

Operating manual Ex p Slot-Printer

APEX (SILAS) Pressurized Cabinet
ATEX/IECEX Zone 1 or ATEX/IECEX Zone 2



Operating instructions – Ex p Slot-Printer

APEX Pressurised Cabinet
Type: 07-3704-2222/900*
ATEX / IECEx Zone 1

SILAS Pressurised Cabinet
Type: 07-3704-2122/900*
ATEX / IECEx Zone 2

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1 General information

1.1 Manufacturer

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1.2 Purpose of these operating instructions



ATTENTION

Please read the enclosed operating manual carefully before starting up the Ex p slot printer.

These operating instructions contain the required information for the intended use of the Ex p Slot-Printer.

The operating instructions are intended for those individuals who are qualified to assemble, install, start up and maintain the product.

They are addressed to technically qualified personnel. The operating instructions are an integral part of the product. They should always be kept in the immediate vicinity of the device and accessible to the installation, operating and maintenance personnel.

If applicable, the guidelines and standards for areas with gas atmospheres must be observed before starting any work, e.g.: RL 2014/34/EU, EN / IEC 60079-17 and EN / IEC 60079-19.

Knowledge and technically correct implementation of the safety instructions and warnings described in these operating instructions are a prerequisite for safe installation and commissioning. The safety instructions and warnings in these operating instructions are kept general and only qualified personnel have the necessary knowledge to interpret and implement them correctly in specific individual cases.

These operating instructions are an integral part of the scope of delivery, even if they can be ordered and delivered separately for logistical reasons

- If you require any further information, please request it from your local or responsible BARTEC subsidiary. Please read the operating instructions and, in particular, the safety instructions carefully before using the device.
- Keep the operating instructions for the entire service life of the device.
- Make the operating instructions available to all persons entrusted with handling the device.

1.3 Languages

The original user manual is written in German. All other available languages are translations of the original user manual.

The user manual is available in German and English. If there are any other languages which are required, these must be requested from BARTEC or specified when ordering.

1.4 Technical changes

BARTEC reserves the right to change the contents of this document without prior notice. No guarantee is given for the correctness of the information. In case of doubt, the German safety instructions apply, as translation and printing errors cannot be ruled out. In the event of any legal dispute, the “General Terms and Conditions” of the BARTEC Group shall apply in addition.

1.5 Additional documents






The current versions of data sheets, operating instructions, certificates and EC Declarations of Conformity as well as information on accessories can be downloaded from www.bartec.com or requested directly from BARTEC GmbH.

1.6 Conformity to standards and directives




For certificates and EU Declaration of Conformity, please see www.bartec.com.

1.7 Explanation of the individual markings

1.7.1 Markings in the operating instructions

	DANGER This symbol indicates a hazard that will result in death or serious injury if not avoided.
	WARNING This symbol indicates a hazard that can result in death or serious injury if not avoided.
	CAUTION This symbol indicates a hazard that may result in injury if not avoided.
	ATTENTION This symbol indicates measures to avoid damage to property.
	Note This symbol indicates important notes and information on effective, economical and environmentally friendly handling.

1.7.2 Markings on the device

	CE marking according to the currently valid directive.
	Device certified in accordance with the marking for potentially explosive atmospheres.
	Marking according to WEEE directive 2012/19/EU

2 Safety

2.1 Handling the product

The product which is described in these operating instructions has left the factory in a safe and tested condition. In order to maintain this condition and to achieve faultless and safe operation of this product, it may only be used in the manner described by the manufacturer. Furthermore, the proper and safe operation of this product requires proper transport, correct storage and careful operation.

Safe and proper installation as well as integration is a prerequisite for faultless and correct operation.

2.2 Intended use

2.2.1 Exclusive intended use

The Ex p Slot-Printer, type 07-3704-****/**** serves exclusively as a label printer which is intended for use in explosion group II, category 2G by means of the explosion protection principle “pressurised enclosure” pursuant to EN/IEC 60079-2.

The Ex p Slot-Printer type A7-3704-****/**** serves exclusively as a label printer which is intended for use in explosion group II, category 3G by means of the explosion protection principle “pressurised enclosure” pursuant to EN/IEC 60079-2.

The permissible operating data of the device used must be observed.

2.2.2 Non-intended use

Any other use is not in accordance with the intended purpose and can lead to damages and accidents. The manufacturer is not liable for any use beyond the exclusive intended use.

2.3 Warranty



WARNING

No modifications or conversions may be made without the written approval of the manufacturer.

Explosion protection is no longer guaranteed if non-specified components are used. In the case of externally supplied parts, there is no guarantee that they have been designed and manufactured to withstand the stresses and to meet the safety requirements

- Please contact the manufacturer and obtain approval before making any changes or conversions.
- Only use original spare and wear parts.



Note

The manufacturer provides the complete warranty service only and exclusively for the spare parts which have been ordered from him.

In principle, our “General Conditions of Sale and Delivery” apply. These are available to the operator at the latest when concluding the contract. Warranty and liability claims for personal injury and property damage are excluded if they are due to one or more of the following causes:

- Improper use of the Ex p slot printer.
- Improper installation, commissioning, operation and maintenance of the Ex p Slot-Printer.
- Failure to observe the instructions in the manual regarding transport, storage, assembly, commissioning, operation and maintenance.
- Unauthorised structural modifications to the Ex p Slot-Printer.
- Inadequate monitoring of parts which are subject to wear and tear.
- Improperly performed repairs.
- Any catastrophic events which are caused by foreign bodies and force majeure.

We grant a warranty period of one year on the Ex p Slot-Printer and its accessories from the date of delivery from the Bad Mergentheim factory. This warranty covers all parts of the delivery and is limited to the replacement or repair of the respective defective parts free of charge at our Bad Mergentheim factory. For this purpose, delivered packaging must be kept as far as possible. If necessary, the goods have to be sent to us after written agreement. There shall be no requirement for any rectification at the place of installation.

2.4 Operator's obligations

The operator is obligated to ensure that only persons work with and on the Ex p Slot-Printer who:

- are familiar with the basic regulations on safety and accident prevention and have been instructed in the use of the Ex p Slot-Printer;
- have read and understood the documentation, safety chapter and warnings.
- The operator is responsible to ensure that the safety and accident prevention regulations applicable in the respective case of use are observed.
- have a level of knowledge of the relevant national standards and regulations.

2.5 Safety instructions

2.5.1 General safety instructions

- General statutory regulations or guidelines on occupational safety, accident prevention regulations and environmental protection laws must be observed, e.g. Ordinance on Industrial Safety and Health (BetrSichV) or the nationally applicable ordinances.
- It is required to wear suitable clothing and footwear with regard to the risk of dangerous electrostatic charges.
- All work steps in potentially explosive atmosphere must always be carried out with the utmost care!

2.6 Safety instructions for the operation

When setting up or operating explosion-protected electrical systems, the IEC / EN 60079-14 regulations as well as the relevant installation and operating regulations must be observed.

Maintenance

- The relevant installation and operating regulations must be observed for electrical systems! (e.g. Directive 99/92/EC, Directive 2014/34/EU, Ordinance on Industrial Safety and Health (BetrSichV) or the nationally applicable regulations IEC / EN 60079-14 and DIN VDE 0100 series)!
- The national waste disposal regulations must be observed when disposing of the device.

Periodic inspection

- Pursuant to IEC /EN 60079-19 and IEC / EN 60079-17, the operator of electrical systems in potentially explosive atmospheres is obligated to have them inspected by a qualified electrician in order to ensure that they are in proper condition.
- If the device is operated correctly and the installation instructions and ambient conditions are observed, maintenance service is required at 3-year intervals in accordance with IEC / EN 60079-17. See Section 10 "Maintenance and care".

Repairs

- Any repairs to explosion-protected equipment may only be carried out by authorised persons using original spare parts and in accordance with the state of the art. The applicable regulations must be observed.

Commissioning

- Before commissioning, it must be ensured that all components and documents are available.

2.7 Avoidance of material damage

2.7.1 Short circuit due to improper connection

An incorrect connection of the power supply could destroy the electronics and invalidates the warranty.

2.7.2 EMC-compliant connection

In order to ensure the safe function of the Ex p Slot-Printer, it is important to carry out the wiring in an EMC-compliant way. This includes observing the section “Electrical connections” with regard to EMC-compliant wiring and inductive loads.

2.7.3 Storage at too high temperature

The Ex p Slot-Printer has to be stored at the intended storage temperature, because otherwise damage to the electronics or seals may occur. In case of high storage temperatures, ensure sufficient air conditioning.

2.7.4 Aggressive cleaning agents

When selecting the correct cleaning agent, it is essential to ensure its suitability. Otherwise it could cause damage to seals and connections. Flammable products are generally prohibited.

2.7.5 Health hazard in case of improper disposal

According to the European Waste Electrical and Electronic Equipment Directive (WEEE Directive), electrical and electronic equipment must not be disposed of with household waste. Their components must be recycled or disposed of separately, because toxic and hazardous components can cause lasting damage to health and the environment if they are disposed of improperly.

As a consumer, you are obligated under the Electrical and Electronic Equipment Act (ElektroG) to return any electrical and electronic equipment free of charge at the end of its service life to the manufacturer, the respective point of sale or to public collection points which are set up for this purpose. Details are regulated by the relevant state law. The symbol on the product, the operating instructions or/and the packaging indicates these regulations. By separating, recycling and disposing of old equipment in this way, you are making an important contribution in protecting our environment.

3 Product description

3.1 General

The type of protection “Ex p”, also known as “pressurised enclosure”, is based on the measure that explosive gases which are present in a closed enclosure are purged out and subsequently an overpressure is generated and maintained relative to the surrounding atmosphere. Due to the higher pressure inside the enclosure compared to the atmosphere, explosive gases cannot enter the interior of the enclosure at any time. This creates an Ex-free area in which electrical equipment can be mounted and operated which is not itself explosion-proof.

The Ex p Slot-Printer described in these operating instructions uses the “pressurised enclosure with leakage compensation” technique. In detail, this is maintaining an overpressure in the enclosure by feeding in purge gas in order to compensate for the leakage losses which occur in the enclosure.

To ensure that the explosive atmosphere (gas), which has been penetrated during the downtimes, cannot become a hazard, the housing must be purged with purge gas before the printer can be put into operation.

3.2 Ex p Slot-Printer

3.2.1 Ex p Slot-Printer zone, Type 07-3704-2222/900*



The BARTEC Ex p Slot-Printer is used in conjunction with the Ex p control unit APEX^{px} and the label printer Zebra ZT111 as a complete printer for the use in Ex zone 1.

After installation, wiring and integration into the local network, it is immediately ready for use.

3.2.2 Ex p Slot-Printer zone, Type A7-3704-2122/900*



The BARTEC Ex p Slot-Printer is used in conjunction with the Ex p control unit SILAS^{pz} and the label printer Zebra ZT111 as a complete printer for the use in Ex zone 2.

After installation, wiring and integration into the local network, it is immediately ready for use.

4 Transport and storage

4.1 Scope of delivery



Note

Any missing parts or damages must be reported immediately in writing to the carrier, the insurance company or BARTEC GmbH.

Check the completeness of the scope of delivery on the basis of the delivery note.

Each Ex p Slot-Printer is delivered as standard with the following scope of delivery:

- Ex p Slot-Printer
- LAN parameterisation cable, programming release
- USB cable for printer configuration
- Operating instructions

4.2 Packaging

The Ex p Slot-Printer is delivered packed in foils, on pallets and/or in cardboard boxes.

- Dispose of the packaging materials at the designated disposal points. Observe the valid national regulations for disposal.

4.3 Transport



WARNING

RISK OF DEATH OR INJURY FROM FALLING HEAVY SUSPENDED LOADS

Serious crushing injuries may occur.

- Never stand under suspended loads.
- Secure the Ex p Slot-Printer with a suitable fastening (e.g. straps) before transport).



ATTENTION

AVOID ANY HARD IMPACTS, FOR INSTANCE, BY DROPPING OR SETTING IT DOWN TOO HARD.

The Ex p Slot-Printer can be damaged.

- Only use lifting equipment and load handling attachments with sufficient lifting capacity.
- The permissible lifting weight of a lifting device must not be exceeded.
- Set down the Ex p Slot-Printer slowly.

Observe the weight of the goods to be transported and select an adequate transport device.

4.4 Storage

Store the control unit in a horizontal position and at a temperature between -25 °C and +60 °C in the original packaging. The storage environment must be dry, dust-free and with low-vibration. Store the control unit for a maximum of 2 years.

For storage logistics, we recommend the “first in - first out” principle.

4.5 Disposal



Note

When disposing of the device, the applicable national regulations must be observed.



The Ex p Slot-Printer can be recycled for the most part. The main board of the printer contains a battery which must be disposed of properly.

Do not dispose of printer components in household waste. Properly recycle the battery and other printer components must also be recycled properly and in accordance with local regulations.

5 Installation



Note

Before starting any work, please read the general safety instructions (see Section 2 “Safety”).

- Please observe the sections “Installation” and “Electrical Connections”.

5.1 Typical installation



Set up the Ex p Slot-Printer at the intended installation location.

Slight unevenness can be compensated by means of the locking feet.

5.1.1 Installation site requirements

The following installation site requirements must be observed for the Ex p Slot-Printer:

- Compressed air supply, network connection and power supply must be available near the device.
- Floor space: The printer requires a firm, level floor space of sufficient size and load-bearing capacity at the selected installation location of the printer.
- There must be enough space at the front of the device in order to remove the printout.
- The right side panel is designed as a door for refilling the print media. In order to ensure that the print media can be refilled easily, the right side should be freely accessible.
- The rear side should be accessible for any connection work.

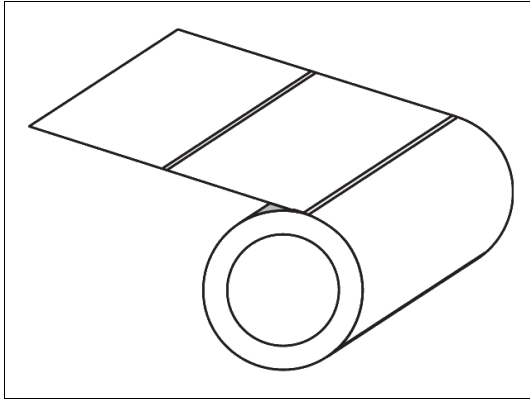
5.2 Media



Note

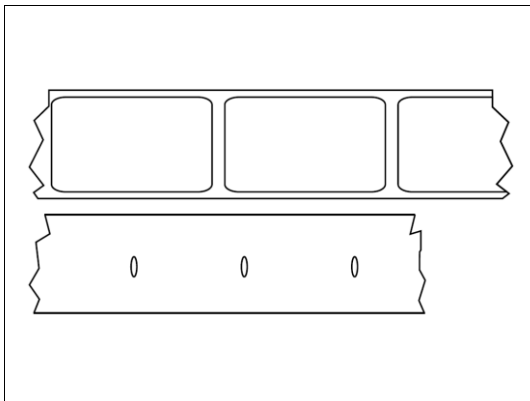
BARTEC strongly recommends the use of Zebra brand supplies in order to ensure consistent print quality. A wide range of paper, polypropylene, polyester, and vinyl media has been specifically designed to improve the printer's printing characteristics and protect the print head from premature wear. Accessories are available at <http://www.zebra.com/howtobuy>.

5.2.1 Media type

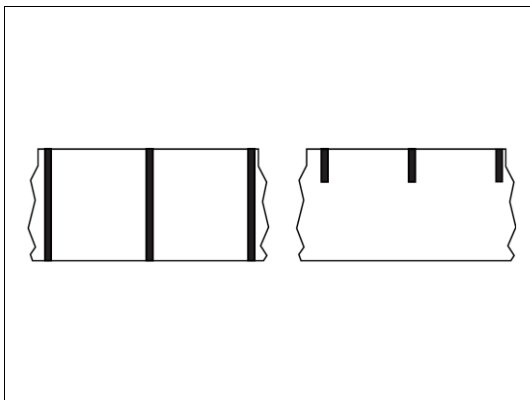


Roll media is wound on a 76 mm (3 inches) diameter roll core. Roll media is wound whose core can be between 25 and 76 mm (1 to 3 inches) in diameter.

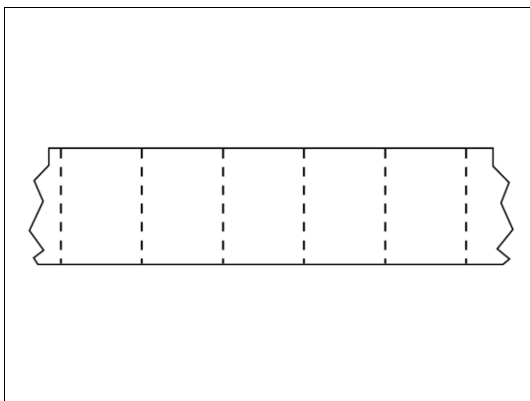
Individual labels or tags are separated from each other by one or more of the following methods:



For media with liner tape, labels are divided by spaces, perforations and cutouts.



For media with black markings, labels are divided by black markings which are pre-printed on the back.



Perforated media has perforations which enable that labels or tags are easily detached. This media may also have black markings or some other form of division between labels or tags.

5.2.2 Ribbons

i

Note

If the ribbon is narrower than the media, the print head is partially unprotected and therefore subject to premature wear and tear.

An ink ribbon is a thin ribbon which is coated on one side with wax or resin. In the thermal transfer printing process, this coating is transferred to the media. The respective print media determines whether an ink ribbon must be used and how wide the ribbon must be.

If a ribbon is used, it must be at least as wide as the media that is used. If the ribbon is narrower than the media, the print head is partially unprotected and therefore subject to premature wear and tear.

Ribbon Application

Media for thermal transfer printing requires the use of ribbons for printing.

Media for direct thermal printing does not require it. In order to determine whether a particular media requires the use of a ribbon, please perform a media scratch test.

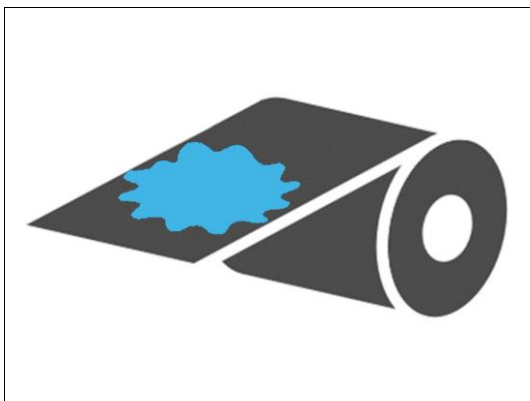
In order to perform a media scratch test, please follow the following steps:

1. Scratch the print surface of the media with your fingernail in a rapid motion.
2. Can you see a black mark on the media?

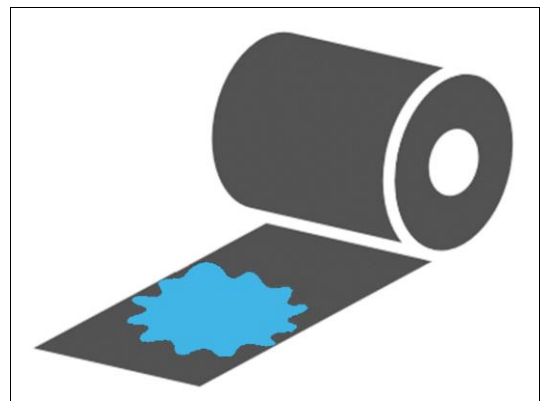
If there is ...	then the media is ...
no black mark visible on the media,	suitable for thermal transfer printing. A ribbon is required.
a black mark visible on the media,	suitable for direct thermal printing. No ribbon is required.

Coated side of the ribbon

Ribbons can be either wound with the coating on the inside or on the outside. This printer can only use ribbon that is coated on the outside. Please perform an adhesive test or ribbon scratch test if you are not sure which side of the ribbon is coated.




Outer side



Inner side

5.3 Inserting the media

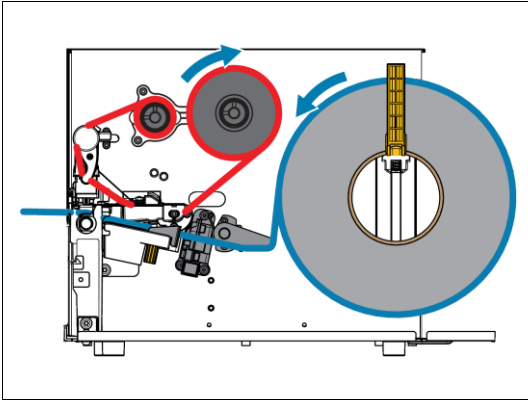


DANGER

DEATH OR SERIOUS PHYSICAL INJURY FROM WORKING ON LIVE PARTS!


Danger to life due to electric current.

- Before you start working near an open print head, please remove any rings, watches, necklaces, ID tags or other metallic objects which could come in contact with energised parts.



Insert the ribbon (red) and the print media (blue) as shown in the figure on the left.

5.3.1 Inserting the ribbon

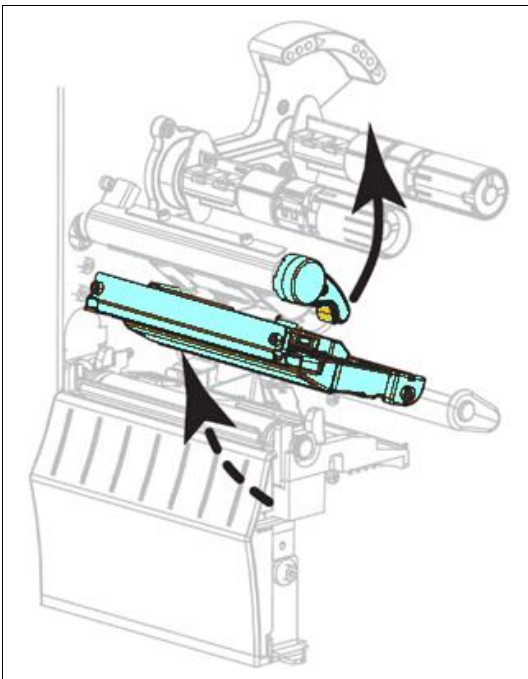


Note

This section applies only to printers which use the thermal transfer option.


Use ribbons that are wider than the media in order to protect the print head from unnecessary wear and tear. Ribbons must be coated on the outer side.

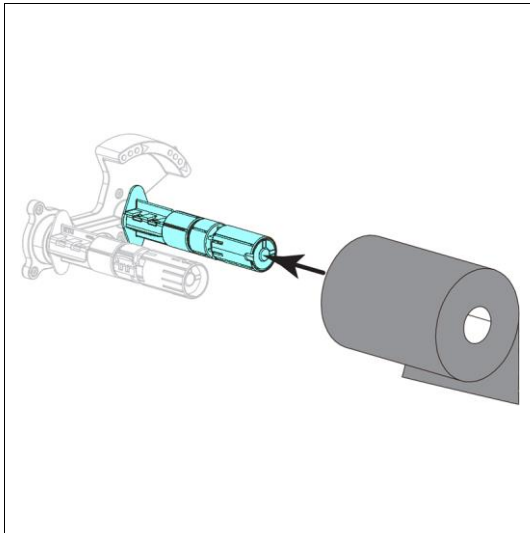
The ribbon is only used with thermal transfer labels. Do not insert any ribbon into the printer for direct thermal labels.



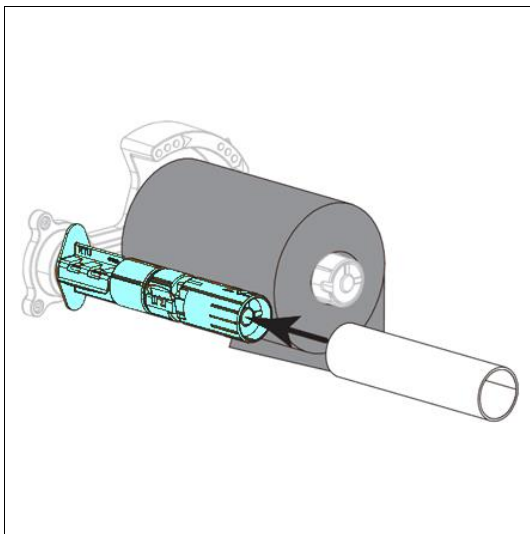
Inserting the ribbon

1. Switch off the Ex p Slot-Printer.
2. Open the Ex p Slot-Printer by using the cam locks on the door.
3. Open the print head unit by turning the lever of the print head.

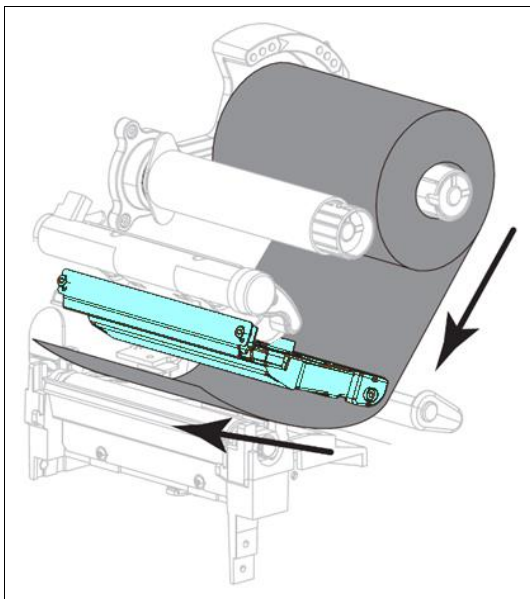
 **Caution** • The print head can be very hot and cause severe burns if touched. Allow the print head to cool down.



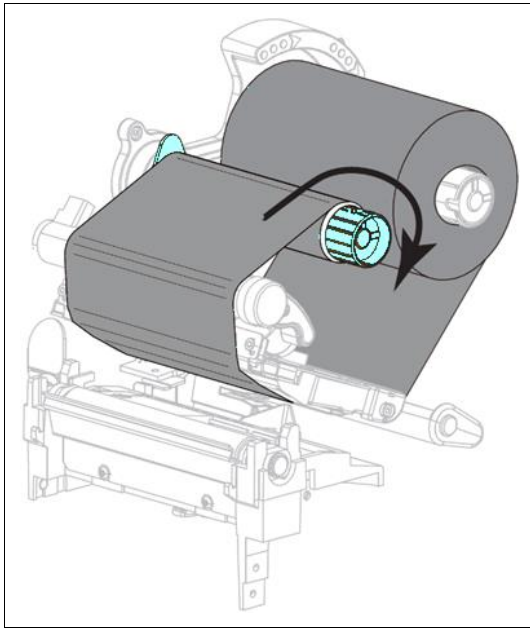
4. Place the ribbon roll on the ribbon supply spindle in such a way that the loose end unwinds as shown in the Figure. Push the roll back as far as it will go.



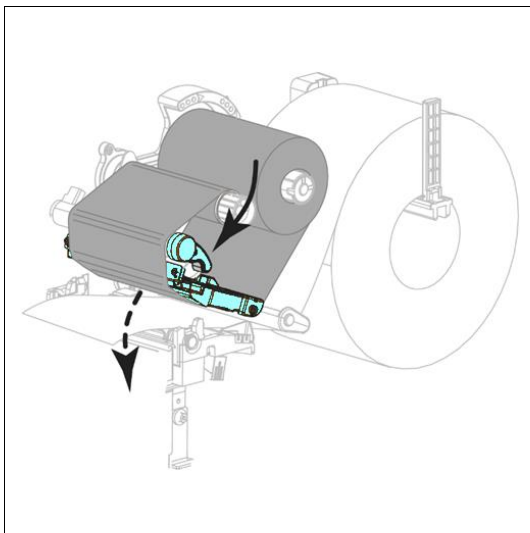
5. The printer is shipped with an empty ribbon core on the ribbon take-up spindle. If this core is no longer there, place an empty ribbon core on the ribbon take-up spindle. Slide the core as far back as possible.



6. Slide the ribbon under the print head unit (see Figure).



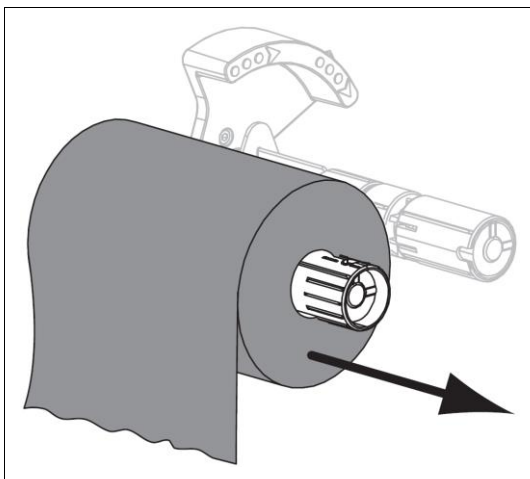
7. Slide the ribbon under the print head unit as far back as possible and wind it around the core on the take-up spindle of the ribbon. Rotate the spool a few times in the indicated direction in order to tighten and align the ribbon.



8. If media is already loaded, rotate the print head opening lever down until the print head clicks into place. Otherwise, proceed with loading media.
9. Close the Ex p Slot-Printer.

5.3.2 Removing used ribbon

Remove used ribbon from the take-up spindle each time you replace the ribbon roll.

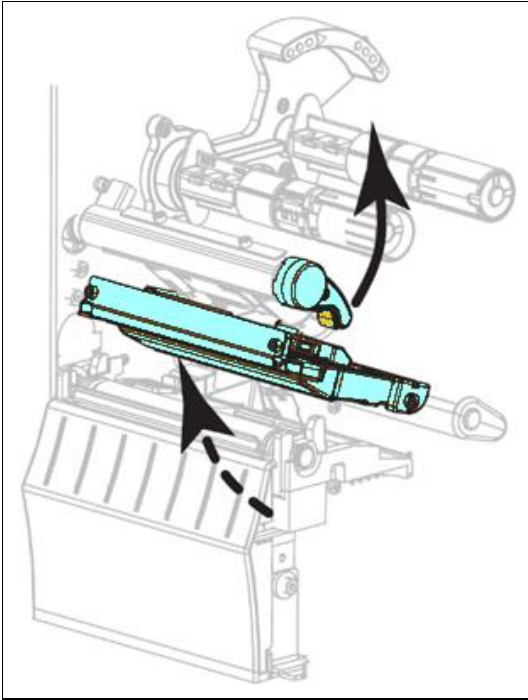


Removing used ribbon

1. Pull the core with the used ribbon from the ribbon take-up spindle.
2. Dispose of the used ribbon. You can reuse the empty core from the ribbon supply spindle by placing it on the ribbon take-up spindle.
3. Reinsert the ribbon. Follow the instructions specified in Section 5.3.1. “Inserting the ribbon”.

5.3.3 Loading the print media

In order to load roll or folded media in any print mode, follow the instructions in this section.

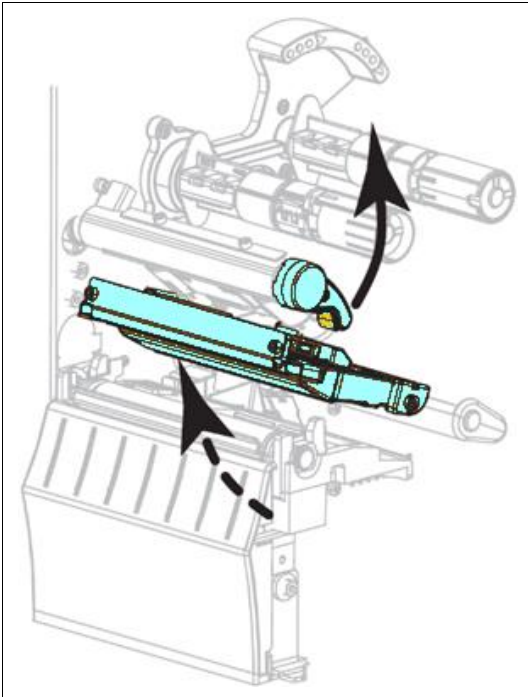


Loading the print media

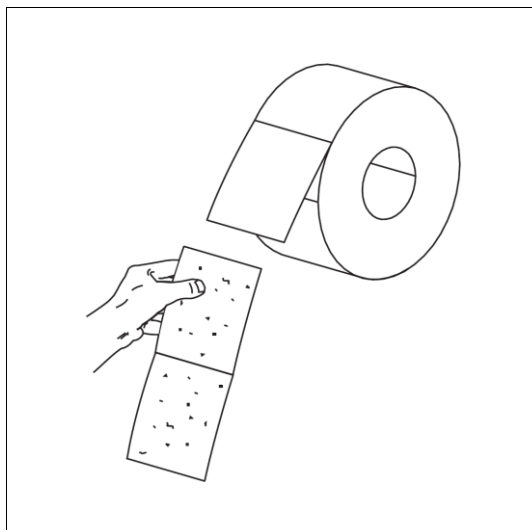
1. Switch off the Ex p Slot-Printer.
2. Open the Ex p Slot-Printer by using the cam locks on the door.
3. Open the print head unit by turning the lever of the print head.



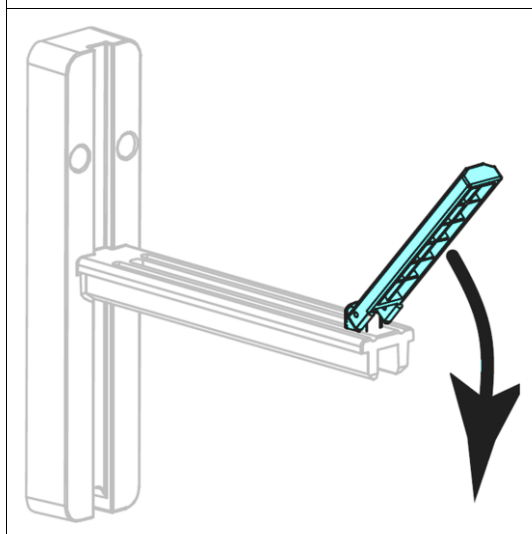
Caution • The print head can be very hot and cause severe burns if touched. Allow the print head to cool down.



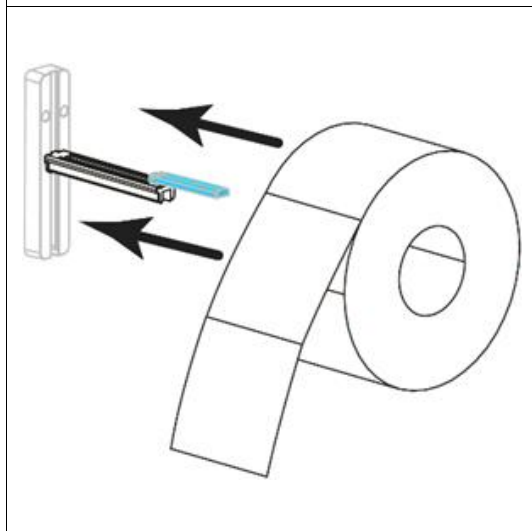
4. Feed the print media into the printer.



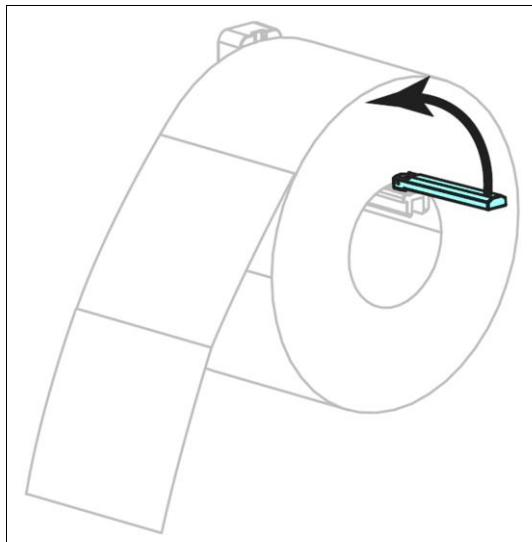
- a. Remove any tags or labels which show any signs of contamination or have been attached by means of adhesives or tape.



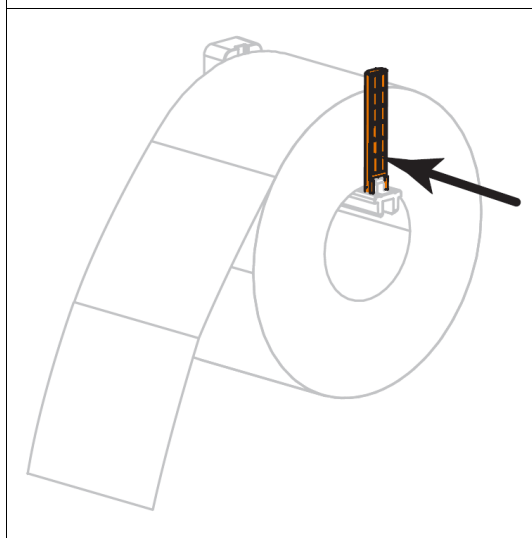
- b. Pull out the media feed guide and flip it downwards.



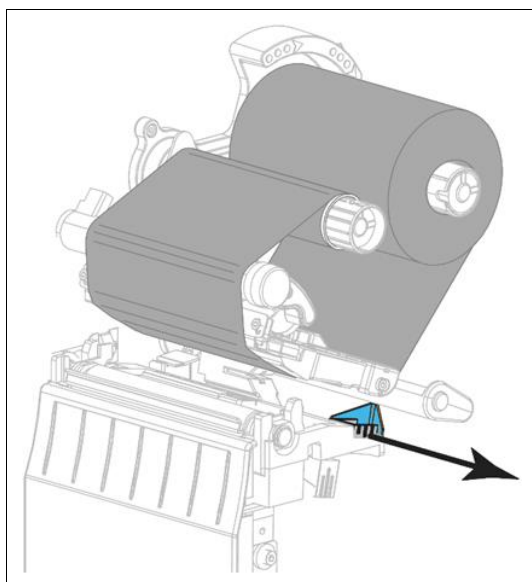
- c. Position the media roll on the media supply bracket. Push the roll to the back as far as it will go.



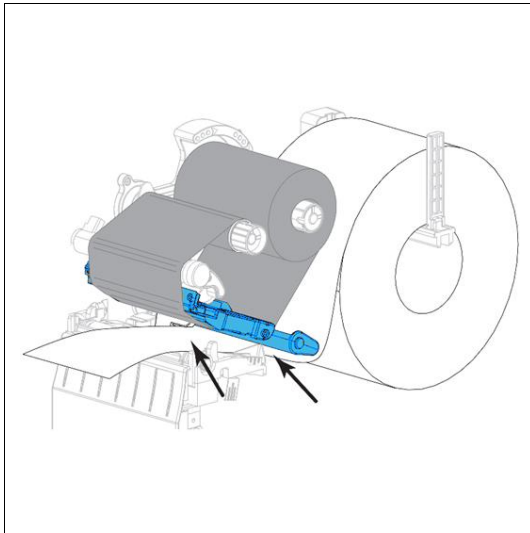
d. Flip the media supply guide upwards.



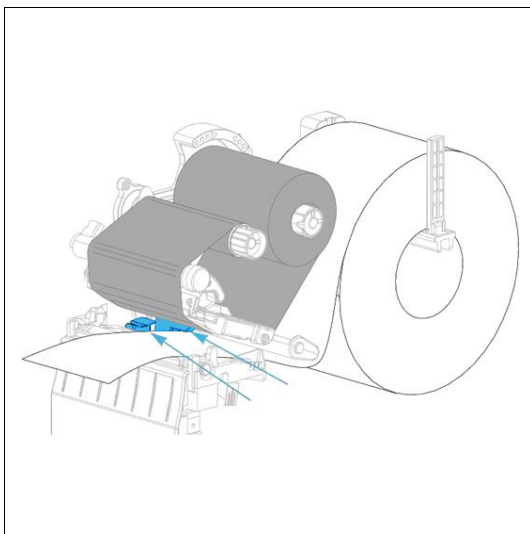
e. Push the media supply guide in until it touches the outer edge of the media roll.



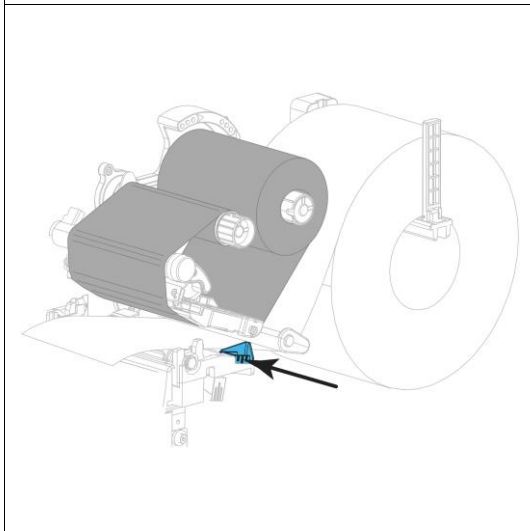
5. Pull out the outer media edge guide completely.



6. Push the media under the media dancer unit and the print head unit. Slide the media through until it protrudes from the front side of the printer.



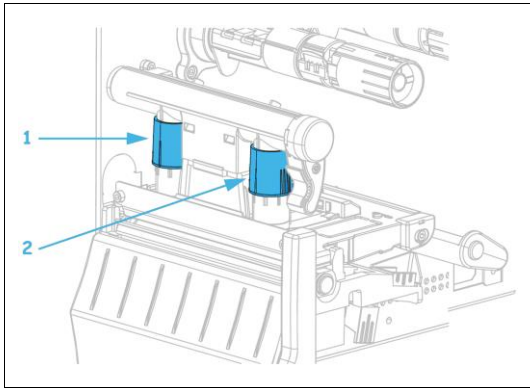
7. Make sure that the medium has passed through the slot in the transmitted light sensor (1) and under the inner media edge guide (2). The media should slightly touch the back end of the slot on the transmitted light sensor.



8. Slide the outer media edge guide in until it touches the edge of the media.
9. Close the Ex p Slot-Printer.

5.4 Print head pressure adjustment

If the printout is too light on one side, or if very thick media is being printed, or if the media shifts laterally during printing, it may be necessary to adjust the print head pressure. Use the lowest possible print head pressure which produces a good print result. The rotary switches for the pressure adjustment of the print head have possible settings between 1 and 4 in half steps.



Position	Designation
1	Inner rotary switch
2	Outer rotary switch

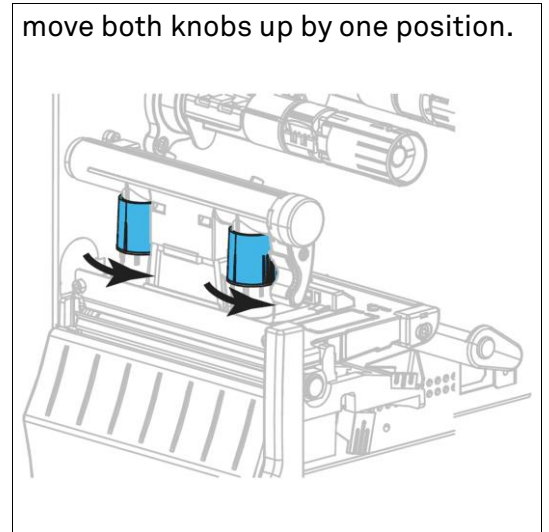
If necessary, change the print head setting for the print adjustment as follows:

If the print media ...

requires a higher pressure in order to achieve good printing results,

then ...

move both knobs up by one position.

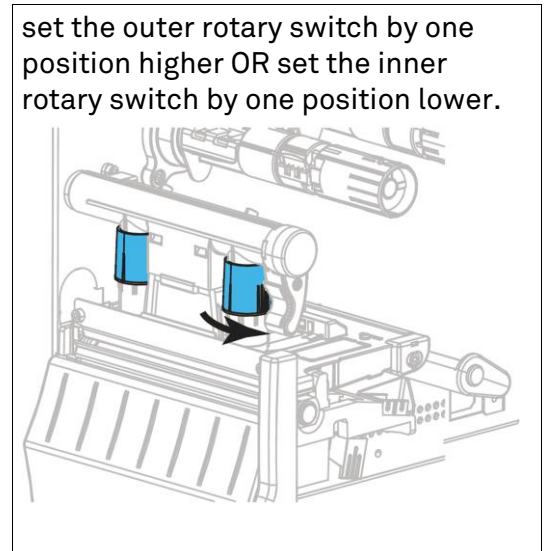


If the print medium ...

slips to the left when printing,

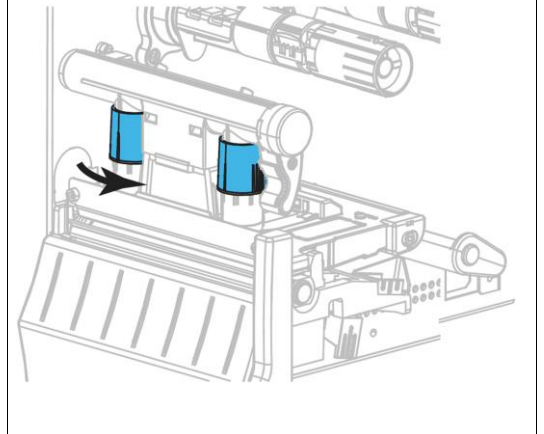
then ...

set the outer rotary switch by one position higher OR set the inner rotary switch by one position lower.



slips to the right when printing,

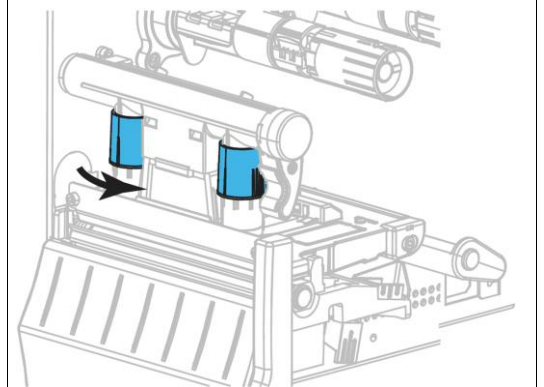
set the inner rotary switch by one position higher OR set the outer rotary switch by one position lower.



If the print medium ...
is printed too bright on the left side of the label,

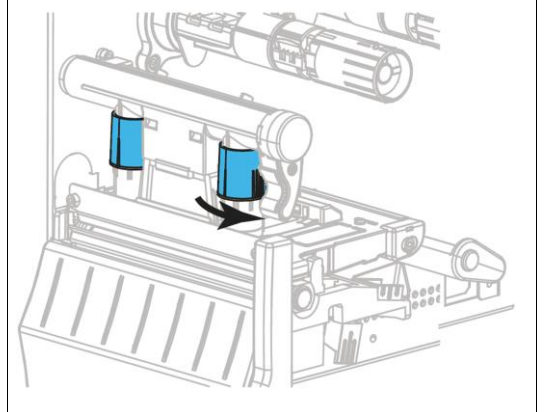
then ...

set the inner rotary switch by one position higher.



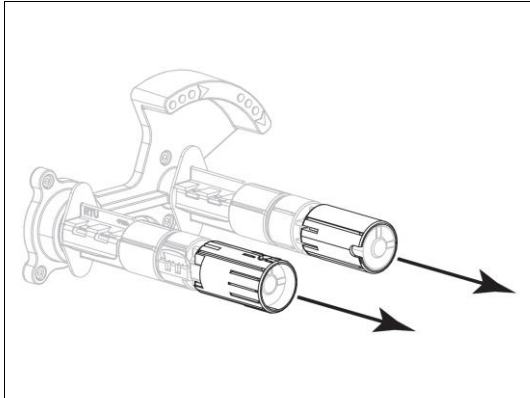
is printed too bright on the right side of the label,

set the outer rotary switch by one position higher.



5.5 Adjusting the ribbon tension

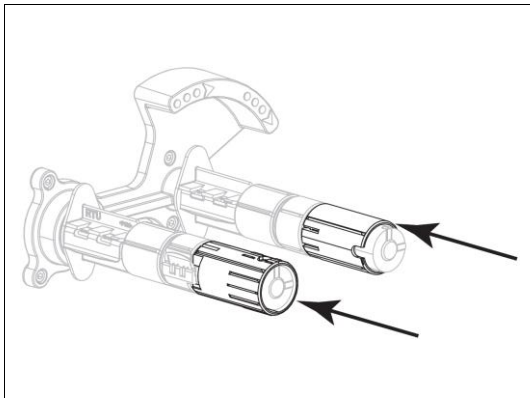
In order to ensure that the printer operates properly, the ribbon supply spindle and ribbon take-up spindle must be used with the same tension setting (normal or low tension). The normal tension is used for most applications. If you are using a narrow ribbon or are experiencing ribbon problems, you may need to set the ribbon to a lower voltage.



Adjusting the ribbon tension

Normal tension adjustment

In order to adjust the ribbon spool to the normal position, pull out the spool end cover until it clicks into place, as it is shown in the following figure. Use these settings for most applications.



Low tension adjustment

In order to set the ribbon spool to the low tension position, slide the spool end cover onto the spool until it snaps into place, as it is shown in the following figure. Use this setting only when it is necessary, for instance, when the ribbon at the beginning of a roll shows any signs of abrasion or jams at the end of the roll at normal tension.

5.6 Purging gas supply

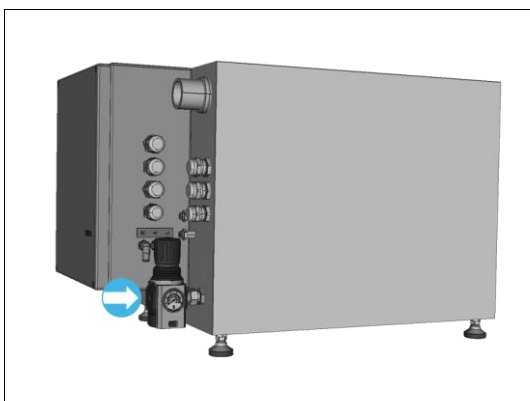
Note



Too little purging gas due to an insufficiently dimensioned purging gas supply line

The pressurized enclosure does not go into operation due to insufficient flow.

- Check the inner diameter of the purging gas supply.



The purging gas supply consists of a pressure reducer, a purging gas valve and a purging gas nozzle.

The pressure reducer for reducing the supplied purging gas pressure is mounted on the outside of the Ex p Slot-Printer.

The purging gas supply is established at the pressure reducer by means of a G ¼" inch connection.

6 Electrical connections



DANGER

Death or serious physical injury from working on live parts!

Danger to life due to electric current.

- The 5 safety rules for working on electrical systems must be observed: Disconnect; secure against reconnection; determine absence of voltage; ground and short-circuit; cover or block off any adjacent live parts.

6.1 Wiring instructions



DANGER

Death or serious physical injury due to opening the cover of the Ex p control unit in an explosive atmosphere!

Explosion hazard.

- Before opening the housing cover, the atmosphere must be checked for the presence of any explosive gases.
- Open only for any maintenance and servicing work.



DANGER

Death or serious physical injury due to improper closures!

Explosion hazard.

- Unused cable glands must be closed with suitable and approved closures.



DANGER

Death or serious injury due to improper installation!

Explosion hazard.

- Tighten cable glands with 3.0 Nm.
- Tighten the lid with 1.4 Nm.



WARNING

Short circuits due to loose or protruding cables in the Ex p control unit!

An explosion may be triggered.

- Connect all single core cables to the terminal, including those which are not required.
- Check that no lines are loose or protruding.



WARNING

Any damages to the seals must be avoided.

The explosion protection concept must be observed.

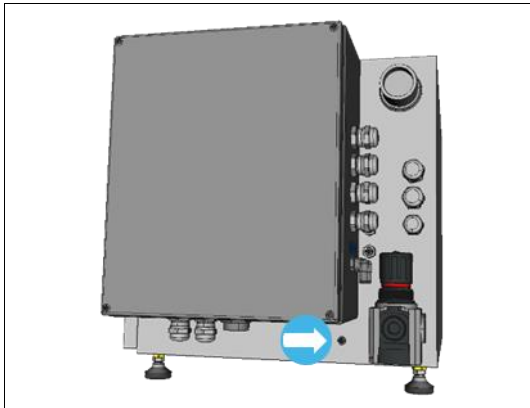
- A visual inspection of the seal must be carried out when closing (good condition, clean and tightly fit).

6.1.1 Inserting and fitting of connection cables

The following describes the procedure for inserting and fitting of connection cables on the Ex p control unit:

- Insert the supply and data line through the cable glands into the terminal compartment and connect or disconnect the conductors by pressing the actuator.
- Place shields and ground connections on the ground terminal.
- Tighten the cable glands with 3.0 Nm.

6.1.2 Earthing



The grounding of a system fulfills protective and functional measures.

Please observe the following points:

- Use the earthing point on the Ex p Slot-Printer.
- Use earth straps with a width of at least 10 mm.

6.1.3 Back-up fuse

i

ATTENTION

PLEASE OBSERVE THE RATED CURRENT OF THE RELEASE CIRCUIT (K1) AND ADD THIS TO THE FOLLOWING VALUES. THE FOLLOWING VALUES ONLY APPLY TO THE EX P CONTROL UNIT.

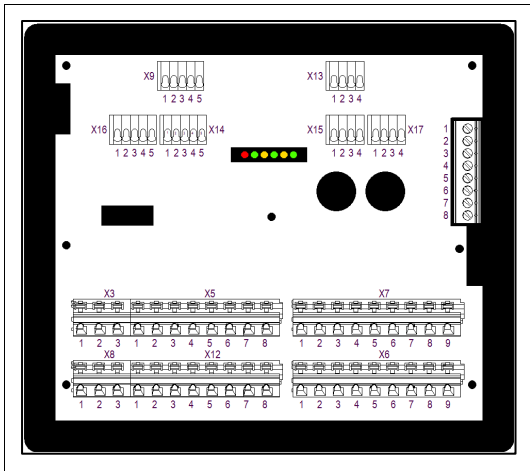
If the dimensions are too small, the Ex p control unit could be destroyed.

- Rated current (controller) + rated current release circuit (K1).

Variant	APEX or SILAS Slot-Printer
Rated current of the control unit	$\geq 2 \text{ A}$
Rated voltage of the control unit	$\geq 277 \text{ V AC}$
Response time	Time-lag
Breaking current	$\geq 1.5 \text{ kA}$
Melting integral	9.7... 14.7 A ² s

6.2 Electrical wiring

6.3 Wiring



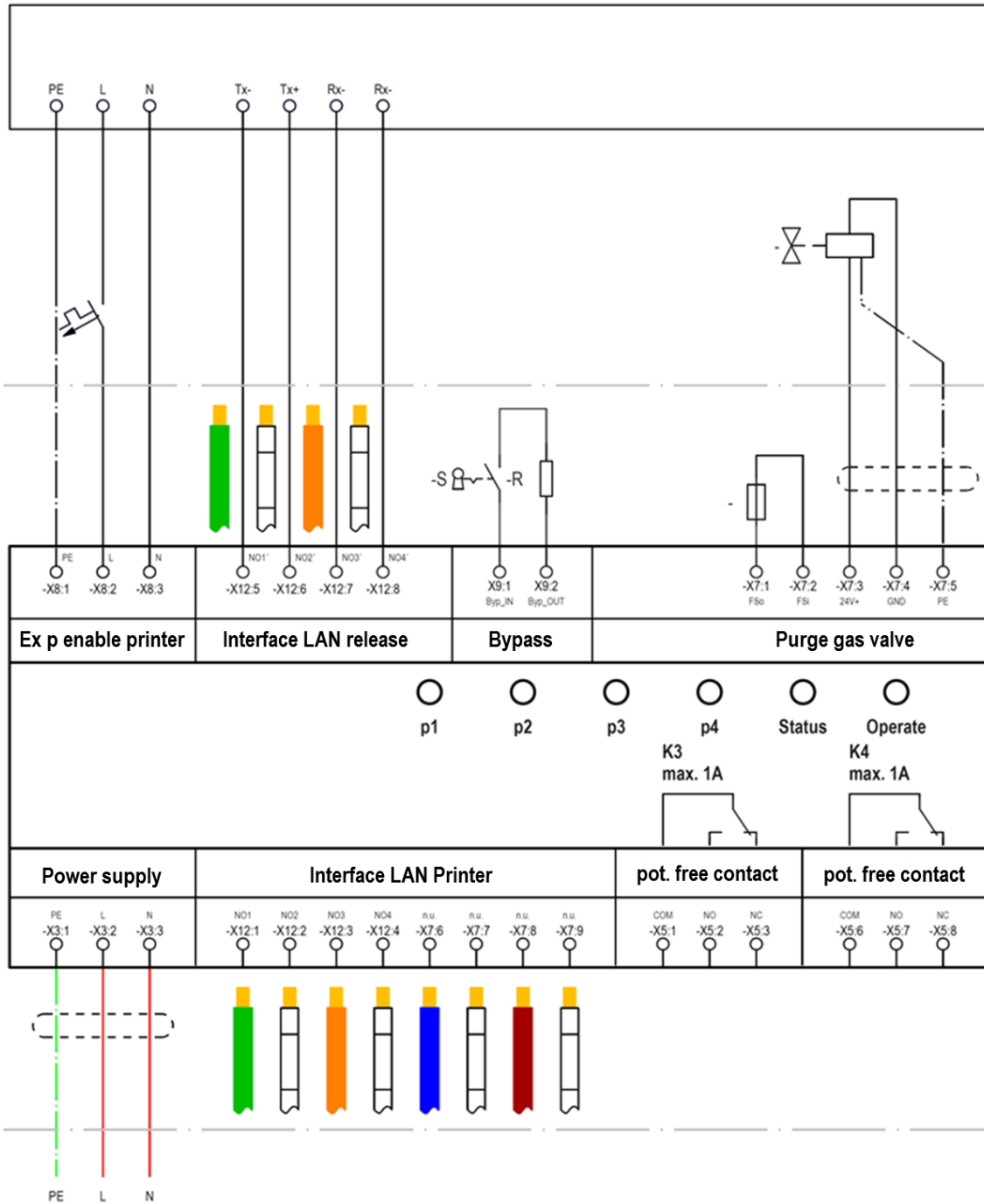
Terminal	Connection
X3	Power supply for the Ex p Slot-Printer
X5	2 x Signal relays, 1 x CO each
X12	Connection type: LAN connection
X7	Connection of unused LAN wires

6.3.1 Cables and connections

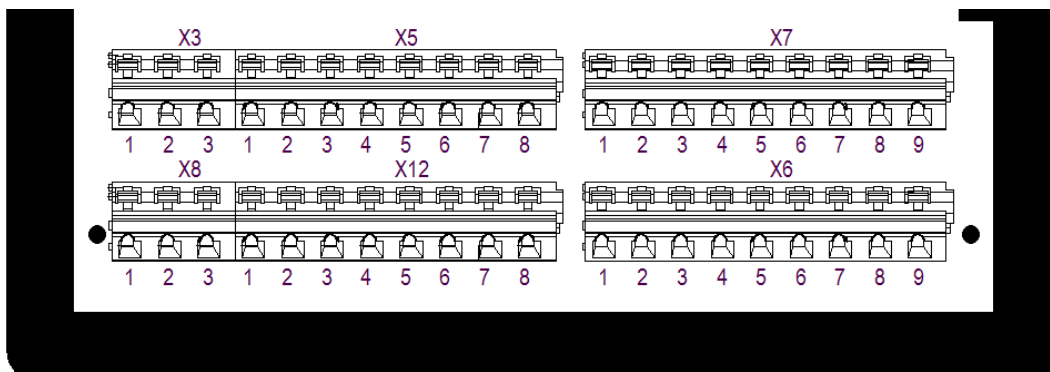
Please observe the following points:

- Divide the lines into groups.
Power cables (power supplies)
Data cables, shielded
- When wiring the LAN connection, it must be ensured that the twisting is routed until shortly before the connection point.
- Avoid any loops in the power supply
- If possible, short cables should be laid. This helps to avoid any coupling capacitances and inductances.
- Use the supplied ferrite core for the power supply.
In this case, the individual conductors must be routed through the ferrite core in a loop.

6.4 Electrical wiring of the Ex p Slot-Printer



6.5 Customer connection



6.5.1 Terminal block “X3” – Power supply

ATTENTION

POTENTIAL PROPERTY DAMAGE DUE TO INCORRECT SUPPLY VOLTAGE.

The internal electronics of the Ex p control unit could be destroyed.

- Before activating the supply voltage, please compare the value of the supply voltage with the specified value that is printed on the control unit.

ATTENTION

Active protective measure

Protect the Ex p Slot-Printer with a back-up fuse.

- As an active protective measure, the supply voltage must be protected by a fuse (at least 1500 A disconnection capacity).

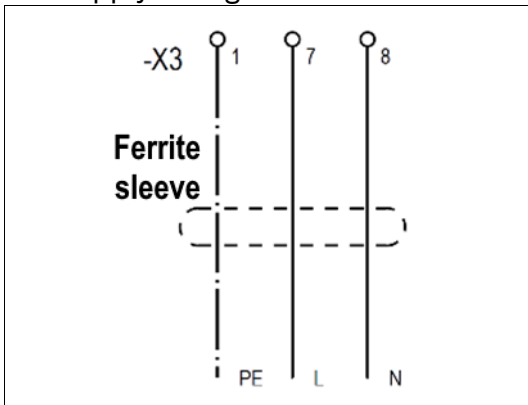
ATTENTION

EMC-compliant wiring

The internal electronics can be disturbed by missing EMC measures and cause unforeseen shutdowns.

- Loop the supplied ferrite sleeve into the power supply.
- See EMC-compliant wiring.

The supply voltage is connected to terminal block X3.

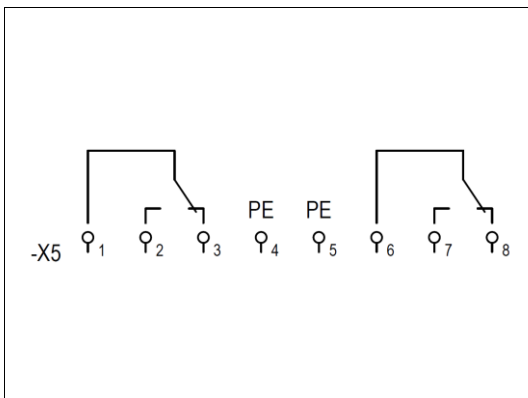


Terminal	Connection
1	PE, Earth wire
2	L, Power supply
3	N, Voltage supply

Procedure for mounting the ferrite sleeve

- Loop the “L” and “N” conductors once through the ferrite sleeve.
- Connect the “L” and “N” conductors to the designated terminals.

6.5.2 Terminal block “X5” – Messages

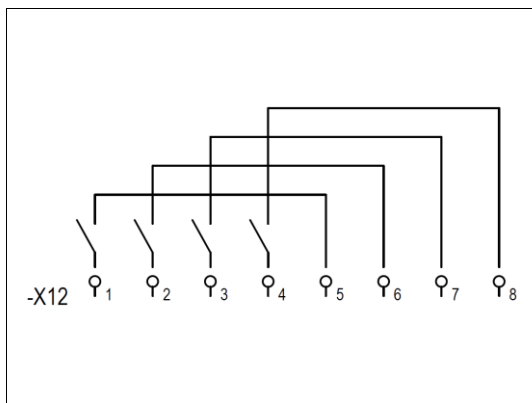


One potential-free changeover contact K3 and K4 each is available on the Ex p control unit for signalling and processing signals.

The associated switching function can be set in the Ex p control unit via the WEB interface and can be freely programmed. The maximum switching current is 1 A.

Terminal	Connection	Function
1	K3 – COM	Foot contact
2	K3 – NO	Normally-open contact
3	K3 – NC	Normally-closed contact
4 / 5	PE	
6	K4 – COM	Foot contact
7	K4 – NO	Normally-open contact
8	K4 – NC	Normally-closed contact

6.5.3 Terminal block “X12” – LAN connection printer



The terminal row X12 with the terminal points 1 to 4 is used to connect the LAN data line.

Terminal	Connection	Function
1	K2_1 - NO	GN User
2	K2_2 – NO	GNWH User
3	K2_3 – NO	OG User
4	K2_4 – NO	OGWH User
5	K2_1´ - NO	GN Installed by BARTEC
6	K2_2´ - NO	GNWH Installed by BARTEC
7	K2_3´ - NO	OG Installed by BARTEC
8	K2_4´ - NO	OGWH Installed by BARTEC

6.5.4 Terminal block “X7”

The terminal block X7 with the terminal points 6 - 9 is intended to receive the unused wires of the LAN connection cable.

Terminal	Connection	Function
1	L1	BU Unused wire
2	L2	BUWH Unused wire
3	L3	BNWH Unused wire
4	L4	BN Unused wire

7 Commissioning



Note

A label offset of approx. 8.3 mm must be set in the printer driver.

7.1 General

We recommend the following procedure for commissioning the Ex p Slot-Printer:

- Unpack and inspect the Ex p Slot-Printer.
Unpack the printer immediately after receipt and inspect it for any transport damage.
Keep all packing material.
Inspect all exterior surfaces for any damage.
Open the Ex p Slot-Printer and inspect it internally for any damage to components.
- If you discover any transport damage during the inspection:
 - Notify the logistics company immediately and file a damage report.
 - Retain all packaging material for inspection by the logistics company.
 - Notify your authorised BARTEC dealer.
- Supply the Ex p Slot-Printer with voltage.
- Establish a direct connection via USB between the setup PC and the Ex p Slot-Printer.
- Activate the bypass key switch.
- Perform all necessary settings, such as IP address, gateway, etc.
- Disconnect USB connection and replace it with an Ethernet connection via Ex p control unit.
- Check the print function via the network.
- Deactivate the bypass key switch.
- Set up the Ex p Slot-Printer at the designated location for the installation.
- Establish the power supply.
- Establish the connection to the Ethernet network.
- Check the print function via the network.

7.2 Setting up the Ex p Slot-Printer

The following steps describe how to prepare the Ex p Slot-Printer for the intended installation site.

Procedure for setting up the Ex p Slot-Printer

- Installing the ZEBRA Setup Software
Software: Zebra Setup Utilities
Download: www.zebra.com/setup
Follow the installation instructions of the ZEBRA software
- Supply power to the Ex p Slot-Printer
- Connect the supply voltage to the X3 control unit.
- Establish a USB connection between the Ex p Slot-Printer and the setup PC.
- Use a USB cable USB-A (PC) to USB-B (printer).
- Activate the bypass key switch.
- The Ex p Slot-Printer is activated.
- Make the intended settings by using the ZEBRA Setup Utilities software.
- Check the settings

7.3 Setting up and commissioning

Set up the printer at the intended installation site.

- Carry out the installation as described in the Section “Installation”.
Purge gas supply
Power supply
Network connection
- Function test
- Purging process
- Automatic activation of the Ex p Slot-Printer
- Test print

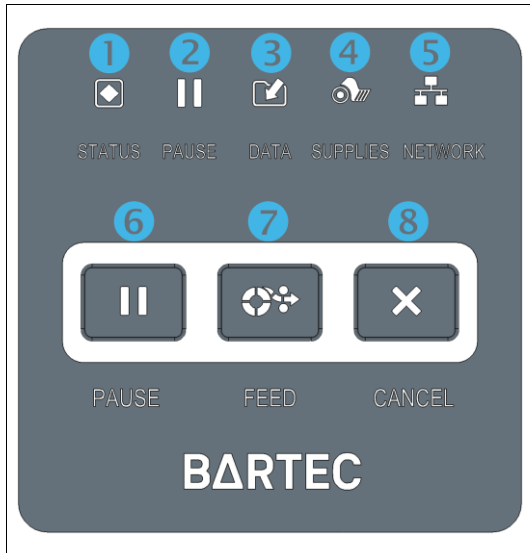
8 Operation

The following sections describe the operation of the Ex p Slot-Printer for the end user. The configuration and setting of the Ex p control unit is described in a separate operating manual.

The complete solution is self-starting after the connection of purging gas supply and supply voltage has been completed.

8.1 Operating the Ex p Slot-Printer

8.1.1 Control panel



Position	Designation
1	Status display
2	Pause display
3	Data display
4	Supplies display
5	Network display
6	Pause button
7	Feed button
8	Cancel button

Indicator lights

The indicator lights show the current status of the printer. For more information, please see Section “Meaning of the Status Indicators” in the Appendix.

Operating keys


Pause button: Pressing the Pause button starts or stops the printer operation.

Feed button: When the feed button is pressed, the printer feeds one blank label at a time.

Cancel button: The Cancel button cancels the label formats when the printer is stopped.

- Press the button once in order to cancel the next label format.
- If you press and hold the button for 2 seconds, all label formats will be cancelled.

8.1.2 Bypass key switch

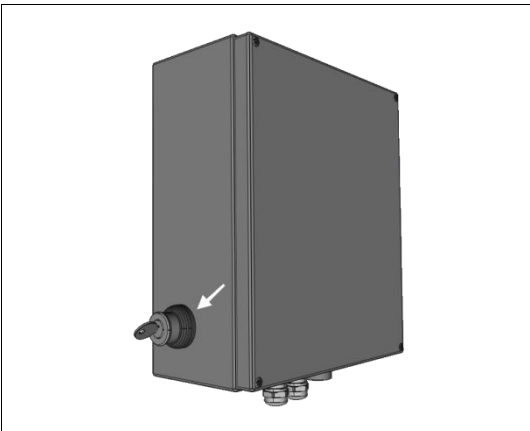


DANGER

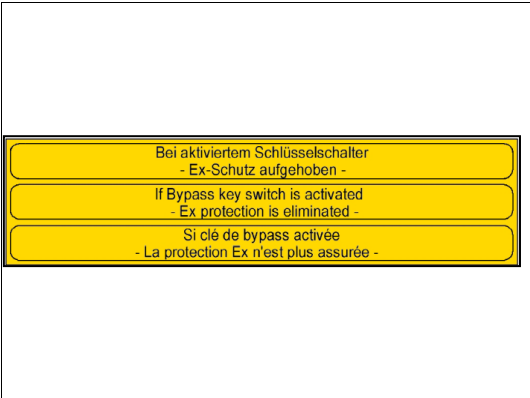
Death or severe personal injury due to startup with bypass key switch in a potentially explosive atmosphere!

Explosion hazard.

- Commissioning with bypass key switch must be approved by the plant manager or his authorised representative. Permission may only be granted if it is ensured that no explosive atmosphere is present for the period of commissioning or if the necessary protective measures against the risk of explosion have been taken (fire permit).
- A marking must be placed in the immediate vicinity of the bypass key switch telling that the Ex protection is eliminated when the key switch is activated.




The bypass key switch integrated on the Ex p control unit serves to support in setting up the printer. In most cases, IP addresses and other settings are not carried out at the installation site. The bypass key switch is integrated so that this can also be carried out without compressed air supply. This eliminates the explosion protection measure and activates the integrated printer even without the supply of purging air. In this way, the intended adjustment tasks can be carried out on the opened Ex p Slot-Printer.



A marking of the bypass key switch shall be carried out in accordance with the following marking plate and must be attached in the immediate vicinity of the bypass key switch.

9 Ex p function test and procedure



DANGER

Death or serious injury due to damaged explosion protection measure!

A safe operation of the Ex p Slot-Printer is no longer possible. Explosion hazard.

- The Ex p Slot-Printer must be taken out of operation and secured against being switched on again.

The operation of the Ex p Slot-Printer can be divided into three phases.

- **Initialisation phase** Ex p Slot-Printer
Activation of purging gas and power supply

- **Purging phase** Ex p Slot-Printer
The Ex p Slot-Printer enclosure is flown through and cleaned with the required amount of purging gas.

- **Operating phase** Ex p Slot-Printer
An overpressure is maintained inside the Ex p Slot-Printer by compensating for any leakage losses and the integrated printer is activated.

The following sequence occurs by the Ex p control system during start-up:

Operating phase	Requirement	Effect
Initialisation phase	Mains voltage connected	Initiation of the purging phase
	Internal pressure < p4 and > p1	
	Purging time has not yet elapsed	
Purging phase	Purging valve opens	Purging time is running
	Internal pressure > p3	
	Internal pressure < p4	
Operating phase	Purging time counts down	Release of the pressurised equipment
	Pre-purge time has elapsed	
	Internal pressure > p1	
	Internal pressure < p4	

10 Maintenance and care



WARNING

Maintenance intervals

If it is used correctly and in accordance with the installation instructions and ambient conditions, the maintenance interval must be observed pursuant to EN 60079-17.

- Maintenance interval max. 3 years.
- Maintenance by qualified personnel.



Note

Maintenance and care

- Observe the currently valid provisions and the national regulations regarding the maintenance, servicing and testing of the operating equipment!
- Any operating and maintenance work may only be performed by trained specialist personnel. The legal regulations and other binding guidelines for occupational safety, accident prevention and environmental protection must be observed.
- When opening any covers or removing parts, live parts may be exposed, unless this is possible by hand. Connecting parts may also be under voltage.

Regular preventive maintenance is an essential part of normal printing operation. If you are careful with your printer, you can minimise the occurrence of any potential problems while achieving and maintaining the desired print quality.

Over time, the movement of media or ribbon across the print head wears away the protective ceramic coating, whereby the print elements (dots) become exposed and potentially damaged.

Here is how you can avoid wear and tear:

- Clean the print head on a regular basis.
- Minimise the print head pressure and the firing temperature (blackening level) settings by optimising the balance between them.
- If you are using thermal transfer printing, please make sure that the ribbon is at least as wide as the media or wider in order to prevent the print head elements from being exposed to the more abrasive labelling material.

10.1 Maintenance work

10.1.1 Visual inspection

Carry out a visual inspection on a regular basis:

- Check the enclosure, cable entries and cables for any damage.
- Check for any contamination.

10.1.2 Cleaning

Special cleaning procedures are described on the following pages. The intervals are only intended as guidelines. You may need to clean more frequently depending on your application and the media used.

Recommended cleaning schedule

Area	Method	Interval
Print head	Solvent *	
Support roller	Solvent *	
Print media sensor	Air flow	Direct Thermal Mode: After each roll of print media.
Ribbon sensor	Air flow	
Media guide	Solvent *	Thermal Transfer Mode: After each ribbon roll.
Ribbon guide	Solvent *	
Clamping roller	Solvent *	
Label guide sensor	Solvent *	Every six months

Zebra recommends using the maintenance kit (Item number: 47362). Instead of using the maintenance kit, you may also use a clean swab that has been dipped in a solution of isopropyl alcohol (90 % minimum) and deionised water (10 % maximum).

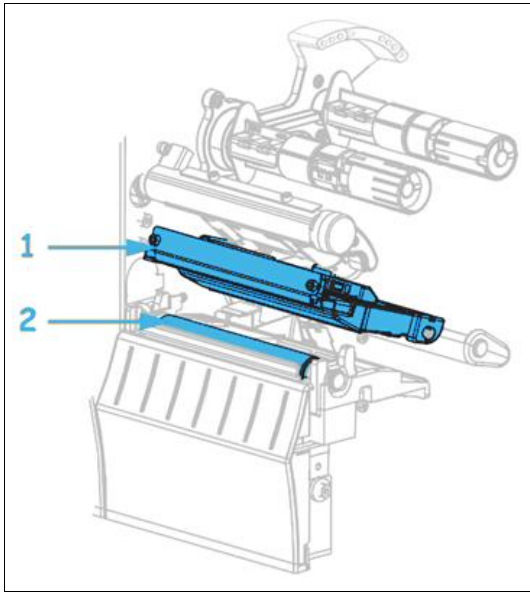
10.1.3 Cleaning of external surfaces, media compartment and sensors

Over time, dust, dirt, and other debris may accumulate on the exterior and interior surfaces of your printer, especially in a harsh operating environment.

External surfaces of the printer: If necessary, you can clean the external surfaces of the printer with a damp cloth and some mild detergent. Do not use any sharp or abrasive cleaning agents or solvents.

10.1.4 Cleaning of print head and support roller

Inconsistent print quality, such as gaps in the barcode or graphics, may indicate a dirty print head.



Position	Designation
1	Print head unit
2	Support roller

Procedure

- Open the Ex p Slot-Printer.
- Turn the print head opening lever upward in order to release the print head unit.
- Remove ribbon and media.
- Take the swab from the Zebra maintenance kit and wipe it back and forth between the ends of the brown bar on the print head assembly. Instead of using the swab from the maintenance kit, you can also use a clean cotton swab dipped in isopropyl alcohol (99.7%). Wait until the solvent has evaporated.
- Manually rotate the support roller and clean it thoroughly with the swab. Wait until the solvent has evaporated.
- Insert the ribbon (provided that it is used) and the media. See Section 5.3 for instructions.
- Rotate the lever to open the print head downwards until the print head clicks into place.
- Close the Ex p Slot-Printer

10.1.5 Regular maintenance of the Ex p monitoring system

Depending on the purity of the purging air that is used, the inlet and outlet of the control unit must be inspected on a regular basis for any contamination (e.g. oil, dust, etc.) or corrosion.

In the event of any abnormalities, the operator should weigh up the possibility of timely proper cleaning at BARTEC GmbH against a spontaneous failure of the control unit.

Furthermore, the function of the entire system should be checked. In this context, the correct sequence of the flushing phase and operating phase should be checked.

10.2 Repairs

Any repairs of the control unit and the Ex p Slot-Printer may only be carried out by BARTEC GmbH.

10.3 Malfunctions and troubleshooting



ATTENTION

A changed operating behaviour can be a sign of an already existing damage of the Ex p Slot-Printer!

- Do not put the Ex p slot printer back into operation until the cause of the malfunction has been eliminated.

It is assumed that the connection of all external electrical and mechanical devices has been carried out properly. Therefore, the proper setup and connection of the electrical devices should be checked first.

10.3.1 Replacing of printer components

Some printer components, such as the print head and support roller, can wear out over time. However, they can be easily replaced. The life of these components can be extended by regular cleaning.

10.3.2 Ordering spare parts

In order to achieve an optimum print quality and proper printer performance with all of our products, BARTEC recommends using only original Zebra accessories. Especially the ZT111 printer has been specifically developed for the use of original Zebra print heads only. Only in this way maximum reliability and print quality can be ensured.

For further information on ordering spare parts, please contact your authorised BARTEC dealer.

11 Technical data – Ex p Slot-Printer

11.1.1 Explosion protection – Ex p Slot-Printer, Zone 1

Type	07-3704-2222/900*
Certifications	ATEX, IECEX, KCs, CCC
Area of use	Zone 1
ATEX	
Certification	BVS 20 ATEX E 060 X
Marking	⊕ II 2G Ex pxb IIC T4 Gb
IECEX	
Certification	IECEX BVS 20.0048X
Marking	Ex pxb IIC T4 Gb
KCs - Korea	
KCS Certification	23-AV4BO-0141X
Marking	Ex pxb IIC T4 Gb
CCC - China	
CCC Certification	2022122304115876
Marking	Ex pxb IIC T4 Gb
Safety device	
Ex p Control unit	APEX ^{px}
Type	07-37A2-2211/2521

11.1.2 Explosion protection – Ex p Slot-Printer, Zone 2

Type	A7-3704-2122/900*
Certifications	ATEX, IECEX, CCC
Area of use	Zone 2
ATEX	
Certification	BVS 20 ATEX E 061 X
Marking	⊕ II 3G Ex pzc IIC T4 Gc
IECEX	
Certification	IECEX BVS 20.0048X
Marking	Ex pzc IIC T4 Gc
CCC - China	
CCC Certification	2022122304115876
Marking	Ex pzc IIC T4 Gc
Safety device	
Ex p Control unit	SILAS ^{pz}
Type	A7-37S2-2111/2521

11.1.3 General

Type	*7-3704-2*22/900*
Operating temperature range	+5 °C to +40 °C @T4
Storage and transport	-25 °C to +60 °C
Humidity	5% to 85%, non-condensing
Mains voltage	100 Vac to 230 Vac, +/- 10%
Current consumption electronics	< 4 A
Max. power consumption	< 50 W
Enable relay K1 (Ex p control unit)	Enable power supply of integrated printer
Enable relay K2 (Ex p control unit)	Enable LAN interface
Signal relays K3 and K4 (Ex p control unit)	Floating, 1x changeover contact, 230 Vac @ 1 A, 24 Vdc @ 1 A
Terminal “Ex e”	0.08 ... 2.5 mm ² (28 ...12 AWG)
With wire end ferrule / plastic collar	0.25 ... 1.5 mm ²
Terminal “Ex i”	0.20 ... 2.0 mm ² (20 ...14 AWG)
With wire end ferrule / plastic collar	0.25 ... 0.75 mm ²
Enclosure material	Stainless steel V4A
Cable glands	2x M20 nickel-plated brass (clamping range: 4 - 12 mm) For power supply and LAN connection
IP degree of protection	IP 4x pursuant to IEC/EN 60079-0 IP 44 pursuant to IEC/EN 60529
Dimensions	375 (W) x 381 (H) x 630 (D) mm
Weight	35 kg

11.1.4 Ex p specific data

Type	*7-3704-2*22/900*
Pressure range	0 ... 25 mbar
Purging time	< 5 minutes
Purging gas valve	proportional
Purging factor	5
Leakage losses	< 20 litres per minute with inserted pressure medium

11.2 Purging gas requirement

Purging gas quantity	Min. 15 m ³ /hour
Purging gas	Industrial compressed air cleaned
Purging gas supply	> 10 mm inner diameter
Purging gas connection	G ¼“ internal thread
Residual dust	< 40 µm
Residual water dew point	Dew point +3 °C
Residual oil content	1 mg/m ³
Temperature	Maximum + 40 °C

12 Ordering information

12.1 Ex p Slot-Printer

Designation	Order number
Ex p Slot-Printer, LAN, 203 dpi, Zone 1	07-3704-2222/9005
Ex p Slot-Printer, LAN, 300 dpi, Zone 1	07-3704-2222/9004
Ex p Slot-Printer, LAN, 203 dpi, Zone 2	A7-3704-2122/9001
Ex p Slot-Printer, LAN, 300 dpi, Zone 2	A7-3704-2122/9002

12.2 Spare parts for the Ex p Slot-Printer

12.2.1 Pressure monitor

Designation	Order number
Pressure control module, Ex p enclosure, 15-mm orifice plate for Ex p Slot-Printer, Type 07-3704-2222/900*	17-51P3-1503
Pressure control module, Ex p enclosure, 18-mm orifice plate for Ex p Slot-Printer, Type A7-3704-2122/900*	17-51P3-1604

12.2.2 Purging gas valve

Designation	Order number
Proportional purging gas valve, brass, DC 24 V	05-0056-0081

12.2.3 Valve fuse

Designation	Order number
Valve fuse 1.6 A	05-0080-1017

12.2.4 Pressure reducer

Designation	Order number
Pressure reducer 1/4", 0.5-6 bar, max. 110 m ³ /h, mounting parts	05-0056-0083

13 Appendix

13.1 Meaning of the status indicators



STATUS indicator lights continuously green

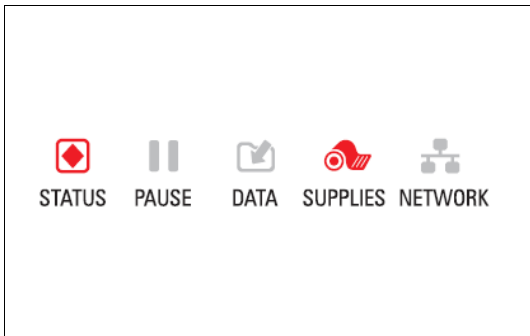
(Other indicators light continuously yellow for 2 seconds during the switching on)

The printer is ready for operation.



PAUSE indicator lights continuously yellow

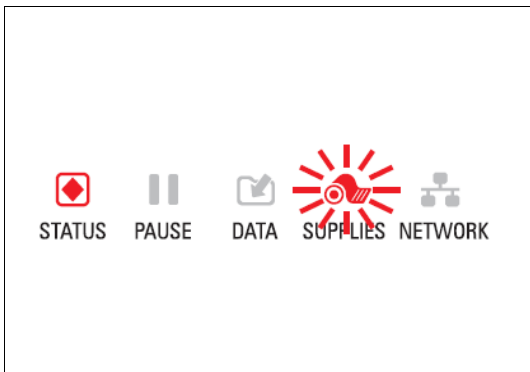
The printing process is interrupted.



STATUS indicator lights continuously red

SUPPLIES indicator lights continuously red

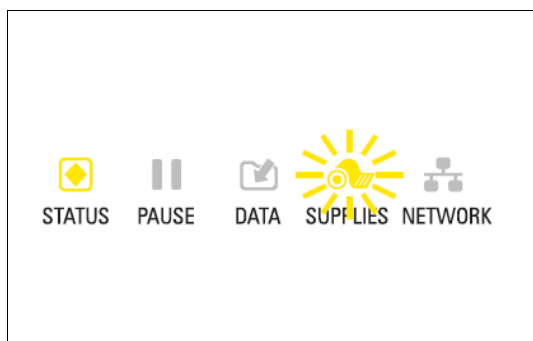
An error has occurred in the media supply. The printing operation can only be continued by user intervention.



STATUS indicator lights continuously red

SUPPLIES indicator flashes red

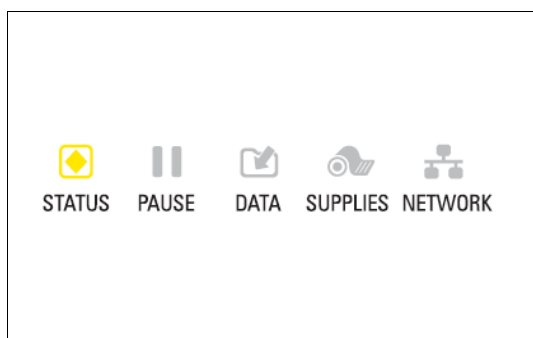
An error has occurred during the ribbon feeding process. The printing operation can only be continued by user intervention.

**STATUS indicator lights continuously yellow****SUPPLIES indicator flashes yellow**

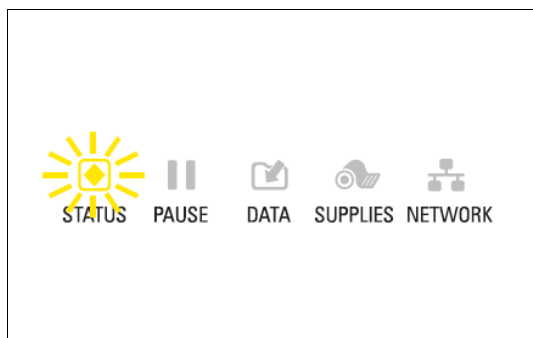
The printer is in direct thermal mode, which does not require the use of a ribbon. However, a ribbon has been inserted into the printer.

**STATUS indicator lights continuously red****PAUSE indicator lights continuously yellow**

The print head cover is open. The printing operation can only be continued by user intervention.

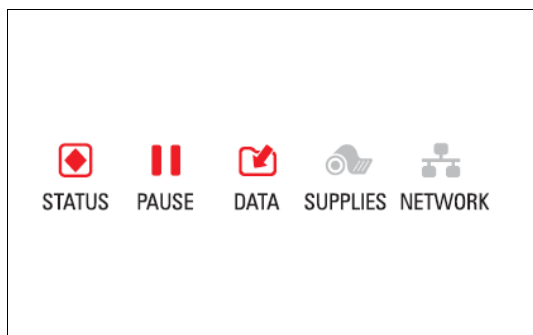
**STATUS indicator lights continuously yellow**

The temperature of the print head is too high.

**STATUS indicator flashes yellow**

The flashing of the indicator may be due to one of the following causes:

- The temperature of the print head is too low.
- The temperature of the power supply is too high.
- The temperature of the printed circuit board is too high.

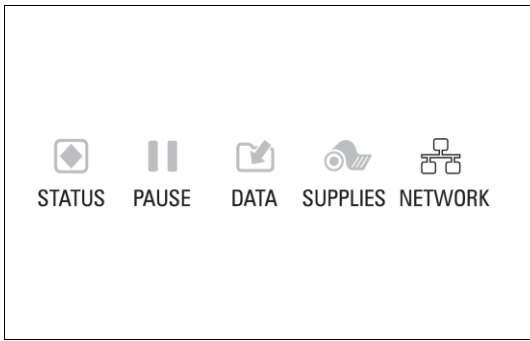
**STATUS indicator lights continuously red****PAUSE indicator lights continuously red****DATA indicator lights continuously red**

The print head has not been replaced with a genuine Zebra print head. A genuine Zebra print head must be installed.



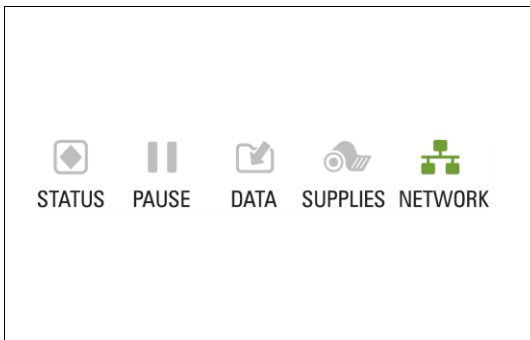
STATUS indicator flashes red

The printer cannot read the DPI setting of the print head.



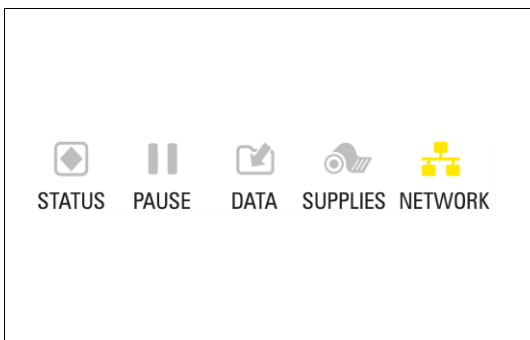
NETWORK indicator light is off

There is no Ethernet link available.



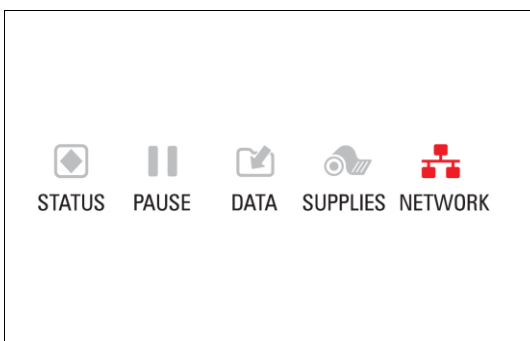
NETWORK indicator lights continuously green

A 100Base-T link has been found.



NETWORK indicator lights continuously yellow

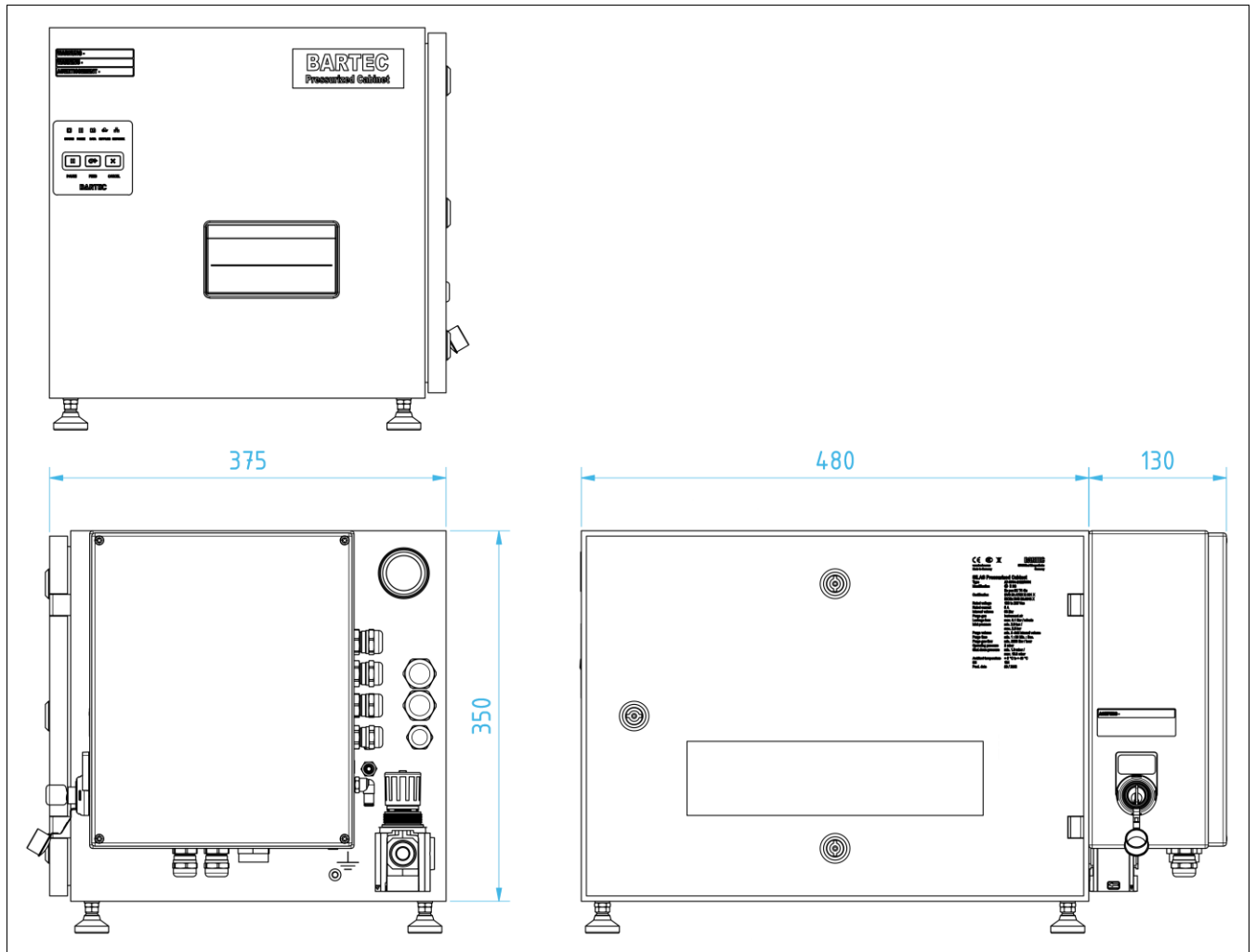
A 10Base-T link has been found.



NETWORK indicator lights continuously red

There is an Ethernet error. The printer is not connected to the network.

13.2 Dimensions of the Ex p Slot-Printer



14 Declaration of Conformity

14.1 Exp Slot-Printer, Zone 1

EU Konformitätserklärung
 EU Declaration of Conformity
 Déclaration UE de conformité
 N° 01-3704-7C0001



Wir	We	Nous
BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
APC – APEX Pressurized Cabinet		

Typ 07-3704-****/****

auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
ATEX-Richtlinie 2014/34/EU	ATEX-Directive 2014/34/EU	Directive ATEX 2014/34/UE
EMV-Richtlinie 2014/30/EU	EMC-Directive 2014/30/EU	Directive CEM 2014/30/UE
RoHS-Richtlinie 2011/65/EU	RoHS-Directive 2011/65/EU	Directive RoHS 2011/65/UE
RoHS-Richtlinie 2015/863/EU	RoHS-Directive 2015/863/EU	Directive RoHS 2015/863/UE
WEEE-Richtlinie 2012/19/EU	WEEE-Directive 2012/19/EU	Directive WEEE 2012/19/UE
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous

EN IEC 60079-0:2018
 EN 60079-2:2014
 EN 60079-11:2012
 EN 62208:2011

EN 61000-6-2:2019
 EN 61000-6-4:2019
 EN 60529:1991 + A1:2000 + A2:2013
 EN 60445:2017

Verfahren der EU-Baumusterprüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié
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BVS 20 ATEX E 060 X

0158, DEKRA Testing and Certification GmbH, Dinnendahlstrasse 9, 44809 Bochum, DE



Bad Mergentheim, 21.08.2020

i.V. Jens Schurwanz
 i.V. Jens Schurwanz
 Global Product Line Manager
 Exp

i.V. Cristian Olareanu
 i.V. Cristian Olareanu
 Team Leader Certification Center

14.2 Ex p Slot-Printer, Zone 2

EU Konformitätserklärung
 EU Declaration of Conformity
 Déclaration UE de conformité
 N° A1-3704-7C0001



Wir	We	Nous
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BARTEC GmbH
 Max-Eyth-Straße 16
 97980 Bad Mergentheim
 Germany

erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
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SPC – SILAS Pressurized Cabinet

Typ A7-3704-**/******

auf das sich diese Erklärung bezieht den Anforderungen der folgen- den Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
ATEX-Richtlinie 2014/34/EU	ATEX-Directive 2014/34/EU	Directive ATEX 2014/34/UE
EMV-Richtlinie 2014/30/EU	EMC-Directive 2014/30/EU	Directive CEM 2014/30/UE
RoHS-Richtlinie 2011/65/EU	RoHS-Directive 2011/65/EU	Directive RoHS 2011/65/UE
RoHS-Richtlinie 2015/863/EU	RoHS-Directive 2015/863/EU	Directive RoHS 2015/863/UE
WEEE-Richtlinie 2012/19/EU	WEEE-Directive 2012/19/EU	Directive WEEE 2012/19/UE
und mit folgenden Normen oder nor- mativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou docu- ments normatifs ci-dessous

EN IEC 60079-0:2018
EN 60079-2:2014
EN 60079-11:2012
EN 62208:2011

EN 61000-6-2:2019
EN 61000-6-4:2019
EN 60529:1991 + A1:2000 + A2:2013
EN 60445:2017

Verfahren der internen Fertigungskontrolle	Procedure of internal control of production	Procédure de contrôle interne de fabrication
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BVS 20 ATEX E 061 X

0158, DEKRA Testing and Certification GmbH, Dinnendahlstrasse 9, 44809 Bochum, DE



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