ES 1200 User Manual

Content

1 Product liability and warranty

1.1 General

This operating manual is part of the technical documentation for the Easy Shrink shrink unit ES1200.

These operating instructions are important in order to operate the device safely, properly and economically. Their attention helps to avoid hazards, reduce repair costs and downtime, and increase the reliability and service life of the entire machine.
Their content corresponds to the state of construction of the device at the time of creation of these operating instructions. Changes to the design and the technical data are reserved due to continuous further development and customer specific design.

Therefore, no claims can be derived from the content of these operating instructions (information, graphics, drawings, descriptions, etc.) The error is reserved!

These instructions shall be read and applied by any person responsible for working with the equipment:

- Operation

  including setup, troubleshooting in the workflow, disposal of production waste, care, disposal of operating and auxiliary materials

- Maintenance

  Maintenance, inspection, repair

- Transport

In addition to the operating instructions and the binding regulations for accident prevention applicable in the country of use and at the place of use, the recognized technical rules for safety and professional work must also be observed, as well as the respective workshop-specific rules.

If you have any questions, please do not hesitate to contact us. You can reach us at the address on the cover page.

If you notice any typographical errors, incomprehensible information or misinformation when reading these operating instructions, please let us know.

1.2 Warranty

The device is expected to maintain its performance, operational safety and work accuracy for many years. However, this is only guaranteed if the regulations for operation, maintenance and servicing are complied with.

During the warranty period, any disturbances that occur will be eliminated in accordance with our warranty terms and conditions. Unauthorized conversions and changes cause immediate loss of the manufacturer's warranty and all consequences thereof are at the expense of the operator. This applies in particular to such changes that impair the safety of the device.

Warranty is assumed exclusively for original spare parts.

This operating manual does not extend our terms and conditions of sale and delivery.

1.3 Intended use

The Easy Shrink shrink units are used for the thermal clamping and releasing of machining tools in shrink chucks as well as to support the cooling of the heated tool holders.

Any other use is not in accordance with the requirements. We are not liable for any resulting damages. The risk is borne solely by the operator.

The intended use includes the observance of the operating instructions and compliance with the prescribed inspection and maintenance intervals.

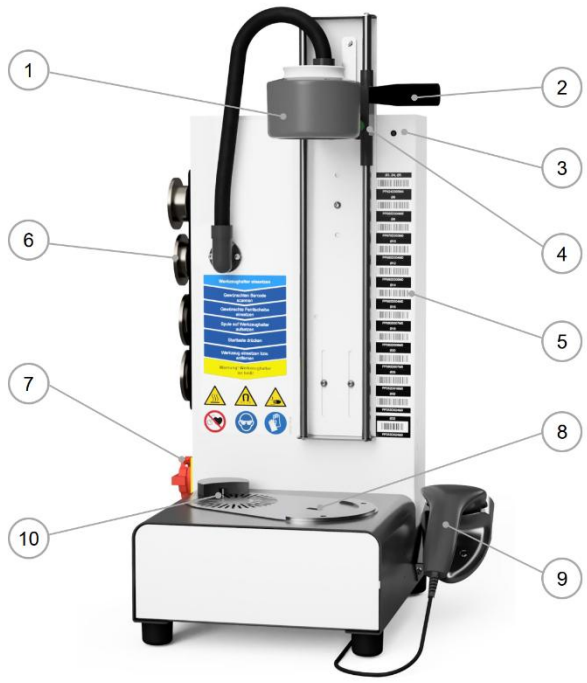


Figure 1: Easy Shrink ES1200

1 Coil
2 Hand lever
3 Operation indicator
4 Pushbutton coil
5 Predefined barcodes (only for ISG1200)
6 Pole disc storage
7 Main switch power supply
8 N/A in this model
9 Barcode scanner (only for ISG1200)
10 Pushbutton aircooling (except for ISG1001)

1.4 Cleaning and maintenance

The surface of the device can be cleaned with a damp cloth. Make sure that no liquid is allowed to penetrate into the device. Rub the guide rods of the coil unit regularly with a lint-free cloth to avoid contamination of the guide bushings.

1.5 Service

For special problem solutions as well as for repairs and all changes that are not described in this operating manual, we are at your disposal. If you have any problems or questions, make a note of the device serial number and the serial number of the generator. The serial number of the device can be found on the nameplate on the left side of the device.

1.6 Symbols and pictograms

The following hazard warnings are used in the operating instructions.

	**Caution**	Possibly imminent danger. If this is not avoided, slight or minor injuries can be the result.
	**Warning**	Possibly imminent danger. If this is not avoided, death or serious injuries can be the result.
	**Danger**	Possibly imminent danger. If this is not avoided, death or serious injuries are the result.

Furthermore, general information is used.

	**Hint**	Identifies a potentially harmful situation. If this is not avoided, the device or something in its environment can be damaged.

Additionally, these imperative instructions must be strictly followed.

	Wear safety glasses!	Risk of eye injury.
	Wear gloves!	Risk of injury from cuts or burns.
	Follow the instructions for use!	Danger due to incorrect operation and wrong action.

2 Safety

The induction device is built according to the state of the art at the time of delivery and is safe to operate. Nevertheless, the device may pose a risk if it is not used by trained or at least instructed personnel for its intended use.

Therefore, please note:

Before commissioning and operating the device, read the operating instructions carefully and familiarize yourself with the operating elements!

The operating instructions are part of the induction device and must always be easily accessible, legible and complete for all persons working with the system.

The device may only be operated by trained, instructed personnel!

The device may only be operated as intended and in a functional condition!

The induction device is designed and calibrated for changing tools of the Easy Shrink series of shrink fit chucks. When used with other chuck designs, problems can occur, to the extent of permanent damage to chucks or the induction device itself.

If you make any interventions or modifications to the device, any warranty of the manufacturer expires immediately. The risk of endangering the life and limb of the user or third parties as well as damage to the induction device and other material assets is borne by the operator!

2.1 Choice of installation location

The Easy Shrink shrink unit is designed as a tabletop unit and should be installed safely and vibration-free in a dry and clean workplace.

Protect the device from dirt, dust and splashing water!

Direct sunlight should be avoided.

2.2 Dangers from electrical energy

In the device there are current-carrying components with contact-hazardous voltages.

Keep the following points in mind for your safety:

	**Electrical hazards**	The device must not be operated with the housing open! The device may only be opened by our service personnel! Keep the device clean and clean it regularly! Avoid the ingress of metal chips, conductive dust like graphite, or liquids!

2.3 Dangers from hot temperatures

The very effective induction heating heats only the relevant edge zones of the chucks with low heat input. The surface of the chucks is heated up to approx. 400°C (750°F). Coil and other components of the shrink device do not heat up or only insignificantly in proper operation.

	**Risk of combustion on hot parts**	The heat is distributed from the heating zone area to the tool and chuck if a chuck is not cooled appropriately immediately after the heating process! Do not stop the chuck from cooling after the shrinking process! Only use shrink fit chucks. There is a risk of injury when heating other chucks, especially for hydraulic clamping chucks!

For your own safety when working with the device, follow the following protective measures:

	**Fire**	The device must not be operated in potentially explosive environments! Do not use highly flammable detergents! Make sure that hot parts cannot be touched accidentally! When shrinking tools, wear the supplied gloves to protect against burns and cuts! Place hot tools on the non-flammable, heat-resistant base! Apart from the chuck and tools, do not bring any metallic objects into the interior of the induction coil, otherwise they will also heat up! Do not reach into the heating area of the coil during operation, as rings or chains, for example, heat up very quickly! Wear safety glasses when shrinking! When heating, fragments of tools or chucks can flake off and cause injuries!

2.4 Protection of chucks against overheating

When heating shrink chucks, observe the manufacturer's specifications.

	**Hint**	Shrinking too long or heating up a chuck several times in a short time can lead to overheating of the chuck and the tool. Therefore, when shrinking, the shrinkage time should be kept as short as possible. Avoid overheating of the chucks due to too long heating times! Do not re-heat a heated chuck again without prior cooling to room temperature.

2.5 Dangers from electromagnetic radiation

With proper use of the system, no hazardous electromagnetic radiation is emitted to the environment. The radiation safety of the device is tested in accordance with the EC Machinery Directive.

	**Electro-magnetic fields**	The shrinking process must not be started without the ferrite disc being attached. If the induction heating is started without the ferrite disc attached, the magnetic field also acts in the immediate area above the coil.

	**Electro-magnetic fields**	The shrinking process must not be started without a tool holder being present inside the induction coil. If the induction heating is started without a tool holder present inside the induction coil, the magnetic field also acts in the immediate area below the coil.

	**Danger of death for implant wearers and pacemakers**	There may be a risk of death for implant wearers, especially pacemakers! As a wearer of an implant, especially with a pacemaker, keep a safety distance of 3 m unless it is clarified with the manufacturer of the implant or your doctor that the implant remains unaffected by the induction field.

2.6 Special hazards

	**Risk of crushing and cutting**	Make sure that you do not bring any body parts or objects into the range of motion of the coil during the operation of the induction device. The weight of the coil can cause bruises and, in combination with the tool cutting edge, cuts.

	**Danger of high voltages**	By using non-Easy Shrink shrink chucks, hot parts of the chucks can come in contact with the coil housing and damage the insulation. In the event of any damage to the coil body and / or electrical device, the device must be shut down immediately and you should contact the manufacturer.

3 Installation and commissioning

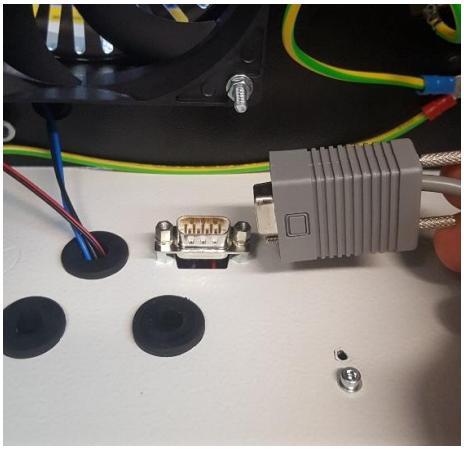
3.1 Assembly

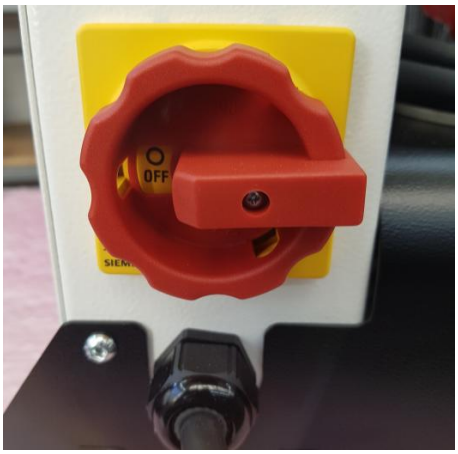
	**Hint**	When unpacking the device, make sure that it does not suffer any damage. Observe the order of assembly.

Choose a flat, sturdy table top as a suitable installation space.

3.2 Assembly

Proceed as follows during assembly:

	Carefully lay the device on its back and connect the plug of the scanner cable. Secure the cable with the thumb screws.
	Pay attention to a flat installation location and verify that the device stands sturdy, without wobble. A firm stand of the device can be ensured via the adjustable foot on the device. Loosen the transport securing screw all the way. Move the coil up and down on the handle to check that it is moving freely.
	Loosen the two marked screws until you can insert them into the slots in the scanner holder. The third screw on the housing must not be loosened, otherwise the shrink position may change. If the shrink position has changed, it can be adjusted again (see 3.4). Screw the scanner holder to the side of the unit.

	Turn on the device at the main switch. The device is now ready for operation and the LED display lights up (see 4.5)

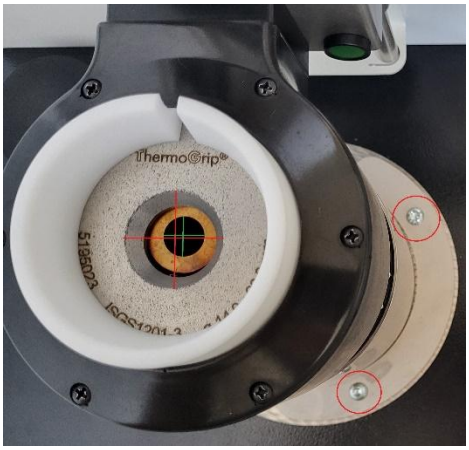
3.3 Setting the minimum and maximum shrink height

	If you want to adjust the shrink height, there are three height settings available. To change the height, remove the top screw, as shown and loosen the two screws at the bottom. Re-attach the top screw at the desired height position and then tighten the bottom screws.

3.4 Adjustment of the shrink position

The shrink position is already preset at the factory.

Only readjust the shrink position if axis offsets have occurred between the coil and the tool holder.

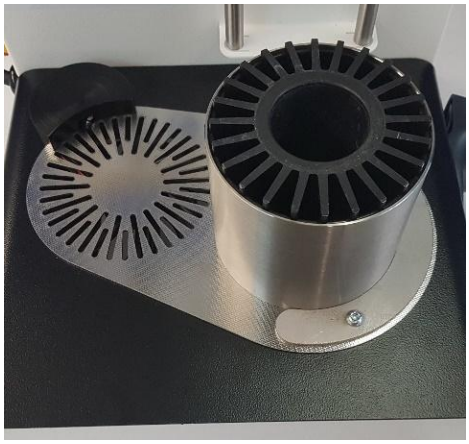
	If the inserted ferrite disc is not concentric with the tool holder, the shrink position can be fine-tuned. Minor errors can be compensated by loosening the screws marked in the picture and then readjusting the crescent-shaped positioning plate.
	Larger deviations must be adjusted via the lateral screws on the generator housing. To do this, loosen the two marked screws and position a tool holder concentrically under the coil. Tighten the screws again in this position.

4 Operation of the devices

A shield enclosing the coil largely prevents stray magnetic fields. Control and high-frequency generator are integrated in the housing. Only a single coil is required for all clamping diameters. All cables to the movable coil are protected.

	**Risk of eye injury**	During the heating phase, parts of the heated metal surface can chip off and cause injuries. Wear safety glasses.
	**Risk of injury to cuts**	Sharp edges or metal chips adhering to the tool can cause cuts. Wear protective gloves.
	**Risk of combustion**	The heat is distributed from the heating zone to the tool and chuck if a chuck is not cooled appropriately immediately after shrinking! Do not stop the chuck from cooling after the shrinking process! Only use shrink fit chucks. When heating other chucks, especially in the case of hydraulic chucks, there is a risk of injury!

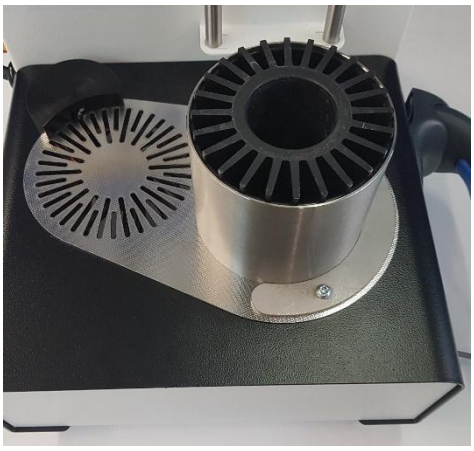
4.1 Setup Coil and Base

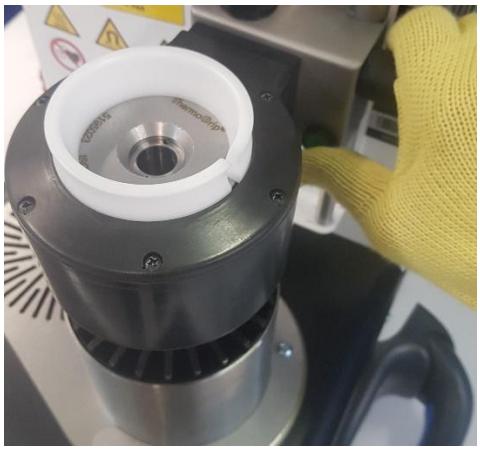
	To remove the disk, compress the white plastic clamping ring manually. Insert the appropriate pole disc (see 4.6.1) for the tool holder and the tool into the coil and secure it again with the clamping ring. Move the coil to the top end position.
	Place the appropriate setting pot in the shrink position under the coil.
	Insert the tool holder into the setting pot.

	Position the coil on top with the tool holder. Press the push button. The heating process starts and stops when the push button is released. During the heating process, the LED indicator flashes (see 4.5).
	Insert the tool into the tool holder or remove the tool that has already been inserted.

	**Warning**	Due to the necessary shrink temperatures, move the hot chucks until they cool down only in the appropriate setting pots and always wear protective gloves. Touch the chuck only with gloves and only at the flange of the interface and not in the heated zone! The maximum gripping time must not exceed 5 seconds even with protective gloves!

	Return the coil to the top end position.
	For safe cooling after tool change, a matching cooling adapter is fitted over the tool holder. The tool holder can then be safely moved to the rear stop on the sliding plate and the next shrinking process can be started.
	Push the tool holder into the cooling position. Depending on the tool holder, the required cooling time varies.

	To remove the disk, compress the white plastic clamping ring manually. Insert the appropriate pole disc (see 4.6.3) for the tool holder and the tool into the coil and secure it again with the clamping ring. Move the coil to the top end position.
	Place the appropriate setting pot in the shrink position under the coil.
	Insert the tool holder into the setting pot.

	Use the handheld scanner to scan the appropriate barcode for the tool holder (see 4.6.3) to set the operating parameters for the next shrink operation. When a barcode has been successfully scanned, the LED starts flashing (see 4.5) The scanned shrink parameters are stored for 30 seconds and then automatically deleted.
	Position the coil on top with the tool holder. Press the push button. If you use predefined parameters, the heating process stops automatically after the set time elapsed. If you use manual parameters, the heating process stops when the push button is released. During the heating process, the LED indicator flashes (see 4.1).
	Insert the tool into the tool holder or remove the tool that has already been inserted.
	**Warning** Due to the necessary shrink temperatures, move the hot chucks until they cool down only in the appropriate setting pots and always wear protective gloves. Touch the chuck only with gloves and only at the flange of the interface and not in the heated zone! The maximum gripping time must not exceed 5 seconds even with protective gloves!

	Return the coil to the top end position.
	For safe cooling after tool change, a matching T3-K cooling adapter is fitted over the tool holder. The tool holder can then be safely moved to the rear stop on the sliding plate and the next shrinking process can be started.
	Push the tool holder into the cooling position. Cooling is started automatically via a switch. Be sure to give the tool holder sufficient time to cool down (cooling time about 300 seconds depending on the tool holder). Move the tool holder back to the shrinking position to stop the cooling.

4.2 LED Display Concept

There is an LED in the upper right area of the ES1200 for the operating status display. The operating state is coded as follows:

LED Status	Status	Procedure
LED On	**Ready for operation**	Waiting for a valid input of parameters by barcode.
LED flashes On 1 sec. Off 1 sec.	**Ready for operation**	Scanned parameters by barcode were accepted.
LED flashes On 0.25 sec. Off 0.25 sec.	**Induction process running**	If you use predefined parameters, the heating process stops automatically after the set time is reached. If you use manual parameters, the heating process stops when you release the actuation switch.
LED pulses 2 pulses	**Error** Si-circuit error or Overheating error.	Switch off the device and test the functionality after 15 minutes. If the error still occurs, please contact your service partner.
LED pulses 3 pulses	**Error** Overvoltage error or Overcurrent error or Over coil current error.	Switch off the device and test the functionality after 15 minutes. If the error still occurs, please contact your service partner.
LED pulses 4 pulses	**Error** Other errors.	Switch off the device and test the functionality after 15 minutes. If the error still occurs, please contact your service partner.
LED Off	**Error** Missing voltage supply or serious error.	Check whether the main switch of the device is switched on. Check the power supply to the machine. If the error still occurs, please contact your service partner.

4.3 ES1200 Coil Location Disk

Clamping Ø in mm	ferrite disc	Shaft tolerance	Tool shaft
3, 4, 5	ES-CLD-0	h6	carbide
6, 8	ES-CLD-1	h6	carbide
10		h6	HSSE/ carbide
12	ES-CLD-2	g6	HSSE/ carbide
12,7		h6	HSSE/ carbide
14, 16, 18		g6	HSSE/ carbide
19,05		h6	HSSE/ carbide
20, 25		g6	HSSE/ carbide
32	ES-CLD-3	g6	HSSE/ carbide

4.4 ES1200 – Parameter input via barcode scanner and overview of ferrite discs and shrinkable tool shanks

The supplied barcode scanner is used to enter parameters that are used for the subsequent shrinking processes. Align the red target beam to the barcode to be scanned and press the shutter button on the barcode scanner. The device acknowledges a successful read-in process with a beep.

	**Hint**	The predefined barcodes are only valid for original Easy Shrink tool holders of type-T. Other types and makes of tool holders may require custom parameters and thus custom barcodes. Contact your tool holder manufacturer if you have any questions.

Automatic parameters:

Heating stops automatically when the preset shrinkage time is reached.

Clamping Ø in mm	ferrite disc	Time in s	Power in %	Tool shaft	Barcode
3, 4, 5	ES-CLD-0	5,4	24	carbide Ø3, 4 h4 Ø5 h5	PP024D005M4
6	ES-CLD-1	4,5	65	carbide h6	PP065D004M5
8	ES-CLD-1	3,2	65	carbide h6	PP065D003M2
10	ES-CLD-1	4,2	76	HSSE/ carbide h6	PP076D004M2
12	ES-CLD-1	6,6	76	HSSE/ carbide h6	PP076D006M6
14	ES-CLD-2	4,0	77	HSSE/ carbide h6	PP077D004M0

16	ES-CLD-2	7,0	77	HSSE/ carbide h6	PP077D007M0
18	ES-CLD-2	6,5	60	HSSE/ carbide h6	PP060D006M5
20	ES-CLD-2	8,8	65	HSSE/ carbide h6	PP065D008M8
25	ES-CLD-2	19,0	39	HSSE/ carbide h6	PP039D019M0
32	ES-CLD-3	21,0	44	HSSE/ carbide h6	PP044D021M0

Clamping Ø in mm	ferrite disc	Time in s	Power in %	Tool shaft	Barcode
3	ES-CLD-0	4,5	11	carbide h4	PP011D004M5
4	ES-CLD-0	5,0	13	carbide h4	PP013D005M0
5	ES-CLD-0	3,0	14	carbide h5	PP014D003M0
6	ES-CLD-1	2,5	34	carbide h6	PP034D002M5
8	ES-CLD-1	3,0	45	carbide h6	PP045D003M0

10	ES-CLD-1	2,0	53	carbide h6	PP053D002M0
12	ES-CLD-1	3,5	56	carbide h6	PP056D003M5
14	ES-CLD-2	2,5	62	carbide h6	PP062D002M5
16	ES-CLD-2	2,5	67	carbide h6	PP067D002M5
20	ES-CLD-2	3,0	77	carbide h6	PP077D003M0
25	ES-CLD-2	6,5	63	carbide h6	PP063D006M5

Manual parameters:

Heating stops by releasing the actuation switch

Power in %	Barcode
Max. power 80% = 8kW	PP080

5 Appendix

5.1 Specifications ES1200

Induction unit	ES1200TLK-8-US
Voltage:	3 x 480 V / 60 Hz
Current consumption, maximum:	3 x 15 A
Generator power:	8 kW
Mass:	20 kg
Dimension: Depth: Width: Height:	 400 mm 320 mm 760 – 840 mm
Environmental conditions: Temperature Relative humidity Atmospheric pressure	 +5°C … +40°C (+40°F … +105°F) 5% … 85%, no condensation, no icing 86kPa … 106kPa

5.2 EC Declaration of Conformity

Within the meaning of the EC – Machinery Directive 2006/42/EC

Bilz Werkzeugfabrik GmbH & Co. KG

hereby declares that the machine referred to below complies with the following relevant provisions due to its design and design as well as in the version placed on the market by us.

Name of the machine:	Induction unit
Machine:	ISG1001 / ISG1201 / ISG1202 / ISG1200
Relevant EC Directives:	EC Machinery Directive 2006/42/EC
	EC EMC Directive 2014/30/EC
	Low Voltage Directive 2014/35/EU
Harmonised standards applied, in particular:	EN ISO 12100:2010
	EN 60204-1:2006+A1:2009
	EN 61000-6-2:2005
	EN 61000-6-4:2007 + A1:2011
	EN 55011:2009 + A1:2010
	EN 60519-1:2015
	EN 60519-3:2005
National standards applied (USA):	FCC 47 CFR Ch. I (Edition 10-1-01), Part 18 C

In the event of any change to the machine that has not been agreed with us, this declaration shall cease to apply.

T H E C O M P A N Y

Company name:	Bilz Werkzeugfabrik
Legal form:	GmbH & Co. KG
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Fax:	+49 (711) 348-1256
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Internet:	www.bilz.de
Name of authorised representatives of the technical documentation:	Bilz Werkzeugfabrik GmbH & Co. KG

Ostfildern, August 2023
Managing director: Michael Voss

5.3 Instructions for use 5-finger protective gloves

Description: 5-finger heat debriszip gloves; Outer layer of para-aramid yarn (KEVLAR) Fine knit lined with aramid felt and 100% Nornex knit

Availability: Size 10

Colour: yellow

Manufacturer: JUTEC GmbH, Mellumstr. 23-25, D-26125 Oldenburg

Description: These gloves are designed to protect your hands. They are from the above mentioned. Material manufactured. Characteristic of these gloves are the long service life and the excellent wearing comfort.

Category: CE 95

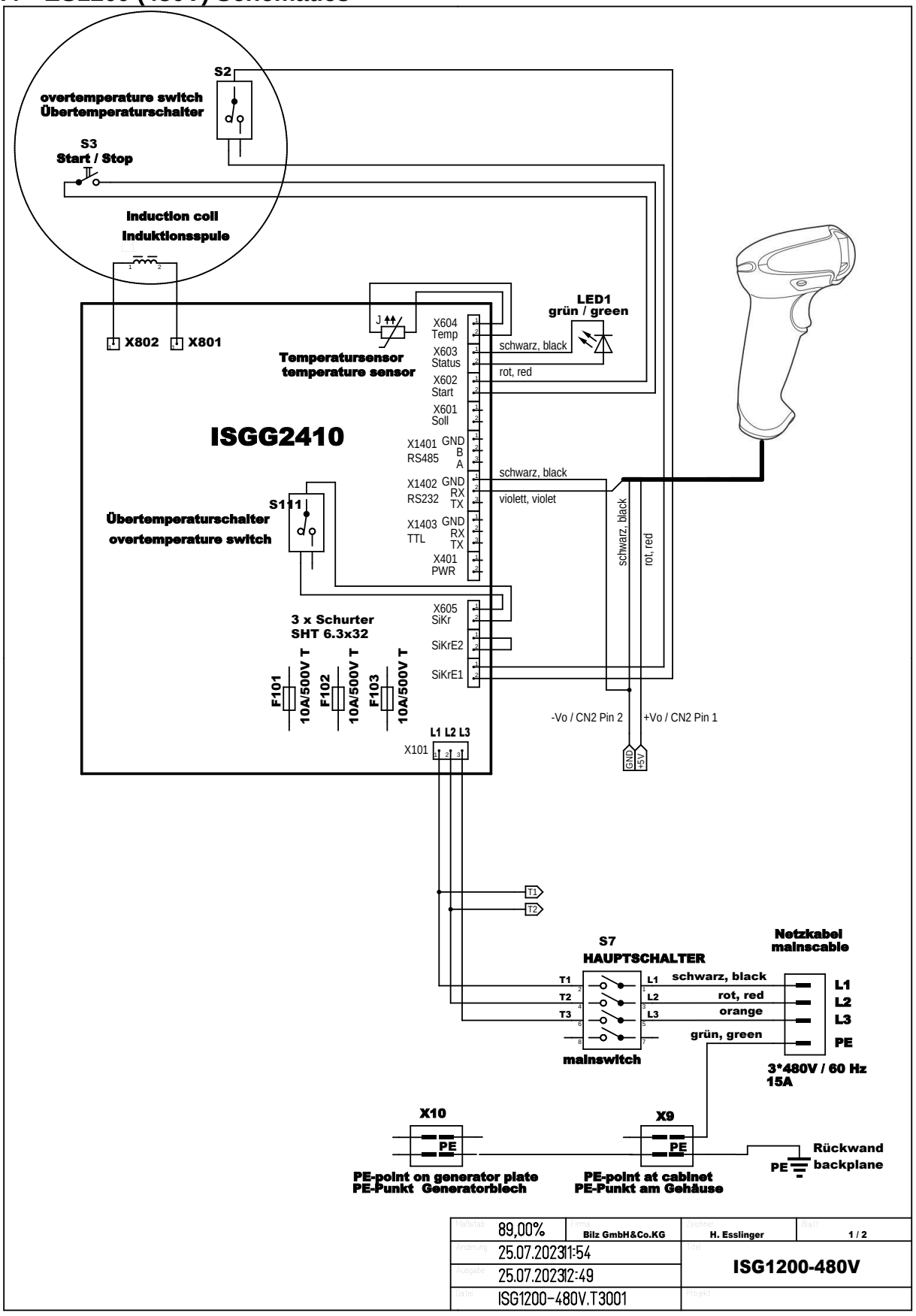
Use: Check that the gloves provide suitable protection for the ones you have provide the activity that has just been carried out. Choose the pair of gloves according to the size of your hands.
Remove the gloves from the packaging.
When using the gloves, pay attention to the following points:
The maximum gripping time depends on the position where the grip is made. To be on the safe side, this must never be longer than 5 seconds.
Due to the open structure of the gloves, they cannot protect the hands against stitches and impacts of sharp objects. Furthermore, the penetration of liquid is possible. To protect against chemicals, a resistant glove should be worn over the glove. Oil, grease and moisture reduce the resistance to cuts of all glovesand should be avoided KEVLAR gloves are tear-resistant. Do not use these near machines with moving parts, as the hand can be pulled into the machine.

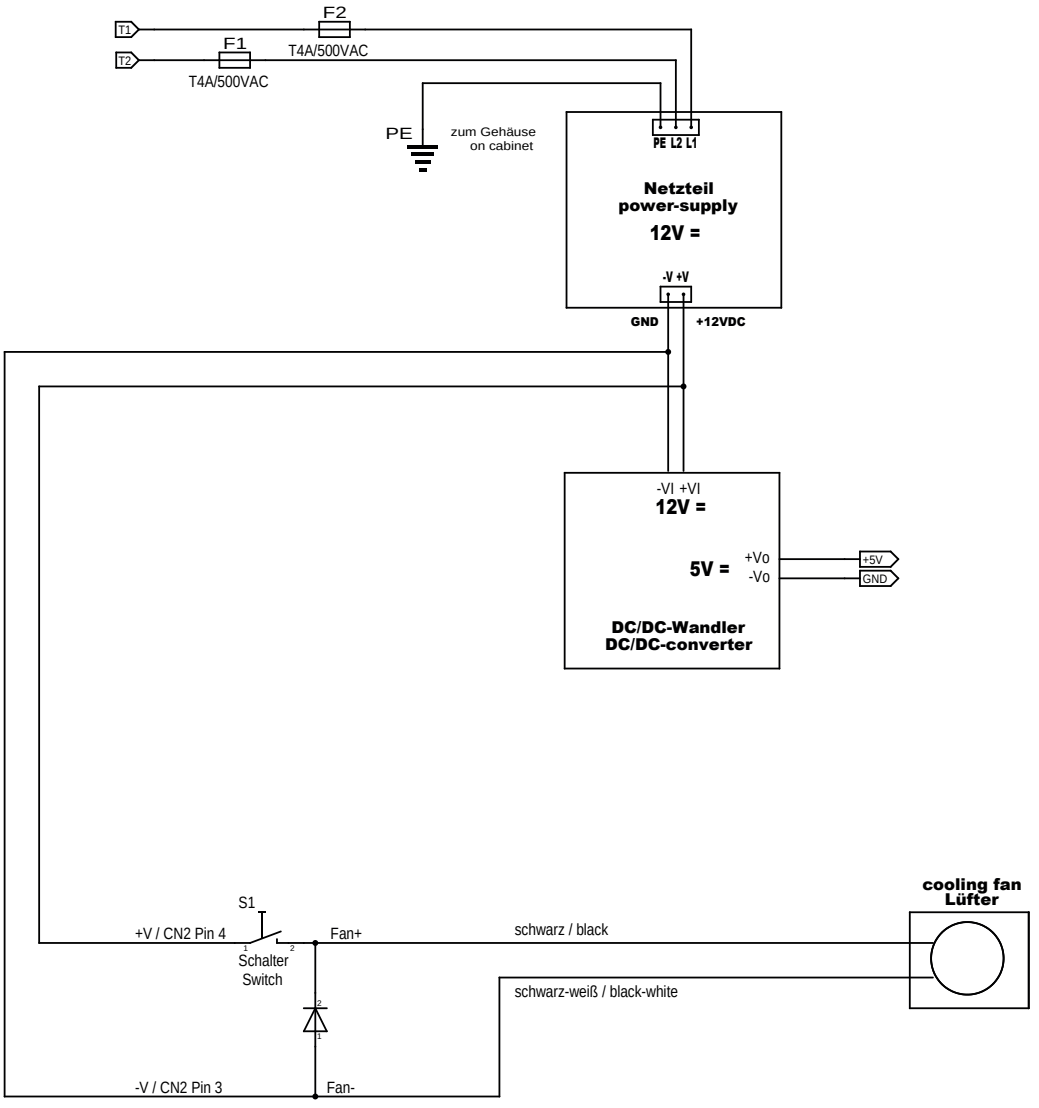
Care and repair: KEVLAR gloves can be dry cleaned orwashed according to the instructions on the label. Wash using water and mild detergents at a maximum of 40°C DO NOT USE plasticizers, bleaching or oxidizing agents, as these weaken the aramid fiber and reduce thecut resistance of the gloves. After washing, carefully check the gloves for cuts and worn areas. Sort out gloves that are too badly damaged and can no longer be repaired, as they nolonger provide protection.

Storage: The gloves should be stored in their original packaging in a dry, clean place. Avoid being exposed to moisture or high temperatures.

Warning: The level of protection required by a specific activity depends on the risks involved, you yourself bear the ultimate responsibility in selecting the appropriate protective equipment for the existing risks in the workplace. Please check that these items provide adequateprotection for the work you are doing. For high-risk work, we offer a range of heavy cut- and heat-resistant KEVLAR gloves.

5.4 ES1200 (480V) Schematics





Maßstab	89,00%	Firma	Bilz GmbH&Co.KG	Zeichner: H. Esslinger	Blatt: 2 / 2
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Erstellt	25.07.2023 12:49				
Datei:	ISG1200-480V.T3001			Projekt:	

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