OPERATING MANUAL
ThermoGrip® Induction unit
ISG3410 / ISG3430
Software version: 3.5 and higher

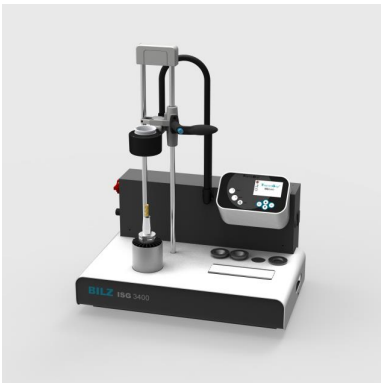
5220342

ISG3410-WK

ISG3430-TLK4

ISG3430-TWK

ISG3430-TLK



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Contents

1 Product liability and warranty

1.1 General

These operating instructions are part of the technical documentation for the ThermoGrip® induction device ISG3410 / ISG3430.

These operating instructions are important so that the device can be used safely, correctly and efficiently. Observing these instructions will help to avoid risks, repair costs and downtimes, and will raise the general level of performance and the lifespan of the machine. The contents correspond to the constructional status of the ISG3410 / ISG3430 at the time these operating instructions were compiled. The construction and technical data is subject to changes due to continuous further developments and for customized models.

Therefore no claims may be made on the basis of the content of these operating instructions (details, charts, drawings, descriptions etc.). Subject to errors!

These operating instructions, in particular the Chapter 2, Safety, page 9, must be read and observed by all persons who work with the device:

Operation

Including tooling, troubleshooting whilst working, clearing production waste, machine care, disposal of operating supplies and materials

Maintenance

Servicing, inspection, repairs

Transport

In addition to the operating instructions and the accident prevention regulations relevant in the country and the place where the device is used, the recognized technical rules relating to safe and professional work and the respective workshop-specific regulations must be observed.

If you have any questions, please do not hesitate to call us.

You can contact us at the address stated above.

If the reader discovers any printing errors, ambiguous information or inaccurate information in these operating instructions, please let us know.

1.2 Warranty

It is expected that the device will remain fully functional and safe. It is also expected that it will work accurately for many years; however this is only possible if the regulations governing the operation, maintenance, and repairs are observed in accordance with the manufacturer’s guidance.

Any faults that occur during the warranty period will be remedied as defined in our warranty conditions. Unauthorized modifications and changes will immediately expire the manufacturer’s warranty and all claims resulting from these will be the responsibility of the machine owner. This applies especially for those modifications that impair the safety of the device.

Warranty claims will only be honored if OEM spare and replacement parts are used.

These operating instructions are not a supplement to our terms and conditions of sale and delivery.

1.3 Intended purpose

The ThermoGrip® induction device ISG3410 / ISG3430 is used for the thermal engagement and disengagement of tools in shrink chucks.

Any other use above and beyond this is deemed not in accordance with the intended use. We will not be liable for any resulting damage. The operator bears the full risk.

Intended use also includes observing the operating instructions and compliance with the stipulated inspection and servicing intervals.

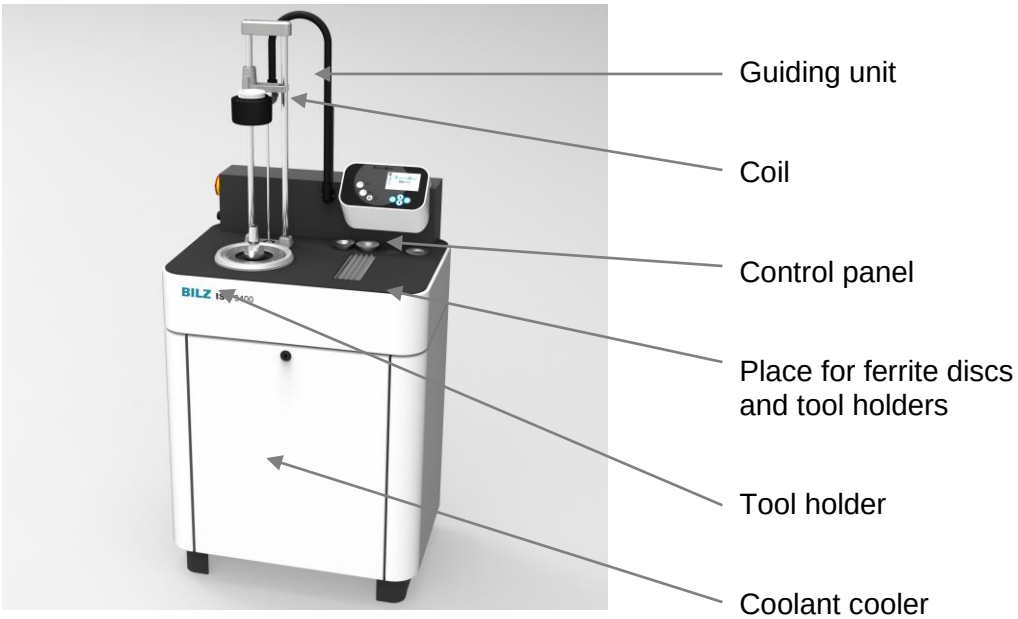


Fig. 1
ThermoGrip® Induction unit ISG3410-WK

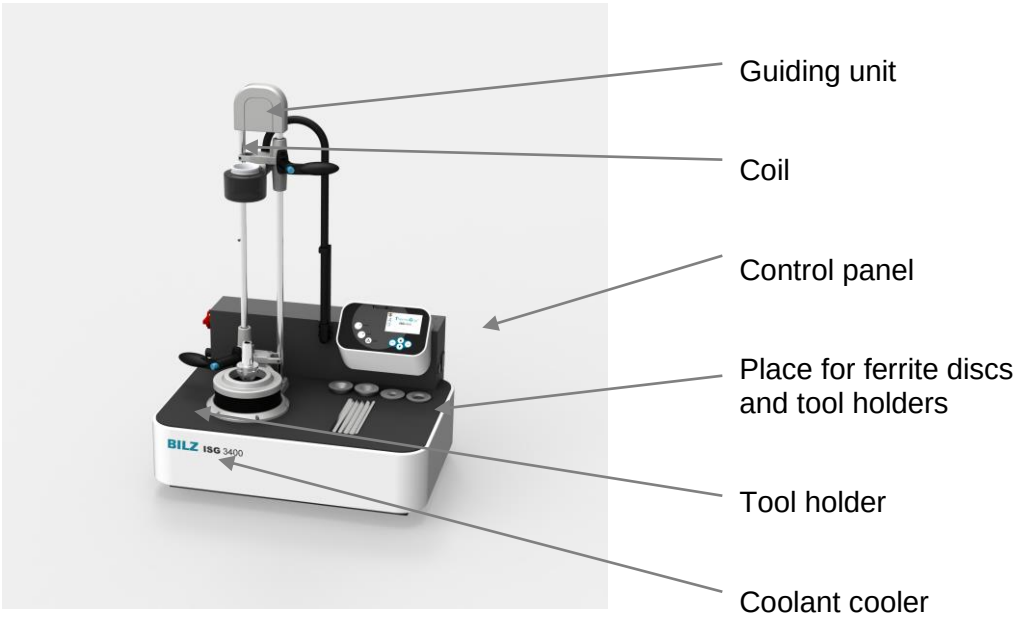


Fig. 2
ThermoGrip® Induction unit ISG3430-TWK

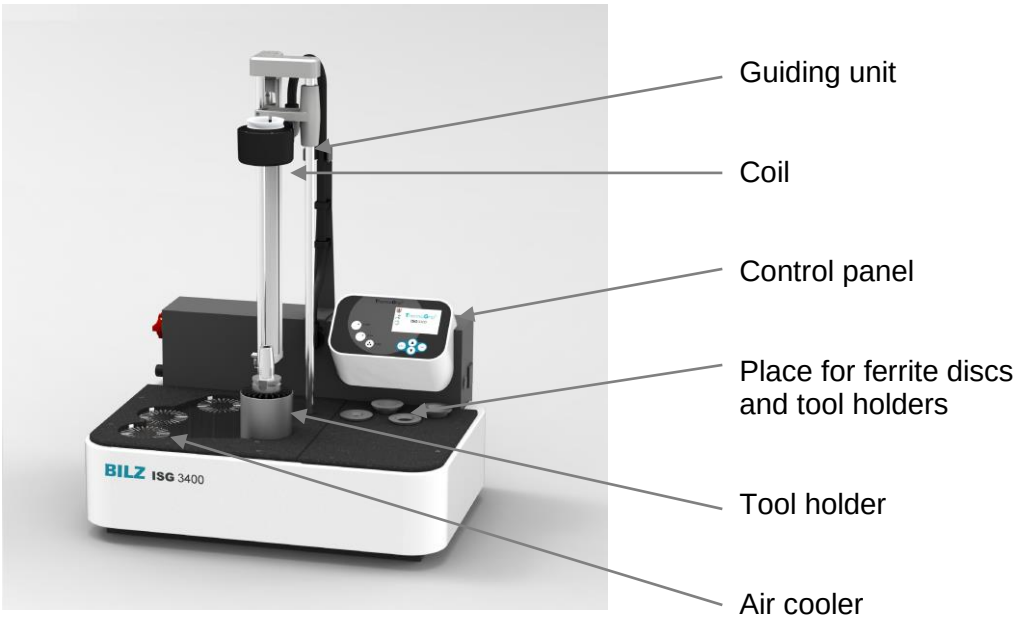


Fig. 3
ThermoGrip® Induction unit ISG3430-TLK4

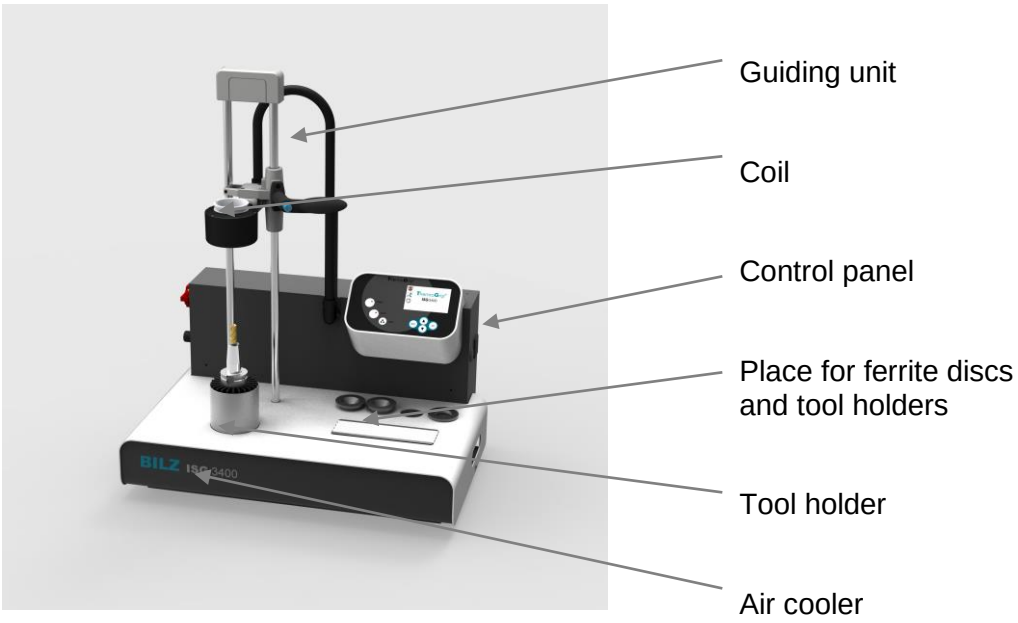


Fig. 4
ThermoGrip® Induction unit ISG3430-TLK

1.4 Service

We will be happy to help solve problems or perform repairs and modifications that are not described in these operating instructions. For problems or queries, make note of the device and generator serial numbers. The device serial number can be found on the type plate on the left side panel, the generator serial numbers is on the right side of the black generator box.

1.5 Symbols and Pictograms

Warnings are marked by warning triangles with hazard symbols to warn about risks that could result in damage to property or personal injury.

Warning! Potentially fatal risk or risk of serious injury!

Non-observance may lead to death or serious injury!

Caution! Risk of minor injury!

Non-observance may lead to minor injury!

Information! Information about how to carry out an action effectively and to avoid damage.

Instructions are marked by circles with hazard symbols or triangles with instruction specifying that an action needs to be carried out or that specific items need to be used.

Goggles Risk of damage to the eyes!

Wear goggles! During the heating phase it is possible that parts of the heated metal surfaces split off and cause injuries!

Gloves Risk of injury!

Sharp edges or metal chips adhered to the tool can cause injury; therefore protective gloves must be worn!

Activities are marked by the symbol ➢ and state the action that needs to be carried out. The result of the activity may be stated beneath the symbol for clarification purposes.

Example:

➢ Lower coil

➢ Start shrinking process

➢ Remove tool

2 Safety

The induction generator has been built to comply with the state-of-the-art design at the time of delivery and is safe to operate. Nevertheless, there are still risks involved with operating the device if it is used by untrained or unqualified personnel or if it is not used as intended. Therefore, must be observed:

Please read the operating instructions carefully and familiarize yourself with the operating elements before commissioning and using the device!

The operating instructions are an integral part of the function of the induction generator and must be easily accessible, legible and available in full to all persons who work with the system.

The device may only be operated by trained and competent personnel!

The device may only be used for its intended purpose and only when it is in a fully functional state!

The induction generator is designed and suited for ThermoGrip® chucks. Problems may arise when unshrinking/ shrink-fitting other chuck types leading to damage to the chucks or to the induction device itself.

All unauthorized modifications will immediately expire the manufacturer's warranty. The operator bears the sole risk of injury to the user or third parties and for any damage to the induction generator or other elements of the device!

All safety data sheets for the hazardous substances supplied are available on request.

2.1 Selection of the installation site

The ISG3410 / ISG3430 is designed as a stand-alone or tabletop device and must be positioned safely in a dry and clean place which is not exposed to vibrations.

Protect against dust, dirt and splash water!

Avoid direct sunlight to improve the legibility of the control panel.

2.2 Risks relating to electrical energy

The device has live parts inside which are dangerous if touched.

Please observe the following safety points:

- The device must not be operated when the housing is open!
- The device must only be opened by our service personnel or under strict manufacturer's guidance!
- Keep the device clean. Clean regularly!
- Never use compressed air to clean the machine or chucks nearby the machine, to prevent chips from being forced to electronics circuits

2.3 Risks from hot parts

The very effective heating function only heats the relevant surface zones of the chuck with the lowest heat input possible. The surface of the heated chucks reaches temperatures of up to 400°C. The coil and the cutting tool hardly heats up at all when operated properly.

Caution! Risk of injury caused by burns from hot parts!

As a result of the shrinking process the heated tool assembly radiates heat. Therefore, the heated chuck must be cooled in a timely manner to avoid risk of injury and damage to the coil!

Ensure that only shrink-fit chucks are used. There is a risk of injury if other chucks, especially hydraulic clamping chucks, are heated up!

Do not interrupt the automatic cooling of the shrink chuck following the shrinking process!

For your own safety, follow the safety instructions below when working with the device:

- The device may not be operated in an explosive environment!
- Do not use easily ignitable, solvent-based, or corrosive cleaning agents!
- Ensure that hot parts cannot be touched accidentally!
- Always wear the gloves supplied when unshrinking/ shrink fitting the tools to protect your hands from burns and cuts!
- Place hot tools on non-flammable, heat-resistant surfaces!
- Apart from the chuck and the tool, do not allow any metal objects inside the induction coil as these will also become hot!
- Never reach into the heating area of the coil during operation as rings or chains can also heat up very quickly!
- Always wear protective eyewear during shrinking! Bits of the tools or chuck can break off during the heating process and cause injuries!

2.4 Protecting the chuck against overheating

If the shrinking process is too long or if the chuck is reheated several times within a short period without correct cooling, the chuck and tool may overheat. Therefore, always keep the heating times as short as possible during shrink fitting.

Avoid overheating the chuck or repetitive cycles without correct cooling times!

Never re-heat a chuck that has not cooled down to room temperature.

2.5 Risks relating to electromagnetic radiation

If used correctly, the device does not emit any electromagnetic radiation that is dangerous to its environment. The radiation safety of the system is checked and verified through tests performed in accordance with EC Machinery Directive (see 10.6, EC Declaration of Conformity, page 55).

The shrinking process must not be operated without the ferrite disc being inserted!

If the induction heating is started when there is no ferrite disc being inserted in the coil, the magnetic field also affects the area close to the coil.

The shrinking process must not be operated without chuck being inserted!

If the induction heating is started when there is no chuck in the coil, the magnetic field also affects the area close to the coil.

Warning!

Potentially fatal risk for people with implants, especially with pacemakers!

If you have an implant, in particular a pacemaker, keep at least 3 m away from the device until you have checked with the manufacturer or your doctor that the implant is not affected by the induction field.

2.6 Special risks

Crushing and cutting hazards in the opening range of the cooling unit! (ISG3410-WK only)

Never reach into the opening of the cooling unit!

The automatic lifting after cooling can cause crushing and cutting at the opening edge.

Risk of crushing and cuts in the coil's range of motion!

Ensure that no parts of your body or objects are in the range of motion of the coil whilst the induction device is operating. The weight of the coil can cause crushing injuries and cuts in connection with the cutting tools.

Damage of the coil and/ or the electric installment

By using Non-ThermoGrip® or too large shrink chucks, the hot chuck may touch the coil and destroy the isolation. In case of any damage of the coil and/ or the electric installment, the device has to be stopped immediately and the manufacturer has to be contacted.

Do not operate the machine with a damaged coil, high voltage is present inside.

3 Controls and commissioning ISG3410 / ISG3430

3.1 Assembly

Caution:
Please inspect the unit for shipping damages prior to assembly.
Ensure that the unit is not damaged during the unpacking process.

In particular, the cable system must not be bent or twisted out of its position of movement! Handle the unit with care.

Comply with the order of assembly!

3.1.1 ISG3430-TWK, ISG3430-TLK4 and ISG3430-TLK

3.1.1.1 Setting up the tabletop units ISG3430-TWK, ISG3430-TLK4 and ISG3430-TLK

Choose a suitable place (see 10.2 Technical Data, Environmental conditions, page 50) for the tabletop units e.g. a plane solid table top.

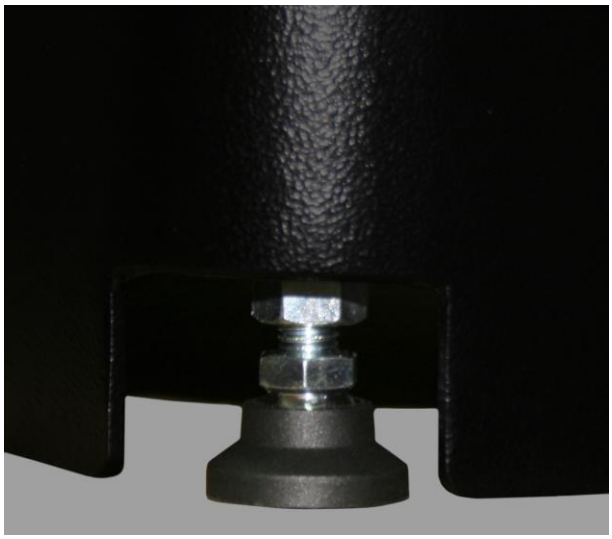
The tabletop units do not have vertically adjustable mounting feet and align themselves automatically with the plane table top.

3.1.2 ISG3410-WK

3.1.2.1 Setting up the ISG3410-WK

Choose a suitable place (see 10.2 Technical Data, Environmental conditions, page 50) for the ISG3410-WK.

The ISG3410-WK possesses three non-height adjustable feet and one height adjustable foot (see Fig. 5).



Twist up or down the height adjustable foot so that the ISG3410-WK stands firm and tighten with the counter nut.

Fig. 5
Height adjustable foot

3.1.2.2 Mounting the guide unit

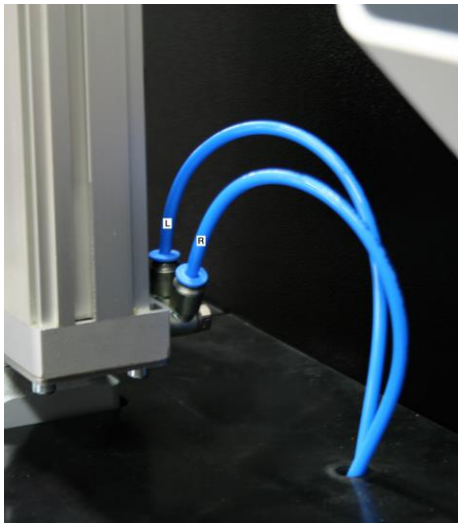
Place the guide unit sub-assembly in the bores and fasten with the two enclosed screws
(DIN912 M6x20, see Fig. 6).

The PE screws at the side must be fastened tightly. (Fig. 7**)**

Fig. 6
Inserting the guide unit in the machine

Fig. 7
Fastening of the PE screws

3.1.2.3 Connecting the compressed air hoses



On an ISG3410-WK / ISG3430-TLK4 with an option “change coil”, the lift cylinder is integrated into the linear unit.

Here, the compressed air feed pipe and the return pipe have to be connected to the cylinder of the guide unit.

Both connections are on the rear side.

Take special care of the marked direction of rotation (**L**eft/ **R**ight) (see Fig. 8).

Fig. 8
Connecting the compressed air hoses to the guide unit

3.1.2.4 Mounting the connector unit

Fasten the connector unit and the cable system to the slide unit with the two enclosed screws
(DIN912 M5x20, see Fig. 9).

Information!

Fig. 9 shows the connector unit with an option “change coil”. Fastening the fix coil unit is similar.

Fig. 9
Securing the connector unit

3.1.2.5 Aligning the coil

Release lightly the screws of the connector unit.

With an option “change coil”, mount the induction coil using a bayonet connection on the plug connector of the guide unit. The bayonet connection has been fitted onto the plug connecter correctly when the red control point of the bayonet ring on the coil is aligned with its counterpart on the linear unit. This is where the bayonet ring has a tight seat and is locked into place.
The correct installation of the (tight) seat of the coil must be checked.

Insert a shrink-fit chuck with the shrunken tool into the corresponding tool holder and an adequate ferrite disc and the clamping ring into the coil to align the connector unit with help of the shrink-fit chuck.

Then tighten the two fastening screws of the connector unit.

3.1.2.6 Connecting the compressed air supply

Compressed air must be oil-free!

The compressed air supply must be connected properly to the unit.

The pneumatic connection of the ISG3410-WK / ISG3430-TLK4 is located on the left hand side.

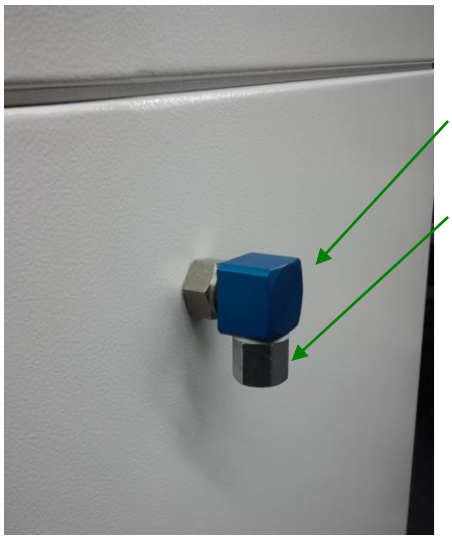


Fig. 10 shows

a rectangular adaptor G3/8 to 3/8 inch inside screw

and

a threaded adaptor G3/8 to 3/8 NPT as option.

Fig. 10
Pneumatics connection ISG3410-WK / ISG3430-TLK4

3.2 Power supply of ISG3410 / ISG3430

- Setting up the power supply
- For the 400V model, this is done by a pre-assembled (CEE-CEKON) plug-in connector. Just plug it into your wall outlet or transformer.
- For the 480V model, we recommend to connect it to a fused disconnect, with J-type fuses installed.
  See Chapter 10.5, Mains Connections, page 54

4 Operating the ISG3410 / ISG3430

4.1 Operating buttons

All the work and adjustment processes are carried out at the operator panel using 7 keys:

Button	Button name in text	Function
START	Start	Start the inductive heating of the shrink-fit chuck
STOP	Stop	Stop the inductive heating of the shrink-fit chuck Acknowledge error messages Only at ISG3410-WK / ISG3430-TLK4: Interruption of Start Delay or Stop Delay Manual up/ down of the coil (press for at least 1 sec)
COOL	Cool	Start manual cooling process
▲	up ▲	Select various menu items Change values and settings
▼	▼ down	
OK	OK	Confirm to the selection or the setting
ESC	ESC	Return into the preceding menu

4.2 Display

All the possible selections, menus and messages for the operator are shown on the display as symbols.

The individual menus contain points of selection or input fields. A further menu is branched through moving the selection points with the arrow buttons up ▲ and ▼ down and by confirming with OK.

If an input box is skipped in a menu, then a leap is made to the last input value. The values are modified using the up ▲ and ▼ down buttons and confirmed by pressing OK.

You can always skip to the preceding menu using ESC.

4.3 Switching on the device

➢ Switch on the main switch

The display shows the type of the machine. Now you are in the main menu.

Shrinking

Configuration

Service

The ISG3430-TWK / ISG3430-TLK is ready for use now.

At ISG3410-WK / ISG3430-TLK4 please note:

After selecting Shrinking or Service and pressing the OK button, the compressed air is switched on.

The linear unit moves down initially and then upwards. If no coil is fitted, the carriage quickly moves upward due to the lack of weight!

The same time, at ISG3410-WK also the lifting unit moves down first and then up again.

The ISG3410-WK / ISG3430-TLK4 is at home position and ready for use now.

4.4 Switching off the device

In order to avoid damage, the unit must not be switched off when the coil is raised.
The unit must be switched off as follows:

➢ Remove the chuck from the location

➢ Lower the coil by continuous pressing of the Stop button (ISG3410-WK / ISG3430-TLK4)

➢ Switch off at the main switch

5 Shrinking

5.1 Basic shrink-fitting information

Only tools with a ground shank and tolerance h4, h5 or h6 should be used.
Tools with shank tolerance h7 cannot be securely clamped.

The following shank tolerances are required for the various shank diameters:

Shank Ø	Shank Tolerance	Type of Tool
3mm	h4	CARBIDE
4mm	h4	CARBIDE
5mm	h5	CARBIDE
≥ 6mm	h6	CARBIDE and HSS

A device with an option “change coil” use different coils depending on the size of the tool to be shrunk-fit. For further information, see Chapter 5.4, Change the coil (only with an option “change coil”), page 21.

If a wrong coil and ferrite disc are used, the ferrite disc can cause damage to the tool cutting edge. The diameter of the ferrite disc bore is 2.5mm larger than the largest tool diameter that the disk is designed for. In the case of ThermoGrip® clamping chucks, the ferrite disc lies on the end face of the chuck which ensures that the coil is correctly positioned in relation to the chuck, even for extended clamping chucks. It is not possible to position slender shapes above the clamping chuck end surface. In this case, you require the **Fehler! Verweisquelle konnte nicht gefunden werden.** ISGF3414 available as an optional accessory (see options **Fehler! Verweisquelle konnte nicht gefunden werden.**, page **Fehler! Textmarke nicht definiert.**).

After the heating cycle, the shrink-fit chuck in the ISG3410 / ISG3430 must not be touched by the operator until it has completely cooled down using the integrated direct coolant cooling.

If it is necessary to handle the hot shrink-fit chuck for special processes, this must only be carried out using protective gloves. Shrinking chucks should only be touched with gloves and only at the collar and not in the heated area. The maximum touching time should not exceed 5 sec. even when using a protection glove.

Ensure that the chucks stand straight and are secure in the tool holders. Even though the shrinking of tools with Weldon, Whistle notch or similar shanks with non closed cylinder geometry is possible, cylindrical shanks such as DIN1835 Form A are preferred, as these enable a greater holding force and the smallest amount of imbalance.

Please ensure that the tool shanks used are not damaged in the clamping area.

To achieve the best possible clamping forces only insert clean, grease-free shafts in the chuck. Ensure that there are no cutting flutes in the clamping area when deciding on the clamping depth.

5.2 Work sequences when clamping, releasing or changing a tool

For your own safety, please observe the following rules when working with the ISG3410 / ISG3430:

Always observe the safety instructions for all shrink-fit processes!

At ISG3430-TWK, after finishing the shrinking procedure, the cooling down must be operated manually through pressing the Cool button.

The cooling can be operated manually at any time through pressing the Cool button.

With the ISG3430-TLK4, the fan starts when inserting a tool holder into the fan position and remain active for the setup cooling time. When in the shrinking position, the fan automatically starts after the shrinking process. All fans can be stopped by removing the respective tool holder.

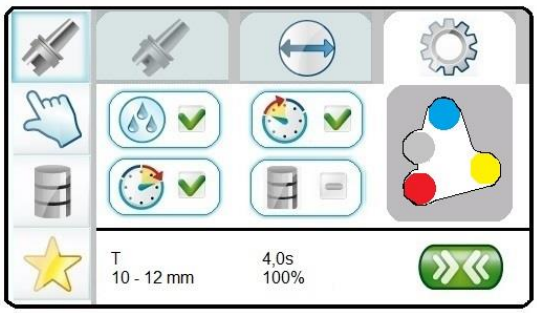
The status of the fans will be shown on the display.

Grey: position not occupied

Red: fans running (chuck is hot)

Yellow: 75% of cooling time has passed

Blue: fans off (chuck is cooled)



Use safety gloves!

Shrinking chucks should only be handled with gloves and only at the collar and not in the heated area. The maximum contact time should not exceed 5 sec. even when using a protective glove.

Wear safety goggles!

5.2.1 General advices

Select the respective tool holder (see Chapter 10.3.1, Available additions and optional accessories, page 52) for the chuck and place this on the footprint.

Insert the chuck into the tool holder. In the case of short tools to be gripped and ThermoGrip® clamping chucks, you can insert the tools 5 mm deep into the front part of the clamping chucks.

When the shrinking menu is selected you get an overview of all shrinking functions.

5.2.2 Clamping

By pressing on the tool during the subsequent heating phase you assist the clamping process.

If the tool has been inserted and the shrinking time has not yet ended, it is helpful to end the heating process with the Stop button, so as not to continue to heat the tool unnecessarily. After the selected shrinking time runs out or the Stop button is pushed, the coil is brought to the upper end position (ISG3430-TWK / ISG3430-TLK) and the cooling device is pulled upwards (ISG3430-TWK).

By pushing the Cool button, the cooling cycle can be started.

With the ISG3430-TLK4, the fan in shrinking position automatically starts after the shrinking process and then the coil is raised to its upper position.

For ISG3410-WK the chuck is lowered and cooled down with coolant. Afterwards the coil is moved into upper position. After the cooling period, the chuck is driven upwards slowly and dried with compressed air.

Afterwards the chuck can be removed by the operator.

5.2.3 Releasing

By pulling on the tool during the subsequent heating phase you assist the releasing process.

Place the removed tool on a heat resistant surface and protect people from accidentally touching the tool and the hot clamping chuck.

If the tool has been released and the shrinking time has not yet ended, it is helpful to end the heating process with the Stop button, so as not to continue to heat the tool unnecessarily. After the selected shrinking time runs out or the Stop button is pushed, the coil is brought to the upper end position (ISG3430-TWK / ISG3430-TLK) and the cooling device is pulled upwards (ISG3430-TWK).

By pushing the Cool button, the cooling cycle can be started.

With the ISG3430-TLK4, the fan in shrinking position automatically starts after the shrinking process and then the coil is raised to its upper position.

For ISG3410-WK the chuck is lowered and cooled down with coolant. Afterwards the coil is moved into upper position. After the cooling period, the chuck is driven upwards slowly and dried with compressed air. Afterwards the chuck can be removed by the operator.

5.3 Change the ferrite disc

Ensure that there is no chuck beneath the coil.

For ISG3410-WK / ISG3430-TLK4 press the Stop button for approx. 1 sec. The linear unit moves into the lower position and it is easier to change the disc.
For ISG3430-TWK / ISG3430-TLK move down the linear unit manually into the lower position.

Press the clamping ring together and remove it from the coil. After that you can take the ferrite disc from the coil. Select the correct ferrite disc suited to the correct shank-Ø into the coil.
See also Chapter 5.5.1.1, Table of factory defined parameters, page 25.

After that fix the ferrite disc on the top of the coil housing with the clamping ring.

For ISG3410-WK / ISG3430-TLK4 press the Stop button again for approx. 1 sec and the linear unit moves back upwards.

5.4 Change the coil (only with an option “change coil”)

5.4.1 Usable coils

The following coils can be used in the respective devices:

Coil	ISG3430-TLK	ISG3430-TWK	ISG3430-TLK4	ISG3410-WK
ISGS3200-1	+	+	+	+
ISGS3200-2	-	-	+	+
ISGS3200-3.1	+	+	+	+

When using a ISGS3200-3.1 coil with ISG3430-TWK / ISG3430-TLK units, 5 minutes of wait time is required after shrinking.

5.4.2 Preparation

Ensure that there is no chuck beneath the coil.

For ISG3410-WK / ISG3430-TLK4 press the Stop button for approx. 1 sec. The linear unit moves into the lower position and it is easier to change the disc.

For ISG3430-TWK / ISG3430-TLK move down the linear unit manually into the lower position.

5.4.3 Dismantle the coil

To do this, twist the union nut on the bayonet fixing through approx. 90° counterclockwise direction and at the same time pull the coil horizontally forwards.

For ISG3410-WK / ISG3430-TLK4 the linear unit moves back to the start position by pressing the Stop button for approx. 1 sec.

5.4.4 Fitting the coil

When inserting the coil ensure that the lettering on the coil is on the correct side and is horizontal. Insert the coil straight and thread on the union nut. Turn the union nut through approx. 90° in a clockwise direction until you feel it locking into place.
The bayonet fixing plug-in connector is correctly fastened when the red control points of the union nut are inline with the coil and the counterpart on the linear unit. Check the coil for correct installation and a firm fit.

For ISG3410-WK / ISG3430-TLK4 the linear unit moves back to the start position by pressing the Stop button for approx. 1 sec.

Ensure that you protect the connector mechanism of coils not being used from soiling.

Never leave the device for a lengthy period without a connected coil, to prevent soiling of the devices, plug-in all connectors too.

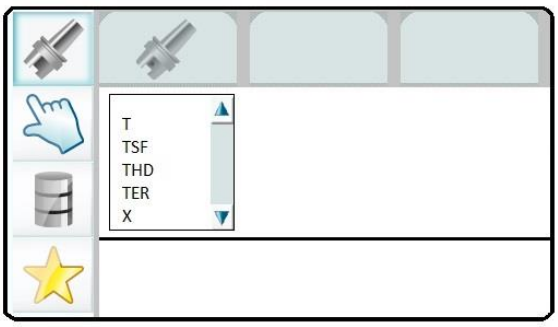
5.5 Shrink-fit operating modes

Parameter

Manual

Tool memory

Favorites



PARAMETER	MANUAL	TOOL MEMORY	FAVORITES
…, if you use a ThermoGrip® chuck. The parameters shrinking time and shrinking output power are programmed for the ThermoGrip®-chuck.	…, if you use another chuck or tool and want to adjust the shrinking parameters yourself.	…, if you use chuck of your own with shrinking parameters of yourself.	…, if you use a table of the most shrunk tools.

Select with up ▲ and ▼ down the desired function and activate with OK.

5.5.1 ThermoGrip® clamping chucks: PARAMETER

The necessary parameters for the ThermoGrip® chuck such as the generator output power, heating period, cooling time, coil and disc sizes for the chuck type are programmed in the factory equipment of the ISG3410 / ISG3430 (see 5.5.1.1, Table of factory defined parameters, page 25).

Unless otherwise specified, use standard coil #1 (ISGS3200-1, page 51).

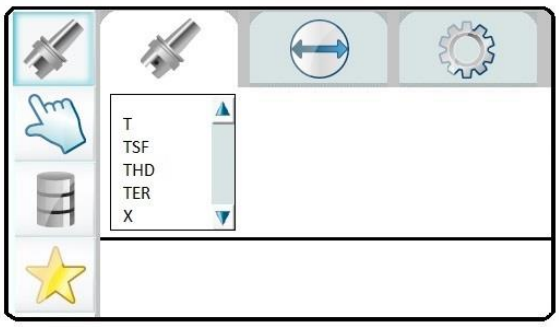
Attention: Special ferrite discs for TSF and TER shrink-fit chucks are necessary (see Fehler! Verweisquelle konnte nicht gefunden werden. **and** Fehler! Verweisquelle konnte nicht gefunden werden.**, page** Fehler! Textmarke nicht definiert.**).**

Attention: For TSF and TER shrink-fit chucks only shrink in carbide tools!

Step 1: Select chuck type

Select with up ▲ and ▼ down the desired chuck type

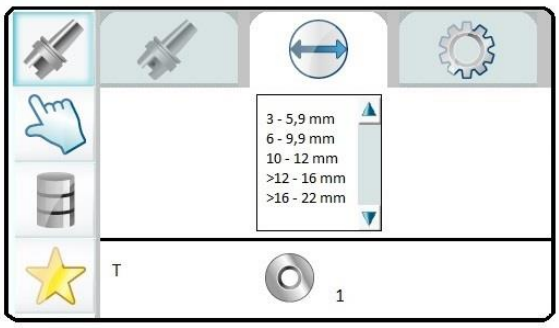
Activate with OK.



Step 2: Select diameter

Select with up ▲ and ▼ down the according diameter

Activate with OK.

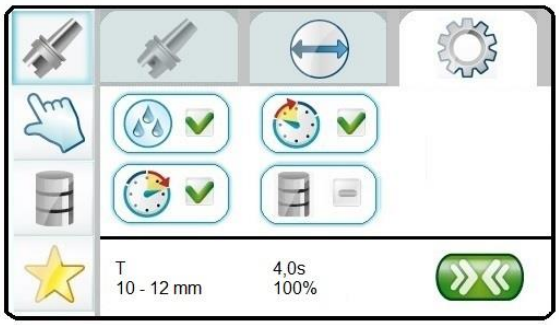


The status (bottom line) shows type of the chuck, the assigned ferrite disc and, if necessary, the assigned coil.

Step 3: Additional options

Select with up ▲ and ▼ down additional options and activate or deactivate with OK.

The status (bottom line) shows the type of chuck and the assigned shrinking time and output power.



The blinking symbol  shows the device is ready for shrinking

Following options are possible for ISG3410-WK / ISG3430-TLK4:

Deselecting the automatic cooling, This option is always set active after every shrinking. Other options see Chapter 6.2, Setting up and configuration of cooling time, page 36

Start Delay Delay of the beginning of the shrinking. See Chapter 6.3, Enter Start Delay (ISG3410-WK / ISG3430-TLK4 only), page 38

Stop Delay (Dwell time) Delay of the beginning of the cooling process. See Chapter 6.4, Enter Stop Delay (ISG3410-WK / ISG3430-TLK4 only), page 38

Setup parameters for TOOL MEMORY.
See Chapter 5.5.3.1, Setup TOOL MEMORY at the machine, page 32

Step 4: Start shrinking

- For ISG3430-TWK / ISG3430-TLK move down the coil carefully until the ferrite disc touches the front of the chuck.
- Start shrinking with Start
- For ISG3410-WK / ISG3430-TWK the water cooling is checked before the heating up of the chuck.
- For ISG3410-WK / ISG3430-TLK4 the coil moves down automatically.
- The operation steps are shown on the display by a progress bar.

At ISG3430-TWK, after finishing the shrinking procedure, the cooling down must be operated manually through pressing the Cool button.

5.5.1.1 Table of factory defined parameters

T- chucks (Standard Type according to DIN69882-8)
Designation of chuck Txxxx

∅-range in mm	∅-range in inches	Ferrite disc	Shrinking time in sec	Shrinking output power in %
3 – 5,9	1/8 – 3/16	ISGS3201-0	4,0	60
6 – 9,9	1/4 – 5/16	ISGS3201-1	4,0	95
10 – 12	3/8	ISGS3201-1	4,0	100
> 12 – 16	1/2 – 5/8	ISGS3201-2	4,0	100
> 16 – 22	3/4	ISGS3201-2	4,0	95
> 22 – 25	1	ISGS3201-3	7,0	100
> 25 – 32	> 1 – 1.1/4	ISGS3201-3	8,2	100

TSF- chucks (Slender design)
Designation of chuck TSFxxxx

∅ in mm	∅ in inches	Ferrite disc	Shrinking time in sec	Shrinking output power in %
3	1/8	ISGS3201-TSF03	3,0	25
4	5/32	ISGS3201-TSF04	3,0	25
5	3/16	ISGS3201-TSF05	3,0	28
6	1/4	ISGS3201-TSF06	3,0	38
8	5/16	ISGS3201-TSF08	3,0	43
10	3/8	ISGS3201-TSF10	3,0	53
12	1/2	ISGS3201-TSF12	4,0	43
14	9/16	ISGS3201-TSF14	3,0	47
16	5/8	ISGS3201-TSF16	3,0	68
18	11/16	ISGS3201-TSF18	3,0	68
20	3/4	ISGS3201-TSF20	3,0	63
25	1	ISGS3201-TSF25	4,0	84

THD- chucks (Enforced design)
Designation of chuck THDxxxx

Coil	Designation	∅ in mm	∅ in inches	Shrinking time in sec	Shrinking output power in %
2	ISGS3200-2	16	5/8	20	100
2	ISGS3200-2	20	3/4	19	100
2	ISGS3200-2	25	1	28	100

TER Shrink collets, geometry according ER 11

Designation	Ferrite disc	∅ in mm	∅ in inches	Time in sec	Power in %	Dwell time in sec
TER0300/11	ISGS3201-TER11-1	3	1/8	3,5	25	3
TER0400/11	ISGS3201-TER11-1	4	5/32	3,5	25	3
TER0600/11	ISGS3201-TER11-1	6	1/4	3,0	30	0

TER Shrink collets, geometry according ER 16

Designation	Ferrite disc	∅ in mm	∅ in inches	Time in sec	Power in %	Dwell time in sec
TER0300/16	ISGS3201-TER16-1	3	1/8	3,7	32	3
TER0400/16	ISGS3201-TER16-1	4	5/32	2,7	28	3
TER0600/16	ISGS3201-TER16-2	6	1/4	3,0	34	0
TER0800/16	ISGS3201-TER16-2	8	5/16	3,0	45	0
TER1000/16	ISGS3201-TER16-2	10	3/8	3,0	45	0

TER Shrink collets, geometry according ER 20

Designation	Ferrite disc	∅ in mm	∅ in inches	Time in sec	Power in %	Dwell time in sec
TER0300/20	ISGS3201-TER20-1	3	1/8	3,7	36	3
TER0400/20	ISGS3201-TER20-1	4	5/32	3,2	36	3
TER0600/20	ISGS3201-TER20-1	6	1/4	4,0	45	0
TER0800/20	ISGS3201-TER20-1	8	5/16	3,5	45	0
TER1000/20	ISGS3201-TER20-1	10	3/8	4,0	45	0
TER1200/20	ISGS3201-TER20-1	12	1/2	4,0	45	0

TER Shrink collets, geometry according ER 25

Designation	Ferrite disc	∅ in mm	∅ in inches	Time in sec	Power in %	Dwell time in sec
TER0300/25	ISGS3201-TER25-1	3	1/8	6,0	54	3
TER0400/25	ISGS3201-TER25-1	4	5/32	4,7	54	3
TER0600/25	ISGS3201-TER25-2	6	1/4	3,0	50	0
TER0800/25	ISGS3201-TER25-2	8	5/16	4,5	50	0
TER1000/25	ISGS3201-TER25-2	10	3/8	4,7	51	0
TER1200/25	ISGS3201-TER25-3	12	1/2	6,0	50	6
TER1400/25	ISGS3201-TER25-3	14	9/16	6,0	50	0
TER1600/25	ISGS3201-TER25-3	16	5/8	4,0	45	6

TER Shrink collets, geometry according ER 32

Designation	Ferrite disc	∅ in mm	∅ in inches	Time in sec	Power in %	Dwell time in sec
TER0600/32	ISGS3201-TER32-1	6	1/4	3,5	75	0
TER0800/32	ISGS3201-TER32-1	8	5/16	2,7	75	3
TER1000/32	ISGS3201-TER32-2	10	3/8	4,0	70	0
TER1200/32	ISGS3201-TER32-2	12	1/2	4,7	65	0
TER1400/32	ISGS3201-TER32-2	14	9/16	4,5	70	0
TER1600/32	ISGS3201-TER32-2	16	5/8	5,7	70	0
TER1800/32	ISGS3201-TER32-2	18	11/16	6,0	70	3
TER2000/32	ISGS3201-TER32-2	20	3/4	5,7	65	3

5.5.2 Shrinking with free “Parameter” selection: MANUAL

This mode is intended for shrinking special tools or special clamping chucks, which only occur in seldom cases. Furthermore, this mode can be used to set the shrinking parameters for frequently used special chucks or tools.

Parameter

Manual

Tool Memory

Favorites

Select with up ▲ and ▼ down the function "MANUAL" and activate with OK.

Step 1: Select shrinking time

Select with up ▲ and ▼ down the desired shrinking time in steps of 0.5 s (0 – 60 s)

Activate with OK.

Step 2: Select shrinking output power

Select with up ▲ and ▼ down the desired output power in steps of 5% (5% – 120%)

Activate with OK.

Step 3: Additional options

Select with up ▲ and ▼ down additional options and activate or deactivate with OK.

The status (bottom line) shows the selected shrinking time and output power.

The blinking symbol  shows the device is ready for shrinking

Following options are possible for ISG3410-WK / ISG3430-TLK4:

Deselecting the automatic cooling, This option is always set active after every shrinking. Other options see Chapter 6.2, Setting up and configuration of cooling time, page 36

Start Delay Delay of the beginning of the shrinking. See Chapter 6.3, Enter Start Delay (ISG3410-WK / ISG3430-TLK4 only), page 38

Stop Delay (Dwell time) Delay of the beginning of the cooling process. See Chapter 6.4, Enter Stop Delay (ISG3410-WK / ISG3430-TLK4 only), page 38

Inverse Shrinking.
See Chapter 5.5.2.1, Special shrinking: Inverse shrinking (shrinking from the bottom), page 30

Step 4: Start shrinking

- For ISG3430-TWK / ISG3430-TLK move down the coil carefully until the ferrite disc touches the front of the chuck.
- Start shrinking with Start
- For ISG3410-WK / ISG3430-TWK the water cooling is checked before the heating up of the chuck.
- For ISG3410-WK / ISG3430-TLK4 the coil moves down automatically.
- The operation steps are shown on the display by a progress bar.

At ISG3430-TWK, after finishing the shrinking procedure, the cooling down must be operated manually through pressing the Cool button.

By delivery of the ISG3410 / ISG3430 the manual shrinking procedure is enabled. The manual shrinking process can be disabled in the configuration menu.
See Chapter 6.8, Lock shrinking operation, page 40.

There is also a possibility to carry out the shrinking process using the Start button when the heating time = 0 seconds is selected. The chuck is heated with the set output power for as long as you press and hold this button.

The shrinking process is ended after releasing the Start button and the cooling process can be started.

If the heating energy selected (time x output power) is too high, the shrink-fit chuck and/ or the tool can easily overheat. In serious cases, permanent damage can occur to the chucks and tools. Please therefore ensure the following is observed:

If the suitable parameter is not known, begin with small values for the time and output power and increase them until the clamping and releasing functions work perfectly!

- **Especially for smaller tools, do NOT increase the heating time by one second at the same power setting. Instead, increase it by 1s and reduce the output power by 20% at the same time. The product of power x time is the energy input. If a cycle at 3s and 100% (3x1=3) is not successful, increase to 4s/ 80% (4*0.8=3.2) and so forth.**
- **Allow the chuck and tool to cool to room temperature before any new heating cycle is started! Ensure that the coil is suitable for the chuck and the tool.**
- **An internal check of the coil cannot be carried out in this case. Therefore ensure that the coil is suitable for the chuck and the tool. To do this, check that the clamping area of the chuck fits in the coil, the coil ferrite disc touches the end face of the chuck (or is at least only a very short distance apart) and that the tool has sufficient clearance in the ferrite disc bore so that the cutting edge cannot be damaged! If you notice that the chuck, tool or coil heat to very hot temperatures, interrupt the process immediately using the Stop button and check the shrinking parameters!**

Guidelines for experimentally determining the necessary shrinking parameters for special chucks and special coils

1) Basic settings:

	Shrinking output power in %	Shrinking time in sec
Special chucks and HSSE/ CARBIDE tool shafts with universal coil and ferrite discs (ISGS3201-0, ISGS3201-1, ISGS3201-2, ISGS3201-3)	100	2
Special chucks and CARBIDE tool shafts with a special coil	70	3

2) Sequence:
Insert tool shank in the counterbore and start the shrinking process.

a) If the tool slides **completely** in the chuck bore:
Use the current values of Heating time and Output Power as suitable shrinking parameters.

b) If the tool does **not** slide into the chuck bore:
Increase the shrinking time T in steps of 1s and then repeat the shrinking process until the tool shaft completely slides into the chuck bore. It is important to ensure that the shrink-fit chuck is cooled down to room temperature before each further shrinking attempt.
Then accept the last selected shrinking parameters Heating time and Output Power.

c) The tool shaft only slides **partially** in to the shrinking chuck bore and is thus not correctly gripped during cooling process.
Allow the chuck to completely cool down to room temperature and increase the shrinking time T in steps of 1s, shrink and try to pull out the tool. Repeat this step until the tool can be easily removed from the heated chuck. It is important to ensure that the shrink-fit chuck is cooled down to room temperature before each further heating cycle is started.
Once successful, accept the last selected parameters for Heating time and Output Power and store them to memory.

5.5.2.1 Special shrinking: Inverse shrinking (shrinking from the bottom)

This function is only available with an option “change coil“.

ISG3410 / ISG3430 with an option “change coil” enables the shrinking of tools inversely where the cutting edge diameter is larger than the coil diameter and would therefore not go through the coil during a conventional shrinking process.

For this purpose, it is required that you’ll need a special elongated tool holder (Fig. 11), a **Fehler! Verweisquelle konnte nicht gefunden werden.** (Fig. 12) and a special coil (ISGS3200-3.1, page **Fehler! Textmarke nicht definiert.**) without a ferrite disc.

Fig. 11
Tool holder

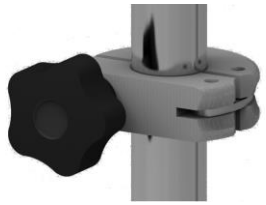


Fig. 12
Fehler! Verweisquelle

The operation inverse shrinking can be selected with the option Inverse.

5.5.2.2 Inverse shrinking-in

In order to shrink-in a tool, choose the option “Inverse shrinking”
For ISG3410-WK / ISG3430-TLK4 the coil moves automatically to the lower end position of the cylinder. Now put the chuck into the tool holder and position it in the coil. Take care that the tool holder with the chuck is positioned in the centre of the coil.

Place the **Fehler! Verweisquelle konnte nicht gefunden werden.** at the guiding rod above the coil (see Fig. 12, page 30). Push up the coil manually, until it is placed in shrinking position to the chuck. The coil is in the correct position if the ferrite disc nut is on a level with the front side of the chuck. Now position the **Fehler! Verweisquelle konnte nicht gefunden werden.** so that the coil will stop at that position when going in the automatic mode.

Proceed as described under item 5.2.2 Clamping, page 20.

Take the chuck with shrunk-in tool out of the coil, when the coil has retracted.

There is no suitable cooling adaptor for ISG3430-TLK / ISG3430-TLK4 unit for the slim chucks.

Therefore, the chuck cannot be cooled down in the conventional manner on a cooling station.

Put the hot chuck on a heat resistant surface and prevent people from touching the tool and the hot chuck accidentally.

5.5.2.3 Inverse shrinking-out

In order to shrink-out a tool, put the chuck in the suitable tool holder with the unit switched on and the operation “Inverse shrinking” selected. (The coil is located in the lower end position of the cylinder). Proceed as described in the Chapter 5.5.2.2, Inverse shrinking-in.

Assist the detaching of the tool by pulling the tool gently.

Take the tool and the chuck out of the coil, when the coil has retracted.

Put the tool and the chuck on a heat resistant mat and prevent people from touching the tool and the hot chuck accidentally.

5.5.2.4 Inverse shrinking tool change

You have the possibility to take a clamped tool out during the heating phase and immediately replace in another tool. Firstly, shrink-out the tool, as described in the Chapter 5.5.2.3, Inverse shrinking-out, page 31. Do not interrupt the heating process with Stop !

A new tool may be placed in the chuck directly after having shrunk-out the old tool without waiting for the coil to go to the lower end position of the cylinder.

Put the taken out tool on a heat resistant mat and prevent people from touching the tool and the hot chuck accidentally.

Take the chuck with shrunk-in tool out of the coil, when the coil has retracted.

Put the tool and the chuck on a heat resistant mat and prevent people from touching the tool and the hot chuck accidentally.

5.5.2.5 Shrinking with Fehler! Verweisquelle konnte nicht gefunden werden. ISGF3414

There is a possibility that with slim clamping chuck designs, special chucks, or when inverse shrinking, that the coil cannot be positioned through its cover disk. In that case you should use the **Fehler! Verweisquelle konnte nicht gefunden werden.** which can be obtained as an accessory (ISGF3414, page **Fehler! Textmarke nicht definiert.**).

The **Fehler! Verweisquelle konnte nicht gefunden werden.** is mounted around the guiding rod and locked with the locking screw.

Take care that the stop – when not needed – is removed and that the coil does not stop at the wrong position unintentionally.

In order to position the **Fehler! Verweisquelle konnte nicht gefunden werden.**, put a chuck in its tool holder in the shrinking position below the coil. The coil is in the correct position if the ferrite disc nut is on a level with the front side of the clamping chuck. Now position the **Fehler! Verweisquelle konnte nicht gefunden werden.** so that the coil will be stopped at that position when going automatically. Lock the stop in this position with the locking screw.

5.5.3 Define your own Parameters: TOOL MEMORY

5.5.3.1 Setup TOOL MEMORY at the machine

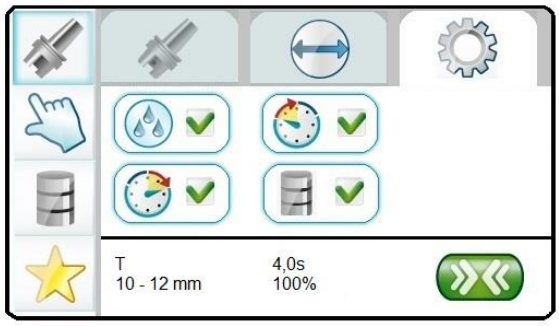
At the beginning, a similar standard chuck is selected from the existing parameter list.

Start with mode PARAMETER similar to standard shrinking
(see Chapter 5.5.1, ThermoGrip® clamping chucks: PARAMETER, page 23).

It is important to define the coil and disc for the new chuck.

Selecting the option „memory“ will switch into manual mode.

Manual mode must be enabled (see Chapter 6.8, Lock shrinking operations, page 40)

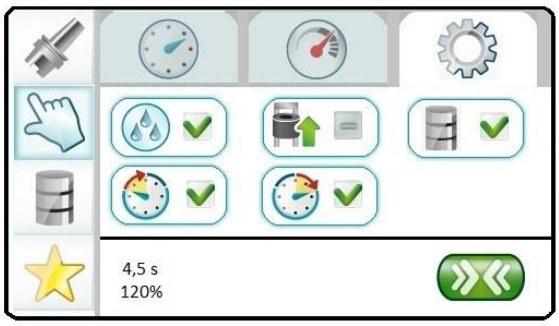


The actual parameters (shrinking time and power) are copied and can be changed now
(see Chapter 5.5.2, Shrinking with free “Parameter” selection: MANUAL, page 27).

After selecting you come to the manual shrinking mode. The desired parameters may be tested by shrinking and can be adjusted again until they are perfect.

Selecting the option „memory“ will save the actual time, power and all other options. The predefined coil and disc will also be saved into a new set of parameter data.

The new set of data is named like the original tool designation heading with an additional letter “M” and a digit.



For e.g., if a chuck similar to TSF with D=8 mm is desired, the new set of data will have the designation „M1 TSF08“. A second set of data with the same chuck as origin will have the designation „M2 TSF08.

The function „TOOL MEMORY“ is enabled now and all sets of own defined shrinking parameters are available (see Chapter 5.5.3.3, Select your own tool parameters, page 33).

The names are fixed and can not be changed at the operating panel.

To change the name or adjust the parameter set, the tool memory has to be read out to an USB memory stick and following the parameter sets can be edited on a PC with the optional program „ToolMemoryEditor“
(see Chapter 6.9, Write the tool memory onto an USB memory stick, page 40).

To quit the manual mode without activating the option „memory“ stop the function without memorizing the new set of data.

5.5.3.2 Setup or change your own parameters externally (option)

With the PC based program „ToolMemoryEditor“ you can define tools by yourself and read into the control with an USB memory stick.

The USB interface is located at the generator module on the right side.

Read in the generated file of tools:

- ➢ Switch off the device
- ➢ Plug in the USB stick
- ➢ Switch on the device

While starting up, the new tool data is read in. The USB stick can be removed as soon as the main menu appears (see Chapter 4.3, Switching on the device, page 17).

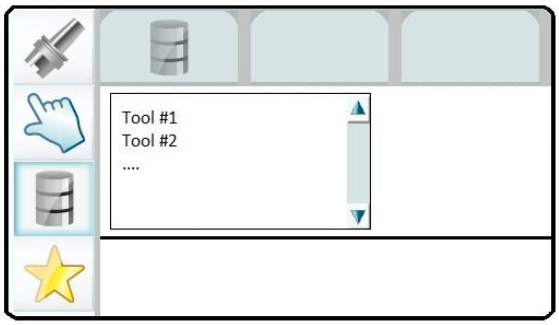
NOTE! Reading back the (changed) sets of parameters will overwrite the existing tool memory.

The function „TOOL MEMORY“ is enabled with correct tool data. These are now available.

5.5.3.3 Select your own tool parameters

Select with up ▲ and ▼ down the function "TOOL MEMORY"

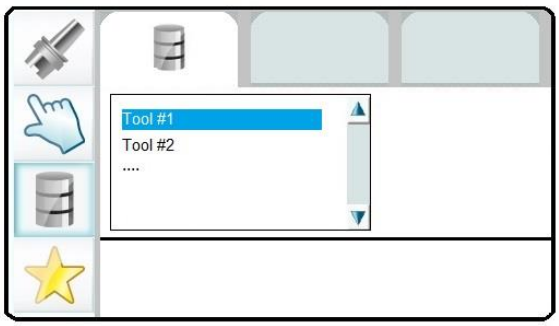
Activate with OK.



A list of the generated tools appears

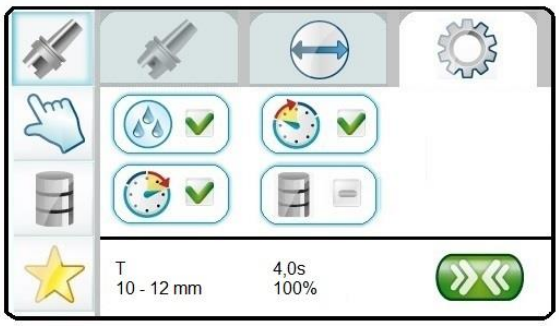
Select with up ▲ and ▼ down the desired tool

Activate with OK.



The menu shrinking will be selected immediately

Continue as described in Chapter 5.5.1, ThermoGrip® clamping chucks: PARAMETER, page 23

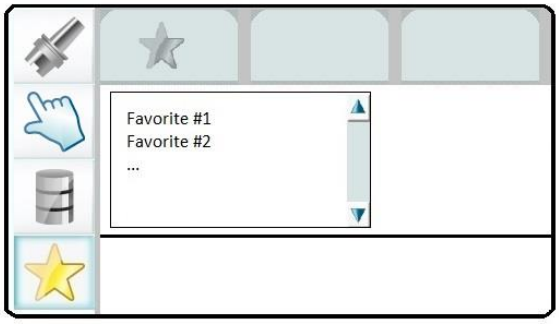


5.5.4 List of most used tools: FAVORITES

A top-ten list of the most used tools is directly available with the function „Favorites“.

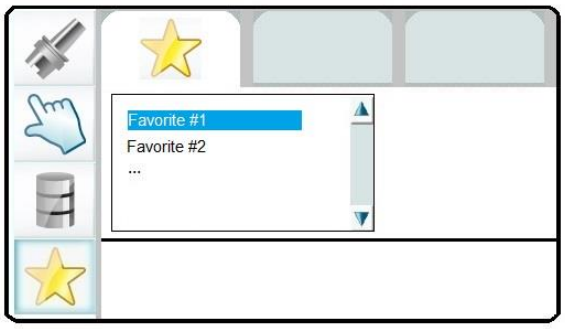
Select with up ▲ and ▼ down the function "FAVORITES"

Activate with OK.



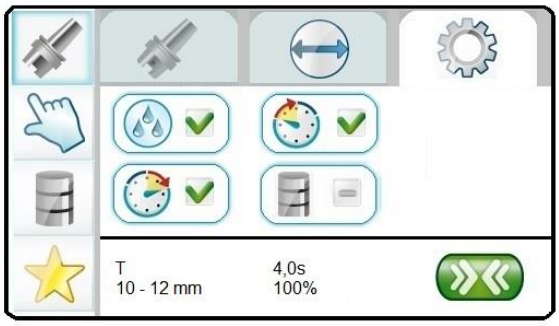
A list of the most used tools appears
Select with up ▲ and ▼ down the desired tool

Activate with OK.



The menu shrinking will be selected immediately

Continue as described in Chapter 5.5.1, ThermoGrip® clamping chucks: PARAMETER, page 23



6 Configuration

With multiple pressings of ESC you come to the main menu.

Shrinking

Configuration

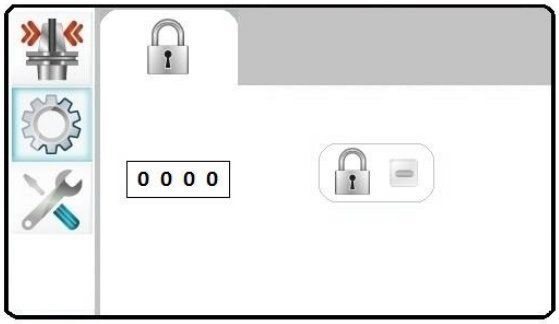
Service

Select with up ▲ and ▼ down the function Configuration and activate with OK.

If the Configuration is protected by a password you have to enter it first.
How to activate/ deactivate the password see Chapter 6.6, Password on/ off or change, page 39

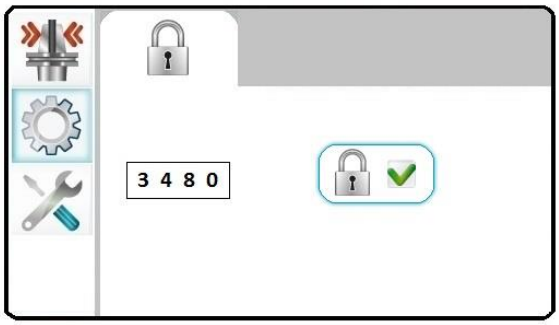
You can increase or decrease the numbers with up ▲ or ▼ down.

Confirm with OK and go to the next decimal figure of the password.



Once all 4 numbers are correct (for e.g. 3480) confirm the password with OK.

When a wrong password is entered you have to repeat the input.



If the password is correct, the following appears in the Configuration display

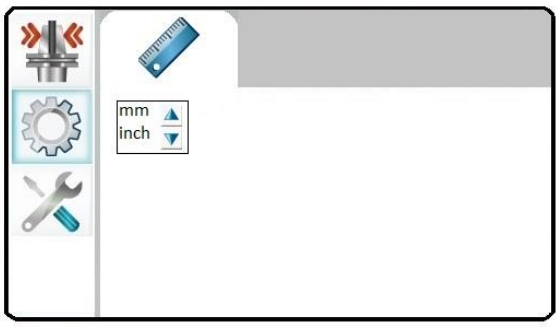
Select the options with up ▲ and ▼ down and activate with OK.

If the symbol „Manual Shrinking“ does not appear, you first have to define a password. See Chapter 6.6, Password on/ off or change, page 39.

6.1 Switching between mm/ inch

The diameter of the tool can be shown on the display in mm or in inches.

Select the desired unit with up ▲ and ▼ down and confirm with OK.



6.2 Setting up and configuration of cooling time

If only the symbol „cooling“ appears, you have to enter a password first.
See Chapter 6.6, Password on/ off or change, page 39.

Select the functions with up ▲ and ▼ down and activate with OK. The active function is marked with ✔ and confirmed with OK.

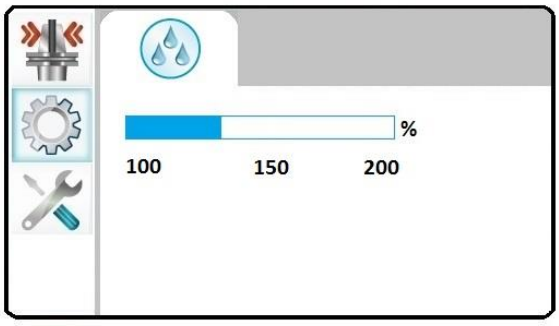
6.2.1 Setting up of cooling time

The cooling time can be extended to a maximum of 200 % of the factory setting.

A cooling time less than 100 % is not possible for safety reasons.

Select the desired value with up ▲ and ▼ down and confirm with OK.

You can leave the menu without saving the value by pressing ESC.



6.2.2 Configuration of cooling time

The cooling function can be configured differently for the "parameter shrinking" and / or "manual shrinking" functions.

Select the functions with up ▲ and ▼ down and activate with OK. The active function is marked with ✔ and confirmed with OK.

The configuration of the cooling time for parameter shrinking or manual shrinking is selected with the corresponding symbol.

6.2.2.1 Configuration of cooling time for “parameter shrinking”

Select the functions with up ▲ and ▼ down.

The active function is marked with ✔.

Confirm the function with OK and leave the menu.

You can leave the menu without saving the function by pressing ESC.

The 3 functions possible are as follows:

If the cooling is deselected, cooling is automatically selected again after a shrinking process (default).

The cooling process is always active and can not be deselected by the operator.

The cooling process is always deselected and must be started manually by the operator.

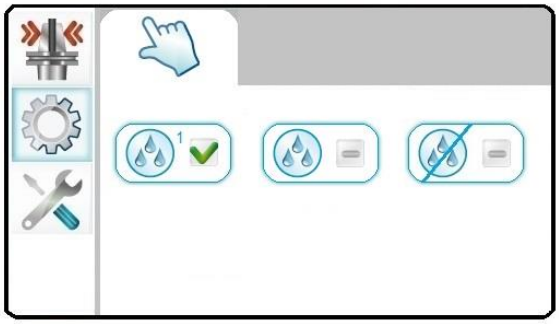
6.2.2.2 Configuration of cooling time for “manual shrinking”

Select the functions with up ▲ and ▼ down.

The active function is marked with ✔.

Confirm the function with OK and leave the menu.

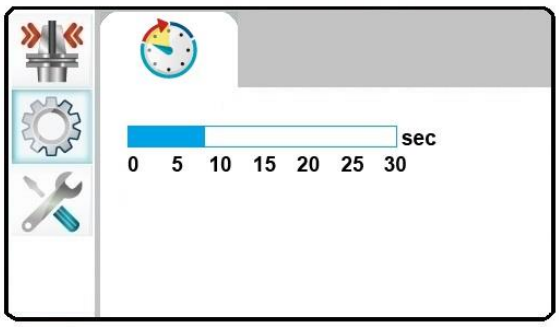
You can leave the menu without saving the function by pressing ESC.



All functions of cooling time for “manual shrinking” are similar to chapter 6.2.2.1.

6.3 Enter Start Delay (ISG3410-WK / ISG3430-TLK4 only)

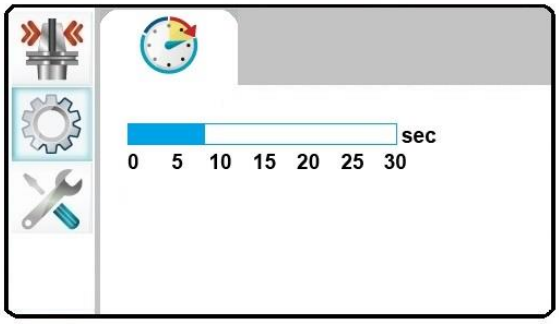
Around 3 seconds will pass before the generator starts. If this waiting time is too short to insert bulky tools, the Start Delay option can be used to set an additional delay of up to 30s.



Select the desired value with up ▲ and ▼ down and confirm with OK.

6.4 Enter Stop Delay (ISG3410-WK / ISG3430-TLK4 only)

After the selected shrinking time has ended, the coil is rapidly driven upwards. If the dwell time of the coils in the lower position is not long enough, a delay time of 30 seconds can be set in the option of the Stop Delay that enables the safe extraction of heavy tools with shrink fitting.
In this case the coil stays in the lower position until the selected time has expired or unless the Stop button is activated.



Select the desired value with up ▲ and ▼ down and confirm with OK.

6.5 Read customized parameters

The function is to read customized parameters from an USB memory stick.

These parameters replace the factory defined values (see5.5.1.1, Table of factory defined parameters25, page 25).

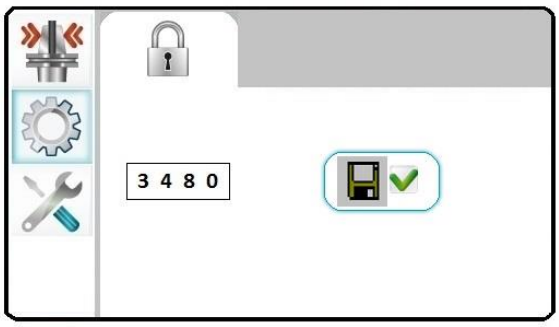
The setup of this parameter file is only allowed by the manufacturer due to warranty reasons.

6.6 Password on/ off or change

Entering "0000" will switch off the password.
This is the factory default.

Whenever you enter a value unequal to "0000" you switch on the password request.

You can enter a password of your choice with up to 4 decimal figures (for e.g.: 3480).



You can increase or decrease the numbers with up ▲ or ▼ down.

Confirm the value with OK and go to the next decimal figure of the password.

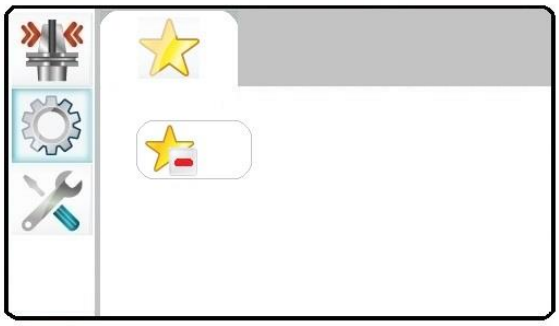
Pressing again OK will save the password.
You can leave the menu without saving the password by pressing ESC.

6.7 Reset list of favorites

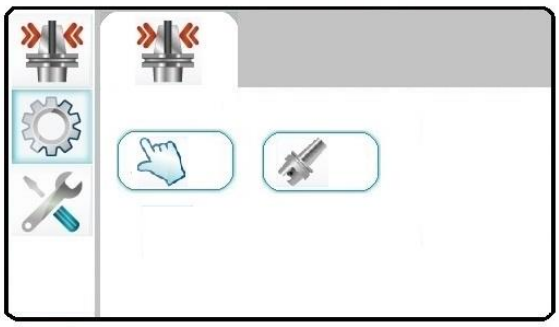
The list of favorites may be cleared by activating the button with OK.

The new list of tools will be generated automatically according to their occurrence.

See Chapter 5.5.4, List of most used tools: FAVORITES, page 34.



6.8 Lock shrinking operations

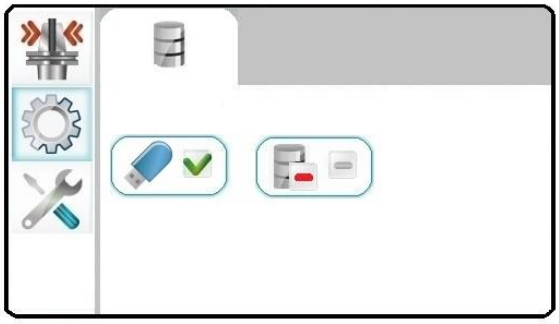


With the ISG3410 / ISG3430, it is possible to lock the functions “Manual shrinking” and / or “Parameter shrinking” for the operator using a password. The function is only applied when ThermoGrip® shrink-fit chucks are used and any overheating occurs as a result of an operating error of the operator must be excluded.

Select or deselect with up ▲ and ▼ down and confirm with OK.

First of all a password must be assigned to be able to lock the functions (see Chapter 6.6, Password on/ off or change, page 39).

6.9 Write the tool memory onto an USB memory stick

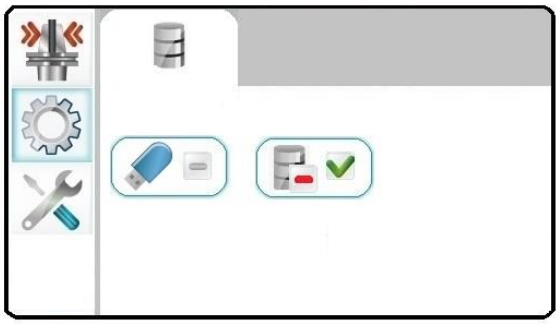


Select the options with up ▲ and ▼ down.

Activating the USB button will write the tool memory onto the USB memory stick.

Format the USB memory stick as FAT32.

6.10 Reset tool memory



The tool memory may be cleared completely by pressing the button OK.

7 Service

With multiple pressings of ESC you come to the main menu.

Shrinking

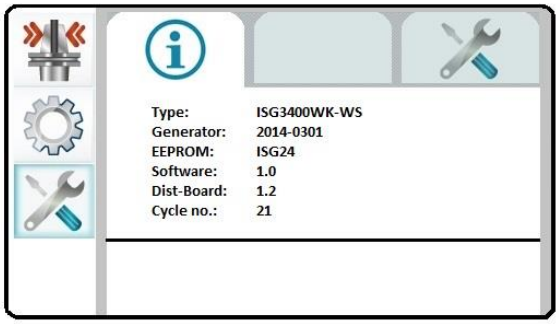
Configuration

Service

Select with up ▲ and ▼ down the function Service and activate with OK.

Information about the shrink unit

Type	equipment designation
Generator	number of the generator installed
EEPROM	version of the variable memory
Software software	version of the control panel
Dist-Board	version of distribution board
Cycle no.	number of all shrinking cycles

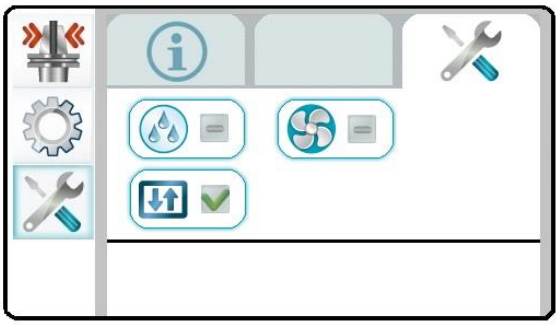


Manual execution of machine functions


Pump on/ off (max. 5 min.)
(ISG3410-WK / ISG3430-TWK only)


Dryer on/ off
(ISG3410-WK only)


Cylinder up/ down
(ISG3410-WK only)



8 Cleaning and Servicing

8.1 Maintenance / Visual Inspection

Every 6 months, check mains cable for damage (visual inspection), the function of protected earth PE and the earth leakage circuit breaker (GFI, GFCI).
To check the GFCI, switch on the pump (see Chapter 7, Service, page 41).

8.2 Cleaning

The unit must be cleaned regularly. To do this, switch it off at the mains and depressurize (remove the mains plug and also at ISG3410-WK / ISG3430-TLK4 unplug compressed air).

The device can be cleaned on the outside using a moist cloth and standard (solvent-free) cleaning agents.

8.2.1 Checking the cooling emulsion (ISG3410-WK / ISG3430-TWK)

The cooling emulsion (Synergy 905 or own products with similar contents) should be changed regularly, at least every 6 months, depending on the contamination level of tank and cooling emulsion, in order to avoid excessive contamination.

Depending on the contamination level, a system cleaner (Techniclean MTC 43 or own products with similar contents) should be used between cooling emulsion changes.

Mix the system cleaner with coolant and leave it in the tank for one day
(approx. concentration of 1%). Shrinking can be carried out for one day with the system cleaner.

The cleaner should not be left in the tank for longer than one day!
The cleaner should not be used as addition to the cooling emulsion!

Keep the unit clean and clean as necessary!
Never use compressed air or cleaning agents!

The unit may only be opened or repaired by manufacturer’s service personnel!

The manufacturer only recommends the use of Synergy 905 as the emulsion and Techniclean MTC 43 as the cleaner!

If this is not possible, only non-flammable, ester-oil-free emulsions and cleaners may be used, and the technical and chemical properties of these must match Synergy 905 and Techniclean MTC 43.

Manufacturer's details see Chapter 10.7, Safety Data Sheets.

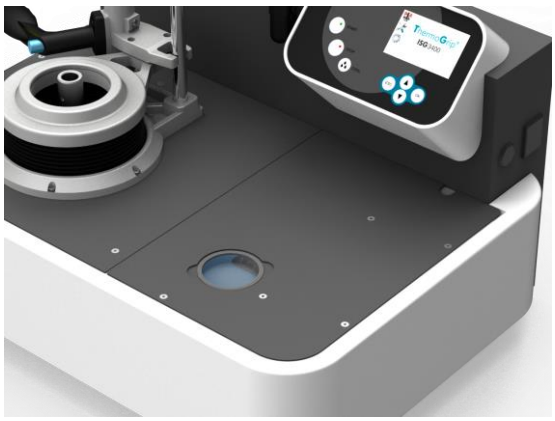
- **Fehler! Verweisquelle konnte nicht gefunden werden.**, page **Fehler! Textmarke nicht definiert.**
- **Fehler! Verweisquelle konnte nicht gefunden werden.**, page **Fehler! Textmarke nicht definiert.**

8.3 Filling/ draining the cooling emulsion

1 liter of cooling concentrate (one initial tank filling) is provided with the unit.
In general, your plant cooling emulsion with similar contents can be used.
Only fill in in an empty and clean tank.

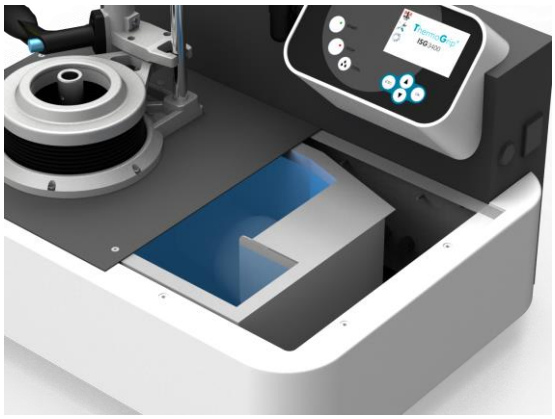
8.3.1 Filling the coolant tank (ISG3430-TWK)

Move away flexible cover



Remove cover of tank opening

Fill tank up to range of MIN-MAX marks



Remove plate for cleaning

- Fill 1 liter of coolant concentrate (approx. concentration of 2-3%)
- Fill water into the coolant tank with a hose up to MIN-MAX range (marked at the tank) (approx. 25 – 28 liters at ISG3430-TWK and approx. 50 liters at ISG3410-WK)
- After filling the tank, test the cooling cycle several times in order to ensure that the coolant concentrate is 100% mixed with the water
- After this test the shrinking process can begin

8.3.2 Draining the coolant tank

To drain the cooling emulsion out of the tank use a sucking device.
(see 10.3.2 Service pump, page 52)

8.4 Checking the float switch

- Whenever the coolant is changed, the function of the float switch must be checked.
  The float must move freely and it will sag down by its own weight, when the coolant tank is empty. With full coolant tank, (float under surface level) the float will stay in horizontal position, the switch is closed.
- If the float does not work properly, try to clean it carefully with a damp rag and mild cleaning agents. Do not use cleaning agents containing any solvent.
  Do not damage the float.
- If cleaning does not restore function, or if there is any damage to the connector or to the cable, the float switch must be replaced.
- The float switch is a safety device and must not be repaired.

8.5 Replacing the float switch

Attention: prior to service the machine must be disconnected from its power supply and from the compressed air system (see Chapter 2, Safety, page 9)

- To remove the float switch, please disconnect connector from the generator module
- Drain the coolant tank (see 8.3.2 Draining the coolant tank, page 43)
- Remove plastic hex nut (22mm hex) and pull the wire with the old switch through the hole
- Replace float switch and align properly, so the float hangs down. The float must move freely by its own weight. Tighten plastic hex nut with a torque of 4Nm (2.95 lbf*ft)
- Replace connector to the generator module. Do not kink or pinch the cable.
  The cable should not have any tension

9 Contacting the Manufacturer

These operating instructions can only serve to generally describe the function and operation of the ThermoGrip® induction generator.

To solve special problems and to carry out repairs or to make any changes not described in these operating instructions, please contact the below mentioned company who will be pleased to help you.

In case of problems or enquiries, please note the unit serial number and the software status. The serial number is located on the rating disc on the back of the unit and the software status is shown in the Service menu beneath the version numbers.

Contact us at:

Bilz Werkzeugfabrik GmbH & Co. KG

Vogelsangstrasse 8

73760 Ostfildern

Germany

Phone +49 (711) 34801-0

Fax +49 (711) 348-1256

www.bilz.de

Up-to-date news about ThermoGrip® can be found on the internet site.

10 Appendix

10.1 Error Messages and Corrective Measures

Hints are displayed as follows:

 <Number> 

Hints serve as information for the operator and can be acknowledged using the Stop button!

Errors are displayed as follows:

 <Number> 

After troubleshooting, the displayed error can be acknowledged using the Stop button!

Errors must only be rectified by trained personnel!

Number	Type	Message	Possible cause	Corrective measures
		Device cannot be started up and programmed	Lack of compressed air (ISG3410-WK / ISG3430-TLK4) No electric supply Fuses defective	Connect and/ or check the power and compressed air supply Check primary fuses of transformer
1.1		No SD card detected in operation panel	SD card faulty or absent	Insert SD card correctly or replace it
1.2		Programmed coil and fitted coil are not identical	Coil fit wrong Wrong coil programmed in tool memory	Insert the correct coil Change programmed coil in tool memory
1.3		Temperature protection of coil 3 active	Timeout of temperature protection not finished	Wait 5 minutes until end of temperature protection
1.4		Telegram error	Connection between operation panel and distribution board faulty	Check the connections in the device
1.6		Chuck did not leave start position in time	Position switch misadjusted/ defective Lifting unit not moving freely	Check/ exchange position switch Service/ clean/ lubricate lifting unit
1.7		Chuck did not reach end position in time	Position switch misadjusted/ defective Lifting unit not moving freely	Check/ exchange position switch Service/ clean/ lubricate lifting unit
1.8		GFCI switch of pump has been released	Pump or GFCI defective	Switch on GFCI Change pump Change GFCI
1.9		Error not acknowledged	Error occurred while shrinking and has not been acknowledged	Solve problem and acknowledge message with Stop button

Number	Type	Message	Possible cause	Corrective measures
1.10		Wrong type in tool memory	Tool type wrong in set of tool memory	See manual of ToolMemoryEditor
1.11		Data carrier not recognized	Invalid set of data on data carrier Data carrier defective	Write valid set of data onto data carrier Change data carrier
1.12		Balluff reader not recognized	Balluff reader not connected Cable is defective	Connect Balluff reader to the interface Check the cable
1.13		Parity or Stop Bit Error	Balluff reader interface has misconfiguration	Correctly set up the configuration of the reader
1.14		Telegram Error	Balluff reader Telegram has invalid carrier	Correctly set up the configuration of the reader
1.15		BCC Check Digit Error	Balluff Reader Telegram has incorrect BCC check digit	Correctly set up the configuration of the reader
2.2		No USB stick in distribution board detected	USB stick faulty or absent in distribution board	Insert or replace USB stick into distribution board
2.3		File not found on USB stick	Missing file on USB stick	Copy missing file on USB stick
2.4		Wrong checksum detected in file Tool.bin	Invalid file	Reprogram file with ToolMemoryEditor
2.5		Float switch in coolant tank not engaged	Coolant level in tank too low Float switch fixed or hangs	Refill coolant liquid Check switch/ level
2.6		Invalid machine type	Machine type not detectable	Contact your supplier
2.7		Telegram error	Connection between distribution board and I/O-extension faulty	Check the connections in the device
2.8		Telegram error	Connection between distribution board and generator faulty	Check the connections in the device
2.10		Float switch cable not connected	Float switch cable not connected or defective	Check cable and connect to generator box
2.41		Fuse has blown	Pump or fuse are defective (Version with Opto-Coupler)	Replace fuse Replace pump
2.42		GFCI switch of pump has been released	Pump or line are defective (Version with Opto-Coupler)	Turn on GFCI switch Replace pump
2.44		Bilz-Reader not recognized on the USB interface	No reader connected Wrong or defective reader	Connect reader to USB interface or change it

Number	Type	Message	Possible cause	Corrective measures
2.45		Data reader not recognized on the USB interface	No reader connected Wrong or defective reader	Connect reader to USB interface or change it
2.46		Connection to database failed	No database connected Connection disturbed Defective Ethernet interface	Connect database Check Connection Change hardware
2.47		Data carrier ID not found in the database	Data record from data carrier has not yet been created in the database	Create data record for data carrier ID in the database
2.48		BCC error in data record from the database	Transmission error from the database	Check configuration of database
3.1		Generator not found at start-up	Generator not connected to distribution board	Check the connections in the device.
3.4		Invalid Data	Data in set of parameters corrupted	Insert correct data into tool memory with ToolMemoryEditor
3.6		Current defect in IGBT	Missing at least 1 phase Mains supply is too low or is dropping down during shrinking	Check mains supply at mains receptacle in device behind the fuses
3.7		Current defect in coil	Current monitoring of the coils diagnoses over/ under current	Check coil contacts Change coil
3.8 		Safety circuit open Coil temperature	Coil temperature > 60°C	Leave the coil to cool down or change it Try again
3.9 		No coil detected or coil defective	Coil absent or defective	Fit a coil Replace coil
3.10		Safety circuit open Temperature of heat sink too high to start shrinking	Temperature inside of generator is too high	Wait to cool down Try again
3.11		Safety circuit open Temperature of heat sink too high	Temperature inside of generator is too high	Wait to cool down Try again
3.12		Relay fault	Relay of output stage doesn't close	Try again
3.13		Hardware error	Invalid generator hardware detected	Contact your supplier
3.18		Generator function stopped incorrect	Error of generator	Acknowledge error message and try again
3.22		IGOR hardware error Processor error	Error of generator	Change generator
3.23		IGOR communication error between both processors	Error of generator	Change generator

Number	Type	Message	Possible cause	Corrective measures
3.24		Relay group 1 error	Error of generator	Change generator
3.25		Relay group 2 error	Error of generator	Change generator
3.26		Relay/Fuse/Phase Error	Error of generator	Change generator
3.27		Relay/Load Resistance Error	Error of generator	Change generator
3.28		Relay test currently not working	Error of generator	Change generator
3.29		Relay test failed time out	Error of generator	Change generator
3.30		Overvoltage	Main voltage is too high	Check power
3.31		Under voltage	Main voltage is too low	Check power
3.32		Invalid coil resistance	Coil with incorrect ID used	Insert correct coil
3.33		Phase missing	Missing phase in power supply	Check power connection

Should these measures fail to start up the ISG3410 / ISG3430, please contact your supplier or the manufacturer’s customer service.

10.2 Technical Data

	ISG3430-TLK	ISG3430-TWK	ISG3430-TLK4	ISG3410-WK
Designation of machine types:				(short guide unit: ..-WK1-..)
Fixed coil: 400V (Designation: ..-FS-11) Changeable coil: 400V (Designation: ..-WS-11)	ISG3430-TLK-FS-11 ISG3430-TLK-WS-11	ISG3430-TWK-FS-11 ISG3430-TWK-WS-11	ISG3430-TLK4-FS-11 ISG3430-TLK4-WS-11	ISG3410-WK1-FS-11 ISG3410-WK1-WS-11 ISG3410-WK1-FS-15 ISG3410-WK1-WS-15
				(long guide unit: ..-WK4-..)
Fixed coil: 480V (Designation: ..-FS-15) Changeable coil: 480V (Designation: ..-WS-15)	ISG3430-TLK-FS-15 ISG3430-TLK-WS-15	ISG3430-TWK-FS-15 ISG3430-TWK-WS-15	ISG3430-TLK4-FS-15 ISG3430-TLK4-WS-15	ISG3410-WK4-FS-11 ISG3410-WK4-WS-11 ISG3410-WK4-FS-15 ISG3410-WK4-WS-15
El. power supply: 400V 480V	3 x 400 V + N / 16 A / 50 Hz 3 x 480 V / 15 A / 60 Hz			
Generator power: 400V 480V	11 kW 12 kW			
Usable tool shanks:	CARBIDE/ HSS			
Maximum of tool length:	450 mm	500 mm	400 mm	400 mm (WK1) 680 mm (WK4)
Clamping range Ø:	3 – 32 mm (CARBIDE), 6 – 32 mm (HSS) all machines 3 – 50 mm (CARBIDE), 6 – 50 mm (HSS) only with ISG3410-WK-WS / ISG3430-TLK4-WS and an adequate coil THD 16 – 25 mm/1” only with ISG3410-WK-WS and an adequate coil			
Air pressure:	none		4 bar (60 psi); dried, oil free, filtered (5 µm)	
Weight (without coolant): 400V 480V	45 kg 50 kg	70 kg 75 kg	70 kg 75 kg	120 kg 125 kg
Dimensions: Depth Width Height	540 mm 780 mm 970 mm	560 mm 800 mm 1130 mm	560 mm 800 mm 1060 mm	560 mm 800 mm 1720 mm (WK1) oder 1950 mm (WK4)
Environmental conditions: Temperature Relative humidity Air pressure	+5°C … +40°C (+40°F ... +105°F) 5% … 85%, no condensation, no icing 86kPa … 106kPa			

10.3 Scope of Supply

Shrinking Unit ISG3410 / ISG3430 incl. coil and 4 ferrite discs, clamping ring, gloves as well as 1 liter coolant concentrate (corresponds to a complete filling of the coolant tank).

<table>
<tr><td rowspan="6">Ferrite discs one-piece
  </td><td colspan="3">For an optimal shielding of the magnetic field between coil and tool shank</td></tr>
<tr><td>Clamping- Ø</td><td>Designation</td><td>Ident No.</td></tr>
<tr><td>3,0 – 5,9 mm</td><td>ISGS3201-0</td><td>6726157</td></tr>
<tr><td>6,0 – 12,0 mm</td><td>ISGS3201-1</td><td>6726143</td></tr>
<tr><td>12,1 – 22,0 mm</td><td>ISGS3201-2</td><td>6726144</td></tr>
<tr><td>22,1 – 32,0 mm</td><td>ISGS3201-3</td><td>6726145</td></tr>
<tr><td rowspan="3">Clamping ring
  </td><td colspan="3">For a secure support of the ferrite disc in the coil</td></tr>
<tr><td></td><td>Designation</td><td>Ident No.</td></tr>
<tr><td></td><td>ISGS309</td><td>6950431</td></tr>
<tr><td rowspan="3">Induction coil
(only with an option “coil change”)
  </td><td colspan="3">Universal coil for a clamping range of Ø 3-32 mm, which is realized with 4 ferrite discs</td></tr>
<tr><td>Clamping- Ø</td><td>Designation</td><td>Ident No.</td></tr>
<tr><td>3,0 – 32,0 mm</td><td>ISGS3200-1</td><td>6726141</td></tr>
<tr><td rowspan="3">Gloves
  </td><td colspan="3">For the protection from possible burns and cuts</td></tr>
<tr><td></td><td>Designation</td><td>Ident No.</td></tr>
<tr><td></td><td>VA662-10</td><td>6947666</td></tr>
<tr><td rowspan="3">Cooling emulsion
  </td><td colspan="3">Cooling emulsion to protect the chuck against corrosion</td></tr>
<tr><td></td><td>Designation</td><td>Ident No.</td></tr>
<tr><td>1 liter (supplied)</td><td>Synergy 905</td><td>5085078</td></tr>
</table>

10.3.1 Available additions and optional accessories

Expansion options and optional accessories can be found on our homepage or in our product catalogs.

www.bilz.de

If you have any further questions, please contact your sales representative.

10.3.2 Service pump

The service pump can be used to drain the cooling tank of shrink machines with water cooling. Power via 2 batteries Mono Type D 1,5 V (included).

	Designation	Ident No.
Service pump	ISGP-3V-600	5021281

10.4 Instructions Safety Glove

Description: Heat protection glove, outer layer consisting of para aramide yarn (KEVLAR) Fine knitted fabric lined with aramide felt and 100% Nornex knitted fabric

Availability: Size 10

Color: yellow

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

Description: These gloves have been designed to protect your hands. They are made of the materials named above. The characteristic features of these gloves are their long service life and outstanding comfort.

Category: CE 95

Instructions: Check that the gloves offer suitable protection for the activity you are currently performing. Select the gloves to fit the size of your hands. Remove the gloves from the wrapping.

When using the gloves, pay attention to the following points:

The maximum touching time depends on the area touched.
For safety reasons this time should never exceed 5 sec.

The open structure of these gloves means that they cannot protect your hands from punctures and impacts from pointed objects. Penetration by liquids is also possible. For protection from chemicals, gloves resistant to such substances should be worn over these gloves. Oil, grease and moisture reduce the resistance of all gloves to cutting damage and should be avoided. KEVLAR gloves are resistant to tearing. Do not use these gloves near machines with moving parts, as your hands could get pulled into the machine.

Care and repairs: KEVLAR gloves can be dry-cleaned or washed according to the instructions on the label. Wash in water and mild detergent at maximum 40°C. DO NOT USE softening agents, bleach or oxidizing agents, as these weaken the aramide fibers and reduce the cut-resistance of the gloves. After washing the gloves, check them carefully for any cuts and worn places. Do not use gloves which are damaged too much and can no longer be repaired, as these no longer offer adequate protection.

Storage: The gloves should be kept in their original wrapping in a dry, clean place. Avoid exposing the gloves to moisture or high temperatures.

Warning: The degree of protection required by a special task depends on the risks involved. You yourself bear final responsibility for selection of the best safety equipment for the risks involved in your workplace. Please check whether this article offers adequate protection for the jobs of work you have to perform. We offer a whole range of cut- and heat-proof KEVLAR gloves for high-risk jobs of work.

10.5 Mains Connections

Allocation of the CEE socket

Pin name	Pin designation	Wire color
L1	Phase L1	Brown
L2	Phase L2	Black/ grey
L3	Phase L3	Black
N	Neutral	Blue
PE	Ground	Green-yellow

The nominal voltages between the phases are 3 x 400V (-10/ +10%)

The nominal voltage between a phase L1, L2 or L3 and neutral is 230V (-10/ +10%)

Further hints:

- Connecting the protected earth PE and connecting the neutral N is essential!
- If an earth-leakage circuit breaker (GFI, GFCI) is used for the protection of the CEE-socket, it must be 4-polar.

Allocation of the power cord (480V)

Pin name	Pin designation	Wire color
L1	Phase L1	black
L2	Phase L2	orange
L3	Phase L3	red
PE	Ground wire	green

The nominal voltages between the phases are 3 x 480V (-10/ +10%)

Further hints:

- Connecting the protected earth PE is essential!
- This device must be connected to a circuit of 20A max. with class J fuses.
  It is recommended to place a fused disconnect in close proximity of the machine with lock out provision provided. We recommend placing an insulation transformer ahead of this.

10.6 EC Declaration of Conformity

In accordance with the EC Machinery Directive 2006/42/EC

Bilz Werkzeugfabrik GmbH & Co. KG

declares, that the machine designated below corresponds to the following relevant directives with regard to its design and construction in the version brought into circulation.

Designation of the machine:	Induction unit
Machine type:	ISG3410 / ISG3430
Relevant EC directives:	EC Machinery Directive 2006/42/EC EC EMC Directive 2014/30/EC Low Voltage Directive 2014/35/EU
Applied harmonized standards, 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
Applied national standards (USA):	FCC 47 CFR Ch. I (Edition 10-1-01), Part 18 C

In the event of any changes to the machine for which we have not been consulted, this statement becomes null and void.

T H E C O M P A N Y:

Company name:	Bilz Werkzeugfabrik
Legal form of company:	GmbH & Co. KG
Founding year:	1919
Register of companies:	HRA 210313, Amtsgericht Stuttgart
Headquarters:	Vogelsangstrasse 8 73760 Ostfildern Germany
Phone:	+49 (711) 34801-0
Fax:	+49 (711) 348-1256
E-Mail:	vertrieb@bilz.de
Internet:	www.bilz.de
Name of authorized representative of the technical documentation:	Bilz Werkzeugfabrik GmbH & Co. KG

Ostfildern, February 2024April 2024

General Manager: Michael Voss

10.7 Safety Data Sheets

All safety data sheets for the hazardous substances supplied are available on request.

10.8 Table of Fuses for 400V units

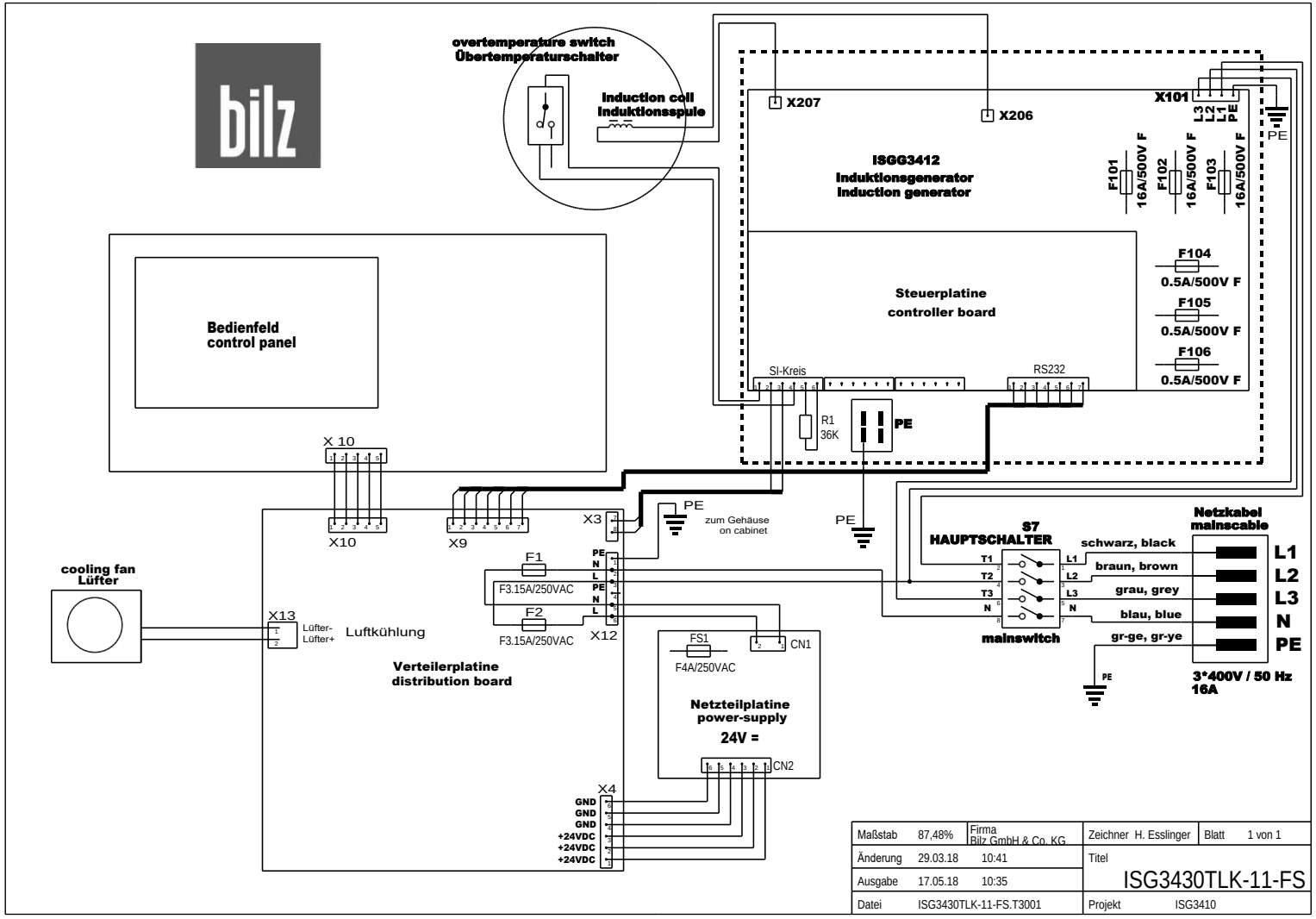
Fuse	Phases	Rated Voltage	Rated Current	Frequency	Dimensions	Tripping Characteristic	Location
F1	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F2	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F3	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
FS1	1	250V	4A	50/60 Hz	5x20 mm	fast acting	24VDC Power supply
F101	1	500V	16A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F102	1	500V	16A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F103	1	500V	16A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F104	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator
F105	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator
F106	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator

10.9 Table of Fuses for 480V units

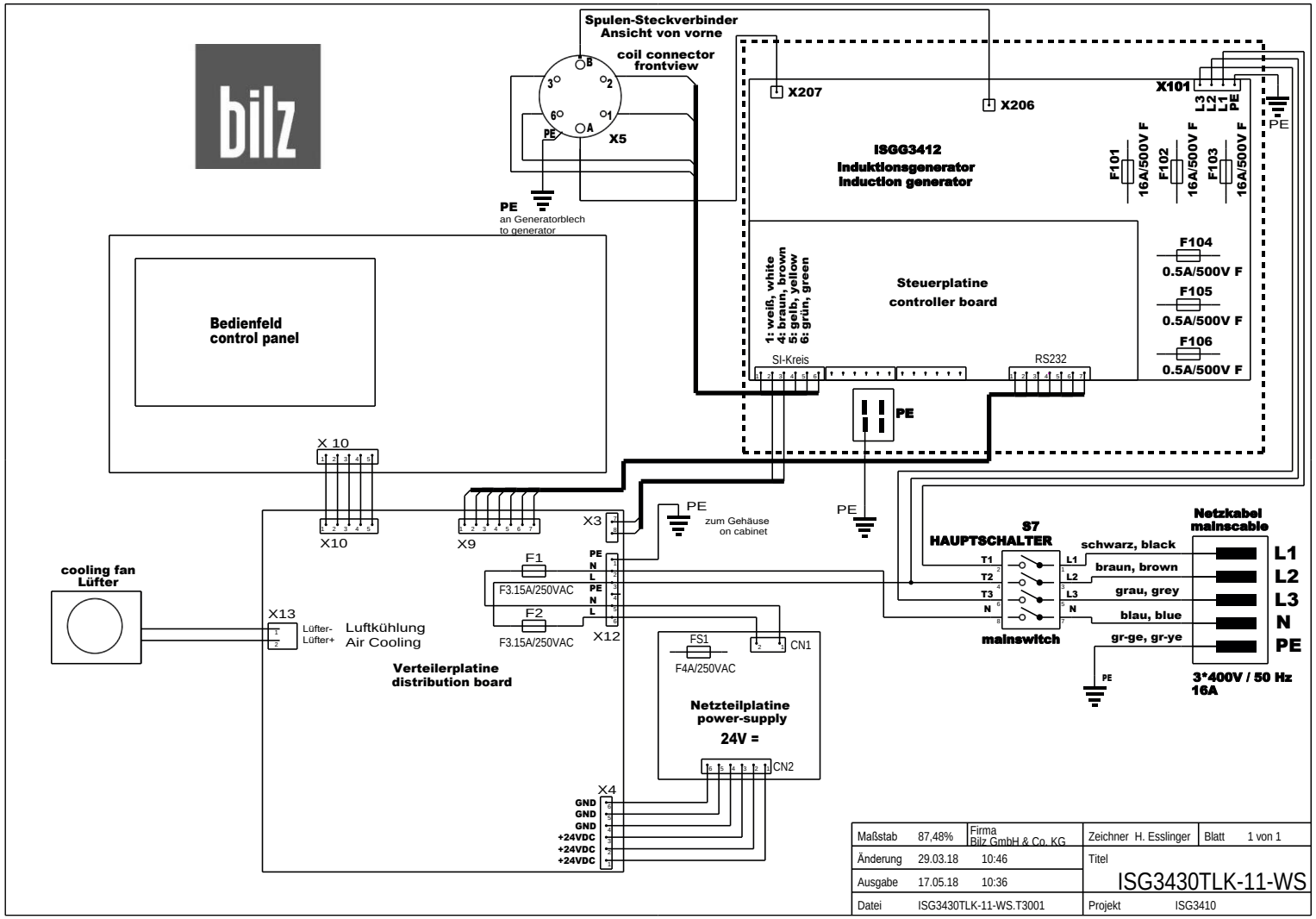
Fuse	Phases	Rated Voltage	Rated Current	Frequency	Dimensions	Tripping Characteristic	Location
F1	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F2	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F3	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
FS1	1	250V	4A	50/60 Hz	5x20 mm	fast acting	24VDC Power supply
F7	1	600V	1.5A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	time lag	Transformer input
F8	1	600V	1.5A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	time lag	Transformer input
F101	1	600V	15A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F102	1	600V	15A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F103	1	600V	15A	50/60 Hz	10x38 mm - 13/32" x 1-1/2"	fast acting	Generator
F104	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator
F105	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator
F106	1	500V	0.5A	50/60 Hz	6.3x32 mm - 1/4” x 1-1/4”	fast acting	Generator

10.10 Wiring Diagrams

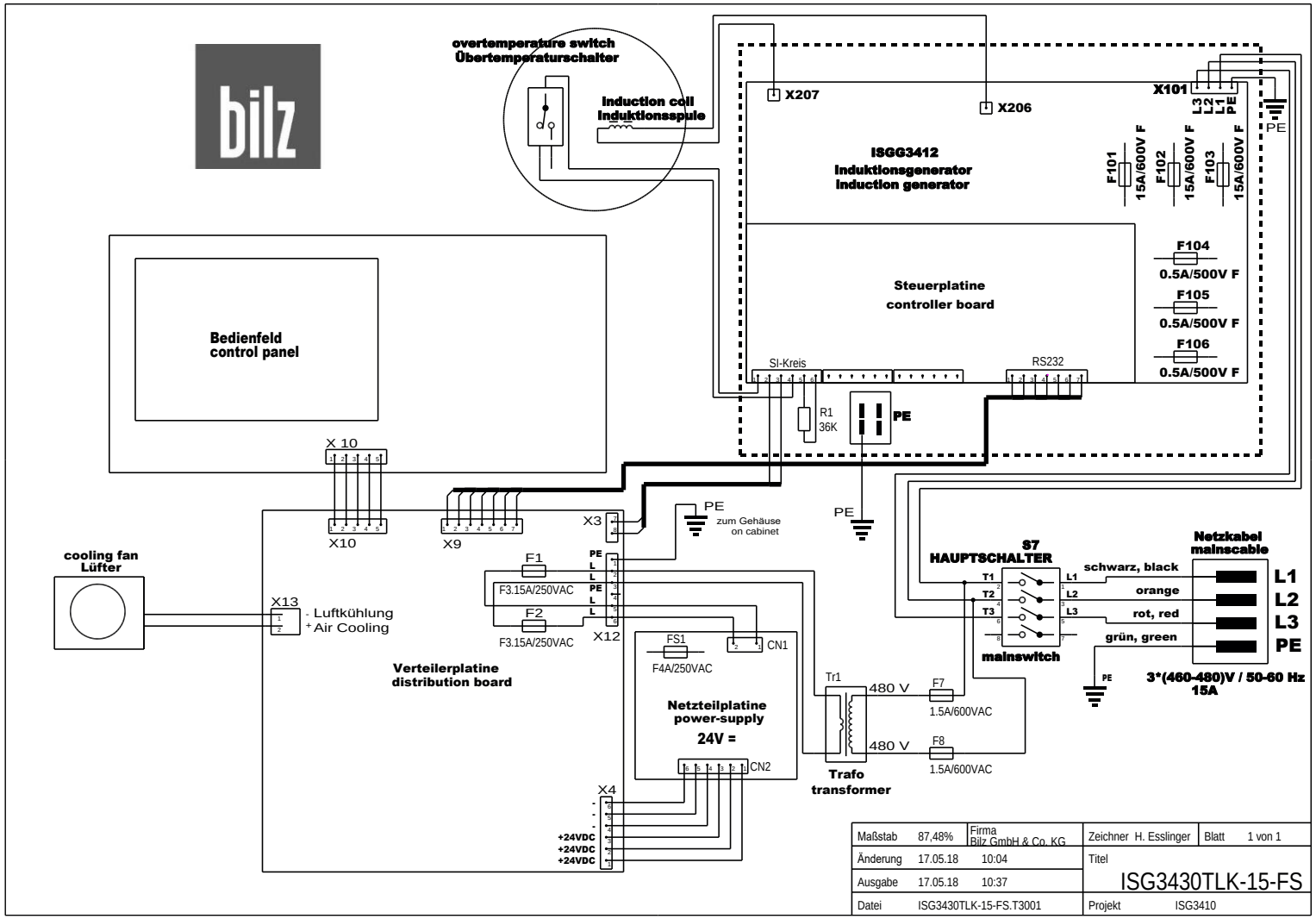
10.10.1 ISG3430-TLK-11-FS (400V)



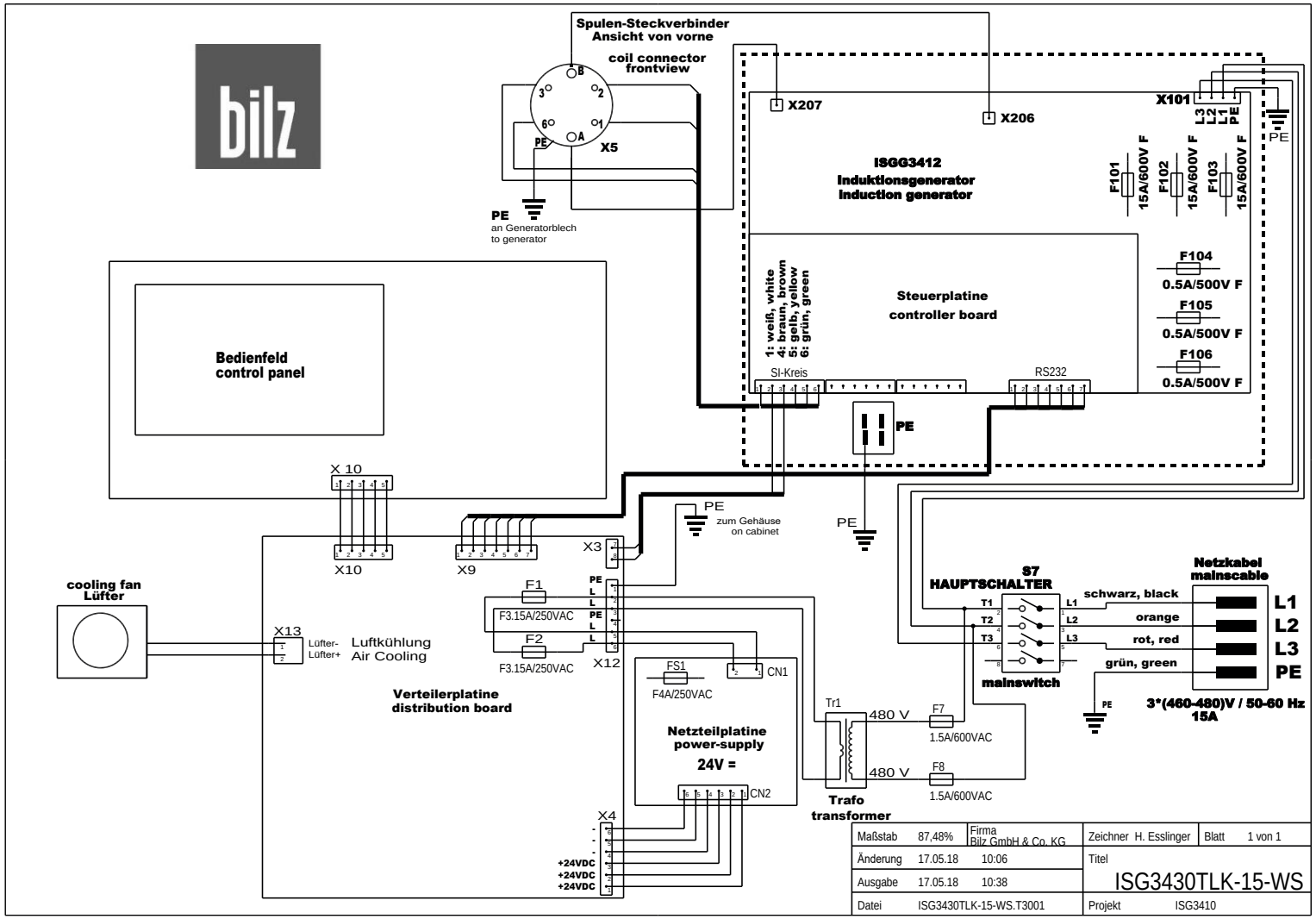
10.10.2 ISG3430-TLK-11-WS (400V)



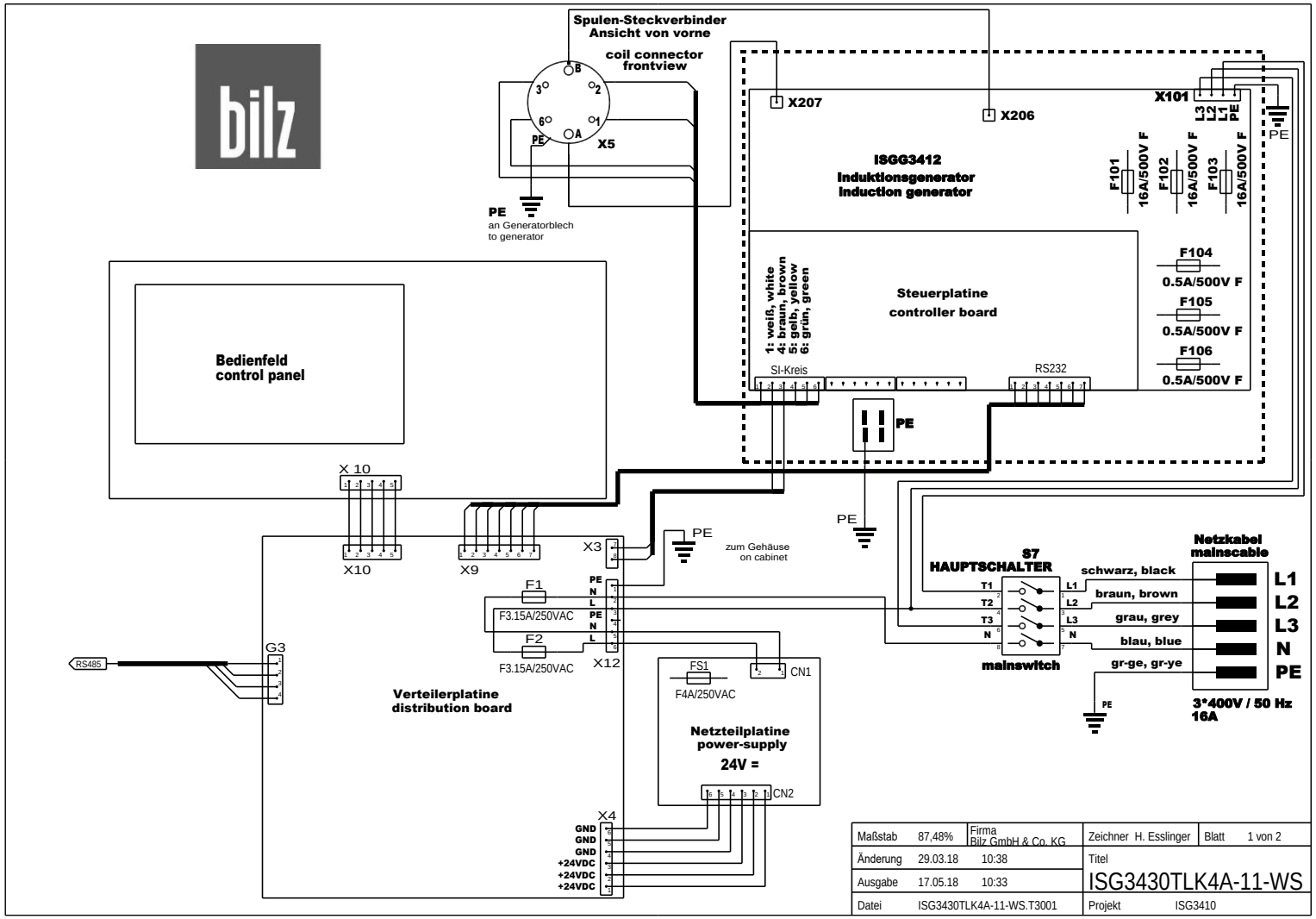
10.10.3 ISG3430-TLK-15-FS (480V)

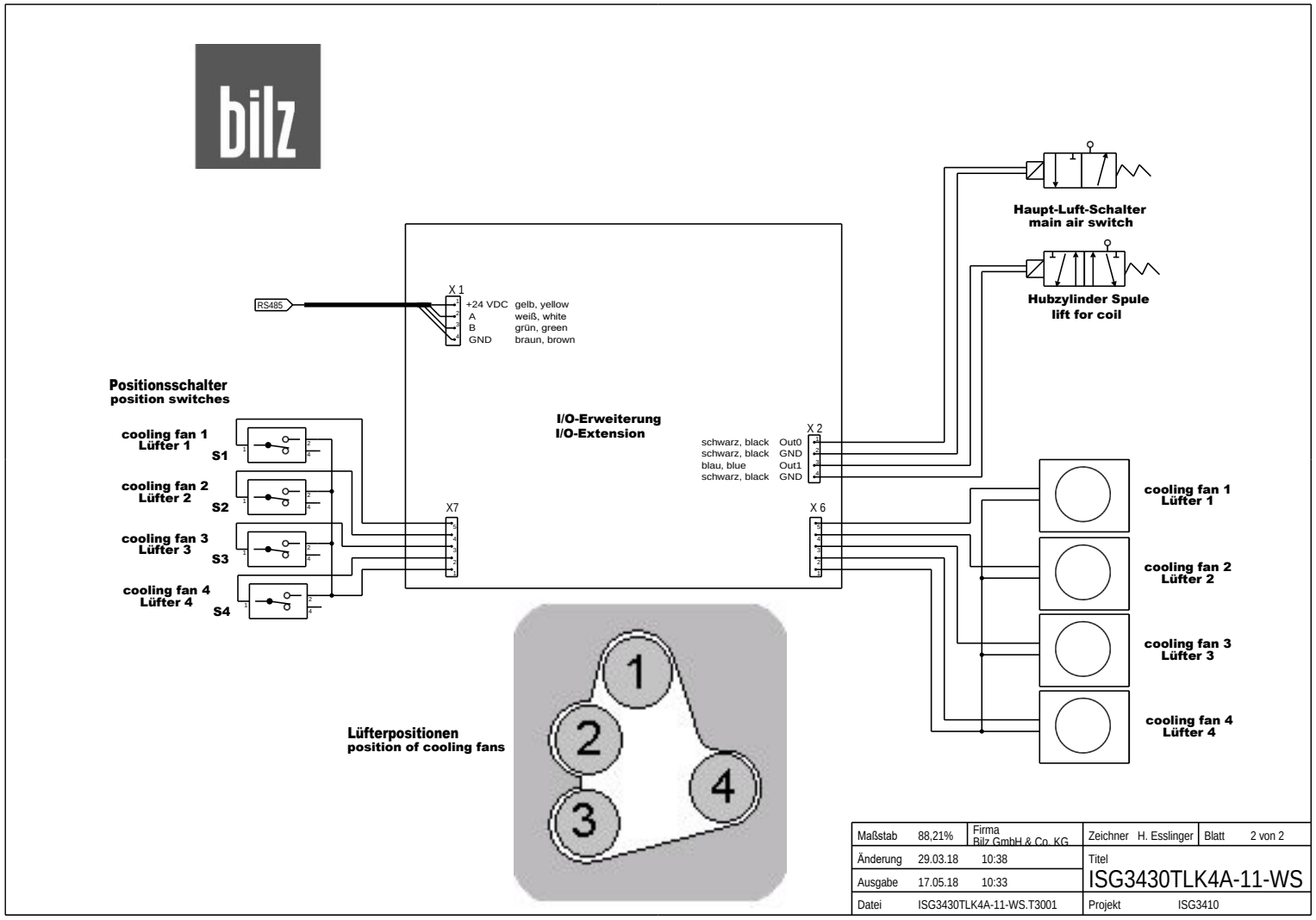


10.10.4 ISG3430-TLK-15-WS (480V)

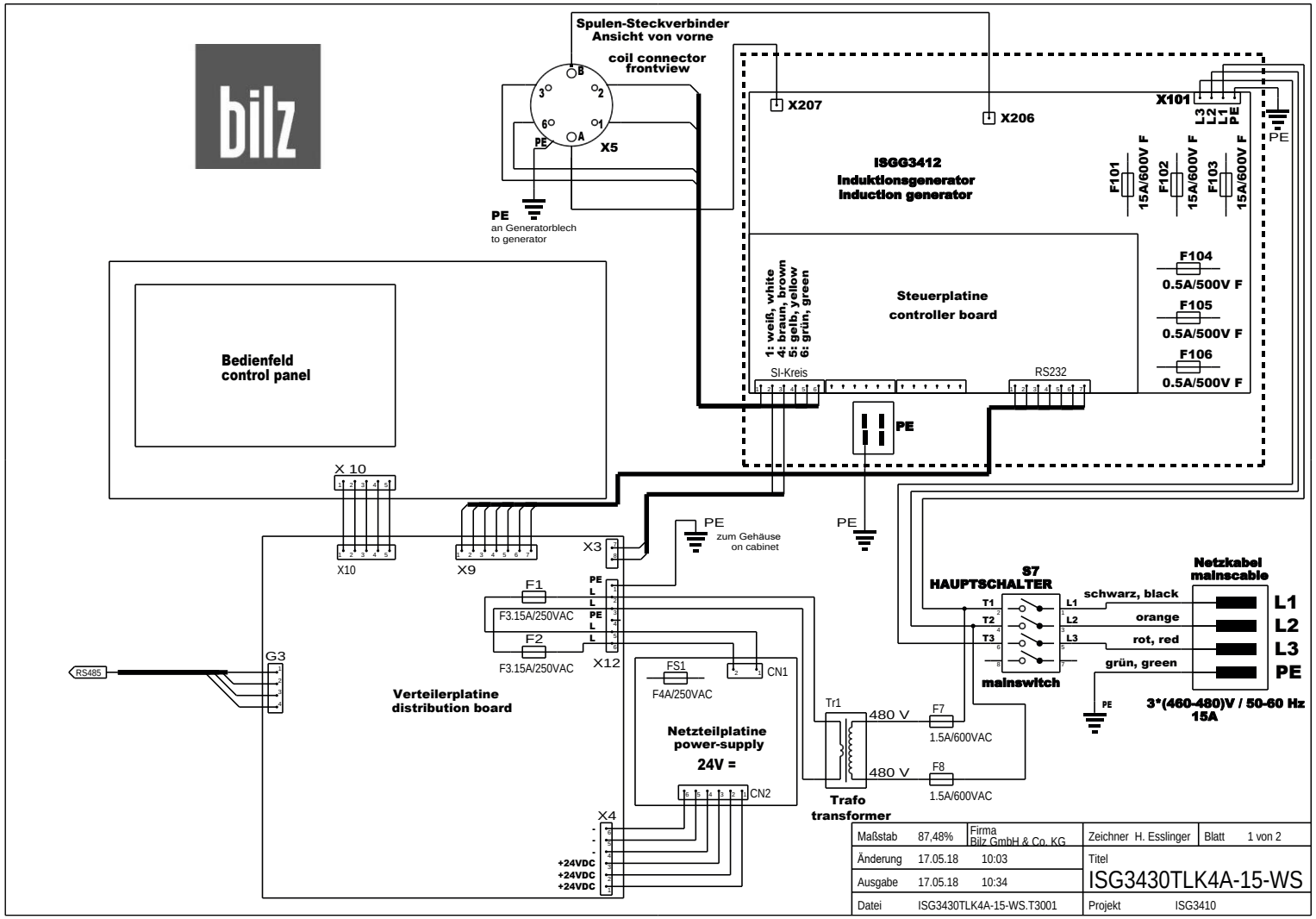


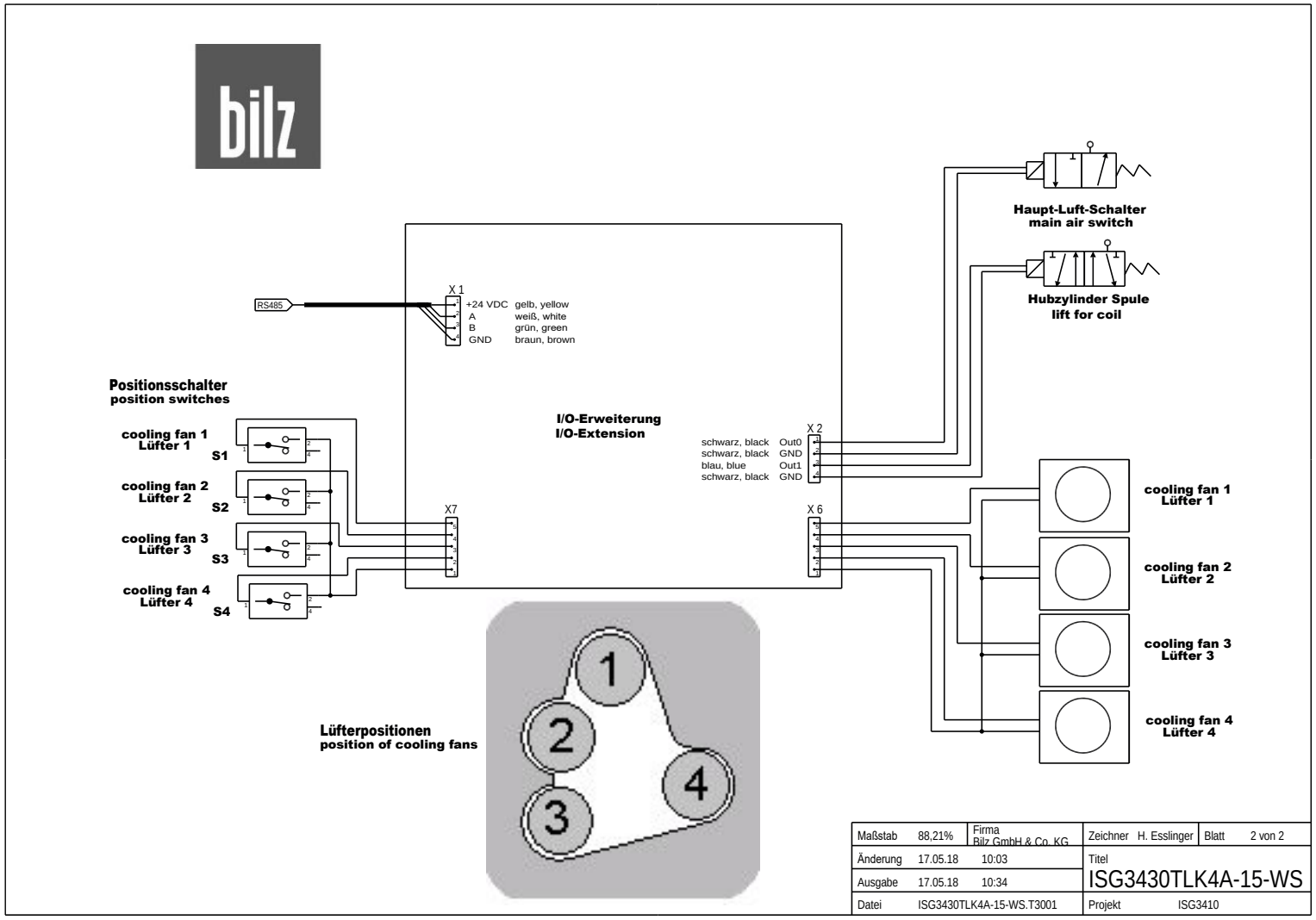
10.10.5 ISG3430-TLK4-11-WS (400V)



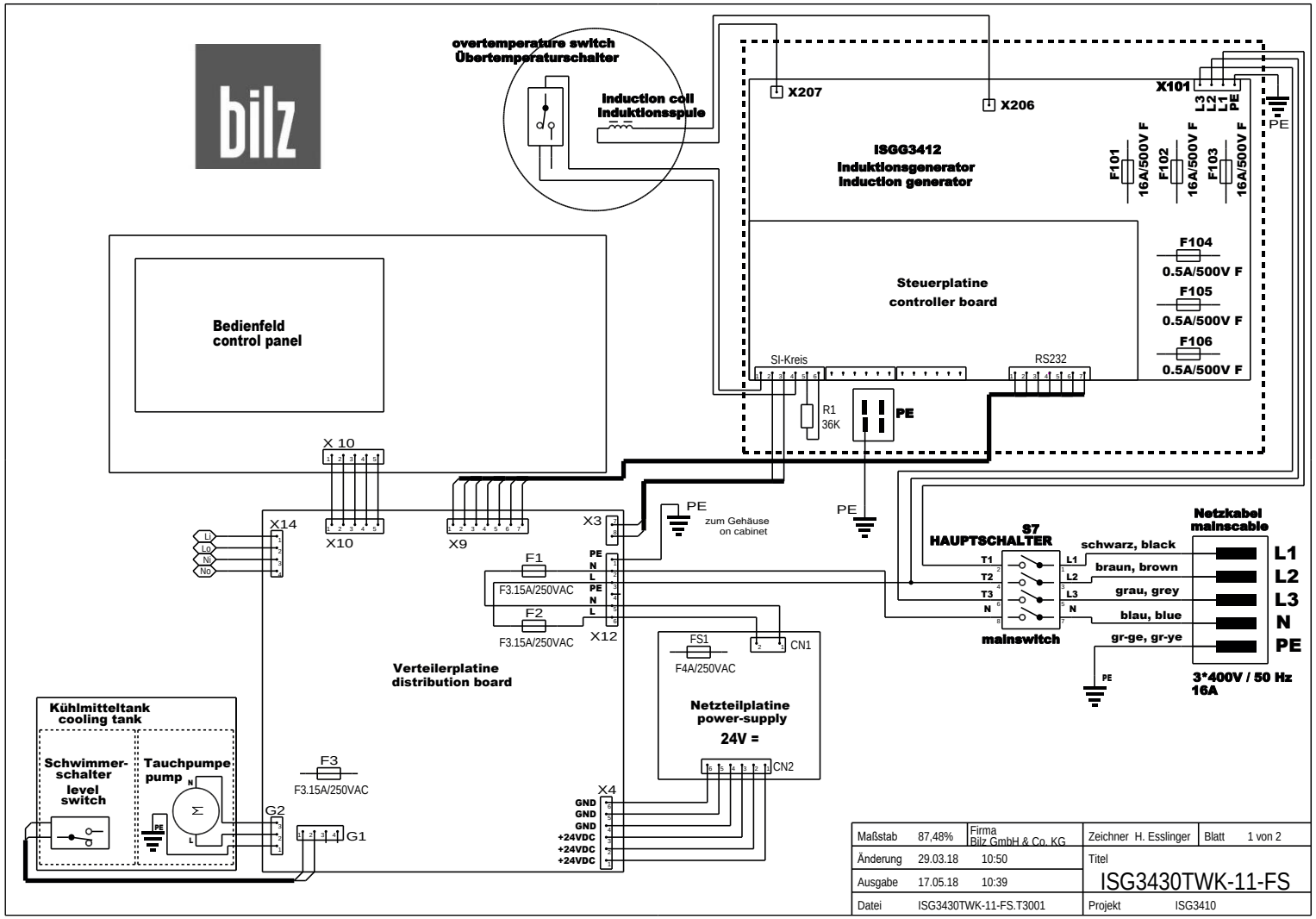

RS485
X 1
+24 VDC gelb, yellow
A weiß, white
B grün, green
GND braun, brown
Positionsschalter
position switches
cooling fan 1
Lüfter 1
S1
cooling fan 2
Lüfter 2
S2
cooling fan 3
Lüfter 3
S3
cooling fan 4
Lüfter 4
S4
X7
I/O-Erweiterung
I/O-Extension
X 2
schwarz, black Out0
schwarz, black GND
blau, blue Out1
schwarz, black GND
X 6
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
cooling fan 1
Lüfter 1
cooling fan 2
Lüfter 2
cooling fan 3
Lüfter 3
cooling fan 4
Lüfter 4
Lüfterpositionen
position of cooling fans
1
2
3
4
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 29.03.18 10:38
Titel
Ausgabe 17.05.18 10:33
ISG3430TLK4A-11-WS
Datei ISG3430TLK4A-11-WS.T3001
Projekt ISG3410

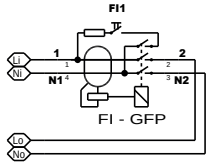
10.10.6 ISG3430-TLK4-15-WS (480V)




RS485
X 1
+24 VDC gelb, yellow
A weiß, white
B grün, green
GND braun, brown
Positionsschalter
position switches
cooling fan 1
Lüfter 1
S1
cooling fan 2
Lüfter 2
S2
cooling fan 3
Lüfter 3
S3
cooling fan 4
Lüfter 4
S4
X7
I/O-Erweiterung
I/O-Extension
X 2
schwarz, black Out0
schwarz, black GND
blau, blue Out1
schwarz, black GND
X 6
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
cooling fan 1
Lüfter 1
cooling fan 2
Lüfter 2
cooling fan 3
Lüfter 3
cooling fan 4
Lüfter 4
Lüfterpositionen
position of cooling fans
1
2
3
4
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 17.05.18 10:03
Titel
Ausgabe 17.05.18 10:34
ISG3430TLK4A-15-WS
Datei ISG3430TLK4A-15-WS.T3001
Projekt ISG3410

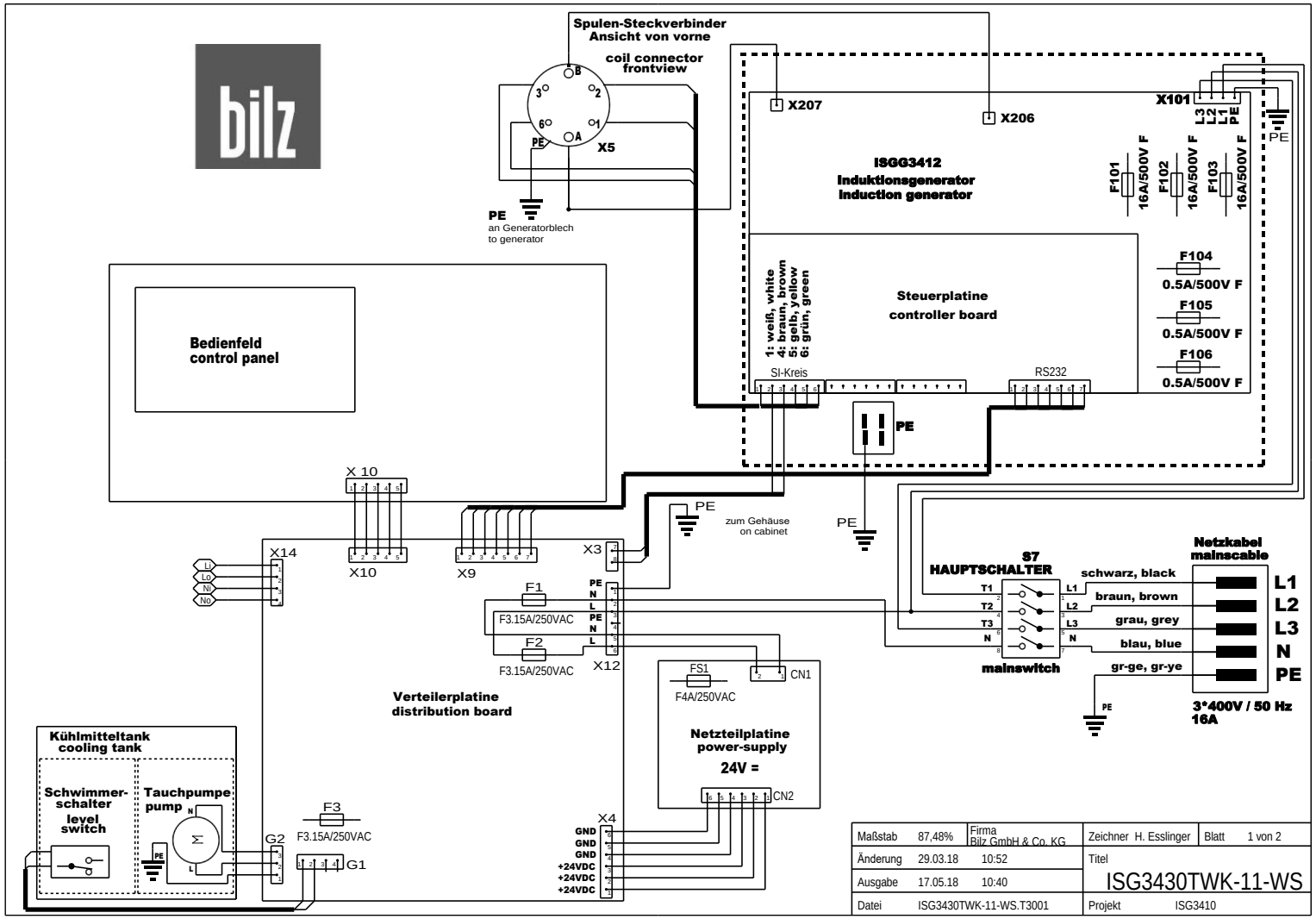
10.10.7 ISG3430-TWK-11-FS (400V)

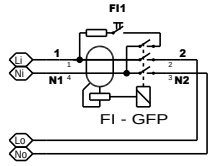




Maßstab	88,21%	Firma Bilz GmbH & Co. KG		Zeichner H. Esslinger	Blatt 2 von 2
Änderung	29.03.18 10:50			Titel	
Ausgabe	17.05.18 10:39			ISG3430TWK-11-FS	
Datei	ISG3430TWK-11-FS.T3001			Projekt ISG3410	

10.10.8 ISG3430-TWK-11-WS (400V)





Maßstab	88,21%	Firma Bilz GmbH & Co. KG		Zeichner H. Esslinger	Blatt 2 von 2
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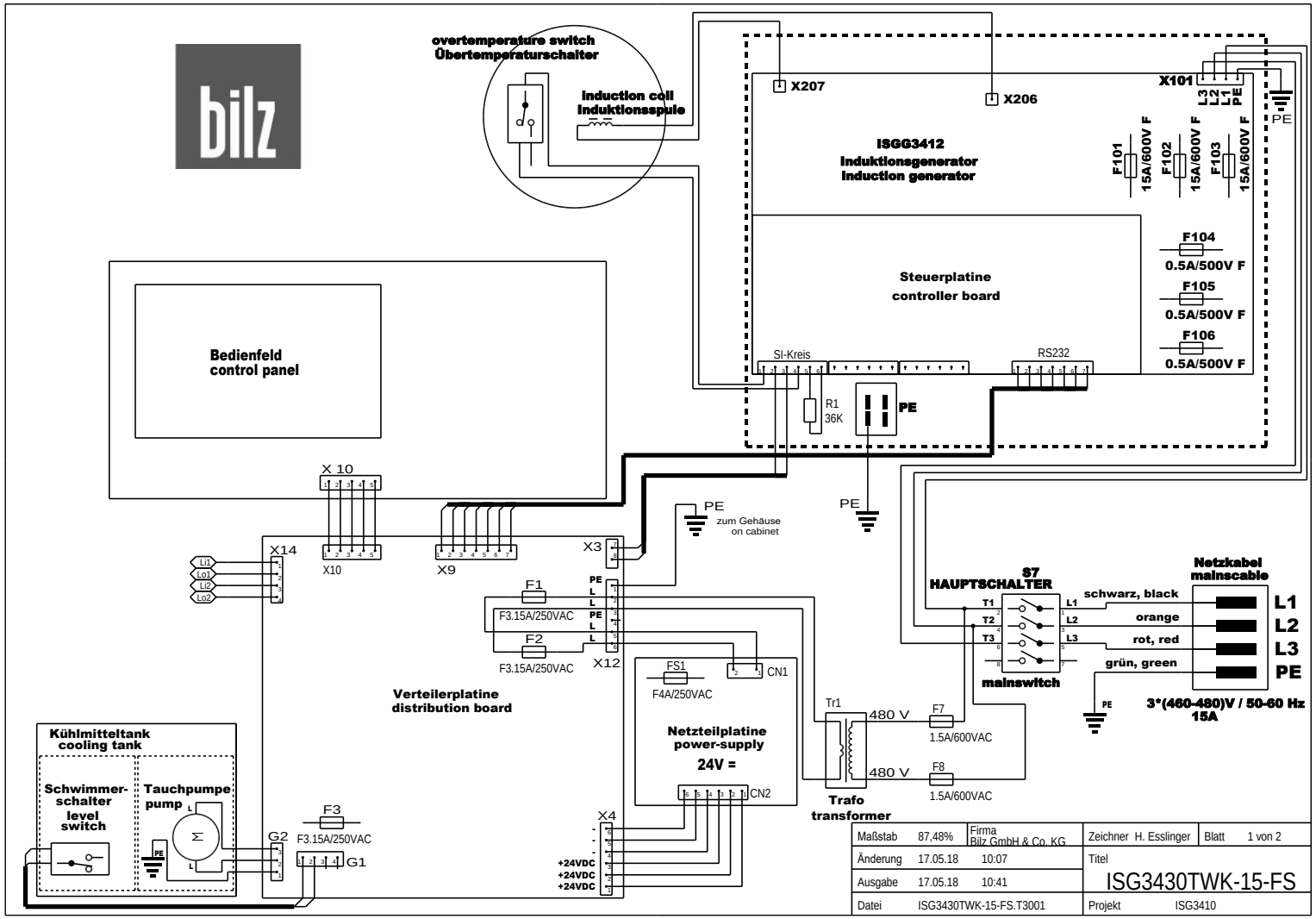
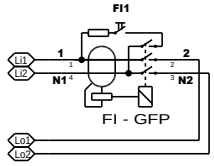
Ausgabe	17.05.18 10:40			ISG3430TWK-11-WS	
Datei	ISG3430TWK-11-WS.T3001			Projekt ISG3410	

10.10.9 ISG3430-TWK-15-FS (480V)





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Änderung	17.05.18	10:07	Titel		
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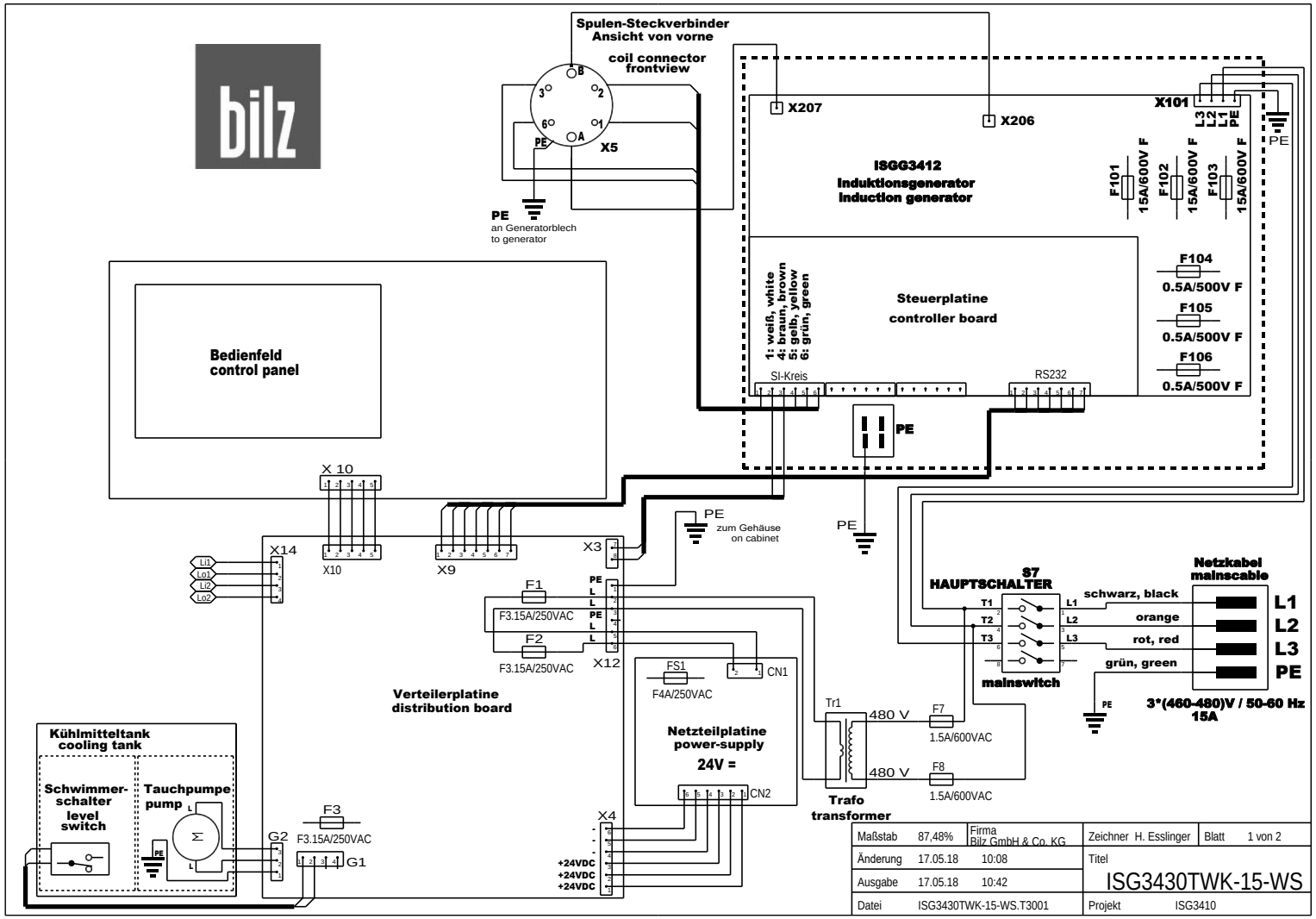
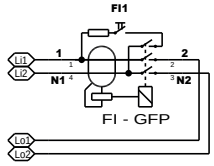
Datei	ISG3430TWK-15-FS.T3001		Projekt	ISG3410	

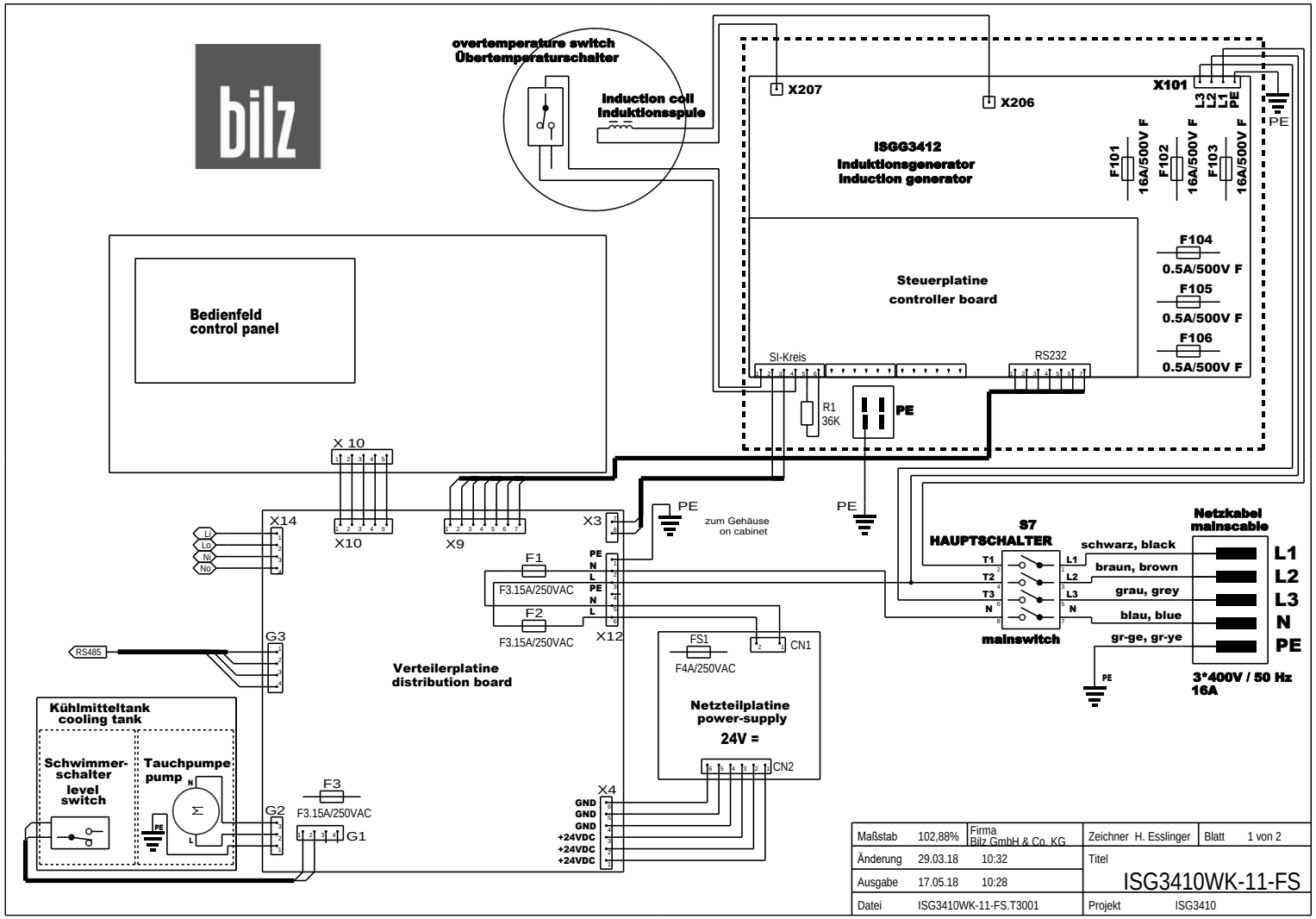
10.10.10 ISG3430-TWK-15-WS (480V)

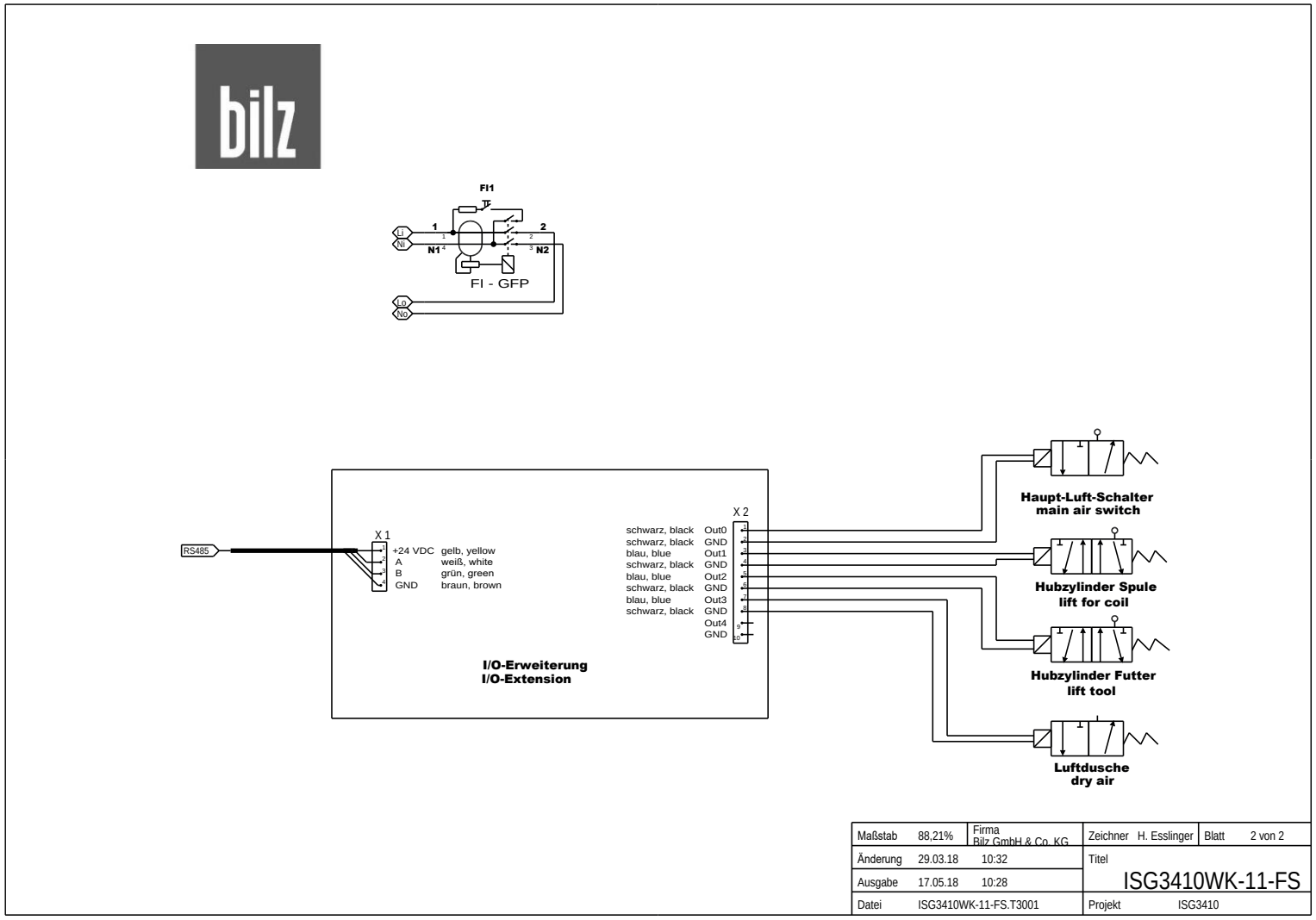




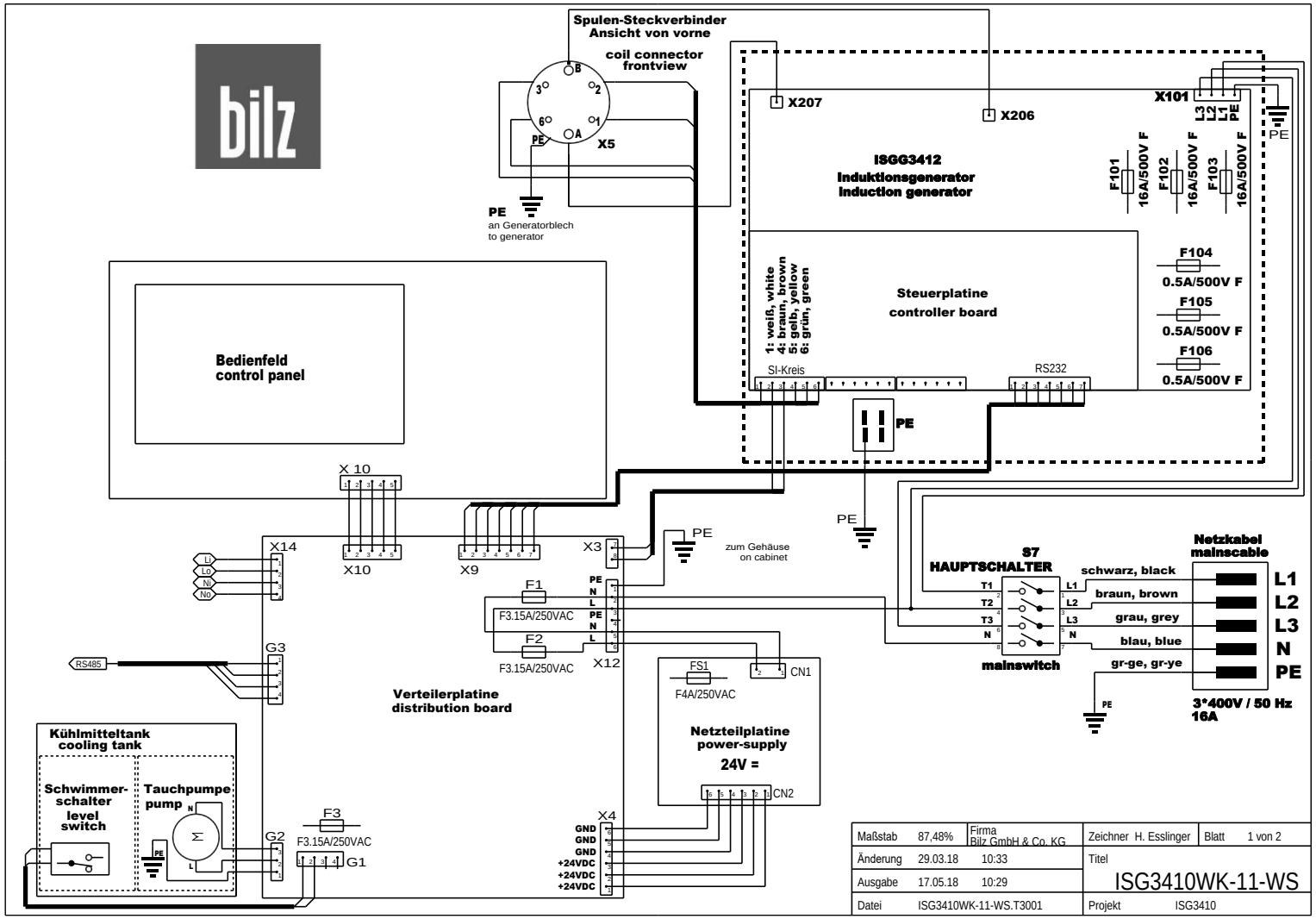
Maßstab	88,21%	Firma Bilz GmbH & Co. KG		Zeichner H. Esslinger	Blatt 2 von 2
Änderung	17.05.18	10:08		Titel	
Ausgabe	17.05.18	10:42		ISG3430TWK-15-WS	
Datei	ISG3430TWK-15-WS.T3001			Projekt ISG3410	

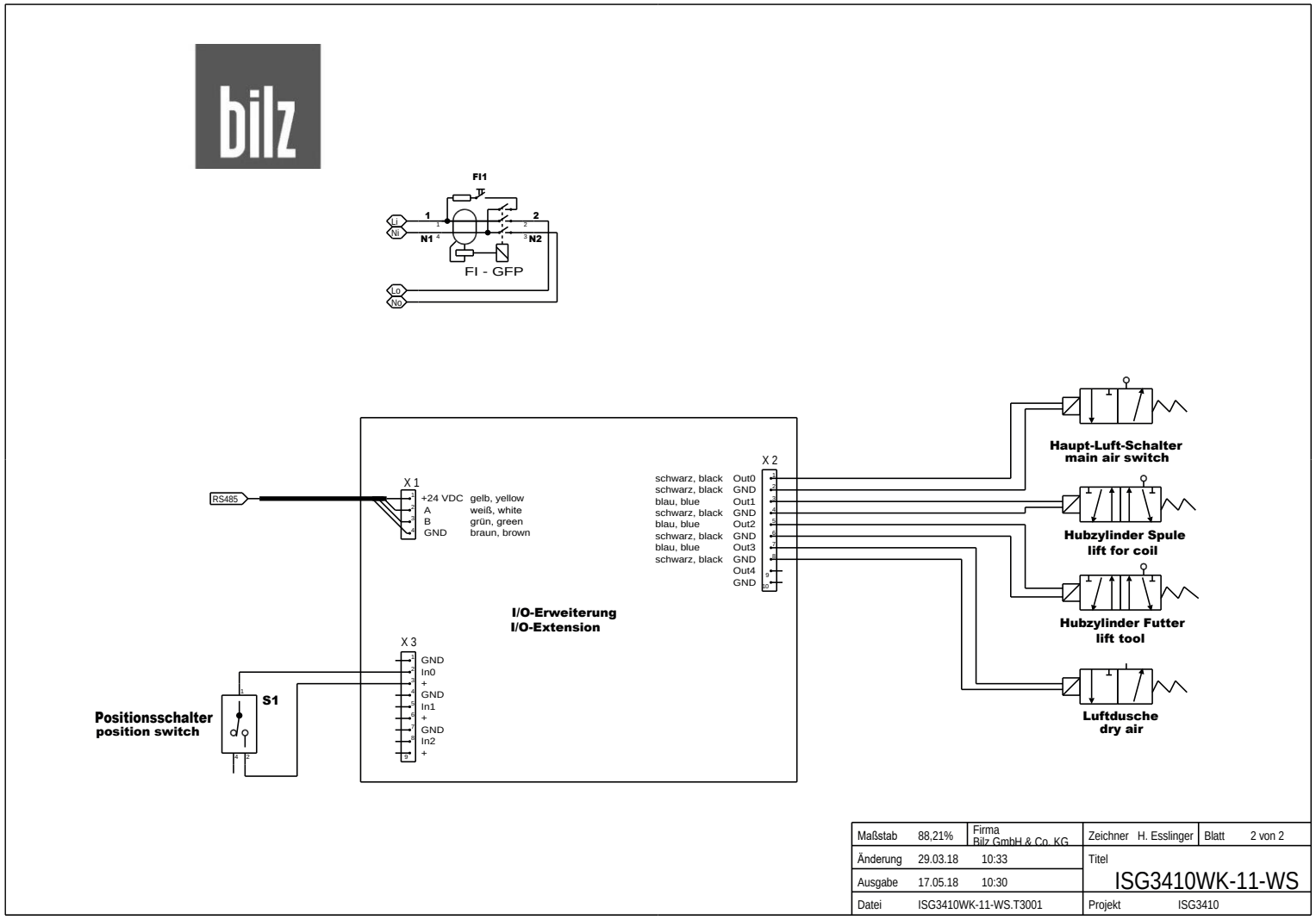
10.10.11 ISG3410-WK-11-FS (400V)



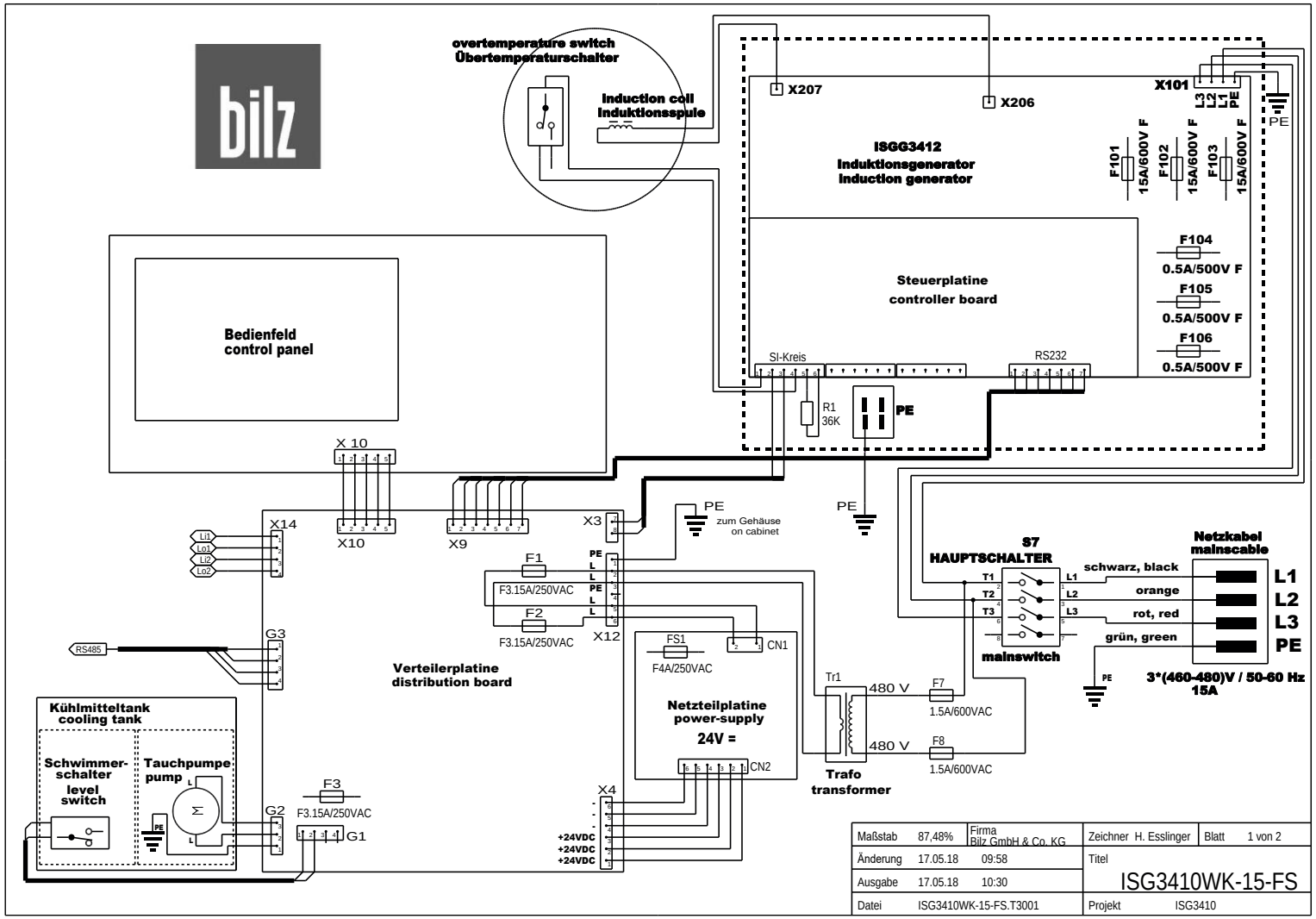

FI1
1
2
Li
Ni
N1
N2
FI - GFP
Lo
No
RS485
X 1
+24 VDC gelb, yellow
A weiß, white
B grün, green
GND braun, brown
X 2
schwarz, black Out0
schwarz, black GND
blau, blue Out1
schwarz, black GND
blau, blue Out2
schwarz, black GND
blau, blue Out3
schwarz, black GND
Out4
GND
I/O-Erweiterung
I/O-Extension
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
Hubzylinder Futter
lift tool
Luftdusche
dry air
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 29.03.18 10:32
Ausgabe 17.05.18 10:28
Titel
ISG3410WK-11-FS
Datei ISG3410WK-11-FS.T3001
Projekt ISG3410

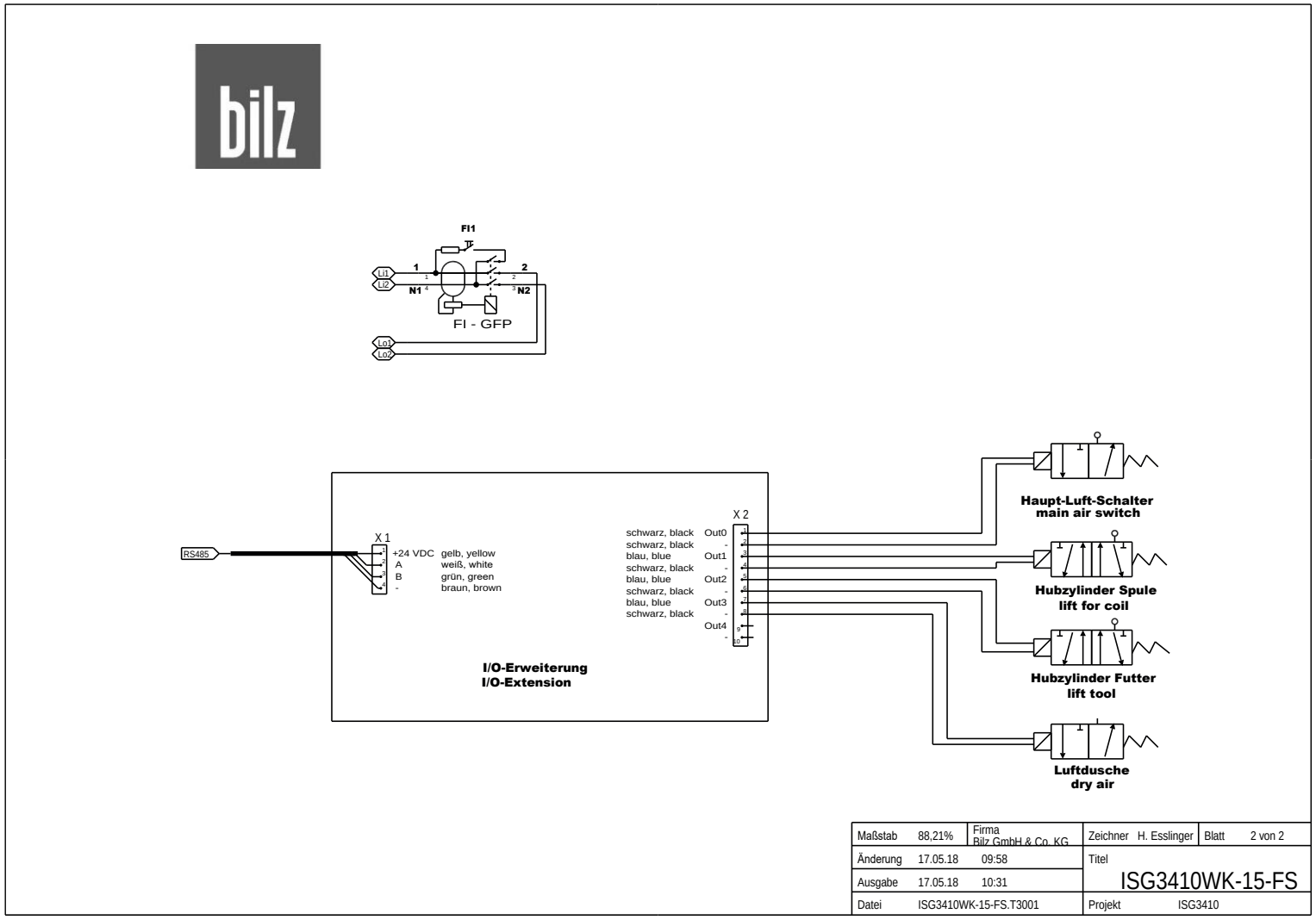
10.10.12 ISG3410-WK-11-WS (400V)



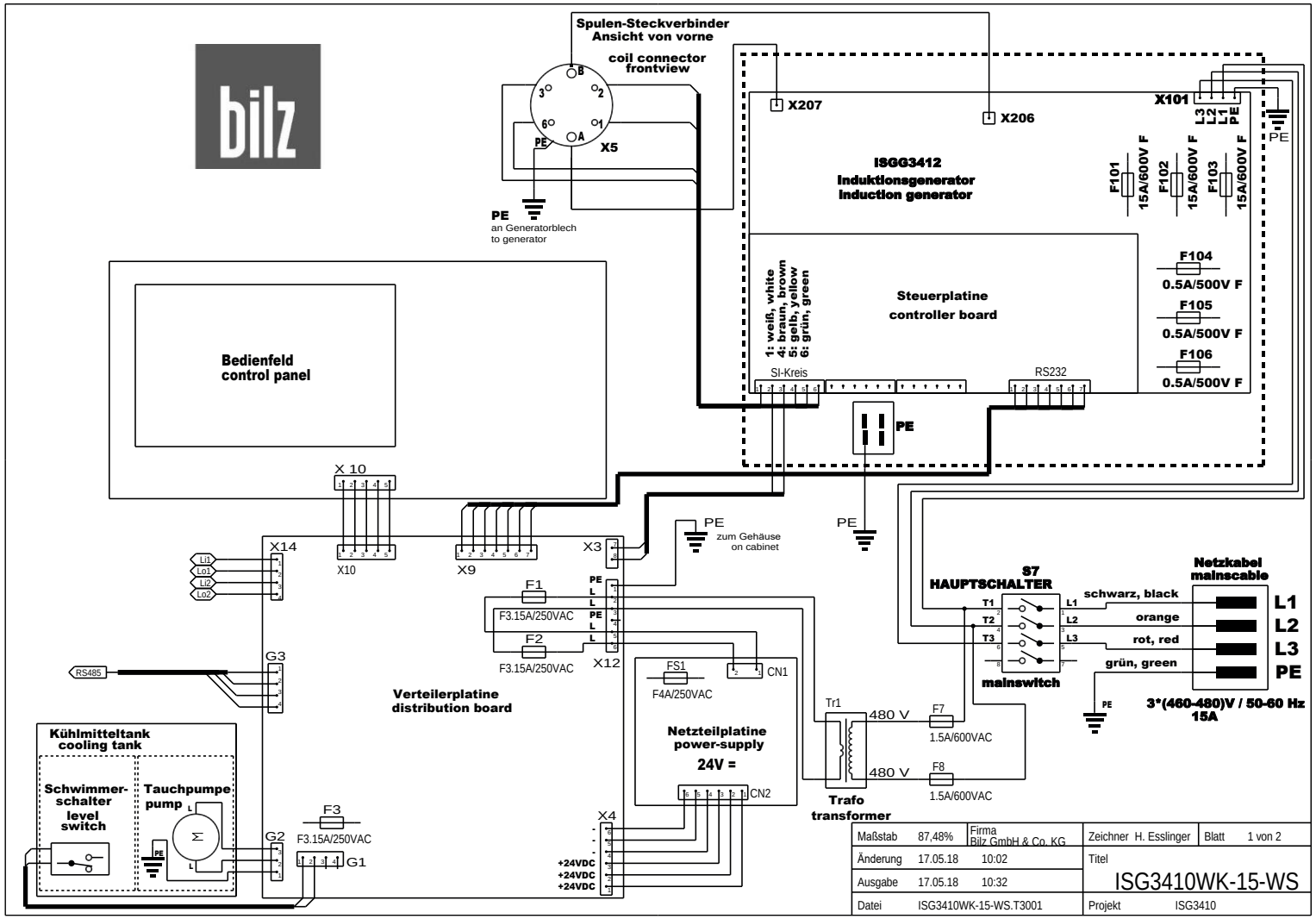

FI1
1
2
N1
N2
LI
NI
LO
NO
FI - GFP
X 1
RS485
+24 VDC gelb, yellow
A weiß, white
B grün, green
GND braun, brown
X 2
schwarz, black Out0
schwarz, black GND
blau, blue Out1
schwarz, black GND
blau, blue Out2
schwarz, black GND
blau, blue Out3
schwarz, black GND
Out4
GND
I/O-Erweiterung
I/O-Extension
X 3
GND
In0
+
GND
In1
+
GND
In2
+
S1
Positionsschalter
position switch
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
Hubzylinder Futter
lift tool
Luftdusche
dry air
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 29.03.18 10:33
Titel
Ausgabe 17.05.18 10:30
ISG3410WK-11-WS
Datei ISG3410WK-11-WS.T3001
Projekt ISG3410

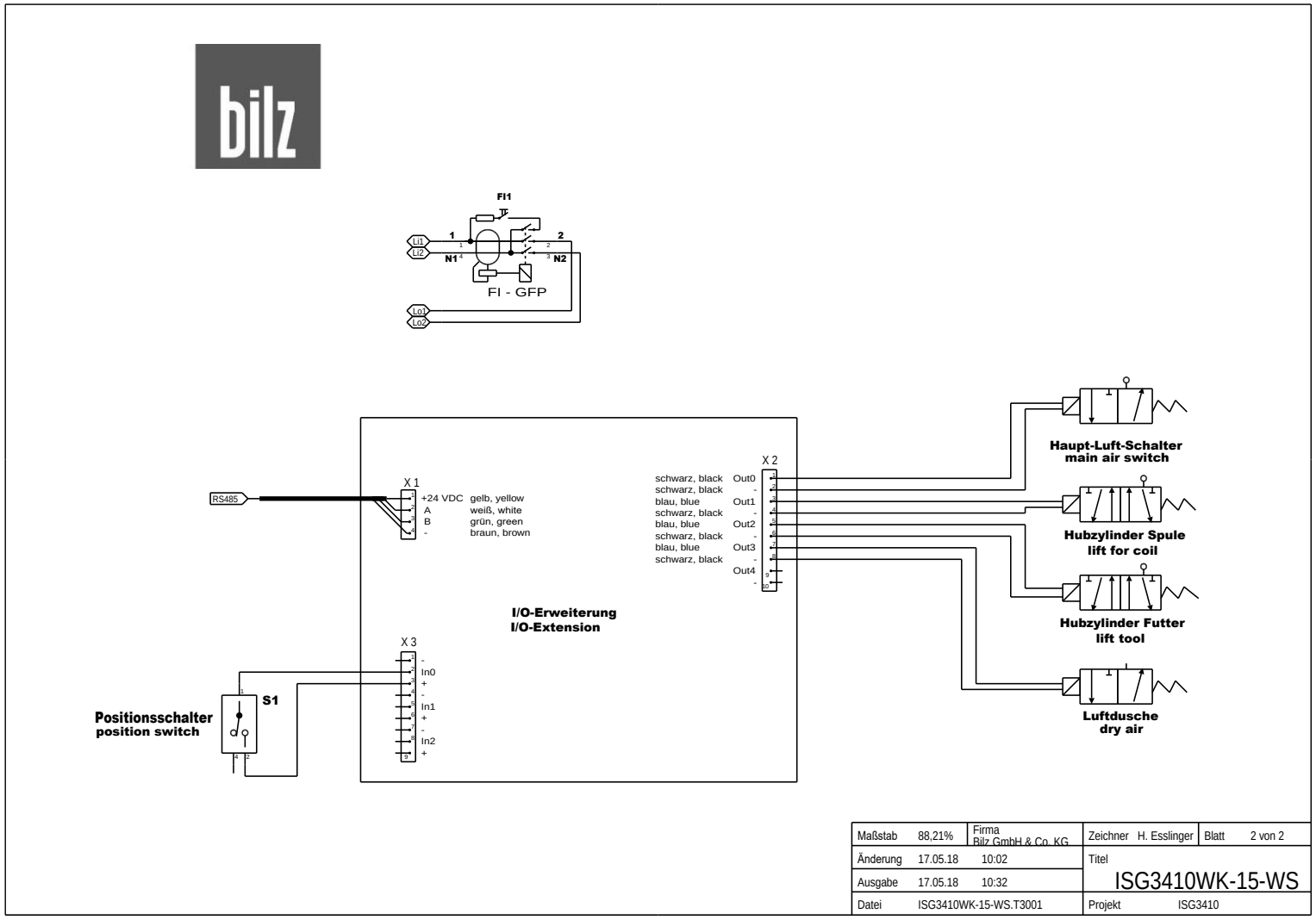
10.10.13 ISG3410-WK-15-FS (480V)




FI1
L/1
L/2
1
2
N1
N2
FI - GFP
Lo1
Lo2
RS485
X 1
+24 VDC
A
B
-
gelb, yellow
weiß, white
grün, green
braun, brown
X 2
schwarz, black
schwarz, black
blau, blue
schwarz, black
blau, blue
schwarz, black
blau, blue
schwarz, black
Out0
Out1
Out2
Out3
Out4
I/O-Erweiterung
I/O-Extension
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
Hubzylinder Futter
lift tool
Luftdusche
dry air
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 17.05.18 09:58
Ausgabe 17.05.18 10:31
Titel
ISG3410WK-15-FS
Datei ISG3410WK-15-FS.T3001
Projekt ISG3410

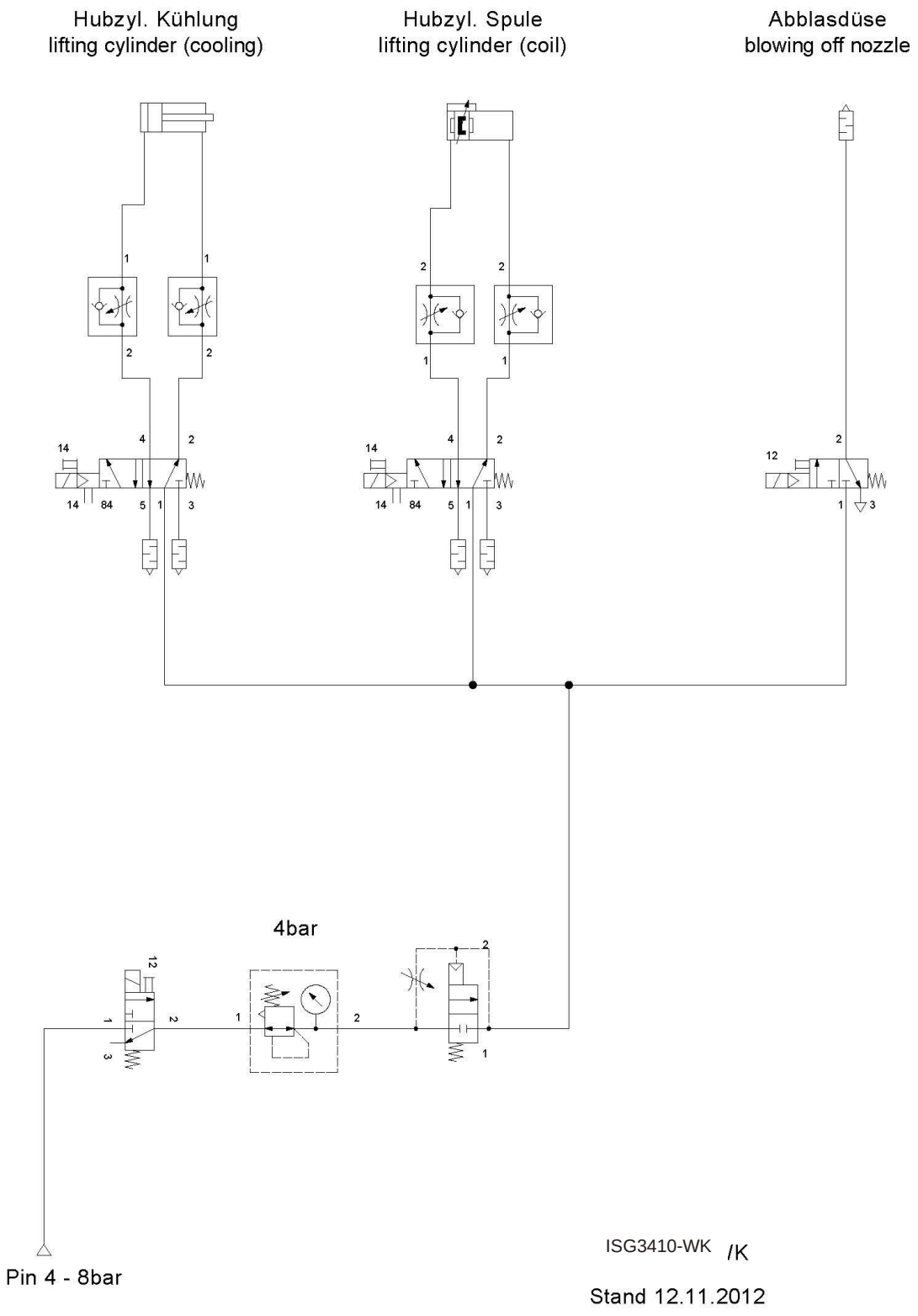
10.10.14 ISG3410-WK-15-WS (480V)




FI1
L1
L2
1
2
N1
N2
FI - GFP
Lo1
Lo2
X 1
RS485
+24 VDC
A
B
-
gelb, yellow
weiß, white
grün, green
braun, brown
X 2
schwarz, black Out0
schwarz, black -
blau, blue Out1
schwarz, black -
blau, blue Out2
schwarz, black -
blau, blue Out3
schwarz, black -
Out4
-
I/O-Erweiterung
I/O-Extension
X 3
In0
In1
In2
S1
Positionsschalter
position switch
Haupt-Luft-Schalter
main air switch
Hubzylinder Spule
lift for coil
Hubzylinder Futter
lift tool
Luftdusche
dry air
Maßstab 88,21%
Firma Bilz GmbH & Co. KG
Zeichner H. Esslinger
Blatt 2 von 2
Änderung 17.05.18 10:02
Ausgabe 17.05.18 10:32
Titel
ISG3410WK-15-WS
Datei ISG3410WK-15-WS.T3001
Projekt ISG3410

10.11 Pneumatic Diagrams

10.11.1 ISG3410-WK



10.11.2 ISG3430-TLK4