HP Vigo

Order number: G30027

Operating and Maintenance Instructions

Valid from serial number **50_25039_81** onwards.

Bio-Circle Surface Technology GmbH – HP Vigo_ Operating and Maintenance Instructions _AL2_ 2026

BIO-CIRCLE®

bio-circle.com

TABLE OF CONTENTS

Sustainability and quality

Aware of our responsibility for the environment, we **introduced an environmental management system as early as 1996,** which has been **continuously certified by LRQA** in accordance with the requirements of the **globally valid DIN ISO 14.001 standard. Since 2020**, we have also participated in **ecovadis – the independent sustainability ranking for companies** – and have had ourselves evaluated.

As a sustainably-minded company, we not only attach great importance to the best product performance, but also to the best environmental compatibility

We are pleased that you have chosen the HP Vigo. The more familiar you are with the HP Vigo, the better you will be able to use it. Therefore we kindly ask you:

Before you start using the HP Vigo, read the Operating Instructions. They contain important information to help you operate the device properly.
You will also find important information to ensure the safety and best possible maintenance of the HP Vigo.

Yours, Bio-Circle Surface Technology GmbH

We will be happy to assist you with any further queries you may have:

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1. General information

The manual may only be reproduced with the written consent of the manufacturer. The manufacturer reserves the right to make changes and improvements to the device without notifying the customer.
The illustrations contained herein are non-binding. Please contact the manufacturer if you have any questions or are unclear.

Text passages that require special attention when reading through are highlighted in bold and marked with the symbols explained below:

	**NOTE – INFORMATION** This symbol indicates particularly important information that must not be neglected.
	**CAUTION – DANGER** Text passages highlighted by this symbol indicate hazards to which careful attention must be paid in order to avoid serious accidents and personal injury.
	**WARNING – CAUTION** Text passages highlighted by this symbol indicate procedures and behaviour to be followed in order to avoid damage to property.

	**For the protection of the user and to avoid possible damage to the device, it is essential to have read and understood these instructions in full before using the device.**

The information may be translated into other languages in accordance with applicable legislation and/or agreements or commercial requirements. **The original language of the documentation shall be German.**

The **Operating and Maintenance Instructions** are an integral part of the scope of delivery. Each page of the manual (in paper form) is numbered and the total number of pages of the document is indicated on each sheet. The completeness and correct sequence of the instructions can therefore be checked at any time.
The manual must be carefully stored and kept in its original condition.

1.1 Declaration of Conformity

Version 1-2025

EG-KONFORMITÄTSERKLÄRUNG

im Sinne der Maschinenrichtlinie 2006/42/EG

CE DECLARATION OF CONFORMITY – Letter A Directive 2006/42/EC
DÉCLARATION DE CONFORMIETÉ CE – À la norme 2006/42/CE
DICHIARAZIONE DIE CONFORMITÀ CE – ai sensi della direttiva macchine 2006/42/CE
DECLARACIÓN „CE“ DE CONFORMIDAD – según la directiva comunitaria 2006/42/CE

Wir / We / Nous / No/ Nosotros: **Bio-Circle Surface Technology GmbH**
Berensweg 200; D-33334 Gütersloh
Deutschland / Germany / Allemagne / Germania / Alemania

erklären hiermit, dass die Produkte / declare that the products / déclarons que les produits / dichiariamo che / explicamos con esto, que los productos

Bio-Circle HP Vigo
MAS-1240

folgenden einschlägigen Bestimmungen entsprechen / Confirm the following directives / Sont conformes aux dispositions des directives des produits / Sono conformi con le relative disposizioni della direttiva CE / Cumplen a las disposiciones pertinentes siguientes

Richtlinie / Directive / Direttiva / Directiva:	
2006/42/EG (EEC)	**EG-Maschinenrichtlinie** / EEC-Machinery Directive / Directive CE sur les machines / Direttiva Macchine CE / Directiva CE de máquinas
2014/35/EU	**Niederspannungsrichtlinie** / Directive Low Voltage / Directive „basse tension“ / Direttiva „bassa tensione“/ Directiva de baja tensión
2014/30/EU	**Elektromagnetische Verträglichkeitsrichtlinie** / Directive on the Electromagnetic Compatibility / Direttiva sulla compatibilità elettromagnetica / Directiva de compatibilidad electromagnética
2014/29/EU	**Einfache Druckbehälter** / Simple pressure vessels / récipients à pression simples /recipienti a pressione semplici
2011/65/EU RoHS	**Beschränkung der Verwendung bestimmter gefährlicher Stoffe** / Restriction of the use of certain hazardous substance / Relative à la limitation de l'utilisation de certaines substances dangereuses / Restrizione dell'uso di determinate sostanze./ Restricción del uso de determinadas sustancias.

Die Erklärung verliert ihre Gültigkeit bei nicht bestimmungsgemäßer Verwendung und bei Änderungen an dem Produkt, die nicht mit dem Hersteller abgesprochen werden. / The declaration loses its validity if the device is not used as intended or if changes in the product are made, which are not discussed with the manufacturer. / La déclaration perd sa validité lorsqu'elle n´est pas utilisée comme prévu et en cas de modification qui ne sont pas convenues avec le fabricant. / La dichiarazione perde la sua validità quando non è utilizzata come previsto e se le modifiche non sono d'accordo con il costruttore. / La decaración pierde su validez al no usarla conforme a su deseo y al cambiar el producto sin hablar con el fabricante.

Für die Zusammenstellung der technischen Unterlagen ist bevollmächtigt / Institution authorized for compiling the technical documents / La présentation des résultats des documents techniques est habilité par / Instituzione autorizzata a mettere insieme i documenti tecnici / Autorizado para la compilación de los documents técnicos:

Bio-Circle Surface Technology GmbH, Berensweg 200, D-33334 Gütersloh

Gütersloh, 01.12.2024

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MAKING GREEN WORK.

1.2 Warranty

The machine is delivered after proper acceptance and the warranty is **twelve months** from the date of delivery made, unless otherwise stated in the order confirmation. The warranty only applies to a buyer who complies with the contractual and administrative regulations and if the device has been professionally installed.

Under this warranty, the manufacturer undertakes solely and exclusively to repair or replace, free of charge, the product or any part thereof if defects are found after an inspection at the factory, carried out at the sole discretion of its technicians. In any case, the labour costs are excluded from the clauses of this warranty and will be charged to the buyer.

The warranty, which excludes any liability for direct or indirect personal injury or damage to property, is limited to design and machining defects only and shall cease to be effective if it can be proved that the returned parts have been disassembled, tampered with, or repaired outside our factory.

Excluded from the warranty are all those parts that wear out quickly due to their specific use, such as seals, pumps, diaphragms, mechanical seals, and fuses.

The warranty is void if the instructions have not been followed: in the event of improper use, lack of maintenance and use of chemicals not expressly approved by the manufacturer. The warranty is void if changes have been made to the device or to the control software that have not been agreed with the manufacturer, or if components have been replaced by other, non-identical parts (e.g. different supplier, different model, etc.).
Malfunctions or damage to machine parts caused by incorrect levelling of the machine will invacoverate the warranty.

All transport, inspection, disassembly, and reassembly costs resulting from the intervention of one of our technicians at the customer's request will be charged to the buyer.
The manufacturer declines all liability if the preceding provisions are not respected.

The operator's claims for material defects and defects of title are subject to the operator asserting the defect in writing without delay, at the latest, however, within two working days. The manufacturer is in no case responsible for damage to the device itself or consequential damage caused by the device due to improper handling of the device. In particular, the manufacturer is not responsible for failures or faults caused by modifications made by the customer or other persons. Insofar as the manufacturer is responsible for a defect, the manufacturer is entitled to choose between repair or replacement. There shall be no claims to the availability of previous versions and to the retrofitting of delivered devices to the respective current series status.

1.3 Exclusive rights

All contents of these Operating Instructions are the intellectual property of the manufacturer and are subject to copyright protection. Any reproduction, editing, distribution, transfer to third parties - also in extracts - and any kind of utilisation outside the limits of copyright law require the written consent of the manufacturer. In the event of infringement, the manufacturer reserves the right to take legal action at any time. We reserve the right to make changes to these Operating Instructions as well as changes to technical details compared to the information and illustrations in these Operating Instructions. Any software installed on the PLC is the exclusive property of the manufacturer and is provided to the customer for use.

2. General safety regulations

CE

2.1 General safety instructions

Even if the installation is carried out by the manufacturing company or by authorised technicians, the documentation must be read before any subsequent activity.

The personnel responsible for the transport and handling, installation, operation, maintenance and dismantling of the machine must read the instructions, paying particular attention to the general safety regulations and the specifications contained in the relevant section for carrying out the activities that fall within their area of responsibility.
This chapter describes the general safety regulations that must be observed.

	During installation, operation and maintenance: Observe the space requirements specified by the manufacturer, also with regard to the applicable occupational safety laws.

2.2 Persons working on the device n

The device was built and designed for manual operation mode only. The persons who are allowed to interact with the machine are:

- **Operator:** Selected, trained and authorised person who has the necessary prerequisites, competences and information for the operation and monitoring of the device.
- **Maintenance technician:** Selected, authorised technician who fulfils the necessary requirements for carrying out scheduled maintenance activities on the device. They must have certain information and competences as well as special skills in the respective technical field. In particular, as regards the assembly of the partly completed machine, they must have the necessary mechanical knowledge.
- **Specialist technician** of the manufacturer or technician authorised by the manufacturer: technician authorised and selected by the manufacturer who fulfils the conditions necessary to carry out unscheduled maintenance on the device.

2.3 Power-supply- and voltage-free state of the device

The machine is understood to be in a power-supply- and voltage-free state if the following conditions apply:

1. Disconnect the device from the power supply by setting the main switch to position "0" or "OFF" and pulling the plug out of the socket.
2. All water inlet valves to the tanks are closed.
3. The compressed air inlet valve is closed.
4. All liquids in the tanks of the device have a temperature <= ambient temperature.

2.4 Personal protective equipment

Pictogram	Instruction	Phase
	Wear protective gloves according to EN 388	Transport and handling, installation, operation, adjustment and disassembly
	Wear safety shoes according to EN ISO 20345	Transport and handling, installation, operation, adjustment and disassembly
	Wear safety goggles	Operation with open movable guard with interlock, maintenance in areas containing liquids, filling detergent into the tank.

	**Before using cleaning chemicals, carefully read the technical data sheet and the safety data sheet of the product and follow the instructions given.**

2.5 Safety instructions for transport and handling

- ▸ During lifting, transport, and handling operations, follow the information provided by the manufacturer and the indications directly on the packaging, on the device and in the Operating Instructions.
- ▸ When transporting and handling, call in one or more staff members for signalling when conditions require it.
- ▸ The personnel carrying out the loading, unloading, transport and handling of the device must have acquired proven skills and experience in this field and must be experienced in particular regarding the use of hoisting equipment.
- ▸ If the device has to be transported by means of transport, ensure that they are suitable for this purpose. Loading and unloading operations must not create hazards for the operator and the workers directly involved.

2.6 Safety instructions for installation

- ▸ The installation and connections of the machine must be carried out in accordance with the manufacturer's instructions. All installation and connection activities must be carried out in a professional manner.
- ▸ All installation work must be carried out with the device disconnected from the power supply and voltage.

2.7 Safety instructions for operation

▸ The operator must be properly trained and instructed on the use of the device.
▸ Use the device only for the purposes intended by the manufacturer. Improper use of the device may cause danger to the health and safety of persons as well as economic damage.
▸ The device is not designed to be operated in an environment where there is a risk of explosion and fire.
▸ The device has been designed and built to meet all the operating conditions specified by the manufacturer. Manipulation of any equipment to achieve performance other than that intended may cause risks to the safety and health of persons as well as economic damage.
▸ Do not use the device if the safety systems are not perfectly installed and functioning. Failure to comply with this requirement may cause high risks to the safety and health of persons.
▸ The safety equipment installed on the device must not be modified, put out of operation, removed, or bypassed. Failure to comply with this requirement may cause high risks to the safety and health of persons.
▸ In the operating phase of the device, wear only the clothing and/or personal protective equipment specified in the Operating Instructions supplied by the manufacturer and required by the applicable occupational safety laws.
▸ If only the intended cleaning agents are used and sufficient ventilation is provided, the workplace limit values are not expected to be exceeded. However, the operator of the machine is obliged to carry out a risk assessment depending on the substances being washed in.

2.8 Safety instructions for maintenance and setup

▸Good maintenance ensures the best possible performance, a longer service life and the constant upkeep of safety.
▸The maintenance or setup activities must be carried out by authorised persons who must establish all the necessary safety conditions and follow the indicated procedures.
▸ All maintenance or setup activities requiring specific technical competence or special skills may only be carried out by qualified personnel with proven experience in the specific field in question.
▸ If maintenance work has to be carried out in hard-to-reach areas or hazardous areas, take appropriate safety measures for yourself and others, paying close attention to applicable occupational safety laws.
▸ Replace heavily worn parts with original spare parts. Use the oils and greases recommended by the manufacturer.
▸ Observe the relevant applicable laws for the disposal of the fluid.
▸ When the device is hot, only handle parts inside with gloves suitable for the operating temperature, as there is a risk of burns.
▸ Maintenance work may only be carried out when the device is disconnected from the power supply and voltage.

2.9 Safety instructions for dismantling and scrapping

All dismantling and scrapping operations requiring specific technical competence or skills shall be carried out only by qualified personnel with proven experience in the specific field concerned.

2.10 Safety instructions in the event of fire

	**In the event of fire, do not use water or other extinguishing agents that can cause electrical hazards. Only use CO_2 fire extinguishers.**

In the event of fire, follow the procedure below:

1. Disconnect the power supply line to the device via the main switch of the device, if possible.
2. Disconnect any extraction system connected to the machine if it has a separate supply.
3. Extinguish the fire with a CO2 fire extinguisher.
4. Contact the manufacturer before restarting the device.

2.11 Intended use

The device has been designed and built for cleaning workpieces made of plastic or metal alloys to remove machining residues and contaminants.
The intended environment of use is industrial type, the electromagnetic environment is type A (industrial). The operator must be instructed in the use of the device with the aid of the:

▸ Operating Instructions.

Only if requested by the machine operator, the following supplementary activity shall be carried out:

▸ Training on the device (operating simulation).

2.12 Misuse

Misuse means the following:

▸ Installation of components other than those described by the manufacturer.
▸ All uses other than those intended by the manufacturer.
▸ Operating the device in locations with explosion and fire hazards, as the device is not certified according to the ATEX directive 2014/34/EU.
▸ Use of cleaning agents or quantities of cleaning agents that do not comply with the manufacturer's specifications: chemically unstable, flammable, and explosive.
▸ Installations, modifications, or adjustments to the equipment that are not provided for by the Operating and Maintenance Instructions or by the layout drawn up in the definition phase of the order or that are not approved by the manufacturer.
▸ Uses and behaviour that contradict the regulations contained in the Operating Instructions.
▸ Maintenance work that is not carried out in accordance with the specifications contained in the Operating and Maintenance Instructions.
▸ Cleaning of products that do not comply with the manufacturer's specifications, such as products made of wood or other products that differ from the products described under “Intended use”.
▸ Operation of the device with the protective equipment deactivated or removed.
▸ Stepping or climbing onto/into the device, regardless of whether it is switched on or off.
▸ Operation of the device with two or more operators.
▸ Operation of the device by unqualified or underage persons.
▸ Operation of the device on sloping, unsuitable ground or on ground with unevenness and interruptions that may affect the stability of the device.
▸ Operation of the device outdoors, on forecourts, on board ships or on truck beds, or under unsuitable ambient conditions.

2.13 Safety equipment

For the purpose of safety of the device and to avoid danger to the operator, fixed and movable safety guards and safety equipment have been installed.

Safety function	**Safety equipment**	**Position of the equipment**
Emergency stop by interruption of the consumer supply	Main switch	Near the operating areas
Safe Category 0 operational stop of the motor(s) and pump(s)	Locking of the movable safety guard	Near the movable safety guard
Switching off the electrical consumers when the minimum detergent level in the tank is detected	Level switch	Inside the tank
Switching off the heating resistor when the set temperature is reached	Temperature sensor	Inside the tank near the heating resistor
Protection of the pump against overpressure	Bypass valve	Near the pump

All safety functions have been validated with reference to the applicable standards EN 13849-1 and EN 13849-2.

2.14 Residual risks – instructions – prohibitions – regulations

	Although the protective measures integrated into the development have been implemented, protective devices provided and additional protective measures taken, residual risks remain. The residual risks existing on the device are indicated by self-adhesive pictograms.

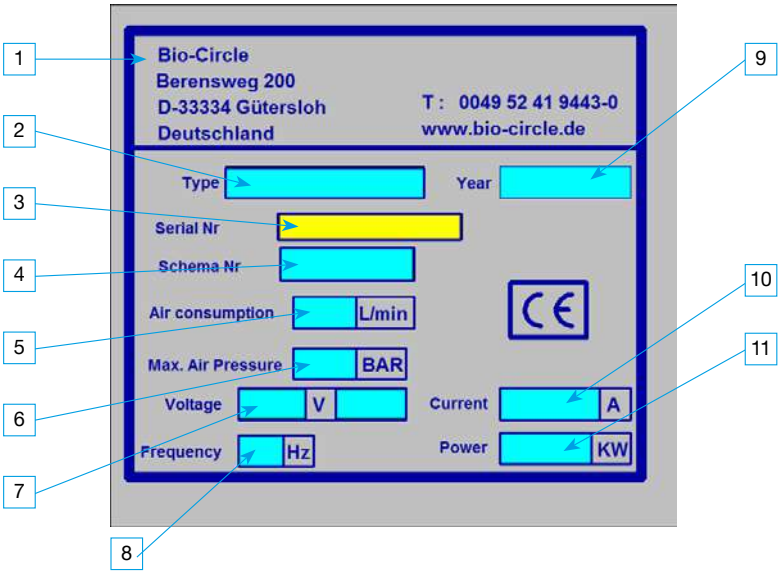
Pictogram	**Prohibition or regulation**	**Position**
	PROHIBITION – Do not climb on the device	Device housing
	PROHIBITION – Do not remove guards when device is in operation	Interlocked movable guards, fixed movable guards
	DANGER – Electrical hazard	Control cabinet, control panel, junction boxes
	DANGER – Warning against falling objects	Loading and unloading area, workpiece handling area
	DANGER – Warning against hot surfaces	Non-insulated areas where the temperature may exceed 60 °C.
	MANDATORY – Read the Operating Instructions before each activity	---

3. Device overview

Nameplate

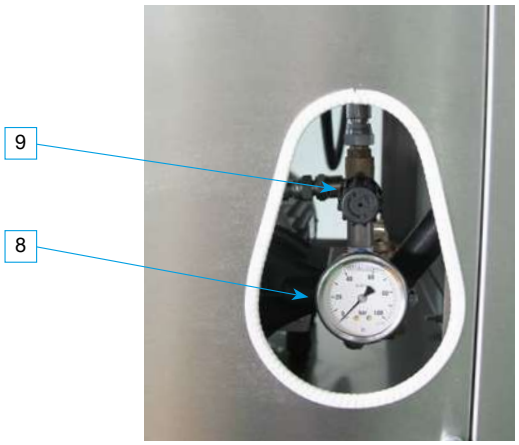
The nameplate is located on the left side of the device and
contains the specifications of the device and the most important technical data for the connections.

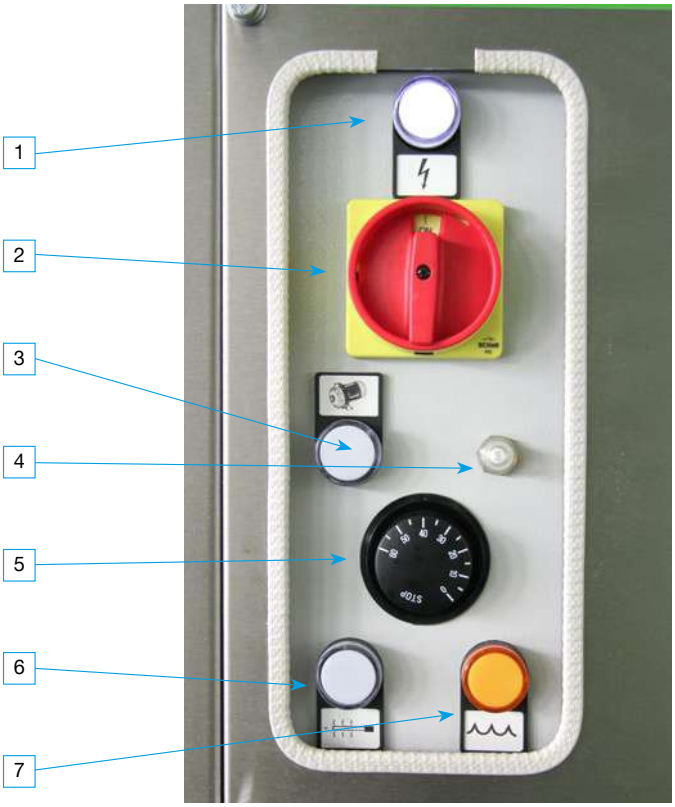
No.	Information
1	Company data
2	Device type
3	Serial number
4	Wiring diagram code
5	Air consumption
6	Maximum pneumatic supply pressure
7	Rated voltage
8	Rated frequency
9	Year of manufacture
10	Rated current
11	Rated power



Controls

No.	Information
1	Power supply indicator light
2	Main switch
3	Overheating protection indicator light
4	Overheating protection re-set
5	Thermostat
6	Heating indicator light
7	Fill level indicator light
8	Manometer
9	Pressure regulator





3.1 Design of the device

The supporting structure of the device is made of stainless steel and serves to hold and support all components of the device. It withstands the stresses generated by the device components.

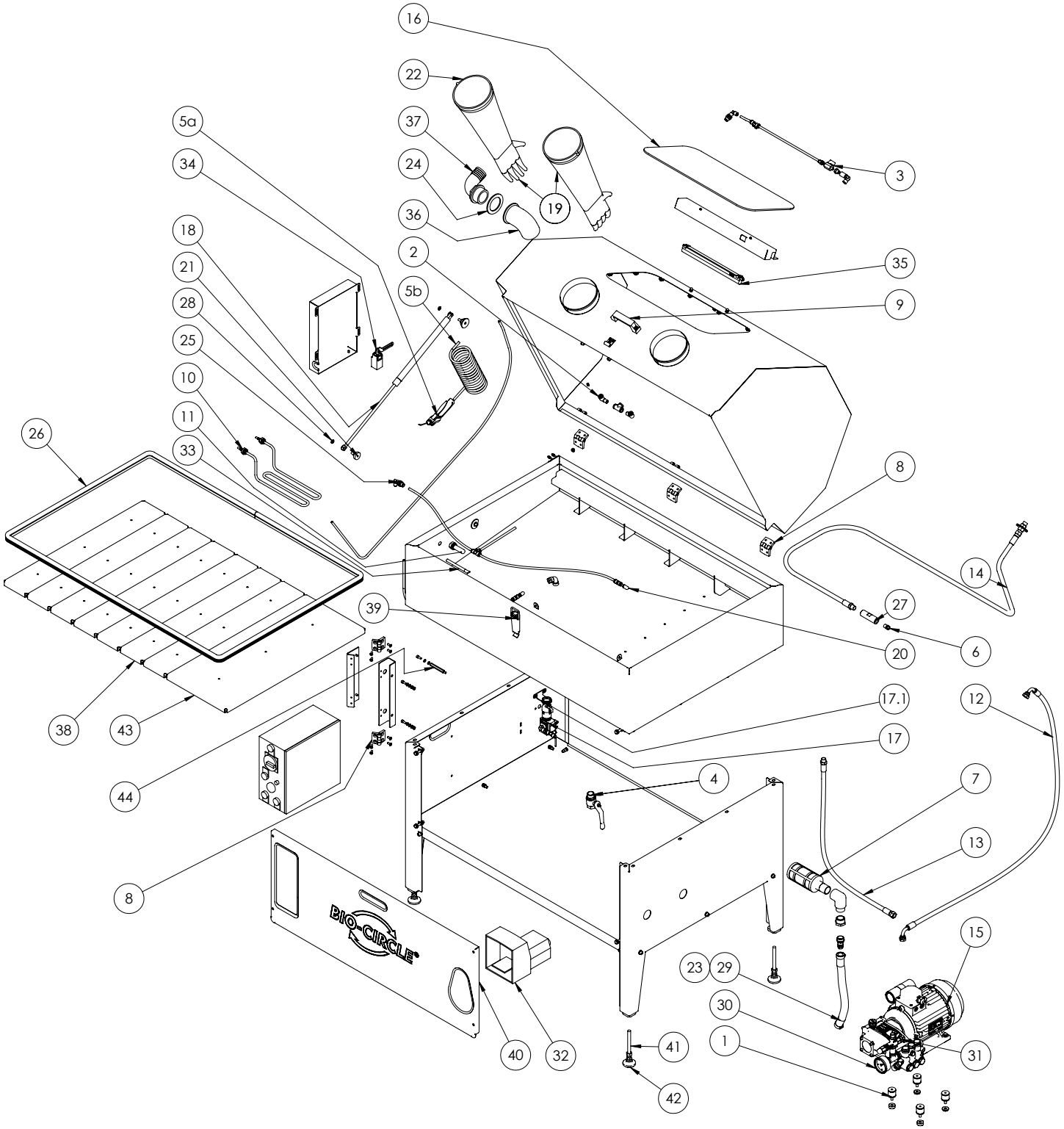
Cleaning chamber	The cleaning chamber is the closed area in which the workpieces are cleaned. It comprises the following: • One window and one lamp to see into the interior • Two installed gloves to allow the operator to clean manually • An internal cleaning gun or lance • A compressed air gun to dry the workpieces • A pedal that supplies the cleaning lance with liquid
Liquid tank	The liquid tank is used to hold and collect the cleaning liquid.
Electric motors	The electric motors are asynchronous motors.
Liquid pump	The pump is used to spray the liquid contained in the tank onto the workpieces to be cleaned. Depending on the device configuration, there may be more than one pump, each connected to the corresponding tank.
Heating resistor	The heating resistor is used to bring the liquid contained in the tank to the desired temperature. Depending on the model and configuration, the resistors can have different power and quantity. Their operation is controlled by the thermostat in the control cabinet.
Control cabinet	The control cabinet contains the power and control part of the device, such as circuit breakers, contactors, and relays.
Control panel	The control panel allows control and monitoring of the operation of the device. The height of the controls, their colour and arrangement have been designed in accordance with the safety regulations in force.
Main switch	The lockable main switch is located on the side of the control cabinet and serves as an emergency stop switch. In accordance with the standard EN60204-1 this switch is red and has a yellow background. It is used to disconnect the device from the power supply during the maintenance phase and is mechanically interlocked.
Liquid level sensor	The fill level sensor is used to switch off the heating and pump if the fill level is insufficient.

Access to components contained in the control cabinet is neither possible nor permitted when parts are live:
Before accessing the control cabinet, bring the machine into a supply- and voltage-free state.

3.2 Technical properties

Description	BIO-CIRCLE HP VIGO	Unit
General		--
Ambient operating temperature	5 – 45	°C
Storage/transport temperature	5 – 55	°C
Storage/transport humidity without condensation	max. 90	%
Weighted emission sound pressure level	< 70	db(A)
Total width	1348	mm
Depth with cover open	1334	mm
Height with cover open	1953	mm
Empty weight of the machine	125	kg
Maximum load capacity	150	kg
Tank volume	120	L
Useful volume	80 –120	L
Water connection	¾	Zoll
Air connection	8	mm
Air outlet	50	mm
Electrical voltage	230	V
Frequency	50	Hz
Current	14,1	A
Electrical power of the device	2,2	kW
Washing pressure	10 – 80	bar
Compressed air	max. 8	bar
Compressed air consumption at 6 bar	460	L/min

3.3 Exploded view



3.4 Device and spare parts list

DEVICES	Order no.
HP Vigo	G30027
HP Vigo Gebrauchtgerät	G30027-10

SPARE PARTS

No.	Description	Qty.	Order no
1	Vibration damper type 30 X 30 B, M8 x 20-8	4	G30027-73
2	Glass pane nozzles & articulated hose, set	2	G30027-41
3	Mini ball valve 1/8' in brass M-F	1	G30027-68
4	Ball valve 3/4" in brass M-F	1	G21000-30
5a	Compressed air gun LSP-1/4-C 1	1	G42427-01
5b	Spiral hose 8 x 6 mm	1	G90010-21-01
6	High-pressure water nozzle flat jet of 1/4' stainless steel	1	G22828-07
7	PVC bottom filter 1" M BSP (ø 70 mm x 130 mm)	1	G30027-35
8	Hinges made of synthetic material	5	G30027-63
9	Handle for cover	1	G30027-69
10	2.05 kW Incoloy®/stainless steel radiator 230V A/C Mono	1	G30027-75
11	Float switch made of PP 1/2"	1	G30027-25
12	High-pressure hose 3/8' L = 1600 mm (incl. 2x 90° knee coupling)	1	G30027-77
13	Hochdruckschlauch 3/8' L = 1000 mm	1	G30027-78
14	Hochdruckschlauch 3/8' AISI L = 1600 mm	1	G30027-79
15	High-pressure pump unit complete with motor and all other components	1	G30027-26
16	Safety window 600 x 325 x 5 mm	1	G30027-27
17	Air pressure regulator MS4-LR-1/4-D6-AS	1	G30027-49
17.1	Mounting bracket for compressed air pressure regulator	1	G30027-49A
18	Gas spring 200 N	1	G30027-24
19	Gloves, size 10–11	1	G42207-06
20	Oxygen bubbler made from sintered plastics	2	G30027-40
21	Gas spring bracket	2	G30027-70
22	Galvanised hose clamp 2	1	G42307
23	Hose 3/4" DN 19 x 5, fabric insert	0,8 m	G11983
24	Venting gasket	1	G30027-43
25	Compressed air knee coupling for hose ø 8 mm	2	G30028-64
26	EPDM cover gasket 2 – 4 mm	4	G30027-34
27	Spray lance handle	1	G30027-42
28	Gas spring safety device	2	G30027-46
29	Stainless-steel hose clamp	2	G11979-01
30	Manometer d63 1/4" 0 – 160 bar 63MM	1	G30027-80
31	Pressure regulator for high-pressure pump	1	G30027-64
32	Foot pedal	1	G30027-30
33	Thermostat	1	G30027-31
34	Safety device for cover	1	G30027-32
35	LED lamp	1	G30027-33
36	2" nut for vent mounting	1	G30027-44
37	Chamber ventilation plastic 90°	1	G30027-45
38	Inlay plate, small, set of 7 pallets	7	G30027-81
39	Tension lock for cover	1	G30027-65
40	Front panel with logo	1	G30027-83
41	Levelling feet M12	4	G30027-85
42	Base plate for levelling feet	4	G30027-72A
43	Inlay plate, large	1	G30027-82
44	Hexagonal spacer M6x70	1	G30027-89

WEAR PARTS

Mechanical component	Replacement interval (approx.)
Hoses	2 years
Pump seals	2 years
Pump, gear motors	5 years
Heating resistor	3 years
Liquid level sensor with float	5 years

The intervals apply to devices that are in operation 8 hours a day for 230 days a year.

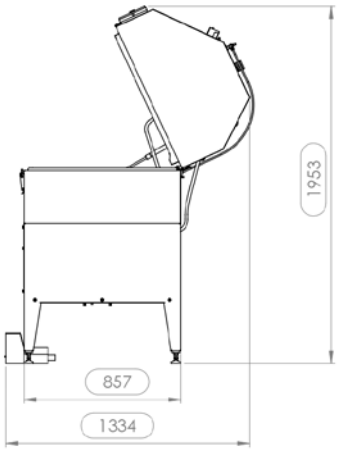
Depending on the conditions of use of the device and the type of detergent used, in some cases the replacement intervals may be shorter than indicated in the table.

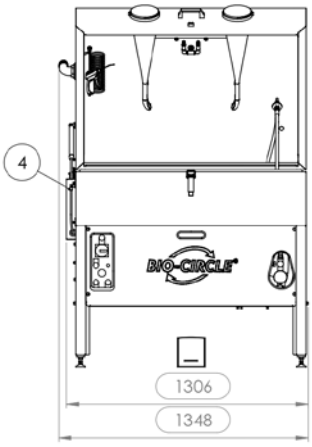
3.5 Device layout

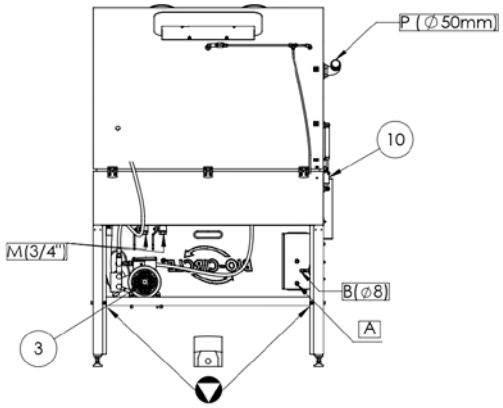
Floor plan drawing of the device with all specific data,
such as installed components, safety components, connection points of the consumers,
control panels, hoisting points, assemblies dismantled for transport.

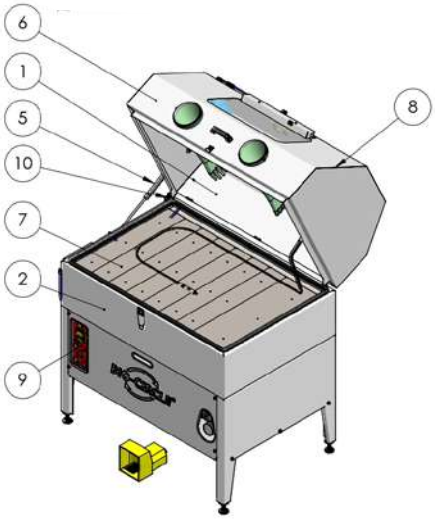
Symbols used in the illustration:

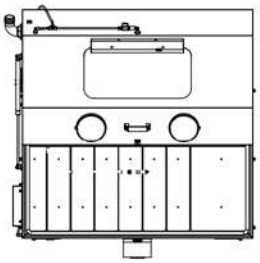
Symbol	Description of the symbol	Bedeutung (s. Maschinen-Layout)
8	Number in a round frame	**Device component** number
C ¾“	Text in a rectangular frame	**Connection point** for electrics/pneumatics/water, followed by the type of connection/dimension
71	Number in a hexagonal frame	**Safety equipment** of the device
POC	Text in an oval frame	Reference to special places or areas, such as the position of the sign or the control panel
	White symbol in a black circle	Hoisting point when using a forklift truck











	Description
A	ELECTRICAL CONNECTION INLET
B	COMPRESSED AIR INTAKE CONTROL
M	TANK DRAIN OUTLET
P	CABIN VENT OUTLET
1	WASHING CHAMBER
2	LIQUID TANK
3	LIQUID PUMP
4	LIQUID HEATING RESISTOR
5	PNEUMATIC CYLINDER DOOR/COVER OPENING AND CLOSING
6	MANUAL WASHING STATION
7	BEARING SURFACE
8	INTERLOCKED COVER/DOOR
9	ELECTRICAL SWITCHBOARD
10	COVER INTERLOCKING DEVICE

Tolerances	
DIMENSIONS	± 20 mm
CONNECTIONS	± 50 mm

4. Commissioning

4.1 Preparing for commissioning

Check the condition of the delivered unit

- Check the condition of the pneumatic system.
- Check the integrity of the electrical controls.
- Check the integrity of the electrical wiring (visual inspection).
- Check that there are no marks or dents on the housings, covers and mechanical parts indicating impact during transport.
- Check that no connectors have come loose in the cabinet during transport.
- Make sure that no screws have come loose during transport.

	**If damage is found, do not install the device, but contact the manufacturer and describe/document the defects found.**

Check the location of the planned installation

For the operation of the device, the device operator must ensure the following:

- Minimum space required for use of the device
- Reassembly of parts dismantled for transport
- Power supply
- Pneumatic supply
- Drain for the cleaning fluids

Minimum space required

The space required for assembly corresponds to the external dimensions of the device plus at least 1.5 m in each direction parallel to the work surface. Operation and maintenance do not require more space than assembly. Ensure that the installations of the supply sources have been prepared according to the indications in the device layout.

	The installation and connections of the device must be carried out according to the manufacturer's instructions. All national normative and legislative requirements of the country in which the device is installed must also be taken into account. All installation and connection activities must be carried out in a professional manner.
	All installation activities must be carried out in a power-supply-free and voltage-free state.

Lighting

The natural and/or artificial lighting in the installation area must ensure the following minimum illuminance values:

- 300 lux at the control panels
- 500 lux in the other areas of the device where maintenance and testing activities are carried out.

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4.2 Installation

Set-up and levelling

The device must be set up in accordance with the device layout agreed and accepted at the time of concluding the purchase contract. The floor must be level and have adequate bearing capacity for the weight of the device. The device must be levelled before operation. For a satisfactory result, it is advised to adjust the support feet provided under the device.

	In the event of incorrect levelling, some parts of the device may wear out prematurely or be damaged.

Connection to the energy sources

Electricity

Before any activity:

- ► Make sure that the characteristics of the device correspond to the data of the supply system (voltage, frequency, conductor cross-section in relation to nominal current consumption).
- ► Make sure that the main switch of the device is in position „0" („OFF").
- ► Always connect the protective earth conductor to the PE pole of the device first.

The supply line must be connected to the disconnector in the control cabinet, observing the phase sequence. For the dimensioning of the supply line, refer to the data of the nominal current consumption of the device.

Air

The device must be supplied via a supply system that possesses the features described in the technical characteristics.

Before any activity:

- ► Make sure that the characteristics of the device correspond to the data of the supply system (temperature and pressure)
- ► Check the condition of the connection point.

For optimal activity of the microorganisms and oil degradation, the microorganisms need oxygen as a basis for life. Therefore, the bubbling stones must be switched on permanently to ensure the necessary oxygen supply for the microorganisms.
If the unit is not to be used for a longer period of time (more than two weeks), it is recommended to switch it off. Make sure that there is no closed oil film on the surface. If necessary, remove the oil film mechanically.

Filling the tank

Fill the tank of the device with the appropriate cleaning fluid. Refer to the data sheet for the required quantity.

Choosing the cleaning agent

Before determining the appropriate cleaning agent, contact the manufacturer to check compatibility with the device and the workpieces to be treated.
To ensure that the device operates correctly, use products approved by the manufacturer.
Bio-Circle offers a wide range of water-based cleaning agents from its own development, which are optimised for use in the HP Vigo:
BIO-CIRCLE L Evo,
CB 100 (LR),
CB 100 Alu (LR)

The **use of flammable cleaning agents, solvents** or, in general, water-based cleaning agents that can cause a chemical reaction with water and/or the material of the product to be cleaned, creating a potentially explosive atmosphere, is **strictly prohibited.**

Switching on the device

1. Turn the main switch on the control cabinet from the „OFF” position to the „ON” position.
2. Open the main pneumatic valve.
3. Check the correct position of the filters on the suction side of the pump(s).
4. Check the correct direction of rotation of the motors.
5. Set the desired temperature on the control panel, 45 °C should not be exceeded.
6. Wait until the cleaning agent reaches the set temperature.

Checking the safety equipment

Check the functionality of the emergency stop switch by operating it:
The machine cycle, including the supply to the heating resistors, must be interrupted.
Check the functionality of the safety switch with swivelling lever by opening the cover:
The machine cycle must be interrupted.

	**In the event of malfunctions of the safety equipment, please contact the manufacturer immediately.**

5. Operating the device

1. Open the movable guards with interlocks.
2. Place the workpieces to be loaded on the sheet-metal support surface.
3. Close the movable guards with interlocks.
4. Switch on the lamp.
5. Open the pneumatic valve to clean the glass pane.
6. Put your arms in the gloves.
7. Grasp the cleaning lance.
8. Press the pedal to start the cleaning process.
9. Blow the workpiece dry with the compressed air gun.
10. At the end, pull out your hands, open the locking mechanism of the movable guard and remove the workpieces.
11. From this stage, the next cycle can be started by repeating the steps described above.

No other activities are to be carried out on the device during the entire operating cycle.

5.1 Restoring device operation after emergency stop and restart

After an emergency stop of the device, the procedure for a correct restart is as follows:

- ▸ Identify the causes that caused the emergency stop.
- ▸ Using the main switch on the side of the control cabinet, turn the handle to position „O”, switch off the power supply to the machine.
- ▸ Disconnect the pneumatic supply using the valve installed on the pneumatic connection point of the device.
- ▸ Remedy the causes identified.
- ▸ Switch the power supply back on by moving the main switch to position „I”.
- ▸ Reconnect the pneumatic supply using the valve installed on the pneumatic connection point of the device.

5.2 Setting the washing pressure

The high-pressure pump unit makes it possible to adjust the washing pressure individually to the component to be cleaned. The pressure regulator provided for this purpose is located below the tank on the front side of the device. Turning the pressure regulator to the right increases the washing pressure, turning it to the left reduces the washing pressure. The pressure gauge allows the pressure to be read during operation.

The pressure must not be set below 10 bar and above 80 bar so that the installed components are not damaged and optimum cleaning is ensured.

6. Maintenance and troubleshooting

6.1 Maintenance activities

- **Scheduled maintenance:** All activities necessary to maintain the functionality and efficiency of the device. Normally, these activities are scheduled by the manufacturer, who specifies the necessary competences and the procedure. Unless otherwise specified in the Operating Instructions, these operations must be carried out by the maintenance technician.
- **Unscheduled maintenance:** All activities necessary to maintain the proper functionality and efficiency of the device. These activities are not scheduled by the manufacturer and must be carried out by the manufacturer's specialist technician or by a technician authorised by the manufacturer.

Before carrying out any maintenance activity on the device, the following is required:

- Bring the machine into a supply- and voltage-free state.
- Lock the supplies using mechanical devices (padlocks).
- Notify personnel by placing a sign with the inscription „Device is being serviced" in a clearly visible position.

The scheduled maintenance activities to be carried out are:

Person responsible	Interval	Activity to be	Equipment needed	Maintenance intervention
Operator	Daily, at the first switch-on	**Check tank for presence of foam**	None	Check cleaning parameters and the type of cleaning agent used.
Maintenance technician	Every 40 hours of operation	**Check filter in tank, clean if necessary**	None	Remove and clean filter. **Attention: Always wear gloves.**
	Monthly	**Clean tank and filter**	Manual cleaning lance, paper towel and cleaning agent	Empty and clean tank, removing all residues present. Clean filter in tank.
	Monthly	**Clean float**	Paper towel and cleaning agent	Remove residues from float.
	Monthly	**Add oil to the piston pump**	Universal spanner and specific oil	Check oil level in the piston pump via the inspection glass on the pump housing. If the oil level is below minimum level, top up with specific oil.
	Every 6 months	**Clean heating resistor**	Steel brush	Remove any deposits and encrustations on the heating resistor.

	For maintenance activities, the personnel must wear the required personal protective equipment. In this regard, follow the information in the technical data sheets of the cleaning agents and the specifications in the safety data sheet of the cleaning agent used.
	During operation of the device, residual liquids are produced which must be collected, recycled, or disposed of in accordance with the applicable laws of the respective country. For more information, see the technical data sheets of the cleaning agents used.
	**Only** use **engine oil 10/15W 40** as oil in **the piston pump!**

6.2 Inspection activities

The inspection activities shall be carried out daily at the beginning and end of device operation.

At the beginning of the work shift, check the following:

- Tightness of the tank and the conduits
- Pneumatic line for leaks
- Condition of the safety equipment
- Presence of sufficient compressed air to supply oxygen to the microbes via the bubbling stones

At the end of the work shift, check the following:

- Is the power supply to the device correctly switched off, especially with regard to components that overheat in the event of a lack of water or in the event of a malfunction, such as heating resistors, pumps, etc.?
- Tightness of the tank and the conduits
- Condition of the safety equipment
- Liquid level in the cleaning tank; top up with liquid if necessary
- Presence of sufficient compressed air to supply oxygen to the microbes via the bubbling stones

6.3 Troubleshooting

Fault/malfunction	Cause	Remedy
Low pressure on the pump	Pressure set too low; filter clogged; high pressure nozzle clogged	Set pressure correctly; clean filter; clean nozzle
Nothing works; control lights do not work; pump and heating do not work	General fuse in the control cabinet blown	Open the fuse housing, replace fuse. If the new fuse pops out immediately, an electrician must measure everything.
Pump does not run when the foot pedal is pressed; heater does not work; "Too little liquid" lamp lights up	Cleaning fluid in tank too low; safety switch has detected low water level	Top up with fresh cleaning agent to the required quantity.
Pump does not run when the foot pedal is pressed.	Safety fuse in the control cabinet switched off	Operate the fuse. The pump should work again. If the fuse remains off, the pump motor must be checked.
	Cover is not closed properly; safety switch is defective.	Close the cover correctly. If problem persists, check safety switch position for correct mechanical closure. If OK, measure safety switch electrically and replace if necessary.
	Foot pedal is possibly broken.	Measure foot pedal and replace if necessary.
The liquid is not heated	Heating resistor blown	Replace heating resistor; replace fuse in control cabinet.
	Temperature sensor defective; temperature not set or set too low; fuse in control cabinet blown	Replace temperature sensor; set thermostat correctly; replace fuse
Poor visibility through window	Pressure on compressed air nozzle for window cleaning too low; compressed air tap not open; air nozzles incorrectly adjusted	Increase pressure at the pressure regulator; Adjust air nozzles
Cover will not stay open; cover is very difficult to open	Gas spring defective	Replace gas spring

7. 7.Decommissioning and scrapping

7.1 Introduction

During the development and manufacture of the device, attention was paid to robustness, durability, and flexibility, so that it can be used productively for many years.
Once the end of its technical and operational life has been reached, the device must be decommissioned, i.e. taken out of service and brought into a condition that no longer allows it to be used for the purposes for which it was designed and built.

The procedures for decommissioning must also be observed in the following cases:
- ▸ Decommissioning of the device due to a longer production stoppage
- ▸ Transfer of the device to another department or plant
- ▸ Decommissioning of the device, dismantling and storage
- ▸ Final dismantling of the device and scrapping

The manufacturer is not liable for personal injury or damage to property resulting from the reuse of one or more device parts. They can only guarantee the safety and reliability of the device under the conditions for which it was designed and built.

7.2 Preparing the device for dismantling

To prepare the device for disconnection of the power supply, proceed as described below:
1. Make sure the device is disconnected from the power supply.
2. Set the main switch of the device to the „OFF” position.
3. Drain the liquids contained in the tank through the drain valves located at the bottom of the tank.
4. Wait at least 15 minutes for the residual voltage of the electrical equipment to discharge.
5. Close all doors and flaps, with key if provided, and affix a sign indicating that the device is out of service.

7.3 Disconnecting the power supply to the device

To disconnect the device from all energy sources, proceed as described below:
1. Disconnect the power supply cable, making sure that the circuit breaker upstream of the supply line is opened first.
2. Disconnect the water supply pipe, making sure that the manual shut-off valve located upstream of the supply pipe is closed first to prevent water from escaping.
3. Disconnect the compressed air supply hose, making sure that the manual shut-off valve upstream of the supply line is closed first to prevent compressed air from escaping.

7.4 Dismantling

Remove and destroy the identification plates of the device.
To dismantle the device, remove the main assemblies and then disassemble them into their individual parts on a workbench. The structural parts of the device may only be dismantled after there is no longer any danger of crushing, i.e. only after these parts have been secured. Securing is done by slinging them to hoisting equipment with a load capacity appropriate for the original weight of the device (indicated on the nameplate).
After disassembly, separate the components according to the type of material. Dispose of the material at collection points in accordance with the national legislation of the country where dismantling takes place.
The material or any parts of the device must not be released into the environment.

7.5 Materials used

Material	Components
Copper	Cables, electrical components
Stainless steel	Protective devices, connecting pieces, supporting structure, platform
Varnished steel	Pumps, gear motor
Brass	Valves, connectors
Lubricating grease and oil	Gear motor
Polyamide	Pneumatic lines
Electrical and electronic equipment	Electrical equipment
General plastics	Level control, parts made of (green) Polyzene®
Safety glass	Inspection windows, guards
PVC	Hoses

The preceding list is not exhaustive but includes the parts that make up more than 99 % of the device by weight. In case of doubt about the nature of the materials, please contact the manufacturer for information.

7.6 Disposal

Electrical appliances

Electrical equipment marked with the following symbol with reference to Directives 2011/65/EU – RoSH2 and 2012/19/EU – WEEE must be collected separately from other waste.

Oils and lubricants

These products must be disposed of in accordance with the regulations in force in the country of use or taken to authorised collection points.

Waste products of the cleaning process

The device has a drain tap for the cleaning liquid.

During the cleaning process, waste cleaning fluids are produced, which must be collected, reused, or disposed of in accordance with the legislation in force in the country where the device is installed. Further information is provided by the manufacturer.

8. Transport, packaging, and storage

8.1 Transport modalities and safety regulations

	The persons responsible for hoisting must draw up a "safety plan" as a precautionary measure to guarantee the health and safety of the persons involved, in accordance with the national legislation in force. Transport modalities not provided for in the Operating Instructions that cause damage to the device or to parts thereof are considered unsuitable. Therefore, the manufacturer shall not be held liable in any way for any damage to property or injury to persons.
	Observe hoisting points for forklift trucks. Before hoisting, check the position of the centre of gravity of the load. Each time the device is transported, make sure that it does not contain any liquids or cleaning agents and that it is properly closed and secured.
	Transport and handling of the device must be carried out by operators trained in the use of hoisting- and transport equipment. Operators must wear suitable personal protective equipment.

8.2 Packaging

Packaging may be of the following types:

- ▸ Packing in cardboard box on pallet
- ▸ Packaging in wooden crate with pallet
- ▸ Packing in wooden box with pallet
- ▸ Fastening with plastic strapping and wrapping with stretch film
- ▸ Use of a barrier bag for shipping by sea

Unpacking and disposal of packaging material

Before and during unpacking, check the following:

- ▸ Conformity of the components received with the shipping list
- ▸ Integrity of the components

When unpacking the device, take care not to damage the structure and components. The device may only be lifted from the supplied pallet using a lifting truck with textile straps whose load capacity exceeds the device weight indicated on the name-plate

	The device might be attached to the pallet with bolts. Before hoisting the device, the bolts must be unscrewed in order to separate the device from the pallet.

Packaging material must be disposed of appropriately in accordance with the regulations in force.

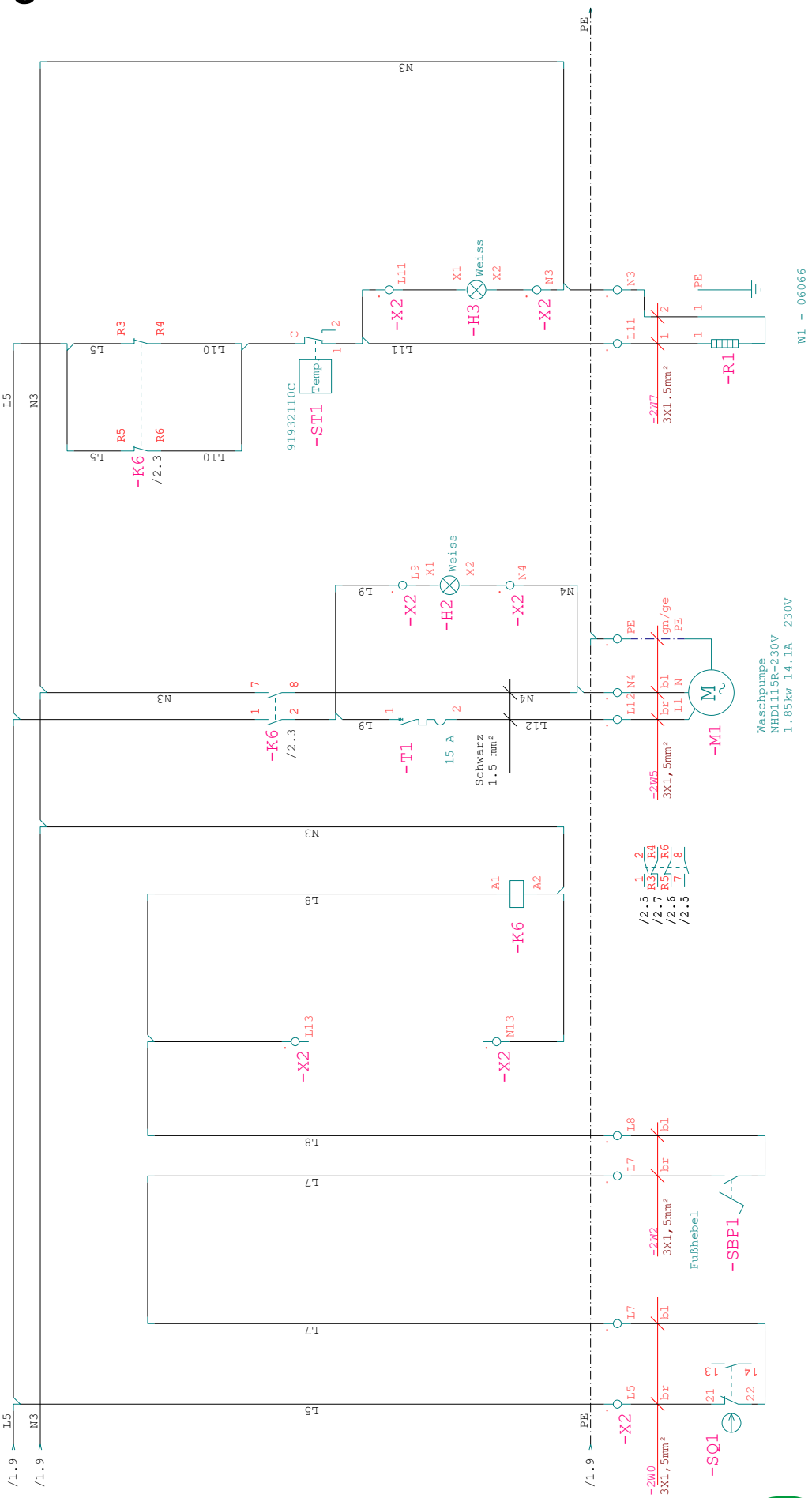
8.3 Storage

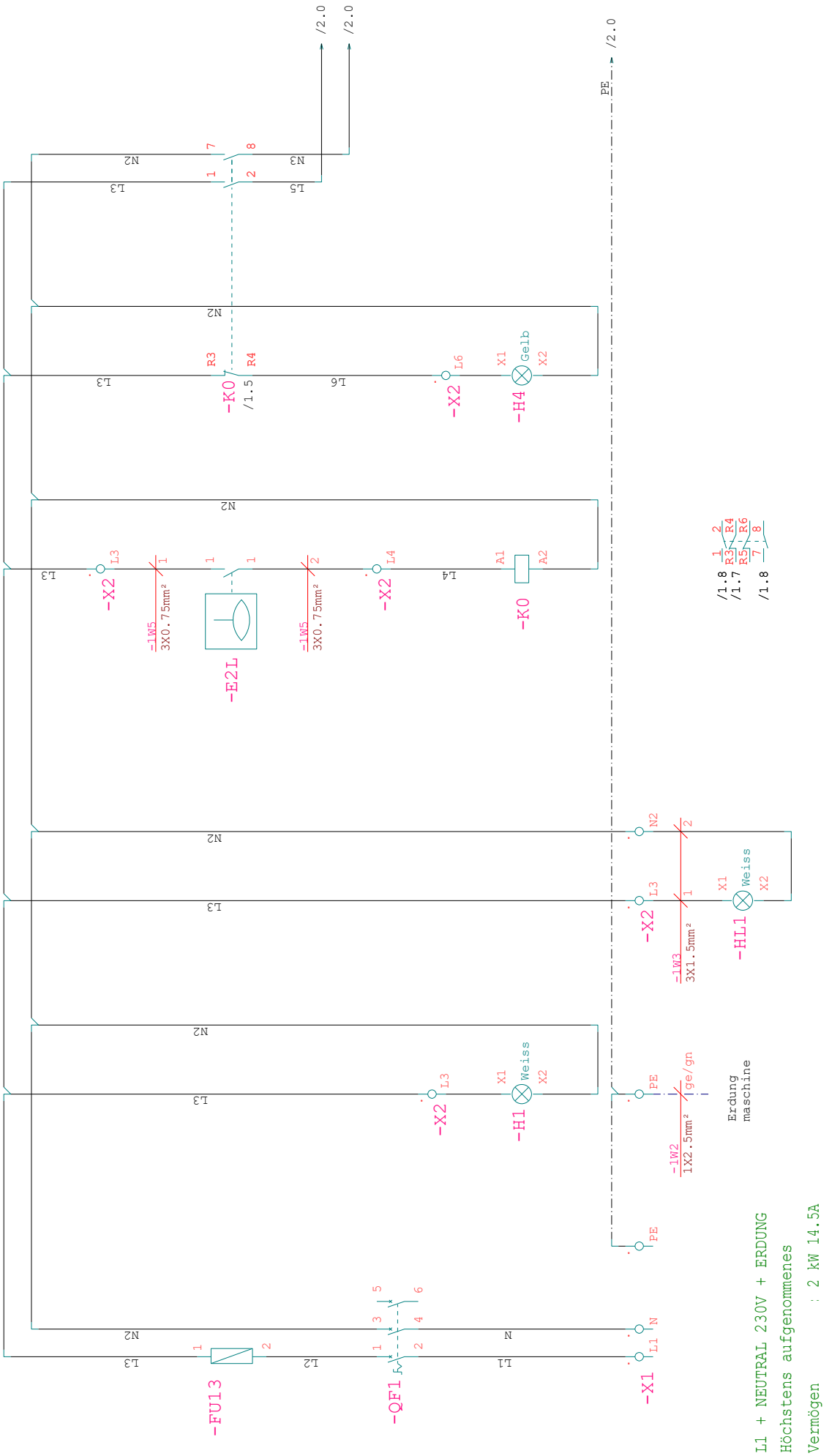
The following instructions must be followed when storing the device in order to avoid damaging it:

- ▸ Disconnect the power-, water-, and pneumatic supplies.
- ▸ Empty the tanks and all parts of the system.
- ▸ Clean the device carefully.
- ▸ Protect the device from shocks and mechanical stresses that can damage its structure.
- ▸ Protect the device from moisture and major temperature fluctuations.
- ▸ Prevent the device from coming into contact with corrosive substances.

9. Circuit diagrams

Wiring diagram

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L5
N3
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8
1
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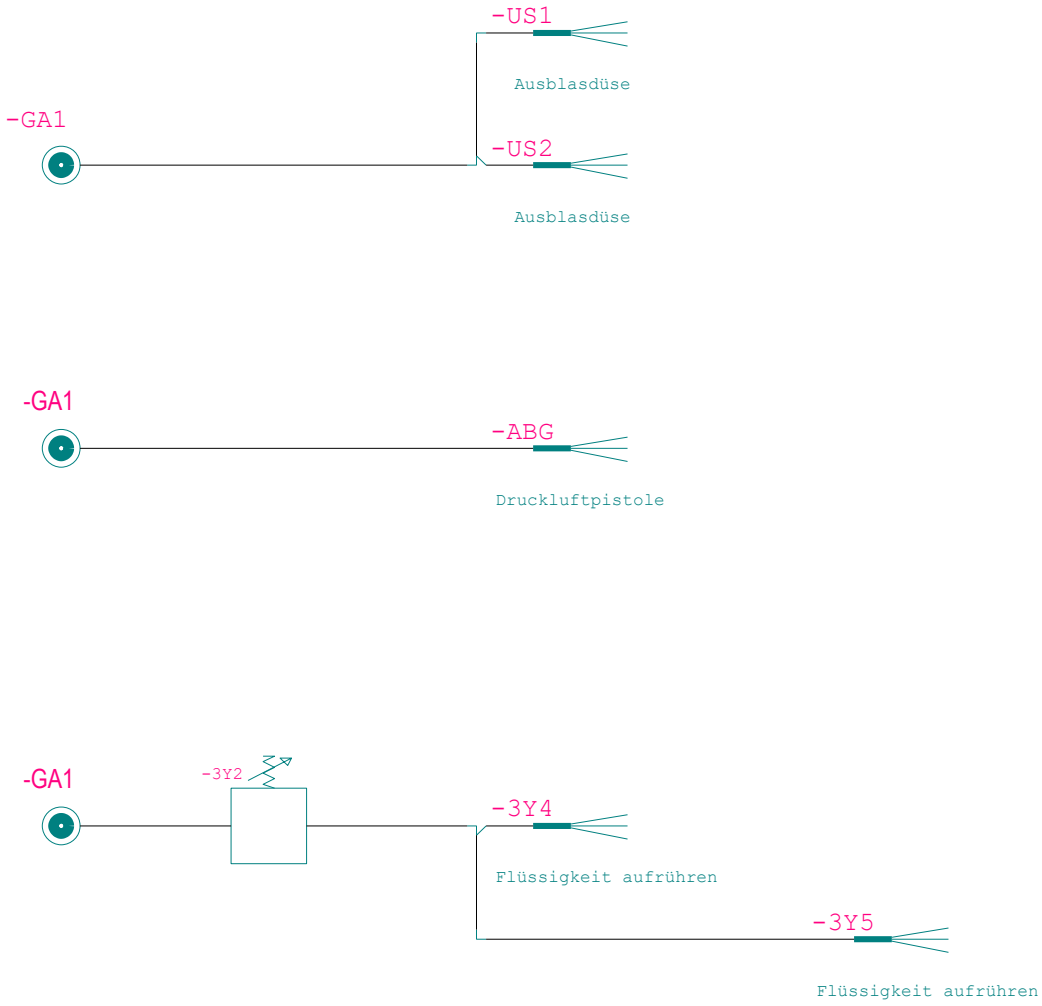
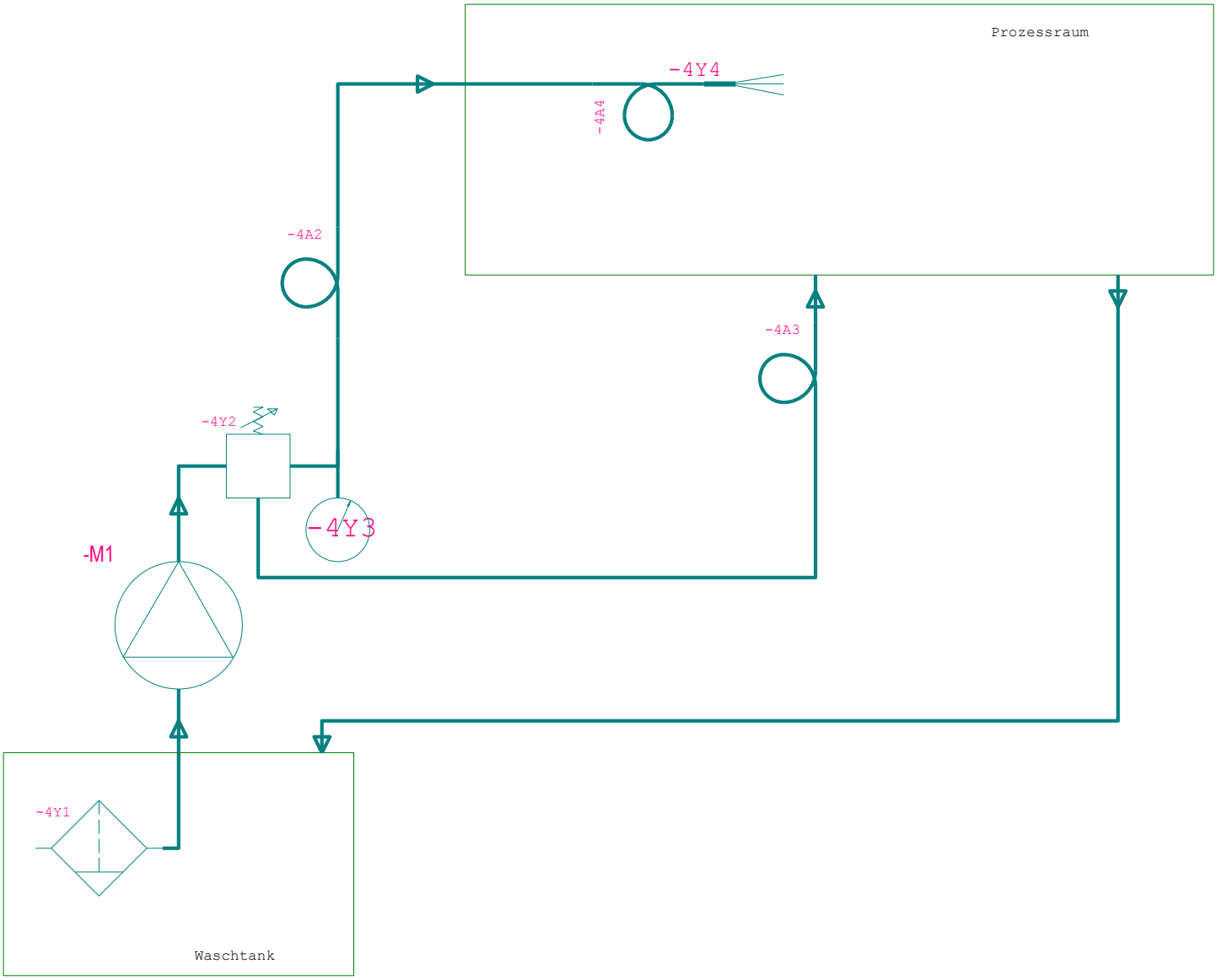
R4
L6
-X2
X1
Gelb
X2
-H4
L4
A1
A2
-K0
-X2
L3
-1W5
3X0.75mm²
-E2L
-1W5
3X0.75mm²
-X2
/1.8
/1.7
/1.8
R3
R4
R5
R6
-X2
L3
-1W3
3X1.5mm²
X1
Weiss
X2
-HL1
-X2
L3
X1
Weiss
X2
-H1
PE
-1W2
1X2.5mm²
ge/gn
Erdung
maschine
PE
-X1
L1
N
-QF1
-FU13
L1 + NEUTRAL 230V + ERDUNG
Höchstens aufgenommenes
Vermögen
: 2 kW 14.5A

Pneumatic plan

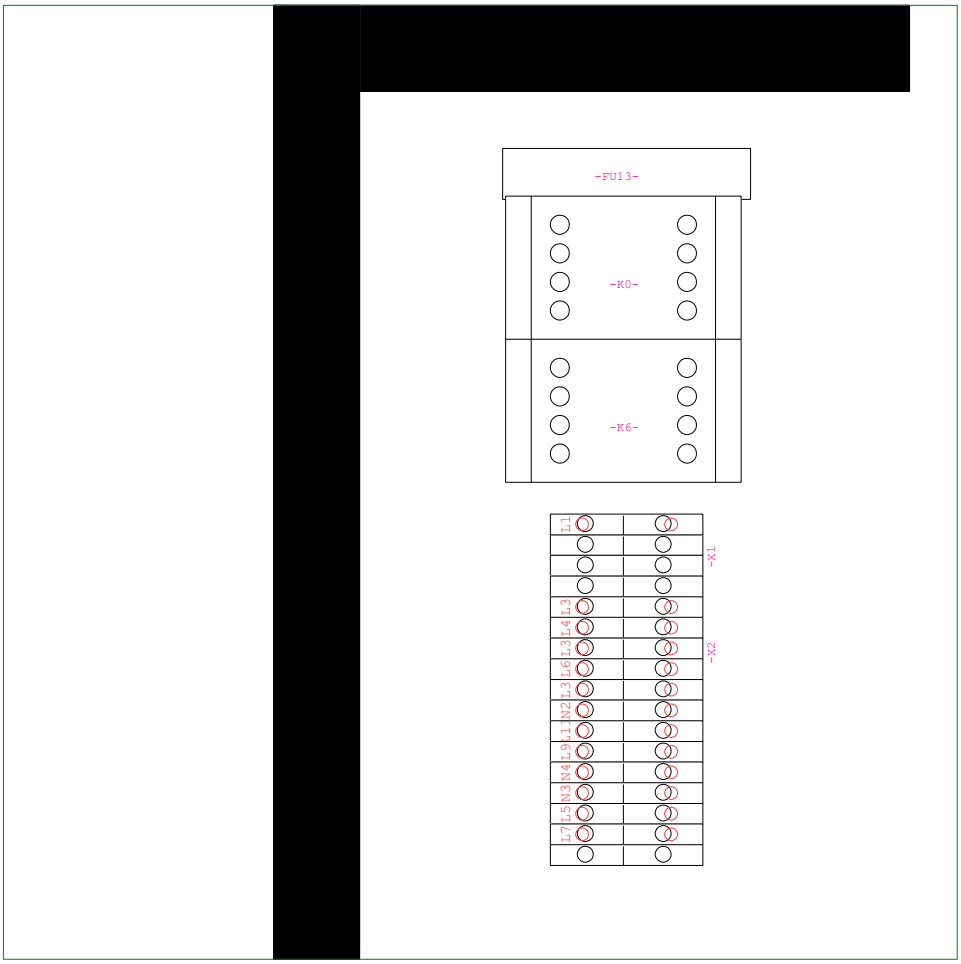


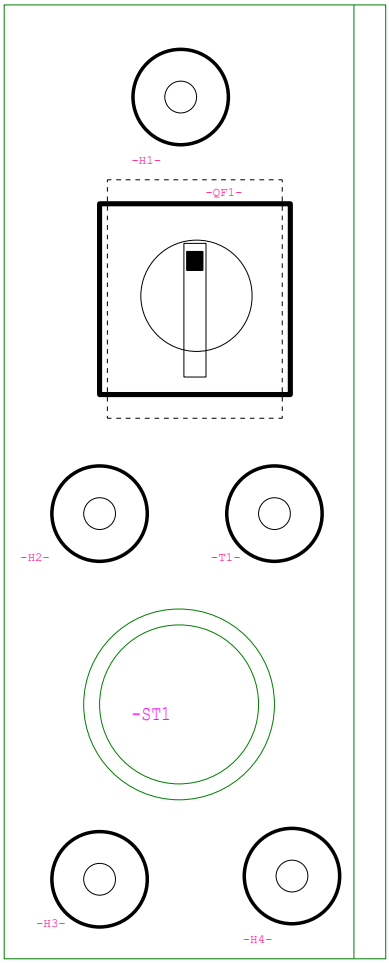
Hydraulic plan



Control cabinet

300 x 300 x 120 mm





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