INDUCTION **UNIT**

OPERATING **MANUAL**

Contents

Product Liability and Warranty 5

General 5
Warranty 6
Intended Purpose 6
Service 7
Symbols and Pictograms 7

Safety 8

Selection of the Installation Site 8
Risks Relating to Electrical Energy 8
Risks from Hot Parts 9
Protecting the Chuck Against Overheating 9
Risks Relating to Electromagnetic Radiation 10
Special Risks 10

Controls and Commissioning INDN AP Unit 11

Assembly 11

Power Supply of INDN AP Unit 12

Operating the INDN AP Unit 13

Operating Buttons 13
Display 13
Switching on the Device 14
Switching Off the Device 14

Shrinking 15

Basic Shrink-Fitting Information 15
Work Sequences when Clamping, Releasing Or Changing a Tool 16
General Advices 16
Clamping 16
Releasing 16
Change the Ferrite Disc 17
Shrink-Fit Operating Modes 18
SRKIN / SRK Clamping Chucks: PARAMETER 19
Shrinking with Free “Parameter” Selection: MANUAL 22
Define Your Own Parameters: TOOL MEMORY 25
List of Most Used Tools: FAVORITES 26

Configuration 27

Switching Between mm/ Inch 28
Setting Up and Configuration of Cooling Time 28
Setting Up of Cooling Time 28
Configuration of Cooling Time 29
Configuration of Cooling Time for “parameter Shrinking” 29
Configuration of Cooling Time for “manual Shrinking” 29
Enter Start Delay 30
Enter Stop Delay 30
Password on/ Off Or Change 30
Reset List of Favorites 30

Service 32

Maintenance / Visual Inspection 33
Cleaning 33
Checking the Cooling Emulsion 33
Filling/ Draining the Cooling Emulsion 34
Draining the Coolant Tank 34
Checking the Float Switch 34
Replacing the Float Switch 34

Contacting TheManufacturer 35

Appendix 36

Error Messages and Corrective Measures 36
Technical Data 40
Available Additions Andoptional Accessories 42
Service Pump 42
Instructions Safety Glove 43
Mains Connections 44
EC Declaration of Conformity 45
Safety Data Sheets 46
Synergy 905 46
Techniclean MTC 43 50
Table of Fuses for 400V Units 58
Table of Fuses for 480V Units 58
Wiring Diagrams 59
Pneumatic Diagrams 63

Product Liability and Warranty

General

These operating instructions are part of the technical documentation for the induction device INDN AP UNIT.

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 INDN AP UNIT 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 Safety, 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.

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.

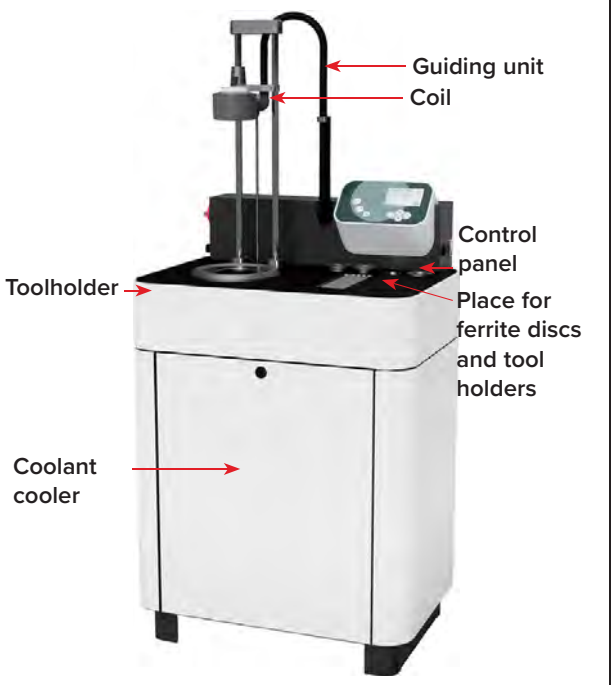
Intended Purpose

The induction device INDN AP unit 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



Induction INDN AP unit

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.

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**

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 shrink 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!

Selection of the Installation Site

The INDN AP unit 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.

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

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!

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.

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 (EC Declaration of Conformity, page 45).

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.

Special Risks

Crushing and cutting hazards in the opening range of the cooling unit!

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 IMC group holders 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.

Controls and Commissioning INDN AP Unit

Assembly

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

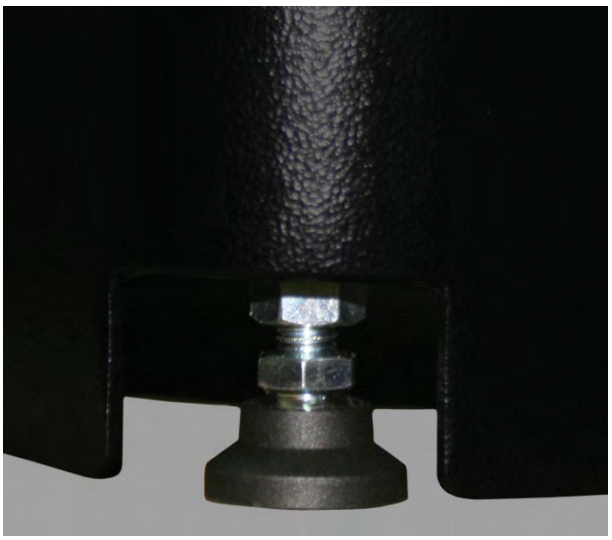
In particular, the cable system must not be bent or twisted out of its position of movement! Handle the unit with care.

Comply with the order of assembly!

Setting up the unit

Choose a suitable place for the unit. The unit possesses three non-height adjustable feet and one height adjustable foot (see Fig. 5).

Fig. 5



Height adjustable foot

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

Mounting the guide unit

Fig. 6

Inserting the guide unit in the machine

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. 7

Aligning the coil

Release lightly the screws of the connector unit.
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.

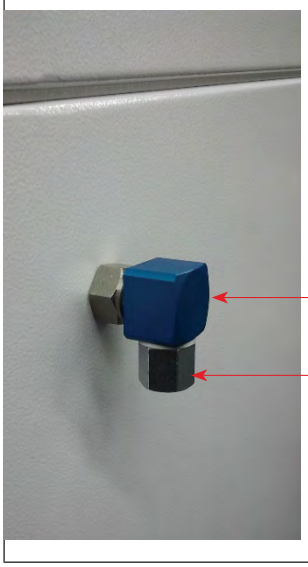
Connecting the compressed air supply

Compressed air must be oil-free!

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

The pneumatic connection of the unit is located on the left hand side.

Fig. 10



Pneumatics connection

Power Supply of INDN AP Unit

- 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.

Operating the INDN AP Unit

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 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 ▲ ▼ down	Select various menu items Change values and settings
OK	OK	Confirm to the selection or the setting
ESC	ESC	Return into the preceding menu

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.

Switching on the Device

- Switch on the main switch

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

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, also the lifting unit moves down first and then up again.

The unit is at home position and ready for use now.

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
- Switch off at the main switch

Shrinking

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	h6	CARBIDE
4mm	h6	CARBIDE
5mm	h6	CARBIDE
≥ 6mm	h6	CARBIDE and HSS

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 IMC group 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 coil limit stop INDN AP COIL LIMIT STOP available as an optional accessory (see options Coil limit stop, page

After the heating cycle, the shrink-fit chuck 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.

Work Sequences when Clamping, Releasing or Changing a Tool

For your own safety, please observe the following rules when working with the unit:

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

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

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!

General Advices

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

Insert the chuck into the tool holder.

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

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.

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

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.

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.

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

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.

Change the Ferrite Disc

Ensure that there is no chuck beneath the coil.

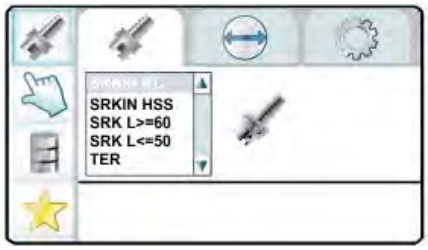
Press the **Stop** button for approx. 1 sec. The linear unit moves into the lower position and it is easier to change the disc.

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 Table of factory defined parameters, page 25.

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

Press the **Stop** button again for approx. 1 sec and the linear unit moves back upwards.

Shrink-Fit Operating Modes

Parameter Manual Tool memory Favorites	

Parameter	Manual	Tool Memory	Favorites
..., if you use a SRKIN / SRK chuck. The parameters shrinking time and shrinking output power are programmed for the SRKIN / SRK-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.

SRKIN / SRK Clamping Chucks: PARAMETER

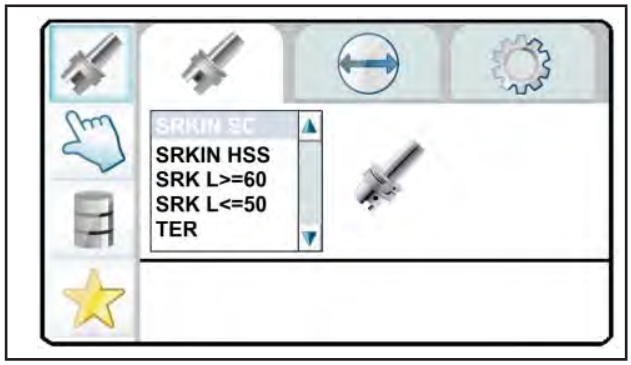
The necessary parameters for the SRKIN / SRK chuck such as the generator output power, heating period, cooling time, disc sizes for the chuck type are programmed in the factory equipment of the SRKIN / SRK (see 5.5.1.1, Table of factory defined parameters, page 25).

Attention: for SRK 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

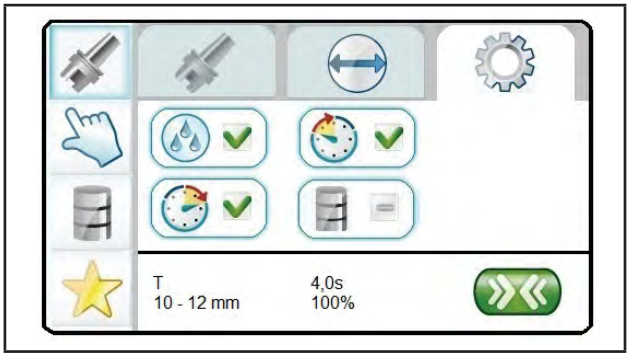
Activate with OK.

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

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

Deselecting the automatic cooling, This option is always set active after every shrinking. Other options see Setting up and configuration of cooling time, page 28

Start Delay Delay of the beginning of the shrinking. See Enter Start Delay page 30

Stop Delay (Dwell time) Delay of the beginning of the cooling process.
See Enter Stop Delay, page 30

- Start shrinking with **Start**
- The water cooling is checked before the heating up of the chuck.
- The coil moves down automatically.
- The operation steps are shown on the display by a progress bar.

Table of factory defined parameters

SRKIN- Chucks (Standard Type According to DIN69882-8) Designation of Chuck SRKINxxxx Solid Carbide Shank				
Ø-Range In mm	Ø-Range In Inches	Ferrite Disc	Shrinking Time In Sec	Shrinking Output Power in %
6 – 9,9	1/4 – 5/16	INDN AP DISC 6-12 #1	4,0	95
10 – 12	3/8	INDN AP DISC 6-12 #1	4,0	100
> 12 – 16	1/2 – 5/8	INDN AP DISC 14-20 #2	4,0	100
> 16 – 22	3/4	INDN AP DISC 14-20 #2	6,0	95
> 22 – 25	1	INDN AP DISC 25-32 #3	9,0	100
> 25 – 32	> 1 – 1.1/4	INDN AP DISC 25-32 #3	8,2	100

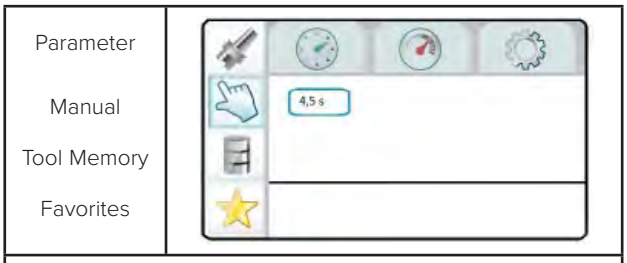
SRKIN- Chucks (Standard Type According to DIN69882-8) Designation of Chuck SRKINxxxx HSS Shank				
Ø-Range In mm	Ø-Range In Inches	Ferrite Disc	Shrinking Time In Sec	Shrinking Output Power in %
6 – 9,9	1/4 – 5/16	INDN AP DISC 6-12 #1	6,0	95
10 – 12	3/8	INDN AP DISC 6-12 #1	6,0	100
> 12 – 16	1/2 – 5/8	INDN AP DISC 14-20 #2	8,0	95
> 16 – 22	3/4	INDN AP DISC 14-20 #2	8,0	100
> 22 – 25	1	INDN AP DISC 25-32 #3	10,0	100
> 25 – 32	> 1 – 1.1/4	INDN AP DISC 25-32 #3	8,2	100

SRK/ER SRK - LBX/NL ≥ 60- Chucks (Slim Design) Designation of Chuck SRK/ER SRKxxxx				
Ø in mm	Ø in Inches	Ferrite Disc	Shrinking Time In Sec	Shrinking Output Power in %
3	1/8	INDN AP DISC SRK3-5 #5	3,0	60
4	5/32	INDN AP DISC SRK3-5 #5	3,0	25
5	3/16	INDN AP DISC SRK3-5 #5	3,0	28
6	1/4	INDN AP DISC 3-5 #0	3,0	38
8	5/16	INDN AP DISC SRK8-10 #8	3,0	43
10	3/8	INDN AP DISC SRK12 #12	3,0	53
12	1/2	INDN AP DISC SRK12 #12	4,0	43

SRK/ER SRK - LBX/NL ≤ 50- Chucks (Slim Design) Designation of Chuck SRK/ER SRKxxxx				
Ø in mm	Ø in Inches	Ferrite Disc	Shrinking Time In Sec	Shrinking Output Power in %
3	1/8	INDN AP DISC SRK3-5 #5	3,0	60
4	5/32	INDN AP DISC SRK3-5 #5	3,0	60
5	3/16	INDN AP DISC SRK3-5 #5	3,0	60
6	1/4	INDN AP DISC 3-5 #0	2.5	75
8	5/16	INDN AP DISC SRK8-10 #8	2,0	80
10	3/8	INDN AP DISC SRK12 #12	4.5	70
12	1/2	INDN AP DISC SRK12 #12	6,0	75

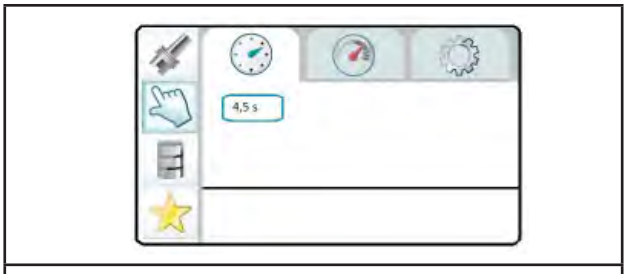
Shrinking with Free “Parameter” Selection: MANUAL

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.



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

Step 1: Select shrinking time

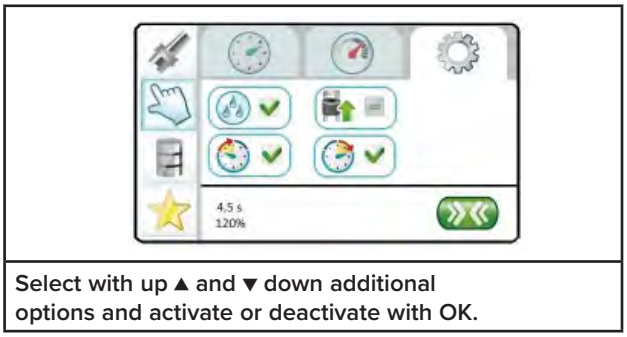


Select with up ▲ and ▼ down the desired shrinking time in steps of 0.5 s (0 – 60 s) Activate with OK.

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

Deselecting the automatic cooling, This option is always set active after every shrinking. Other options see Setting up and configuration of cooling time, page 28

Start Delay Delay of the beginning of the shrinking. See Enter Start Delay, page 30

Stop Delay (Dwell time) Delay of the beginning of the cooling process. See Enter Stop Delay, page 30

Step 4: Start shrinking

- Start shrinking with **Start**
- The water cooling is checked before the heating up of the chuck.
- The coil moves down automatically.
- The operation steps are shown on the display by a progress bar.

By delivery of the unit the manual shrinking procedure is enabled.
The manual shrinking process can be disabled in the configuration menu.
See 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	100	2
Special chucks and CARBIDE tool shafts	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.

Shrinking with coil limit stop
INDN AP COIL LIMIT STOP

There is a possibility that with slim clamping chuck designs or special chucks, that the coil cannot be positioned through its cover disk. In that case you should use the coil limit stop which can be obtained as an accessory (page 53).

The coil limit stop 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 coil limit stop, 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 coil limit stop so that the coil will be stopped at that position when going automatically. Lock the stop in this position with the locking screw.

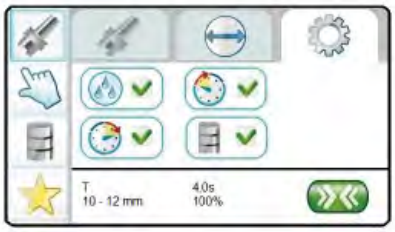
Define Your Own Parameters: TOOL MEMORY

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

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

Manual mode must be enabled
(see Lock shrinking operations, page 31)



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

The actual parameters (shrinking time and power) are copied and can be changed now (see Shrinking with free “Parameter” selection: MANUAL, page 22).

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 SRK with D=8 mm is desired, the new set of data will have the designation „M1 SRK08“. A second set of data with the same chuck as origin will have the designation „M2 SRK08.

The function „TOOL MEMORY“ is enabled now and all sets of own defined shrinking parameters are available.

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

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

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.

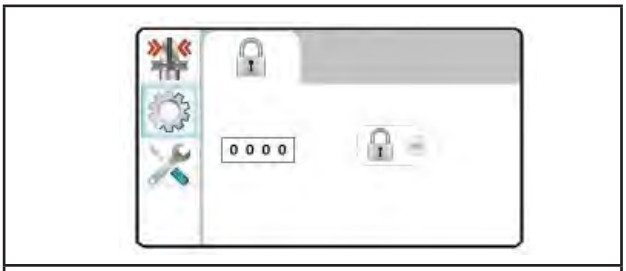
The menu shrinking will be selected immediately Continue as described in SRKIN / SRK clamping chucks: PARAMETER.

Configuration

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

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 Password on/ off or change, page 30



You can increase or decrease the numbers with up ▲ or ▼ down.
Confirm with OK and go to the next decimal figure of the password.

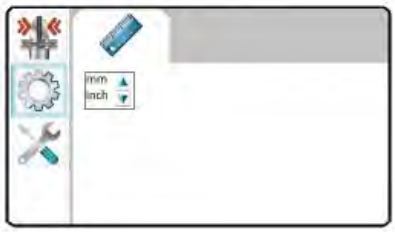
Once all 4 numbers are correct (for e.g. 3480) confirm the password with OK.
When a wrong password is entered you have to repeat the input.

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 Password on/ off or change, page 30.

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.

Setting Up and Configuration of Cooling Time

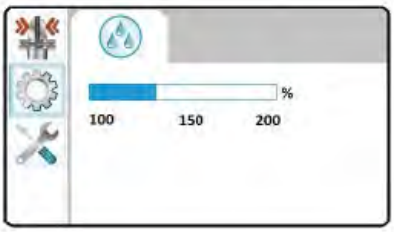
If only the symbol „cooling“ appears, you have to enter a password first.
See Password on/ off or change, page 30.

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

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.

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.

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.

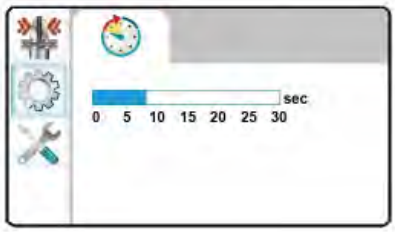
Configuration of Cooling Time for “manual Shrinking”

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.

Enter Start Delay

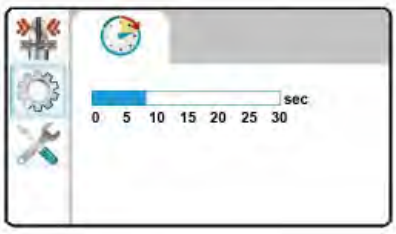
Around 3 seconds will pass before the generator starts. If this waiting time is too short to insert bulky tools, the Start Delay option can be used to set an additional delay of up to 30s.



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

Enter Stop Delay

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.



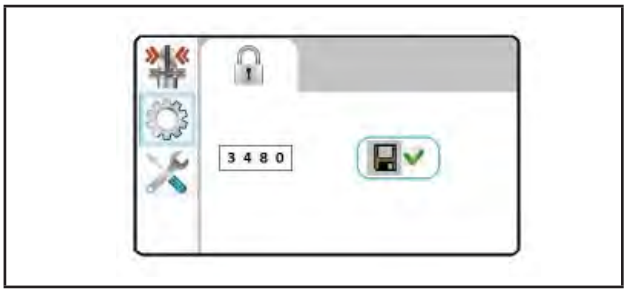
Select the desired value with up ▲ and ▼ down and confirm with OK.

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.

Reset List of Favorites

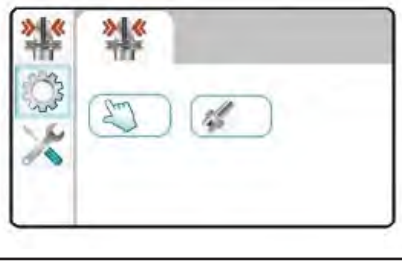
The list of favorites may be cleared by activating the button with OK.

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

See List of most used tools: FAVORITES, page 26.

Lock shrinking operations

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 SRKIN / SRK chucks are used and any overheating occurs as a result of an operating error of the operator must be excluded.

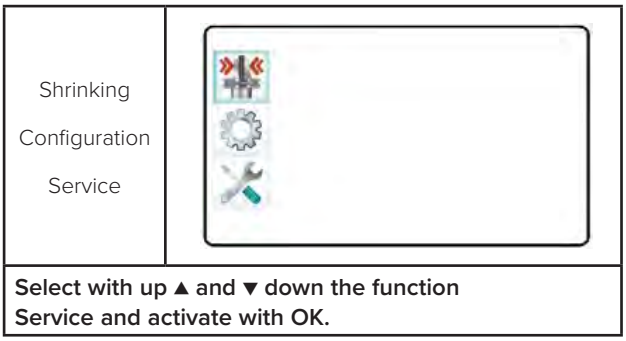


Select or deselect with up ▲ and ▼ down and confirm with OK.

First of all a password must be assigned to be able to lock the functions (see Password on/ off or change, page 30).

Service

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



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

Information about the shrink unit

Type: equipment designation

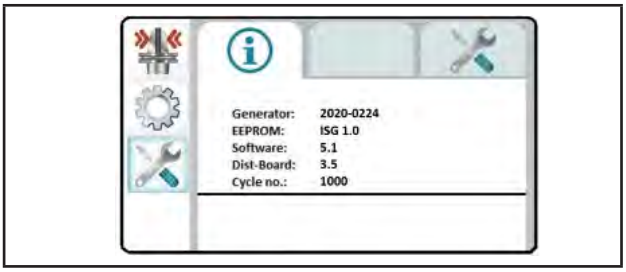
Generator: number of the generator installed

EEPROM: version of the variable memory

Software: version of the control panel software

Dist-Board: version of distribution board

Cycle no.: number of all shrinking cycles



Manual execution of machine functions

 Pump on/ off (max. 5 min.)

 Dryer on/ off

 Cylinder up/ down

Cleaning and Servicing

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 Service, page 41).

Cleaning

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

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

Checking the Cooling Emulsion

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 Safety Data Sheets.

- Synergy 905, page 46
- Techniclean MTC 43, page 50

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.

- 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. 50 liters)
- 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

Draining the Coolant Tank

To drain the cooling emulsion out of the tank use a sucking device.
(see 10.3.4 INDN AP SERVICE PUMP, page 55)

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.

Replacing the Float Switch

Attention: prior to service the machine must be disconnected from its power supply and from the compressed air system (see 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 34)
- 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

Contacting the Manufacturer

These operating instructions can only serve to generally describe the function and operation of the INDN AP UNIT.

To solve special problems and to carry out repairs or to make any changes not described in these operating instructions, please contact your local IMC group supplier 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.

Appendix

Error Messages and Corrective Measures

Hints are displayed as follows:

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

Errors are displayed as follows:

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 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

Number	Type	Message	Possible Cause	Corrective Measures
1.9		Error not acknowledged	Error occurred while shrinking and has not been acknowledged	Solve problem and acknowledge message with Stop button
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
3.24		Relay group 1 error	Error of generator	Change generator

Number	Type	Message	Possible Cause	Corrective Measures
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 unit, please contact your supplier or the manufacturer’s customer service.

Technical Data

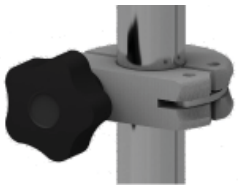
Designation of Machine Types: Fixed Coil: 400V	INDN AP UNIT
El. Power Supply: 400V 480V	 3 x 400 V + N / 16 A / 50 Hz 3 x 480 V / 15 A / 60 Hz
Generator Power: 400V 480V	 11 kW 12 kW
Usable Tool Shanks:	CARBIDE/ HSS
Maximum of Tool Length:	400 mm (WK1)
Clamping Range Ø:	3 – 32 mm (CARBIDE), 6 – 32 mm (HSS)
Air Pressure:	4 bar (60 psi); dried, oil free, filtered (5 µm)
Weight (without Coolant): 400V 480V	 120 kg 125 kg
Dimensions: Depth Width Height	 560 mm 800 mm 1720 mm
Environmental Conditions: Temperature Relative humidity Air pressure	 +5°C ... +40°C (+40°F ... +105°F) 5% ... 85%, no condensation, no icing 86kPa ... 106kPa

Scope of Supply

Shrinking Unit INDN AP UNIT incl. coil and 7 ferrite discs, clamping ring, gloves as well as 1 liter coolant concentrate (corresponds to a complete filling of the coolant tank).

Ferrite Discs One-Piece 	**For an Optimal Shielding of the Magnetic Field Between Coil and Tool Shank**		
	Clamping- Ø	**Designation**	**Ident No.**
	3,0-5.0 SRK6	INDN AP DISC 3-5 #0	3446164
	6,0 – 12,0 mm	INDN AP DISC 6-12 #1	3446167
	12,1 – 22,0 mm	INDN AP DISC 14-20 #2	3446168
	22,1 – 32,0 mm	INDN AP DISC 25-32 #3	3446169
	3.0-5.0 SRK	INDN AP DISC SRK3-5 #5	3430239
	8.0 SRK	INDN AP DISC SRK8 #8	3430241
	10.0-12.0 SRK	INDN AP DISC SRK12 #12	3430243
Clamping Ring 	**For a Secure Support of the Ferrite Disc in the Coil**		
		Designation	**Ident No.**
		INDN AP CLAMP RING	3446175
Gloves 	For the protection from possible burns and cuts		
		Designation	Ident No.
		IND THERMIC GLOVES	4592880
Cooling Emulsion 	**Cooling Emulsion to Protect the Chuck Against Corrosion**		
		Designation	**Ident No.**
	1 liter (supplied)	COOLANT SYNERGY 905	3447823
	System cleaner	Techniclean MTC 43	

Available Additions and Optional Accessories

Multi Adapters	For the Reception and Correct Positioning of the Chuck		
	**Chuck-Type**	**Designation**	**Ident No.**
	HSK32 / C3	INDN AP AD 32	3446176
	HSK40 / C4	INDN AP AD 40	3446177
	HSK50 / C5 / #30	INDN AP AD 50	3446178
	HSK63 / C6 / #40	INDN AP AD 63	3446179
	HSK80 / C8 / #45	INDN AP AD 80	3446180
	HSK100 / C10 / #50	INDN AP AD 100	3446181
Ferrite Disc Two-Parts	**For Application with Larger Cutting Diameters as with the Shrinking Shaft Diameter**		
	**Clamping-Ø**	**Designation**	**Ident No.**
	Ø3-5	INDN AP SPLIT #0	3446171
	6,0 – 12,0 mm	INDN AP SPLIT #1	3446172
	12,1 – 22,0 mm	INDN AP SPLIT #2	3446173
	22,1 – 32,0 mm	INDN AP SPLIT #3	3446174
Coil Limit Stop	**Fixture Used for Special Applications Like Ferrite Discs Two-Pieces. Used as a Stopper for Positioning the Coil When no Correct Positioning Between Ferrite Disc and Chuck Front end Will Be Possible.**		
		**Designation**	**Ident No.**
		INDN AP COIL LIMIT STOP	3446391

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	INDN AP SERVICE PUMP	3446392

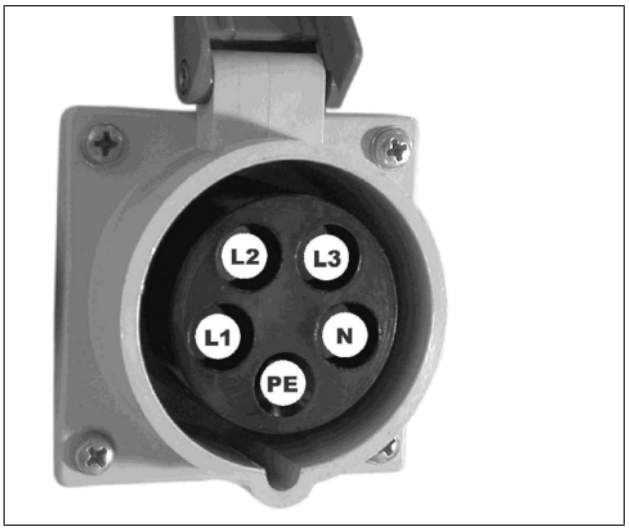
Instructions Safety Glove

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

.

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%)

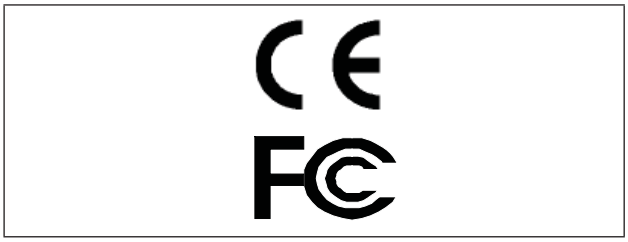
Further hints:

- 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.

EC Declaration of Conformity

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

IMC BV
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:	INDN AP UNIT
Relevant EC Directives:	EC Machinery Directive 2006/42/EC
	EC EMC Directive 2014/30/EC
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 60519-1:2011
	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.

THE COMPANY:

Company Name:	IMC BV
Headquarters:	Zwolleweg 6, 2803 PS Gouda, Netherlands

Safety Data Sheets

Synergy 905

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 Edition number 7 Reviewed on 09/16/2016

1 Identification

Product identifier

Trade name: Synergy 905

Article number: 11905-04
Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.
Application of the substance / the preparation:
For industrial use only
Metalworking fluid concentrate

Details of the supplier of the safety data sheet
Manufacturer / Supplier:
BLASER SWISSLUBE AG
Winterseistrasse 22
CH-3415 Hasle-Rüegsau
Swizerland
Tel.: +41 (0)34 460 01 01
Fax: +41 (0)34 460 01 00
E-mail: blaser@blaser.com

BLASER SWISSLUBE, Inc.
31 Hatfield Lane
Goshen, NY 10924
USA
Phone: +1 (0) 845 294 32 00
Fax .: +1 (0) 845 294 31 02
Mailto: mailboxusa@blaser.com

Information department:
Product Safety Department
E-mail: reach@blaser.com

Emergency telephone number:
Within USA and Canada .: 1-800-424-9300
Outside USA and Canada: +1-703-527-3887 (collect calls accepted)

2 Hazard(s) identification

OSHA/HCS status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture
Causes skin irritation.
Causes serious eye irritation.
May cause damage to the gastro-intestinal tract through prolonged or repeated exposure. Route of exposure: Oral.

Label elements
GHS label elements The product is classified and labeled according to 29 CFR 1910.1200 (OSHA Hazcom 2012).
Hazard pictograms

GHS07 GHS08

Signal word Warning

Hazard-determining components of labeling:
Alkanolamine*
Hazard statements
H315 Causes skin irritation.

(Contd. on page 2)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 Edition number 7 Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 1)

H319 Causes serious eye irritation.
H373 May cause damage to the gastro-intestinal tract through prolonged or repeated exposure. Route of exposure: Oral.
Precautionary statements
P264 Wash thoroughly after handling.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards None

*
3 Composition/information on ingredients

Chemical characterization: Mixtures
Description: Mixture of nitrogen-containing organic acids (salts) and inhibitors

Declarable components: **CAS no.**		
Confidential	Carboxylic acids, neutralized with alkanolamines*	>5.0-<15%
CAS: 102-71-6 EINECS: 203-049-8	Triethanolamine	>5.0-9.9%
CAS: 57-55-6 EINECS: 200-338-0	Propylene glycol	>1.0-4.9%
Confidential	Alkanolamine*	>1.0-4.9%
Proprietary	Benzotriazole*	< 2.00%

Additional information:
* Neutralization product: equilibrium of ion pairs.
The specific chemical identity and/or exact percentage concentration of proprietary components is withheld as a trade secret.

*
4 First-aid measures

Description of first aid measures
General information:
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
After inhalation:
In case of unconsciousness place patient stably in side position for transportation.
Not applicable, as the concentrate is not volatile.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing:
Do not induce vomiting; immediately call for medical help.
A person vomiting while lying on their back should be turned onto their side.
Information for doctor:
Most important symptoms and effects, both acute and delayed Nausea / vomiting
Indication of any immediate medical attention and special treatment needed
If swallowed or in case of vomiting, danger of entering the lungs.
Medical supervision for at least 48 hours.

(Contd. on page 3)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 Edition number 7 Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 2)

*
5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents: CO_2, extinguishing powder or water spray. Fight larger fires with water spray.
For safety reasons unsuitable extinguishing agents: Water with full jet
Special hazards arising from the substance or mixture
During heating or in case of fire poisonous gases are produced.
Advice for firefighters
Protective equipment: Mouth respiratory protective device.
Additional information Cool endangered receptacles with water spray.

*
6 Accidental release measures

Personal precautions, protective equipment and emergency procedures Mount respiratory protective device.
Environmental precautions: Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
7 Handling and storage

Handling:
Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
The product has been classified and marked in accordance with directives on hazardous materials.
Observe the general safety regulations when handling chemicals.
Information about protection against explosions and fires: Keep respiratory protective device available.

Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Store only in the original receptacle.
Information about storage in one common storage facility:
Do not store together with oxidizing and acidic materials.
Further information about storage conditions:
Protect from heat and direct sunlight.
Optimal storage temperature between 32°F and 104°F
Minimum shelf life: In closed, original container, at least 12 months.
Specific end use(s) No further relevant information available.

*
8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters
Components with limit values at the workplace:
NIOSH Recommended exposure limit for Metalworking fluids: 0.5 mg/m3 (particulate)

102-71-6 Triethanolamine	
TLV (US)	Long-term value: 5 mg/m³
EL (Canada)	Long-term value: 5 mg/m³
EV (Canada)	Long-term value: 3.1 mg/m³, 0.5 ppm

(Contd. on page 4)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 Edition number 7 Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 3)

TLV (USA)	Long-term value: 5 mg/m³
57-55-6 Propylene glycol	
EV (Canada)	Long-term value: 155* 10** mg/m³, 50* ppm *vapour and aerosol;**aerosol only
WEEL (USA)	Long-term value: 10 mg/m³

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Respiratory Protection: Not required.
Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Material of gloves (recommended): Suitable protective gloves: Nitrile gloves, minimum thickness of 0.3 mm.
Breakthrough time of glove material:
The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye protection (recommended):
Eye protector with side protection (framed eyeglasses) ANSI Z87.1 – 2010
Use of tight fitting goggles
Body protection (recommended): Protective work clothing

*
9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Fluid
Color:	Yellow
Odor:	Weak, characteristic
Odor threshold:	Not determined.
pH-value:	8.7 - 9.0 @ 5% in H_2O (DIN 51369 / ASTM D1287)
Change in condition:	
Melting point/Melting range:	Not applicable
Boiling point/Boiling range:	>100 °C (>212 °F) (DIN 51751 / ASTM D86)
Flash point:	144 °C (291 °F) (ISO 2592 / ASTM D92) Not applicable (contains water).
Evaporation rate	Not determined.
Flammability (solid, gaseous):	Not applicable.
Explosion limits (@1013 mbar):	
Lower:	Not determined.
Upper:	Not determined.

(Contd. on page 5)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 | Edition number 7 | Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 4)

Oxidizing properties	Not applicable.
Vapor pressure:	Not determined.
Refractive index:	1.404
Relative density	1.06 @ 68°F (20 °C) (DIN 51757 / ASTM D1217)
Vapor density	Not applicable.
Evaporation rate	Not determined.
Solubility in / Miscibility with Water:	Emulsifiable.
Partition coefficient (n-octanol/water):	Not determined.
Auto-ignition temperature:	Product is not selfigniting.
Decomposition temperature:	Not determined.
Viscosity Kinematic at 40 °C (104 °F):	5.8 mm²/s (ISO 3104 / ASTM D445)
VOC content:	164 g/l (ASTM E1868-10); Concentrate in the packaging as sold. 24.6 g/l (ASTM E1868-10) @ Maximum concentration 15%
Solvent content:	13.8 %
Other information:	none

10 Stability and reactivity

Reactivity None known if used as directed.
Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions Reacts with strong acids and oxidizing agents.
Conditions to avoid No further relevant information available.
Incompatible materials: No further relevant information available.
Hazardous decomposition products (in case of fire or oxidation):
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

11 Toxicological information

Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification:
* pure substance

Alkanolamine*		
Oral	LD50	> 2000 mg/kg (rat)
	No Observed Adverse Effect Level	>31.25 mg/kg bw/day (rat)
Dicyclohexylamine*		
Oral	LD50	200 mg/kg (rat)
Dermal	LD50	200-316 mg/kg (rabbit)
31075-24-8 Poly quaternary ammonium chloride		
Oral	LD50	1951 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LD50	2.9 mg/L (rat)

Primary irritant effect:
on the skin: Causes skin irritation.
on the eye: Irritating effect.

(Contd. on page 6)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 | Edition number 7 | Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 5)

Sensitization: No sensitizing effects known.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

IARC (International Agency for Research on Cancer)		
102-71-6	Triethanolamine	3

NTP (National Toxicology Program)
None of the ingredients are listed.

12 Ecological information

Toxicity
Aquatic toxicity:
* pure substance

Benzotriazole*	
LC50/96h	180 mg/l (Brachydanio rerio)
NOEC/21d	0.97 mg/l (Daphnia galeata)
NOEC/10d	3.94 mg/l (Lemna minor)
EC50/48h	63-91 mg/L (Daphnia magna)
Dicyclohexylamine*	
LC50/96h	62 mg/l (Danio rerio)
	12 mg/l (Oryzias latipes)
EC50/48h	201 mg/L (Bak)
	8 mg/L (Daphnia magna)
31075-24-8 Poly quaternary ammonium chloride	
LC50/96h	0.047 mg/l (Oncorhynchus mykiss) (OECD 203)
EC50/48h	0.37 mg/L (Daphnia magna) (OECD 202)
EC50/72h	0.0019 mg/L (Algae) (OECD 201)

Persistence and degradability No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Additional ecological information:
General notes:
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Used containers
Recommendation: Disposal must be made according to official regulations.

(Contd. on page 7)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 | Edition number 7 | Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 6)

14 Transport information

UN-Number
DOT, IMDG, IATA not applicable
DOT, IMDG, IATA not applicable

DOT, IMDG, IATA
Hazard Classification: not applicable
DOT, IMDG, IATA not applicable

Environmental hazards
Marine pollutant (according to IMDG): No

Special precautions for user Not applicable.

Transport/Additional information: Not hazardous according to the above specifications.

IATA IATA Dangerous Goods Regulation (DGR) 57th Edition 2016

UN "Model Regulation": not applicable

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

SARA (Superfund Amendments and Reauthorization)

Section 355 (extremely hazardous substances):
None of the ingredients are listed.

Section 313 (Specific toxic chemical listings):
This product does not contain a chemical that are listed in Section 313.

TSCA (Toxic Substances Control Act):
All ingredients are listed on the U.S. TSCA inventory or exempt from premanufacture notice requirements.

California Proposition 65
This product does not intentionally contain any chemicals known by the State of California to cause cancer and/or birth defects. Moreover, we do not routinely analyze its products for impurities which may be such chemicals.

Chemicals known to cause cancer:
None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:
None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:
None of the ingredients are listed.

Chemicals known to cause developmental toxicity:
None of the ingredients are listed.

Carcinogenic categories:

EPA (Environmental Protection Agency)
None of the ingredients are listed.

NIOSH-Carcinogen list
None of the ingredients are listed.

California SCAQMD Rule 1144:
Category: Metalworking Fluid – Metal Forming – General. Recordkeeping requirement: Super Compliant.
GHS label elements GHS label elements are issued under section 2.

USA

(Contd. on page 8)

Safety Data Sheet
acc. to 29 CFR 1910.1200 (OSHA Hazcom 2012)

Issued on 09/16/2016 | Edition number 7 | Reviewed on 09/16/2016

Trade name: Synergy 905

(Contd. of page 7)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

H.R.2420:
RoHS:
This product fulfill the H.R.2420 requirements in that the EDEE Act regulated materials are absent or their concentrations are significantly below regulatory thresholds.
NFPA ratings (scale 0-4)

Health = 1
Fire = 1
Reactivity = 0

HMIS ratings (0-4)

Health = *1
Fire = 1
Reactivity = 0

Department issuing SDS: Product Stewardship

Editor's notice:
The above mentioned data correspond to our present state of knowledge and experience. The safety data sheet serves as description of the products in regard to necessary safety measures. The indications have not the meaning of guarantees on properties.
Date of preparation / last revision 09/16/2016 / 6

Abbreviations and acronyms:
RoHS: Restriction of Hazardous Substances
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
ISO: International Organisation for Standardisation
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic chemicals
vPvB: very Persistent and very Bioaccumulative chemicals
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
ATE: Acute Toxicity Estimate
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
* **Data compared to the previous version altered.**
The asterisk (*) on the left side indicate the respective changes from the previous version.

USA

Techniclean MTC 43

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	**Techniclean MTC 43**
Product code	462650-DE02
SDS no.	462650
Product type	Liquid.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Use of lubricants and greases in open systems-Industrial Use of lubricants and greases in open systems-Professional

Use of the substance/ mixture	Cleaner. For specific application advice see appropriate Technical Data Sheet or consult our company representative.

1.3 Details of the supplier of the safety data sheet

Supplier	Castrol (UK) Limited PO Box 352, Chertsey Road, Sunbury On Thames, Middlesex, TW16 9AW Orders/Enquiries: 0845 9645111 Technical Enquiries: 0845 9000209
E-mail address	MSDSadvice@bp.com

1.4 Emergency telephone number

EMERGENCY TELEPHONE NUMBER	Carechem: +44 (0) 1235 239 670 (24/7)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Skin Irrit. 2, H315
Eye Dam. 1, H318
Aquatic Chronic 3, H412

Additional information CLP: Not classified as hazardous when diluted below 5%

See Section 16 for the full text of the H statements declared above.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

Hazard pictograms

Signal word Danger

Hazard statements
H318 - Causes serious eye damage.
H315 - Causes skin irritation.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention
P280 - Wear protective gloves. Wear eye or face protection.
P273 - Avoid release to the environment.

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 2: Hazards identification

Response	P332 + P313 - If skin irritation occurs: Get medical attention. P305 + P351 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTER or physician.
Storage	Not applicable.
Disposal	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	(ethylenedioxy)dimethanol alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether
Supplemental label elements	Not applicable.

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings	Not applicable.
Tactile warning of danger	Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	Defatting to the skin.

SECTION 3: Composition/information on ingredients

Substance/mixture Mixture

Alkalis and additives in aqueous solution.

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
(ethylenedioxy)dimethanol	EC: 222-720-6 CAS: 3586-55-8	≤10	Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318	[1]
dipropylene glycol methyl ether	REACH #: 01-2119450011-60 EC: 252-104-2 CAS: 34590-94-8	≤10	Not classified.	[2]
alcohols, C8-10, ethers with polyethylene-polypropylene glycol monobenzyl ether	CAS: 68154-99-4	≤10	Acute Tox. 4, H312 Skin Irrit. 2, H315 Eye Dam. 1, H318	[1]
Alcohols, C9-11, ethoxylated	CAS: 68439-46-3	≤3	Eye Dam. 1, H318	[1]
Alcohols, C12-15, ethoxylated propoxylated	CAS: 68551-13-3	≤2.2	Aquatic Acute 1, H400 (M=1)	[1]
pyridine-2-thiol 1-oxide, sodium salt	EC: 223-296-5 CAS: 3811-73-2	≤0.22	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410 (M=10)	[1]

See Section 16 for the full text of the H statements declared above.

Type

SECTION 3: Composition/information on ingredients

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
[5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Get medical attention immediately.

Skin contact
Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.

Inhalation
If inhaled, remove to fresh air. Get medical attention if symptoms appear. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Ingestion
Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Wash out mouth with water if person is conscious. Get medical attention if symptoms occur.

Protection of first-aiders
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician
Treatment should in general be symptomatic and directed to relieving any effects.
In case of inhalation of decomposition products in a fire, symptoms may be delayed.
The exposed person may need to be kept under medical surveillance for 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use foam or all-purpose dry chemical to extinguish.

Unsuitable extinguishing media
Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture
In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous combustion products
Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
nitrogen oxides (NO, NO_2 etc.)

5.3 Advice for firefighters

Special precautions for fire-fighters
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment for fire-fighters
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. Do not breathe vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Contact emergency personnel.

For emergency responders
Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and material for containment and cleaning up

Small spill
Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill
Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilt product. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures
Put on appropriate personal protective equipment. Do not breathe vapour or mist. Do not ingest. Avoid contact of spilt material and runoff with soil and surface waterways. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Empty containers retain product residue and can be hazardous. Use only with adequate ventilation. Do not get in eyes, on skin or on clothing.

Advice on general occupational hygiene
Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store between the following temperatures: 5 to 40°C (41 to 104°F). Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Keep away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store and use only in equipment/containers designed for use with this product. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations
See section 1.2 and Exposure scenarios in annex, if applicable.

Product name Technielean MTC 43 Product code 462650-DE02 Page: 4/17
Version 2.02 Date of issue 3 January 2017 Format United Kingdom (UK) (United Kingdom) Language ENGLISH

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
dipropylene glycol methyl ether	**EH40/2005 WELs (United Kingdom (UK)). Absorbed through skin.** TWA: 308 mg/m³ 8 hours. Issued/Revised: 2/2000 TWA: 50 ppm 8 hours. Issued/Revised: 2/2000

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

This product contains a preservative that may release trace amounts of formaldehyde during use.

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived No Effect Level

No DNELs/DMELs available.

Predicted No Effect Concentration

No PNECs available

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection

Use with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Recommended: half-face mask - inorganic gases/vapor filter (Type B) - particulate filter.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

General Information:

Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. The correct choice of protective gloves depends upon the chemicals being handled, and the conditions of work and use. Most gloves provide protection for only a limited time before they must be discarded and replaced (even the best chemically resistant gloves will break down after repeated chemical exposures).

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 8: Exposure controls/personal protection

Gloves should be chosen in consultation with the supplier / manufacturer and taking account of a full assessment of the working conditions.

Wear suitable gloves.
Recommended: Butyl gloves.
Breakthrough time:

Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are taken into account. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.
Our recommendations on the selection of gloves are as follows:

Continuous contact:

Gloves with a minimum breakthrough time of 240 minutes, or >480 minutes if suitable gloves can be obtained.
If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to.

Short-term / splash protection:

Recommended breakthrough times as above.
It is recognised that for short-term, transient exposures, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Glove Thickness:

For general applications, we recommend gloves with a thickness typically greater than 0.35 mm.

It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.

Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:

- Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.

- Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Skin and body

Use of protective clothing is good industrial practice.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Refer to standards:

Respiratory protection: EN 529
Gloves: EN 420, EN 374
Eye protection: EN 166
Filtering half-mask: EN 149
Filtering half-mask with valve: EN 405
Half-mask: EN 140 plus filter
Full-face mask: EN 136 plus filter
Particulate filters: EN 143
Gas/combined filters: EN 14387

Product name Technielean MTC 43 Product code 462650-DE02 Page: 6/17
Version 2.02 Date of issue 3 January 2017 Format United Kingdom (UK) (United Kingdom) Language ENGLISH

SECTION 8: Exposure controls/personal protection

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Yellow. [Light]
Odour	Not available.
Odour threshold	Not available.
pH	8.8 [Conc. (% w/w): 5%]
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Open cup: >100°C (>212°F) [Estimated. Water content interferes with flash point determination.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	>1000 kg/m³ (>1 g/cm³) at 20°C
Solubility(ies)	Soluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Kinematic: 5.1 mm^2/s (5.1 cSt) at 40°C
Explosive properties	Not available.
Oxidising properties	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability The product is stable.

10.3 Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerisation will not occur.

10.4 Conditions to avoid High temperatures

10.5 Incompatible materials Reactive or incompatible with the following materials: oxidising materials.
Slightly reactive or incompatible with the following materials: acids.

10.6 Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity estimates

Route	ATE value
Oral	5854.1 mg/kg
Dermal	22000 mg/kg

Information on likely routes of exposure Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Inhalation May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. May cause irritation to eyes, nose and throat due to exposure to vapour, mists or fumes.

Ingestion Irritating to mouth, throat and stomach.

Skin contact Causes skin irritation. Defatting to the skin.

Eye contact Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation No specific data.

Ingestion Adverse symptoms may include the following:
stomach pains

Skin contact Adverse symptoms may include the following:
pain or irritation
redness
dryness
cracking
blistering may occur

Eye contact Adverse symptoms may include the following:
pain
watering
redness

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Potential chronic health effects

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Environmental hazards Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

Expected to be biodegradable.

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Liquid. Soluble in water.

SECTION 12: Ecological information

12.5 Results of PBT and vPvB assessment

PBT	Not applicable.
vPvB	Not applicable.

12.6 Other adverse effects No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Hazardous waste Yes.

European waste catalogue (EWC)

Waste code	Waste designation
12 03 01*	aqueous washing liquids

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

Packaging

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Waste code	European waste catalogue (EWC)
15 01 10*	packaging containing residues of or contaminated by hazardous substances

Special precautions This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

14.6 Special precautions for user Not available.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code Not available.

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Other regulations

REACH Status	The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.
United States inventory (TSCA 8b)	All components are listed or exempted.
Australia inventory (AICS)	All components are listed or exempted.
Canada inventory	All components are listed or exempted.
China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
Philippines inventory (PICCS)	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.

15.2 Chemical safety assessment This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2015/830

SECTION 16: Other information

Varies = may contain one or more of the following 101316-69-2 / RRN 01-2119486948-13, 101316-70-0, 101316-71-8, 101316-72-7 / RRN 01-2119469959-06, 64741-88-4 / RRN 01-2119488706-23, 64741-89-5 / RRN 01-2119487067-30, 64741-95-3 / RRN 01-2119487081-40, 64741-96-4/ RRN 01-2119483621-38, 64741-97-5 / RRN 01-2119480374-36, 64742-01-4 / RRN 01-2119488707-21, 64742-44-5 / RRN 01-2119985177-24, 64742-45-6, 64742-52-5 / RRN 01-2119467170-45, 64742-53-6 / RRN 01-2119480375-34, 64742-54-7 / RRN 01-2119484627-25, 64742-55-8 / RRN 01-2119487077-29, 64742-56-9 / RRN 01-2119480132-48, 64742-57-0 / RRN 01-2119489287-22, 64742-58-1, 64742-62-7 / RRN 01-2119480472-38, 64742-63-8, 64742-64-9, 64742-65-0 / RRN 01-2119471299-27, 64742-70-7 / RRN 01-2119487080-42, 72623-85-9 / RRN 01-2119555262-43, 72623-86-0 / RRN 01-2119474878-16, 72623-87-1 / RRN 01-2119474889-13, 74869-22-0 / RRN 01-2119495601-36, 90669-74-2 / RRN 01-2119970171-43

Full text of abbreviated H statements

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Acute Tox. 4, H312	ACUTE TOXICITY (dermal) - Category 4
Acute Tox. 4, H332	ACUTE TOXICITY (inhalation) - Category 4
Aquatic Acute 1, H400	ACUTE AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM AQUATIC HAZARD - Category 1
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2

History

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Prepared by	Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition	Mixture
Code	462650-DE02
Product name	Technilean MTC 43

Section 1: Title

Short title of the exposure scenario	Use of lubricants and greases in open systems - Industrial
List of use descriptors	**Identified use name:** Use of lubricants and greases in open systems-Industrial **Process Category:** PROC01, PROC02, PROC07, PROC08b, PROC09, PROC10, PROC13 **Sector of end use:** SU03 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC04 **Specific Environmental Release Category:** ATIEL-ATC SPERC 4.CI.v1
Processes and activities covered by the exposure scenario	Covers use of lubricants and greases in open systems, including application of lubricant to work pieces or equipment by dipping, brushing or spraying (without exposure to heat), e.g. mould releases, corrosion protection, slideways. Includes associated product storage, material transfers, sampling and maintenance activities.

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Product characteristics:

Physical state:	Liquid, vapour pressure < 0.5 kPa
Concentration of substance in product:	Covers use of substance/product up to 100 % (unless stated differently)
Frequency and duration of use:	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure:	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

The following information provides minimum risk management measures for the contributing scenarios identified within this lubricant use group. However, more detailed information on control measures e.g. specific glove types may be documented in Section 8 of the main body of this safety data sheet.
Please review Section 8 in conjunction with the information on this Generic Exposure Scenario.

General measures applicable to all activities:
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Material transfers Manual:
Avoid carrying out activities involving exposure for more than 1 hour.

Material transfers Automated process with (semi) closed systems:
Ensure material transfers are under containment or extract ventilation.

Roller, spreader, flow application:
Provide extract ventilation to points where emissions occur.

Spraying:
Carry out in a vented booth or extracted enclosure.

Treatment by dipping and pouring:
Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training.

Equipment cleaning and maintenance:
Drain down system prior to equipment break-in or maintenance. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Retain drain-downs in sealed storage pending disposal or for subsequent recycle.

Storage:
Store substance within a closed system.

Section 2.2: Control of environmental exposure

Product characteristics:	Applicability domain: product in which the risk determining substance has the following hazard profile: LogKow: Vapour pressure: PNEC Freshwater aquatic range (mg/L):
Amounts used:	
EU tonnage of risk determining substance per year:	3.81E+01 Tonnes/year
Frequency and duration of use:	
Emission days	300
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other conditions affecting environmental exposure:	Negligible wastewater emissions as process operates without water contact.
Release fraction to air (after typical onsite RMMs)	5.00E-05
Release fraction to soil from process (after typical onsite RMMs)	0
Release fraction to wastewater from process (after typical onsite RMMs and before sewage treatment plan)	No data available yet
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Prevent discharge of undissolved substance to or recover from onsite wastewater. User sites are assumed to be provided with oil/water separators and waste water to be discharged via a sewage treatment plant
Organisational measures to prevent/limit release from site:	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant:	
Estimated substance removal from wastewater via on-site sewage treatment	No data available yet
Assumed domestic sewage treatment plant flow rate (m3/d)	2.00E+3
Maximum allowable site tonnage (M_{maxs}) based on release following total wastewater treatment removal	No data available yet
Maximum allowable site tonnage (M_{maxs}) based on release following total wastewater treatment removal as product:	No data available yet
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Section 3: EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	Used ECETOC TRA model (May 2010 release).
Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SPERC factsheet. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For further information see www.ATIEL.org/REACH_GES
Health	Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition	Mixture
Code	462650-DE02
Product name	Technicleen MTC 43

Section 1: Title

Short title of the exposure scenario	Use of lubricants and greases in open systems - Professional
List of use descriptors	**Identified use name:** Use of lubricants and greases in open systems-Professional **Process Category:** PROC01, PROC02, PROC08a, PROC10, PROC11, PROC13 **Sector of end use:** SU22 **Subsequent service life relevant for that use:** No. **Environmental Release Category:** ERC08a, ERC08d **Specific Environmental Release Category:** ATIEL-ATC SPERC 8.Cp.v1
Processes and activities covered by the exposure scenario	Covers use of lubricants and greases in open systems, including application of lubricant to work pieces or equipment by dipping, brushing or spraying (without exposure to heat), e.g. mould releases, corrosion protection, slideways. Includes associated product storage, material transfers, sampling and maintenance activities.
Assessment Method	See Section 3

Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Physical state:	Liquid, vapour pressure < 0.5 kPa
Amounts used:	Covers use of substance/product up to 100 % (unless stated differently)
Frequency and duration of use:	Covers daily exposures up to 8 hours
Other conditions affecting workers exposure:	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented

Contributing scenarios: Operational conditions and risk management measures

General measures applicable to all activities: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/ minimise exposures and to report any skin problems that may develop. Use suitable eye protection. Avoid direct eye contact with product also via contamination on hands.
Material transfers Manual: Avoid carrying out activities involving exposure for more than 1 hour.
Roller, spreader, flow application: Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid carrying out activities involving exposure for more than 4 hours. Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training.
Spraying: Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid carrying out activities involving exposure for more than 1 hour. Wear a respirator conforming to EN140 with type A/P2 filter or better. Wear suitable coveralls to prevent exposure to the skin. Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training.
Treatment by dipping and pouring: Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.
Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid carrying out activities involving exposure for more than 4 hours. Retain drain-downs in sealed storage pending disposal or for subsequent recycle.
Storage: Store substance within a closed system.

Section 2.2: Control of environmental exposure

Product characteristics:	Applicability domain: product in which the risk determining substance has the following hazard profile: LogKow: Vapour pressure: PNEC Freshwater aquatic range (mg/L):
Amounts used:	2.24E+01 Tonnes/year
Frequency and duration of use:	
Emission days	365
Environment factors not influenced by risk management:	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other conditions affecting environmental exposure:	Negligible wastewater emissions as process operates without water contact.
Release fraction to air (after typical onsite RMMs)	1.00E-04
Release fraction to soil from process (after typical onsite RMMs)	1E-03
Release fraction to wastewater from process (after typical onsite RMMs and before sewage treatment plan)	No data available yet
Technical conditions and measures at process level (source) to prevent release:	Common practices vary across sites thus conservative process release estimates used.
Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:	Prevent discharge of undissolved substance to or recover from onsite wastewater.
Organisational measures to prevent/limit release from site:	Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
Conditions and measures related to sewage treatment plant:	
Estimated substance removal from wastewater via on-site sewage treatment	No data available yet
Maximum allowable site tonnage (M_{msts}) based on release following total wastewater treatment removal	No data available yet
Conditions and measures related to external treatment of waste for disposal:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Section 3: EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

Exposure estimation and reference to its source - Environment	
Exposure assessment (environment):	Used ECETOC TRA model (May 2010 release).
Exposure estimation and reference to its source - Workers	
Exposure assessment (human):	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Section 4: Guidance to check compliance with the exposure scenario

Environment	Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SPERC factsheet. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. For further information see www.ATIEL.org/REACH_GES

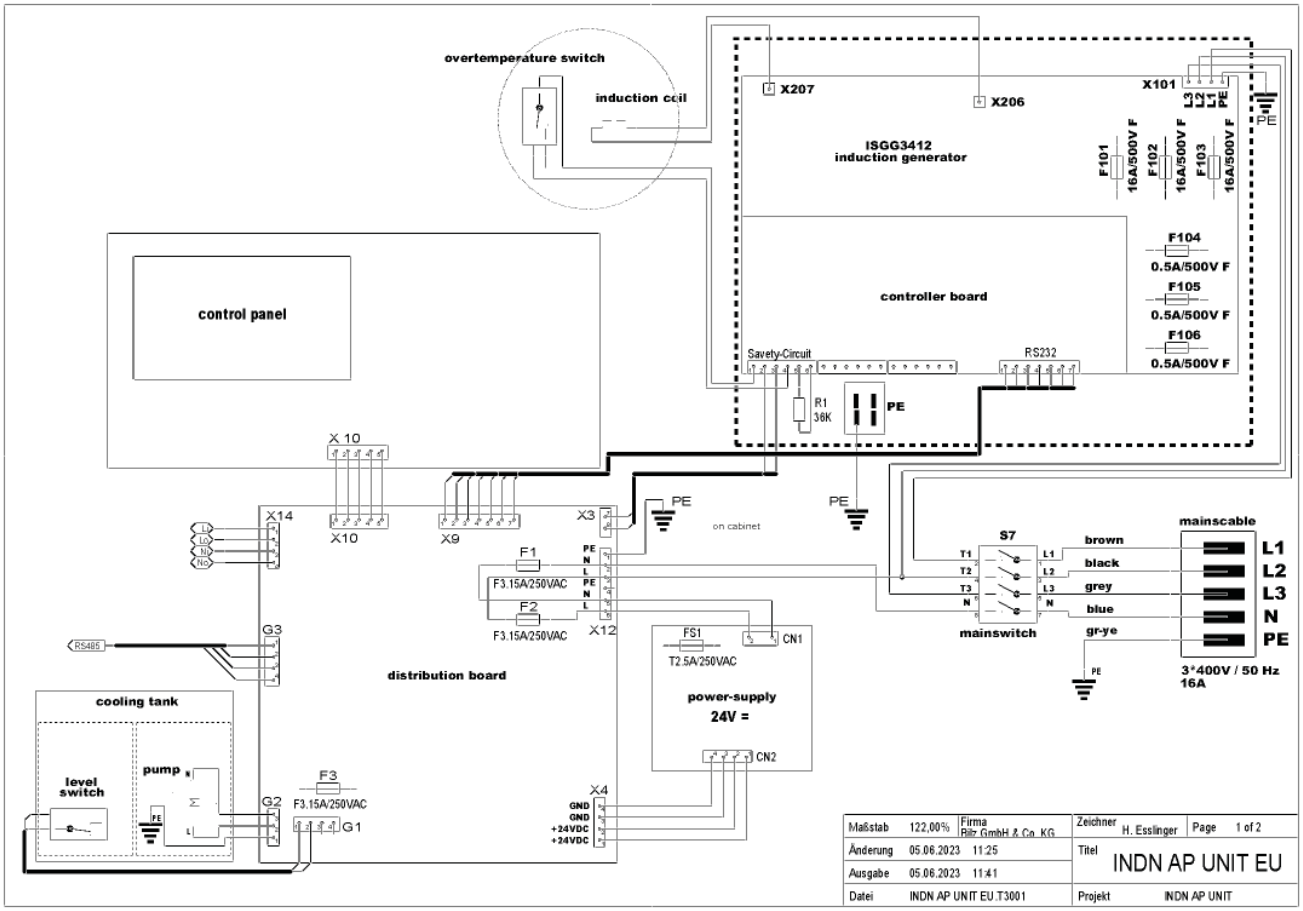
Table of Fuses for 400V Units

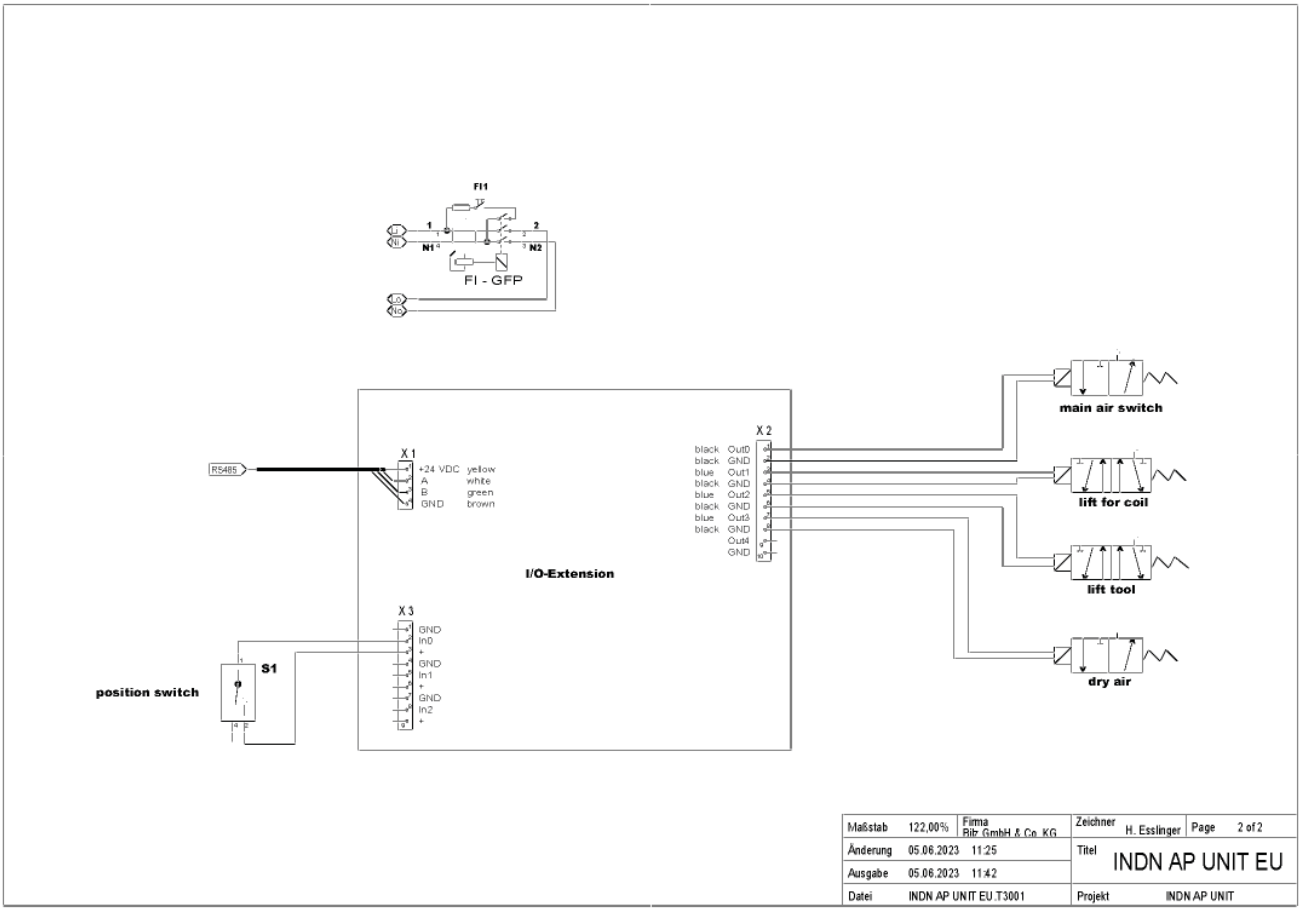
Fuse	Phases	Rated Voltage	Rated Current	Frequency	Dimensions	Tripping Characteristic	Location
F1	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F2	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
F3	1	250V	3.15A	50/60 Hz	5x20 mm	fast acting	Distribution board
FS1	1	250V	4A	50/60 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

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

Wiring Diagrams

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FI - GFP
N1
N2
X 1
+24 VDC yellow
A white
B green
GND brown
RS485
I/O-Extension
X 2
black Out0
black GND
blue Out1
black GND
blue Out2
black GND
blue Out3
black GND
Out4
GND
X 3
GND
In0
+
GND
In1
+
GND
In2
+
S1
position switch
main air switch
lift for coil
lift tool
dry air
Maßstab 122,00% Firma Bibr GmbH & Co. KG
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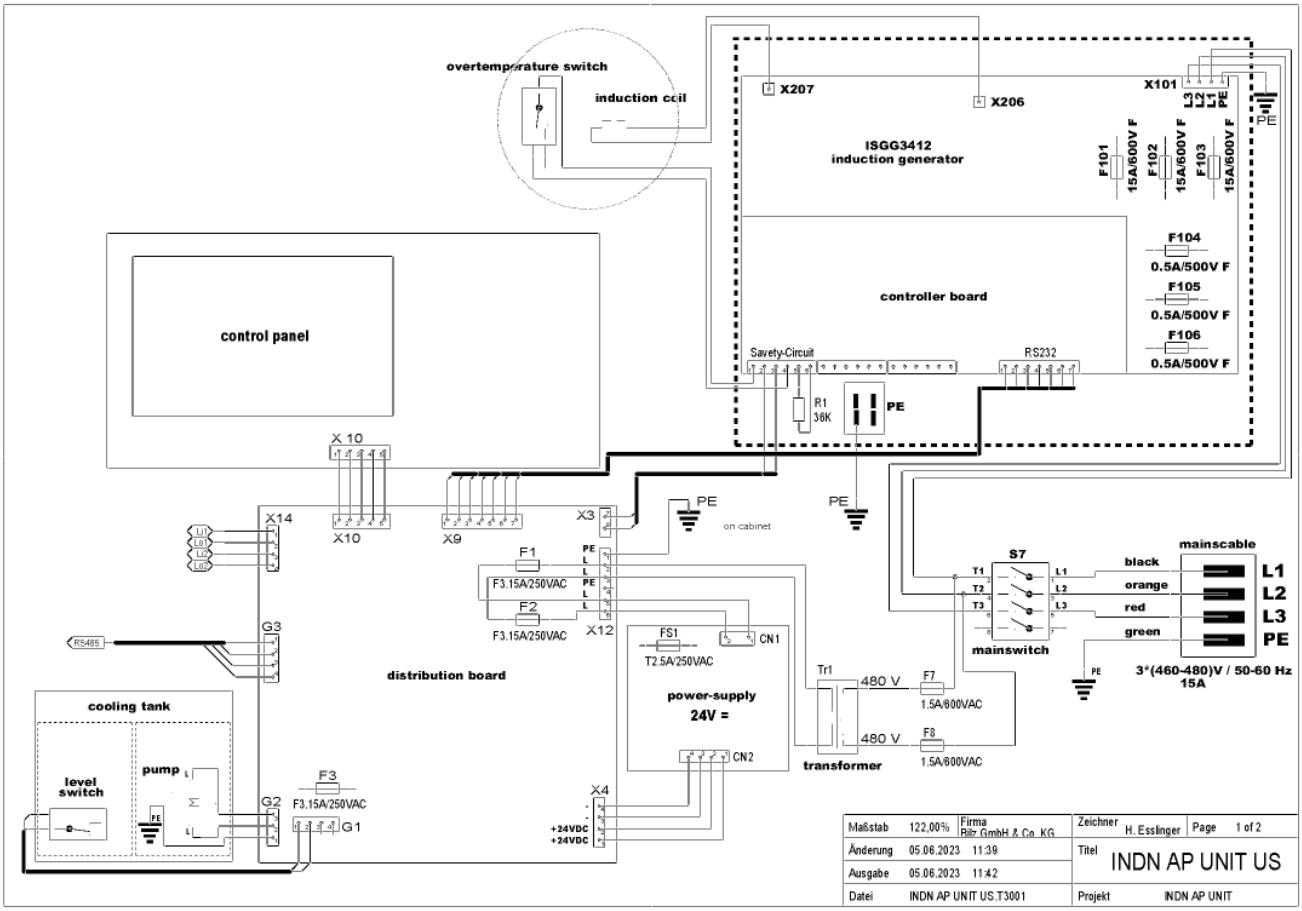
overtemperature switch
induction coil
X207
X206
X101
ISGG3412
induction generator
F101
15A/600V F
F102
15A/600V F
F103
15A/600V F
F104
0.5A/500V F
F105
0.5A/500V F
F106
0.5A/500V F
controller board
control panel
Savety-Circuit
RS232
R1
36K
PE
X 10
X14
X10
X9
X3
on cabinet
F1
F3.15A/250VAC
F2
F3.15A/250VAC
X12
FS1
T2.5A/250VAC
CN1
power-supply
24V =
CN2
S7
mainscable
black
orange
red
green
L1
L2
L3
PE
mainswitch
3*(460-480)V / 50-60 Hz
15A
Tr1
480 V
F7
1.5A/600VAC
480 V
F8
1.5A/600VAC
transformer
G3
RS485
distribution board
cooling tank
level
switch
pump
G2
F3
F3.15A/250VAC
G1
X4
+24VDC
+24VDC
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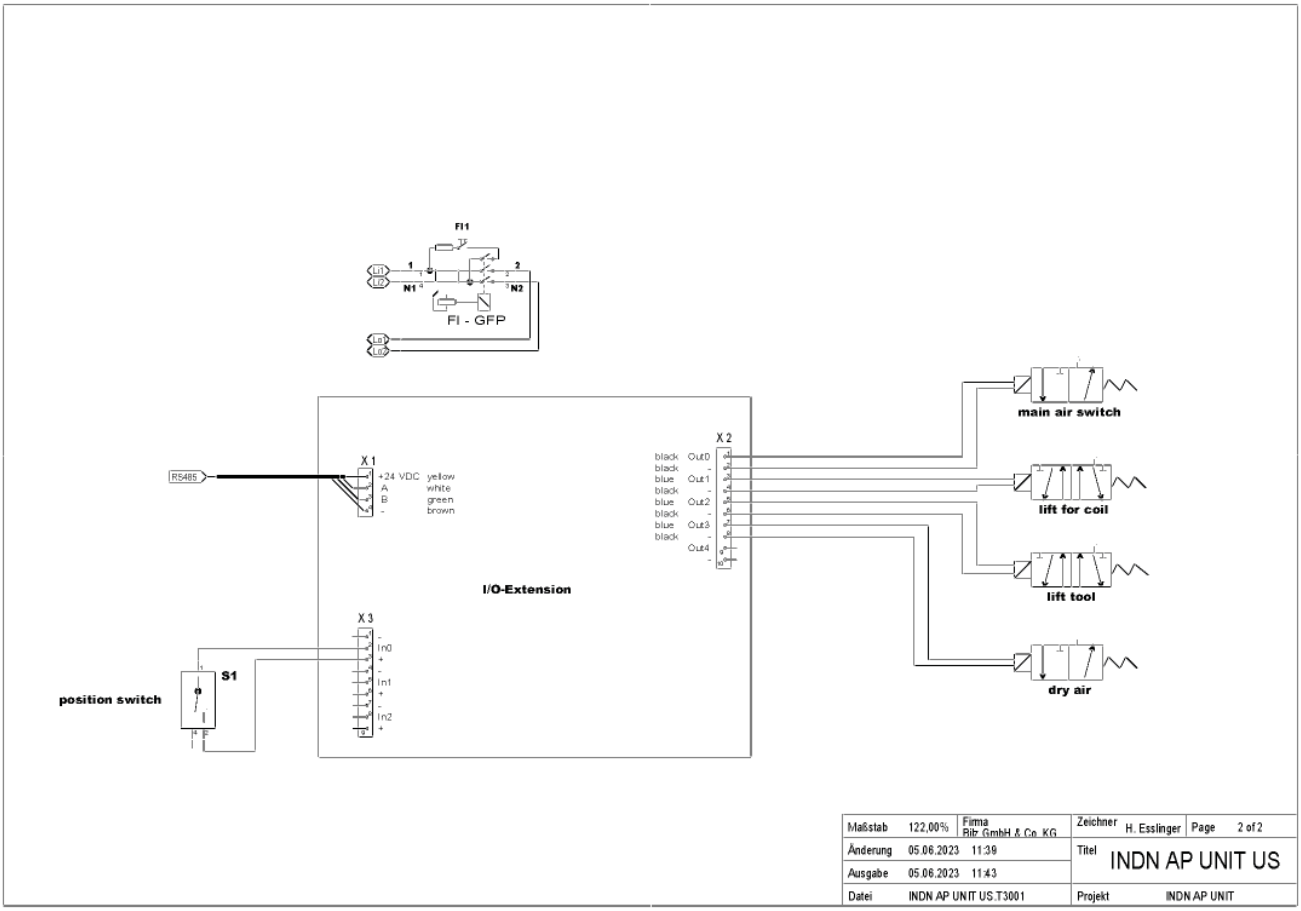
Fl1
L1
L2
1
2
N1
N2
Fl - GFP
L1'
L2'
X 1
RS485
+24 VDC yellow
A white
B green
- brown
I/O-Extension
X 2
black Out0
black -
blue Out1
black -
blue Out2
black -
blue Out3
black -
Out4
-
main air switch
lift for coil
lift tool
dry air
X 3
In0
In1
In2
position switch
S1
Maßstab 122,00%
Firma Ritz GmbH & Co. KG
Zeichner H. Esslinger
Page 2 of 2
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Pneumatic Diagrams