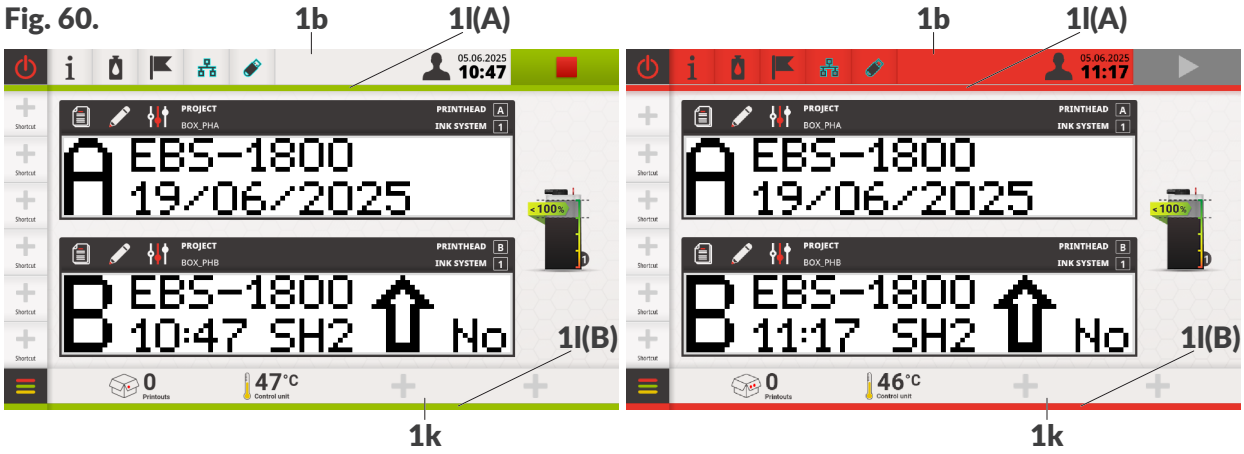
To customize the widget bar, press any widget or any icon ➕ on the main screen or ▶ ▶ ▶ . For more details see ***"7.1.4. Setting up Widgets"****.*

3.1.1.6. NEON SIGNS

Two neon signs **1l** (see ***Fig. 60***) 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. 60.



Colors of neon signs		Meaning
Blinking yellow.		Working parameters of the printer are being set.
Solid yellow.		No projects open for printing for all of the printheads.
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 any 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

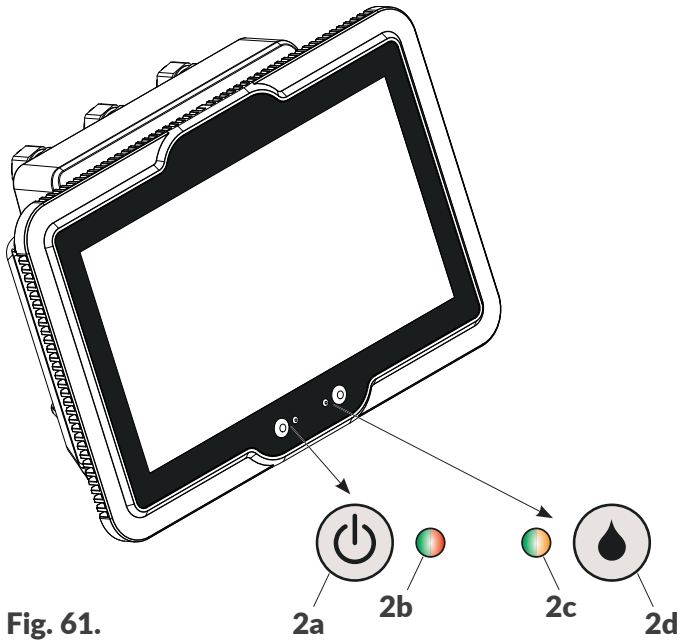
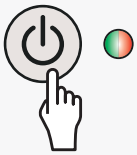
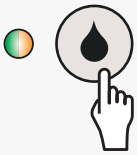


Fig. 61.

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 any printhead is being purged.
			Solid green. – Printing.

3.2. OTHER USER-INTERFACE ELEMENTS

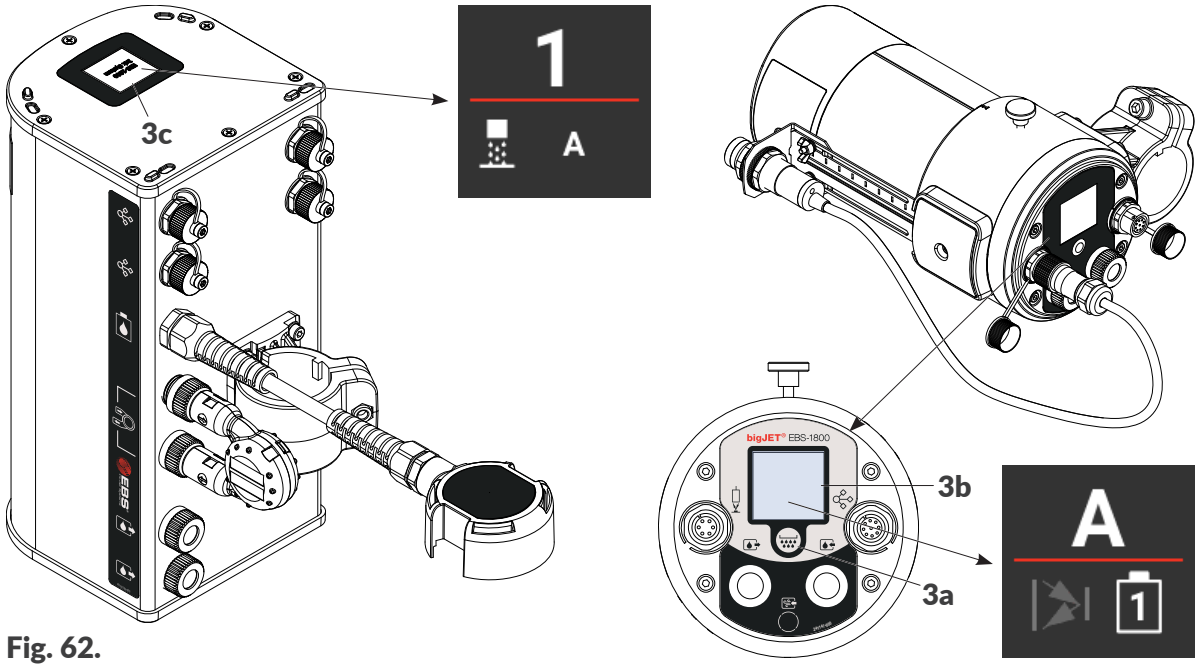


Fig. 62.

The other elements of the user interface are:

- buttons **3a** (see *Fig. 62*) on the backside of every printhead, to start purging the given printhead,
- LCD display **3b** on the backside of every printhead,
- LCD display **3c** on every ink system.

Button	Function
	Start purging the nozzle plate in the selected 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 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.

A printhead LCD

LCD display	Function
	The printhead LCDs provide access to the following information: – printhead number / symbol, – printhead status (color of the frame), –  - status of the photodetector connected to the printhead (icon), –  - number given the ink system to which the printhead is connected hydraulically (icon).

Frame	Color / Printhead status
	None (the whole LCD background is black): – There are no errors or warnings.
	Solid yellow: – Warning concerning the given printhead.
	Solid red: – Error in the given printhead.

Number / Symbol	Meaning
Number *e.g.* **1**, **2**, **3**, **4**	– Printhead not configured.  *If a printhead in the printing system is not configured, it is an undesired situation and if it occurs printing cannot be initiated. In such a situation, it is necessary to start the wizard and configure the printing system (including the printheads). For more details see* ***"7.3. Configuring Parts of the Printing System"****.*
One-letter symbol *e.g.* **A**, **B**, **C**, **D**	– Printhead configured for independent operation.
Two-character symbol *e.g.* **A1**, **B2**	– Printhead configured for operation within a group (it is connected with another printhead or other printheads to print a single project). – The first character (a letter) symbolizes the group the given printhead falls into and the second one (a digit) denotes the printhead number (*e.g.* the symbol **A2** denotes printhead number **2** within group **A**).

Icon	Color / Photodetector status
	– Photodetector connected to the given printhead **is not** selected as the trigger source.
	– Photodetector connected to the given printhead **is** selected as the trigger source; no object within photodetector reach.
	– Photodetector connected to the given printhead **is** selected as the trigger source; an object within photodetector reach.

Icon	Number / Information about ink system
	– The number assigned to the ink system where the given printhead is hydraulically connected.  *The software-based assignment of a given printhead to the ink system where the printhead is connected hydraulically takes place while the printing system is being configured by the configuration wizard. For more details see* ***"7.3. Configuring Parts of the Printing System"****.*

Ink system LCD

LCD display	Function
  	The ink system LCDs provide access to the following information: – ink system number, – ink system status (color of the frame), –  - symbols of the printheads that are hydraulically connected to the given ink system.

Frame	Status
	None (the whole LCD background is black): – There are no errors or warnings.
	Solid yellow: – Warning concerning the given ink system.
	Solid red: – Error in the given ink system.

Upper number	Meaning
Number *e.g.* **1**, **2**	– Ink system number.

Lower symbol	Meaning
 Symbol *e.g.* **A**, **B**, **C**, **D**, **A1**, **B2**	– Symbols of the printheads that are hydraulically connected to the given ink system.  *The software-based assignment of printheads to a given ink system where the printheads are connected hydraulically takes place while the printing system is being configured by the configuration wizard. For more details see* ***"7.3. Configuring Parts of the Printing System"****.*

3.3. RULES FOR USING THE USER INTERFACE

3.3.1. NAVIGATION

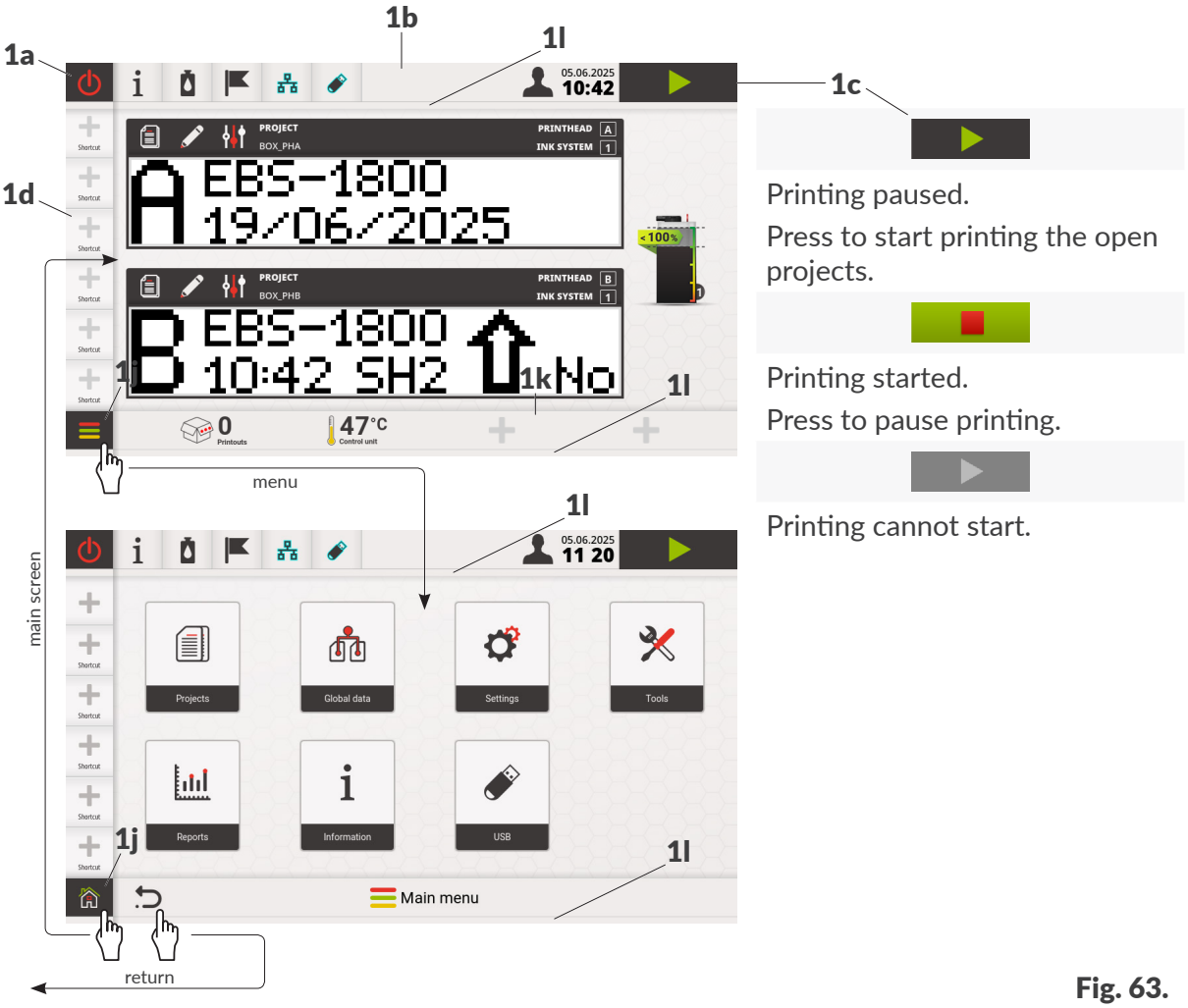


Fig. 63.

Icon bar **1b** (see ***Fig. 63***), 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.

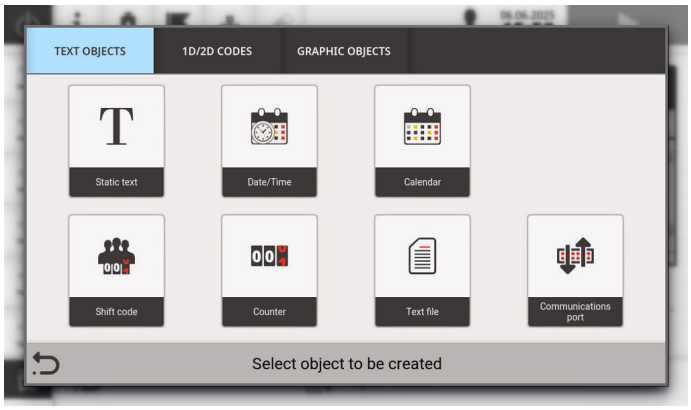
Access to the majority of printer functions is provided by icons in the menu called by icon on the main screen, *e.g.*

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 ***“3.1.1.4. Editable User Shortcut Bar”****.*

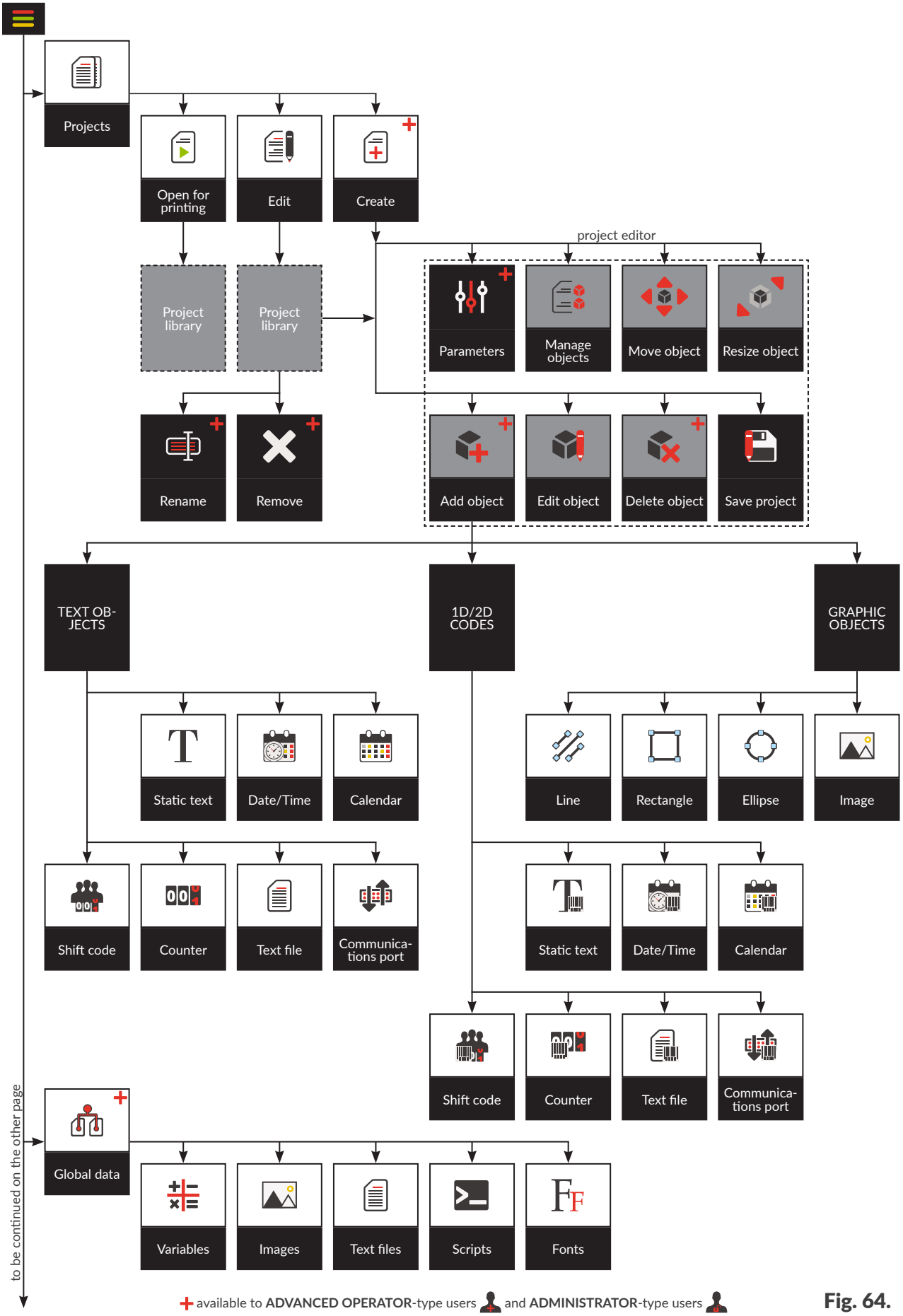
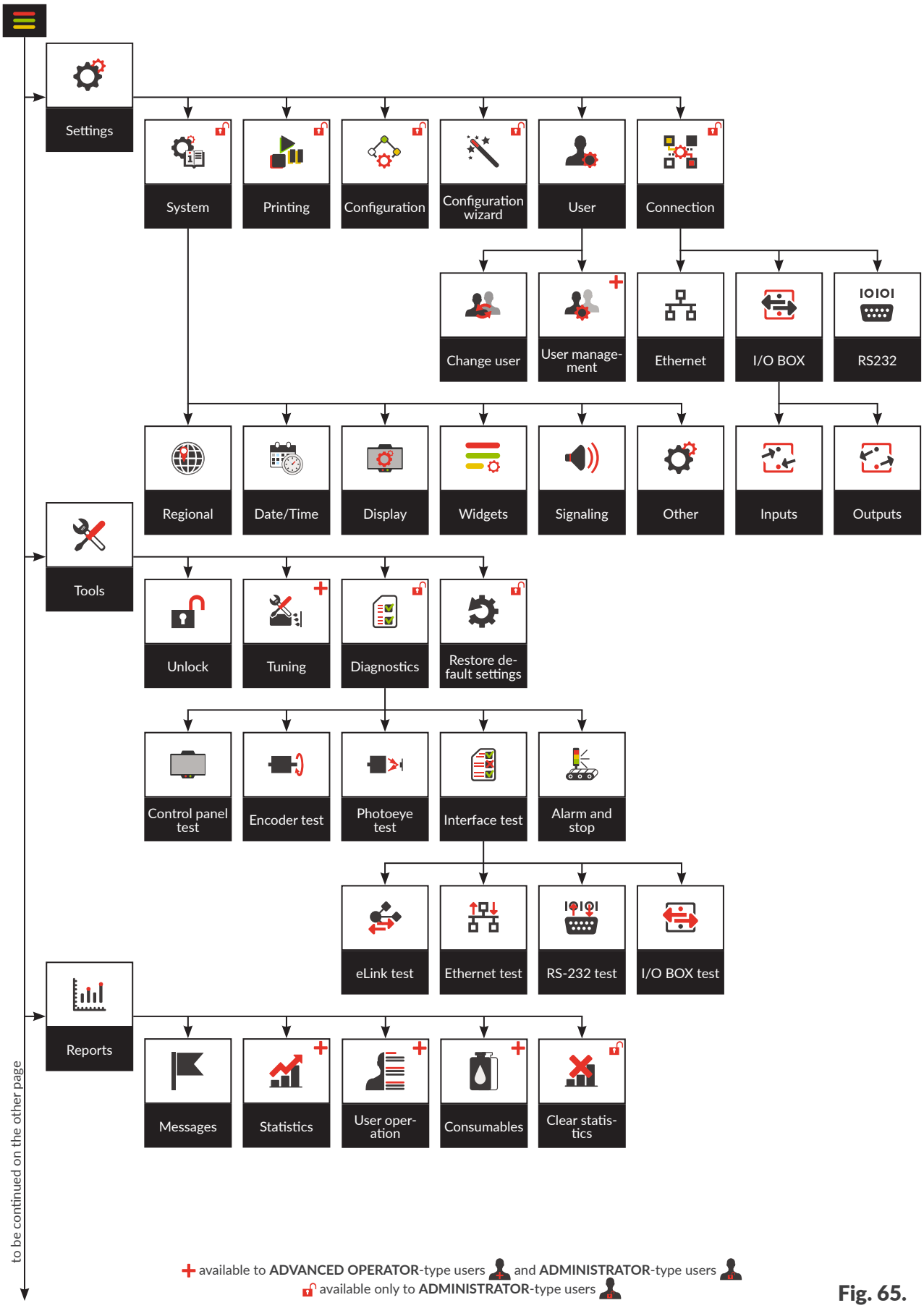
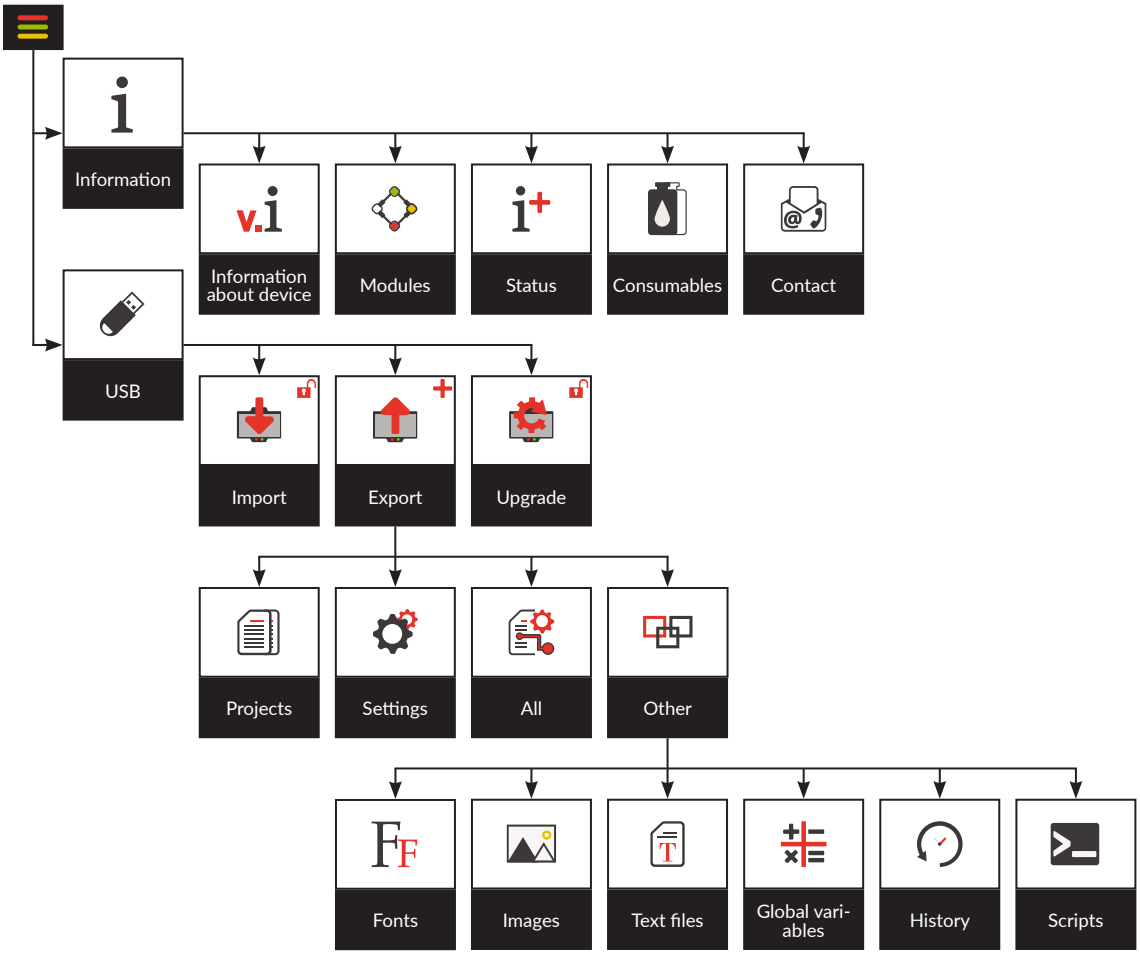

Projects
Open for printing
Edit
Create
project editor
Project library
Project library
Parameters
Manage objects
Move object
Resize object
Rename
Remove
Add object
Edit object
Delete object
Save project
TEXT OB-JECTS
1D/2D CODES
GRAPHIC OBJECTS
Static text
Date/Time
Calendar
Line
Rectangle
Ellipse
Image
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
Fonts
to be continued on the other page
+ available to ADVANCED OPERATOR-type users and ADMINISTRATOR-type users

Fig. 64.



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

Fig. 65.



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

Fig. 66.

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. 67***).

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.

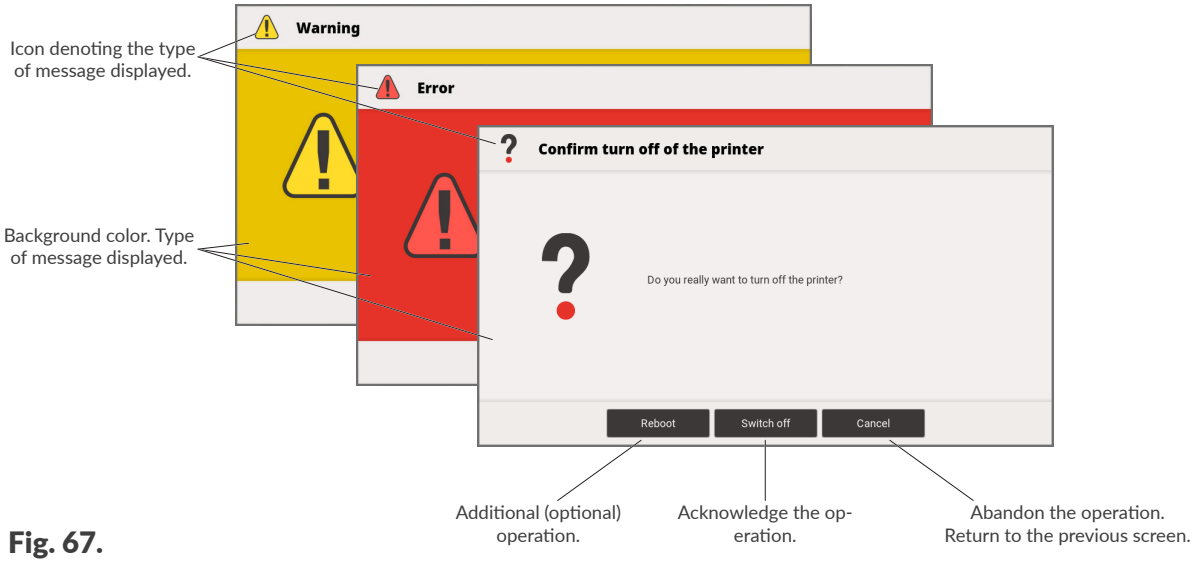
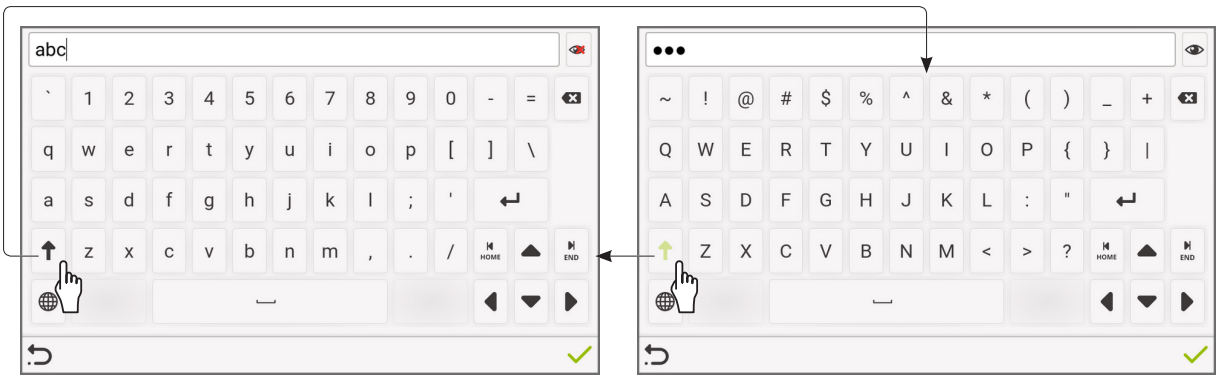


Fig. 67.

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.



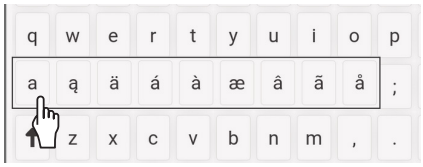
Icon	Function	Icon	Function
	Display the keyboard that contains capital letters, special characters and symbols.		Display the keyboard that contains small letters, digits and symbols.
	Hide characters while passwords are typed in; the characters in the text box are replaced with the character ●.		Display 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. 68***).

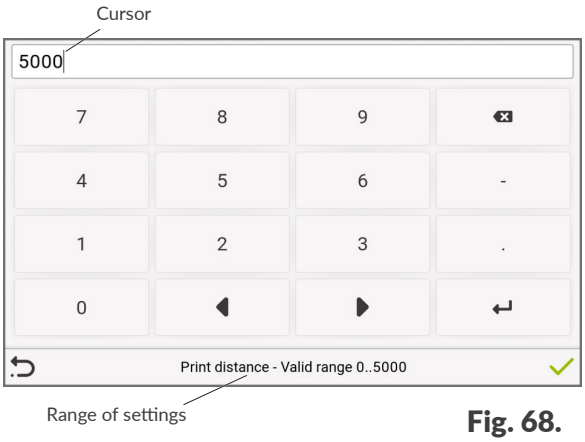


Fig. 68.

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 **OPERATOR**  have the following privileges:

- Start / shut down the printer,
- Open projects 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,
- 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 / delete global variables,
- Edit printer settings,
- Edit printing parameters,
- Import / export 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.

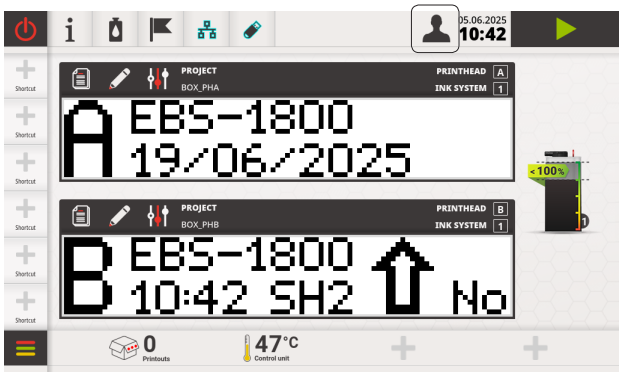
All accounts of **ADMINISTRATOR**-type users can be deleted excluding that of the user called “Administrator”.

3.4.1. CHANGING A USER

For security reasons, after starting the printer for the first time, you must change the default password for the "Administrator" user to a password of your own choosing. For more information see ***"7.5.1. Changing the User Password"****.*

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**".
   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

Every time before you start the printer it is necessary to:
- check the printer for leaks; if a leak is detected, the printer must not be started,
- check the sump tray(s) under the ink canister for fill and empty the tray(s), if need be; for more details see ***"8.2.2. Sump Tray Periodic Inspection and Emptying"****.*

The printer should be started up by ***instructed persons****.*

To start the printer up:

1. Connect power plug **9a** (see ***Fig. 2 on page 15***) to the electrical mains.
   The printer goes into standby mode.
   The LED in the control unit glows red.
   The LCDs in the control unit, the printheads and the ink system(s) are blank.
2. Press the button in the control unit.
   The welcome screens are displayed on the all LCD displays.
   The LED in the control unit glows blinking red.
3. Wait a few seconds.
   The main screen is displayed on the control unit LCD display.
   Status screens are displayed on the printheads and ink system(s) LCDs.
   In the control unit, the LED glows green and the LED glows blinking orange.
   The neon signs on the control unit LCD display glow blinking yellow.
4. Wait a few seconds.
   The LED in the control unit glow orange.
   The printer is started up and ready to print the open projects.
   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 projects begin 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 control unit LCD display.
   In the control unit, the LED goes off and the LED glows blinking red.
3. Wait a few seconds.
   The LED in the control unit glows red.
   All LCD displays are blank.
   The printer goes into standby mode.
4. Pull out power plug **9a** (see ***Fig. 2 on page 15***) 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 **9a** (see ***Fig. 2 on page 15***) 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 control unit LCD display.

   In the control unit, the LED goes off and the LED glows blinking red.

   All LCD displays are blank.
3. Wait a few seconds.

   The LED in the control unit glows blinking red.

   The welcome screens are displayed on the all LCD displays.
4. Wait a few seconds.

   The main screen is displayed on the control unit LCD display.

   Status screens are displayed on the printheads and ink system(s) LCDs.

   In the control unit, the LED glows green and the LED glows blinking orange.

   The neon signs on the control unit LCD display glow blinking yellow.

   The LED in the control unit glow orange.

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

   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 projects begin immediately after the printer has started
or
- Printing has to be started manually.

4.4. PRINTING

The printer is ready for printing when:

- An appropriate project is open for printing for at least one printhead (or a group of printheads linked together to print a single project),
- The LEDs in the control unit glow orange,
- The start printing icon on the screen is active.

*The printing-related operations described in this chapter (opening a project for printing, starting / pausing printing) can be carried out remotely via signals applied to **I/O BOX** inputs. For more details see "7.4.3. The I/O BOX Module".*

4.4.1. OPENING A PROJECT FOR PRINTING

The names and previews of the projects currently open for printing (so called active projects)

- for each of the printheads,

  or

- for each of the groups of printheads linked together to print a single project

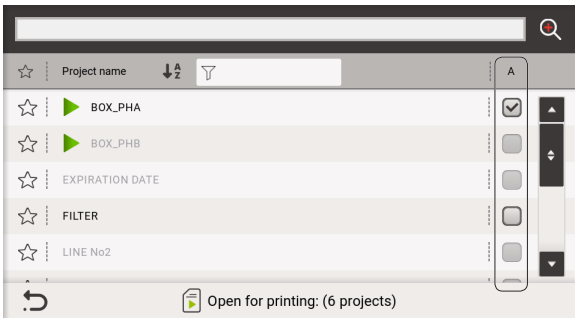
are displayed on the main screen.

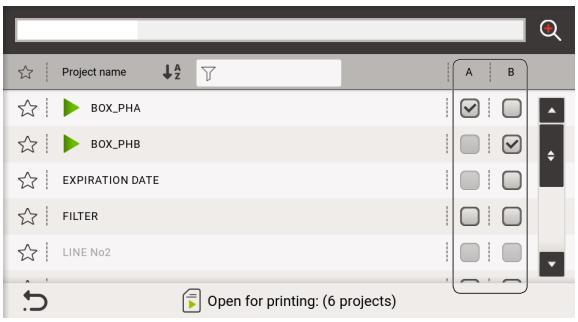
To open a project(s) for printing:

1. On the main screen press the icon (or a project name) that applies to a selected printhead (or a group of printheads) to open the project for printing **for the selected printhead or the group of printheads** (the printhead / group of printheads is marked as **A** on the screen on the right)

   or

   press ▶ ▶ to open a project(s) for printing **for any printhead(s) or a group(s) of printheads** (the printheads / groups are marked as **A** and **B** on the screen on the right).





The project library is displayed.

The projects that are open for printing are marked with the ▶ icon.

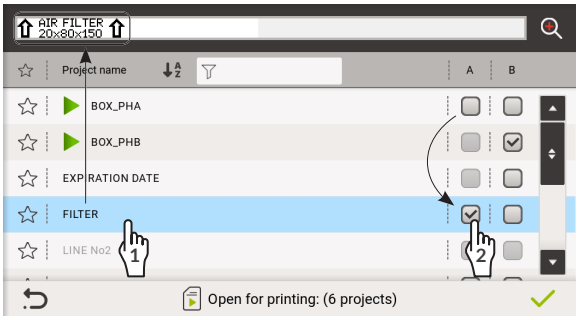
The information on for which printhead (or group of printheads) a given project is open for printing is shown with the icon ☑ in the printhead / group of printheads identification column.

Certain projects can be displayed in gray in the library. This means that they cannot be opened to be printed because their heights differ from the number of nozzles in all the printheads / groups of printheads installed in the printer.

If a given project cannot be opened to be printed by some printheads / groups of printheads only, then the icons ▢ in the printhead / group of printheads identification columns are displayed in gray).

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

2. Select a required project from the library.
3. The project is highlighted in blue, its preview is displayed in the upper part of the window.
4. Select the printhead(s) or the group(s) of printheads for which you wish to open the project.



The icon ☑ is displayed in the printhead / group of printheads identification column.

If you use the icon (or a project name) on the main screen (where you open a project for printing for a selected printhead or a selected group of printheads), steps ***2*** and ***4*** of this are combined into one step.

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

5. Press ✓ to acknowledge.

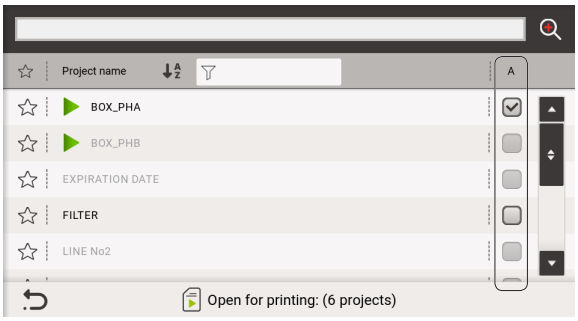
The selected project is open for printing for the selected printhead(s) or the group(s) of printheads.

If the printer is in printing mode, an additional message is displayed and when the message is acknowledged, the projects that are being printed are swapped for the newly selected ones.

The main screen is displayed and it shows the previews of the projects open for printing.

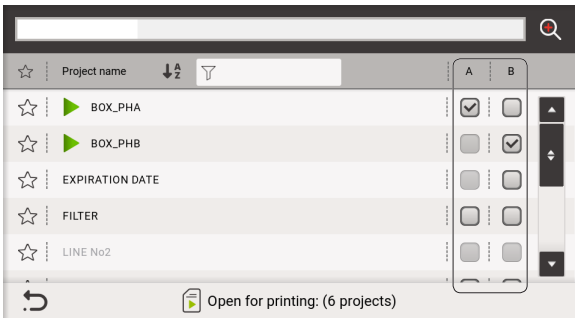
To close a project(s) for printing:

1. On the main screen press the icon (or a project name) that applies to a selected printhead (or a group of printheads) to close the project for printing **for the selected printhead or the group of printheads** (the printhead / group of printheads is marked as **A** on the screen on the right)



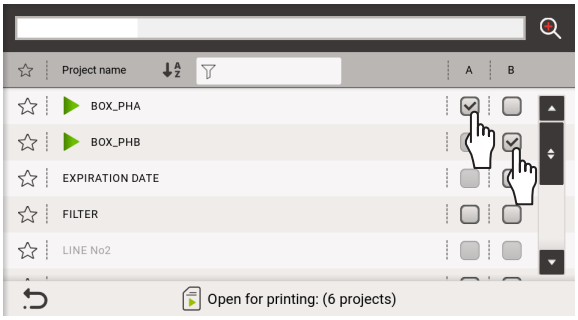
   or

   press ▶ ▶ to close a project(s) for printing **for any printhead(s) or a group(s) of printheads** (the printheads / groups are marked as **A** and **B** on the screen on the right).

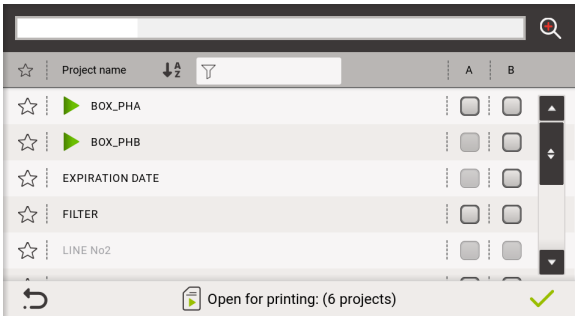


   The project library is displayed.
   The projects that are open for printing are marked with the ▶ icon.
   The information on for which printhead (or group of printheads) a given project is open for printing is shown with the icon ☑ in the printhead / group of printheads identification column.

2. Press ☑ in the printhead / group of printheads identification column.



   The icon ☐ is displayed in the selected printhead / group of printheads identification column in place the icon ☑.



3. Press ✓ to acknowledge.
4. The project(s) that have been previously opened to be printed by the selected printhead(s) or the group(s) of printheads is(are) closed.
   No project(s) open for printing can be closed if the printer is in print mode.
   The main screen without the preview of a project for the selected printhead(s) or group of printheads is displayed.
   The neon signs glow yellow, thereby signaling that no projects are 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 projects:

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

   *If the **Edit before printing** parameter is active for any object in the projects, 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 glow green.

   The printer enters printing mode where:

   - **In trigger source printing mode**: it awaits a signal from the photodetector that is selected as the trigger source or from a selected **I/O BOX** input,
   - **In no trigger source printing mode**: it immediately starts printing projects 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 glows orange.

   Printing pauses and:

   - **In immediate pausing mode**: printing pauses with projects printing unfinished,
   - **In finish printing mode**: all the printheads finish printing the projects and then printing pauses.

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

   *Printing can be immediately paused by a signal sent to the selected **I/O BOX** input.*

   The printer enters the ready state.

4.4.4. CODE SWITCH PRINTING

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

Printing by means of a code switch **CS** (Code Switch) is recommended when projects to be printed are to be switched frequently. Projects are switched via signals applied to **I/O BOX** binary inputs.

Configuration of **I/O BOX** binary inputs depends on the number of projects to be switched.

*For more details on how to configure the **I/O BOX** module see **"7.4.3. The I/O BOX Module"**.*

Switching two project combinations

To switch two combinations of projects, it is sufficient to use any independent (**Input type** = **Single bit**) **I/O BOX** binary input that is in **Invoke action** mode (the **Operation Mode** parameter).
The action **Open project** should be assigned to both of the selected input states (**0**, **1**). With this action you can select a project (a combination of projects) to be open for printing when an appropriate state occurs at a binary input and define the printheads / group of printheads for which the project (the combination of projects) are to be open.

Switching a greater number of project combinations

If a greater number of project combinations needs switching, it is necessary to use connected binary inputs (**Input type** = **Multi bit**). The maximum number of switchable projects depends on the number of binary inputs connected together (**n**) and on the value of the **Synchronous** parameter, which defines project switching mode.

If **Synchronous** = ×, then all the connected inputs create an **n**-bit word that allows you to have 2^n combinations of states, and thereby to switch up to 2^n project combinations.

For example, if 5 binary inputs are connected together, the number of state combinations is $2^5 = 32$, therefore up to 32 project combinations can be switched.

The **Open project** action can be assigned to every combination of input states. With this action you can select a project (a combination of projects) to be open for printing and define the printheads / group of printheads for which the project (the combination of projects) are to be open.
A project (a combination of projects) is switched when the state changes at any of the connected inputs.

If **Synchronous** = ✓, the first input (the most significant bit), or the strobe input, is used to switch projects. The other inputs create an **n-1**-bit word that allows you to have 2^{n-1} combinations of states, and thereby to switch up to 2^{n-1} project combinations.

For example, if 5 binary inputs are connected together, the first input (the most significant bit) is used to switch projects, and the number of state combinations of the other inputs is $2^{5-1} = 2^4 = 16$, which means up to 16 project combinations can be switched.

The **Open project** action can be assigned to every combination of input states. With this action you can select a project (a combination of projects) to be open for printing and define the print-heads / group of printheads for which the project (the combination of projects) are to be open.
A project (a combination of projects) is switched when a signal edge defined with the parameter **Slope** (**Rising** / **Falling**) occurs at the first of the connected inputs (at the strobe input).

4.5. PREVIEWING A PROJECT

The previews of projects open for printing / being printed are available on the main screen. The size (scale) of the project previews depends on the number of preview windows displayed 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. 69***).

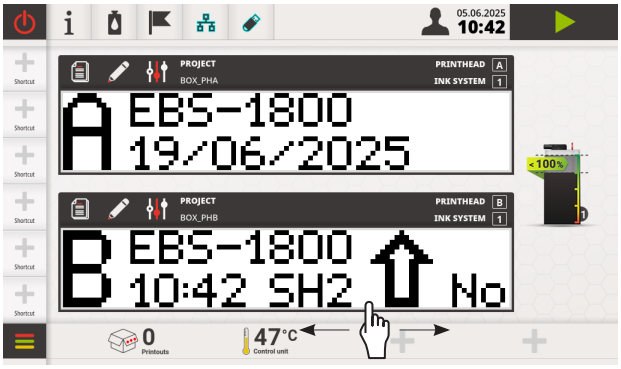


Fig. 69.

An additional preview window for a selected project (see ***Fig. 70***), 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

.

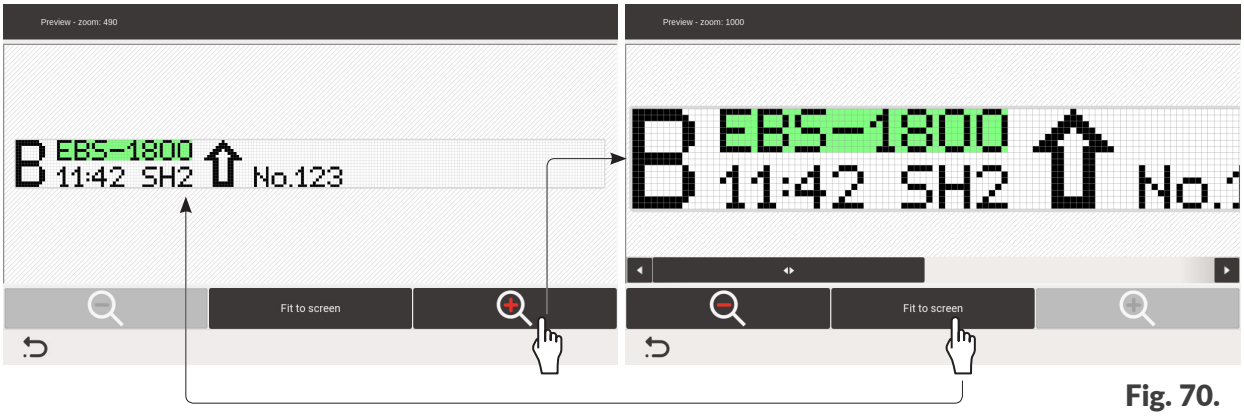


Fig. 70.

The minimum and maximum scales of a preview depend on project size (length and height).

Icon	Function
	Decrease the scale of a preview.
	Increase the scale of a preview.
Fit to screen	Adjust the project preview scale to the preview window.

4.6. USING AN INK CANISTER

Indicator **1h** (see ***Fig. 71***) on the main screen offers access to the following information:

- An estimate of the ink remaining in the canister.
- The number assigned to the ink system to which the ink canister is connected (ink canister number).
- Warnings / errors concerning a low ink level in the canister, no ink in the canister, incorrect canister, no canister or concerning the **IMS** (Ink Monitoring System).
- Service mode (printing can continue over another 50 hours).

If the printing system is provided with more than one ink system, the number of level indicators displayed on the main screen corresponds to number of the ink systems installed, and thereby to the number of ink canisters.

For detailed information about a selected ink canister press indicator **1h**, which corresponds to the given canister, on the main screen or the icon on the icon bar.

Detailed information about the selected canister is also accessible by pressing ▶ i ▶ ▶ *or* i ▶ ▶ .

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

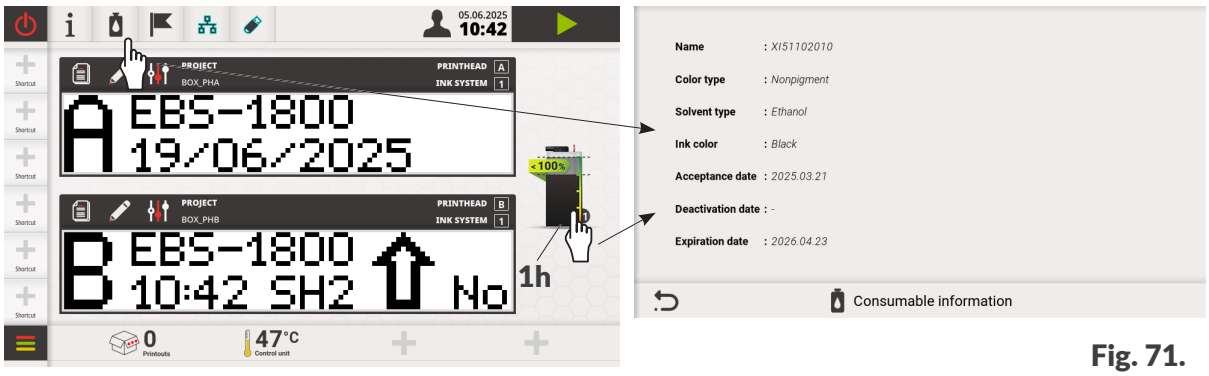
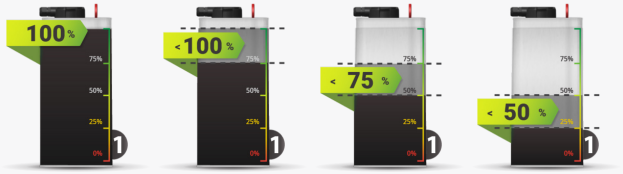
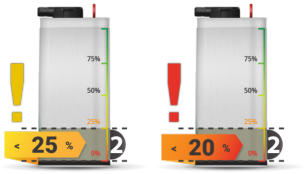
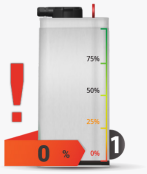
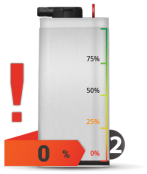
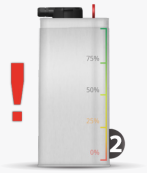
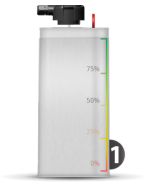
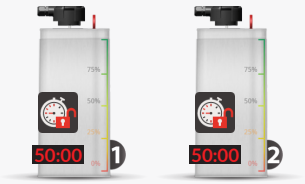


Fig. 71.

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

Indicator	Information / Action
	Ink level in canister 1 is normal.
	Low ink level in canister 2. Printing continues. Prepare a new canister of ink.
	Ink canister 1 is empty. A warning is displayed. Printing continues with the ink supplied from the buffer in ink system 1. Replace the ink canister. *Canister replacement at this stage does not pause printing.*
	Ink canister 2 and the buffer in ink system 2 are empty. An error is displayed. Printing pauses. Replace the ink canister.
	Incorrect canister 2 or the installed canister cannot be identified. The error is signaled. Printing pauses. Replace the ink canister with a correct one.
	No ink canister No.1. The error is signaled. Printing pauses.
	Service mode* (printing can continue over 50 hours). The additional icon on the icon bar is replaced with the icon .

** If a **correct** canister 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 canister of ink is installed or a service intervention is made. For more information see **"9.3.3. Releasing Protections"**.*

An empty canister of ink message is displayed in a dialog box. The dialog box is always displayed after printer start-up.

4.6.1. REPLACING THE INK CANISTER

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

*The ink canister should be replaced by an **instructed person**.*

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

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

If the printer issues an **empty canister warning**, it is necessary to replace the ink canister with a new one. From that moment on, printing continues with the ink supplied from the ink system buffer. At this stage, you can replace the ink canister **without pausing printing.**

If the printer issues an **empty canister error**, it means that both the ink canister and the ink system buffer are empty and **printing pauses**.

To replace the canister:

CAUTION: Sharp Elements!
*Be careful when replacing a canister not to get wounded with the needle that sticks out of the connection. **Do not touch the needle!** Avoid manipulations near the needle.*
*Before replacing the canister check the sump tray under it for fill and empty the tray, if need be. For more details see **"8.2.2. Sump Tray Periodic Inspection and Emptying"**.*

1. Press the catches to detach connection **4c** (see ***Fig. 72 on page 96***) from ink canister **5**.

   CAUTION: The time for applying the procedure is limited! A risk for printer damage!
   *The time between the moment connection **4c** is detached from canister **5** and the moment the connection,**4c**, is attached to a new canister **must not be longer than 30 seconds**. The time is counted down by the timer displayed on the ink level indicator on the main screen.*
   *If ink canister replacement follows an empty canister **warning**, then when the 30-second time limit elapses the printer issues the error and printing pauses.*

   A no canister message may be displayed on the screen.

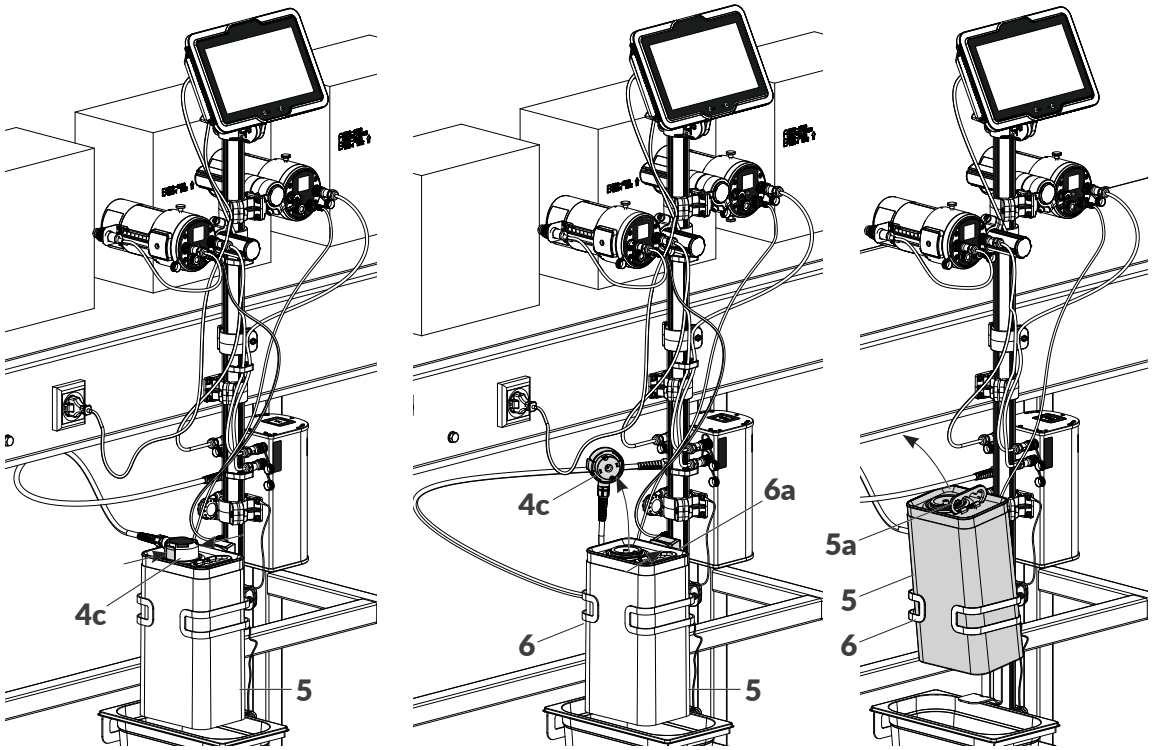


Fig. 72.

2. Release clamp **6a** to make removal of ink canister **5** from cage **6** possible.
3. Pull handle **5a** to remove the canister **5** from the cage **6**.
4. Put a new canister of ink **5** in the cage **6**. Make sure that the clamp **6a** closes on the canister top edge.

> *Weight of a 5-liter canister of methyl ethyl ketone-based ink:* ***approx 5.0 kg (11,0 lbs)****.*

5. Pull the tab to remove cap **5b** (see ***Fig. 73***) from the new canister **5**.

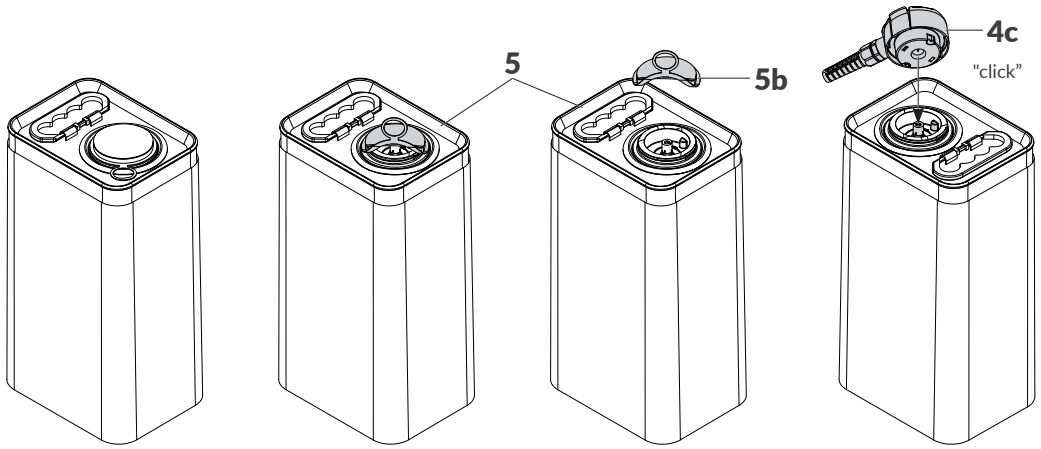


Fig. 73.

6. Attach the connection **4c** to the new canister of ink **5**. Keep pressing the connection until the catches close.
   The message is displayed.
7. Press **OK** to acknowledge.
   The new canister is installed.
   Dispose of the empty canister following the selective waste collection principles.

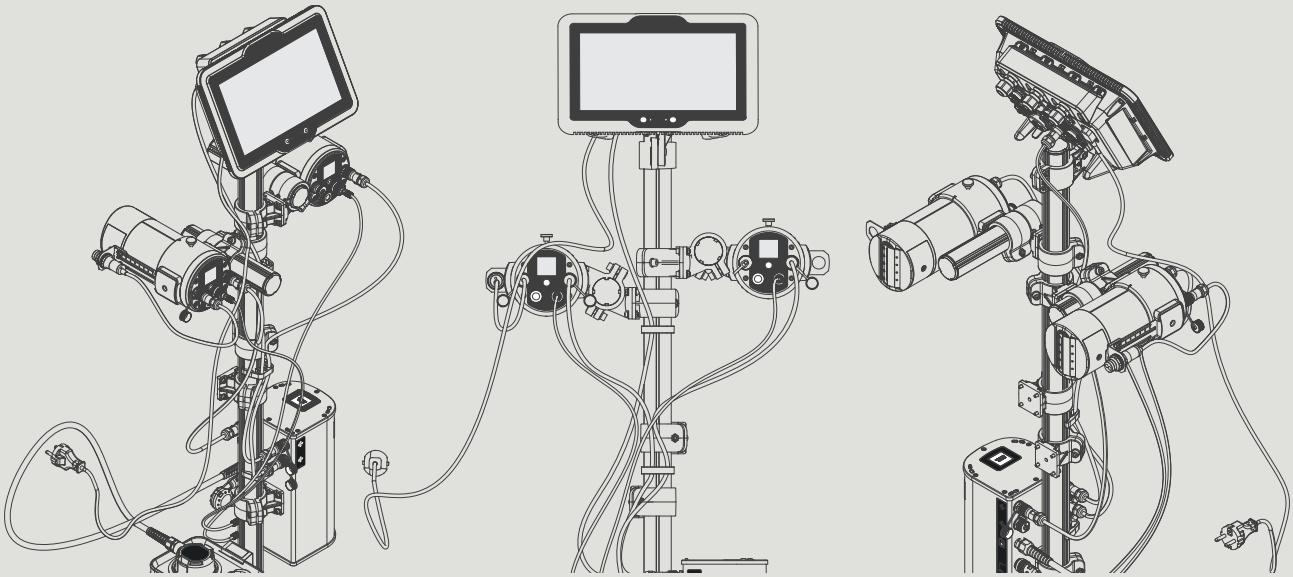
G2024/10/02_1EN

EBS® Ink-Jet Systeme

bigJET®

EBS-1800 USER MANUAL

Industrial DROP ON DEMAND Printers
Original Instructions



EN

Part 2 of 3

You can find our user manuals at:
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CHAPTER 5
EDITING

5. EDITING PROJECTS AND PROJECT PARAMETERS

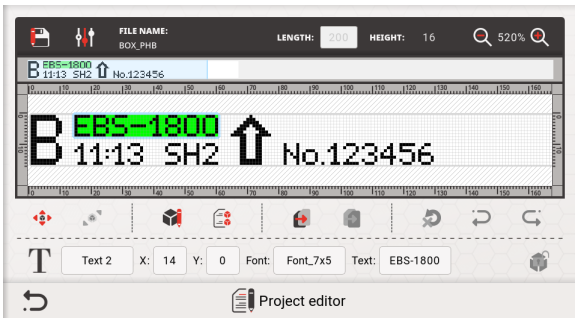
5.1. PROJECT EDITOR

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

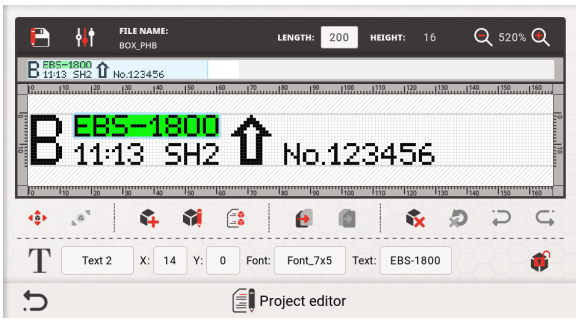


Fig. 74.

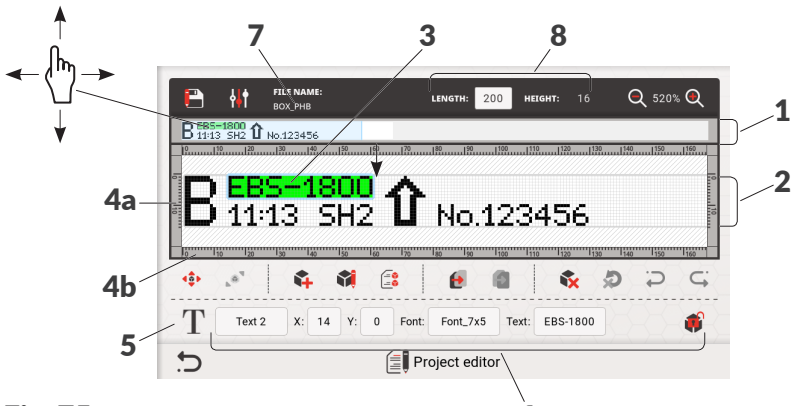


Fig. 75.

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)

Project size edit area

The following parameters are available in project size edit area **8** (see *Fig. 75 on page 99*):

Parameter	Range of settings
Length	30* to 30000

Project length **C** (see *Fig. 79* and *Fig. 80 on page 115*).

*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. Printheads".*

Height	**Informational 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. 76*).
- Objects highlighted in **green** (see *Fig. 76*) are enabled to be edited by **OPERATOR**-type users .
- Objects highlighted in **yellow** (see *Fig. 76*) exceed the project area or their content exceeds the object frame.

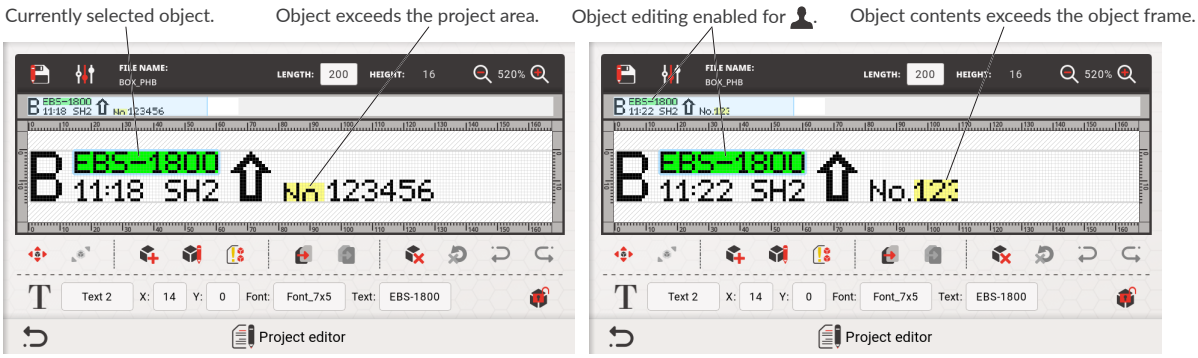


Fig. 76.

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. 77***) contain an error, for example they contain a non-existent (deleted) global variable, text file, image or font.

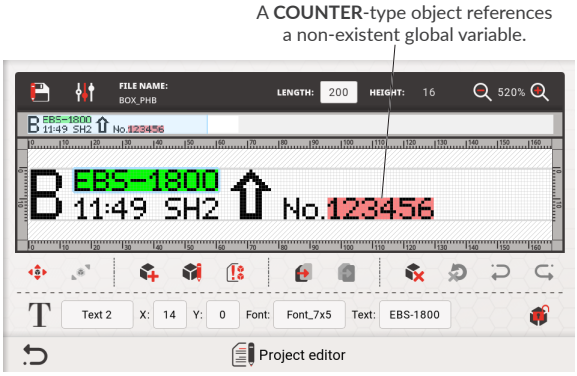


Fig. 77.

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. 75 on page 99***) 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. 75 on page 99***). 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.

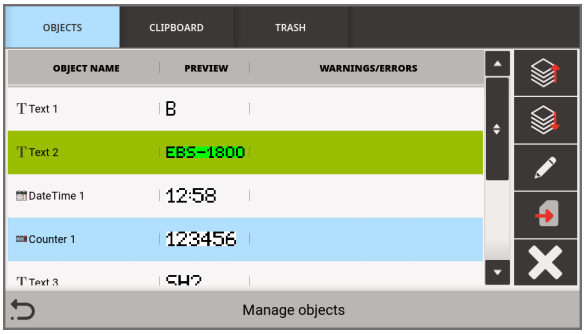
To change the size of the object frame:

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 trashcan.	▼	■	■

■ yes ▼ no

5.1.6. DELETING AN OBJECT

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

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.
   The object is restored and its position in the project is the same as it was at the time of deleting.

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.

|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

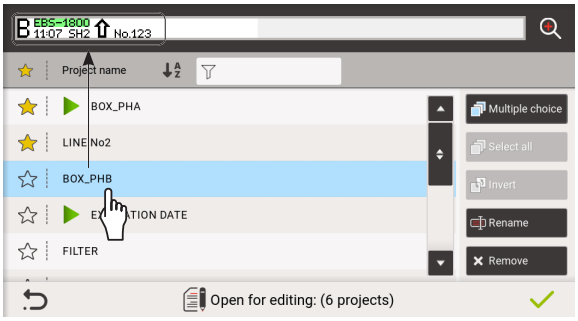
Size of the frame of an object.
The values can be modified manually or by means of the  function in the project editor.
The size of the frame of text objects, bar / matrix codes and **IMAGE**-type objects  can be changed only when the value of the |**GEOMETRY**| ▶ **Auto adjustment** parameter differs from **Fit frame to content**.

|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 projects open for printing / being printed are 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.

By pressing the icon for the selected project on the main screen, you can start editing 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:*
   *- any independent printhead installed in the printer (e.g. for the **16N/29** printhead, you can create projects that are 16 dots in height)*
   or
   - any group of printheads configured in the printer.

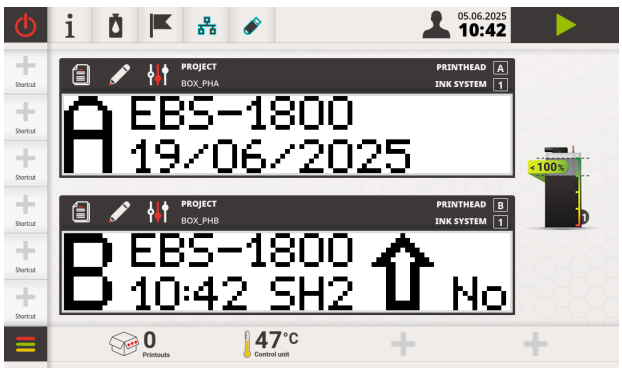
   *An **ADMINISTRATOR**-type user can create a project whose height equals the number of nozzles in any printhead (or group of printheads) designed for the **bigJET®** EBS-1800 printers. Projects whose height differs from the number of nozzles in the selected printhead (or the group of printheads) cannot selected for printing for the given printhead / group of printheads. They can be exported to another printer that is equipped with a printhead / group of printheads with the 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; this applies to the selected project; see the picture on the right) - modify parameters of one of the projects that are open for printing / being printed,



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

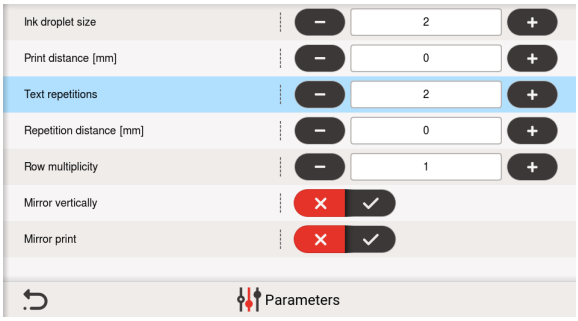


Fig. 78.

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.

The parameter is also used to eliminate differences in drop sizes that might occur if printheads are arranged at various levels.

Print distance [mm] or [inch]	**0 to 5000** [mm] or **0 to 196,85** [inch]

Initial distance **B** of a print (see *Fig. 79* and *Fig. 80 on page 115*).

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

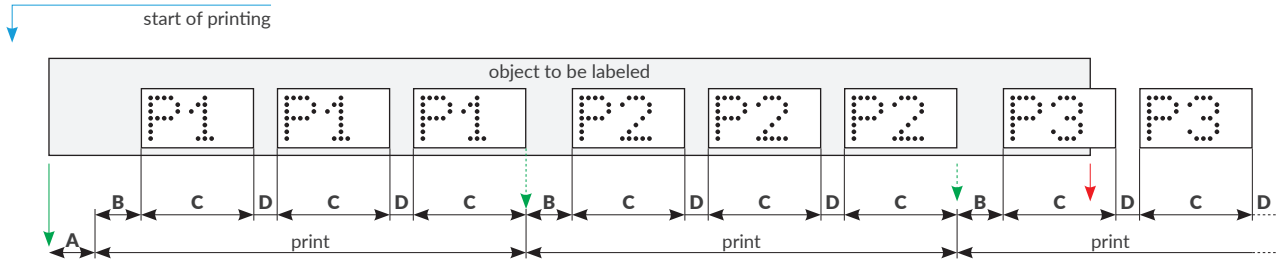
*For examples of applications of the parameter **Print distance** see also "7.2. Printing Settings".*

Text repetitions	**1 to 10000**

Number of project repetitions which form a single printout.

Each of the reprints of the project PX (see ***Fig. 79***) being printed always contains identical contents, even if the project contains dynamic contents objects.

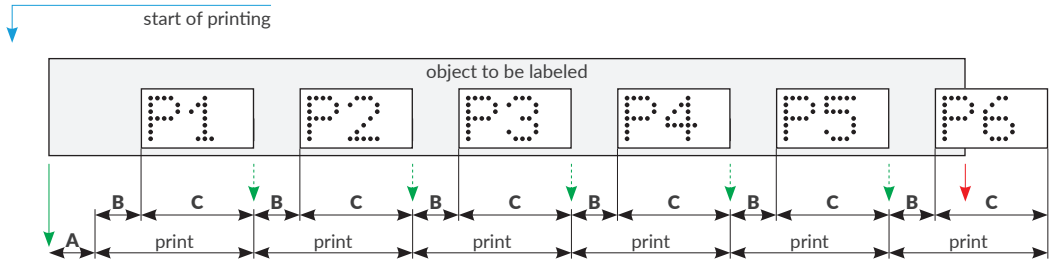
If **Text repetitions** > **1**, the distance between the consecutive project repetitions is set with the **Repetition distance** parameter (see ***Fig. 79***).



A - configuration space,
B - initial distance before print (the **Print distance** project parameter),
C - project length (the **Length** parameter is available in the project editor window - see **8** on ***Fig. 75 on page 99***),
D - distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is **3**).

Fig. 79.

If **Text repetitions** = **1** and the project contains dynamic contents objects, then every print has different contents (see ***Fig. 80***).



A - configuration space,
B - initial distance before print (the **Print distance** project parameter),
C - project length (the **Length** parameter is available in the project editor window - see **8** on ***Fig. 75 on page 99***),
PX - project prints *e.g.* P1, P2 (the **Text repetitions** project parameter is **1**).

Fig. 80.

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 if **Text repetitions** > **1**.

Distance **D** (see ***Fig. 79***) between the consecutive project repetitions PX that form a single printout.

*For examples of applications of the parameter **Repetition distance** see also **"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 (✓).

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 ▶ ▶ ▶ ***Print with encoder direction***. *For more information see* *"7.2. Printing Settings"*.

A horizontal direction of printing can be changed automatically during printing by means of a signal applied to the selected input in the **I/O BOX**. The functionality can be used, *e.g.* when a manipulator is applied.

For more details see *"7.4.3. The I/O BOX Module"*.

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 on the font list,
- **TrueType fonts**; marked with 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 are displayed at the beginning of the list of 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 ▶ ▶ .
You can manage the imported fonts via the font library. For more details see “7.6.5. Fonts”.

|STYLE| ▶ Font size [px]	**4 to project** height

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	**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.

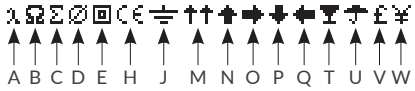
|STYLE| ▶ Row multiplicity	**1 to 10**

The number defining how many times every column in an object is to be repeated.

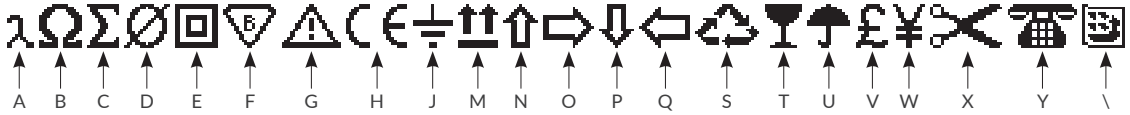
If matrix fonts are used for generating special characters (**Spec_7**, **Spec_16**, **Spec_25**), the creation of a given character requires that the capital letter corresponding to that character be entered while object contents are added.

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

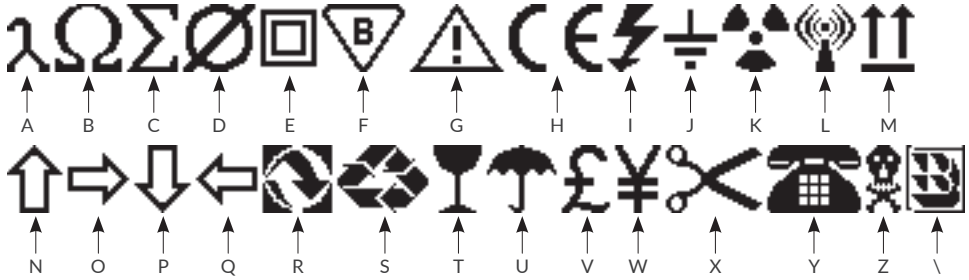
Spec_7



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.

|**DATE/TIME**| ▶ **Calendar type**	**Gregorian, Julian, Hijri**

Type of calendar to be used to determine a date.

|**DATE/TIME**| ▶ **Region**	

Precise identification of the region that determines the date and / or time format and the language in which the date and / or time items will be generated.

|**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 region (default format), **By region (short format)**, **By region (long format))**: predefined date formats dependent on the selected region (**Region**).
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, **DD:MM:YYYY**, **MM:DD:YY**, **YY:DD:MM**, **YY:MM:DD**, **YYYY:DD:MM**, **YYYY:MM:DD**: predefined date formats independent of what region is selected; additionally a separator (**Date separator**) can be selected.

|DATE SEPARATOR| ▶ 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 region.

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

By region (default format), **By region (short format)**, **By region (long format)**: predefined time formats dependent on the selected region (**Region**).
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 region is selected; additionally a separator (**Time separator**) can be selected.

|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 region.

|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 appropriate to the region selected with the parameter **|DATE/TIME| ▶ Region**.

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).
%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).

Item	Meaning
%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**	**MM.DD.YY, MM.DD.YYYY, MM.YY, MM.YYYY, DD.MM.YY, DD.MM.YYYY, YY, YY.MM, YY.MM.DD, YY.DD.MM, YYYY, YYYY.MM, YYYY.MM.DD, YYYY.DD.MM**

A user-required format of the date.

|**CALENDAR**| ▶ **Date separator**	„␣ (space)", „-", „.", „:"

Character that separates consecutive date items from each other.

|**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.

|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

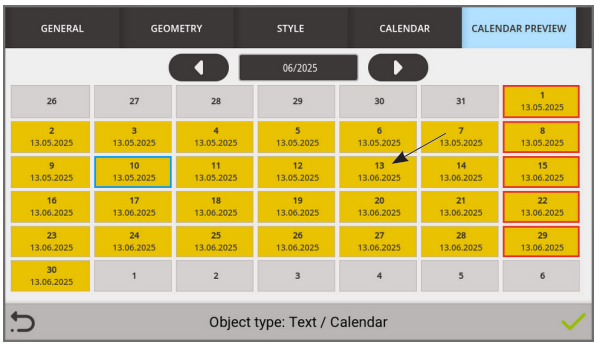
Date offset [months]: 0

Date offset [years]: 0

Date change frequency: Month

Change date: 13

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 thirteenth 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

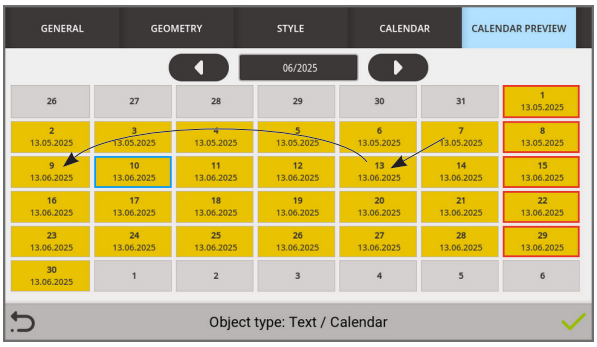
Date offset [months]: 0

Date offset [years]: 0

Date change frequency: Month

Change date: 13

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 thirteenth 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 thirteenth day of the month. The set date is printed by Monday before the following thirteenth day of the month or by the thirteenth 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.

A given work shift is counted from the hour at which it begins to the hour at which the successive shift begins.

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 :

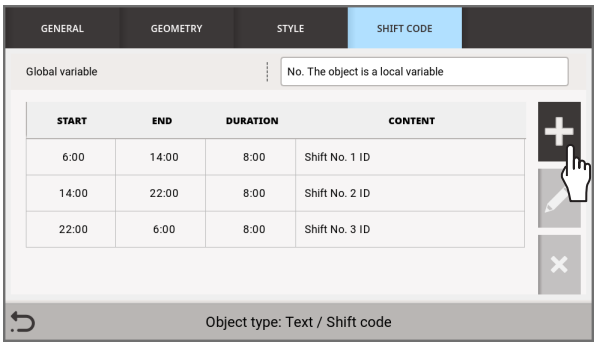
1. Press  ▶ |**TEXT OBJECTS**| ▶ .
2. Set the parameters that are specific to the **SHIFT CODE**-type object .

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

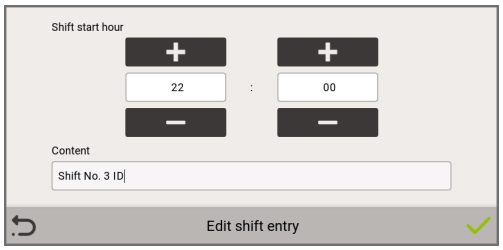
Decide whether the object is to be local or global (a global variable).

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	**00:00** to **23:59**

   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 or a signal has been applied to the selected input in the **I/O BOX**) 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 or a signal has been applied to the selected input in the **I/O BOX**) if **Start mode** = **Max**.

Start mode	**Last value**, **Start value**, **Min**, **Max**

Select a value to start counting from:

- **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**: when a project is printed for the first time, when printing is resumed and when the reset icon on the main screen is used or a signal has been applied to the selected input in the **I/O BOX**, the counting starts from the value given with the **Start value** parameter.

- **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 or a signal has been applied to the selected input in the **I/O BOX**, 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 or a signal has been applied to the selected input in the **I/O BOX**, the counting starts from the value given with the **Max** parameter.

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 or a signal has been applied to the selected input in the **I/O BOX**, 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 or a signal has been applied to the selected input in the **I/O BOX**, 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	**Start line** 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	**Number of lines per printout** to **End line-Start line+1**

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.

|TEXT FILE| ▶ Number of lines per printout	**1** to **End line-Start line+1**

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. The maximum number of text lines that can be added is restricted by the values of the **Start line** and **End line** parameters.

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 **RS-232** or **Ethernet** interface.

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

- The device is connected to the **RS-232** or **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	**RS232, TCP/IP socket**

Interface through which data is transmitted from an external device:

- **RS232**: data is transmitted via the **RS-232**,
- **TCP/IP socket**: data is transmitted via the selected **Ethernet TCP/IP** socket (with the port number defined with the **Port number** parameter).

|COMMUNICATIONS PORT| ▶ Port number	**5000 to 5009**

The parameter is available only if **Communication type** = **TCP/IP socket**.

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| ▶ Sample content	

Approximate object contents can be used, *e.g.* to visualize the object within a project before transfer of the data from an external device begins.
Therefore it is recommended that the approximate object contents be close to the data that is to be transmitted from an external device.

If the **Sample content** parameter remains blank, the object name defined with the parameter **|GENERAL| ▶ Object name** is used as the approximate object contents.

|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).
The data buffer can be cleaned up if the icon  on the main screen is pressed or a signal is applied to the selected **I/O BOX** input.

|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.

|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".

|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**):

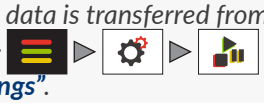
- **Off**: the printer sends no data.
- **String**: the printer sends the data defined with the **On data ready to print [string]** parameter.
- **Hex:** the printer sends the character defined with the **On data ready to print [hex values]** parameter.
- **Echo - resend received**: the printer sends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

|CALLBACKS| ▶ On buffer overflow	**Off, String, Hex, Echo - resend received**

The parameter is available only if **|COMMUNICATIONS PORT| ▶ 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]**	**5** 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**: 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 [T] you can put a bar / matrix code consisting of invariable **ASCII**-character contents into a project.

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

1. Press [+] ▶ |**1D/2D CODES**| ▶ [T].
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 [T] 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.

A given work shift is counted from the hour at which it begins to the hour at which the successive shift begins.

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 in advance 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 **RS-232** or **Ethernet** interface.

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

- The device is connected to the **RS-232** or **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:

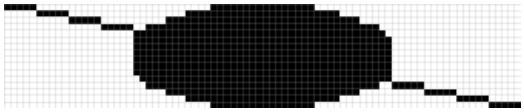
1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **LINE**-type object .

Parameter	Range of settings
|**GENERAL**| ▶ **Inverted**	✕ / ✓

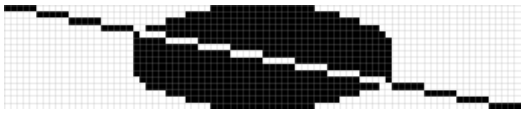
The parameter is available only if |**GENERAL**| ▶ **Transparency** = ✓.

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

- ✕.



- ✓.



|**SHAPE**| ▶ **Line width [px]**	1 to 30

Thickness of a line to be drawn; given as a number of dots.

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 :

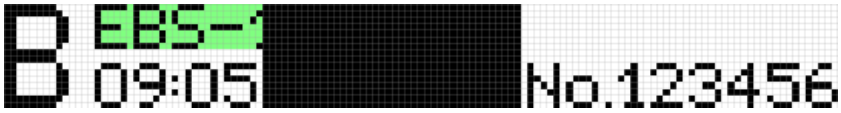
1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **RECTANGLE**-type object .

Parameter	Range of settings
|**GENERAL**| ▶ **Inverted**	✕ / ✓

The parameter is available only if |**GENERAL**| ▶ **Transparency** = ✓.

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

– ✕.



– ✓.



|**SHAPE**| ▶ **Line width [px]**	**1** to **30**

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.

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 :

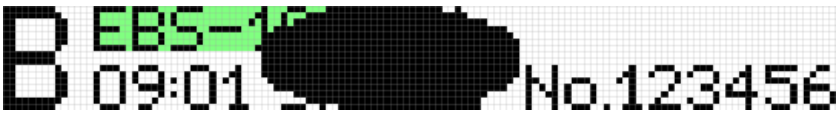
1. Press ▶ |**GRAPHIC OBJECTS**| ▶ .
2. Set the parameters that are specific to the **ELLIPSE**-type object .

Parameter	Range of settings
|**GENERAL**| ▶ **Inverted**	✕ / ✓

The parameter is available only if |**GENERAL**| ▶ **Transparency** = ✓.

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

– ✕.



– ✓.



|**SHAPE**| ▶ **Line width [px]**	**1** to **30**

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.

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.*

A graphics file can be imported to the printer and then used in a project if it meets the following requirements:
- maximum size: ***1 megapixel (1 Mpx)****,*
- maximum width: ***30000 px****,*
- maximum height: ***30000 px****.*

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



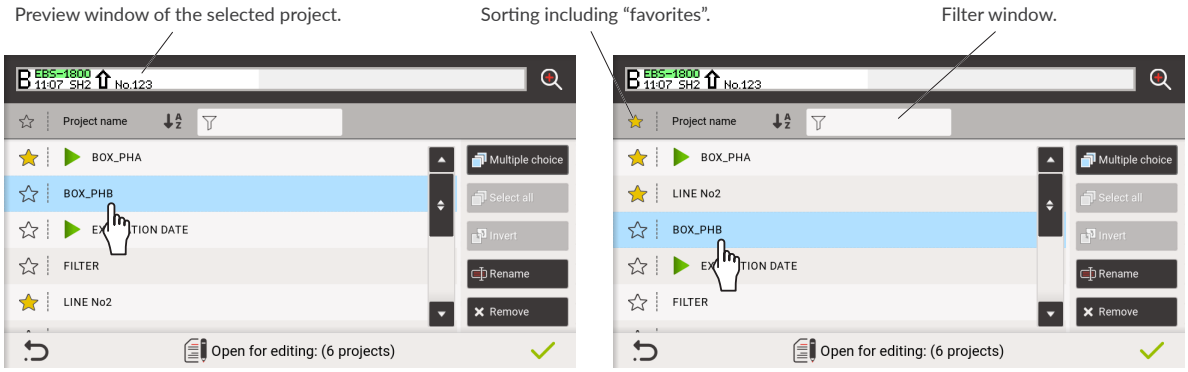


Fig. 81.

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. 81***). 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.

A project that is open for printing / being printed by at least one printhead or a group of printheads is marked with the symbol ▶.

Certain projects can be displayed in gray in the library. This means that they cannot be selected to be printed because their height is not suitable for all the printheads / groups of printheads.

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).



** These icons are available only when you have called the project library by pressing* .

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

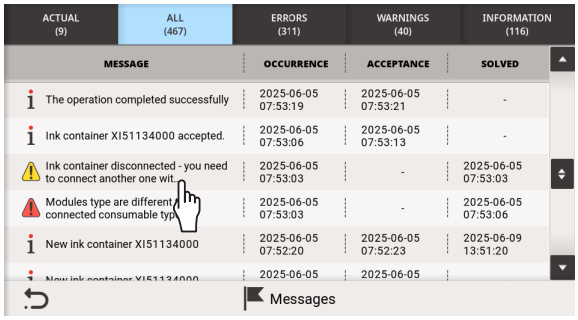
Every report can be saved in a **USB** memory device.

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. 57 on page 64*).



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 and a notice messages),
- How many times a message has occurred (this info is available when you click the message).

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 .*

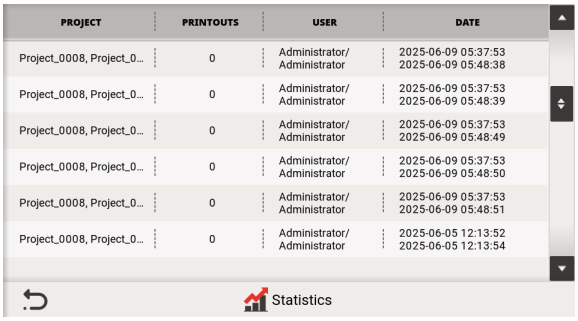
*Printout statistics can be exported to a **USB** memory device as a ***.csv** file; for more information see **"7.7.3. Exporting / Importing Other Files"**,*

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 (projects) name,
   - Number of prints made for a given project,
   - Printing start date,
   - Printing completion date.



6.1.2.1. CLEANING UP PRINTOUT STATISTICS

*The function is available to **ADMINISTRATOR**-type users only.*

To clean up printout statistics:

1. Press ▶ ▶ .

   In the dialog box displayed you are prompted to acknowledge the operation.

2. Press **Yes** to acknowledge.

   The printout statistics are cleaned up.

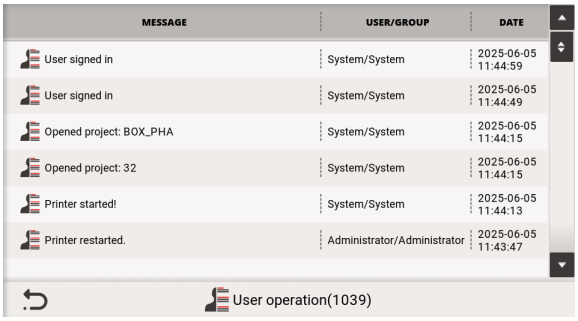
6.1.3. OPERATION HISTORY

*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:

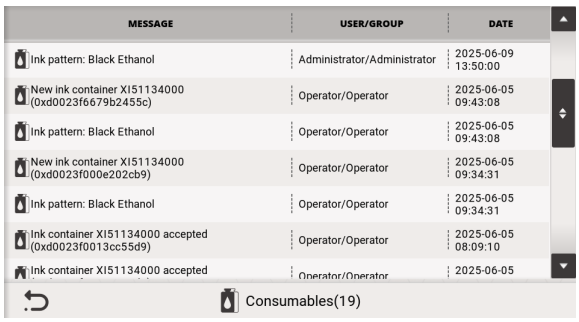
- Description of the operation displayed in the interface language,
- Name and type of user who carried out the operation,
- Date when the operation was carried out.

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.

6.2. INFORMATION

6.2.1. PRINTER INFORMATION

To gain access to printer information:

1. Press ▶ ▶
   or
   press ▶ on icon bar **1b** (see *Fig. 57 on page 64*).



The function provides access to the following information about the printer software:

- Printer identifier,
- Versions of the system and of each of the system modules.

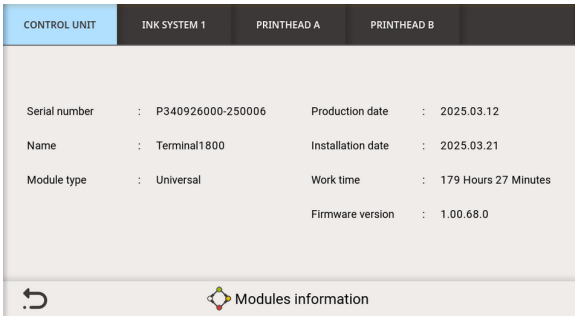
Press to generate a two-dimensional QR code which contains basic information about the printer. If you use the link provided by the QR code, the printer information is automatically forwarded to the service staff. Owing to that, the diagnostic process is significantly simplified.

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. 57 on page 64*).



2. Select a part about which you wish to get information:
   |**CONTROL UNIT**|,
   |**INK SYSTEM 1**|, |**INK SYSTEM 2**|,
   |**PRINTHEAD A**|, |**PRINTHEAD A1**|, |**PRINTHEAD B2**|, *etc.*.

The function provides access to the following information about modules:

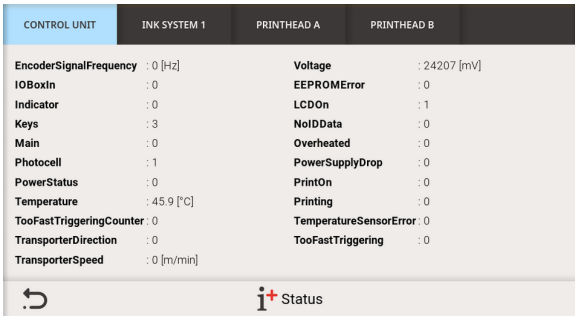
- Serial number,
- Name,
- Type of module,
- Date of manufacture,
- Date of installation,
- Running time,
- Software version,
- Expiration date (for printheads).

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 ▶ ▶ ▶
   or
   press ▶ ▶ on icon bar **1b** (see *Fig. 57 on page 64*).

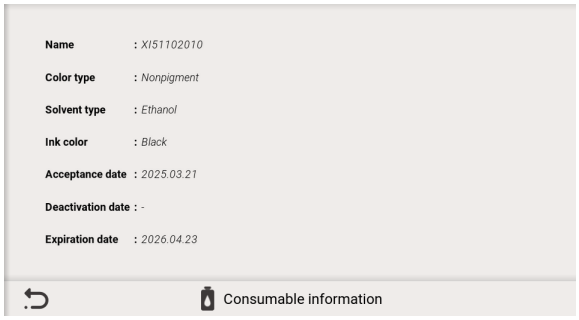


2. Select a part about which you wish to get information:
   |**CONTROL UNIT**|,
   |**INK SYSTEM 1**|, |**INK SYSTEM 2**|,
   |**PRINTHEAD A**|, |**PRINTHEAD A1**|, |**PRINTHEAD B2**|, *etc.*.
   The status data on each of the printer modules is available in the window displayed. The data can be used 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 canister):

1. Press ▶ ▶
   or
   press on icon bar **1b** (see *Fig. 57 on page 64*)
   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 canister [%],
- 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. 57 on page 64*).



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.

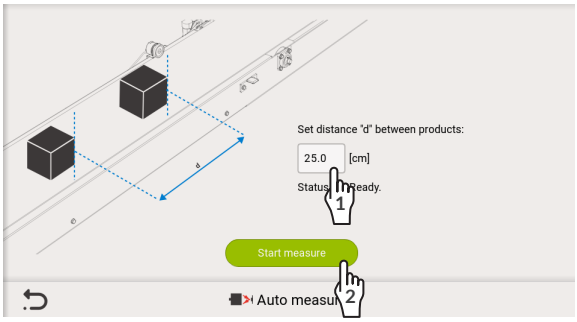
The procedure for measuring the conveyor belt travel speed requires that the printer be provided with a photodetector.

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 trigger source 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. Enter the distance that is between the beginnings of the objects you have put on the conveyor belt.

4. 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**).

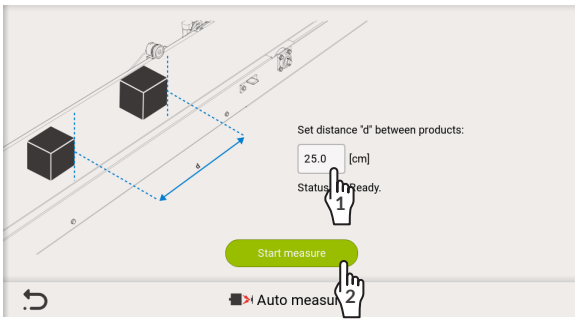
The procedure for measuring encoder parameters requires that the printer be equipped with a photodetector and an encoder.

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 trigger source when:

- The built-in measuring tool is started,
- The encoder is measuring the conveyor belt travel speed.

To measure the encoder constant:

1. Make the setting: ▶ ▶ ▶ **Impulse generator source** = **External**.
2. Press **Auto measure**.
   The measuring tool is displayed (see the drawing on the right).



3. Enter the distance that is between the beginnings of the objects you have put on the conveyor belt.
4. 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 window displayed, you are requested to confirm whether the measured value should be used as the setting for printing parameters or not.
6. Press **Yes**.
   The encoder constant measured with the measuring tool is entered to the printer as the value 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 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.

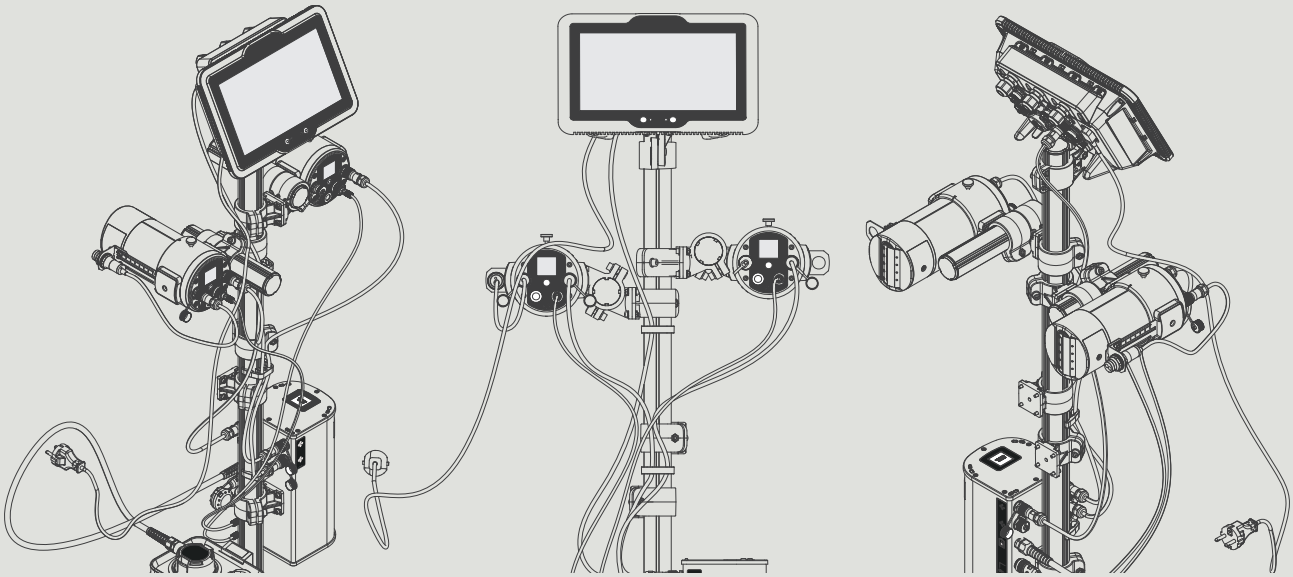
G2024/10/02_1EN

EBS® Ink-Jet Systeme

bigJET®

EBS-1800 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

2026.10.08

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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.

Units	[m], [inch]

English units of measurement are used in the printer.

Temperature units	[°C], [°F]

Units of temperature used in the printer.

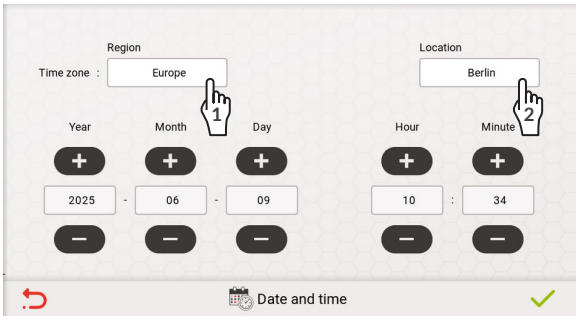
2. Modify the selected parameter.
3. Press ✓ to acknowledge.

   *If the value of the **Country** or **Language** parameter has been modified, the printer restarts as soon as the modifications are acknowledged by pressing the icon ✓.*

   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".



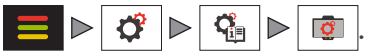
To set the current date and time:

1. Press ▶ ▶ ▶
   or
   press the clock on icon bar **1b** (see *Fig. 57 on page 64*).
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 depends on the **Country** parameter settings available in the menu* ▶ ▶ ▶ .
3. Set a time zone. To this end:
   - Select a region or continent.
   - Select a city or town.
4. Press ✓ to acknowledge.
   In the dialog box displayed you are notified of the necessity to restart the printer.
5. Press OK to acknowledge.
   The printer restarts.
   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 settings
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.

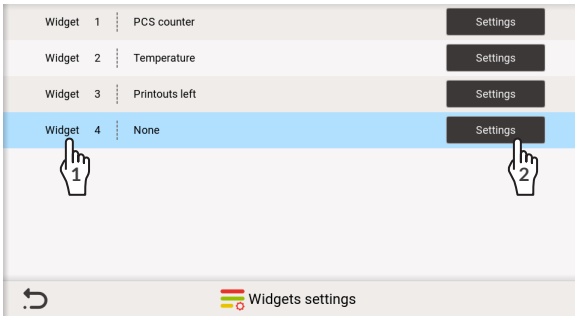
   The display is configured.

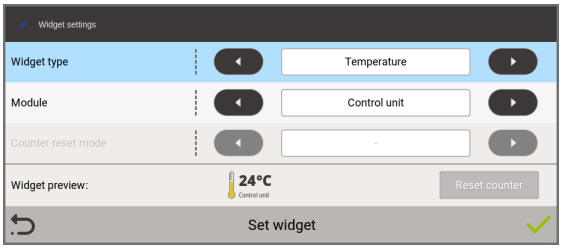
7.1.4. SETTING UP WIDGETS

The information displayed on the main screen of the control unit can be customized with widgets on editable widget bar **1k** (see *Fig. 59 on page 66*).

To customize the widget bar:

1. Press  .
   The widget selection and configuration window is displayed (see the drawing on the right).
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.





*The window for configuring the selected widget is also displayed when any + icon or widget on widget bar **1k** on the main screen is pressed.*

Set the following in that window:

- Type of widget (**Widget type**),
- For selected widgets: additional parameters, *e.g.* the printer module (**Module**) whose temperature is to be displayed or print counter reset mode (**Counter reset mode**).

No two widgets of the same type can be created for a given printer module.

The widget preview (**Widget preview**) is displayed in the lower part of the window.

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 settings
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**.

Tapping sound	✕ / ✓

The sound signal generated while the touch screen is being used.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.
   The sound signals are modified.

7.1.6. OTHER SETTINGS

To modify other settings:

1. Press ☰ ▶ ⚙ ▶ ⚙ ▶ ⚙.
   The other settings involve the following parameters:

Printer name	

The name that the printer uses for communication purposes.

The printer name is also used as the default name of the files while data is exported to a **USB** memory device.

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

API	✕ / ✓

Enabling the printer's communications protocol.

The printer communicates via the **Ethernet TCP/IP** socket with port number 6000.

*For more details see **Description of Communication with EBS-1600/EBS-1800 Printers** (signature **G2023/05/7_1EN**) For information on how the **bigJET®** EBS-1800 printers communicate with external devices contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

2. Modify the selected parameter.
3. Press ✓ to acknowledge.

As soon as modifications are acknowledged with the icon ✓, the dialog box notifying you of the necessity to restart the printer is displayed. The value of the parameter is not modified until the printer restarts.

The settings are modified.

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 settings
Impulse generator source	**Internal**, **External**

The source of timing signals, *i.e.* the signals that determine when successive columns of a print 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".

Print with encoder direction	✕ / ✓

The parameter is available only if **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 if **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 direction	✕ / ✓

The parameter is available only if **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.

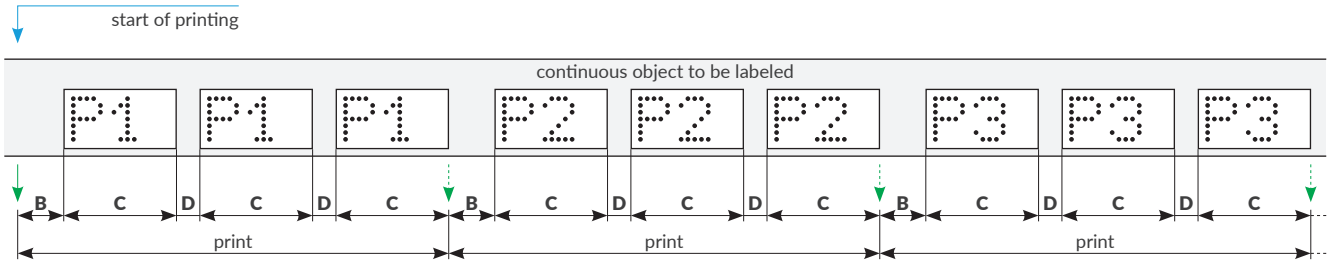
If the conveyor belt starts moving backwards, printing pauses. When the conveyor belt starts moving in the proper direction, printing continues.

– ✓ - "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.

Trigger signal source	**Start printing after pressing start**, **Photoeye: Printhead / Control unit**, **I/O BOX input: 1 to 8** (depends on hardware configuration)

Print trigger source:

– **Start printing after pressing start**: prints are triggered:
(↓) for the first print: when printing is enabled by the user (↓),
(⋮) for successive prints: when printing of the previous print is finished.
This mode is recommended for labeling continuous objects, *e.g.* pipes, tubes, cables.



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. 75 on page 99*),
D -distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is **3**).

Fig. 82.

– **Photoeye: Printhead / Control unit** or **I/O BOX input: 1 to 8*** of the **I/O BOX**: 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 trigger source or when the signal occurs at a selected **I/O BOX** binary input.
Printing does not start until the so called configuration space is measured out.

** The list of values of the parameter **Trigger signal source** shows the **I/O BOX** binary inputs that are set at working in **Trigger printout** mode. For more details see "7.4.3. The I/O BOX Module".*

For more information about configuration space see "7.3. Configuring Parts of the Printing System".

*If the 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. Printheads".*

For examples see *Fig. 83 on page 175* through *Fig. 86 on page 178*.

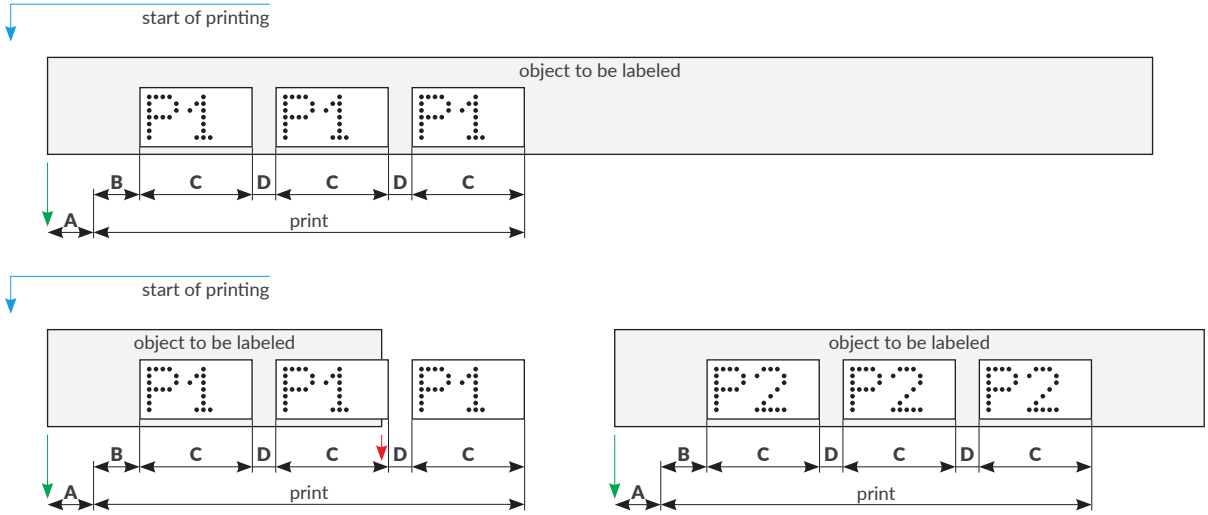
The trigger can be additionally configured with the **Trigger type**, **Start on next item** and **Product edge** parameters.

Trigger type	Edge, Level

The parameter is available if the setting of the **Trigger signal source** parameter is different than **Start printing after pressing start**.

Printer reaction **after printing has been completed**:

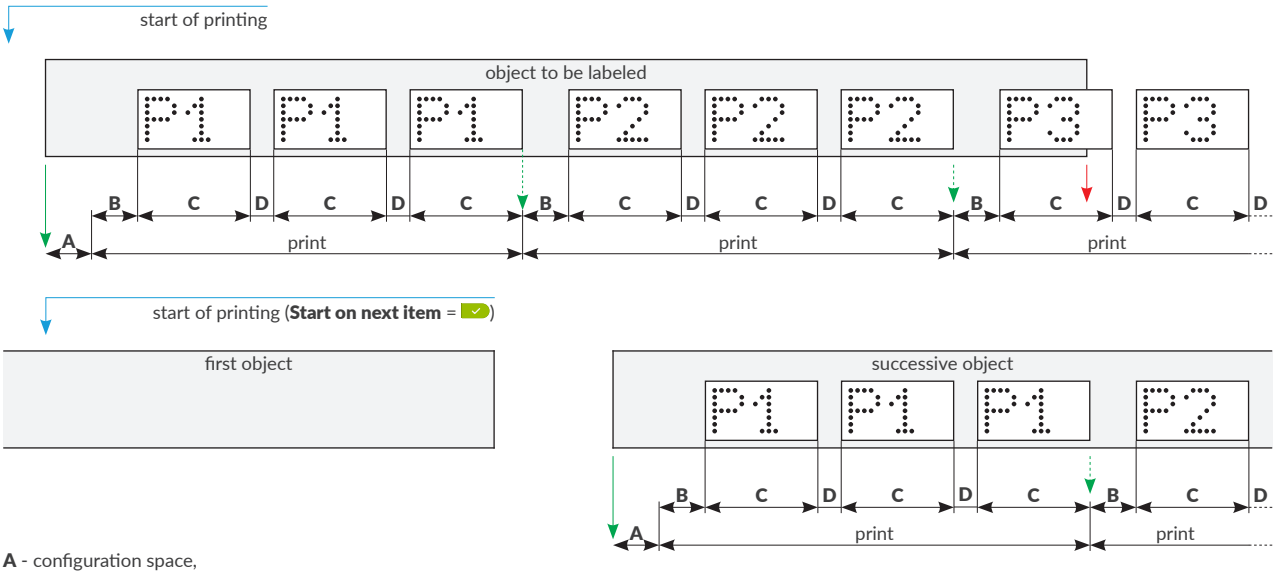
– **Edge**: when the beginning of an object (↓) is detected (and a configuration space **A** is measured out), the printer makes **one** print consisting of initial distance **B** and a defined number of project reprints PX (the **Text repetitions** project parameter), and then waits until the beginning of another object (↓) is detected to make a successive print; the entire print is made (including all reprints PX) even if the end of the object being labeled (↓) is detected while the print is being made; this mode is dedicated to making one print on every object.



A - configuration space,
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. 75 on page 99*),
D - distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is **3**).

Fig. 83.

– **Level**: when the beginning of an object (↓) is detected (and a configuration space **A** is measured out), the printer starts making prints consisting of initial distance **B** and a defined number of project reprints PX (the **Text repetitions** project parameter) and continues making the prints as long as the object being labeled is within reach of trigger source; the entire print is made (including all reprints PX) even if the end of the object being labeled (↓) is detected while the print is being made; this mode is dedicated to making many prints on one object; for further configuration use the parameter **Start on next item**.



A - configuration space,
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. 75 on page 99*),
D - distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is 3).

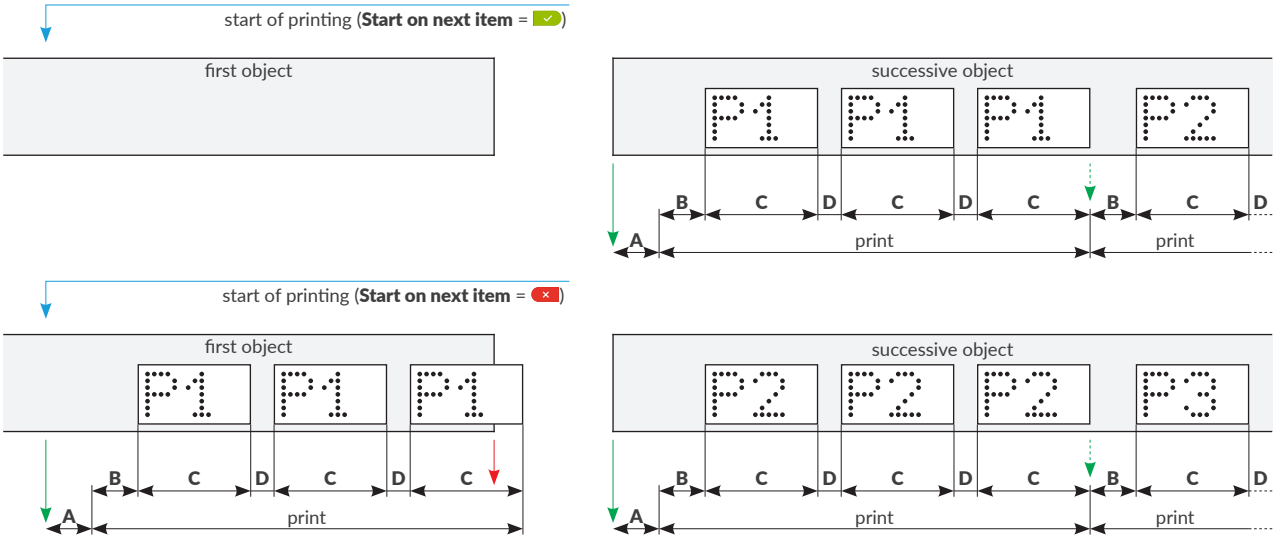
Fig. 84.

Start on next item ✕ / ✓

The parameter is available only if **Trigger type** = **Level**.

This mode is designed to make the first print if an object is within trigger source reach while the user enables printing (↓):

- ✕: the first print is made on the object that is within trigger source reach while printing is enabled (↓),
- ✓: the first print is made on the successive object (after the beginning of the object has been detected) (↓); the object that is within trigger source reach while printing is enabled will not be labeled.



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. 75 on page 99*),
D - distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is 3).

Fig. 85.

*The parameter **Start on next item** is set at ✓ by default.*
*If **Start on next item** = ✕, the **bigJET®** EBS-1800 printer reaction is analogical to that of older models of the **EBS Ink Jet Systeme GmbH** printers. Owing to that, the printers are compatible.*

Product edge	Leading, Trailing

The parameter is available if the setting 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.

Queuing print triggers	✕ / ✓

The parameter is available if the setting of the **Trigger signal source** parameter is different than **Start printing after pressing start**.

With this parameter you can:

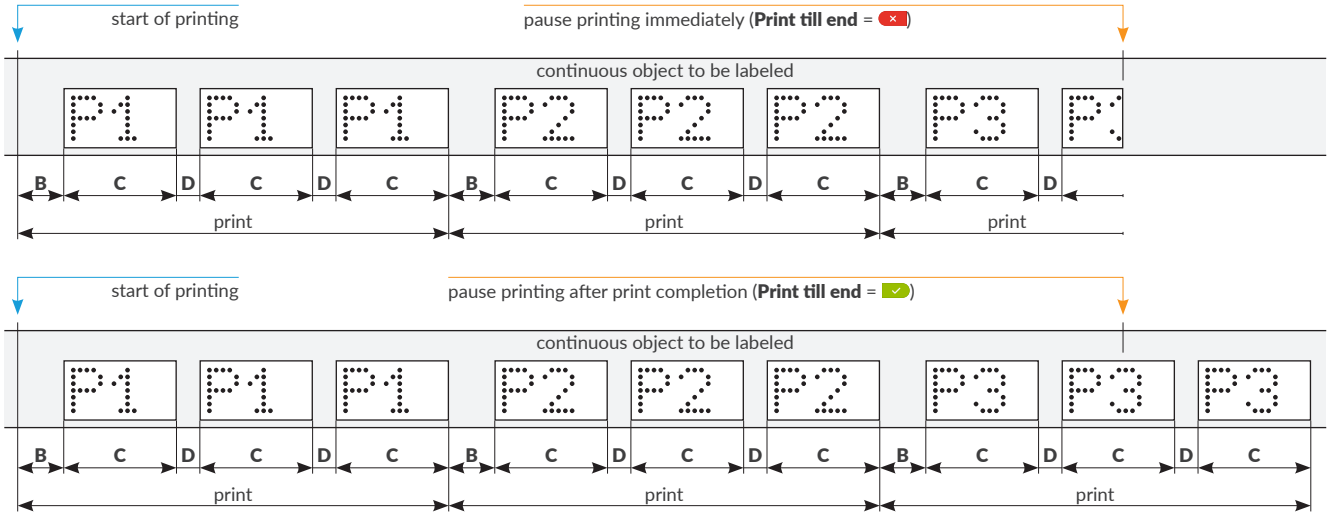
- With this parameter you decide whether the trigger source should be put a few objects before the printhead defined as the first (to count more than 1 object) or not; the number of objects that can be between the trigger source and the printhead is limited to 30.
- Impact on the moment when the print 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.

This parameter defines - when printing pauses (↓) - whether printing should stop immediately or the current printout (and all the reprints PX) should be brought to completion.



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. 75 on page 99*),
D - distance between the successive project reprints (the **Repetition distance** project parameter),
PX - project reprints *e.g.* P1, P1, P1 (the **Text repetitions** project parameter is **3**).

Fig. 86.

Autostart	✕ / ✓

This parameter defines whether printing of the open projects is to start immediately after printer start-up (✓) or it needs to be initiated manually (✕).

2. Modify the selected parameter.
3. Press ✓ to acknowledge.
   The printing settings are modified.

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.

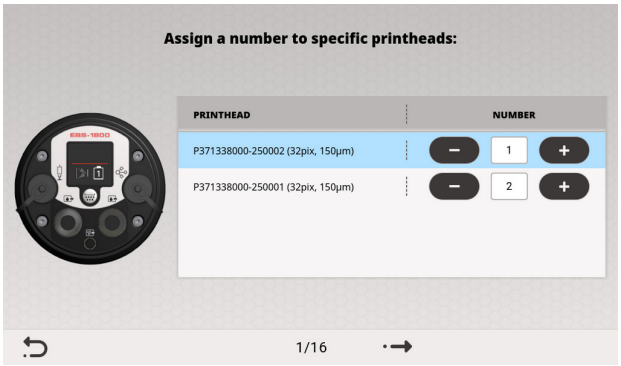
Minor changes to the configuration of individual parts can be entered in printer memory manually and the wizard is not needed.

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.

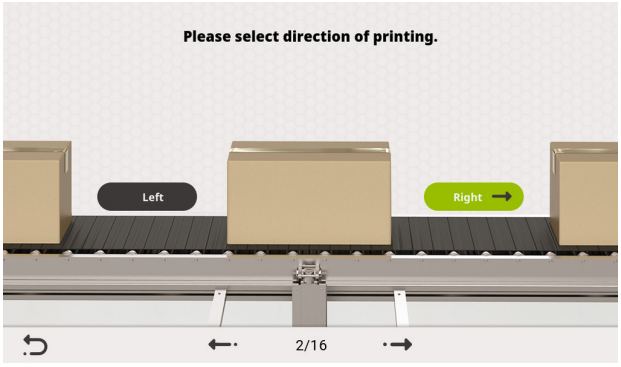
2. Enter the real printing system setup on the factory conveyor to the printer, following the on-screen instructions.
   The procedure for setting up a printing system with the wizard does not consist of a single set of operations. It depends of a number of printing system parameters.

The following parameters can be defined with the printing system configuration wizard:

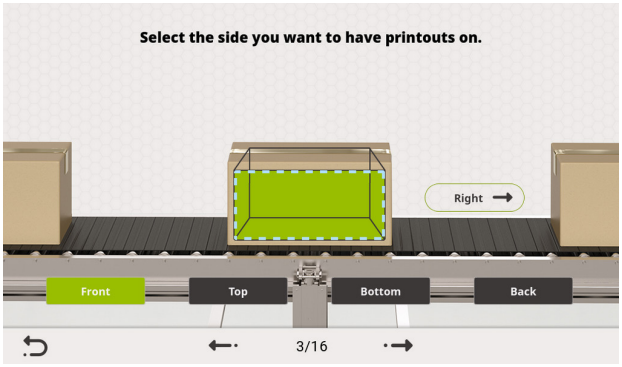
- Unique number (**1** to **4**) assigned to each of the printheads connected to the printer.
  The assigned number is displayed on the printhead **LCD**.



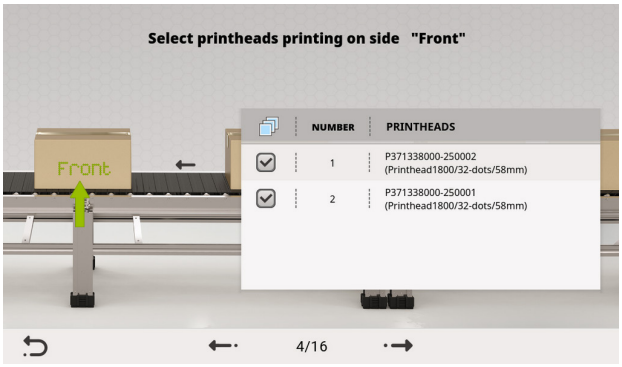
- The direction (right, left) in which the conveyor belt moves.



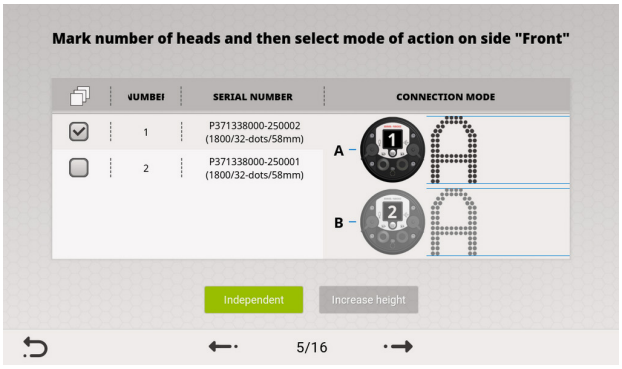
– The side (front, back, top, bottom) of an object to be labeled on which printouts are to be made.



– Selection of printheads for print making on the object side(s) you indicated in the previous step.



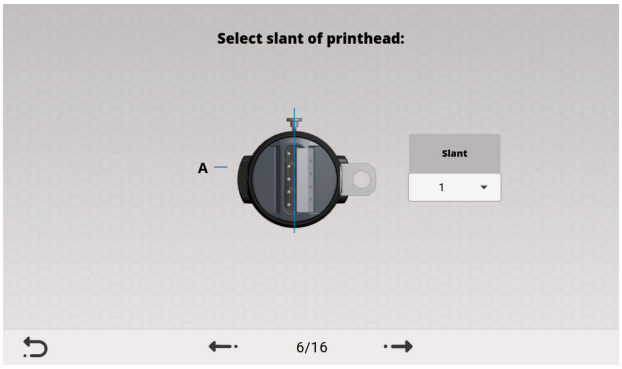
– Printheads operation modes:
Independent: independent printheads; each of the printheads prints a different project.
Increase height: printheads are linked (grouped) together to print one project to get prints whose height is greater.



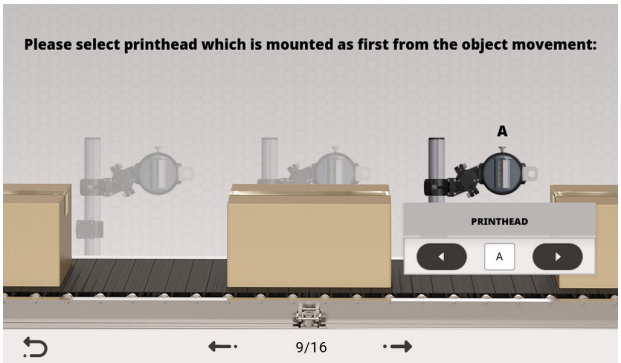
At this stage of printing system configuration, every printhead number is replaced by:
*- a letter symbol, if the printer is an independent one (e.g. number **1** is replaced with the letter **A**),*
*- a two-character symbol, if the printer is part of a group of printheads; the first character (a letter) symbolizes the group and the other (a digit) indicates the printhead number (e.g. the symbol **A2** means printhead **2** within group **A**).*
*While the identifier of a given printhead changes, the symbol displayed on the printhead **LCD** blinks.*

If printheads are grouped together, the next step in the procedure is to define how the printheads are arranged within the group. For independent printheads, the step is skipped.

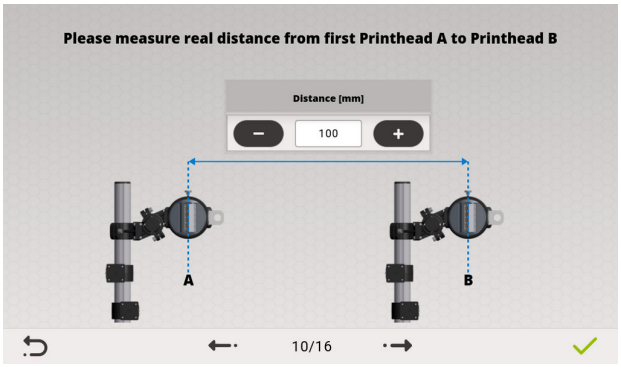
– Degree of turning of the independent printhead.



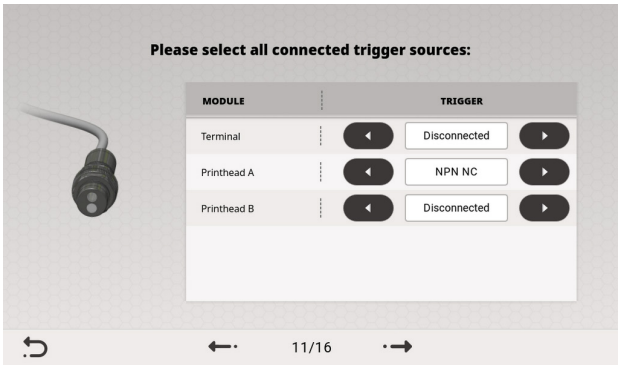
- Select the printhead in front of which objects to be labeled move first.



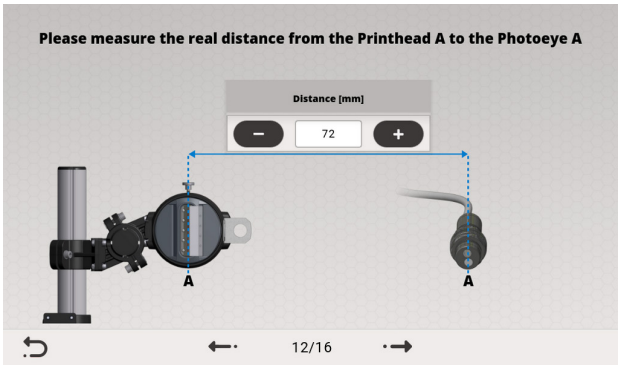
- Distance in a horizontal direction between each of the printheads connected to the printing system and the printhead defined as the first one in the previous step.



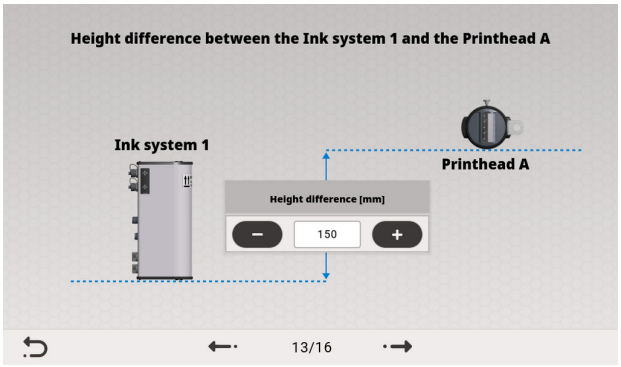
- Type (**NPN NO, PNP NO, NPN NC, PNP NC**) of trigger source connected to the control unit and / or to each of the printheads.



- Distance in a horizontal direction between each of the trigger sources selected in the previous step and the printhead defined as the first.
  For the photodetector that is set as the trigger source in printing parameters, this distance is a so-called **configuration space**.



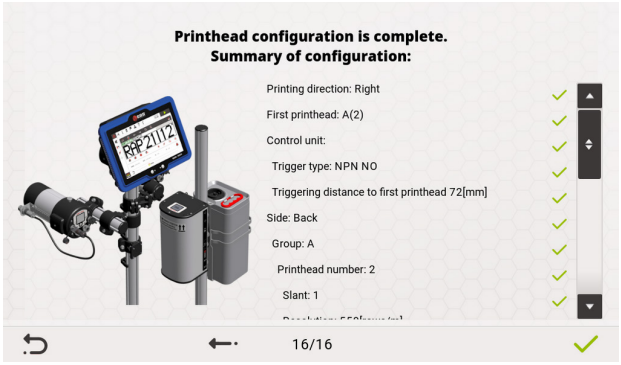
- Difference in levels between each of the printheads and the ink system to which that printhead is hydraulically connected.



– Pressure of the ink in the ink system.



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 you finish configuring the printer using the wizard or when you exit the wizard at any time having saved the settings you have made, the projects currently open for printing close.

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 settings
First printhead	**A**, **B**, **C**, **D**, **A1**, **B2**, *etc.*.

Symbol of the printhead in front of which objects to be labeled move first.

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 input in one of the printheads.

Trigger distance to first printhead [mm] or [inch]	**0 to 5000** [mm] or **0 to 195** [inch]

The parameter is available 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 printhead defined as the first printhead (the **First printhead** parameter).
If the photodetector connected to the control unit is selected as the trigger source, this distance is a co-called **configuration space**.

*You can select the trigger source 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 INK SYSTEMS

Ink systems are configured while the printing system is being configured by means of the configuration wizard.
The function described in this chapter is designed to modify the configuration of the selected ink system without the use of the configuration wizard.

To modify parameters of the selected ink system:

1. Press ▶ ▶ ▶ |**INK SYSTEM 1 / 2**|.
   The following parameters need setting to configure every ink system:

Parameter	Range of settings
Pressure [kPa]	**15 to 45**

Pressure of the ink in the ink system.

Number	**Informational parameter**

Ink system number.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.
   The configuration of the selected ink system is completed.

7.3.4. CONFIGURING PRINTHEADS

Printheads are configured while the printing system is being configured by means of the configuration wizard.

The function described in this chapter is designed to modify the configuration of the selected printhead without the use of the configuration wizard.

To modify parameters of the selected printhead:

1. Press ▶ ▶ ▶ |**PRINTHEAD A / B / A1 / B2 / ...**|.

   The following parameters need setting to configure every printhead:

Parameter	Range of settings
Distance to first printhead [mm] or [inch]	**0 to 5000** [mm] or **0 to 195** [inch]

The parameter is inactive if the printhead that is being configured is defined as the first one (the **First printhead** parameter in control unit configuration).

Distance in a horizontal direction between the printhead that is being configured and the printhead defined as the first.

Height difference to Ink System %1* ***%1** = [mm] or [inch]	**-1500 to +1500** [mm] or **-78 to +78** [inch]

Difference in levels between the printhead that is being configured and the ink system to which that printhead is hydraulically connected.

Trigger	**Disconnected, NPN NO, PNP NO, NPN NC, PNP NC**

Type of photodetector connected to input in the printhead that is being configured.

Trigger distance to first Printhead %1* ***%1** = [mm] or [inch]	**0 to 5000** [mm] or **0 to 195** [inch]

The parameter is available if the setting of the **Trigger** parameter is different than **Disconnected**.

Distance in a horizontal direction between the photodetector connected to the printhead that is being configured and the printhead defined as the first (the **First printhead** parameter in control unit configuration).

If the photodetector connected to the printhead that is being configured is selected as the source of trigger signal, this distance is a so-called **configuration space**.

*You can select the trigger source by pressing ▶ ▶ ▶ **Trigger signal source**.*
For more details see "7.2. Printing Settings".

Slant	**1, 2, 3, 4, 5**

Degree of turning of the printhead that is being configured.

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 printhead in the holder (see the mark on the printhead holder).



For more details see "2.2.4. Printheads".

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 **Resolution** parameter shall be set for the printhead that is being configured or for the group of interconnected printheads to which the printhead that is being configured falls.

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 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 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.

Group name	**Informational parameter**

Name (symbol) of the printhead group to which the printhead that is being configured falls.

Configuration type	**Informational parameter**

Mode of operation of the printhead that is being configured:

- **Independent**: an independent printhead,
- **Increase height**: a printhead grouped together with another printhead(s) to print a single project.

Connected Ink System	**Informational parameter**

Number assigned to the ink system where the printhead being configured is hydraulically connected.

Number	**Informational parameter**

Number that identifies the printhead being configured.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.
   The configuration of the selected printhead is completed.

7.4. CONFIGURING COMMUNICATIONS INTERFACES

*All functions described in this section are available to **ADMINISTRATOR**-type users only.*

7.4.1. RS-232

External device can be connected to the printer via the **RS-232** connector in the control unit.

*For more details see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External Connections"**.*

The **RS-232** interface can be used, *e.g.* to transmit data from an external device and to add this data to a project by means of a (text or code) **COMMUNICATIONS PORT**-type 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 **RS-232** interface:

1. Press ▶ ▶ ▶ .
   The following parameters need setting to configure the **RS-232** interface:

Parameter	Range of settings
Baud rate [bps]	1200 to 115200

Data transmission rate.

Data bits	5, 6, 7, 8, 9

Number of data bits.

Parity	None, Odd, Even

Parity check.

Stop bits	1, 2

Number of stop bits.

Flow control	None, XON/XOFF, RTS/CTS

Data flow control mode:

- **None**: no data flow control,
- **XON/XOFF**: software-based control of data flow; exclusively by means of **TxD** and **RxD** lines,
- **RTS/CTS**: hardware-based control of data flow; by means of additional **RTS** and **CTS** lines.

2. Modify the selected parameter.
3. Press ✓ to acknowledge.
   The **RS-232** interface is configured.
   Parameters of the printer **RS-232** must be configured in the same way as the **RS-232** parameters in the external device are.

7.4.2. ETHERNET

The printer can be connected to a local, managed **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. 57 on page 64***).
   The following parameters need setting to configure the **Ethernet** interface:

Parameter	Range of settings
Interface	**Enabled**, **Disabled**

Activate / deactivate the **Ethernet** interface.

In its default (preselected) state, the ***Ethernet*** *interface is inactive.*

Wake On Lan	**Enabled**, **Disabled**

The parameter is available only if **Interface** = **Enabled**.

To enable the LAN to activate / deactivate the printer.

Operation Mode	**DHCP**, **Manual**

The parameter is available only if **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.

7.4.3. THE I/O BOX MODULE

*For a description of the **I/O BOX** and of how to apply signals to module inputs / outputs see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External Connections"**.*

7.4.3.1. BINARY INPUTS

To configure **I/O BOX** binary inputs:

1. Press ☰ ▶ ⚙ ▶ ▶ ▶ ▶ |**INX**|, where **X** means an input number (**1 to 8**),
   The binary input settings involve the following parameters:

Parameter	Range of settings
Input type	**Disabled**, **Single bit**, **Multi bit**

Type of **I/O BOX** binary input:

- **Disabled**: inactive input ( ),
- **Single bit**: independent input ( ),
- **Multi bit**: selected input (- the most significant bit, **MSB**) and successive inputs ( ) are combined, forming a bit word whose number of bits is given with the **Number of bits** parameter.

*If a few binary inputs are combined to create a it word, the inputs are configured by means of the parameters available for the word's most significant bit (**MSB**). For the other bits, no configuration parameters are available.*

Operation Mode	Invoke action, Trigger printout, Abort printout

The parameter is available only if **Input type** = **Single bit**.

Independent binary input modes:

- **Invoke action**: to call specified actions assigned to both of the input bit states (**0**, **1**); for how to assign an action to a bit state see further in this chapter,
- **Trigger printout**: the input is the trigger source for print making; for further configuration of the trigger source use the parameters **Trigger Signal Mode** and **Trigger distance to first printhead**,

  *Any number of **Single bit**-type inputs can be configured as the trigger source for print making.*
  *A print can be triggered via a signal applied to a selected **I/O BOX** input, if the printing parameter ▶ ▶ ▶ **Trigger signal source** is set accordingly. In such a case, the value of the parameter **Trigger distance to first printhead** is the so called **configuration distance**.*

- **Abort printout**: the input is the source of a print abort signal if the active signal edge occurs at it; the active edge is defined with the **Slope** parameter.

  *Any number of **Single bit**-type inputs can be configured as the source of a printout abort signal.*
  *If the active edge occurs at any input that uses **Abort printout** mode, print making is aborted.*

Number of bits	2 to 8

The parameter is available only if **Input type** = **Multi bit**.

Number of binary inputs (bits) combined to create a bit word.

Synchronous	✕ / ✓

The parameter is available only if **Input type** = **Multi bit** and **Number of bits** > **2**.

Action mode (asynchronous or synchronous, *i.e.* using a strobe signal) for the action assigned to a given word bit combination:

- ✕: the action is performed asynchronously, *i.e.* when the state of any input that forms a bit word changes,
- ✓: the action is performed synchronously, *i.e.* when the active signal edge occurs at the strobe signal input (the input that corresponds to the most significant bit, **MSB**); the active edge is defined with the **Slope** parameter.

In asynchronous mode (**Synchronous** = ✕), all of the word bit combinations can be used to assign an action. For example, if **Number of bits** = **4**, the number of word bit combinations available (and thereby the number of assignable actions) is $2^4 = 16$.
In synchronous mode (**Synchronous** = ✓), the most significant bit (**MSB**) in the word is used as a strobe signal. All the combinations of **the other** word bits can be used to assign an action. For example, if **Number of bits** = **4**, the number of potential combinations of **the other** word bits (and thereby the number of assignable actions) is $2^{4-1} = 8$.

2. Modify parameters of the selected binary input.
3. Press ✓ to acknowledge.
   The configuration of the **I/O BOX** binary inputs is completed.

One of the following actions can be assigned to either of the bit states (**0**, **1**) at an independent binary input (**Input type** = **Single bit**) or to each combination of binary input bits that create a bit word (**Input type** = **Multi bit**):

None

No action is assigned.

Print start

Enable printing the open projects.

Print stop

Pause printing.

Open project

Open a project(s) for the printhead(s) or the group(s) of printheads.

The action can be used to print by the application of a code switch.

To assign an action, you are required to set additional parameters such as a project name or a symbol for the selected printhead(s) or the group(s) of printheads.

Reset variable fields

Restore initial values of variable objects in all the projects open for printing / being printed.

Set printing direction

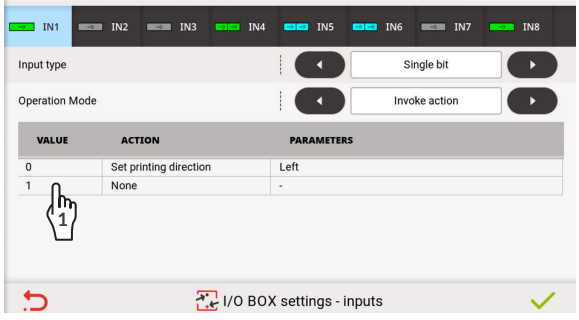
Change the horizontal direction of printing (the **Mirror print** project parameter) in all the projects being printed.

The functionality can be used, *e.g.* when a manipulator is applied.

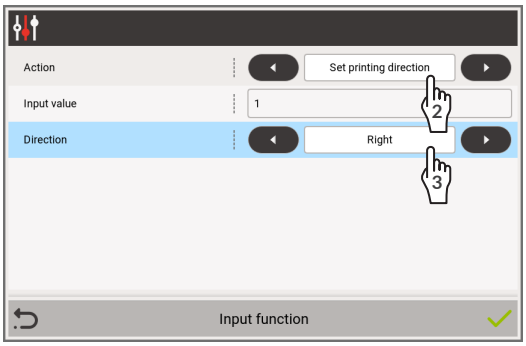
Assigning an action to a bit state (0, 1) at an independent binary input

To assign an action to a bit state at an **I/O BOX** independent binary input:

1. Press ☰ ▶ ⚙ ▶ ⚙ ▶ ⇄ ▶ |**INX**|,
   where **X** means an input number (input |**IN1**| is selected in the picture on the right).
2. Set the following input parameters:
   Input type = **Single bit**,
   Operation Mode = **Invoke action**.
3. Select the bit state (*e.g.* **1**) you wish to assign an action to.
   The configuration window is displayed.



4. In the configuration window (see the picture on the right) select the action (**Action**) that is to be assigned to the bit state (**Input value**).
5. Set additional action parameters (**Direction**), if need be.
6. Press ✓ to acknowledge the assignment.

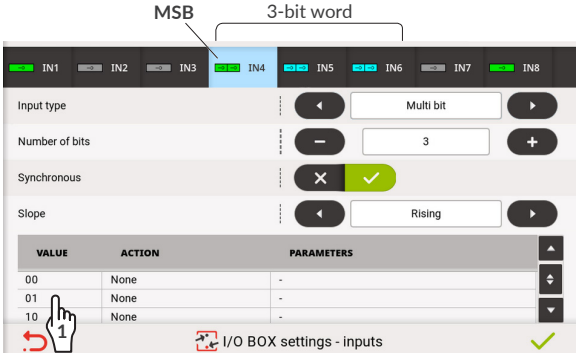


The action is assigned to the bit state at the selected binary input.

Assigning an action to a bit combination at joined inputs (forming a bit word)

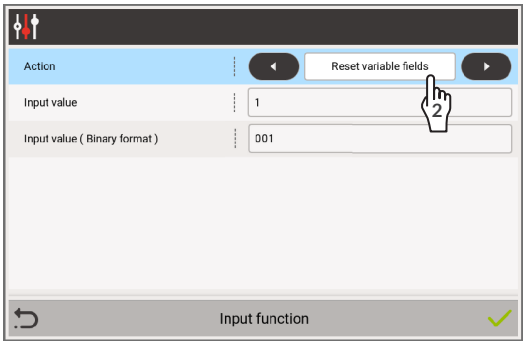
To assign an action to a bit combination at **I/O BOX** joined binary inputs:

1. Press ▶ ▶ ▶ ▶ |**INX**|, where **X** means an input number (input |**IN4**| is selected in the picture on the right).
2. Set the following input parameters:
   Input type = Multi bit,
   Number of bits = 3,
   Synchronous = ✓,
   Slope = Rising.



In the above-given example:
*- 3 successive inputs (**IN4**, **IN5**, **IN6**) are joined to form a 3-bit word,*
*- actions are performed in synchronous mode, i.e. the most significant bit (**MSB** of the word, input **IN4**) is used as a strobe input,*
- the rising edge of the strobe signal is the active edge,
*- actions can be assigned to 4 combinations of the word's other bits (inputs **IN5**, **IN6**).*

3. Select the bit combination (*e.g.* **01**) you wish to assign an action to.
   The configuration window is displayed.
4. In the configuration window (see the picture on the right) select the action (**Action**) that is to be assigned to the bit combination (**Input value (Binary format)**).
5. Set additional action parameters, if need be.
6. Press ✓ to acknowledge the assignment.

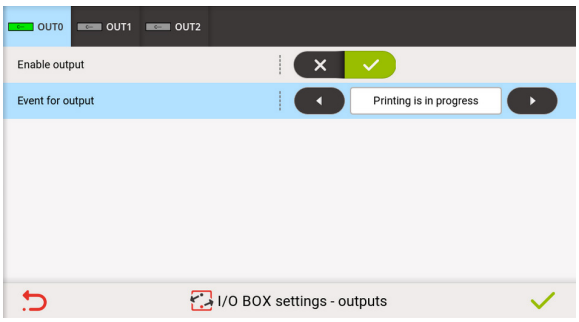


The action is assigned to the bit combination of the joined binary inputs.

7.4.3.2. RELAY OUTPUTS

To configure **I/O BOX** relay outputs:

1. Press ▶ ▶ ▶ ▶ |**OUTX**|, where **X** means an output number (output |**OUT0**| is selected in the picture on the right).



The relay output settings involve the following parameters:

Parameter	Range of settings
Enable output	✕ / ✓

Activate the selected relay output.

Event for output	

The parameter is available only if **Enable output** = ✓.

A printer event or state which, when occurs, activates the selected relay output. For a list of printer events / states see further in this section.

2. Modify parameters of the selected relay output.
3. Press ✓ to acknowledge.
   The configuration of the **I/O BOX** relay outputs is completed.

Each of the **I/O BOX** relay outputs can be activated as the result of the occurrence of the following printer events or states:

Printer is ready to print

The output is active when the printer is ready to print.

Printing is on

The output is active when the printer is in print mode.

Printing is in progress

The output is active when the printer is making a print.

Ink level low

The output is active when an empty ink canister warning is issued.

Printing continues with the ink contained in the ink system buffer.

No ink

The output is activated when the empty ink canister and empty ink system buffer errors occur.

Printing pauses.

Status normal

The output is active when no warning or error has occurred and the printer is not in the startup or shutdown procedure.

Status warning

The output is activated when any warning occurs.

Status error

The output is activated when any error occurs.

Owing to the fact that every error that occurs on the printer pauses printing, an event can be used for signaling that printing has paused due to an error.

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 information 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 projects that are 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"***.

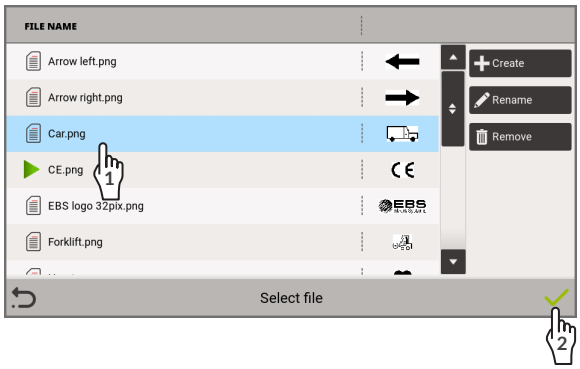
- Created / modified with the built-in graphics file editor.

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 projects that are 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.

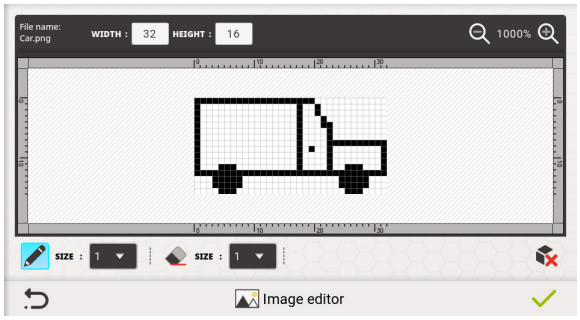
   The selected graphics file is highlighted in blue.

   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"***.

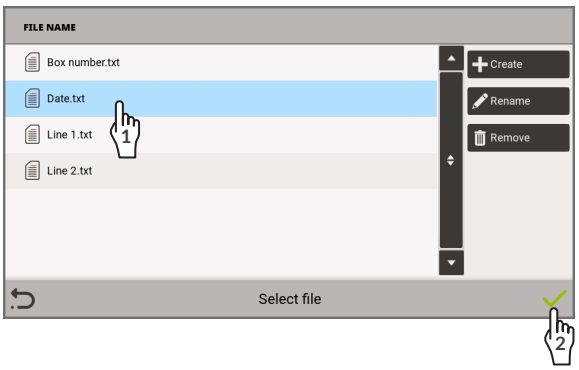
– Created / modified with the built-in text file editor.

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 projects that are open for printing / being printed are marked with the ▶ icon on the list and none of them can be edited / re-named / deleted.*



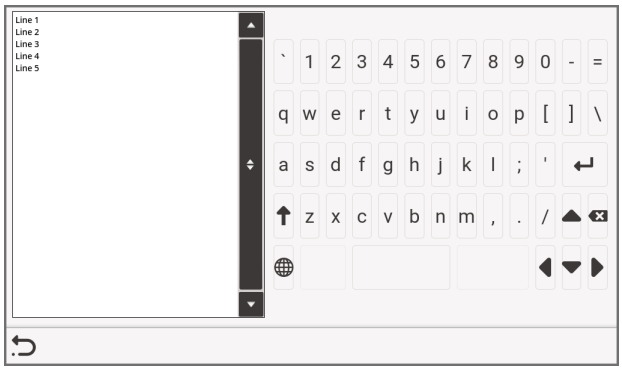
2. Select the text file that you wish to edit.

   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

The manufacturer bears no responsibility for the content of user scripts or any consequences resulting from their use.

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.

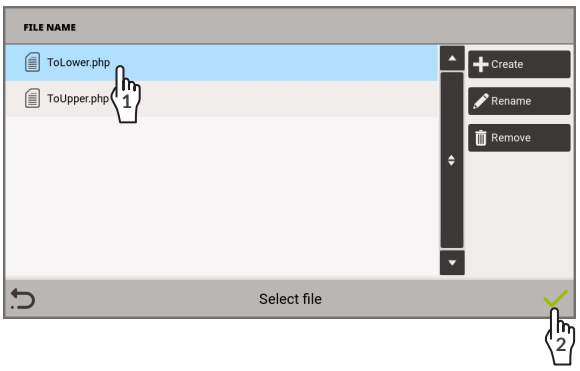
The user must be aware that incorrectly written scripts may lead to:

- malfunctions in printing (*e.g.*, incorrect print content, missing prints),
- disruptions in network operation (if the device is connected to a local network),
- modification or loss of user data.

To edit the selected script:

1. Press ▶ ▶ .
   The list of scripts available in printer memory is displayed.

   The scripts used in the projects that are 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 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.

7.6.5. FONTS

Fonts are used to generate text objects. Text objects can be generated based on built-in fonts or user fonts.

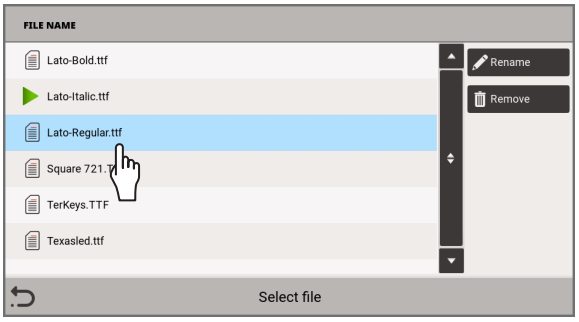
Before they can be used in projects, fonts shall be imported to the printer with the import function.

For more details see "7.7.3. Exporting / Importing Other Files".

The font library is used to manage imported user fonts.

To manage user fonts:

1. Press ☰ ▶ ⚙ ▶ FF.
   The user font library is displayed.



The fonts used in the projects that are open for printing / being printed are marked with the ▶ icon on the list and none of them can be renamed / deleted.

2. Select the font.
   The selected font is highlighted in blue.

The following functions are available in the font library:

- rename the selected font,
- delete the selected font.

3. Perform one of the above-given functions.
   The selected font is deleted or renamed.

7.7. EXCHANGING DATA VIA A USB PORT

*No **data import** function can be carried out when the printer is in printing mode.*
*The **data export**, **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**.

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. 57 on page 64***) 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,
   - event history,
   - scripts,

– statistics,

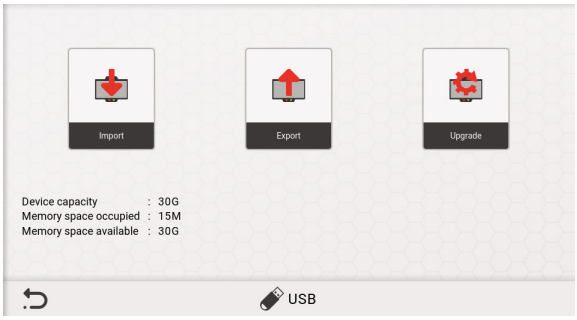
*Statistics in ***.csv*** format are exported together with event history and can be extracted from the target ***.zip*** file for further processing or for analysis.*

– 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.

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.

   *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 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.

CAUTION: 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 (together with printer statistics),

*Event history can be exported to a **USB** memory device, but it cannot be imported to the printer. Printer statistics in ***.csv** format can be extracted from the target ***.zip** file.*

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 (together with printer statistics),
   - 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),
- Other files (fonts, images, text files, global variables, scripts),
- Event history,
- Printer statistics.

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.

   CAUTION: The risk that data may 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.

CAUTION: 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 ▶ i ▶ v.i ▶ ***System*** *or* i ▶ v.i ▶ ***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.

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 PLATES

CAUTION: The risk of damaging the nozzle plates!
No tools must be used while nozzle plates are being cleaned as otherwise the plates may get damaged.

*Absorbent material contaminated with wash-up, or the used wash-up itself, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- 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 plates in the printheads shall be cleaned to remove dry ink residues and dirt, which may be the reason for impaired print quality.

To clean the nozzle plate in a selected printhead:

1. If the printer is printing, press the icon or the button on the control unit to pause printing.
2. Put a metal vessel for waste or absorbent material under the nozzle plate of the selected printhead.
3. Spray wash-up on the nozzle plate (see ***Fig. 87***).

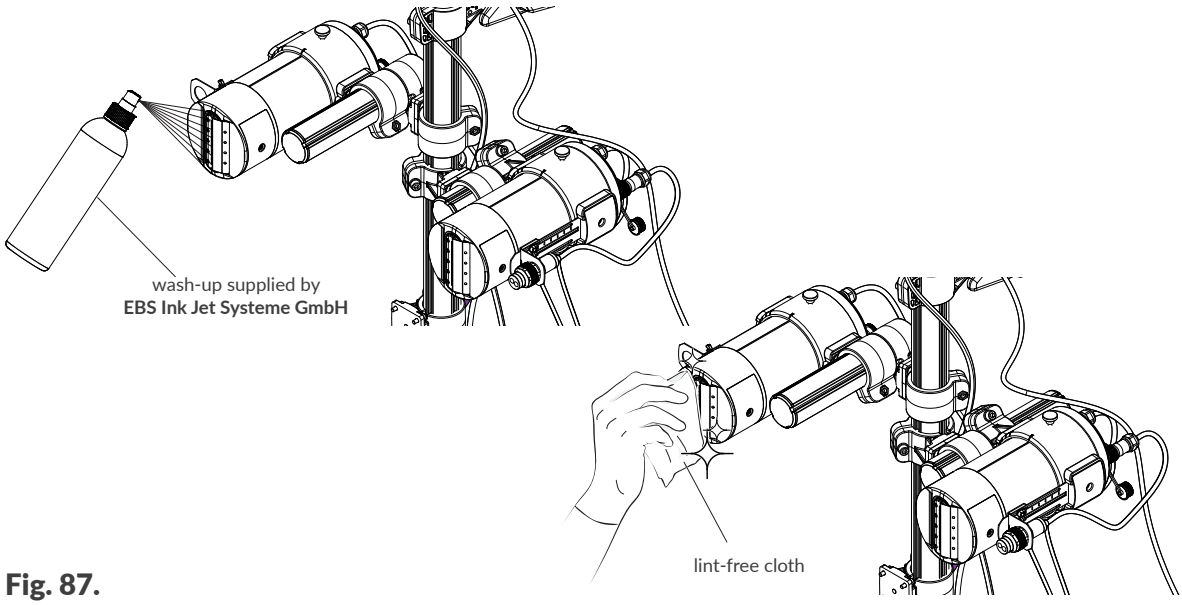


Fig. 87.

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. PERIODIC LEAK INSPECTION



CAUTION: The risk of damaging the printer!
*If a leak is detected, do not start the printer up, as this can cause damage. In such a situation, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

Every day, and also each time before starting the printer up, it is necessary to check the printer for leaks.

To locate a possible leak source, visually inspect the following components:

Part to be checked	Potential problems
Printhead.	– Ink leaks from the printhead.
Ink system.	– Ink leaks from the ink system. – Ink leaks from the ink filter. – Ink leaks from the ink canister. – Sump tray under a canister brimful.
Tubes.	– Damaged / detached tubes.

8.2.2. SUMP TRAY PERIODIC INSPECTION AND EMPTYING



CAUTION: Risk of ignition!
Static electric charge may accumulate on human body (e.g. as a result of wearing synthetic clothing) and it can cause a spark to jump to the ink-filled sump trays. This can ignite the flammable substance! Therefore, the metal sump tray must be connected to the ink canister cage via the tray handle using an equipotential bonding conductor.
In addition to that, before approaching flammable liquids collected in the sump trays, discharge the electric charge by touching a grounded metal object.



*Waste ink collected in the sump trays shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*



*Sump trays should be emptied by **instructed persons**.*

Every day, and also each time before starting the printer, it is necessary to check the filling level of the sump trays located under the ink canisters and, if necessary, empty them.

8.2.3. REPLACING / INSPECTING A PRINTHEAD

Printheads are designed to operate over **18 months*** of installation in the printer. Therefore, when the aforementioned period expires, it is advisable to replace the printheads with spare ones or to take them in for a service. Informational messages remind you of the necessity to get a given printhead replaced / serviced.

** A maximum time that may elapse from the installation of a printhead in the printer to the recommended replacement / servicing as part of preventive maintenance depends on the type of ink in use.*
*The printhead should be replaced by **instructed persons**.*
*For the information on how to deal with the printhead that has been removed and how to order an appropriate spare printhead, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

The printer can be provided with printheads of one of five types: **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58.**

Printheads can be used interchangeably in a given printer on condition that they are intended to print in ink of one type.

When you install a spare printhead of a different type than the one previously used, pay attention to restrictions on a maximum number of nozzles. The restrictions are imposed by:

- current output of a single **eLink** connector in the control unit: **max 64 nozzles per eLink connector**,
- ink system ink efficiency: **max 64 nozzles per ink system**.

To get information about the selected printhead installed in the printer (*e.g.* the printhead marked with the symbol **A1**):

1. Press ▶ ▶ ▶ |**PRINTHEAD A1**|
   or
   press ▶ ▶ |**PRINTHEAD A1**| on icon bar **1b** (see ***Fig. 57 on page 64***).

To replace the selected printhead:

*Absorbent material contaminated with ink, or any ink that may have leaked during printhead replacement, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- a #5 angle hex (Allen) key,
- a metal vessel or absorbent material for collecting waste.



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. Put a metal vessel for collecting waste or absorbent material directly under the ink inlet in the printhead.
4. Disconnect the cables and tubing from the printhead to be replaced **2** (see ***Fig. 88***):
   - the photodetector cable from input - if photodetector **3** is connected to the printhead to be replaced,
   - the **eLink** cable from the connector ,
   - the tubing that supplies ink to the printhead from hydraulic coupling .

   CAUTION: The risk of ink leakage!
   Although both the ink tubing and hydraulic connections in printer sub-assemblies are provided with cut-off valves, a small amount of ink may flow out while the tubing is disconnected from ink input . Be careful not to get splashed and not to soil the printer environment.

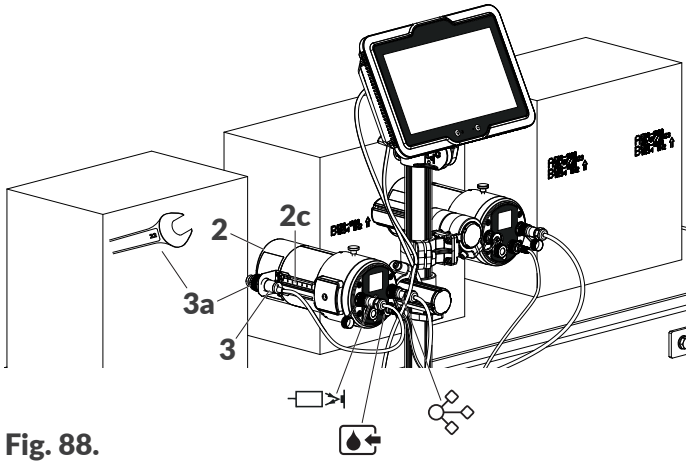


Fig. 88.

5. Loosen handwheel **2n** (see ***Fig. 89***).
6. Remove the selected printhead **2** pulling it out of holder **2f** in a backward direction. Remember the degree through which the printhead is turned in holder **2f**.

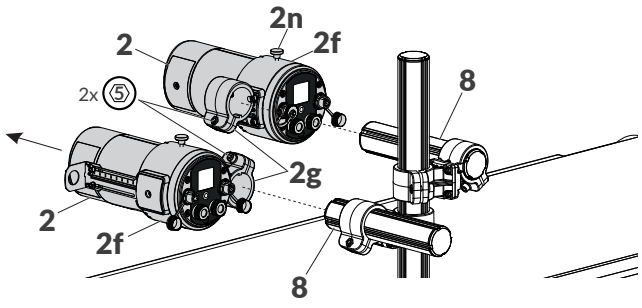


Fig. 89.

7. Install a spare / refurbished printhead **2** pushing it into the holder **2f**. Make sure that the degree of turning of the printhead in the holder **2f** is set correctly.
8. Tighten the handwheel **2n**.
9. Re-connect the cables and tubing to the printhead **2**.
10. Connect the power cord to a power outlet.
11. Start the printer.

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

Immediately after printer start-up, the automatic authorization procedure for the spare / refurbished printhead follows.

The part authorization procedure requires that a canister(s) of ink of the type to be used be connected to the printer.
*If automatic authorization fails, printing cannot start, of which on-screen messages inform you, and the printer signals an error. If that happens, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

The printhead is replaced and active.

No printing can be enabled unless the printhead is authorized. If no authorization is obtained, you are informed of by on-screen messages and a printer error is signaled.

After printhead replacement, it may be necessary to re-configure the printing system. 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"**.*

It is advisable to carry out the purging procedure after printhead replacement.

*For more details see **"9.3.1. Purging the Selected Printhead"**.*

8.2.4. REPLACING THE INK FILTER

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

*The ink filter should be replaced by **instructed persons**.*
*For the information on how to order an appropriate spare filter, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

The ink filter is designed for operation over **12 months** of installation in the printer. Therefore it is advisable to replace it after the above given time has elapsed. The need to replace the ink filter is indicated by informational messages.

To replace the ink filter:

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- a metal vessel or absorbent material for collecting waste.



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. Put a metal vessel for collecting waste or absorbent material directly under connections  of ink filter **4a** in ink system **4**.

4. Unscrew two nuts **4g** (see ***Fig. 90***) that fasten the ink filter **4a** to the ink system **4**.

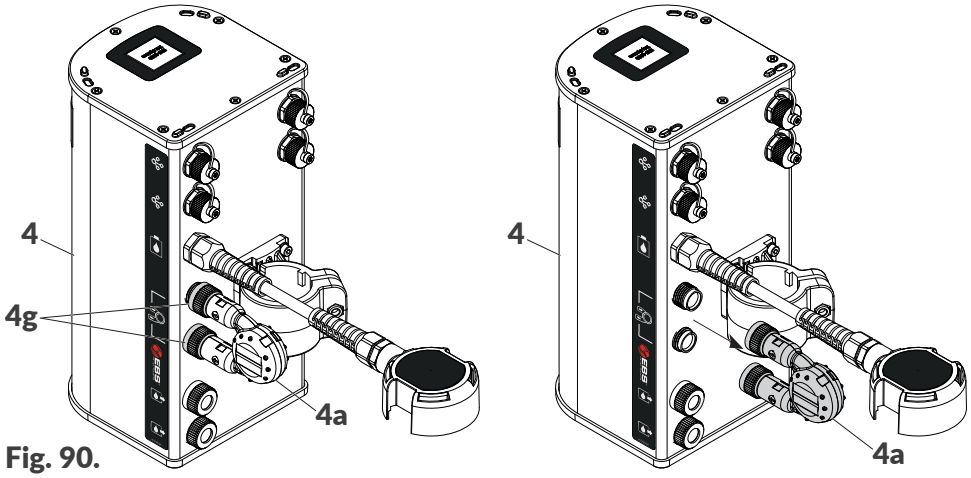


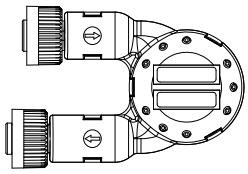
Fig. 90.

5. Remove the ink filter **4a** by pulling it out in the direction shown in ***Fig. 90***.

> ***CAUTION: The risk of ink leakage!***
> *Although both the ink filter connections and hydraulic connections in the ink system are provided with cut-off valves, a small amount of ink may flow out while the filter is being disconnected from the ink system. Be careful not to get splashed and not to soil the printer environment.*

6. Install a spare ink filter.

   The ink filter **4a** is a directional component. The direction of ink flow is marked with arrows on the filter connections (see the drawing on the right). Moreover, the filter has two connections of various lengths to prevent installation in the reverse direction. The filter orientation is also indicated with a sticker on the ink system **4**.



7. Tighten the two nuts **4g** (see ***Fig. 90***), to fasten the ink filter **4a** to the ink system **4**. The nuts **4g**, are sufficiently tightened with fingers.
8. Connect the power cord to a power outlet.
9. Start the printer.

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

   The ink filter is replaced.

8.2.5. REPLACING / SERVICING AN INK SYSTEM

The ink system is designed for operation over **5 years*** of installation in the printer. Therefore, when the aforementioned period expires, it is advisable to replace the ink system with a spare one or to take it in for a service. The need to replace / service the ink system is indicated in informational messages.

> ** A maximum time that may elapse from the installation of an ink system in the printer to its recommended replacement / servicing as part of preventive maintenance depends on the type of ink in use.*
> *The ink system should be replaced by **instructed persons**.*
> *For the information on how to deal with the ink system that has been removed and how to order an appropriate spare system, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

To get information about the selected ink system installed in the printer (*e.g.* the ink system numbered **1**):

1. Press ▶ ▶ ▶ |**INK SYSTEM 1**|

   or

   press ▶ ▶ |**INK SYSTEM 1**| on icon bar **1b** (see ***Fig. 57 on page 64***).

To replace the selected ink system:

CAUTION: Sharp Elements!
While disconnecting / connecting the connection from / to the ink canister 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.*

*Absorbent material contaminated with ink, or any ink that may have leaked during ink system replacement, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- a #5 angle hex (Allen) key,
- a metal vessel or absorbent material for collecting waste.

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. Press the catches to detach connection **4c** (see ***Fig. 91***) from ink canister **5**.

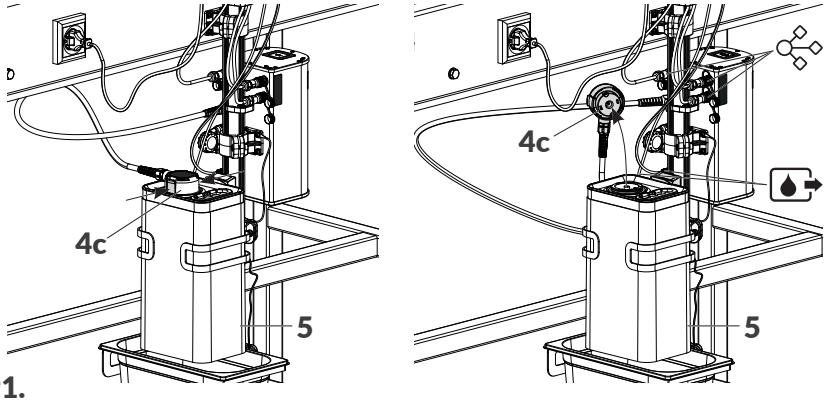


Fig. 91.

4. Put a metal vessel for collecting waste or absorbent material directly under ink system outlets .

5. Disconnect the cables and tubing from the ink system to be replaced **4**:
   - all the **eLink** cables from connectors ,
   - all the tubing from the ink system outlets .

CAUTION: The risk of ink leakage!
Although both the ink tubing and hydraulic connections in printer sub-assemblies are provided with cut-off valves, a small amount of ink may flow out while the tubing is disconnected from ink outlets . Be careful not to get splashed and not to soil the printer environment.

6. Use the #**5** angle hex key to loosen the screw that is part of holder **4f** (see ***Fig. 92***) and fastens ink system **4** to support beam **7**.
7. Remove the ink system **4**, pulling it off the support beam **7** downward.

   For certain printer configurations, additional operations, *e.g.* removal of the ink canister cage and sump tray, may need conducting before ink system **4** is removed from support beam **7**.
8. Install a spare / refurbished ink system **4** on the support beam **7**. Tighten the screw that is part of the holder **4f**.
9. Re-connect the cables and the tubing to the ink system **4**.
10. Re-connect the connection **4c** to the ink canister **5**. Keep pressing the connection until the catches close.
11. Connect the power cord to a power outlet.
12. Start the printer.

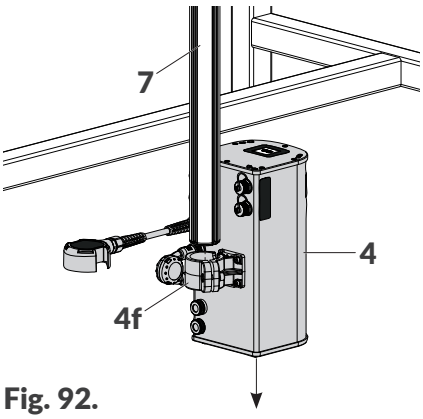


Fig. 92.

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

Immediately after printer start-up, the automatic authorization procedure for the spare / refurbished ink system follows.

> *The part authorization procedure requires that a canister(s) of ink of the type to be used be connected to the printer.*
> *If the automatic authorization fails, printing cannot start, of which on-screen messages inform you, and the printer signals an error. If that happens, contact an authorized representative of **EBS Ink Jet Systeme GmbH**.*

The selected ink system is replaced and active.

No printing can be enabled unless the ink system is authorized. If no authorization is obtained, you are informed of by on-screen messages and a printer error will be signaled.

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 position of the printer in storage:

- The ink systems, the ink canisters or the printer as a whole can only be stored in the vertical (working) position.
- The other system sub-assemblies (the control unit, printheads, a support beam) 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 disconnect the ink canister(s) when the printer is to be stored.

When the printer that is planned to be stored over **up to 3 weeks** is taken out of the store, 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

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



*Absorbent material contaminated with ink / wash-up, or any ink / wash-up that have leaked during purging, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- a metal vessel or absorbent material for collecting waste,
- canisters of wash-up whose type matches the type of ink in use; the number of wash-up canisters is the same as the number of ink canisters installed.



*Only **instructed persons** can prepare the printer for storing over a period longer than 3 weeks.*

If the printing system consists of a greater number of ink systems and ink canisters, repeat the procedure for each of the ink systems, the ink canisters connected to a given ink system and the printheads connected hydraulically to that system.

To prepare the printer for storing during a period of **over 3 weeks**:

1. Disconnect the ink canister from the selected ink system.
2. Connect a canister of wash-up in place of the ink canister you have removed and do not disconnect it during the whole storage period.
3. For each of the printheads hydraulically connected to the selected ink system:
   - Put a metal vessel for waste or absorbent material under the nozzle plate.
   - Press and hold the button on the printhead backplate to start the purging procedure.

   Continue purging until the ink flowing out of the nozzles becomes transparent, which means that the wash-up has reached the nozzle plate.
4. When all the printing system parts are filled with wash-up, shut the printer down 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. Disconnect the wash-up canister from the selected ink system.
3. Connect a canister of ink in place of the wash-up canister you have removed.

4. For each of the printheads hydraulically connected to the selected ink system:
   - Put a metal vessel for waste or absorbent material under the nozzle plate.
   - Press and hold the button on the printhead backplate to start the purging procedure.

   Continue purging until the wash-up flowing out of the nozzles is not transparent, which means that the ink has reached the nozzle plate.

   The printhead is filled with ink.
5. Make a few test prints to assess print quality.

8.3.2. TRANSPORTING THE PRINTER

*The printer can be handled by **instructed persons**.*

The position of the printer during transport:

- The ink systems, the canisters of ink or the printer as a whole can only be transported in the vertical (working) position.
- The other system parts (the control unit, printheads, a support beam) can be stored in any position.

Caution shall be taken not to damage nozzle plates, the control unit screen, cables, tubing 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 printer weight (incl. two printheads, one ink system, excl. a canister): approx **13.5 kg** (**approx 29.76 lbs**).

Weight of individual parts:

- control unit: approx **2.75 kg** (approx **6.06 lbs**),
- Ink system (filled with ink): approx. **2.8 kg** (approx **6.17 lbs**),
- printhead (filled with ink): approx **1.0 kg** (approx **2.20 lbs**),
- complete support beam (a main beam, **1 m** in length, an ink canister cage, two printhead support beams, two printhead holders): approx **3.8 kg** (approx **8.38 lbs**),
- **5-liter** canister of methyl ethyl ketone-based ink: approx **5.0 kg** (approx **11.0 lbs**).

CHAPTER 9
TROUBLESHOOTING

9. TROUBLESHOOTING

9.1. MESSAGE HANDLING

Three types of messages occur on the **PicAS®II** EBS-1600 printer:

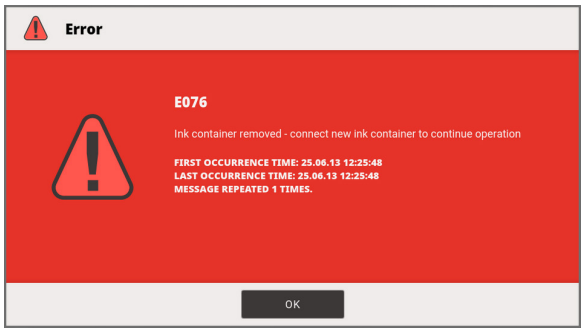
- Error messages ,
- Warning messages ,
- Informative messages .

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.

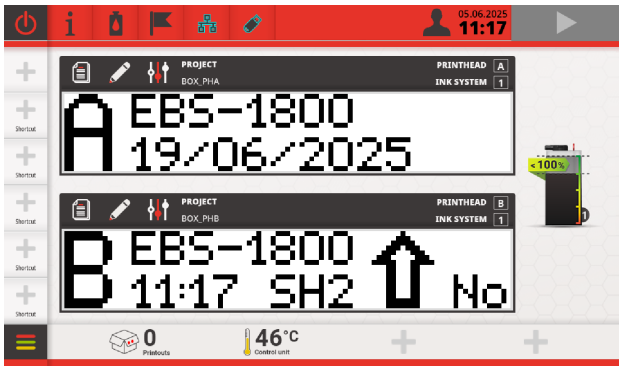


Error messages concern:

- The errors that disable printing, *e.g.* an ink canister and the buffer in an ink system are empty.
  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 frame on the LCD display on the module where the error occurred glows 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 printer error (*e.g.* an ink canister and the buffer in an ink system are empty) and the printer automatically enters error condition:

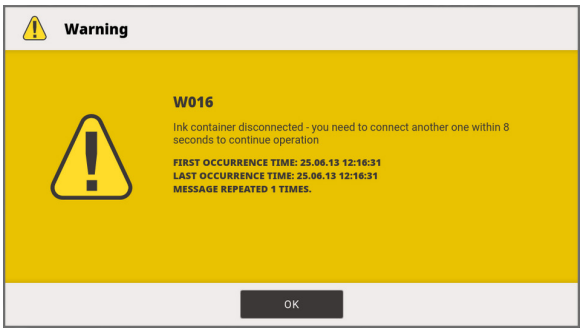
- View the contents of the error message.
- Press **OK** to acknowledge the message.
- Proceed with an action that is adequate for the message, *e.g.* install a new canister of ink.
  The printer exits error condition.
- If the error pauses printing, re-enable printing.

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

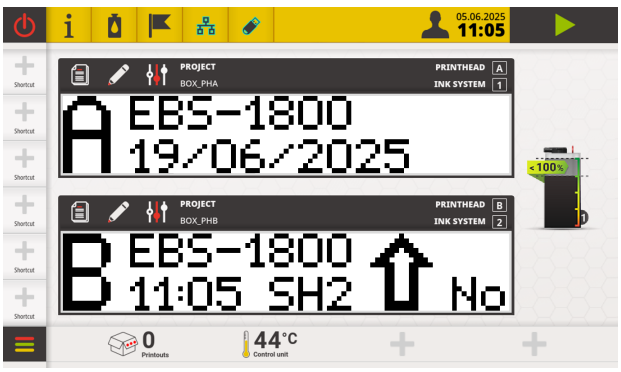
Warning messages (see the drawing on the right) are displayed in the dialog box when a condition that requires user intervention occurs.

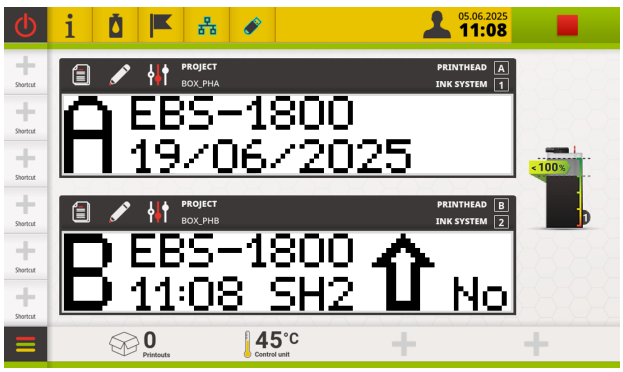


Warning messages concern:

- 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 frame on the LCD display on the module where the warning occurred glows yellow,
- 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:

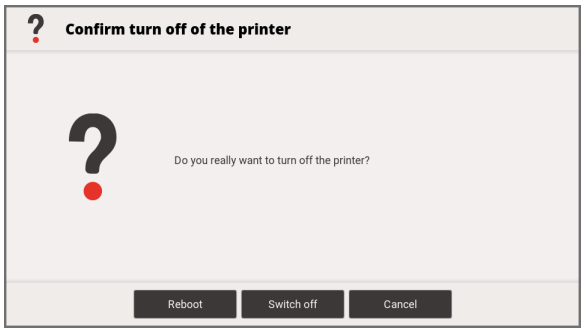
- View the contents of the warning message.
- Press **OK** to acknowledge the message.
- Proceed with an action that is adequate for the message, *e.g.* ensure an appropriate interval between the moments when successive prints are triggered.
  The printer exits warning condition.

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.
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.
E020	Template project does not exist!
E021	Selected project cannot be printed because it contains incorrect objects.
E022	Missing object.
E023	Project file damaged.
E024	Object 'Text file': Cannot open file.
E025	Variable field 'Text file': Problem opening/accessing file on a given line.
E026	Communications port %1 is not open! Communication aborted!
E027	Communications port %1 - fatal error while processing of received data!
E028	Printer cannot be turned off - please hold power button.
E029	Printer can not be restarted - please hold power button
E031	No ink. Replace ink container.
E032	Incorrect ink container data received from IMS system.
E033	Incorrect ink container data received from IMS system.
E034	Incorrect ink container data received from IMS system.

ID	Contents
E035	Incorrect ink container data received from IMS system.
E041	Cannot load project settings! Use default settings... User interaction required to set proper settings.
E042	Cannot load printing parameters for this project! Use default parameters... User interaction required to set proper parameters (default parameters may be incorrect for current printhead).
E043	Cannot load printing parameters from external file! Use local parameters!
E044	Cannot save project (cannot create directory tree containing project).
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.
E047	Printing has been stopped because project %1 requires user input.
E048	Limit of invalid activation codes exceeded . Printer will switch off.
E049	Invalid activation code.
E050	Cannot load selected barcode description from printer database. This may happen if your project has been created with a newer printer, which handles more barcode types (or printer barcode database is damaged).
E052	New module detected: %1 Printer needs reconfiguration, do you want to do it now?
E053	Module disconnected: %1 Printer needs reconfiguration, do it now?
E054	Disconnected module: %1 Compatible module connected:%2 Do you want to replace the disconnected module with the connected one? You can also do configuration for manual settings.
E055	Modules connected: %1 Modules disconnected: %2 Printer needs reconfiguring, do it now?
E056	New modules detected: %1 Printer needs reconfiguration, do it now?
E057	Modules disconnected: %1 Printer needs reconfiguration, do it now?
E058	Module disconnected: %1 Printer cannot be used, because not all required modules are connected. Please connect all modules to continue work.
E059	Modules disconnected: %1 Printer cannot be used, because not all required modules are connected. Please connect all modules to continue work.
E060	New connected Modules: %1 They are compatible to disconnected: %2 Printer can operate normally after checking modules. Do you want to check modules now? You can also run configuration for manual settings.
E061	Module connected: %1 Printer cannot be used. There are redundant modules that cannot be used in the configuration alone. Please connect/disconnect proper modules to continue work.
E062	Modules connected: %1 Printer cannot be used. There are redundant modules that cannot be used in the configuration alone. Please connect/disconnect proper modules to continue work.
E063	Modules connected: %1 Modules disconnected: %2 Printer cannot be used. There are redundant modules that cannot be used in the configuration alone. Please connect/disconnect proper modules to continue work.
E065	Connected module(s) incompatible firmware version. Do you want to update firmware?
E066	Control unit overheated.
E067	Control unit memory error.
E068	Control unit temperature sensor damaged.
E069	Control unit power failure.

ID	Contents
E070	Control unit failure - authorization data could not be read.
E071	Printhead %1 memory error.
E072	Printhead %1 is overheated.
E073	Printhead %1 power failure.
E074	Printhead %1 failure - authorization data could not be read.
E075	Air pressure sensor error in the Ink System %1.
E076	Ink container removed - connect new ink container to continue operation.
E077	Unauthorized ink system %1. Do you want to authorize?
E078	Unauthorized control unit. Do you want to authorize?
E080	Unauthorized printhead %1. Do you want to authorize?
E081	Printer inactive. Do you want to authorize?
E082	Ink system %1 failure - authorization data could not be read.
E084	Ink System %1 overheated.
E085	Ink System %1 memory error.
E086	No ink in ink system %1.
E087	Ink system %1 IMS module failure.
E088	Ink system %1 temperature sensor damaged.
E089	Printhead %1 temperature sensor damaged.
E090	Rapid pressure drop in the Ink System %1.
E091	Pressure sensor is not calibrated.
E092	Ink System %1 air leakage.
E093	Pressure in Ink System %1 cannot be obtained.
E094	Connected module(s) may be newer than system. Try to update system or contact to your distributor.
E095	The connected module has the same serial number (%1) as the other one. Disconnect one of them.
E099	Problem with filling the Ink System %1.
E100	Too many wrong answers for activation codes. New code will be generated.
E101	No pressure in the system %1. Correct the ink container connection.
E102	Problem with filling the Ink System %1.
E103	Ink System %1 ink level sensor error.
E105	Pressure cannot be obtained.
E106	Ink System %1 failure - hardware error.
E107	Ink system %1 IMS module failure.
E108	Ink system IMS module failure.
E109	Ink system IMS module failure.
E110	Connected modules are suitable for different consumables types, and can't be authorized together.
E111	Modules are different than connected consumable type, and can't be authorized.
E112	Printer can not be authorized, because is not configured properly.
E113	Ink system %1 expired.
E114	Printhead %1 expired.
E115	Connected module is intended to use with a different printer type.
E116	Modules type are different than connected consumable type.

ID	Contents
E117	Project %1 was closed because it contains incorrect objects.
E122	Import error.
E123	Export error.
E124	Incorrect data of 'edit before start printing' objects.
E125	The device is not able to send a request to the server.
E126	The "Set printing direction" action is not available for multi-head systems. Set the correct configuration of the I/O BOX Module.
	Warning messages
W006	Ink level low.
W007	Ink level low.
W009	Objects out of printing area.
W010	Data in print queue has been exceeded, next data will not be collected. Make printout to release the print queue.
W012	Truncated font.
W013	Triggering too fast.
W014	Printing too fast.
W016	Ink container disconnected - you need to connect another one within %1 seconds to continue operation.
W017	Ink system %1 ink level low. Please connect new canister of ink.
W018	Ink system %1 expired.
W019	Printhead %1 expired.
W022	Invalid date/time detected Last valid date/time restored.
W023	Option unavailable.
W024	Incorrect option.
W025	Maximum number of pending printouts exceeded.
W027	Pressure in system %1 is low. Correct the ink container connection.
W028	Bottle pressure too high. Unscrew and rescrew the bottle to reduce pressure. This operation will stop printing.
W029	Printing speed may be too fast for the selected project(s). Some printouts may be incorrect. Please reduce printing speed, resolution or dot size.
W030	Printer was not ready to print. Printout(s) omitted.
W031	No pressure in the system %1. Correct the ink container connection.
W032	There is a communication problem with the printhead. Check if the printout is correct.
W033	Working pressure outside the operating range, it may affect the print quality. Check the set pressure and the position of the heads relative to the ink system in the configuration.
W037	Font file %1 damaged.
W038	Filter replacement date for ink system %1 exceeded.
W039	Project can not be printed because it contains incorrect objects.
W040	Due to the wear rate (number of dots printed), it is recommended to make a service inspection of the printhead %1.
W041	Printout omitted due to no data received for a Communications port-type object.
W042	Ink System %1 overfilled.

ID	Contents
	Informational messages
I001	Printer enabled by unlock code. Remaining operating time: %1.
I002	Ink expires on %1.
I004	New ink container %1.
I005	Ink container %1 accepted.
I008	Improper shutdown detected which may cause data damage or device malfunction. Please always follow the correct shutdown procedure.
I010	No project opened.
I011	Module disconnected: %1 - printer can operate normally.
I012	Module connected: %1 - printer can operate normally. Do you want to reconfigure printer anyway?
I013	Modules connected: %1 Modules disconnected: %2 The printer can work normally. Do you want to reconfigure printer anyway?
I014	Modules disconnected: %1 Printer can operate normally.
I015	Modules connected: %1 Printer can operate normally. Do you want to reconfigure printer anyway?
I016	Unlock code accepted.
I017	Ink type changed. Accept/register the new ink.
I018	Printhead %1 reached purge timeout. Please wait %2 s for unlock purge.
I019	Printhead %1 expires on %2.
I020	Ink system %1 expires on %2.
I023	This operation is not allowed in tuning mode.
I027	Activation code accepted. You can set the date that is earlier than the current date.
I028	The operation completed successfully.
I029	The time to replace the filter in the ink system %1 is approaching. Replace the filter to %2.
I030	Connected consumable is intended to use in maintenance procedures. The ability to start printing is blocked.
I031	You need to restart the printer. Press “OK” to restart the printer.
I032	Imported successfully.
I033	Export successfully completed.
I034	List contain too large images. The maximum size is %1 Mpx. The maximum width is %2 px. The maximum height is %3 px.
I035	Software successfully upgraded. New version: %1.
I036	The printer has recovered to normal state after an internal error.
I037	The printer has recovered to normal state after an internal error.
I038	The printer has recovered to normal state after an internal error.
I039	The printer has recovered to normal state after an internal error.
I040	Your request was not accepted by EBS in time.
I041	Software update failed. Please try again.

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
Printhead.	– Dirty nozzle plate. – Ink leaks from the printhead. – Damaged LCD.
Ink system.	– Ink leaks from the ink system. – Ink leaks from the ink filter. – Damaged LCD. – No canister of ink. – Ink canister connection incorrectly attached to an ink canister. – Sump tray under a canister brimful.
Cabling / tubes / accessories.	– Damaged / detached cables / tubes. – 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 the trigger source. – 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 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 projects that are open for printing / being printed.
  You can start editing the project that is open for printing / being printed by pressing the  icon for the selected project on the main screen.
- Parameters of the projects that are open for printing / being printed.
  You can modify parameters of the project open for printing / being printed by pressing the  icon for the selected project 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. 93***) 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 **"2.3.5.1. Status Beacon"**.*

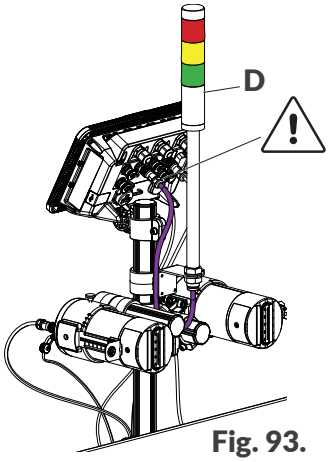
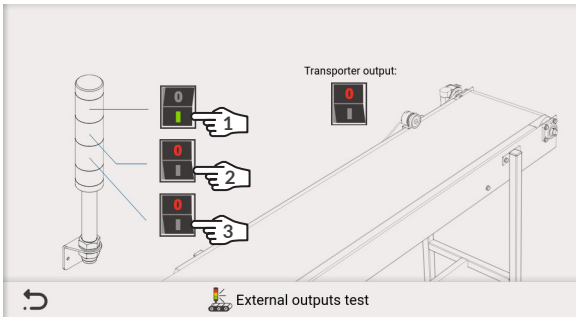


Fig. 93.

To test the status beacon:

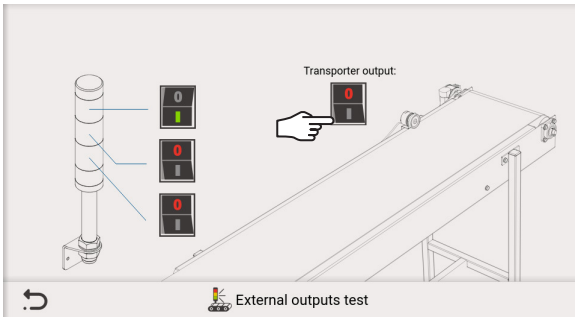
1. Press ☰ ▶ 🔧 ▶ 📋 ▶ 🚦.
   The diagnostic screen is displayed.
2. To test each of the beacon sections:
   - 1 Press to test the red section,
   - 2 Press to test the yellow section,
   - 3 Press to test the green section.

   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 CONTROL OUTPUT

The conveyor control 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 halts if an error that disables printing occurs or not.



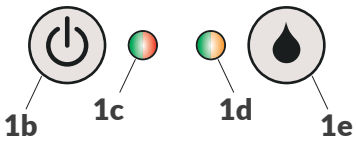
To test the conveyor control output:

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

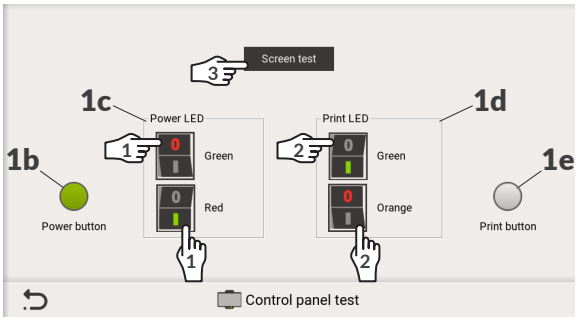
The control unit is tested to check whether the following function correctly or not:

- 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. 94***) is tested to check whether the rotational speed sensor connected to output in the control unit functions correctly or not.

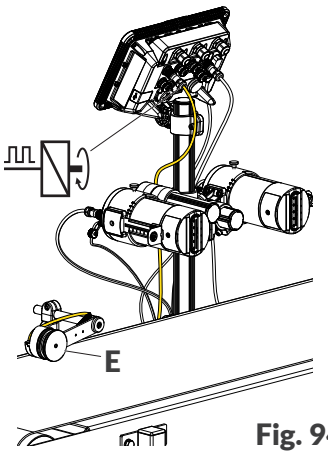
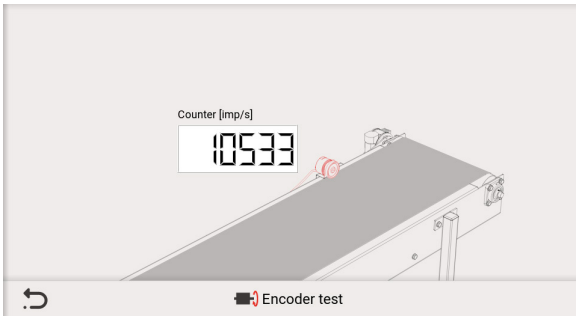


Fig. 94.

> *For more details see **"2.3.5.2. 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

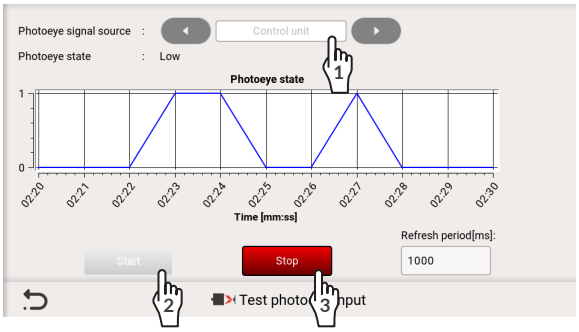
Photodetectors are tested to confirm whether the photodetectors connected to:

- printheads inputs
  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 printhead or to the control unit,

– The module to which the photodetector is connected is incorrectly indicated in the diagnostic window.

*On the diagnostic screen, you can also set test parameters such as Refresh period **[ms]**.*

5. Press 3 to finish the test.
6. Press ⮌ to exit the diagnostic screen.

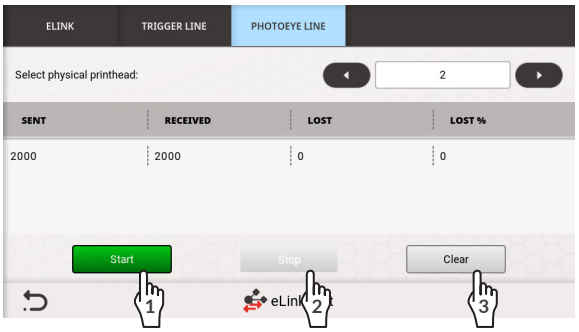
9.2.2.6. TESTING THE UNIVERSAL INTERFACE **ELINK**

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 ▶ ▶ ▶ ▶ ▶ |**TRIGGERING**|.
   The diagnostic screen is displayed.
2. Press 1 to run the test.
   Transmission parameters are displayed.
3. Press 2 to finish the test.

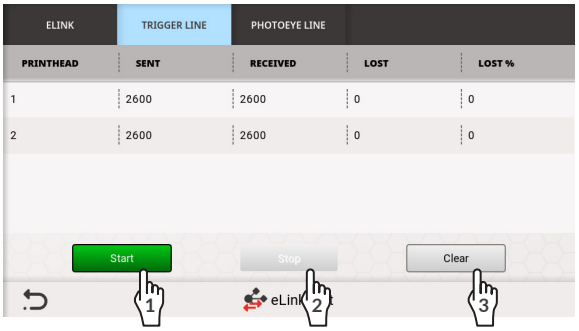


On the diagnostic screen, you also can clear the test results and start anew.

4. Press ⮌ to exit the diagnostic screen.

To test the printing timing circuit:

1. Press ▶ ▶ ▶ ▶ ▶ |**TIMING**|.
   The diagnostic screen is displayed.
2. Press 1 to run the test.
   Transmission parameters are displayed.
3. Press 2 to finish the test.

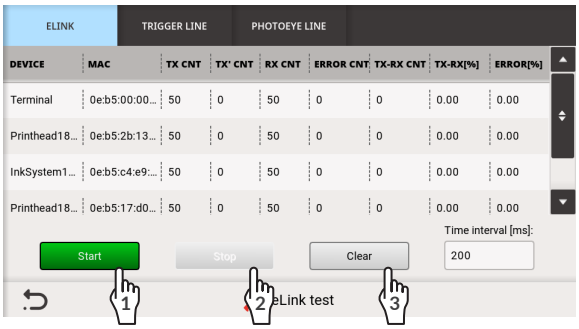


On the diagnostic screen, you also can clear the test results and start anew.

4. Press ⮌ to exit the diagnostic screen.

To test the data exchange circuit (**eLink-Ethernet**):

1. Press ▶ ▶ ▶ ▶ ▶ |**DATA**|.
   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.*

4. Press ⮌ to exit the diagnostic screen.

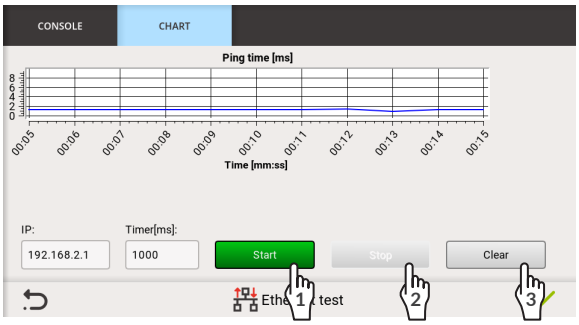
9.2.2.7. TESTING THE **ETHERNET** INTERFACE

The **Ethernet** interface is tested to check whether communication via the interface is effective or not.

The printer must be connected to a local, managed **Ethernet** network 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.

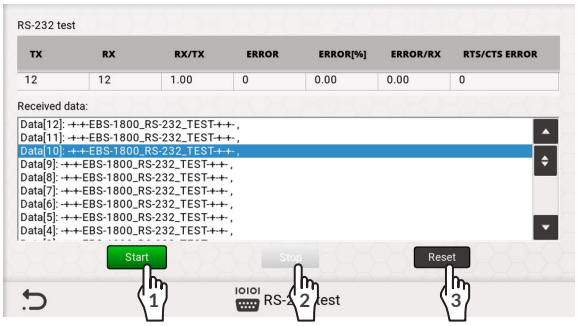
9.2.2.8. TESTING THE **RS-232** INTERFACE

Tools required:
*- a test jumper (Part No **P430087**).*

An **RS-232** test is aimed at checking whether communication via the interface is correct or not. The test requires that the test jumper be connected to interface connector in the control unit.

To test the **RS-232** interface:

1. Press ▶ ▶ ▶ ▶ .
   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.

9.2.2.9. TESTING THE **I/O BOX**

An **I/O BOX** test is aimed at checking whether cabling is connected to binary inputs and to relay outputs correctly or not.

Testing I/O BOX binary input:

To test the selected binary input **INX**, where **X** denotes the input number (**1** to **8**), it is necessary to connect:

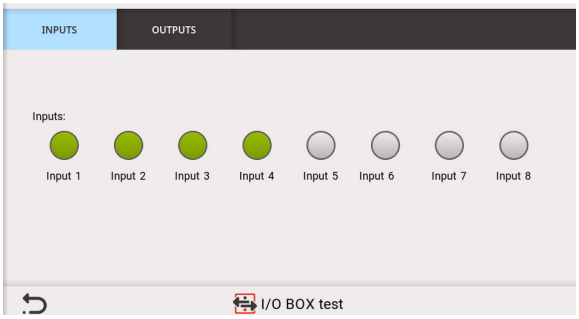
- a voltage in the range of **0 – 30 V DC**, with a minimum current of **10 mA**, to terminal **INX+**,
- ground to terminal **INX-**.

For example, ***Fig. 11 on page 23*** shows the circuit that can be used to test binary input **IN4**.

*For more details see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External Connections"**.*

To test **I/O BOX** binary inputs:

1. Press ▶ ▶ ▶ ▶ ▶ |**INPUTS**|.
   The diagnostic screen is displayed.



2. Connect / disconnect to the selected binary input.
   When the voltage of is applied to the selected input, the corresponding indicator light on the diagnostic screen glows green.
   No change in the indicator light state in response to connection / disconnection of may indicate that the **I/O BOX** is damaged or the test voltage of is incorrectly applied to it.
3. Press ⮌ to exit the diagnostic screen.

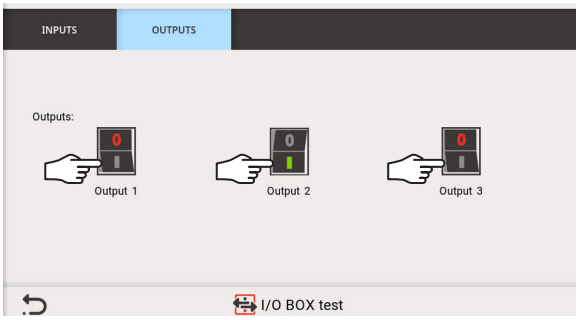
Testing I/O BOX relay outputs

To test the selected relay output it is necessary to connect to it an appropriate device or a multimeter that is set at checking whether a circuit has continuity or not.

*For more details see **"2.2.3. Control Unit"** ▶ **"2.2.3.1. External Connections"**.*

To test **I/O BOX** relay outputs:

1. Press ▶ ▶ ▶ ▶ ▶ |**OUTPUTS**|.
   The diagnostic screen is displayed.



2. Press the switch that corresponds to the selected relay output to close / open the circuit.
   The device connected to the output starts / stops working or the multimeter connected to the relay contacts shows that the circuit is closed / open.
   No reaction of the selected relay output to manual trigger may indicate that the **I/O BOX** is damaged or the external device is incorrectly connected to it.
3. 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 displays in the control unit, in the ink system and in the printheads are blank. The LEDs in the control unit a 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 at least one correct project in order to print it.

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 resolution of prints in a 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 pulses applied to the encoder, *i.e.*  **Impulse generator source = External**.
Prints are too pale or too bold. Differences in intensities of prints made by printheads arranged at various levels.	Modify the value of the parameter **Ink droplet size** for every project to be printed in order to: – adjust print clarity to the type of surface to be printed on, – eliminate differences in print intensity.
Slant prints.	– Check whether the value of the **Slant** parameter for a given printhead is the same as the degree of turning of the printhead in the holder or not (see the mark on the printhead holder).
Blurred prints.	Objects move in front of the face of the selected printhead from the wrong side. An object and the slide are in contact and smudge the ink. – Change the position of the slide for the selected printhead. – Change the direction in which objects move in front of the printhead face.
Some of the nozzles do not print or dots generated by them are smaller than the other.	Dirty nozzle plate in the selected printhead. – Follow the nozzle plate cleaning procedure for the selected printhead. – Apply the printhead purging procedure for the selected printhead. – Apply the printing unit tuning procedure for the selected printhead. – Contact an authorized representative of **EBS Ink Jet Systeme GmbH**.

Irregularity	Recommended action
Irregular print distortions or fading.	Air trapped in the ink system, the selected printhead or tubing, or the ink filter are clogged. – Apply the printhead purging procedure for the selected printhead. – Replace the ink filter. – 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 selected printhead and objects to be labeled.
Empty ink canister.	– Replace the ink canister.
No prints although no error is signaled.	– Review and correct the contents of the projects that is open for printing / being printed. – Check whether the photodetector selected as the source of the trigger signal is clean or not. – Check whether objects to be labeled are within trigger source reach or not. – Check the photodetector and encoder setup, if the latter is in use. – If printing is triggered by a signal at the selected output in the **I/O BOX**, check the **I/O BOX** configuration and whether the signal is correctly applied to the **I/O BOX** terminal strip or not. – 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"*. – Check whether the ink tubes are open and unobstructed or not. – Make a test print.

Irregularity	Recommended action
Some prints are skipped.	– Reduce printing speed. – Increase the space between objects to be labeled. – Set photodetector signal buffering, *i.e.*  ▶ **Queuing print triggers** = .
Print endings missing when the degree of turning of the selected 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 canister or **IMS** (Ink Monitoring System) errors.	– Replace ink canister 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”.

9.3. SERVICING

9.3.1. PURGING THE SELECTED PRINTHEAD

*Absorbent material contaminated with ink, or any ink that have leaked during purging, shall be treated as hazardous waste and delivered to an authorized local waste collection facility for safe recycling in accordance with the Safety Data Sheet (**SDS**) for the consumable materials used and applicable local environmental regulations.*

*The selected printhead should be purged by **instructed persons**.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
- absorbent material or a metal vessel for collecting waste.



The objective of printhead purging is to:

- Clean clogged nozzles,
- Remove the air trapped in the ink tubing that feeds ink to the selected printhead,
- Fill the ink tubing that feeds ink to the selected printhead with wash-up / ink,
- Purge the selected printhead, the ink system the printhead is connected to and the ink tubing in the selected printhead's ink path after prior connection of a canister of wash-up.

The purging procedure should be applied to the selected printhead when:

- Some of the dots are missing in first prints made by the selected printhead after an idle period,
- The dots in the prints made by the selected printhead vary in size.

Purging consists in opening of all the nozzles in the selected printhead and jetting of the ink / wash-up through the nozzles at pressure at the same time.

To follow the purging procedure for the selected printhead:

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 of the selected printhead.
3. Press and hold the button on the backplate of the selected 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.
4. Press the icon or the button on the control unit to resume printing.

You can also start purging the selected printhead by pressing the **Purging** icon while the printing unit tuning procedure for the selected printhead is in progress.

9.3.2. TUNING THE PRINTING UNIT

*The function is not available to an **OPERATOR**-type user .*

*The printing unit of the selected printhead should be tuned by **instructed persons**.*

Tools required:
- safety goggles,
- protective gloves that are resistant to ink / wash-up,
- protective clothing,
*- a #**2.5** hex (Allen) key with a ball tip,*
*- a #**T6 Torx** screwdriver.*



Print quality may be impaired when the nozzle plate is dirty or air is trapped in the tubing that feeds ink to the selected printhead. Therefore, before tuning the printing unit in the selected printhead, it is advisable to:

– Clean the nozzle plate in the selected printhead

*For more details see **"8.1. Cleaning the Nozzle Plates"**.*

and

– Apply the short purging procedure for the selected printhead.

*For more details see **"9.3.1. Purging the Selected 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 selected 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. 95 shows an example of a print made by the printhead in which nozzle **number 6** needs tuning.



Fig. 95.

To follow the tuning procedure for the printing unit in the selected printhead:

1. Position the printhead in the starting position of the holder **2f** (rotation degree = **1**; see ***Fig. 96 on page 246***).

   When the degree of turning of the selected printhead in holder **2f** 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 printhead see **"2.3. Installing the Printer"** ▶ **"2.3.1. Additional Information"**.*

2. Check whether photodetector **3** restricts access to blanking plate **2e** (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 printhead. If access to

blanking plate **2e** is free, skip this step. Otherwise, it is advisable to change the position of photodetector **3** by moving it towards the back of the printhead.

To change the position of photodetector **3**:

- Remember or mark the position of photodetector **3** in holder **2c**; 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,

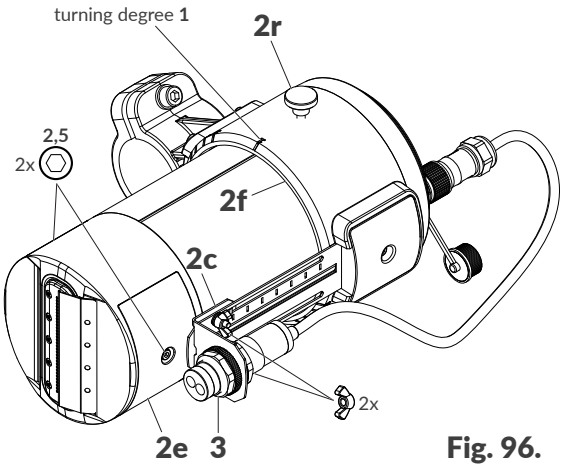


Fig. 96.

- Move the photodetector **3** towards the back of the printhead as much as it is needed to gain access to the blanking plate **2e** and to the adjustment screws blanked out by the plate,
- Tighten the two butterfly nuts that hold the photodetector **3** in a temporary position.

3. Use a #**2.5** hex key with a ball tip to loosen the screws that fasten blanking plates **2e** on both sides of the printhead (see ***Fig. 96***).
   The screws cannot be screwed out completely as they are part of the blanking plates **2e**.
4. Remove the blanking plates **2e** (see ***Fig. 97***).
   If blanking plates **2e** are removed, you will gain access to the slots where adjustment screws are.

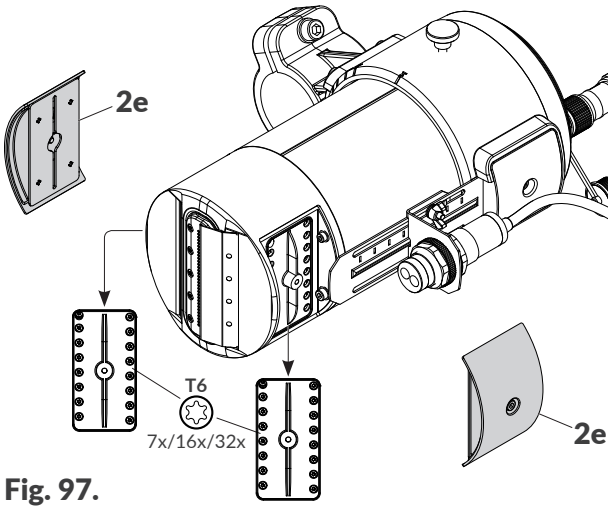
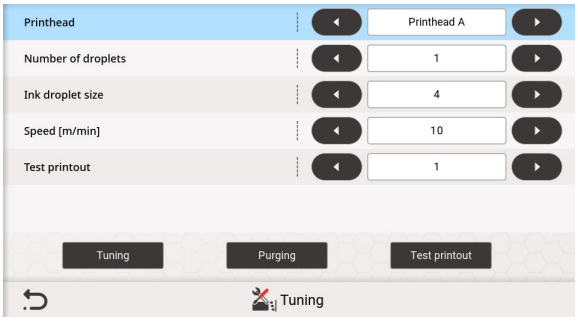


Fig. 97.

The number of the adjustment screws equals the number of nozzles in the printhead, that is:
7N/13, **7N/24**: 7 screws,
16N/26, **16N/56**: 16 screws,
32N/58: 32 screws.
The adjustment screw numbers are given on the stickers next to the slots. They correspond to the values of the **Nozzle number** 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
Printhead	**Printhead A**, **B**, **C**, **D**, **A1**, *etc.*

Symbol that identifies the printhead that is being tuned.
The range of settings depends on printer configuration.

Nozzle number	**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 or print intensity while a test print is being made.
It is advisable to set the intensity with which prints are made most frequently.

Speed %1* ***%1** = **[m/min]** or **[inch/min]**	**5 to 110 [m/min]** **400 to 4400 [inch/min]**

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.

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 **Speed %1**) for making a test printout using **Test printout**. The **Ink droplet size** and **Speed %1** parameters can be modified manually, if need be.

Function / Parameter	Range of values
Tuning	

Enable / disable tuning, or printing with a selected nozzle (the **Nozzle number** parameter) and set the printing parameters **Ink droplet size** and **Speed %1**.

Purging	

Switch on / off purging for the selected printhead.



The time of purging is limited by the total sum of all rinsing cycles per minute; the sum must not exceed 30 seconds.

Test printout	

Enable / disable printing of a test printout defined by the settings of the printing parameters **Ink droplet size** and **Speed %1**.

The **Ink droplet size** and **Speed %1** parameters can be set manually or selected as a predefined range of settings established with the **Test printout** parameter.

6. Put a sheet of paper in front of the selected printhead's nozzle outlet.



CAUTION: 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 tuning procedure for the nozzle indicated with the parameter **Nozzle number** in the printhead indicated with the **Printhead** parameter is applied.
8. Set the parameters **Ink droplet size** and **Speed %1** manually or select one of the predefined combinations of these parameters using the **Test printout** parameter.
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 **Nozzle number** 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 **Nozzle number** 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 trigger signal.
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 **2e** (see ***Fig. 97 on page 246***).

If the tuning procedure is preceded by modification of the degree of turning of the 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.

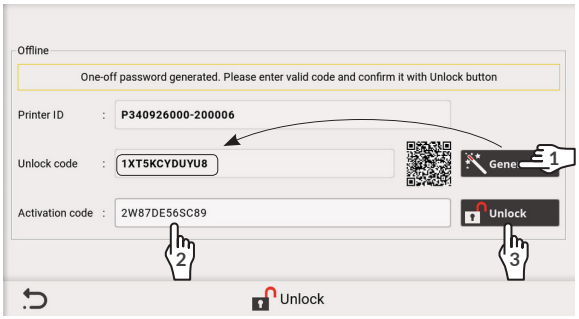
This function can be used for the following, among other things:

- 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:
   - (a) give the representative the one-off unlock code **OTP** generated in the previous step
     or
   - (b) scan the **QR** code and then open the web site indicated by it; your unlock request containing the **OTP** unlock code and printer data is automatically forwarded to the representative.
4. Specify the operation you wish to perform (*e.g.* enter service mode, which enables printing over a period of **50 hours**).

5. Depending on how the unlock request is delivered:
   - (a) the authorized representative of **EBS Ink Jet Systeme GmbH** generates and passes you the one-off activation code **OTA**

     or
   - (b) the **OTA** activation code is displayed on the device you used to scan the **QR** code.
6. Enter the **OTA** (**Activation code**) code you have obtained.

   CAUTION: 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.*
7. Press .

   The selected protection is released.

9.3.3.1. ENTERING SERVICE MODE

If a **correct** canister 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 canister 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 Canister"**.*

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 canister 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 canister, the printer checks the expiration date on the canister, 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

*For security reasons, after restoring the default password for the user named "Administrator," you must change it to your own password. For more details see **"7.5.1. Changing the User Password"**.*

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 re-named. 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

CAUTION: 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.

*The function is available to **ADMINISTRATOR**-type users only.*

The function restores all settings of the printer to their default values.

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 two printheads, one ink system, no canister): – approx **13.5 kg** (approx **29.76 lbs**) Printer sub-assemblies: – Control unit: approx **2.75 kg** (approx **6.06 lbs**) – Ink system (filled with ink): approx **2.8 kg** (approx **6.17 lbs**) – **7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58** printheads (filled with ink): approx **1.0 kg** (approx **2.20 lbs**) – Complete support beam (main beam, **1 m** in length, ink canister cage, two printhead support beams, two printhead holders): approx **3.8 kg** (approx **8.38 lbs**) **5-liter** canister of methyl ethyl ketone-based ink: – approx **5.0 kg** (approx **11.0 lbs**)

Dimensions (control unit)

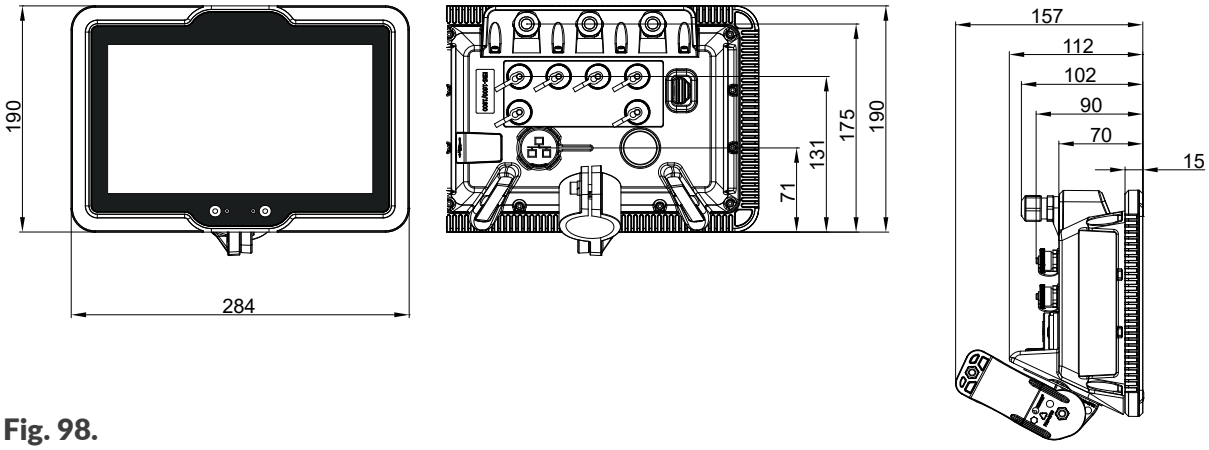


Fig. 98.

Dimensions (**7N/13**, **7N/24**, **16N/29**, **16N/56**, **32N/58** printhead)

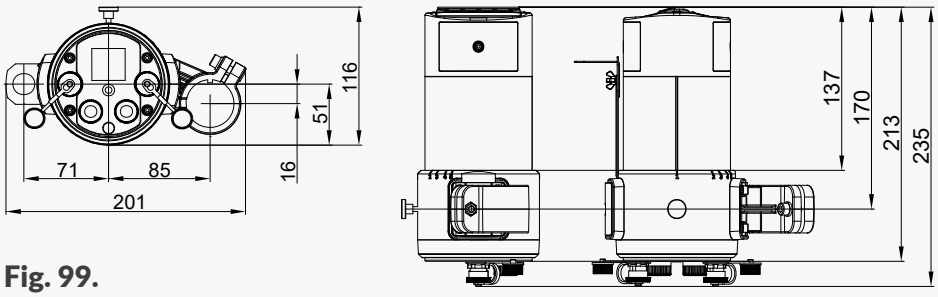


Fig. 99.

Dimensions (ink system)

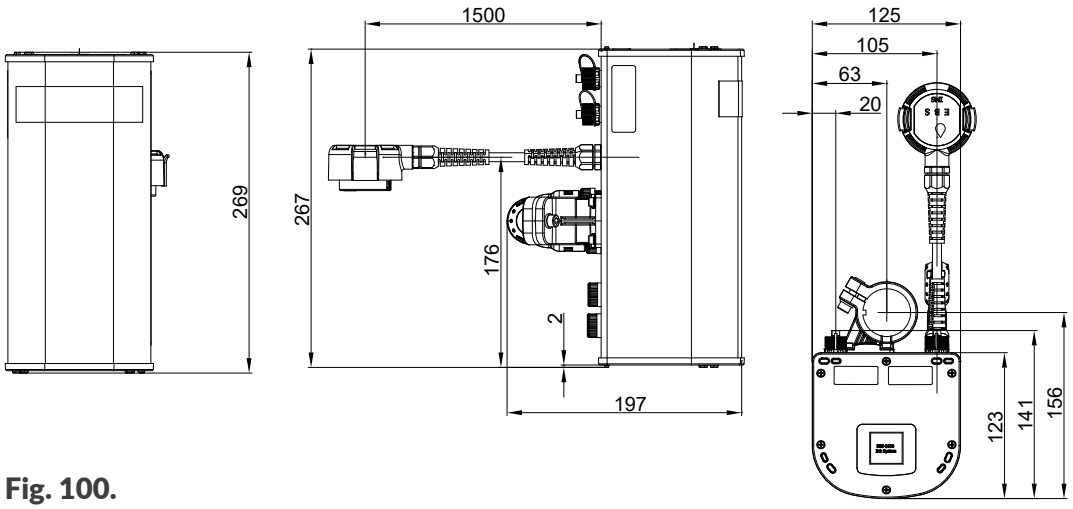


Fig. 100.

Dimensions (**5-liter** canister of ink / wash-up)

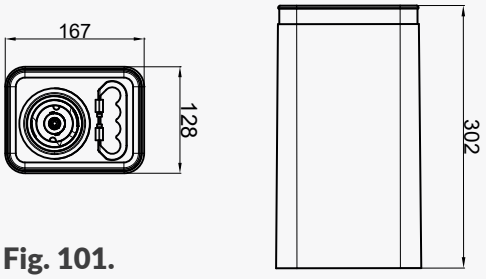


Fig. 101.

Dimensions (fasteners)

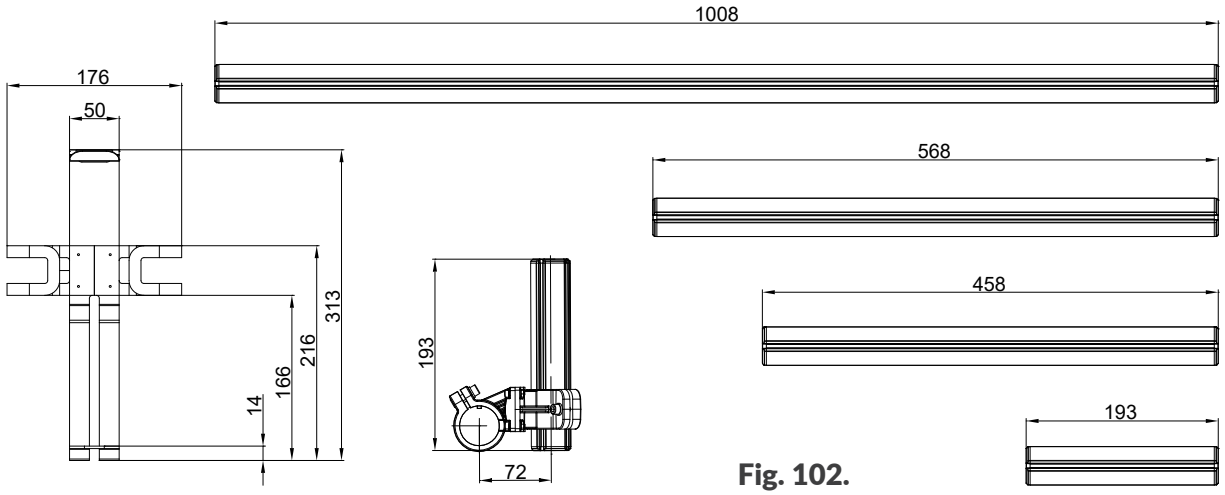


Fig. 102.

Physical properties

Dimensions (example of configuration shown in *"2.3. Installing the Printer"*)

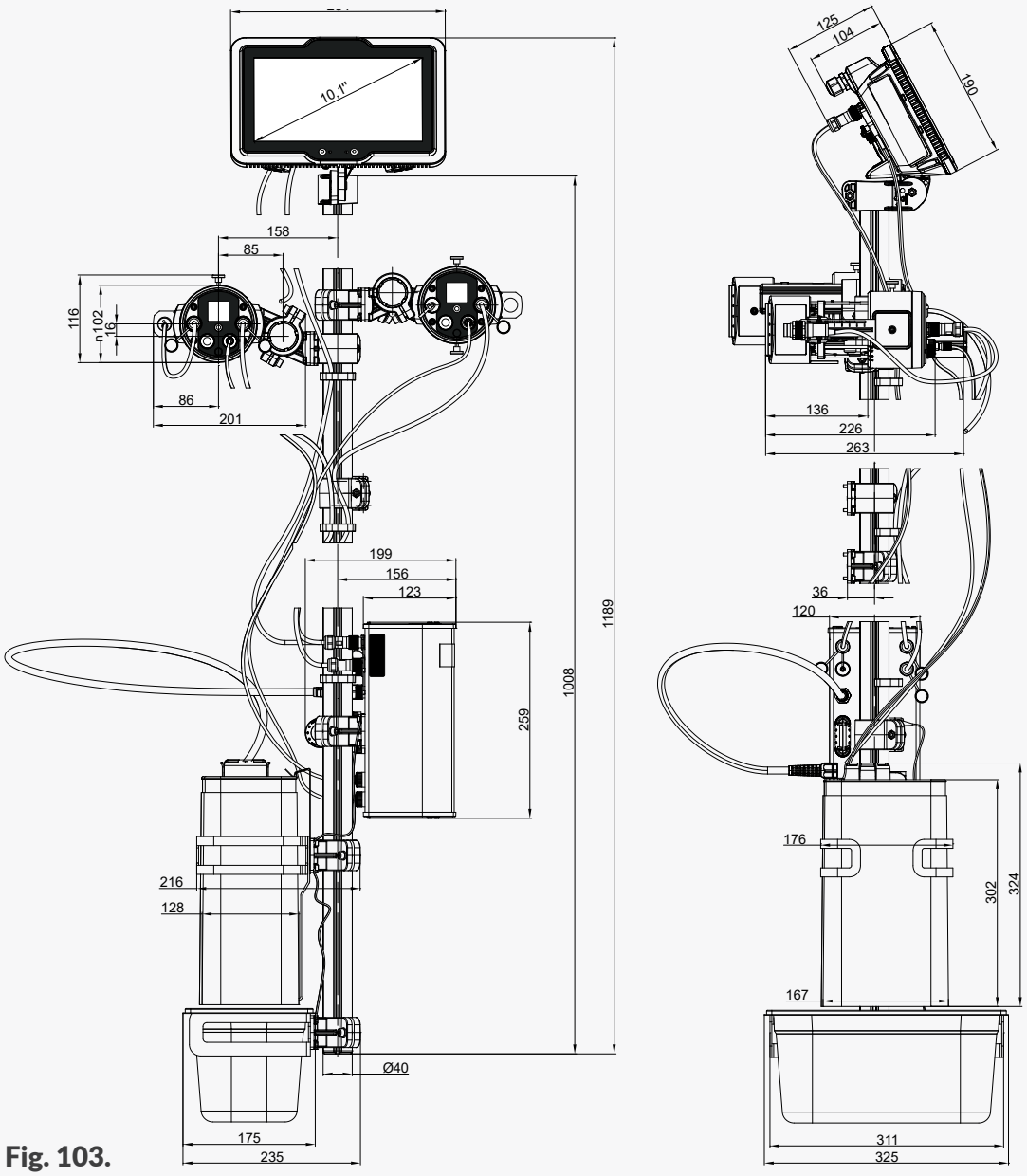


Fig. 103.

Material for housing: Control unit, printheads, ink system:

- **Fire retardant polyamide**, **aluminum**

Technical data

Project parameters	– Maximum length of a printable project: **30000 columns**, or: – approx **109 m** (at **275 dots/m** in horizontal direction) – **3000 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 one **7N/13** printhead – **24 mm / 0.94 in.** for one **7N/24** printhead – **29 mm / 1.14 in.** for one **16N/29** printhead – **56 mm / 2.20 in.** for one **16N/56** printhead – **229 mm / 9.02 in.** for four **16N/56** printheads – **58 mm / 2.28 in.** for one **32N/58** printhead – **231 mm / 9.09 in.** for four **32N/58** printheads – Adjustment to print height and resolution in vertical direction: **yes** (by turning the printhead; for independent printheads only)
Maximum speed (for independent, 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
Printheads	– Number of printheads: **1** to **4** – Type of printheads: **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 – Grouping printheads together: **yes** (only the same **16N/56**, **32N/58** printheads) – Printhead combination modes: – **independent printheads** – **printheads grouped together to get higher prints**
eLink cable	– Length: – **1 m** / **39.4 in.** (standard) – **3 m** / **118.1 in.**, **5 m** / **196.8 in.**, **10 m** / **393.7 in.** (options) – Minimum bend radius: – for **1 m** and **3 m** 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

Technical data

Ink tubing	– Length:
	  – **1.5 m** / **59.1 in.** (standard)
	  – **3.5 m** / **137.8 in.**, **5.5 m** / **216.5 in.**, **10.5 m** / **413.4 in.** (options)
	– Minimum bend radius:
	  – **40 mm** / **1.58 in.** - for static and dynamic operation.

Ingress protection rating	Control unit: – **IP54** Printhead: – **IP55** Ink system: – **IP54**  *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 bar** to **0.45 bar** (**2.17 psi** 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 control output – **Ethernet** connector – **eLink** connector **(2x)** – **RS-232** connector – **I/O BOX** inputs / outputs Printhead: – Photodetector connector – **eLink** connector – Ink outlet; venting – Ink inlet; from ink system – External air blow; option for operation in difficult conditions Ink system: – **eLink** connector **(4x)** – Ink outlet; printhead feeding **(2x)** – Ink canister connection

Functions

Work modes	– Printing triggering:
	  – Trigger source printing mode
	  – No trigger source printing mode
	– 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 V** to **240 V** ∿, **50/60 Hz**, max **2.2 A** to **1.1 A**
	– Maximum power consumption: **225 W**
	– The power supply circuit of the printer shall be secured with a cut-out device whose rated current is:
	  – max. **13 A** for **Great Britain and Ireland**
	  – max. **16 A** for **the EU countries**
	  – max. **20 A** for **the USA and Canada**,
	  – for the other countries - in compliance with the applicable regulations.
	– 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 canister capacity	– **5 liters**

Working conditions	
Working position - printer	– **Vertical** (ink system, ink canister) – **Any** (the other printing system items)
Working position - printheads	– **Any**
Level difference	– **Max ±1.5 m** (between each of printheads and ink system that feeds ink to the printhead)
Distance from printhead to object	– **2 mm** to **20 mm**
Minimum distance between objects to be labeled	– **5 mm**
Print triggering	– **Photodetector** – **I/O BOX input** – **No triggering**
Timing	– **Internal Generator** – **Rotational speed sensor (encoder)**
Ambient conditions	– Working temperature: **+5°C** to **+45°C (+41°F** to **+113°F)** – Relative humidity: **10%** to **90%** without condensation – Maximum altitude (above sea level): **2000 m** – Vibration: **max 1 g, max 10 Hz** – Shocks: **max 1 g, max 2 ms** – Operation in tropical climates: **no**
Storage conditions	– Temperature: **0°C** to **+50°C (+32°F** to **+122°F)** – Relative humidity: **10%** to **90%** without condensation – Shocks: **max 1 g, max 2 ms** Position: – **Vertical** (ink system, ink canister) – **Any** (the other printing system items)
Ink Monitoring System data	– Working frequency: **13.56 MHz** – Magnetic field strength at **10 m** distance from the system: **max -29,3 dBµA/m**
Working environment - electromagnetic compatibility	The **bigJET®** EBS-1800 printers are Class A devices as defined in the **EN 61000-6-4** (emissions in industrial environments) and **EN 61000-6-8** (emissions in residential environments with a low level of industrial activity) standards. In residential environments, they may cause radio-frequency interference that affects the operation of certain electronic devices. In such cases, users may be required to take appropriate corrective measures.

Specifications	
Objects	– Text objects / codes: **static text**, **date/time**, **calendar**, **shift code**, **counter**, **text file**, **communications port** – Graphic objects: **line**, **rectangle**, **ellipse, image**
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) – Statistics – All printer data

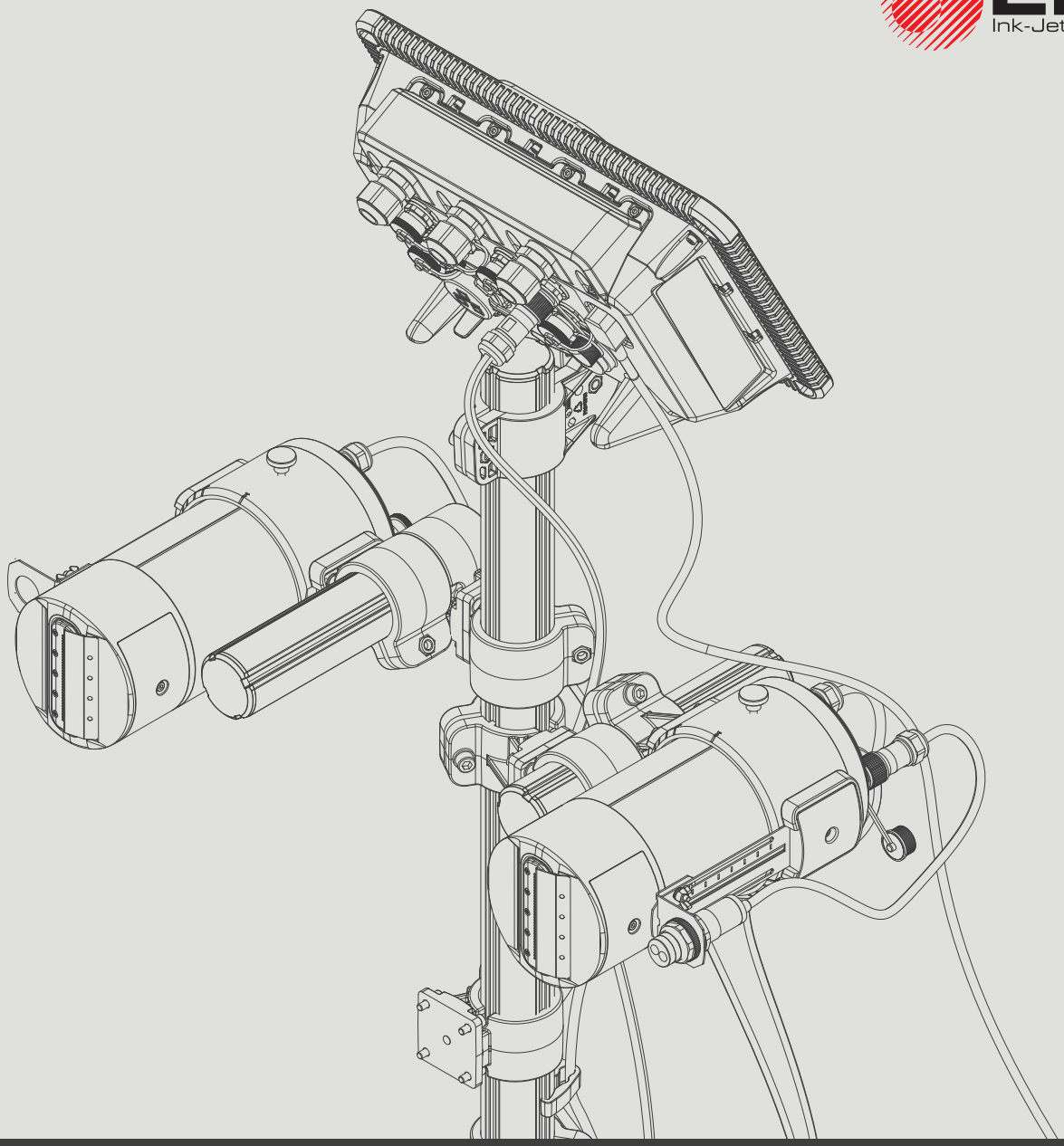
CHAPTER 11
VERSION CONTROL

11. VERSION CONTROL

Version of manual	Date of issue	System version
G2024/10/02_1EN	2026.08.17	1.04.16.0
G2024/10/02_1EN	**2026.10.08**	**1.04.16.0**

G2024/10/02_1EN

EN



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2026.10.08