Authorised Specialists and Operators

manual

Installation and Operating Instructions

Series HSC-Oil - Series HSC FR Oil / 300101-DE/UK-A **English**

HSC823-INOX Oil (DE/UK) - HSC923-INOX Oil (UK)
HSC1140-INOX Oil (DE) - HSC1240-INOX Oil (DE)

HSC1140-INOX FR Oil
HSC1240-INOX FR Oil

HSC823 Oil (DE/UK) - HSC923 Oil (UK)
HSC1140 Oil (DE) - HSC1240 Oil (DE)

HSC1140 FR Oil
HSC1240 FR Oil

Declaration of Conformity

Manufacturer:	**Ehrle GmbH**
Address:	**Industriestraße 3** **D – 89165 Dietenheim**
Product: Stationary Hotwater High Pressure Cleaners	**Series HSC-Oil (DE/UK)** **Serie HSC FR Oil (DE)** **each Standard/INOX**

This product given below is in conformity with the European Directives:

Relevant EC Directives:

2000/14/EC
2006/42/EC
2011/65/EU
2014/30/EU
2004/108/EC
2006/95/EC

Applied harmonized standards:

EN 60335–1
EN 60335–2–79
EN 50581
EN 55014–1: 2006+A1: 2009+A2: 2011
EN 55014-2: 2015
EN 62233: 2008
EN IEC 61000–3–2: 2019-12
EN 61000–3–3: 2020–07

Conformity procedures applied:

2000/14/EC: Annex V

This product conforms to
the following directives:

UK CA UK NI

CE **CE-0085**

Dietenheim, 01.09.2023

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1 User information

1.1 General

General Information

For a comprehensive advice and information on the Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil and HSC FR Oil please contact the EHRLE Customer Service.

With the purchase of an EHRLE Stationary Hotwater High Pressure Cleaner of the Series HSC-Oil and HSC FR Oil you are the owner of a quality product, which is characterised by:

- user-friendliness,
- reliability,
- environmental friendliness.

These Installation and Operating Instructions are part of the Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil and HSC FR Oil and must be kept at the operating site and available at all times.

For the Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil and HSC FR Oil, the manual contains information on

- User information
- Safety
- Product information
- Installation
- Commissioning
- Operation
- Decommissioning
- Maintenance
- Troubleshooting
- Circuit diagrams.

1.2 System concept

The Stationary Hot Water High Pressure Cleaners are designed for two separate operating levels with different access rights

- **Level 1 for system operators** with access to
  - controls and indicator elements inside the cabinet via the lockable door
  - three main switches on the front of the cabinet door.

  The control elements in the cabinet are used to set operating parameters such as
  - operating pressure
  - water temperature
  - detergent quantity.

- **Level 2 for operating personnel** with exclusive access to the three main switches on the front of the cabinet door. On the front of the cabinet door, the three main switches can be switched on/off:
  - system operation
  - hot water mode
  - admixture of detergents.

1.3 Terminology

In this manual the terminology listed below is replaced by the relevant short terms whenever possible:

• Stationary Hotwater High Pressure Cleaner - Series HSC-Oil / HSC FR Oil	High pressure cleaner
• Installation and Operating Instructions	Manual
• FR (e.g. HSC1140 FR Oil)	Frost protection
• High pressure hose	HP-Hose

If a clear reference to a subject is required in the description parts, the terminology „Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil / Series HSC FR Oil" is used.

1.4 Meaning of the emphasis

The emphasis used in this manual have the following meanings:

WARNING

Warning precedes operating procedures, instructions, etc., which, if not strictly observed, could result in personal injury or loss of life. Warning precedes also, when device misuse could result in personal injury or loss of life.

CAUTION

Caution precedes operating procedures, instructions, etc., which, if not strictly observed, could result in damage to the high pressure cleaner. Caution precedes also, when device misuse could result in damage to the high pressure cleaner.

This symbol indicates additional information.

1.5 Meaning of the symbols

Symbol	Meaning
	**WARNING** **Follow instructions!** Non-observance or neglecting of prescribed instructions, incorrect operation or misuse of the device may endanger life and limb of persons.
	**WARNING** **Danger of death due to electric shock.** Switch off the high pressure cleaner and disconnect it from the power supply before starting installation, maintenance and repair work. Protect the system against unintentional restarting. Touching live parts can lead to life-threatening injuries.
	**WARNING** **Explosion hazard due to use of unauthorised cleaning agents.** Never add liquids containing solvents such as paint thinners, petrol or similar to the high pressure jet. The spray mist of solvents is highly flammable, explosive and toxic. Otherwise, life and limb of persons is in danger.
	**WARNING** **Danger of burns and scalds.** When operating with a water temperature of up to 98 °C, the cleaning objects, the hot water emerging from the trigger gun or system components can become hot. Make sure that the surfaces and the water have cooled down before touching them. The hot water emerging from the trigger gun must not come into contact with the skin. Touching hot surfaces or contact with hot water can cause burns or scalding of the skin surface.
	**WARNING** **Toxic substances** Inhalation of exhaust fumes, touching and/or ingestion of toxic substances via the food chain can endanger the health of persons and even lead to death. Do not inhale exhaust fumes. Observe the relevant safety regulations when handling toxic substances.

Symbol	Meaning
	**WARNING** **Danger with heavy loads.** A person is not allowed to lift and move loads more than 23 kg. Otherwise the health of persons may be endangered (e.g. overload of the spinal column, injuries from falling loads). For loads of more than 23 kg, use suitable lifting equipment (e.g. forklift truck, lift truck).
	**CAUTION** **Observe instructions for installation, device adjustment, operation, maintenance and repair.** Non-observance or neglecting prescribed instructions, incorrect operation or misuse of the system may result in damage to system parts, assemblies or components.
	**General Information.** General additional information.
	**Information on recycling.** General information on recycling.
	**Information on disposal.** General information on the professional and environmentally sound disposal of old appliances, assemblies, components, materials and consumables. The symbol with the crossed-out dustbin indicates that.
	**Information on hearing protection.** General information on hearing protection.
▶	Requires direct action.
✓	Result after an action.
●	Itemisation

1.6 Target group

These Installation and Operating Instructions contain information and instructions for

- Authorised, instructed and trained operating personnel to carry out cleaning work.
- Authorised, qualified and trained personnel to carry out installation, operation, maintenance, repair and adjustment of the system.

1.7 Warranty and Liability

The Statinary Hotwater High Pressure Cleaners of Series HSC-Oil / Series HSC FR Oil may only be used for its intended purpose.

Intended use includes:

- The information and instructions contained in this Installation and Operating Instructions must be observed.
- Operation only by personnel who
  - are instructed and trained on the system, or
  - have read and understood the information and instructions in these Installation and Operating Instructions in full and can thus ensure safe handling of the system.
- Installation, operation, maintenance, repair and adjustment of the system only by qualified, trained and authorized personnel. For installation, maintenance, repair and adjustment of the system, the relevant specialist personnel can be consulted and commissioned by the EHRLE Customer Service.
- If the safety and protective devices are faulty, the system must not be put into operation.
- The system may only be operated with fully functional safety and protective devices. In the event of functional failures during operation, the system must be taken out of operation immediately.
- Faulty, insufficient or defective systems must not be put into operation. Before commissioning, carry out a visual inspection for faulty, defective or defective
  - system parts, assemblies or components
  - electrical cables
  - HP-Hoses.
- The system must be switched off immediately and taken out of operation if defects, faults or deficiencies occur on
  - system parts, assemblies or components
  - electrical cables
  - HP-Hoses.
- No constructive changes may be made to the system.
- The system may only be operated in the configuration certified by the manufacturer. Operation with subsequently installed modules, components or additional devices is not permitted and may endanger life and limb of persons or lead to damage to the system.

- Only original parts from the manufacturer or consumables approved by the manufacturer may be used for maintenance and repair work.
- Only fuels and operating materials approved by the manufacturer may be used for the operation of the system.

Any warranty and liability claims for personal injury and damage to the system are void if the system is not used for its intended purpose

1.8 Environmental protection

Note on recycling.

The packaging materials are recyclable. Please do not throw the packaging into the household waste, but recycle it.

Note on disposal.

Old appliances, assemblies or system parts contain valuable recyclable materials that should be sent for possible recovery.

The old appliances must not be disposed of together with unsorted municipal waste (household waste). The symbol with the crossed-out dustbin on the appliance indicates this obligation.

Therefore, please dispose of discarded devices, assemblies or parts properly via suitable collection systems.

Dispose of used materials in an appropriate and environmentally friendly manner. Observe the local regulations.

Old appliances, assemblies or system parts contain valuable recyclable materials that should be recycled.

According to environmental regulations, waste water containing mineral oil, fuels for hot water heating or lubricants such as oils and greases must not enter the soil, water or sewerage system. Dispose of these substances properly.

Do not allow engine oil, fuel oil or petrol to escape into the environment. Protect the soil and dispose of used oil in an environmentally friendly manner.

Engine cleaning or underbody washing of all types of vehicles may only be carried out at washing stations equipped with oil separators in accordance with environmental regulations (environmental protection).

2 Safety

2.1 General safety information

Observe the respective national regulations of the legislator for liquid sprayers. Liquid sprayers must be inspected regularly and the result of the inspection must be recorded in writing.

Observe the relevant national regulations of the legislator on accident prevention.

Observe the safety data sheets and instructions of the cleaning agent manufacturers supplied with the detergents used.

Keep cleaning agents out of the reach of unauthorized persons. Risk of poisoning or caustic burns from cleaning agents! Observe the instructions on the cleaning agents.

Perform prescribed adjustment, maintenance and inspection work in due time (see Section 8, Maintenance).

Safety-relevant defects must be rectified immediately.

Observe all warning and information signs attached to the unit. Keep all signs on the device legible.

2.2 Access for persons to the system

The cabinet door for access to the interior of the cabinet must be kept locked. Only authorised persons may have access to the inside of the cabinet.

Ensure that access to the system is only possible for the following persons:

- Operating personnel authorised, instructed and trained by the system operator and specially trained for general cleaning tasks. Operation is limited to the three main switches on the front of the cabinet door.
- Authorised, qualified and specially trained personnel for the installation, operation, maintenance, repair and adjustment of the system. Access to the key for the cabinet door in order to be able to carry out appropriate measures inside the cabinet.

Keep the key for the cabinet access door in a place accessible only to authorised personnel.

2.3 Safety instructions for cleaning operation for system operators and operating personnel

During cleaning work, the personnel at the workplace must wear the necessary Personal Protective Equipment (PPE). This includes waterproof protective suits, rubber boots, protective goggles, headgear, ear protection if necessary, etc.

No cleaning work may be carried out in the presence of persons without sufficient protective clothing

Before switching on, carry out a visual inspection of the system parts from the outside for damage (HP-Hose, electrical or mechanical parts). Devices with damaged parts, assemblies or components must not be put into operation.

The water jet leaving the trigger gun must not be directed at

- persons
- animals

- live electrical installations (building mains connections, sockets, electrical wiring, etc.)
- live electrical installations, machines, devices, assemblies or components
- system, machinery or equipment in operation.

Under the influence of the high pressure jet, parts can be separated from the cleaning object and thrown away. Persons can be injured as a result.

Never aim the high pressure jet at fragile or loose objects.

When cleaning tyres and their valves, keep a minimum distance of 30 cm from the high pressure nozzle. Otherwise damage may occur.

Before cleaning the high pressure cleaner itself, take the system out of operation and disconnect it from the electrical mains connection. Secure the system against unintentional or unauthorised restarting (e.g. lock main switch, disconnect mains cable from power outlet, provide warning sign indicating work on the high pressure cleaner, etc.).

Never operate the system unattended.

The system is designed for a water temperature of up to 98 °C temperatures. When operated with hot water, water-carrying parts (for example pump housing, uninsulated pipes, metal parts of the trigger gun and spray lance) as well as cleaning objects may become hot. Touching hot surfaces can cause burns of the skin surface. Make sure surfaces have cooled before touching.

The hot water escaping from the trigger gun must not come into contact with the skin. Contact with hot water can cause scalding. After hot water operation, wait until the water has cooled down again.

Asbestos-containing and other materials containing substances hazardous to health must not be sprayed off.

Information on hearing protection.

If the sound levels exceed the permissible values, the personnel and persons in the area of exposure must wear hearing protection.

The sound level for EHRLE high pressure cleaners under maximum load is 82 dB (A). A high sound level over a long period can cause hearing loss. If the noise produced by the application of the emerging high pressure jet to noise-enhancing objects exceeds the permissible values, the operating personnel and any persons affected must wear hearing protection.

Do not operate the system if electrical cables or other safety-relevant parts (unloader valve, HP-Hose, trigger gun, etc.) are defective.

Before changing the cleaning agent, flush out the complete high pressure system for minimum 2 minutes by pulled trigger gun. This avoids subsequent dangerous chemical reactions.

Aerosols can be formed when using high pressure cleaners. An aerosol is a mixture of solid or liquid suspended particles in a gas. Inhaling aerosols can be harmful for your health.

Employers are obliged to perform a hazard assessment in order to define, depending on the surface to be cleaned and the environment, protective measures necessary to prevent inhalation of aerosols.

Respiratory protection masks of class FFP 2 or above are suitable for protection against aqueous aerosols.

Using the device for longer periods can cause poor circulation in the hands due to vibrations. A general period of use cannot be set, because this depends on several influencing factors:

- Personal tendency to suffer from poor circulation (frequently cold fingers, tingling sensation in the fingers)
- Low ambient temperature. Wear warm gloves to protect your hands.
- Holding the device too tightly hindering blood circulation
- Continuous operation is more harmful than operation interrupted by work breaks.

You should see a doctor if using the device regularly and for lengthy periods of time, and in the event of repeated occurrences of symptoms such as tingling in the fingers or cold fingers.

The high pressure cleaners must not be set up and operated in rooms where there is a risk of fire or explosion.

Using high pressure cleaners in gas-stations or other hazardous area:

- refer to „Technical Rules for Flammable Liquids" (TRGF).
- the relevant safety regulations must be observed.

The heating installation of the oil-heated high pressure cleaners of the Series HSC-Oil / Series HSC FR Oil underlie the regulations of fire equipments.

The heating installation must be inspected regularly in accordance with the respective national regulations of the legislator. Observe the local regulations for high pressure cleaner installation and operation.

The HP-hose do not

- run over, pull excessively or twist
- pull over sharp edges
- repair.

Replace the defective HP-hose with an HP-hose approved by the manufacturer.

2.4 Safety instructions for oil-heated system

For oil-heated high pressure cleaners operated in enclosure rooms, make sure that the exhaust is leaded off properly and there is sufficient fresh air circulation (air for combustion).

When operating the oil-heated high pressure cleaners of the Series HSC-Oil / Series HSC FR the exhaust air and the device parts around the exhaust opening can become very hot. Do not touch or reach into these system parts around the exhaust opening. Touching the parts can cause burns to persons. Before touching, wait until the parts have cooled down after operation

Do not come into contact with exhaust gases during operation. The escaping exhaust gases are hot and toxic. Inhalation of or contact with the exhaust gases can cause burns or poisoning to persons can occur.

The chimney openings, exhaust pipes as well as exhaust openings must never be closed or covered. There is a risk of fire, among other things, if these are covered or closed.

2.5 Regulations, guidelines and rules for the Oil supply

During installation, the regulations of building law, trade law and immission control must be observed.

When installing the fuel tank in the interior of the cabinet, the regulations on the storage of flammable liquids must be observed.

2.6 Accident prevention regulations

Observe the applicable national regulations of the legislator on accident prevention.

2.7 Lifting and moving loads

The Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil / Series HSC FR Oil weigh 300 kg (with packaging 318 kg). Components of the high-pressure cleaners can have a weight of more than 23 kg.

Lifting and moving loads is permitted for one person up to 23 kg. If the load exceeds 23 kg use suitable lifting equipment (e.g. forklift, lift trucks).

Observe the international standard „ISO 11228-1 Ergonomie - Manuelles Handhaben von Lasten - Teil 1 Heben und Tragen 05/2003".

2.8 Periodic inspections

The periodic inspections are listed in Section 8 (Maintenance).

2.9 Operator obligations

The operator must ensure that before each commissioning of the liquid sprayer, its safety-relevant parts are checked for their perfect condition (safety relief valves, HP-Hoses, trigger gun, trigger gun electrical cables, fuel tank etc.).

2.10 Manufacturer tests and certificates

Before delivery the high pressure cleaner passed the following factory tests:

- heat coil water pressure test with 350 bar
- high pressure cleaner factory test
  (the scope of delivery encloses the factory test protocol).

2.11 Safety regulations Electrical connection

When working on electrically live parts:

- Observe accident prevention regulations DGUV V3 (previously BGV A3) and local regulations,
- use tools according to DIN EN 60900.

2.12 Federal Immission Control Act

The heating installation of the Stationary Hotwater High Pressure Cleaners underlie the regulations of fire equipments.

According to these regulations oil- or gasfired high pressure cleaners have to be checked annually by your responsible district chimney sweep to ensure observance of the emission limit values.

The first test must be carried out within the first four weeks after commissioning. The operator of the high pressure cleaner must arrange for the measurement to be performed.

2.13 Safety regulations for chimney system

When planning chimney system, the locally applicable guidelines must be observed.

Before the chimney system is installed, the responsible district chimney sweep must be consulted.

The chimney system must be checked for safe operation and approved before use. The signed confirmation of the chimney sweep ensures that the combustion system complies with the legal regulations.

2.14 Guidelines for pressure vessels and steam boiler regulation

EHRLE High Pressure Cleaners comply with the German and European pressure vessel regulation and the steam boiler regulation. The water capacity is less than 10 l. The high pressure cleaner is thus free of installation regulations with respect to its boiler.

Observe the local planning authority regulations!

2.15 Guidelines for liquid sprayers

High pressure cleaners must be inspected by an expert in accordance with the „Guidelines for liquid sprayers", if necessary or at least every 12 months. The result of the test must be recorded in writing.

In the appendix of this manual there is a test sheet (proof of customer service) to record the tests carried out.

EHRLE service technicians are experts and can be consulted and commissioned by EHRLE service for this prescribed inspection.

2.16 Design changes to the system

Design changes to the high pressure cleaner are not permitted.

When operating a system which has been modified or changed in design, the system will not be used for its intended purpose. If the system is not used for its intended purpose, no liability or warranty will be accepted (see Section 1.7, Warranty and Liability).

2.17 Safety devices

Safety devices serve to protect the user and must not be suspended or circumvented in their function.

The high pressure cleaner has the following safety devices:

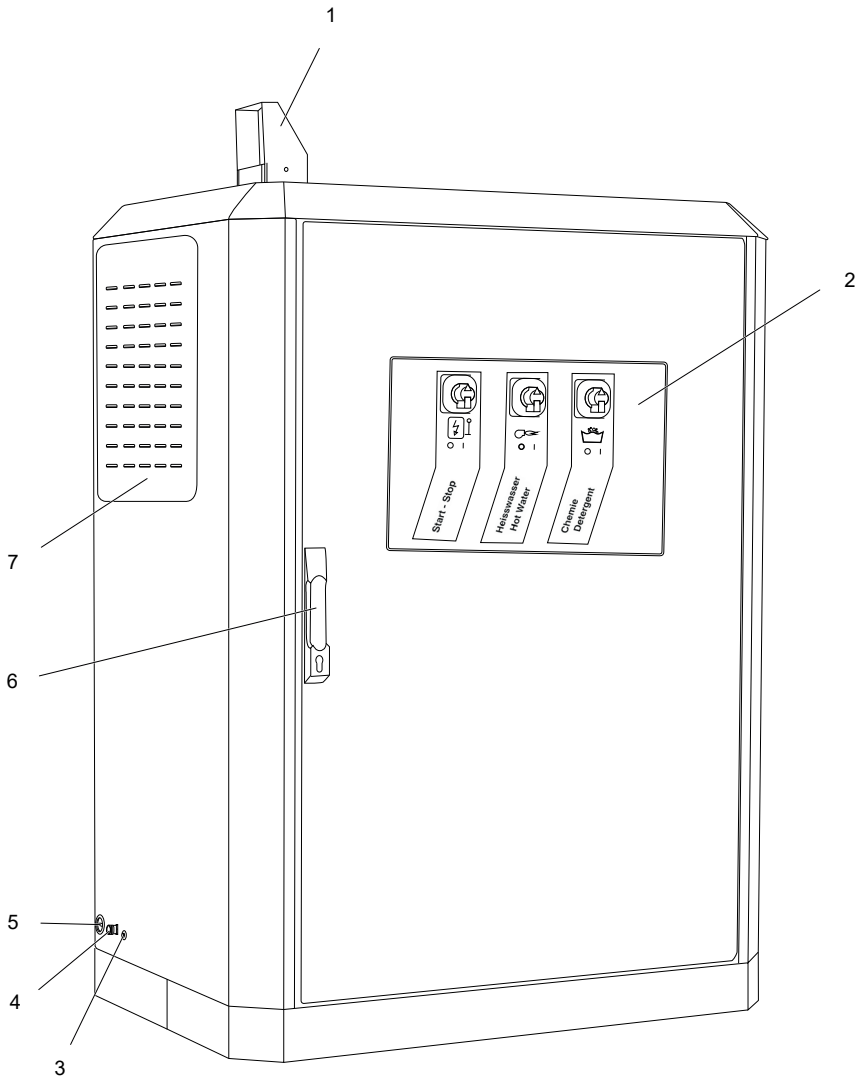
- Various pressure switches:
  System functions are switched on or off (safety functions) based on type of construction and intended use.
- Low-water cut-off:
  The system does not switch on, respectively in case of operation off, if the water level in the float container is insufficient.
- Unloader valve and non-return valve:
  The first serves to adjust the operating pressure and the second valve keeps the pump head depressurised when the trigger gun is deactivated.
- Safety valve:
  Opens when a preset pressure is exceeded and diverts the water stream.
- Thermostat and overload protection switch:
  Releases when the pump current load is too high, the system is switched off.
- TSS system with pump-off delay:
  After deactivating the trigger gun, the pump continues operation for approx. 30 s in the pressureless bypass mode (avoidance of too high pressure build-up in the pump); then the motor is switched off.
- Total Switch-off:
  Automatically switches the high pressure cleaner off in the event of prolonged interruption of operation or unused trigger gun for more than 20 minutes.
- Optical flame monitoring:
  Switches off the heating after the flame in the combustion chamber has extinguished.
- Mechanical arrest for trigger gun:
  Prevents unintentional or unconscious activating the trigger gun.

3 Product description

3.1 System views

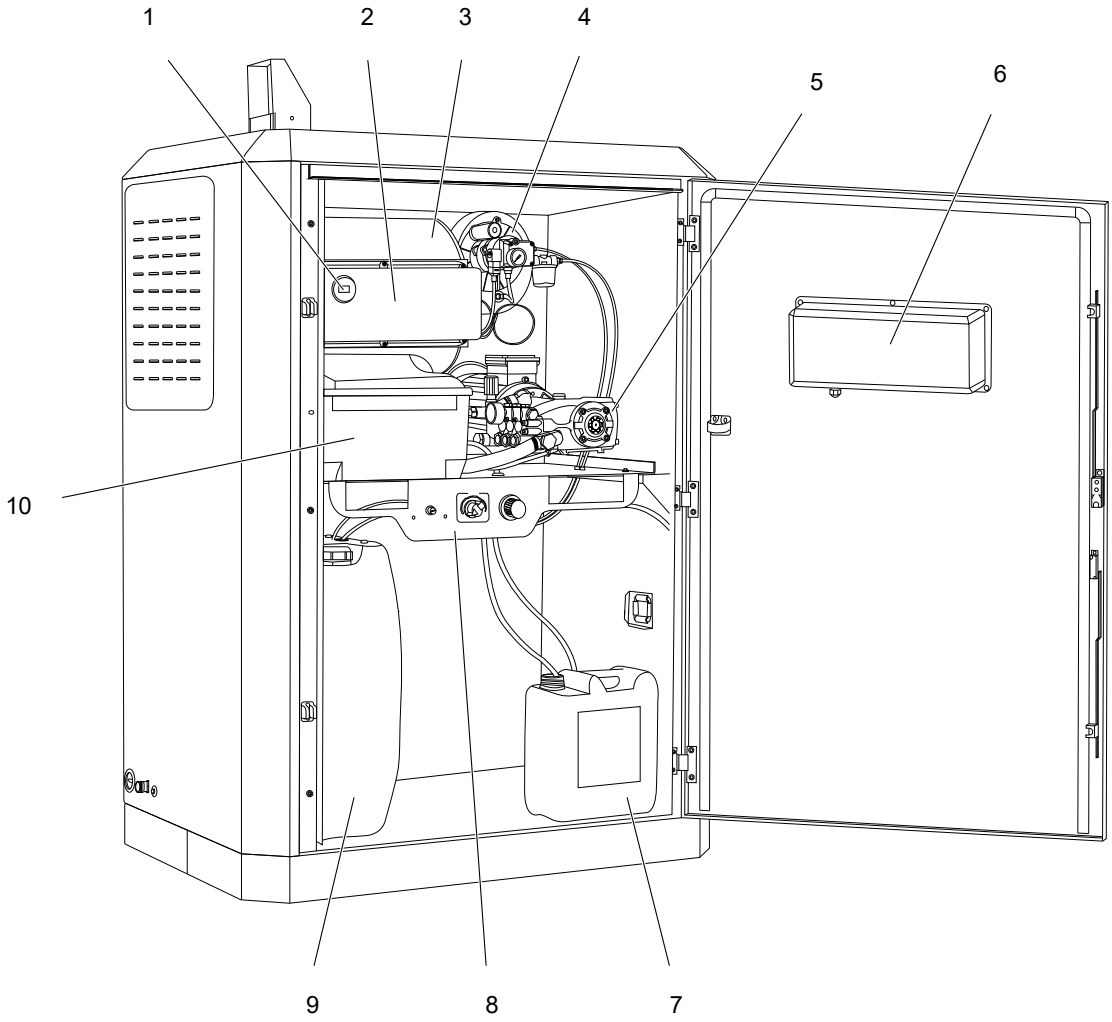
3.1.1 Series HSC-Oil (DE/UK), Standard and INOX

The following figures show a general example for the Stationary Hotwater High Pressure Cleaners of Series HSC-Oil.



1 Chimney adapter (optional chimney adapter (800163) as chimney transition from square to round for chimney system Ø 150 mm)
2 Control panel, cabinet door front
3 HP-Hose feed-through
4 Feed-through water connection
5 Feed-through electrical connection
6 Door latch with lock
7 Cover maintenance opening

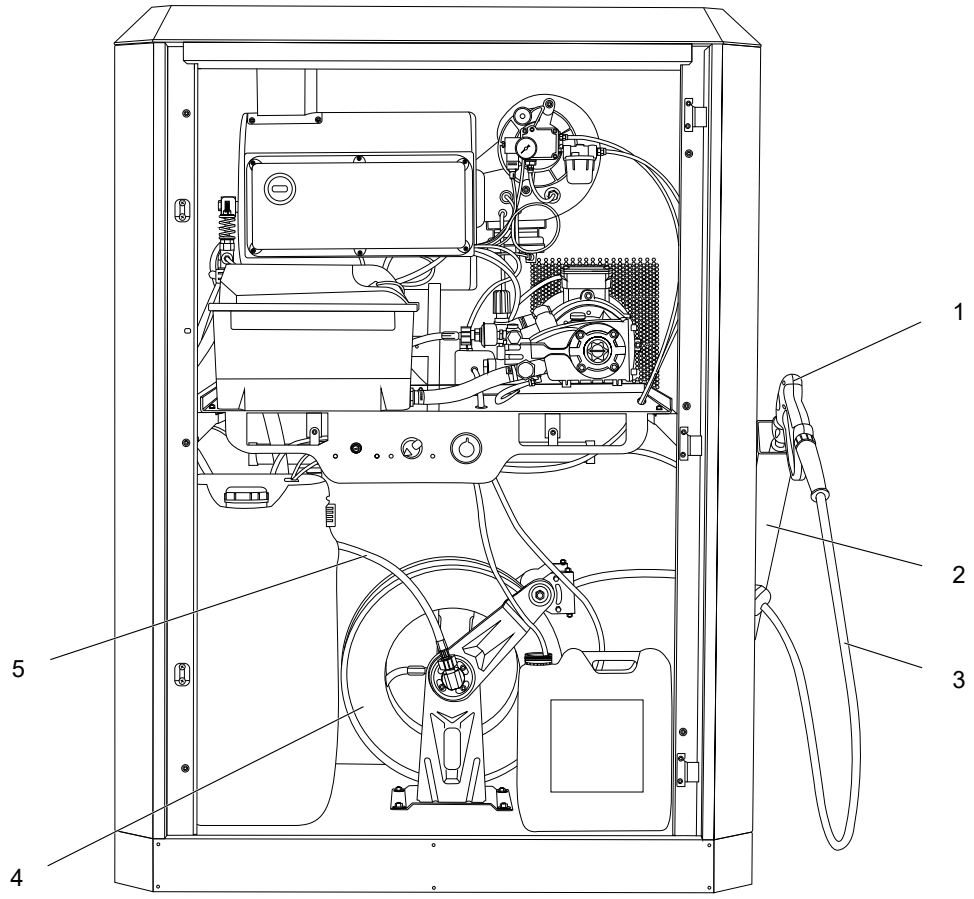
Fig. 3 - 1 Stationary Hotwater High Pressure Cleaners Series HSC-Oil, total view



1 Service hour meter
2 Electronic control unit
3 Heating coil
4 Oil burner
5 Elektric-motor with HP-pump, with unloader safety valve for variable pressure and quantity regulation as well as pressure gauge
6 Protectiv cover (terminal contacts main switches)
7 Detergent container 20 l
(Storage space for two detergent containers)
8 Control panel (maximum thermostat 95 °C, thermostat and detergent control valve)
9 Fuel tank 60 l
10 Float container with water-supply separation

Fig. 3 - 2 Stationary Hotwater High Pressure Cleaners Series HSC-Oil, view to cabinet interior (door opened)

3.1.2 Series HSC-Oil (DE/UK), interior with additional kit 265300 for Standard and INOX

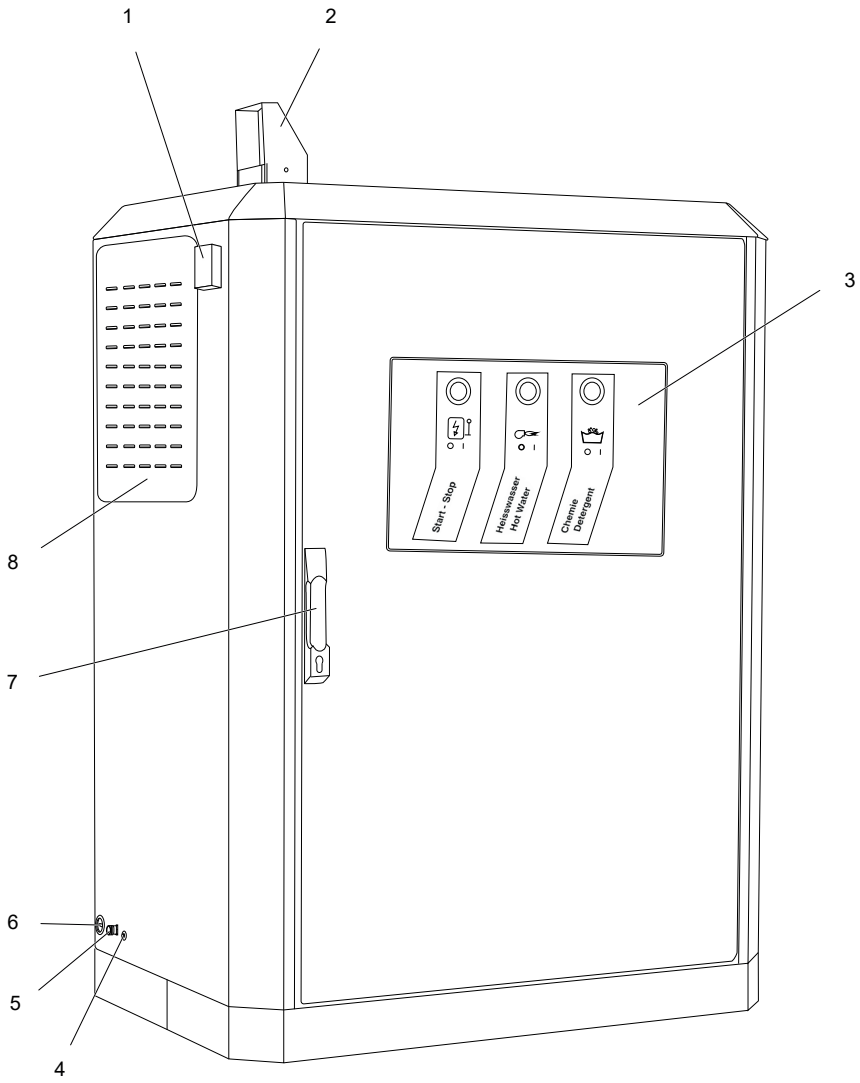


1	Spray lance with trigger gun, nozzle protection and HP-nozzle	3	HP-hose 20 m
2	Lance quiver with water drain integrated	4	Automatic hose reell
		5	Connection hose

Fig. 3 - 3 Stationary Hotwater High Pressure Cleaners Series HSC-Oil, cabinet interior equipped with additional kit 265300

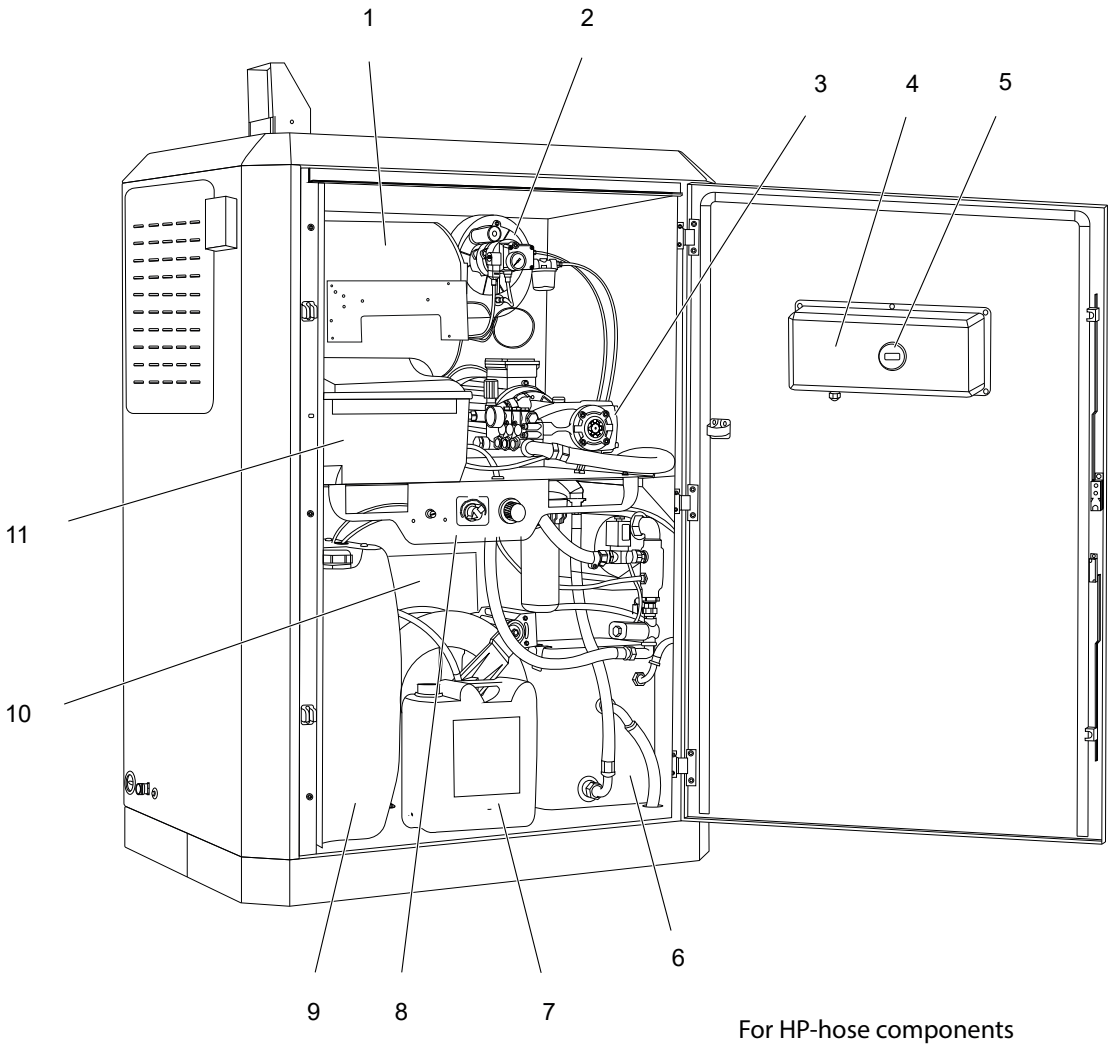
3.1.3 Series HSC FR Oil (DE/UK), Standard and INOX

The following figures show a general example for the Stationary Hotwater High Pressure Cleaners of Series HSC FR Oil with frost protection.



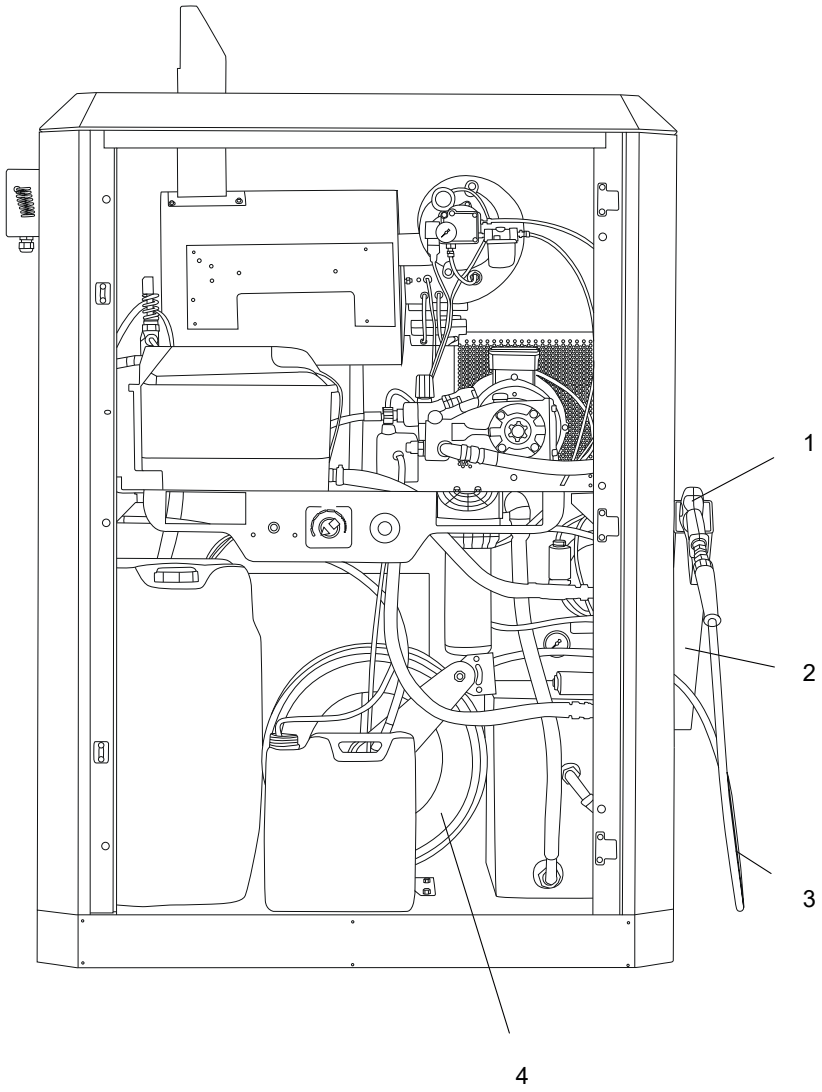
1 Universal-thermostat for frost protection
2 Chimney adapter (optional chimney adapter (800163) as chimney transition from square to round for chimney system Ø 150 mm)
3 Control panel, cabinet door front
4 HP-Hose feed-through
5 Feed-through water connection
6 Feed-through electrical connection
7 Door latch with lock
8 Cover maintenance opening

Fig. 3 - 4 Stationary Hotwater High Pressure Cleaners Series HSC FR Oil with frost protechtion, total view



1 Heating coil
2 Oil burner
3 Elektric-motor with HP-pump, with unloader safety valve for variable pressure and quantity regulation as well as pressure gauge
4 Protectiv cover (terminal contacts main switches)
5 Service hour meter
6 Anti freeze tank (WAB) with anti freeze circulatory system
7 Detergent container 20 l (two containers possible)
8 Control panel (maximum thermostat 95 °C, thermostat and detergent control valve)
9 Fuel tank 60 l
10 Electronic control unit (Series HSC FR Oil)
11 Float container with water-supply separation

Fig. 3 - 5 Stationary Hotwater High Pressure Cleaners Series HSC FR Oil with frost protection, view to cabinet interior (door opened))



1 Trigger gun with low-pressure leakage, spray lance, nozzle protection and HP-nozzle
2 Lance quiver with water drain into the anti freeze tank (WAB)
3 HP-hose 10 m (Series)
4 Optional to Pos. 3 automatic hose reel with connection hose and 20 m HP-hose

Fig. 3 - 6 Stationary Hotwater High Pressure Cleaners Series HSC FR Oil with frost protection, view to the HP-hose components inside the cabinet

3.2 Type plates

3.2.1 Series HSC-Oil (Standard)

HSC823 Oil-Standard

Type: HSC823
52601-XX-C

Voltage	1/N/PE/AC/50Hz/230V
Operating pressure	30-140bar/ 3-14MPa
Max. pressure	160bar/ 16MPa
Discharge capacity	300 - 720l/h
Nozzle size	045
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,4kW / 15A
Electrical protection	16A slow

Serial No.: 010010111 88329
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC1140 Oil-Standard

Type: HSC1140
52702-XX-C

Voltage	3/N/PE/AC/50Hz/400V
Operating pressure	30-180bar/ 3-18MPa
Max. pressure	200bar/ 20MPa
Discharge capacity	300 - 1000l/h
Nozzle size	055
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	6,5kW / 12,2A
Electrical protection	3x16A slow

Serial No.: 010010111 88329
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC1240 Oil-Standard

Type: HSC1240
52801-XX-B

Voltage	3/N/PE/AC/50Hz/400V
Operating pressure	30-160bar/ 3-16MPa
Max. pressure	180bar/ 18MPa
Discharge capacity	300 - 1200l/h
Nozzle size	070
Hot water capacity	30 - 98°C
Pump speed	1400 rpm
Connected load	7,6kW / 14,1A
Electrical protection	3x16A slow

Serial No.: 010010111 88329
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC823 UK-Oil-Standard

Type: HSC823 UK
52602-UK-A

Voltage	1/N/PE/AC/50Hz/240V
Operating pressure	30-120bar/ 3-12MPa
Max. pressure	140bar/ 14MPa
Discharge capacity	300 - 720l/h
Nozzle size	050
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,0kW / 13A
Electrical protection	13A slow

Serial No.: 010010111 88329
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC923 UK-Oil-Standard

Type: HSC923 UK
534001-UK-A

Voltage	1/N/PE/AC/50Hz/240V
Operating pressure	30-100bar/ 3-10MPa
Max. pressure	120bar/ 12MPa
Discharge capacity	300 - 840l/h
Nozzle size	070
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,3kW / 13A
Electrical protection	13A slow

Serial No.: 011010110 88329
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

3.2.2 Series HSC-Oil (INOX)

HSC823-INOX-Oil

Type: HSC823 INOX
526010-XX-C

Voltage	1/N/PE/AC/50Hz/230V
Operating pressure	30-140bar/ 3-14MPa
Max. pressure	160bar/ 16MPa
Discharge capacity	300 - 720l/h
Nozzle size	045
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,4kW / 15A
Electrical protection	16A slow

Serial No.: 010010111 88329

EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC1140-INOX-Oil

Type: HSC1140-INOX
527-XX-B

Voltage	3/N/PE/AC/50Hz/400V
Operating pressure	30-180bar/ 3-18MPa
Max. pressure	200bar/ 20MPa
Discharge capacity	300 - 1000l/h
Nozzle size	055
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	6,5kW / 12,2A
Electrical protection	3x16A slow

Serial No.: 010010111 88329

EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC1240-INOX-Oil

Type: HSC1240-INOX
528-XX-B

Voltage	3/N/PE/AC/50Hz/400V
Operating pressure	30-160bar/ 3-16MPa
Max. pressure	180bar/ 18MPa
Discharge capacity	300 - 1200l/h
Nozzle size	070
Hot water capacity	30 - 98°C
Pump speed	1400 rpm
Connected load	7,6kW / 14,1A
Electrical protection	3x16A slow

Serial No.: 000110111 88329

EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC823-INOX-UK-Oil

Type: HSC823 UK INOX
525-UK-A

Voltage	1/N/PE/AC/50Hz/240V
Operating pressure	30-120bar/ 3-12MPa
Max. pressure	140bar/ 14MPa
Discharge capacity	300 - 720l/h
Nozzle size	050
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,0kW / 13A
Electrical protection	13A slow

Serial No.: 010010111 88329

EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

HSC923-INOX-UK-Oil

Type: HSC923 UK INOX
534002-UK-A

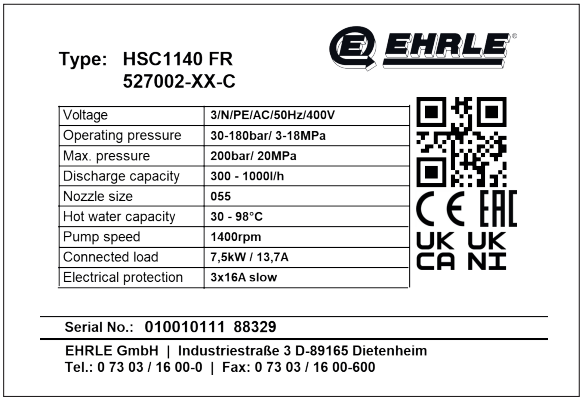
Voltage	1/N/PE/AC/50Hz/240V
Operating pressure	30-100bar/ 3-10MPa
Max. pressure	120bar/ 12MPa
Discharge capacity	300 - 840l/h
Nozzle size	070
Hot water capacity	30 - 98°C
Pump speed	1400rpm
Connected load	3,3kW / 13A
Electrical protection	13A slow

Serial No.: 011010110 88329

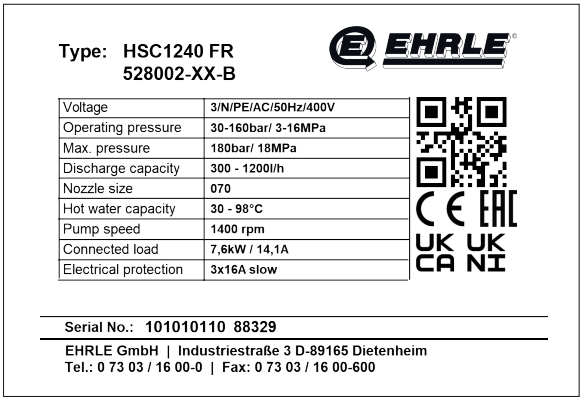
EHRLE GmbH | Industriestraße 3 D-89165 Dietenheim
Tel.: 0 73 03 / 16 00-0 | Fax: 0 73 03 / 16 00-600

3.2.3 Series HSC FR Oil (Standard)

HSC1140 FR Oil-Standard

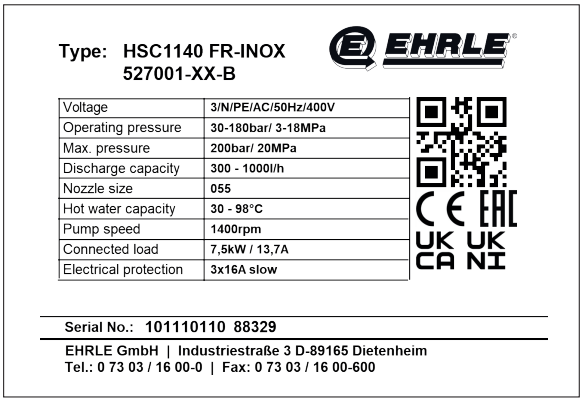


HSC1240 FR Oil-Standard

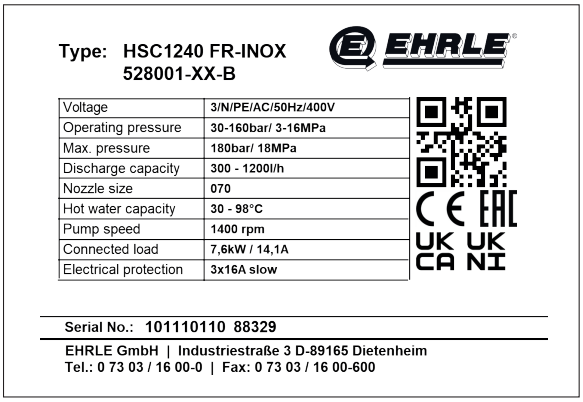


3.2.4 Series HSC FR Oil (INOX)

HSC1140-INOX FR Oil



HSC1240-INOX FR Oil



3.3 Serial number

The serial number on the nameplate uniquely identifies the product. It is required for Ehrle customer service.

Ser. Nr._____

3.4 Technical data

3.4.1 HSC823 Oil, HSC1140 Oil and HSC1240 Oil

		Standard and INOX		
		HSC823 Oil	HSC1140 Oil	HSC1240 Oil
Performance data				
Operating pressure	bar	30 - 140	30 - 180	30 - 160
	MPA	3 - 14	3 - 18	3 - 16
Max. operating over-pressure	bar	160	200	180
	MPA	16	20	18
Discharge capacity	l/h	300 - 720	300 - 1000	300 - 1200
Hot water capacity	° C	30 - 98	30 - 98	30 - 98
Pump speed	rpm	1400	1400	1400
Recoil force trigger gun	N	30,4	55,4	64,3
Nozzle size	---	045	055	070
Temperature values				
Inlet temperature (max.)	° C	45	45	45
Infiniteley variable	° C	30 - 98	30 - 98	30 - 98
with a heating capacity of	kW	60	60	60
Electrical connection				
Mains voltage	V	230	400	400
Phase	~	1	3	3
Mains frequency	Hz	50	50	50
Connected load	kW	3,4	7,6	7,6
Current (max.)	A	15	14,1	14,1
Degree of protection	IP	IPX5	IPX5	IPX5
Main fuse (slow-blowing)	A	16	3 x 16	3 x 16
Residual current circuit breaker (max. allowed residual current)	mA	30	30	30
Chassis electro heating	W	80	80	80
Extension cable up to 20 m	Wires	3 x	5 x	5 x
	mm^2	2,5	2,5	2,5

Tab. 3 - 1 Technical data for HSC823 Oil, HSC1140 Oil and HSC1240 Oil (Standard and INOX)

		Standard and INOX		
		HSC823 Oil	HSC1140 Oil	HSC1240 Oil
Oil consumption				
Max. oil consumption	kg/h	4,5	4,5	4,5
Tank filling quantities and chemical suction quantity				
Fuel tank	l	60	60	60
Chemical tank (optional)	l	2 x 20	2 x 20	2 x 20
Chemical suction quantity	l/h	28	19	50
Water connection				
Max. feed pressure	bar	5	5	5
	MPA	0,5	0,5	0,5
Max. feed temperature	° C	45	45	45
Feed volume	l/min	12	15	18
Suction height	m	0	0	0
Dimensions and weights				
Weight Standard (with packaging) INOX (with packaging)	 kg kg	 301 (318) 300 (317)	 301 (318) 300 (317)	 301 (318) 300 (317)
Length (with packaging)	mm	1220 (1250)	1220 (1250)	1220 (1250)
Width (with packaging)	mm	755 (815)	755 (815)	755 (815)
Height (with packaging)	mm	1625 (1755)	1625 (1755)	1625 (1755)
Lubricant				
Amount of oil	l	0,25	0,65	0,65
Oil grade	Type	10W40	10W40	10W40
Fuel				
Only heating oil or diesel oil may be used as fuel				
Heating oil EL 51 603	l	60	60	60
Diesel oil	l	60	60	60

Tab. 3 - 1 Technical data for HSC823 Oil, HSC1140 Oil and HSC1240 Oil (Standard and INOX)

3.4.2 HSC823-UK Oil and HSC923-UK Oil

		Standard and INOX	
		HSC823-UK Oil	HSC923-UK Oil
Performance data			
Operating pressure	bar	30 - 120	30 - 100
	MPA	3 - 12	3 - 10
Max. operating over-pressure	bar	140	120
	MPA	14	12
Discharge capacity	l/h	300 - 720	300 - 840
Hot water capacity	° C	30 - 98	30 - 98
Pump speed	rpm	1400	1400
Recoil force trigger gun	N	26,6	32,2
Nozzle size	---	050	070
Temperature values			
Inlet temperature (max.)	° C	45	45
Infiniteley variable	° C	30 - 98	30 - 98
with a heating capacity of	kW	60	60
Electrical connection			
Mains voltage	V	240	240
Phase	~	1	1
Mains frequency	Hz	50	50
Connected load	kW	3,0	3,3
Current (max.)	A	13	13
Degree of protection	IP	IPX5	IPX5
Main fuse (slow-blowing)	A	13	13
Residual current circuit breaker (max. allowed residual current)	mA	30	30
Chassis electro heating	W	80	80
Extension cable up to 20 m	Wires	3 x	3 x
	mm^2	2,5	2,5

Tab. 3 - 2 Technical data for HSC823-UK Oil and HSC923-UK Oil (Standard and INOX)

		Standard and INOX	
		HSC823-UK Oil	HSC923-UK Oil
Oil consumption			
Max. oil consumption	kg/h	4,5	4,5
Tank filling quantities and chemical suction quantity			
Fuel tank	l	60	60
Chemical tank (optional)	l	2 x 20	2 x 20
Chemical suction quantity	l/h	20	20
Water connection			
Max. feed pressure	bar	5	5
	MPA	0,5	0,5
Max. feed temperature	° C	45	45
Feed volume	l/min	12	14
Suction height	m	0	0
Dimensions and weights			
Weight Standard (with packaging) INOX (with packaging)	 kg kg	 301 (318) 300 (317)	 301 (318) 300 (317)
Length (with packaging)	mm	1220 (1250)	1220 (1250)
Width (with packaging)	mm	755 (815)	755 (815)
Height (with packaging)	mm	1625 (1755)	1625 (1755)
Lubricant			
Amount of oil	l	0,25	0,25
Oil grade	Type	10W40	10W40
Fuel			
Only heating oil or diesel oil may be used as fuel			
Heating oil EL 51 603	l	60	60
Diesel oil	l	60	60

Tab. 3 - 2 Technical data for HSC823-UK Oil and HSC923-UK Oil (Standard and INOX)

3.4.3 HSC1140 FR Oil and HSC1240 FR Oil

		Standard and INOX	
		HSC1140 FR Oil	HSC1240 FR Oil
Performance data			
Operating pressure	bar	30 - 180	30 - 160
	MPA	3 - 18	3 - 16
Max. operating over-pressure	bar	200	180
	MPA	20	18
Discharge capacity	l/h	300 - 1000	300 - 1200
Hot water capacity	° C	30 - 98	30 - 98
Pump speed	rpm	1400	1400
Recoil force trigger gun	N	55,4	55,4
Nozzle size	---	055	070
Temperature values			
Inlet temperature (max.)	° C	45	45
Infiniteley variable	° C	30 - 98	30 - 98
with a heating capacity of	kW	60	60
Electrical connection			
Mains voltage	V	400	400
Phase	~	3	3
Mains frequency	Hz	50	50
Connected load	kW	7,6	7,6
Current (max.)	A	14,1	14,1
Degree of protection	IP	IPX5	IPX5
Main fuse (slow-blowing)	A	3 x 16	3 x 16
Residual current circuit breaker (max. allowed residual current)	mA	30	30
Chassis electro heating	W	80	80
Extension cable up to 20 m	Wires	5 x	5 x
	mm^2	2,5	2,5

Tab. 3 - 3 Technical data HSC1140 FR Oil and HS1240 FR Oil (Standard and INOX)

		Standard and INOX	
		HSC1140 FR Oil	HSC1240 FR Oil
Oil consumption			
Max. oil consumption	kg/h	4,5	4,5
Tank filling quantities and chemical suction quantity			
Fuel tank	l	60	60
Chemical tank (optional)	l	2 x 20	2 x 20
Chemical suction quantity	l/h	-	-
Water connection			
Max. feed pressure	bar	5	5
	MPA	0,5	0,5
Max. feed temperature	° C	45	45
Feed volume	l/min	15	18
Suction height	m	0	0
Dimensions and weights			
Weight Standard (with packaging) INOX (with packaging)	 kg kg	 301 (318) 300 (317)	 301 (318) 300 (317)
Length (with packaging)	mm	1220 (1250)	1220 (1250)
Width (with packaging)	mm	755 (815)	755 (815)
Height (with packaging)	mm	1625 (1755)	1625 (1755)
Lubricant			
Amount of oil	l	0,65	0,65
Oil grade	Typ	10W40	10W40
Fuel			
Only heating oil or diesel oil may be used as fuel			
Heating oil EL 51 603	l	60	60
Diesel oil	l	60	60

Tab. 3 - 3 Technical data HSC1140 FR Oil and HS1240 FR Oil (Standard and INOX)

3.4.4 Selection of spray nozzles

Contamination	Nozzle	Spraying angle	Article-Nr.	Pressure [MPa]
heavy	050 (blue)	25°	25050	max. 20

Tab. 3 - 4 List of spray nozzles

4 Installation

WARNING

Ensure correct device assembly.

For the installation of the high pressure cleaners, the personnel must have

- read this manual and understood, that error-free device assembly can be guaranteed, or
- specially trained and instructed on the respective system.

Otherwise, the life and limb of persons may be endangered.

WARNING

Danger with heavy loads

The Stationary Hotwater High Pressure Cleaners of the Series HSC-Oil / Series HSC FR Oil weigh 300 kg (with packaging 318 kg). Components of the high pressure cleaners can have a weight of more than 23 kg.

A person is not allowed to lift and move loads (e.g. devices, assemblies) more than 23 kg.

Otherwise the health of persons may be endangered (e.g. overload of the spinal column, injuries from falling loads).

For loads of more than 23 kg, use suitable lifting equipment (e.g. forklift, lift truck).

General Information

For detailed advice and information on the installation of the Stationary Hotwater High Pressure Cleaners Series HSC-Oil / Series HSC FR oil, please contact EHRLE customer service.

If required, EHRLE customer service can commission appropriately qualified personnel to carry out a wide range of installation work.

4.1 Selection of the operating location

WARNING

Select a suitable and permissible operating location for the system.

The local regulations concerning the installation and operation of the system must be observed.

The Stationary Hotwater High Pressure Cleaners must not be installed and operated in rooms or areas subject to fire or explosion hazards.

For use at petrol stations or similar hazardous areas, reference is made to the hazardous areas in accordance with the „Technical Rules for Flammable Liquids" (TRGF).

WARNING

Observe the regulations for combustion plants.

The heating equipment of the plant falls under the directives for combustion plants. When installing them, the locally applicable regulations must be observed.

If oil-fired systems are installed indoors, proper discharge of the combustion exhaust gases via an exhaust gas chimney system and sufficient ventilation (combustion air) must be ensured.

Inhalation of exhaust fumes poses a risk of poisoning and can lead to death.

Select a dry and operationally safe location for the system cabinet. The site of use must have a water drainage system.

When selecting a location, take into account that the following plant components and the power supply must be easily accessible for operation, maintenance, repair and adjustment work (for dimensions see also Fig. 4 - 1):

- cover maintenance opening (7, Fig. 3 - 1 resp. 8, Fig. 3 - 4)
- connections for system supply
  - supply voltage
  - water pipe
- the swivel area of the cabinet door must be completely free
- exhaust gas chimney system
- maintenance opening for chimney sweep on flue gas system (e.g. exhaust gas measurement by experts such as chimney sweeps)
- washing station equipment such as trigger gun and high pressure hose

The building water connection (mains water supply) and the electrical connection (mains connection) for supplying the system must be designed for trouble-free constant continuous operation (see also section 3.4, Technical Data).

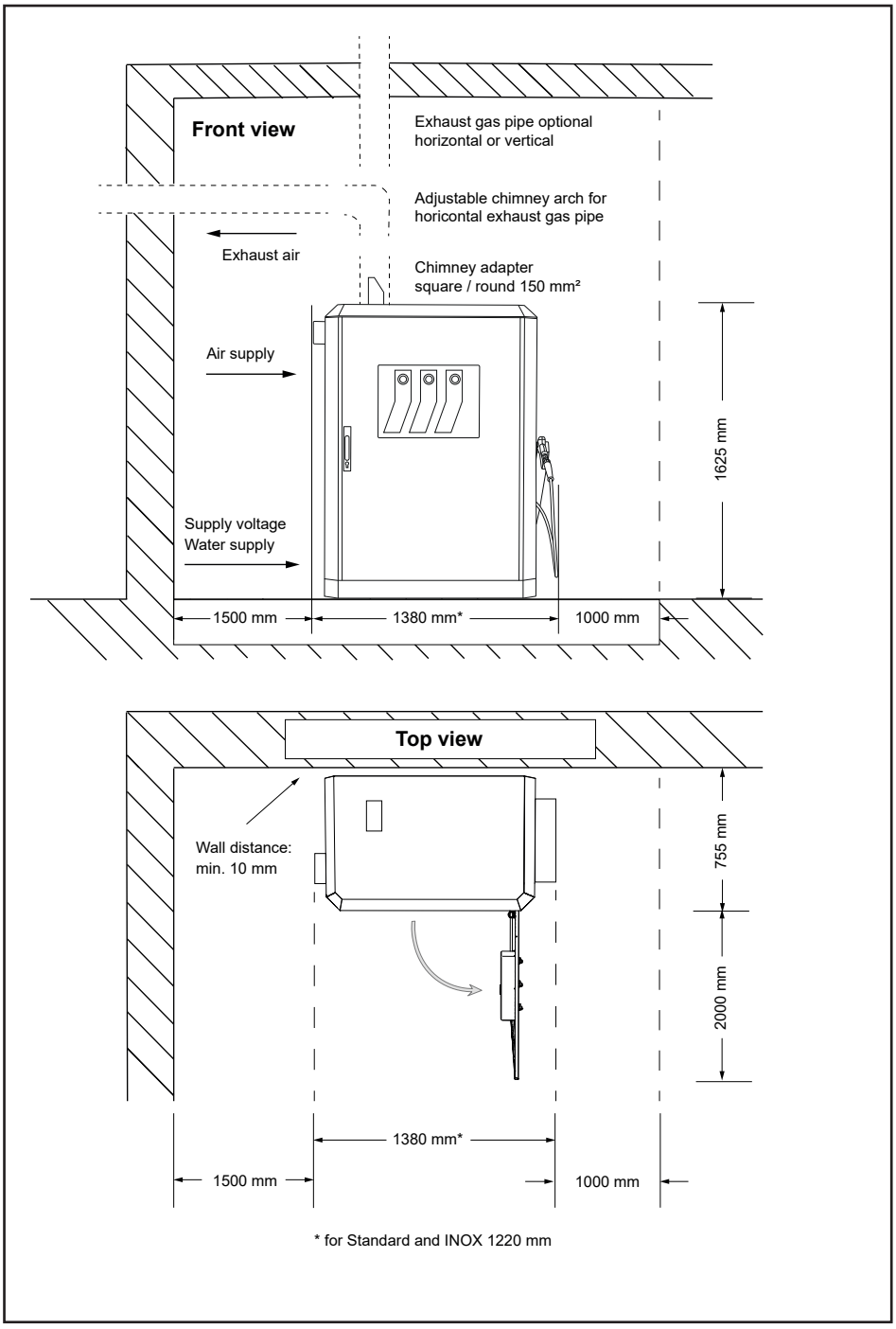


Fig. 4 - 1 Required dimensions for operating location,, here in the example Series HSC FR Oil

4.2 Operating location inside buildings

If oil-fired systems are installed indoors, proper discharge of the combustion exhaust gases via an exhaust gas chimney system and sufficient ventilation (combustion air) must be ensured.

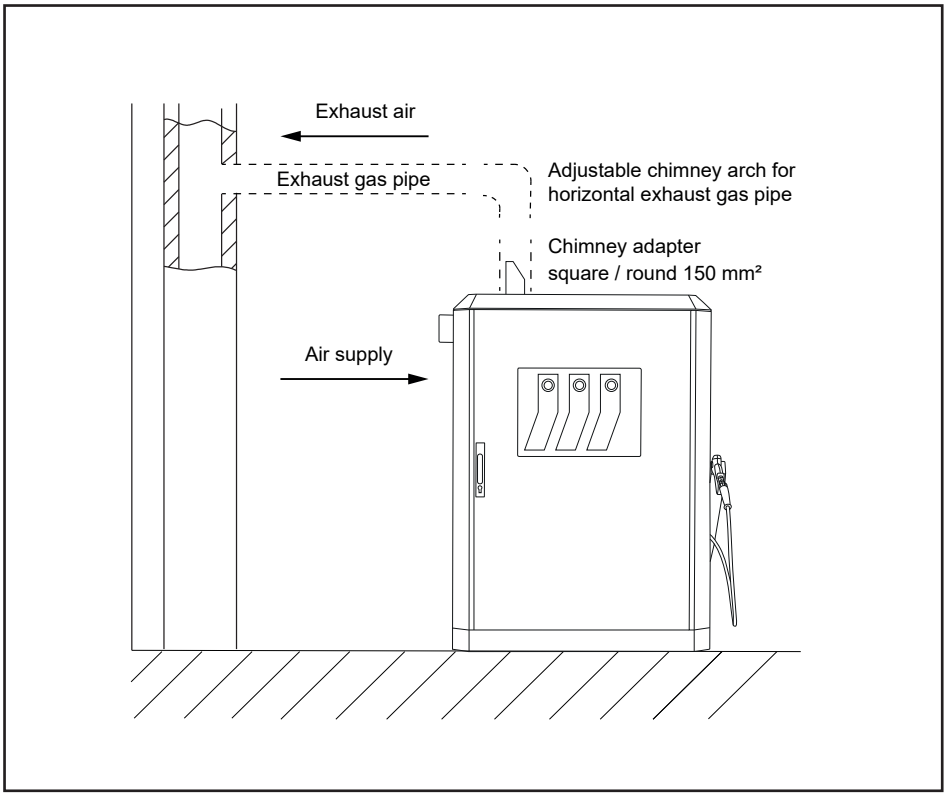


Fig. 4 - 2 Operating location inside buildings

4.3 Installation of exhaust gas chimney system

WARNING

Ensure correct exhaust gas chimney system installation.

The installation of the chimney system may only be carried out by qualified, trained and authorised personnel.

The chimney system must be checked for safe operation and approved by the responsible chimney sweep before it is used. A signed confirmation from the chimney sweep ensures that the combustion system complies with the legal regulations.

Otherwise there is a risk of fire or poisoning from the exhaust gases. As a result, life and limb of persons may be in danger.

The exhaust gas chimney system must be applied for at the responsible chimney sweep and approved after completion.

The exhaust gases must be safely discharged. The specifications for the supply air and exhaust air must be observed.

Chimney specification according to DIN 4705 Part 1

Heat producer		
Heating efficiency	KW	70
Type of fuel		Heating oil EL 51 603 or Diesel oil
CO_2-Value	%	10.5 - 11.2
Exhaust pipe inside diameter	mm	120
Exhaust pipe inside cross section	m²	0.0119
Exhaust temperature	°C	170 - 190
Necessary discharge pressure	N/m²	0.0
Exhaust mass flow	kg/s	0.0309

In consideration of the data listed above and a pipe diameter of 150 mm a minimum effective chimney length (stack height) of 4 m is required.

For the installation of a chimney system, all components can be provided by the manufacturer as optional accessories.

The manufacturer recommends providing a chimney element with test opening for the chimney sweep.

4.4 Installation of the electrical connection

WARNING

Ensure proper installation of the electrical connection.

The electrical connection may only be carried out by qualified, trained and authorised electrical specialists.

Observe the IEC-regulations for electrical cable laying.

All live parts in the intended working area for cleaning work, e.g. equipment, cables, sockets etc. must be protected against water jets in accordance with safety regulations.

Only connect the system to voltage sources earthed in accordance with the safety regulations.

The connection plugs must not lie on the floor and must always be dry. Do not touch the connectors with wet hands.

Improper installation of the electrical connection can endanger life and limb of persons.

General Information

When installing the cabinet of Series HSC-Oil, the direction of rotation of the HP-pump motors does not have to be observed.

A right-hand rotating field is required for the antifreeze pump for the Series HSC FR Oil.

Have the electrical connection carried out by qualified and trained eletricians. Ensure compliance with the provisions of IEC 60364-1.

The electrical mains connection (building connection) for the supply voltage of the system must be designed for trouble-free constant operation (see Section 3.4, Technical Data).

The electrical mains connection of the building must correspond to the electrical values given on the type plate of the system (see Section 3.4, Technical Data).

The following components of the building power supply must be installed at an easily accessible installation site:

- Socket for the plug of the power supply cable of the system
- Building power supply on/off switch
- Fuses or circuit breakers for the building power supply.

Install the electrical connections according to the system-specific circuit diagram (see section 10, Technical documents).

WARNING

Danger of electric shock.

Do not connect the system to the building power supply until all installation work has been completed.

For connection to the building network, proceed according to the instructions in section 5, Commissioning.

Otherwise, the life and limb of persons may be endangered.

Do not connect the system to the mains supply (building connection) until starting with commissioning in accordance with the instructions in section 5.2, Switching on for the first time after installation.

4.5 Establishing the water connection

CAUTION

Dirty water can damage the high pressure cleaner.

Only operate the high pressure cleaner with clear and unpolluted water.

The water inlet temperature to the high pressure cleaner must not exceed 45 °C.

Otherwise, damage to the high pressure cleaner may occur.

The building water connection (tap water network) for the water supply of the high pressure cleaner must be designed for trouble-free constant operation (see Section 3.4, Technical Data).

The water connection for the high pressure cleaner must ensure a water supply of 1500 l/h under a flow pressure between 1 bar and 6 bar.

The regulations of the relevant water supply company must be observed! According to EN 61 770, the system must not be directly connected to the public drinking water supply. However, according to DVGW (Deutscher Verband des Gas- und Wasserfaches - German Gas and Water Association), short-term connection is permissible if a backflow preventer with a pipe ventilator is installed in the supply line. Water after the backflow preventer is no longer considered drinking water.

An indirect connection to the public drinking water supply is also permissible by means of a free outlet.The water supply must comply with EN 61 770, e.g. by using a tank with a float valve. Direct connection to a pipe network not intended for drinking water supply is permissible.

The environmental, waste and water protection regulations must be observed by the system operator!

Equip the water connection of the tap water network with a shut-off valve.

Connect the high pressure cleaner to the water connection via a flexible pressure hose (at least 3/4").

4.6 Fitting the drain hose for condensation water

CAUTION

Install the condensation hose properly.

Ensure that the end of the condensation hose is installed with the specified clearance to the floor.

Failure to do so may cause the condensation to build up and damage the system.

The condensate hose is connected to the outer boiler of the heating coil and drains the condensate water through the bottom plate to the free outlet.

The condensation hose must not have a fixed connection with the sewer system. The condensate must be able to drain freely.

To install the condensate drain hose, proceed as follows:

- ▶ Cut the hose to length. Ensure that the recommended ground clearance at the end of the hose is maintained.
- ▶ Push the hose on top of the drainage nozzle and fasten it with a hose clip.

4.7 Assembly of washing station equipment

CAUTION

Ensure that the high pressure hose is handled properly.

Do not

- run vehicles over the high pressure hose,
- pull it excessively, twist or bend it,
- run it over sharp-edged objects.

Otherwise the high pressure hose may be damaged.

CAUTION

Ensure pressure-tight screw connection of the washing station equipment

Leakage on screw connections of the trigger gun, pressure hose- or hose drum connection lead to increased wear and may damage system parts.

Rectify leackages immediately.

When assembling the washing station equipment, make sure that the individual parts are pressure-tight.

To assemble the wash station equipment, proceed as follows:

- ▶ Connect the high pressure hose to the socket (5, Fig. 6 - 2 for Series HSC-Oil, resp. 4, Fig. 6 - 3 for Series HSC FR Oil) of the trigger gun.
- ▶ Connect the other high pressure hose adapter to the high pressure hose connection of the high pressure cleaner (different connection depending on system type).
- ▶ Attach the HP-nozzle to the spray lance.

4.8 Set up the fuel tank

For the location of the fuel tank inside the cabinet of the

- Series HSC-Oil (Standard and INOX) see 1, Fig. 4-3
- Series HSC FR Oil (Standard and INOX) see 1, Fig. 4-4.

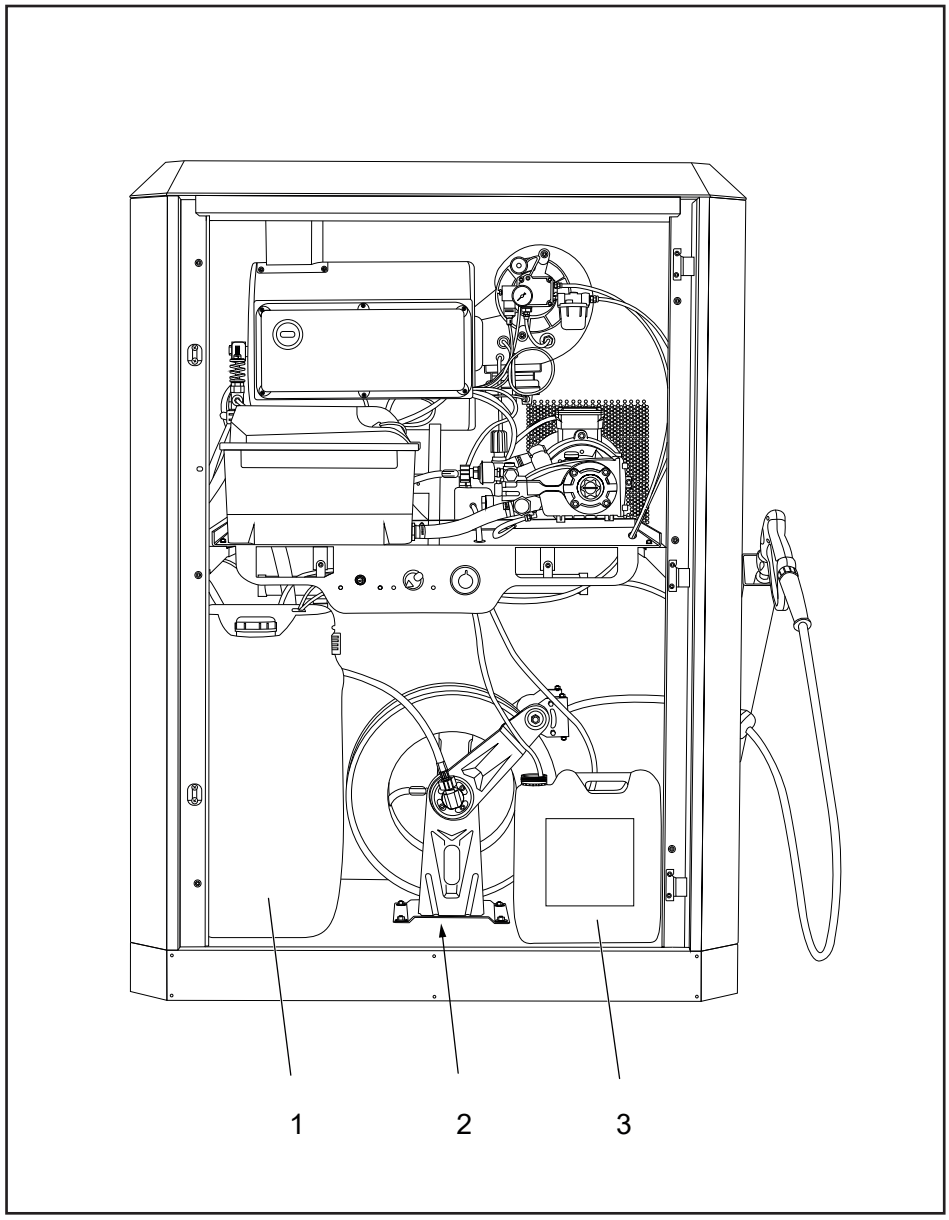
For the handling of fuel, observe the regulations on the storage of flammable liquids and the local regulations.

4.9 Set up the detergent containers

Two detergent containers, each with a capacity of 20 l, can be placed inside the cabinet for the supply of detergent.

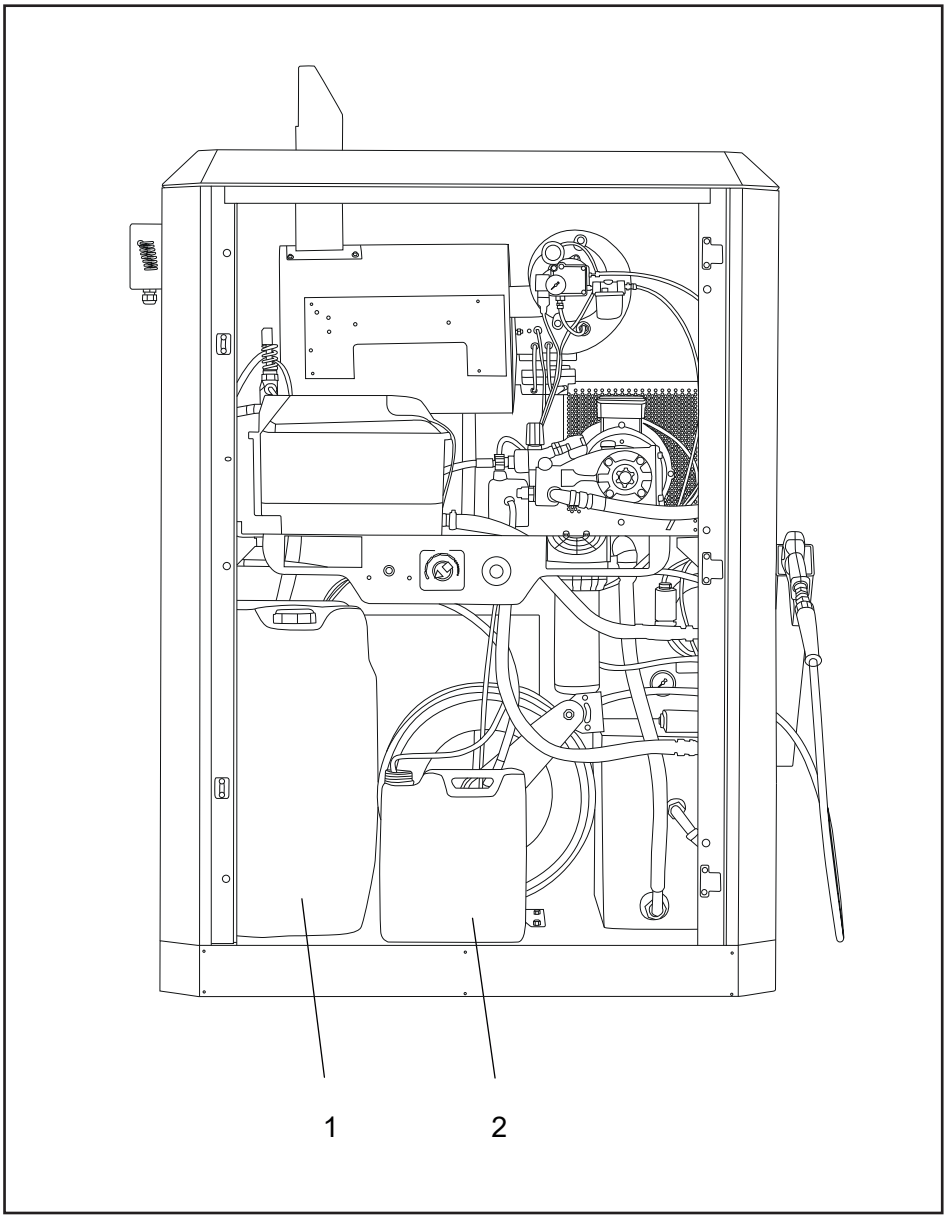
For the location of the detergent containers inside the cabinet of the

- Series HSC-Oil (Standard and INOX) see 3, Fig. 4-3
- Series HSC FR Oil (Standard and INOX) see 2, Fig. 4-4.



1 Fuel tank 60 l
2 Storage space for second detergent container 20 l
3 Detergent container 20 l

Fig. 4 - 3 Location of fuel tank and detergent containers for Series HSC-Oil (Standard and INOX)



1 Fuel tank 60 l
2 Detergent container 20
(positioning the containers lengthwise provides storage space for two detergent containers)

Fig. 4 - 4 Location of fuel tank and detergent containers for Series HSC FR Oil (Standard and INOX)

5 Commissioning

WARNING

Carry out initial commissioning professionally.

The measures for initial commissioning may only be carried out by qualified, trained and authorised personnel.

5.1 Measures prior to commissioning

Proceed as follows before the initial commissioning:

- Check the oil level on the dipstick of the high pressure pump and top up to the „max." mark if necessary.

WARNING

Danger from unapproved fuel.

Use only fuel approved by the manufacturer.

The use of non-approved fuels can impair the operational safety of the high pressure cleaner.

This can endanger the life and limb of people.

CAUTION

Ensure that the fuel tank is always sufficiently filled.

The fuel tank must always be sufficiently filled for operation. The fuel supply hose must always be fully inserted to the bottom of the tank.

A prolonged fuel dry run can lead to damage to the fuel pump

- Fill the fuel tank (see Fig. 4-3 or Fig. 4-4) sufficiently with heating oil or diesel oil.
  Only heating oil EL 51 603 or diesel oil may be used as fuel.
- For systems with exhaust gas chimney system, ensure that the installation complies with the regulations.
- During the initial commissioning and four weeks afterwards, carry out an exhaust gas immission measurement and readjust the burner if necessary (for setting values see section 5.3, Burner setting values for oil-fired systems).

5.2 First switching-on after installation

WARNING

Danger of electric shock.

In the event of accidents (e.g. due to life-threatening voltages) involving persons or to prevent accidents, switch off the system (see Section 6.4, EMERGENCY STOP - Switching off in the event of danger).

The water jet emerging from the trigger gun must not be directed at live electrical components or systems (machines, devices, lines, sockets, etc.).

Before cleaning, disconnect the electrical systems, modules or components from the power supply.

WARNING

Risk of burns from hot surfaces or hot water.

During operation, the surfaces of system parts, assemblies or components can become hot (non-insulated pipes, metal parts of the rigger gun and spray lance, heated water, etc.). Touching hot surfaces or hot water can cause skin burns or scalds to people.

Ensure that the system parts, assemblies or components as well as cleaning objects have cooled down before starting operating, maintenance or repair work.

WARNING

Danger of poisoning by escaping exhaust gas.

The exhaust gas from the exhaust gas chimney system must not be inhaled. Inhalation of exhaust gas can cause dizziness, nausea and even can lead to death to persons

Proceed as follows for the initial commissioning of the system:

- If necessary, switch off the following system functions on the front of the cabinet door via the three main switches for the Series HSC-Oil or the push-buttons for the Series HSC FR Oil.
  - Start - Stop
  - Hot water
  - Detergent

  for the Series HSC Oil, set the three main switches to 0 if necessary.
  resp.
  for Series HSC FR Oil, press the relevant push-button if necessary when the button light is on. The three push-button lights must be off.
- Open the water supply from the tap water network via the shut-off tap.
- Connect the system with the power supply cable to the electrical mains connection of the building
- Switch on the power supply via the circuit breaker on the building side.
- If necessary, unlock and open the cabinet door with the key.

- Inside the cabinet, first set the thermostat (5, Fig. 6 - 4 for Series HSC-Oil or 5, Fig. 6-5 for Series HSC FR Oil) to the „Off" position.

WARNING

Before activating, hold the trigger gun and the spray lance tightly.

After activation of the trigger gun the emerging water jet exerts a jerky recoil force (see also Fig. 6 - 7).

This may result in unintentional jerking away from the selected cleaning object or the trigger gun slipping out of the hand, endangering the life and limb of persons.

- Unlock and pull the trigger lever (3, Abb. 6 - 2 for Series HSC-Oil, resp. 2, Abb. 6 - 3 for Series HSC FR Oil) of the trigger gun.
- On the front of the cabinet door:
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is on.

  The high pressure cleaner starts. The pump first delivers air from the high pressure nozzle. After a short time, water then escapes.

WARNING

Risk of scalding due to hot water.

The hot water escaping from the spray lance must not come into contact with persons. Otherwise scalding to persons may occur.

- Set the Thermostat (5, Fig. 6 - 4 for Series HSC-Oil, resp. 5, Fig. 6-5 for Series HSC FR Oi) inside the cabinet to the desired temperature.
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Hot Water (2, Fig. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Hot Water (2, Fig. 6 - 1). The push-button light is on.
- Set the unloader valve (3, Fig. 6 - 4 for Series HSC-Oil, resp. 3, Fig. 6-5 for Series HSC FR Oil) inside the cabinet to the desired operating pressure.
- The operating pressure can be read off the pressure gauge (2, Fig. 6 - 4 for Series HSC-Oil, resp. 2, Fig. 6 - 5 for Series HSC FR Oil) while the trigger gun is activated.
  By turning the unloader valve (see Fig. 6 - 6) clockwise, the operating pressure and water quantity on the high pressure pump will increase.
  Turning counterclockwise results in lower working pressure and reduced water quantity.
- If the trigger lever on the trigger gun is released, the high pressure cleaner switches to pressureless circulation operation. After 20 sec. circulation mode switches the system to stand-by mode. When the lever on the trigger gun is pulled again, the motor and the pump restart automatically.

General Information

If the system remains in stand-by mode for 20 minutes, the electronic control switches the high pressure cleaner off as programmed.

To resume operation

- for Series HSC-Oil set the main switch Start - Stop to position 0 and then back to operating position 1.
- for Series HSC FR Oil press the push-button Start - Stop. The push-button light is on.

- Check burner settings by qualified personnel according to section 5.3 (burner setting values for oil-heated systems), and adjust if necessary.
- For safety reasons after completion of cleaning work
  - Lock the trigger lever of the trigger gun against unintentional switching on using the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is positioned in the notch (6, Abb. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. The system is switched off.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is off. The system is switched off.

General Information

For the addition of detergents to the high pressure jet, see Section 6.7, Use of Detergents (Chemistry).

Only qualified personnel authorised by the system operator can set and specify the quantity of cleaning agent to be added inside the cabinet via the detergent control valve.

On the front of the cabinet door, the admixture of the cleaning agent can only be switched on/off.

5.3 Burner setting values for oil-heated systems

WARNING

Adjust oil-heated burner properly.

The oil-heated burner may only be adjusted by qualified, trained and authorised personnel.

Check the combustion values at the test opening for chimney sweepers on the exhaust gas chimney system. The measured exhaust values must be within the limits listed below.

Specification for the oil-heated burner check and adjustment

Type of fuel	Heating oil EL 51 603 or Diesel oil
Fuel oil nozzle	1.35 gph 60° SF
Fuel pressure	9 - 12 bar
Burner air squeezing	medium air squeezing

Allowed exhaust values:

Carbon dioxide:	10.5 ... 11.2 CO_2 in %
Carbon monoxide:	max. 90 ppm
Soot number:	0 - 1 according to Bacharach
Exhaust power loss:	8 ... 10 %

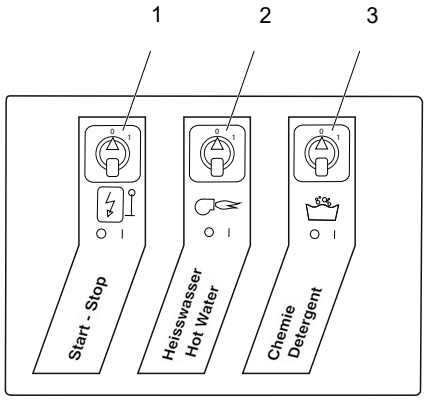
If the limit values listed above are not complied with, the oil burner must be adjusted by authorised specialists.

6 Operation

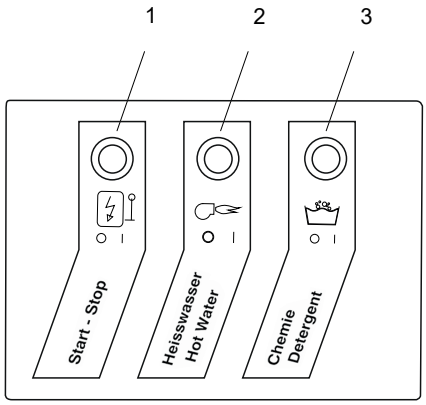
6.1 System indicator and control elements

6.1.1 Control elements on the cabinet front door

The following figure shows the control elements on the front of the cabinet door.



Control panel Series HSC-Oil, Standard / INOX
with rotary switches



Control panel Series HSC FR Oil, Standard / INOX
with push-buttons

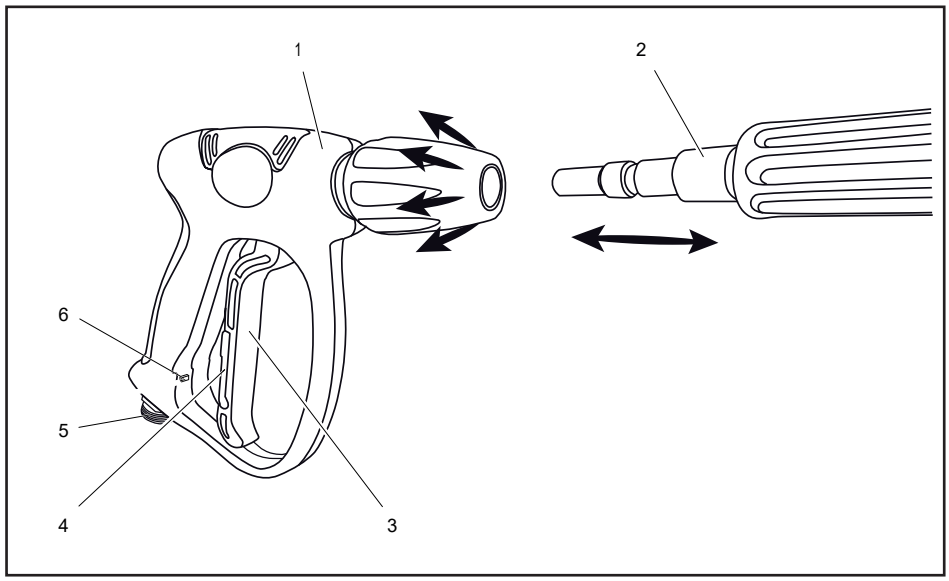
1 Main switch (resp. push-button for Series HSC FR Oil): Start - Stop
2 Main switch (resp. push-button for Series HSC FR Oil): Hot Water On - Off
3 Main switch (resp. push-button for Series HSC FR Oil): Detergent On - Off

Fig. 6 - 1 Control elements, cabinet front door

6.1.2 Control elements of the trigger gun

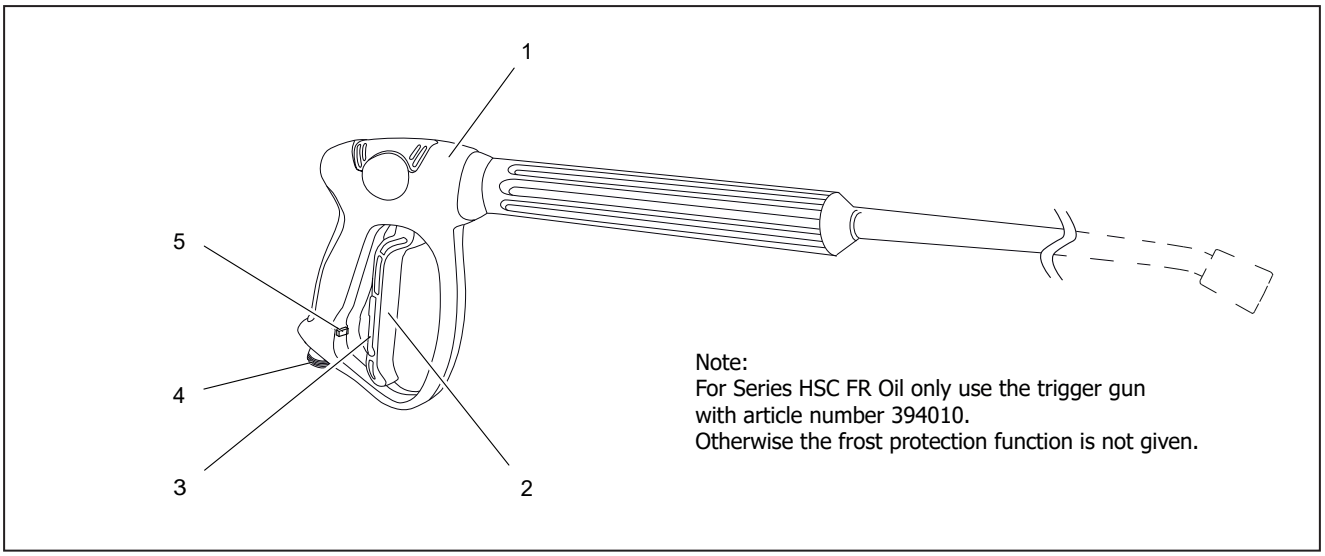
The two figures below show the control elements of the trigger gun for Series HSC-Oil and Series HSC FR Oil.

For Series HSC-Oil, to assemble (disassemble) the spray lance to the (from the) trigger gun see arrows in the figure below



1	Trigger gun	4	Locking lever (safety device)
2	Spray lance	5	Socket for HP-Hose
3	Trigger lever	6	Notch for locking lever (safety arresting)

Fig. 6 - 2 Control elements of the trigger gun for Series HSC-Oil

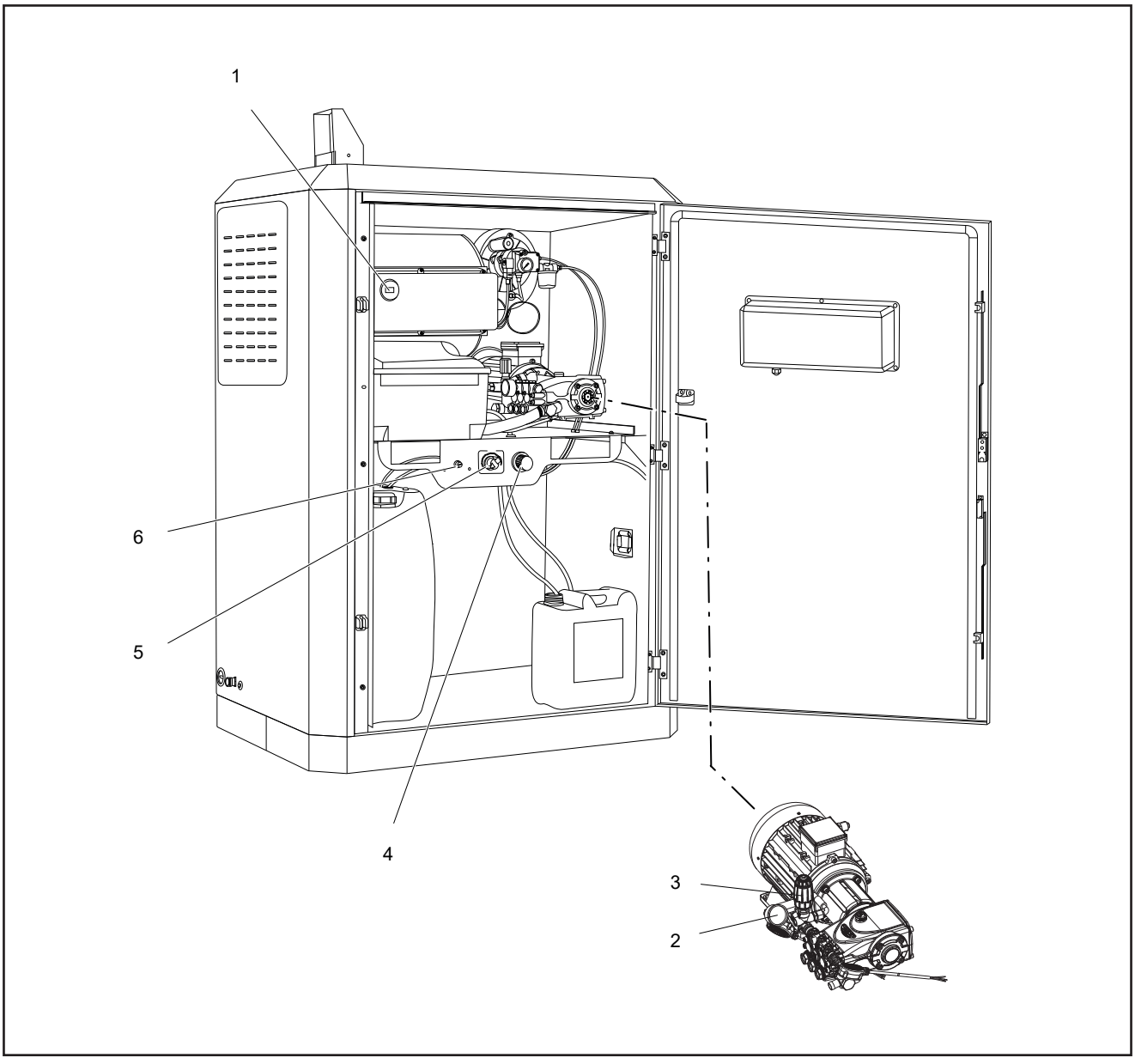


1	Trigger gun with spray lance	4	Socket for HP-Hose
2	Trigger lever	5	Notch for locking lever (safety arresting)
3	Locking lever (safety device)		

Fig. 6 - 3 Control elements of the trigger gun for Series HSC FR Oil

6.1.3 Indicator and control elements in the cabinet

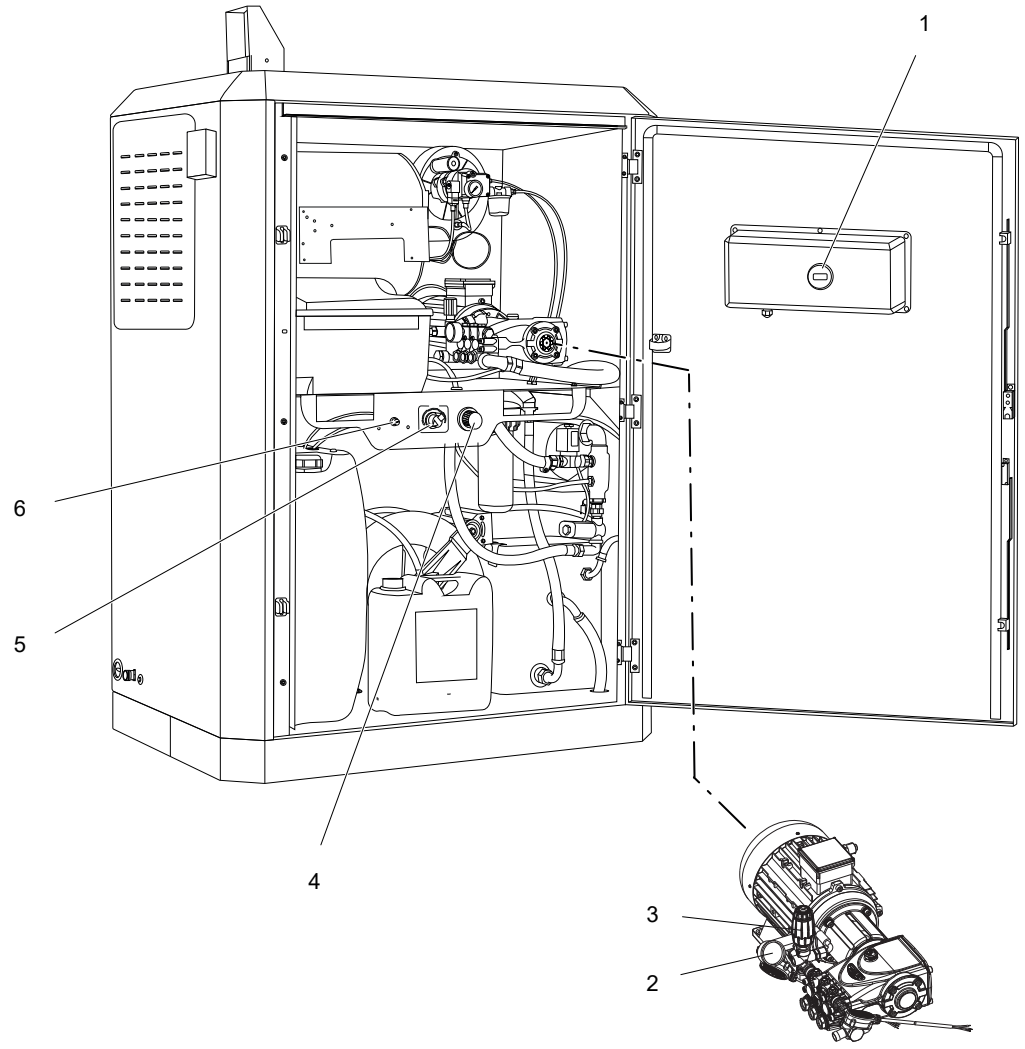
The following figure shows the control and indicator elements inside the cabinet for Series HSC-Oil.



1	Service hour meter	4	Detergent control valve
2	Pressure gauge	5	Thermostat (water temperature setting)
3	Unloader valve (variable pressure and quantity regulation)	6	Maximum Thermostat 95 °C (can be reset manually after triggering)

Fig. 6 - 4 Stationary Hotwater High Pressure Cleaners Series HSC-Oil, indicator and control elements (cabinet interior)

The following figure shows the control and indicator elements inside the cabinet for Series HSC FR Oil.



1	Service hour meter	4	Detergent control valve
2	Pressure gauge	5	Thermostat (water temperature setting)
3	Unloader valve (variable pressure and quantity regulation)	6	Maximum Thermostat 95 °C (can be reset manually after triggering)

Fig. 6 - 5 Stationary Hotwater High Pressure Cleaners Series HSC FR Oil, indicator and control elements (cabinet interior)

6.2 Measures for system operators before operation

WARNING

Perform measures by the system operator in a professional manner.

The measures for system operators prior to operation may only be carried out by authorised, trained and qualified personnel.

Before operation or at periodic intervals (see Section 8, Maintenance), proceed as follows for all system types:

- ▶ Check the oil level on the dipstick of the high pressure pump and top up to the „max.“ mark if necessary.

WARNING

Danger from unapproved fuel.

Use only fuel approved by the manufacturer.

The use of non-approved fuels can impair the operational safety of the high pressure cleaner.

This can endanger the life and limb of people.

CAUTION

Contaminated fuel can damage the high pressure cleaner.

Dirty, water-containing or highly sulphurous heating oil lead to burner malfunctions and higher emission levels.

This can result in damage to the high pressure cleaner.

CAUTION

Ensure that the fuel tank is always sufficiently filled.

The fuel tank must always be sufficiently filled for operation. The fuel supply hose must always be fully inserted to the bottom of the tank.

A prolonged fuel dry run can lead to damage to the fuel pump

- ▶ Fill the fuel tank (see Fig. 4 - 3 for Series HSC-Oil or Fig. 4 - 4 for Series HSC FR Oil) sufficiently with EL heating oil or Diesel oil. Only low-sulphur heating oil EL 51 603 or diesel oil may be used as fuel.

WARNING

Ensure that the exhaust gas chimney system is properly installed.

Only operate the high pressure cleaner with a properly installed exhaust gas chimney system.

Otherwise, life and limb of persons may be endangered.

Before commissioning the high pressure cleaner, authorised specialist personnel at system operator level must proceed as follows:

- Check the exhaust gas chimney system with the maintenance opening for the chimney sweep before commissioning and thereafter at periodic intervals (see section 8, Maintenance) for damage. Do not start up system with damaged exhaust pipes or switch off the system immediately in case of operation.
- Carry out an exhaust gas immission measurement at periodic intervals (see section 8, Maintenance) and readjust the burner if necessary (for setting values see section 5.3, burner setting values for oil-heated systems).

6.3 Notes on operation for specialist and operating personnel

WARNING

Ensure proper operation.

The system may only be adjusted and operated by qualified, trained personnel authorised by the system operator.

WARNING

Danger of electric shock.

In the event of accidents (e.g. due to life-threatening voltages) involving persons or to prevent accidents, switch off the system (see Section 6.4, EMERGENCY STOP - Switching off in the event of danger).

The water jet emerging from the trigger gun must not be directed at live electrical components or systems (machines, devices, lines, sockets, etc.).

Before cleaning, disconnect the cleaning objects such as electrical systems, assemblies or components from the power supply.

WARNING

Ensure that the high pressure jet is used correctly.

The water jet coming out of the trigger gun must not be directed at persons or animals.

In the event of accidents (e.g. danger to persons, injured persons in the work area) or to prevent accidents, switch off the system (see Section 6.4, EMERGENCY STOP - Switching off in the event of danger).

WARNING

Risk of burns from hot surfaces or water.

During operation, the surfaces of system parts, assemblies or components can become hot (e.g. non-insulated pipes, metal parts of the trigger gun and spray lance, heated water, etc.). Contact with hot surfaces or hot water can cause skin burns or scalding in persons.
Ensure that the system parts, assemblies or components as well as cleaning objects have cooled down before starting maintenance or repair work.

WARNING

Danger of poisoning by escaping exhaust gas.

The exhaust gas from the exhaust pipe must not be inhaled.

Inhalation of exhaust gas can lead to dizziness, nausea and death.

The design of the system distinguishes between two levels of access:

- **Level 1:**
  Skilled personnel authorised by the system operator to set system parameters and operation (see section 6.5, System setting and operation for skilled personnel):
  - Access to the control and indicator elements inside the cabinet via a lockable door
  - Adjustment of the desired operating parameters via the control elements inside the cabinet for:
    - Operating pressure
    - Water temperature
    - Quantity of water
    - Detergent additive.
  - Switching on the system functions via the following main switches (for Series HSC Oil) or push-buttons (for Series HSC FR Oil) on the control panel on the front of the cabinet door
    - Start - Stop: On - Off
    - Hot Water: On - Off
    - Detergent: On - Off

- **Level 2:**
  Operating personnel for carrying out cleaning work (see Section 6.6, System operation for operating personnel) with access for:
  - Switching on the system functions via the following main switches (for Series HSC Oil) or push-buttons (for Series HSC FR Oil):
    - Start - Stop: On - Off
    - Heisswasser: On - Off
    - Chemie: On - Off

6.4 EMERGENCY STOP - switch-off in case of danger

WARNING

In case of electrical accidents, never directly touch persons exposed life-threatening voltages.

In the event of accidents with persons at life-threatening voltages, immediately switch off the supply voltage to the high pressure cleaner or disconnect the power supply cable from the infrastructure mains plug. If possible, switch off the circuit breaker for the mains voltage.

Never touch the exposed person who has been involved in an accident directly. First aiders are also endangered by electric shock if they touch the person directly, in wet areas or over wet objects.

In extreme emergencies, without touching the injured person, use a dry garment, wooden slat or other insulating material to separate the person and mains voltage.

In case of accidents with persons or for accident prevention during device operation, perform an EMERGENCY STOP switch-off as follows:

- Disconnect the system from the power supply as follows
  - for Series HSC-Oil set the main switch Start - Stop (1, Abb. 6 - 1) to position 0
  - for Series HSC FR Oil press the push-button - Stop (1, Abb. 6 - 1). The push-button light is off.
- If necessary, if persons are still exposed to electric shock, switch off the power supply to the system via the circuit breaker (building connection) or disconnect the power supply cable from the mains socket.
- If necessary, activate the trigger gun until the high pressure cleaner is depressurised
- Close shut-off valve for water supply (water mains) if necessary.

6.5 System setting and operation for skilled personnel

General Information

Only qualified personnel authorised by the system operator may make settings inside the cabinet. This requires access to the key for opening the cabinet door.

For operation and system setting by authorised personnel, proceed as follows:

- If necessary, switch off the following system functions on the front of the cabinet door via the three main switches (Series HSC Oil) resp. the push-buttons (Series HSC FR Oil), see also Fig. 6 - 1:
  - Start - Stop
  - Hot Water
  - Detergent

for Series HSC-Oil: if necessary set the three main switches to position 0 resp.

for Series HSC FR Oil: If necessary press the push-buttons, if the push-button light is on. The push-button lights must be off.

- Open the shut-off valve of the tap water network.
- Connect the system to the electrical mains connection of the building using the power supply cable.
- Switch on the power supply via the circuit breaker resp. main switch on the building side.
- Unlock and open the cabinet door with the key.
- Inside the cabinet, set the thermostat (5, Fig. 6 - 4 for Series HSC-Oil, resp. 5, Fig. 6 - 5 for Series HSC FR Oil) for setting the water temperature to the „Off" position

WARNING

Before activating, hold the trigger gun and the spray lance tightly.

After activation of the trigger gun the emerging water jet exerts a jerky recoil force (see also Fig. 6 - 7).

This may result in unintentional jerking away from the selected cleaning object or the trigger gun slipping out of the hand, endangering the life and limb of persons.

- Unlock and pull the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) of the trigger gun.
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is on.

  The high pressure cleaner starts. The pump first delivers air from the HP-nozzle. After a short time, water then escapes.

WARNING

Risk of scalding due to hot water.

The hot water escaping from the high pressure jet must not come into contact with persons. Otherwise scalding may occur in persons.

- Inside the cabinet, set the Thermostat (5, Fig. 6 - 4 for Series HSC-Oil, resp. 5, Fg. 6-5 for Series HSC FR Oil) to the desired temperature.
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Hot Water (2, Fig. 6 - 1) to position 1
  - for Series HSC FR Oil: press the push-button Hot Water (2, Fig. 6 - 1). The push-button light is on.
- The operating pressure can be read off the pressure gauge (2, Fig. 6 - 4 for Series HSC-Oil, resp. 2, Fig. 6 - 5 for Series HSC FR Oil) while the trigger gun is activated.

By turning the unloader valve (see Fig. 6 - 6) clockwise, the operating pressure and water quantity on the high pressure pump will increase. Turning counterclockwise results in lower working pressure and reduced water quantity.

- If the trigger lever on the trigger gun is released, the high pressure cleaner switches to pressureless circulation operation. After 20 sec. circulation mode switches the system to stand-by mode. When the lever on the trigger gun is pulled again, the motor and the pump restart automatically.

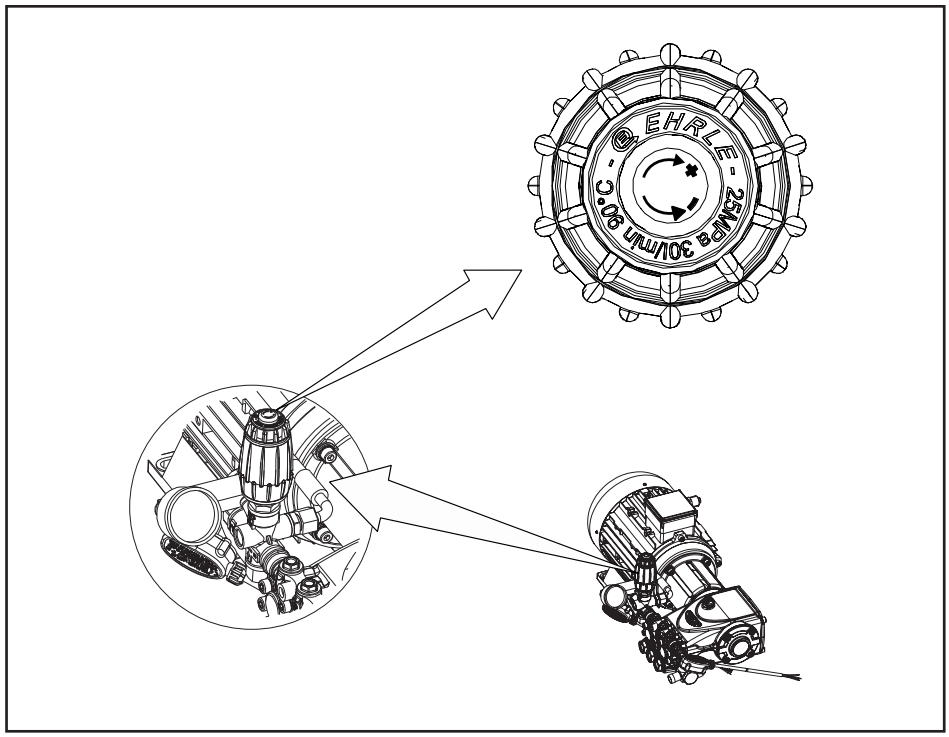


Fig. 6 - 6 Adjustment of the operating pressure at the unloader valve

General Information

If the system remains in stand-by mode for 20 minutes, the electronic control switches the high pressure cleaner off as programmed.

To resume operation

- for Series HSC-Oil: set the main switch Start - Stop to position 0 and then back to operating position 1.
- for Series HSC FR Oil: press the push-button Start - Stop. The push-button light is on.

- For adding detergent to the high pressure jet, the detergent control valve inside the cabinet can be set according to the required amount of detergent
- For the addition of detergent to the high pressure jet, the detergent control valve inside the cabinet can be set according to the desired amount of detergent
  - for Series HSC-Oil see 4, Fig. 6 - 4
  - for Series HSC FR Oil see 4, Fig. 6 - 5).

The procedure for the addition of detergents is described in section 6.7 (Use of detergents, chemistry).

- On the front of the cabinet door, the detergent admixture can be switched On/Off
  - for Series HSC-Oil: set the main switch Detergent (3, Abb. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Detergent (3, Abb. 6 - 1). The push-button light is on.
- The cabinet door must be closed during cleaning work.
- For safety reasons after completion of cleaning work
  - Lock the trigger lever of the trigger gun against unintentional switching on using the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is positioned in the notch for the locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. The system is switched off.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is off. The system is switched off.

6.6 System operation for operating personnel

General Information

The operation of the system by the operating personnel is limited to switching on/off the three system functions on the control panel on the front of the cabinet door via the three

- main switches for Series HSC-Oil.
- push-buttons for Series HSC FR Oil.

For cleaning operation by the operating personnel, proceed as follows:

- If necessary, open the shut-off valve of the tap water network.

WARNING

Before activating, hold the trigger gun and the spray lance tightly.

After activation of the trigger gun the emerging water jet exerts a jerky recoil force (see following figure).

This may result in unintentional jerking away from the selected cleaning object or the trigger gun slipping out of the hand, endangering the life and limb of persons.

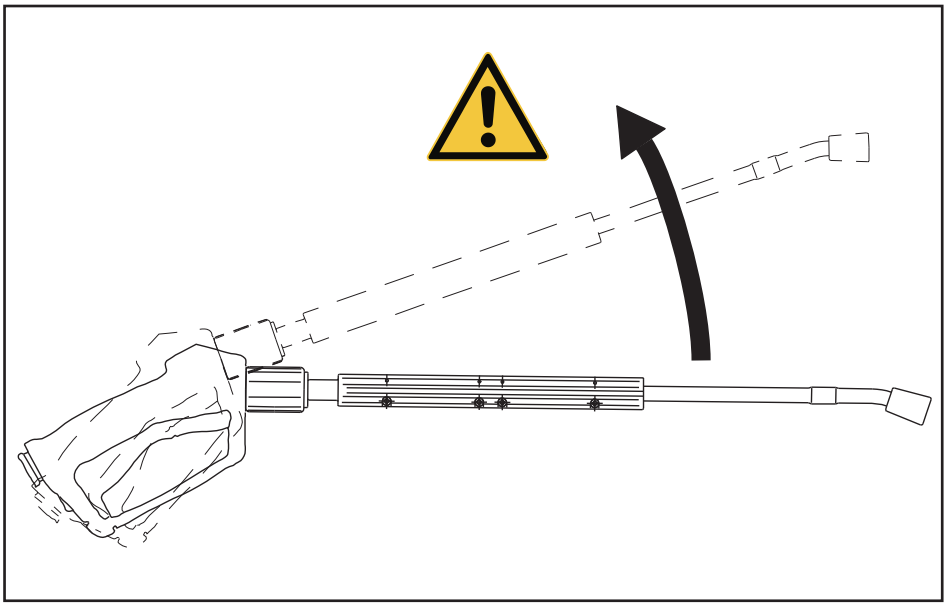


Fig. 6 - 7 Recoil force when switching on the trigger gun

- ▶ Unlock and pull the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) of the trigger gun.
- ▶ On the front of the cabinet door
  - ○ for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 1.
  - ○ for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is on.

  The high pressure cleaner starts. The pump first delivers air from the HP-nozzle. After a short time, water then escapes.
- ▶ If the trigger lever on the trigger gun is released, the high pressure cleaner switches to pressureless circulation operation. After 20 sec. circulation mode switches the system to stand-by mode. When the lever on the trigger gun is pulled again, the motor and the pump restart automatically.

General Information

If the system remains in stand-by mode for 20 minutes, the electronic control switches the high pressure cleaner off as programmed.

To resume operation

- ▶ for Series HSC-Oil: set the main switch Start - Stop to position 0 and then back to operating position 1.
- ▶ for Series HSC FR Oil: press the push-button Start - Stop. The push-button light is on.

WARNING

Risk of scalding due to hot water.

The hot water escaping from the high pressure jet must not come into contact with persons. Otherwise scalding may occur in persons.

- On the front of the cabinet door, hot water can be switched on at a preset temperature
  - for Series HSC-Oil: set the main switch Hot Water (2, Fig. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Hot Water (2, Fig. 6 - 1). The push-button light is on.
- On the front of the cabinet door, the detergent admixture can be switched On/Off
  - for Series HSC-Oil: set the main switch Detergent (3, Abb. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Detergent (3, Abb. 6 - 1). The push-button light is on.

  The procedure for the addition of detergents is described in section 6.7 (Use of detergents, chemistry).
- For safety reasons after completion of cleaning work
  - Lock the trigger lever of the trigger gun against unintentional switching on using the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is positioned in the notch for the locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. The system is switched off.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1). The push-button light is off. The system is switched off.

6.7 Use of detergents (chemistry)

For cleaning work with the high pressure cleaner, a cleaning detergent (chemical) can be added to the high pressure jet.

Access for setting the detergent quantity and filling the detergent container in the cabinet is restricted to qualified personnel authorised by the system operator.

WARNING

Only use permitted detergents.

Only use cleaning detergents approved by the manufacturer EHRLE. The use of inadmissible detergents can endanger the operational safety of the device and thus the life and limb of persons.

There is a risk of poisoning or caustic burns with cleaning detergents. Avoid contact with skin surface and eyes. Observe the manufacturer's safety data sheets. Keep cleaning agents out of the reach of unauthorized persons.

Observe specifications for neutral additive pH value 7 ... 9. Observe the instructions of the additive manufacturer, e.g. Personal Protective Equipment (PPE), waste water regulations.

WARNING

Risk of explosion due to use of inadmissible detergents.

Never aspirate solvent-containing liquids such as paint thinners, petrol, oil or similar liquids. The spray of solvents is highly flammable, explosive and toxic.

Observe the specifications of the additive manufacturers!

CAUTION

Observe the safety data sheets for the detergent agents or chemical additives.

Follow the manufacturer's instructions for detergent agents or chemical additives in the safety data sheets.

Unsuitable and unapproved detergent agents can damage the high pressure cleaner as well as the object to be cleaned.

The temperature specifications for the detergent agents and chemical additives must be observed during hot water operation.

Exceeding temperature limits of the detergent agents or chemical additives during hot water operation can cause damage to the high pressure cleaner.

CAUTION

Chemical dry run or inadmissible detergents can damage the high pressure cleaner.

Only open the detergent control valve when the suction hose for the detergents in the detergent container is fully inserted and the container is sufficiently filled with detergent.

Intake air causes damage to seals and pumps.

In order to protect the environment, we recommend using detergents sparingly. Observe the dosage recommendations on the container labels of the detergents.

An up-to-date list of approved detergents or chemical additives can be requested from EHRLE.

Observe the safety instructions provided with the cleaning agents used (usually on the packaging label).

For the use of cleaning agents, two detergent containers (each with a capacity of 20 l) can be placed in the space provided inside the cabinet (Fig. 4 - 3 for Series HSC-Oil, resp. Fig. 4 - 4 for Series HSC FR Oil).

6.7.1 Adjust the amount of detergent to be added

The cabinet door must be unlocked and opened with the key by authorised specialist personnel. Proceed as follows to set the amount of detergent to be added:

- Check the detergent container for filling, top up with approved detergent if necessary. For adding detergent
  - for Series HSC-Oil: initially, set the detergent control valve (4, Fig. 6 - 4) to position 0.
  - for Series HSC FR Oil: initially set the detergent control valve (4, Fig. 6 - 5) to position 0.
- Open the detergent control valve from position „0" according to the desired quantity of detergent

General Information

The more the detergent control valve is opened, the more amount of detergent is sucked in. Depending on the application, set the dosage via the detergent control valve.

6.7.2 Adding detergent

For cleaning with detergents proceed as follows:

- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Detergent (3, Abb. 6 - 1) to position 1.
  - for Series HSC FR Oil: press the push-button Detergent (3, Abb. 6 - 1). The push-button light is on.
- To remove the dirt, spray on the detergent sparingly and let it work for approx. 1 to 5 minutes.
- Then spray the loosened dirt with the high pressure jet.
- After using detergents, on the front of the cabinet door
  - for Series HSC-Oil: set the main switch Detergent (3, Abb. 6 - 1) to position 0.
  - for Series HSC FR Oil: press the push-button Detergent (3, Abb. 6 - 1). The push-button light is off.
- Rinse the high pressure cleaner for at least 30 seconds.

7 Decommissioning

7.1 Temporary decommissioning by operating personnel

After completion of cleaning works proceed as follows for a temporary decommissioning:

- If detergent has been added
  - for Series HSC-Oil: set the main switch Detergent (3, Fig. 6 - 1) to position 0.
  - for Series HSC FR Oil: press the push-button Detergent (3, Fig. 6 - 1), if the button light is on. The push-button light is off.

  Then rinse the high pressure cleaner for at least 30 seconds.
- After hot water operation
  - for Series HSC-Oil: set the main switch Hot Water (2, Fig. 6 - 1) to position 0.
  - for Series HSC FR Oil: press the push-button Hot Water (2, Fig. 6 - 1), if the button light is on. The push-button light is off.

  The high pressure cleaner must be operated with cold water for at least two minutes with the trigger gun open for cooling.
- Pull the lever of the trigger gun until the high pressure cleaner is depressurized.

WARNING

Lock the lever of the trigger gun after completion of cleaning work.

After deactivating the trigger gun, lock the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) against unintentional switching on by means of the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is correctly positioned in the notch for the locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).

Unintentional activation of the trigger gun after restarting the device can endanger life and limb of persons.

- Lock the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) of the trigger gun against unintentional switching on using the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is arrested in the notch for locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. The system is switched off.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1), if the button light is on. The push-button light is off. The system is switched off.
- If necessary, close the shut-off valve on the building side of the tap water network.

- If necessary, switch off the power supply via the circuit breaker resp. main switch on the building side.
- If necessary, disconnect the mains cable of the system from the mains connection of the building.

7.2 Temporary decommissioning by qualified personnel

After completion of cleaning works proceed as follows for a temporary decommissioning:

- If detergent has been added
  - for Series HSC-Oil: set the main switch Detergent (3, Fig. 6 - 1) to position 0.
  - for Series HSC FR Oil: press the push-button Detergent (3, Fig. 6 - 1), if the button light is on. The push-button light is off.

  Then rinse the high pressure cleaner for at least 30 seconds.
- After hot water operation
  - for Series HSC-Oil: set the main switch Hot Water (2, Fig. 6 - 1) to position 0.
  - for Series HSC FR Oil: press the push-button Hot Water (2, Fig. 6 - 1), if the button light is on. The push-button light is off.

  The high pressure cleaner must be operated with cold water for at least two minutes with the trigger gun open for cooling.
- Pull the lever of the trigger gun until the high pressure cleaner is depressurized

Lock the lever of the trigger gun after completion of cleaning work.

After deactivating the trigger gun, lock the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) against unintentional switching on by means of the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is correctly positioned in the notch for the locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).

Unintentional activation of the trigger gun after restarting the device can endanger life and limb of persons.

- Lock the trigger lever (3, Fig. 6 - 2 for Series HSC-Oil, resp. 2, Fig. 6 - 3 for Series HSC FR Oil) of the trigger gun against unintentional switching on using the locking lever (4, Fig. 6 - 2 for Series HSC-Oil, resp. 3, Fig. 6 - 3 for Series HSC FR Oil). Ensure that the locking lever is arrested in the notch for locking lever (6, Fig. 6 - 2 for Series HSC-Oil, resp. 5, Fig. 6 - 3 for Series HSC FR Oil).
- On the front of the cabinet door
  - for Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. The system is switched off.
  - for Series HSC FR Oil: press the push-button Start - Stop (1, Fig. 6 - 1), if the button light is on. The push-button light is off. The system is switched off.

- If necessary, unlock and open the cabinet door with the key.
- If necessary, move the following control elements inside the cabinet to switch-off position 0:
  - Thermostat (5, Fig. 6 - 4 for Series HSC-Oil, resp. 5, Fig. 6 - 5 for Series HSC FR Oil).
  - Detergent control valve (4, Fig. 6 - 4 for Series HSC-Oil, resp. 4, Fig. 6 - 5 for Series HSC FR Oil).
- If necessary, leave the unloader valve (3, Fig. 6 - 4 for Series HSC-Oil, resp. 3, Fig. 6 - 5 for Series HSC FR Oil) as it is.
- If necessary, close the shut-off valve on the building side of the tap water network.
- For decommissioning the system for a longer period of time, switch off the power supply to the system via the circuit breaker of the mains connection on the building side.
- Disconnect the power supply cable of the system from the mains connection of the building.

7.3 Decommissioning for a longer period of time

If the high pressure cleaner is to be taken out of operation for a longer period of time, refer to Section 7.1 resp. 7.2 and take it out of operation temporarily.

Store the high pressure cleaner and all accessories (trigger gun, spray lance, water inlet hose etc.) in a frost-protected location, refer also to Section 8.3.1 (Frost Protection).

8 Maintenance

WARNING

Carry out maintenance measures professionally.

Maintenance of the system may only be carried out by qualified, trained and and authorised personnel.

Before carrying out any maintenance work, take the system out of operation and disconnect it from the building's electrical supply.

8.1 General Information

The maintenance measures must be carried out professionally as well as regularly and mean for the system:

- Guarantee of operational safety.
- Achieving a long service life.
- Maintaining the performance.

8.2 EHRLE Maintenance and Inspection Contract

The company EHRLE offers with the sale of the system a maintenance contract or especially a safety inspection agreement. The maintenance contract includes:

- Maintenance and repair work
- Security inspection agreement.

The security inspection agreement includes the inspection according to:

- Guidelines for Liquid Sprayers (see section 2.15)
- Federal Immission Control Act (see section 2.12).

8.3 Maintenance work

Components which show increased wear or whose design duration has been exceeded or is exceeded before the next maintenance must be replaced as a precaution.

The following table contains the periodical maintenance work for the Stationary Hotwater High Pressure Cleaners of Series HSC-Oil and Series HSC FR Oil.

Period	Component	Measure	Authorised Personnel
Daily	Trigger gun	Check if trigger gun closes tightly; check function of mechanical locking to prevent unintentional switch-on; replace defective trigger gun.	Trained operator
	all HP-Hoses (inside /outside cabinet)	Check the HP-Hoses (see section 8.3.4).	Skilled worker (with access to cabinet interior)
	Electrical plug and cables (inside / outside cabinet)	Check plugs and cables for damage. Replace damaged plugs and/or cables immediately by an authorized customer service/electrical specialist.	Customer Service/ Electrical Specialist
	Fuel tank	Check fuel tank for sufficient filling.	Skilled worker (with access to cabinet interior)
Weekly or after 40 operating hours.	Check the oil condition in the oil tank at the pump.	With poor oil quality (milky etc.), change the oil according to section 8.3.3.	Skilled worker (with access to cabinet interior)
	Check the oil level in the oil tank on the pump.	Check pump oil level, top up oil if necessary (see section 8.3.3).	Skilled worker (with access to cabinet interior)
	Water inlet filter	Check filter for dirt and clean if necessary, see section 8.3.2.	Trained operator
	Filter from detergent hose	Check filter for dirt and clean if necessary.	Skilled worker (with access to cabinet interior)
	Detergent container	Check detergent container for sufficient filling.	Skilled worker (with access to cabinet interior)
	Drain hose for condensed water	Check for ground clearance, water retention and contamination, ensure free water drainage if necessary.	Skilled worker (with access to cabinet interior)
	Filter in float container	Check filter for dirt and clean if necessary.	Skilled worker (with access to cabinet interior)

Tab. 8 - 1 List of periodical maintenance work

Period	Component	Measure	Authorised Personnel
Monthly	Depending on system configuration: chimney adapter resp. chimney transition from square to round for chimney system Ø 150 mm.	Check the chimney adapter for damage. Check chimney transition for damage and tight fit.	Specialist personnel
	Pipes of the exhaust gas chimney system	Check for damage and tight fit.	Specialist personnel
	Flame tube	If necessary, remove flame tube.	Customer Service
	Fuel oil filter, ignition electrodes and flame plate.	Inspect, or on condition clean or adjust fuel oil filter, ignition electrodes and flame plate.	Customer Service
Monthly or after 200 operating hours	High pressure pump	Check pump for leakage. If more than three drops per minute call customer service.	Skilled worker (with access to cabinet interior) resp. Customer Service
Every six months or if required	HP-nozzle	Replace HP-nozzle.	Trained operator
	Check all piping in the entire system for internal deposits.	Operate system with spray lance without HP-nozzle. If the operating pressure at the pressure gauge exceeds 3 MPa, the system must be descaled. The same applies if an operating pressure of more than 0.7-1 MPa is detected during operation without a high pressure line (water exits freely at the high pressure outlet).	Skilled worker (with access to cabinet interior) trained on descaling procedure
	Filter in the low-water cut-off.	Check filter for dirt and clean if necessary.	Skilled worker (with access to cabinet interior)
	Burner	Adjust burner.	Customer Service

Tab. 8 - 1 List of periodical maintenance work

Period	Component	Measure	Authorised Personnel
Every six months or after 1000 operating hours	High pressure pump	Change the oil according to section 8.3.3.	Skilled worker (with access to cabinet interior)
	Check the entire system for dirt, damage and function	Visual inspection of the system, check high pressure connections for leaks, check overflow valve for leaks, check high pressure hoses, check pressure tank, decalcify heating coil, clean / replace ionisation electrode, adjust burner.	Customer Service
	Heating coil.	Desulphurisation and soot removal.	Customer Service
Annually	Safety check for the entire system.	Carry out a safety check in accordance with the respective national regulations of the legislator for liquid sprayers.	Qualified expert
		Inspection in accordance with the Federal Immission Act (see section 2.12). Flue gas measurement in connection with inspection of the exhaust gas chimney system by the district chimney sweep.	Qualified expert
With customer service	Exhaust gas immission measurement.	Carry out an exhaust gas measurement as part of customer service.	Customer Service
Annually before the onset of frost weather (winter half year)	Anti freeze tank (WAB)	Completely clean or vacuum out the inside of the WAB (6, Fig. 3 - 5).	Skilled worker (with access to cabinet interior)
	Water filter between WAB and pump.	Clean water filter.	Skilled worker (with access to cabinet interior)

Tab. 8 - 1 List of periodical maintenance work

8.3.1 Frost protection

General Information

For locations of Stationary Hotwater High Pressure Cleaners with environmental conditions below freezing point, EHRLE offers detailed advice.

The Series HSC FR Oil are units with frost protection and allow operation in locations with ambient conditions at temperatures up to -20 °C.

For optimum protection, store the high pressure cleaner in a frost-protected area.

If the device is exposed to temperatures below freezing point during temporary or prolonged decommissioning (e.g. storage in warehouse), frost protection must be provided.

8.3.2 Cleaning the filter in water inlet

To clean the filter proceed as follows:

- ▶ Close water inlet.
- ▶ Unscrew the water inlet hose from the unit.
- ▶ Use a screwdriver to push the filter out of the connection.
- ▶ Clean the filter.
- ▶ Reassemble in reverse order.

8.3.3 Oil change

Use the following type of oil to change the oil in the gear unit of the high pressure pump:

- Engine oil SAE 10W40.

To change the oil in the gearbox of the high pressure pump, proceed as follows:

- ▶ Remove the oil dipstick.
- ▶ Extract the oil (observe environmental protection when handling waste oil).
- ▶ Fill oil up to the „MAX" mark on the oil dipstick.

8.3.4 Checking the HP-Hoses

WARNING

Operation with worn, damaged or repaired HP-Hoses can endanger life and limb of persons.

Ensure that HP-Hoses are removed immediately in the case of:

- Signs of wear.
- Signs indicating repairs to the HP-Hose.
- Overaging and low durability.

Bursting or leaky HP-Hoses can cause hot high pressure water or steam to escape. This can endanger life and limb of persons.

Before each commissioning of the high pressure cleaners, carry out a visual inspection of the HP-Hoses for damage. Every HP-Hose must comply with the safety regulations and be marked with:

- Permissible operating pressure.
- Permissible operating temperature.
- Date of manufacture
- Manufacturer.

Replace the HP-Hose at the slightest sign of damage.

Only use spare parts recommended by the manufacturer (see spare parts catalogue).

9 Troubleshooting

WARNING

Carry out troubleshooting and rectification properly.

Troubleshooting of the system may only be carried out by qualified, trained and authorised personnel.

Before troubleshooting inside the cabinet, take the system out of operation and disconnect the mains connection cable from the mains connection of the building.

9.1 Troubleshooting table

For troubleshooting purposes, possible error causes are listed in the following table. Clean the contaminated parts (filter, HP-nozzle, etc.) to eliminate possible faults.

Replace defective parts.

Error	Possible cause	Remedying	Authorised personnel
System cannot be switched on	Check that the power supply cable is plugged in.	Connect the power supply cable to the building power supply	Trained operator
	Building supply circuit breaker has tripped.	Switch the circuit breaker on again.	Trained operator
	Check if power supply cable is defective.	Replace defective power supply cable.	Customer Service/ Electrical Specialist
	Circuit breaker trips again after repeated switching on.	If building power supply is OK, system defective; disconnect power supply cable and contact customer service.	Customer Service
	Water level in float container too low.	Locate the cause of the low water level (water inlet blocked, too low or too low due to contamination, dirty filter in the water inlet, dirty filter in the low-water cut-off etc.).	Skilled worker (with access to cabinet interior).
	System control circuits or components defective.	Replace defective components.	Customer Service

Tab. 9 - 1 Troubleshooting table

Error	Possible cause	Remedying	Authorised personnel
System switched off during operation.	Water level in float container too low.	Locate the cause of the low water level (water inlet blocked, too low or too low due to contamination, dirty filter in the water inlet, dirty filter in the low-water cut-off etc.).	Skilled worker (with access to cabinet interior).
	Low-water cut-off defective.	Replace defective low-water cut-off.	Customer Service
	Fuel tank is empty.	Fill fuel tank sufficiently.	Skilled worker (with access to cabinet interior).
	Motor of high pressure cleaner overheated.	Allow motor to cool down, with Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0. with Series HSC FR Oil the push-button light of Start - Stop (1, Fig. 6 - 1) is off. After motor cooling: with Series HSC-Oil: set the main switch Start - Stop to position 1. with Series HSC FR Oil press the push-button Start - Stop, the push-button light is on.	Skilled worker (with access to cabinet interior).
	With series HSC-Oil fuse F2 defective. With series HSC FR Oil fuse F4 defective.	Switch off the power supply to the system and disconnect the power supply cable from the mains supply. Unscrew the protective cover from the electrical control box and check the fuse F2 resp. fuse F4.	Skilled worker (with access to cabinet interior) / Customer Service
	System control circuits or components defective.	Replace defective components.	Customer Service
System has switched off in stand-by mode.	System was in stand-by mode for 20 minutes. Electronic control has switched off high pressure cleaner according to program.	To resume operation, with Series HSC-Oil: set the main switch Start - Stop (1, Fig. 6 - 1) to position 0 and then back to operation position 1. with Series HSC FR Oil press the push-button Start - Stop (1, Fig. 6 - 1), the push-button light is on.	Trained operator

Tab. 9 - 1 Troubleshooting table

Error	Possible cause	Remedying	Authorised personnel
No pressure build-up with high pressure cleaners	High pressure nozzle dirty or defective.	Clean or replace high pressure nozzle.	Trained operator
	Filter in water inlet dirty.	Clean the filter, see section 8.3.2.	Trained operator
	Water inflow volume is too low.	Ensure sufficient water inflow volume.	Skilled worker (with access to cabinet interior).
	One or more supply lines of the pump are clogged.	Remove the blockage in the supply line.	Skilled worker (with access to cabinet interior).
	One or more supply lines of the pump are leaking.	Replace leaking supply lines.	Customer Service
	Detergent control valve is leaking.	Replace leaking detergent control valve.	Customer Service
	Unloader valve is contaminated.	Clean the unloader valve.	Customer Service
	Unloader valve is defective.	Replace defective unloader valve.	Customer Service
	High pressure pump valves are dirty or defective.	Clean or replace valves.	Customer Service
	Cuffs of the high pressure pump are dirty or defective.	Clean or replace cuffs.	Customer Service
No water-heating, Series HSC-Oil: main switch Start - Stop is in position 1, Series HSC FR Oil: push-button light Start - Stop is on.	Thermostat is in „Off" position (5, Fig. 6 - 4 for Series HSC-Oil or 5, Fig. 6-5 for Series HSC FR Oil).	Set the Thermostat to the desired temperature.	Skilled worker (with access to cabinetinterior).

Tab. 9 - 1 Troubleshooting table

Error	Possible cause	Remedying	Authorised personnel
Continued	Operating pressure below 25 bar.	Check causes for operating pressure below 25 bar.	Skilled worker (with access to cabinet interior).
	Oil burner does not work or is defective.	Check oil burner resp. replace defective oil burner.	Customer Service
	System components or system control circuits defective (pressure switch, flow monitor, ETRONIC control unit, etc.).	Replace defective components.	Customer Service
No or insufficient detergent admixture, Series HSC-Oil: main switch Start - Stop is in position 1, Series HSC FR Oil: push-button light Start - Stop is on	Detergent container is empty.	Fill detergent container sufficiently.	Skilled worker (with access to cabinet interior).
	Detergent control valve is in position 0 (4, Fig. 6 - 4 for Series HSC-Oil, resp. 4, Fig. 6-5 for Series HSC FR Oil).	Open detergent control valve to the desired quantity of detergent.	Skilled worker (with access to cabinet interior).
	Filter from detergent hose or detergent hose contaminated or clogged.	Clean filter or detergent hose or remove blockages.	Skilled worker (with access to cabinet interior).
	Relay K3 defective.	Check Relay K3 resp. replace it.	Skilled worker (with access to cabinet interior) / Customer Service
	Modules of the detergent admixture defective.	Replace defective modules.	Customer Service

Tab. 9 - 1 Troubleshooting table

9.2 Replacement of components and parts

Replace the defective components and parts.

Only use spare parts recommended and approved by the manufacturer

10 Circuit diagrams

10.1 HSC823 Oil

Fig. 10 - 1 HSC823 Oil (Standard/INOX), circuit diagram (Page 1 of 5)

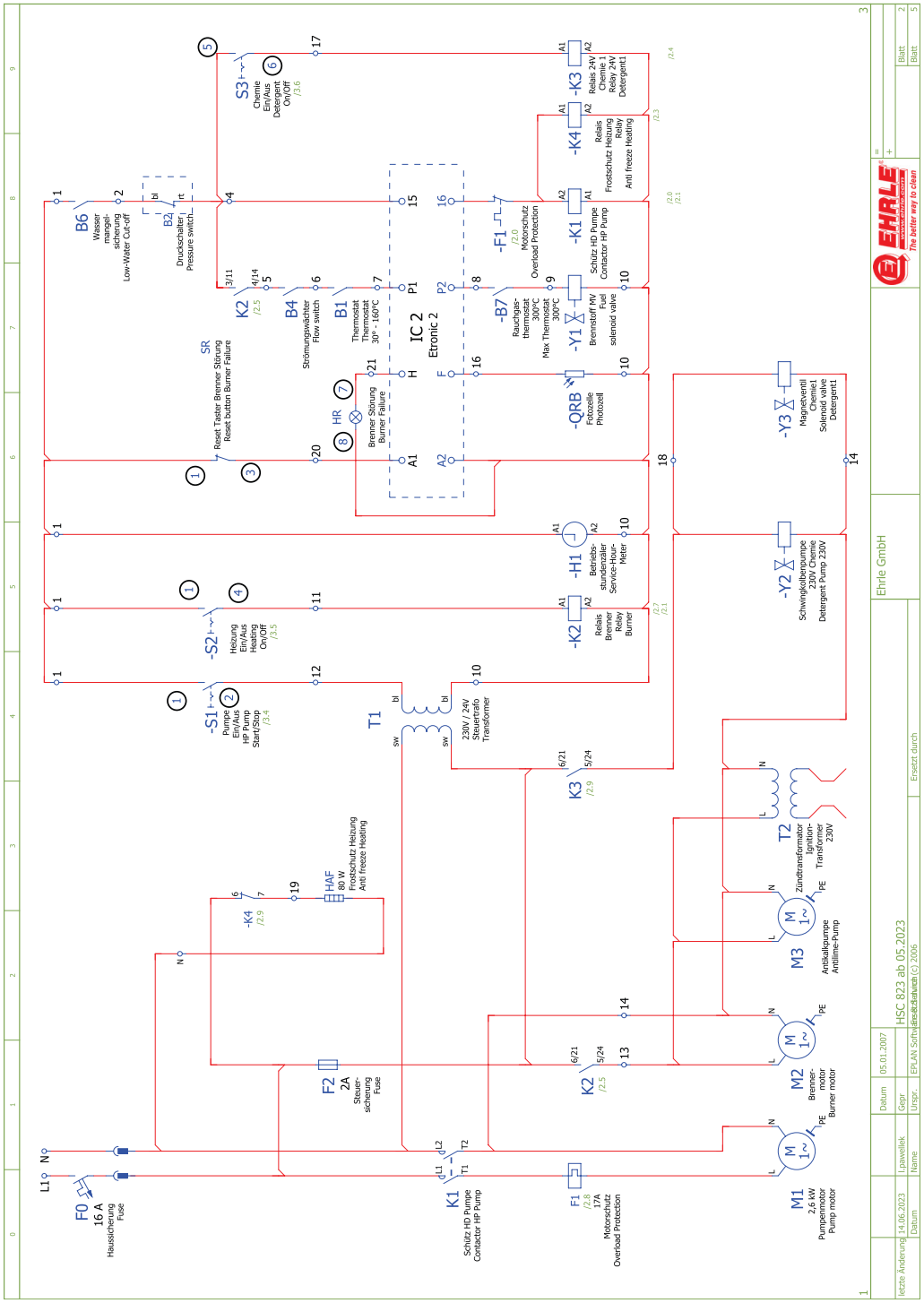


Fig. 10 - 2 HSC823 Oil (Standard/INOX), circuit diagram (Page 2 of 5)

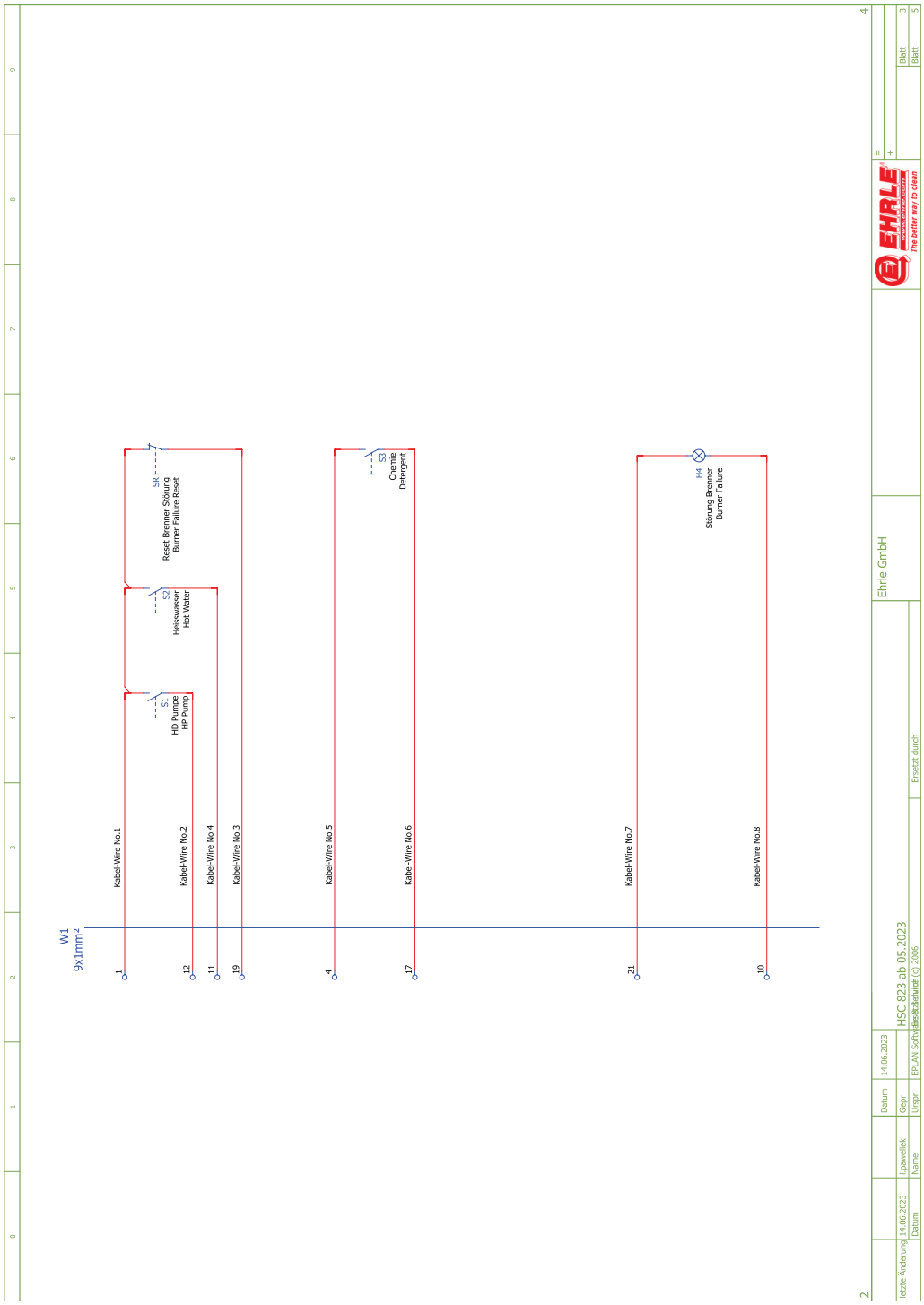
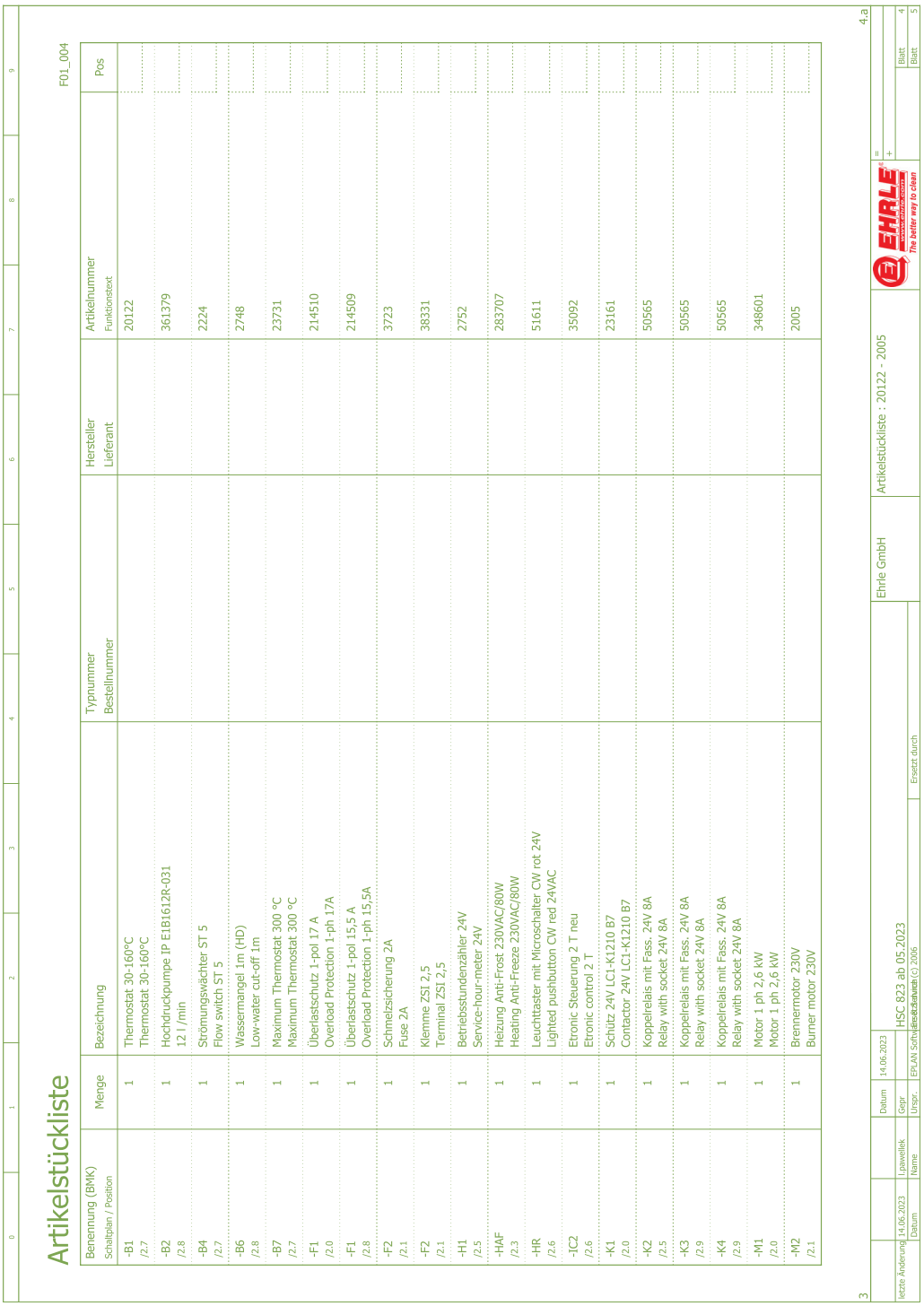


Fig. 10 - 3 HSC823 Oil (Standard/INOX), circuit diagram (Page 3 of 5)



Artikelstückliste

F01_004

Benennung (BMK) / Schaltplan / Position	Menge	Bezeichnung	Typnummer / Bestellnummer	Hersteller / Lieferant	Artikelnummer / Funktionstext	Pos
-B1 /2.7	1	Thermostat 30-160°C Thermostat 30-160°C			20122	
-B2 /2.8	1	Hochdruckpumpe IP E1B1612R-031 12 l /min			361379	
-B4 /2.7	1	Strömungswächter ST 5 Flow switch ST 5			2224	
-B6 /2.8	1	Wassermangel 1m (HD) Low-water cut-off 1m			2748	
-B7 /2.7	1	Maximum Thermostat 300 °C Maximum Thermostat 300 °C			23731	
-F1 /2.0	1	Überlastschutz 1-pol 17 A Overload Protection 1-ph 17A			214510	
-F1 /2.8	1	Überlastschutz 1-pol 15,5 A Overload Protection 1-ph 15,5A			214509	
-F2 /2.1	1	Schmelzsicherung 2A Fuse 2A			3723	
-F2 /2.1	1	Klemme ZSI 2,5 Terminal ZSI 2,5			38331	
-H1 /2.5	1	Betriebsstundenzähler 24V Service-hour-meter 24V			2752	
-HAF /2.3	1	Heizung Anti-Frost 230VAC/80W Heating Anti-Freeze 230VAC/80W			283707	
-HR /2.6	1	Leuchttaster mit Microschalter CW rot 24V Lighted pushbutton CW red 24VAC			51611	
-IC2 /2.6	1	Etronic Steuerung 2 T neu Etronic control 2 T			35092	
-K1 /2.0	1	Schütz 24V LC1-K1210 B7 Contactor 24V LC1-K1210 B7			23161	
-K2 /2.5	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K3 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K4 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-M1 /2.0	1	Motor 1 ph 2,6 kW Motor 1 ph 2,6 kW			348601	
-M2 /2.1	1	Brennermotor 230V Burner motor 230V			2005	

Ehrle GmbH

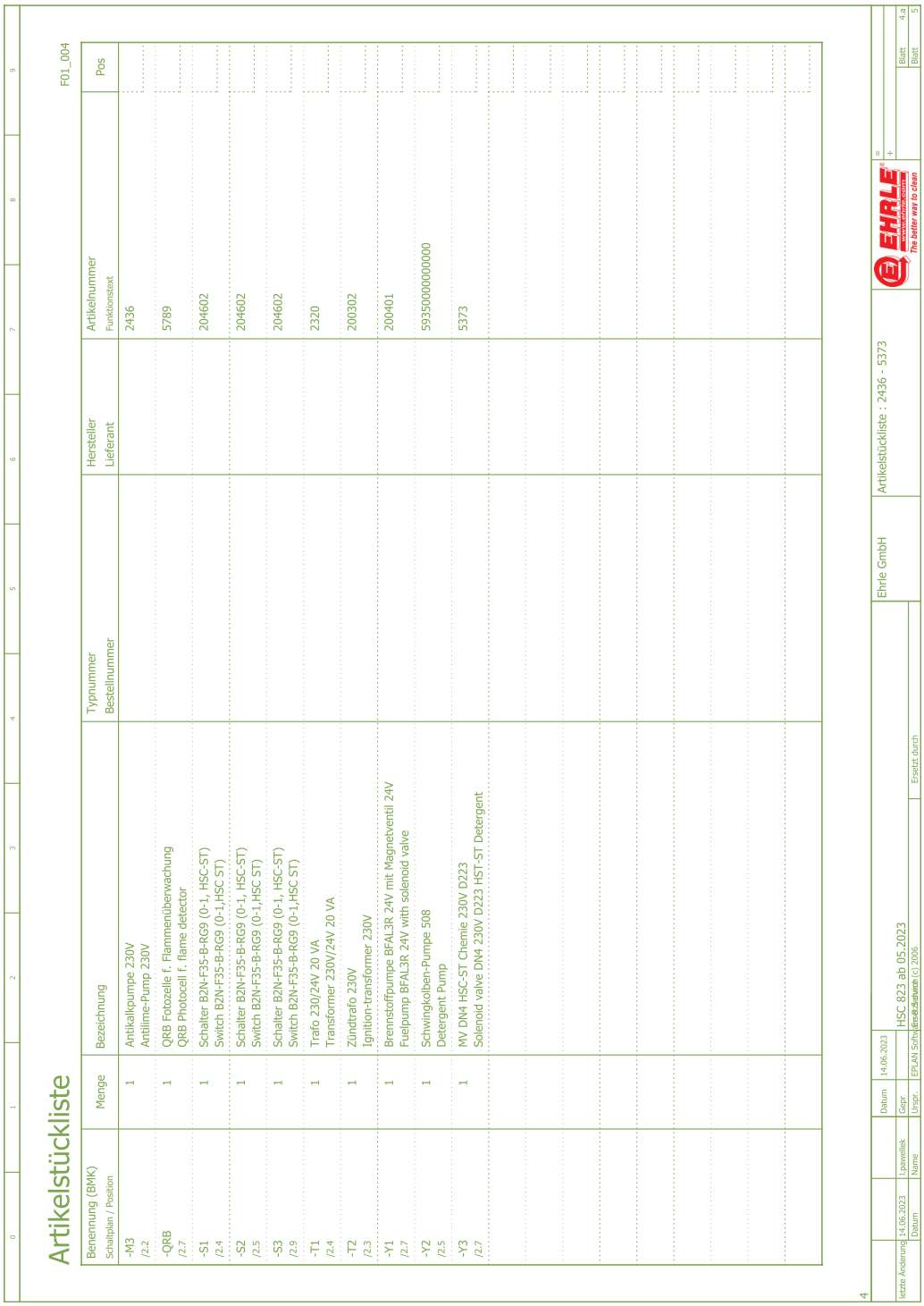
Artikelstückliste : 20122 - 2005

HSC 823 ab 05.2023

Erstellt durch: EPLAN Software & Service GmbH & Co. KG (c) 2006

Blatt 4 / Blatt 5

Fig. 10 - 4 HSC823 Oil (Standard/INOX), circuit diagram (Page 4 of 5)



Artikelstückliste

Benennung (BMK) / Schaltplan / Position	Menge	Bezeichnung	Typnummer / Bestellnummer	Hersteller / Lieferant	Artikelnummer / Funktionstext	Pos
-M3 /2.2	1	Antikalkpumpe 230V Antilime-Pump 230V			2436	
-QRB /2.7	1	QRB Fotozelle f. Flammenüberwachung QRB Photocell f. flame detector			5789	
-S1 /2.4	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-S2 /2.5	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-S3 /2.9	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-T1 /2.4	1	Trafo 230/24V 20 VA Transformer 230V/24V 20 VA			2320	
-T2 /2.3	1	Zündtrafo 230V Ignition-transformer 230V			200302	
-Y1 /2.7	1	Brennstoffpumpe BFAL3R 24V mit Magnetventil 24V Fuelpump BFAL3R 24V with solenoid valve			200401	
-Y2 /2.5	1	Schwingkolben-Pumpe 508 Detergent Pump			5935000000000	
-Y3 /2.7	1	MV DN4 HSC-ST Chemie 230V D223 Solenoid valve DN4 230V D223 HST-ST Detergent			5373	

Ehrle GmbH

Artikelstückliste : 2436 - 5373

HSC 823 ab 05.2023

F01_004

Fig. 10 - 5 HSC823 Oil (Standard/INOX), circuit diagram (Page 5 of 5)

10.2 HSC1140 Oil and HSC1240 Oil

Fig. 10 - 6 HSC1140 Oil and HSC1240 Oil (Standard/INOX), circuit diagram (Page 1 of 5)

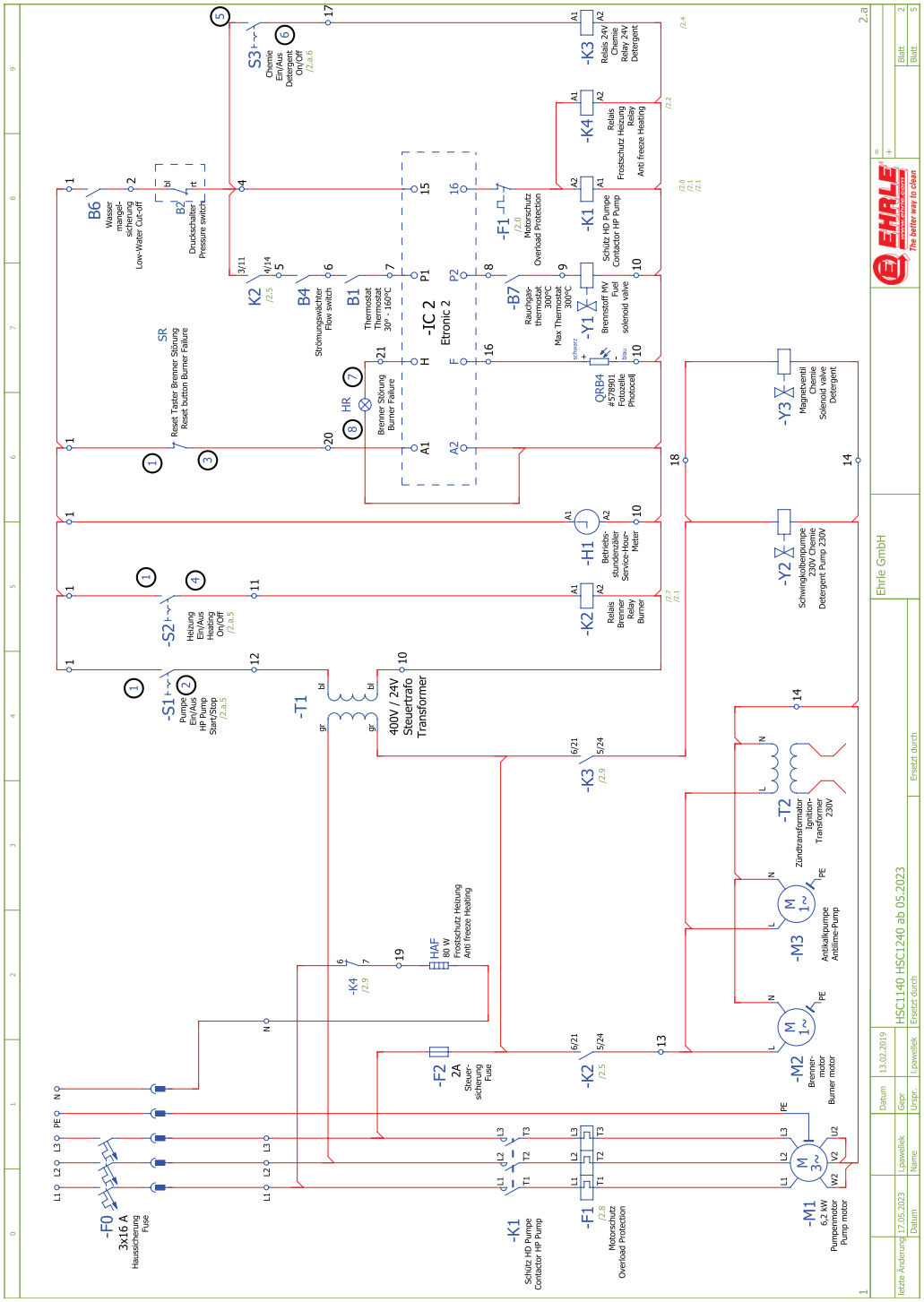


Fig. 10 - 7 HSC1140 Oil and HSC1240 Oil (Standard/INOX), circuit diagram (Page 2 of 5)

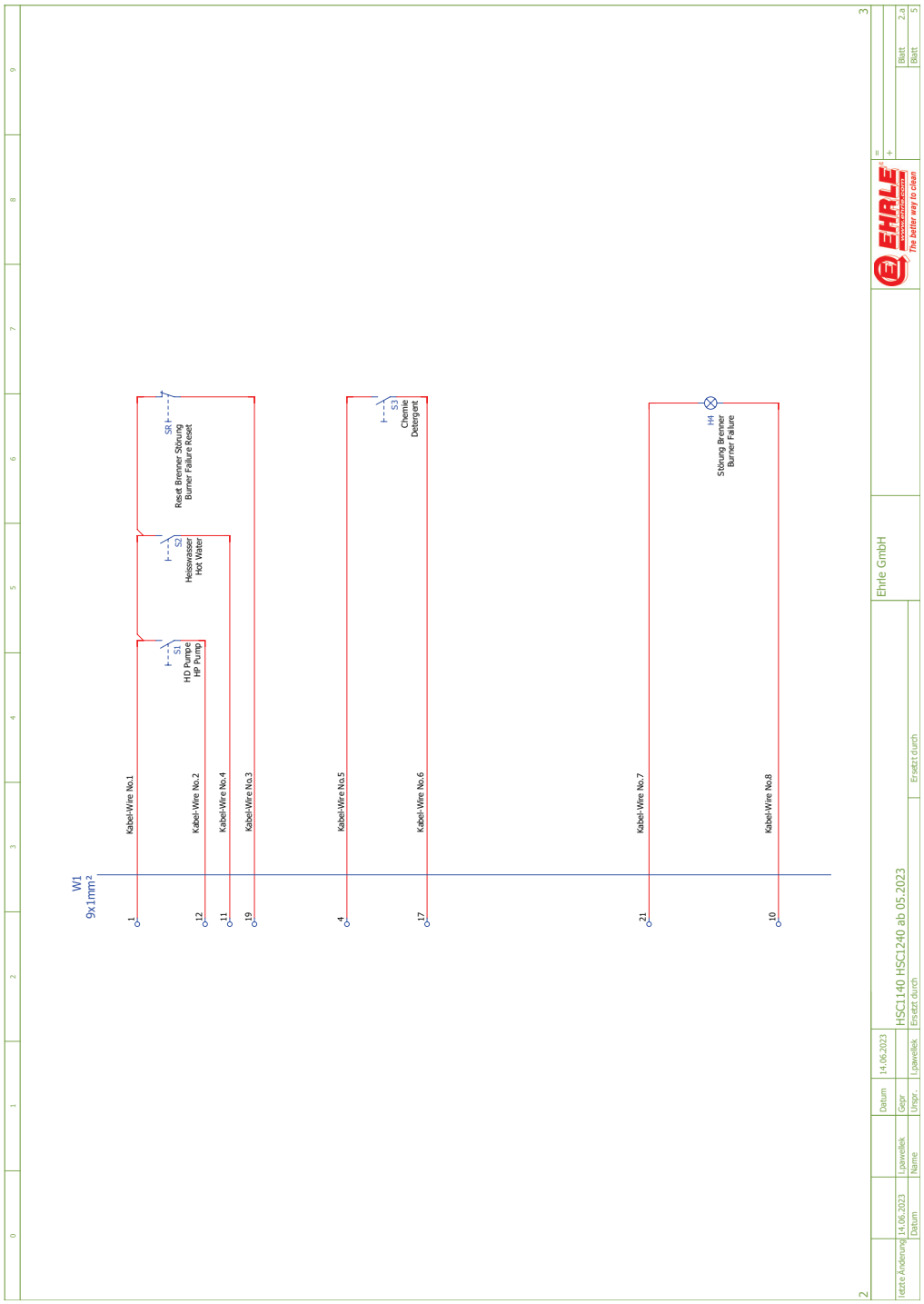


Fig. 10 - 8 HSC1140 Oil and HSC1240 Oil (Standard/INOX), circuit diagram (Page 3 of 5)

Artikelstückliste

F01_004

Benennung (BMK) Schaltplan / Position	Menge	Bezeichnung	Typnummer Bestellnummer	Hersteller Lieferant	Artikelnummer Funktionstext	Pos
-B1 /2.7	1	Thermostat 30-160°C Thermostat 30-160°C			20122	
-B4 /2.7	1	Strömungswächter ST 5 Flow switch ST 5			2224	
-B6 /2.8	1	Wassermangel 1m (HD) Low-water cut-off 1m			2748	
-B7 /2.7	1	Maximum Thermostat 300 °C Maximum Thermostat 300 °C			23731	
-F1 /2.0	1	Überlastschutz 3-pol. 14,5 A Overload protection 3-ph 14,5A			214508	
-F2 /2.1	1	Schmelzsicherung 2A Fuse 2A			3723	
-F2 /2.1	1	Klemme ZSI 2,5 Terminal ZSI 2,5			38331	
-H1 /2.6	1	Betriebsstundenzähler 24V Service-hour-meter 24V			2752	
-HAF /2.2	1	Heizung Anti-Frost 230VAC/80W Heating Anti-Freeze 230VAC/80W			283707	
-IC2 /2.6	1	Etronic Steuerung 2 T neu Etronic control 2 T			35092	
-K1 /2.0	1	Schütz 24V LC1-K1210 B7 Contactor 24V LC1-K1210 B7			23161	
-K2 /2.5	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K3 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K4 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-M1 /2.0	1	Motor 3 ph 6,2kW Motor 3-ph 6,2kW			355601	
-M2 /2.1	1	Brennermotor 230V Burner motor 230V			2005	
-M3 /2.2	1	Antikalkpumpe 230V Antilime-Pump 230V			2436	
-QRB4 /2.7	1	Fotozelle QRB4 700mm Photocell QRB4 700mm			578901	
-S1 /2.4	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	

2.a 3.a

letzte Änderung 08.09.2020 l.pawellek | Datum 08.09.2020 | Gepr | Urspr. l.pawellek | HSC1140 HSC1240 ab 05.2023 | Ersetzt durch | Ehrle GmbH | Artikelstückliste : 20122 - 204602 | EHRLE www.ehrle.com The better way to clean | Blatt 3 | Blatt 5

Fig. 10 - 9 HSC1140 Oil and HSC1240 Oil (Standard/INOX), circuit diagram (Page 4 of 5)

F01_004

Artikelstückliste

Benennung (BMK) Schaltplan / Position	Menge	Bezeichnung	Typnummer Bestellnummer	Hersteller Lieferant	Artikelnummer Funktionstext	Pos
-S2 /2.5	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-S3 /2.9	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-T1 /2.4	1	Trafo 400/24V 20VA Transformer 400/24V 20VA			2648	
-T2 /2.3	1	Zündtrafo 230V Ignition-transformer 230V			200302	
-Y1 /2.7	1	Brennstoffpumpe BFAL3R 24V mit Magnetventil 24V Fuelpump BFAL3R 24V with solenoid valve			200401	
-Y2 /2.6	1	Schwingkolben-Pumpe 508 Detergent Pump			5935000000000	
-Y3 /2.7	1	MV DN4 HSC-ST Chemie 230V D223 Solenoid valve DN4 230V D223 HST-ST Detergent			5373	

letzte Änderung 23.03.2020 l.pawellek | Datum 23.03.2020 | Gepr | Urspr. l.pawellek | HSC1140 HSC1240 ab 05.2023 | Ersetzt durch | Ehrle GmbH | Artikelstückliste : 204602 - 5373 | EHRLE The better way to clean | Blatt 3.a | Blatt 5

Fig. 10 - 10 HSC1140 Oil and HSC1240 Oil (Standard/INOX), circuit diagram (Page 5 of 5)

10.3 HSC823 UK Oil and HSC923 UK Oil

Fig. 10 - 11 HSC823 UK Oil and HSC923 UK Oil (Standard/INOX), circuit diagram (Page 1 of 5)

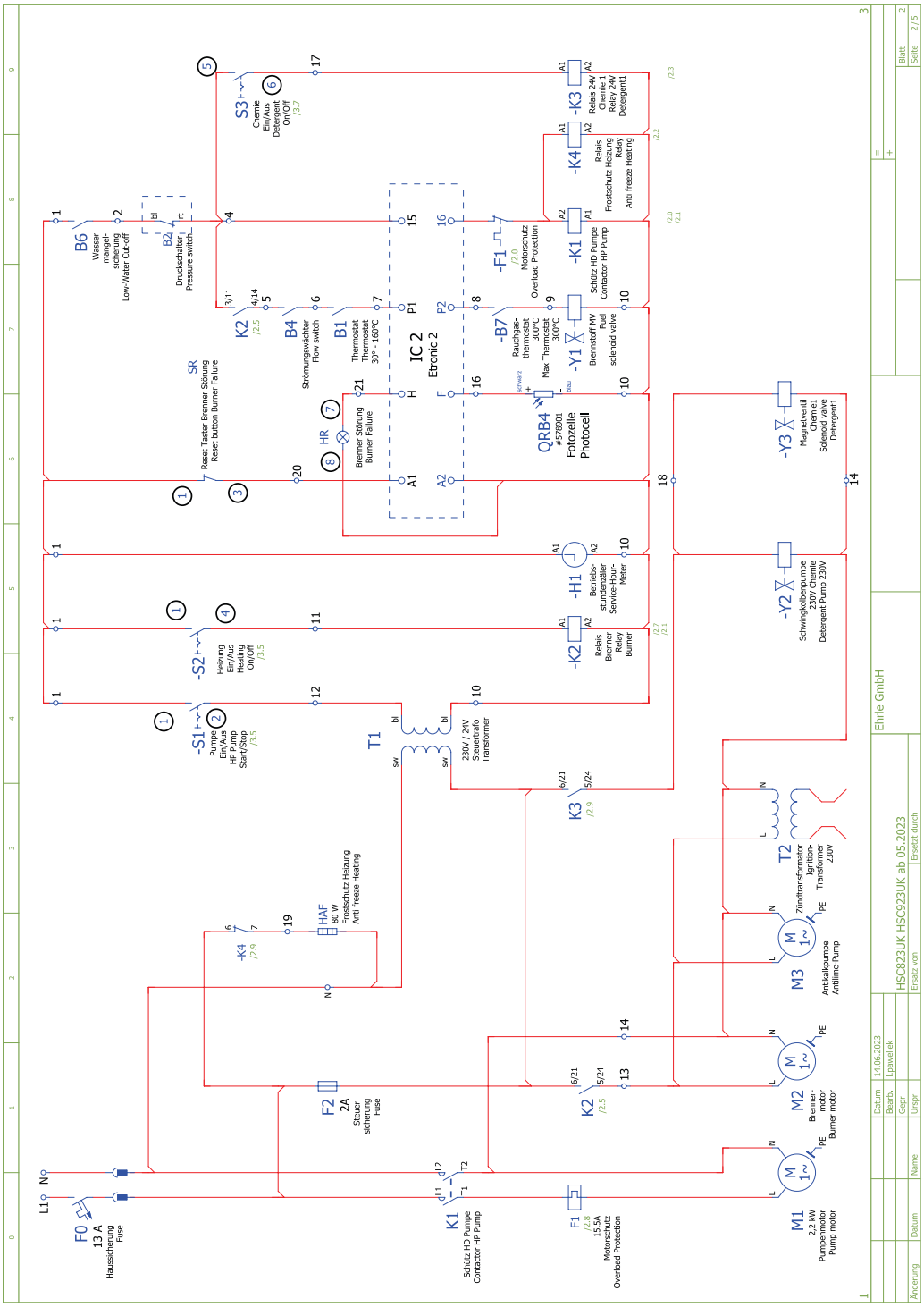


Fig. 10 - 12 HSC823 UK Oil and HSC923 UK Oil (Standard/INOX), circuit diagram (Page 2 of 5)

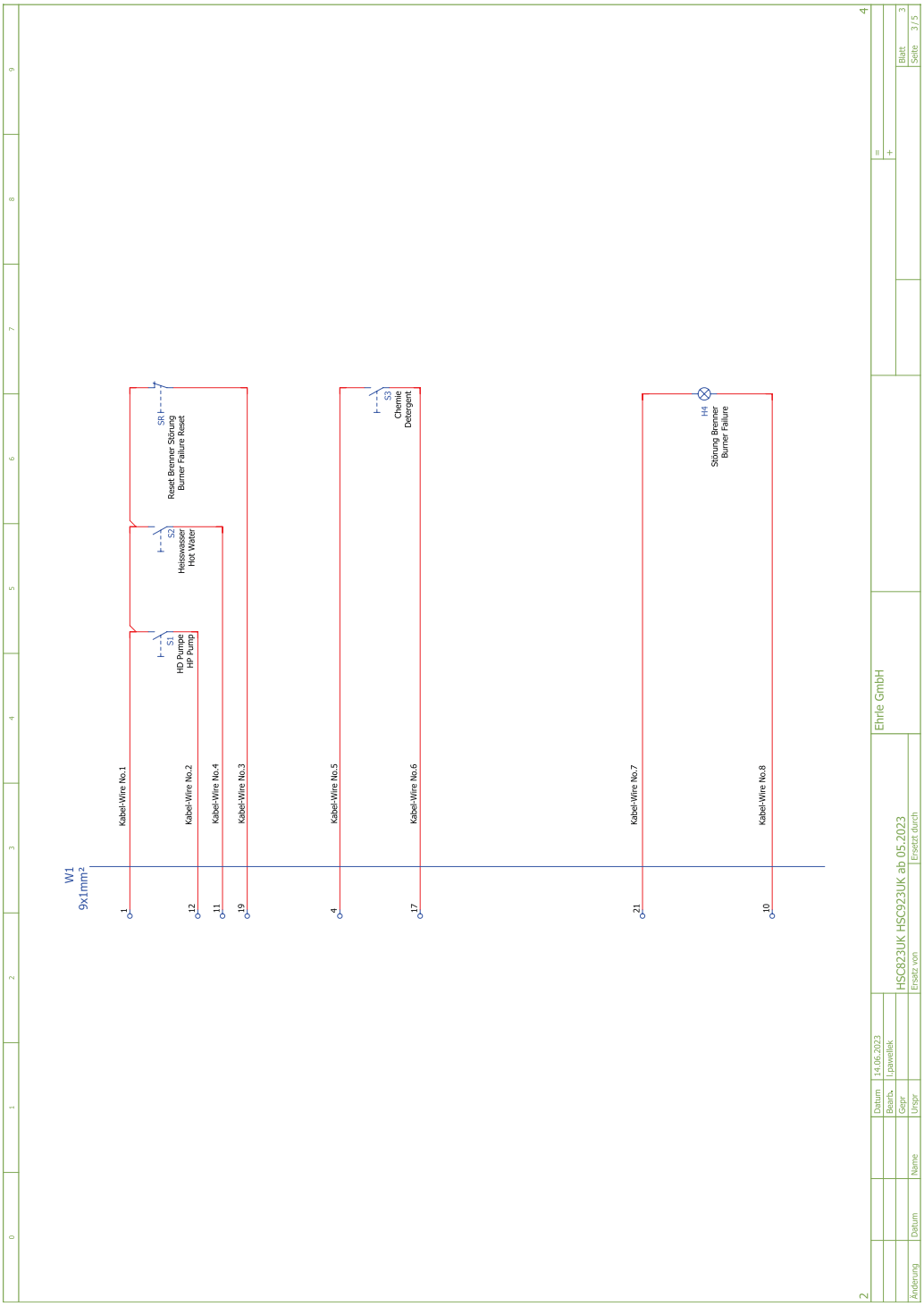
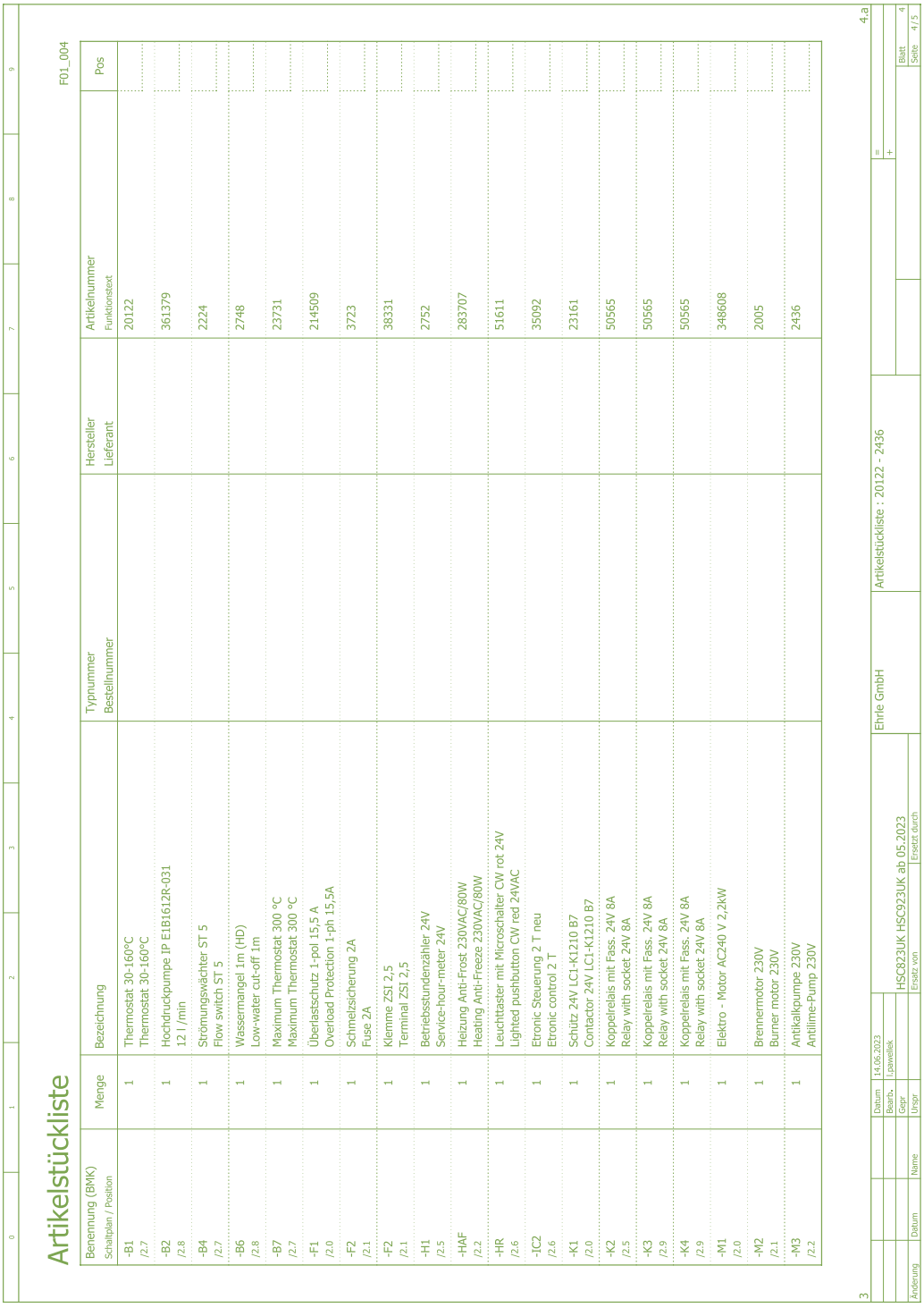


Fig. 10 - 13 HSC823 UK Oil and HSC923 UK Oil (Standard/INOX), circuit diagram (Page 3 of 5)



Artikelstückliste

F01_004

Benennung (BMK) Schaltplan / Position	Menge	Bezeichnung	Typnummer Bestellnummer	Hersteller Lieferant	Artikelnummer Funktionstext	Pos
-B1 /2.7	1	Thermostat 30-160°C Thermostat 30-160°C			20122	
-B2 /2.8	1	Hochdruckpumpe IP E1B1612R-031 12 l/min			361379	
-B4 /2.7	1	Strömungswächter ST 5 Flow switch ST 5			2224	
-B6 /2.8	1	Wassermangel 1m (HD) Low-water cut-off 1m			2748	
-B7 /2.7	1	Maximum Thermostat 300 °C Maximum Thermostat 300 °C			23731	
-F1 /2.0	1	Überlastschutz 1-pol 15,5 A Overload Protection 1-ph 15,5A			214509	
-F2 /2.1	1	Schmelzsicherung 2A Fuse 2A			3723	
-F2 /2.1	1	Klemme ZSI 2,5 Terminal ZSI 2,5			38331	
-H1 /2.5	1	Betriebsstundenzähler 24V Service-hour-meter 24V			2752	
-HAF /2.2	1	Heizung Anti-Frost 230VAC/80W Heating Anti-Freeze 230VAC/80W			283707	
-HR /2.6	1	Leuchttaster mit Microschalter CW rot 24V Lighted pushbutton CW red 24VAC			51611	
-IC2 /2.6	1	Etronic Steuerung 2 T neu Etronic control 2 T			35092	
-K1 /2.0	1	Schütz 24V LC1-K1210 B7 Contactor 24V LC1-K1210 B7			23161	
-K2 /2.5	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K3 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-K4 /2.9	1	Koppelrelais mit Fass. 24V 8A Relay with socket 24V 8A			50565	
-M1 /2.0	1	Elektro - Motor AC240 V 2,2kW			348608	
-M2 /2.1	1	Brennermotor 230V Burner motor 230V			2005	
-M3 /2.2	1	Antikalkpumpe 230V Antilime-Pump 230V			2436	

Datum 14.06.2023 | Bearb. t.pawelek | Gepr | Urspr | Name | Datum | Änderung

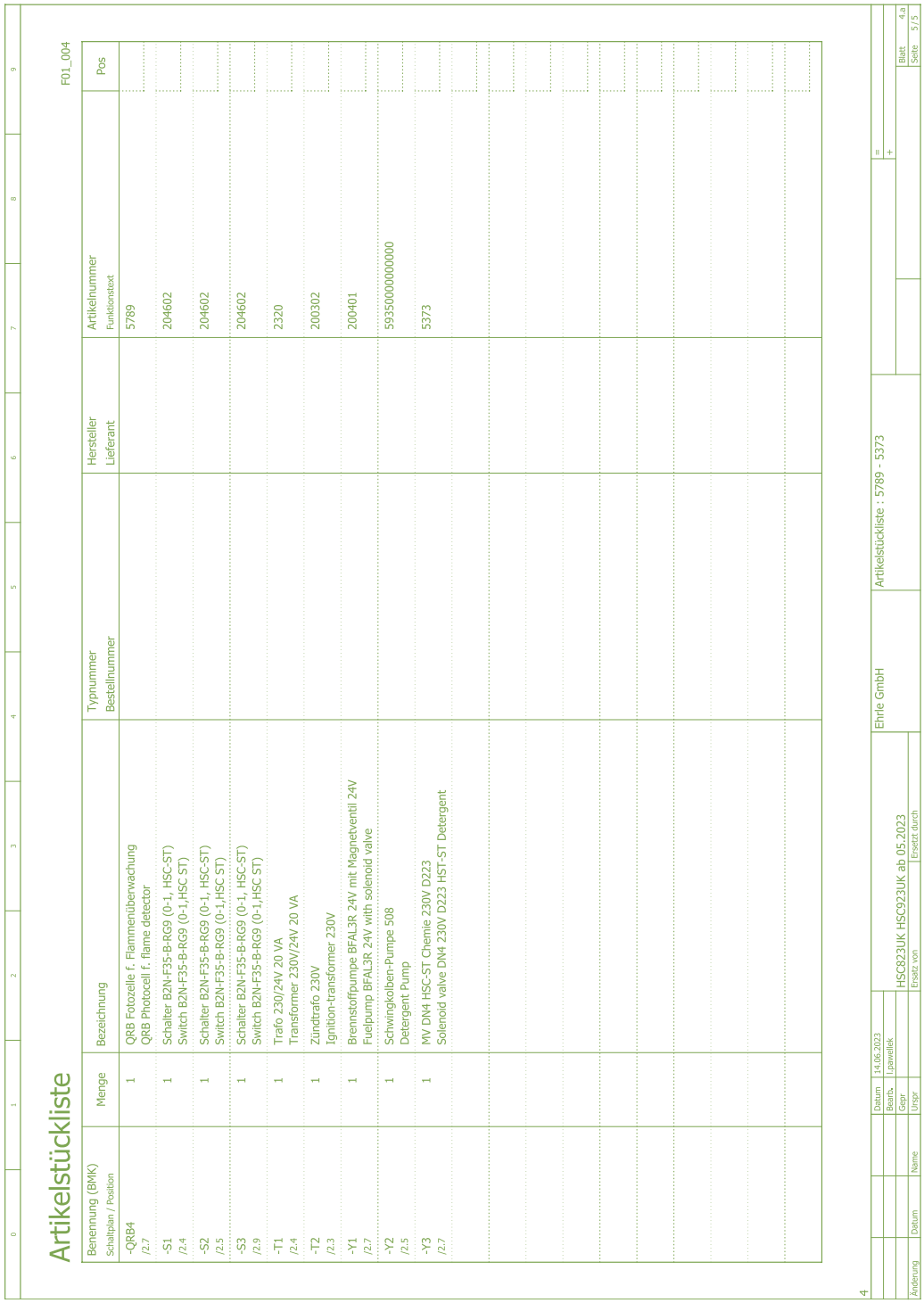
HSC823UK HSC923UK ab 05.2023 | Ersatz von | Ersetzt durch

Ehrle GmbH

Artikelstückliste : 20122 - 2436

4.a | 3 | Blatt 4 | Seite 4/5

Fig. 10 - 14 HSC823 UK Oil and HSC923 UK Oil (Standard/INOX), circuit diagram (Page 4 of 5)



Artikelstückliste

F01_004

Benennung (BMK) / Schaltplan / Position	Menge	Bezeichnung	Typnummer / Bestellnummer	Hersteller / Lieferant	Artikelnummer / Funktionstext	Pos
-QRB4 /2.7	1	QRB Fotozelle f. Flammenüberwachung QRB Photocell f. flame detector			5789	
-S1 /2.4	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-S2 /2.5	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-S3 /2.9	1	Schalter B2N-F35-B-RG9 (0-1, HSC-ST) Switch B2N-F35-B-RG9 (0-1,HSC ST)			204602	
-T1 /2.4	1	Trafo 230/24V 20 VA Transformer 230V/24V 20 VA			2320	
-T2 /2.3	1	Zündtrafo 230V Ignition-transformer 230V			200302	
-Y1 /2.7	1	Brennstoffpumpe BFAL3R 24V mit Magnetventil 24V Fuelpump BFAL3R 24V with solenoid valve			200401	
-Y2 /2.5	1	Schwingkolben-Pumpe 508 Detergent Pump			5935000000000	
-Y3 /2.7	1	MV DN4 HSC-ST Chemie 230V D223 Solenoid valve DN4 230V D223 HST-ST Detergent			5373	

Ehrle GmbH

Artikelstückliste : 5789 - 5373

HSC823UK HSC923UK ab 05.2023

Datum 14.06.2023 | Bearb. Lpawellek | Gepr. | Urspr. | Ersatz von | Ersetzt durch

Änderung | Datum | Name

Blatt 4.a | Seite 5 / 5

Fig. 10 - 15 HSC823 UK Oil and HSC923 UK Oil (Standard/INOX), circuit diagram (Page 5 of 5)

10.4 HSC1140 FR Oil and HSC1240 FR Oil

Fig. 10 - 16 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 1 of 12)

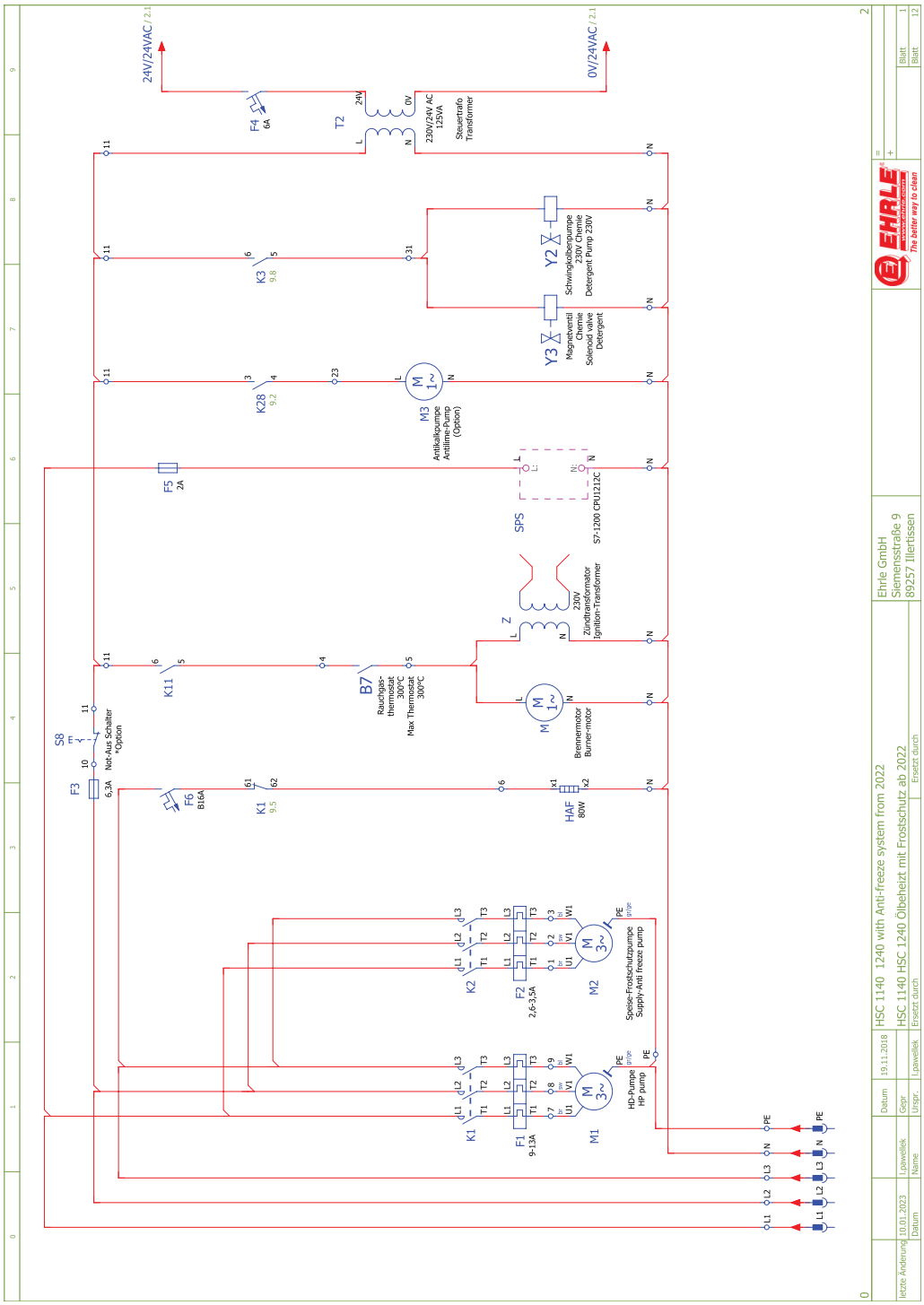


Fig. 10 - 17 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 2 of 12)

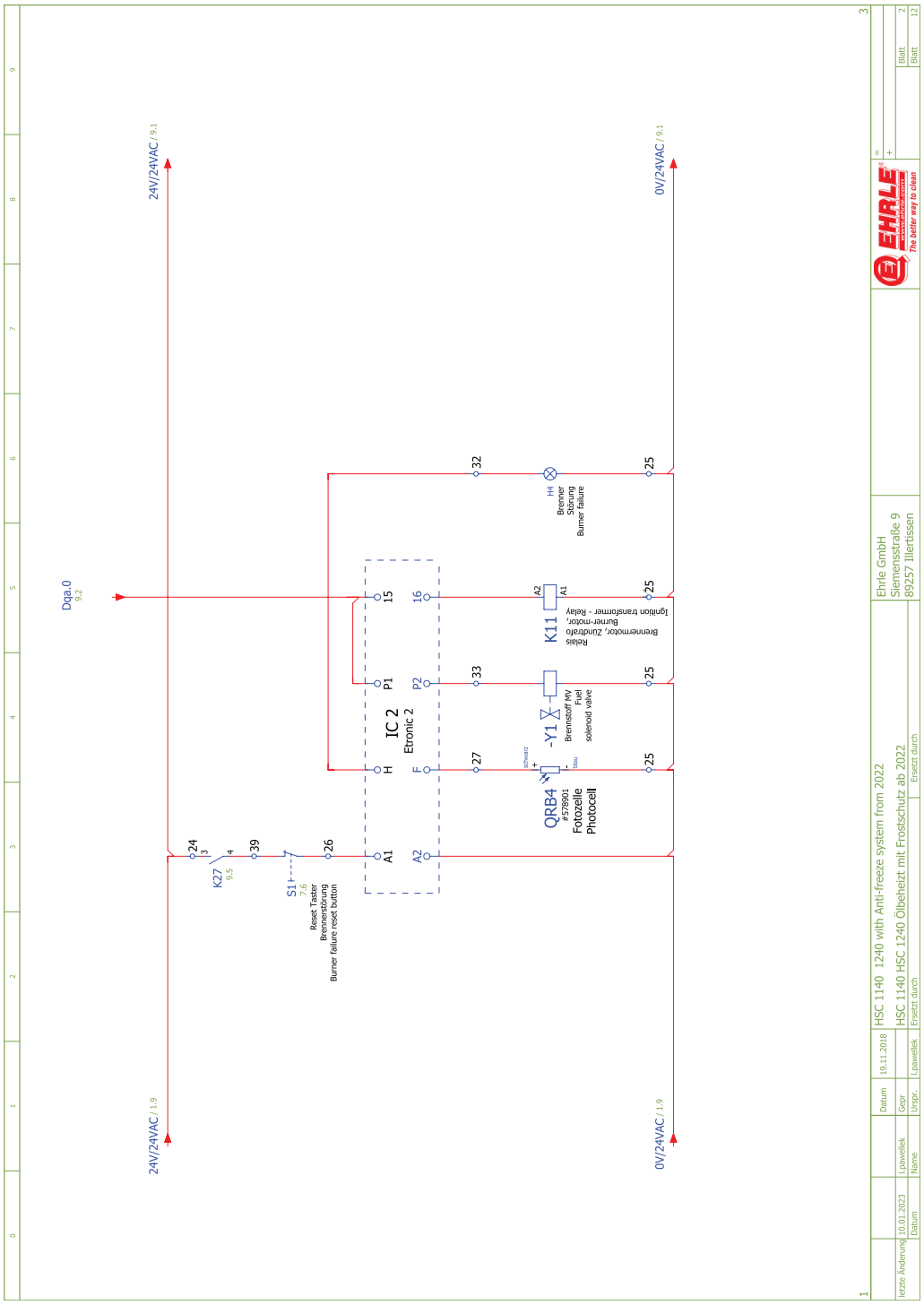


Fig. 10 - 18 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 3 of 12)

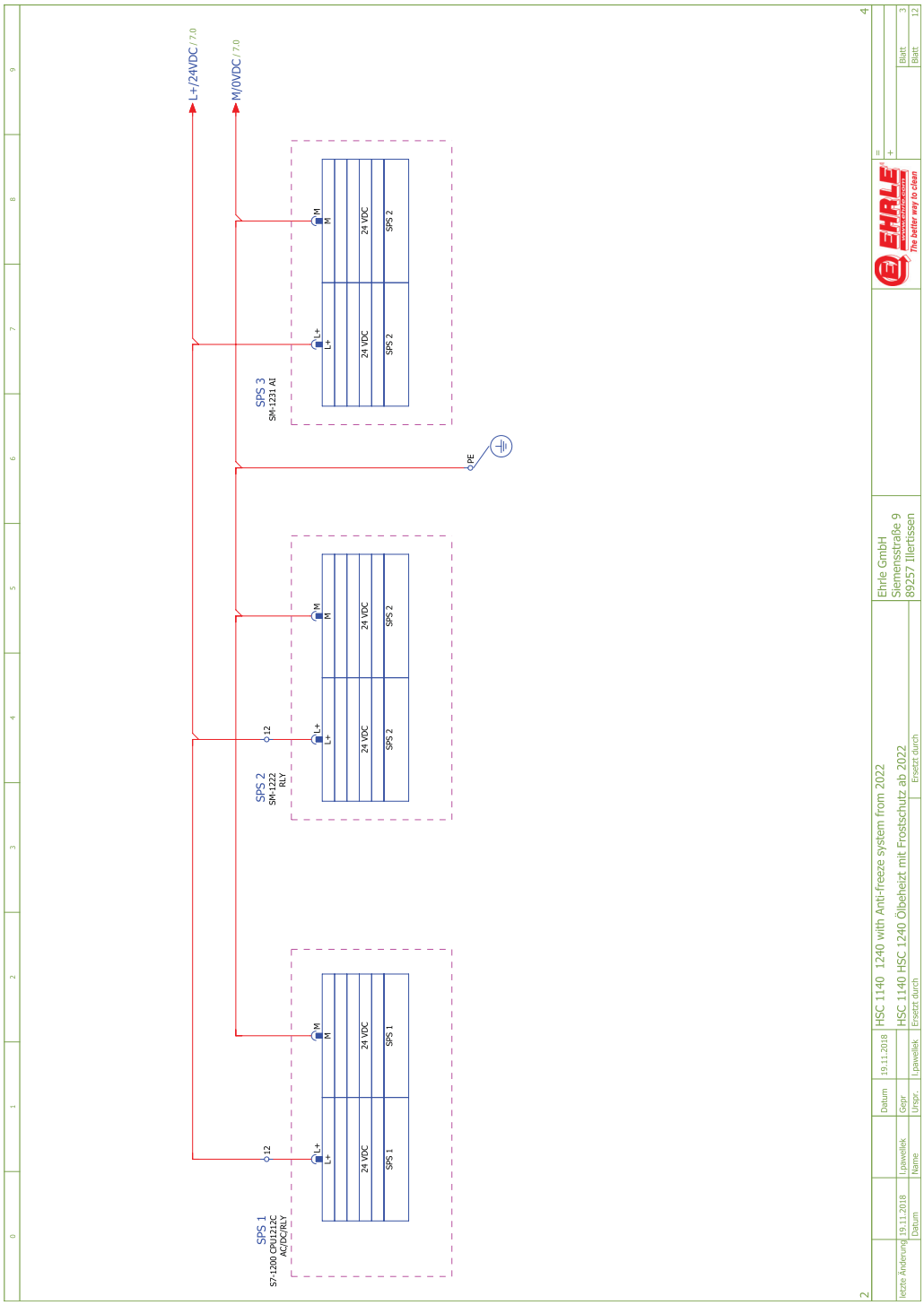


Fig. 10 - 19 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 4 of 12)

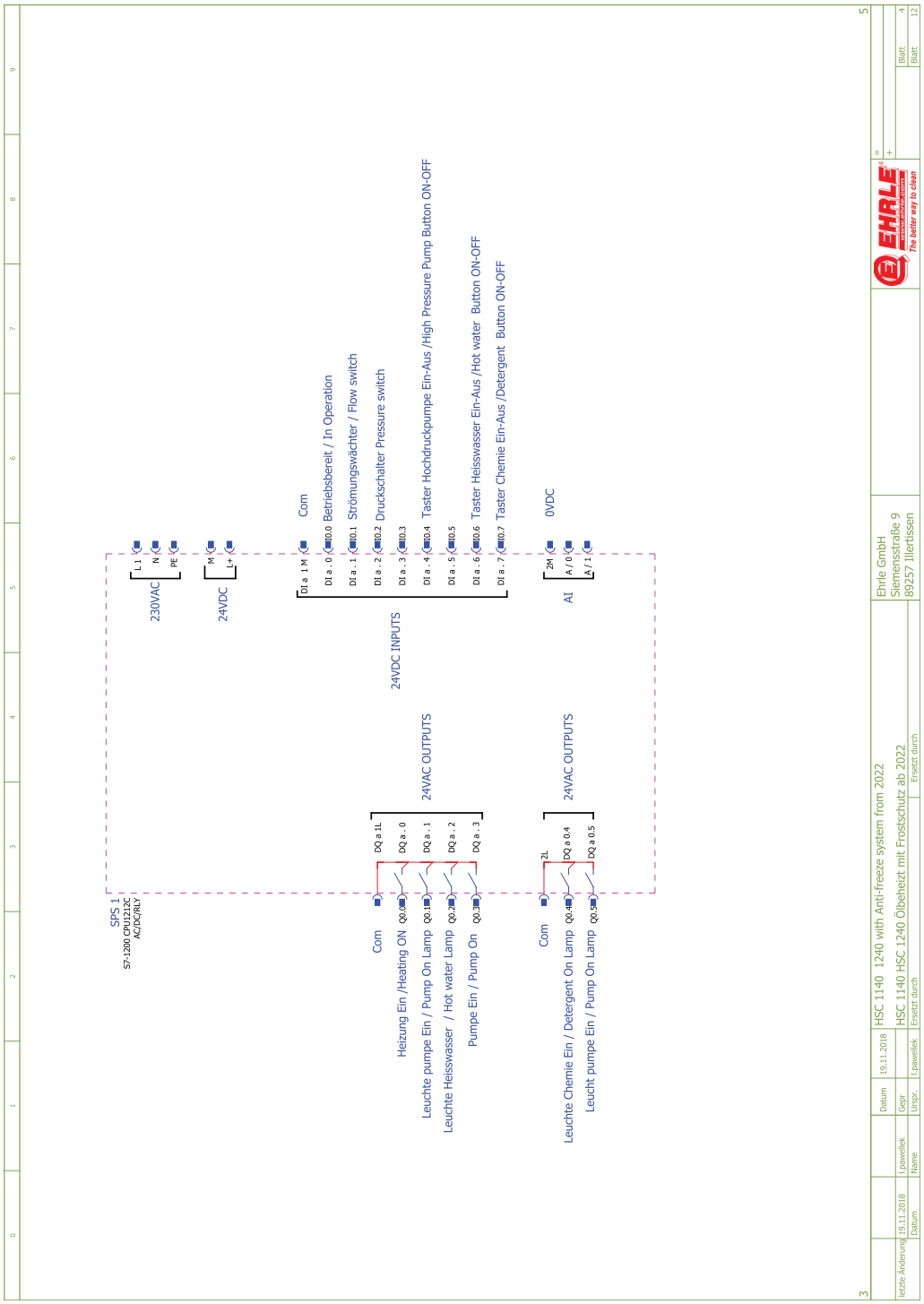


Fig. 10 - 20 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 5 of 12)

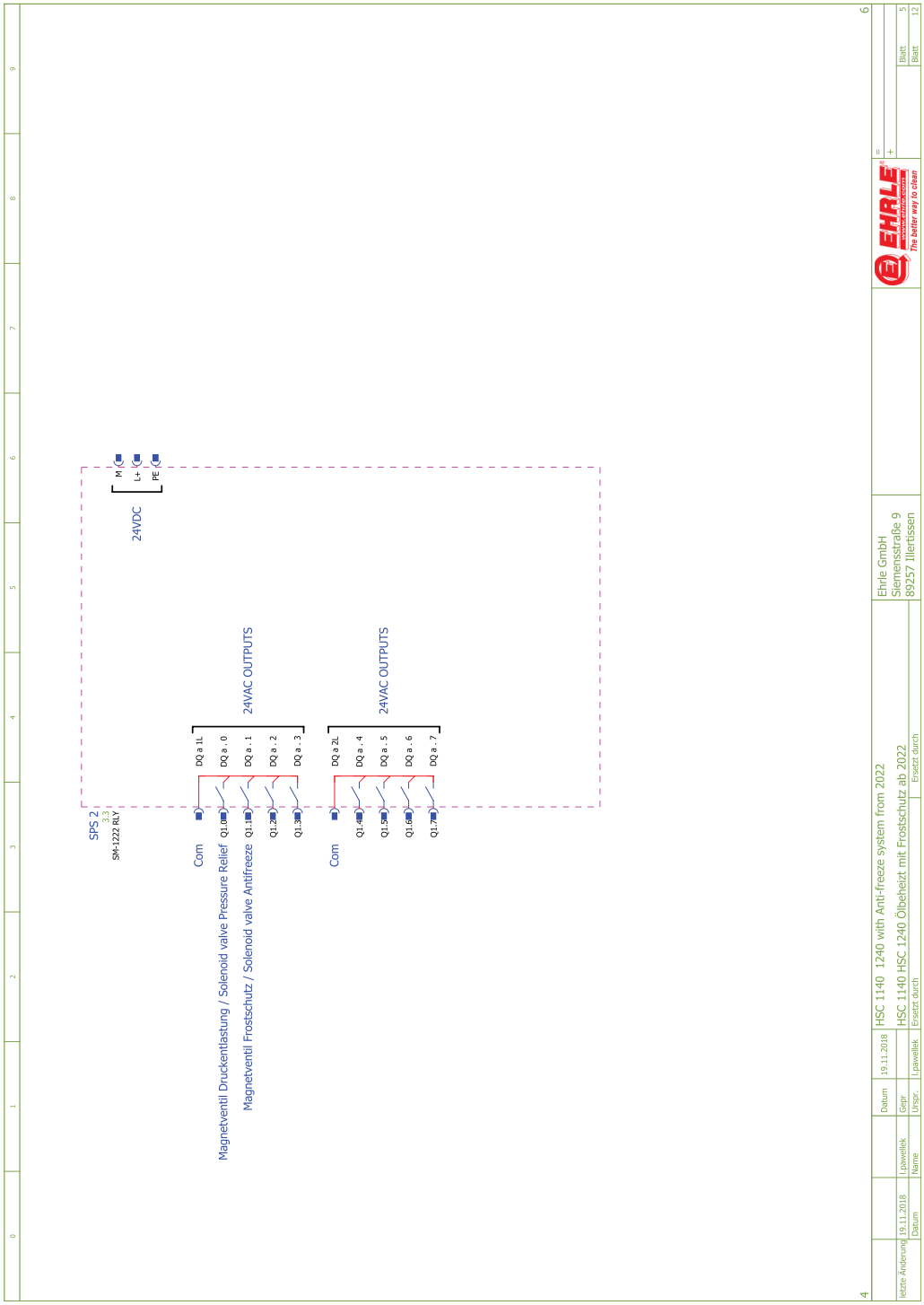


Fig. 10 - 21 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 6 of 12)

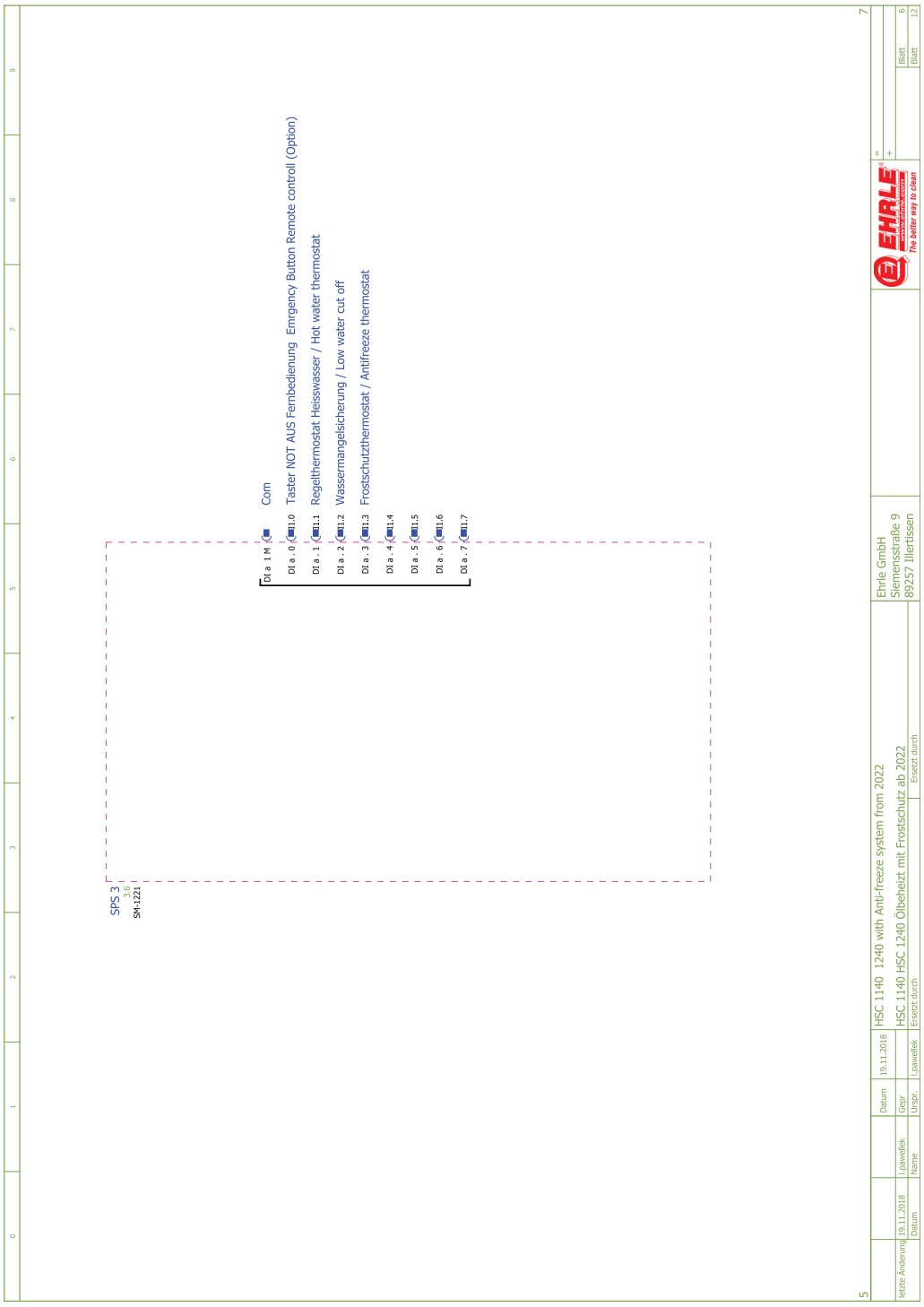


Fig. 10 - 22 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 7 of 12)

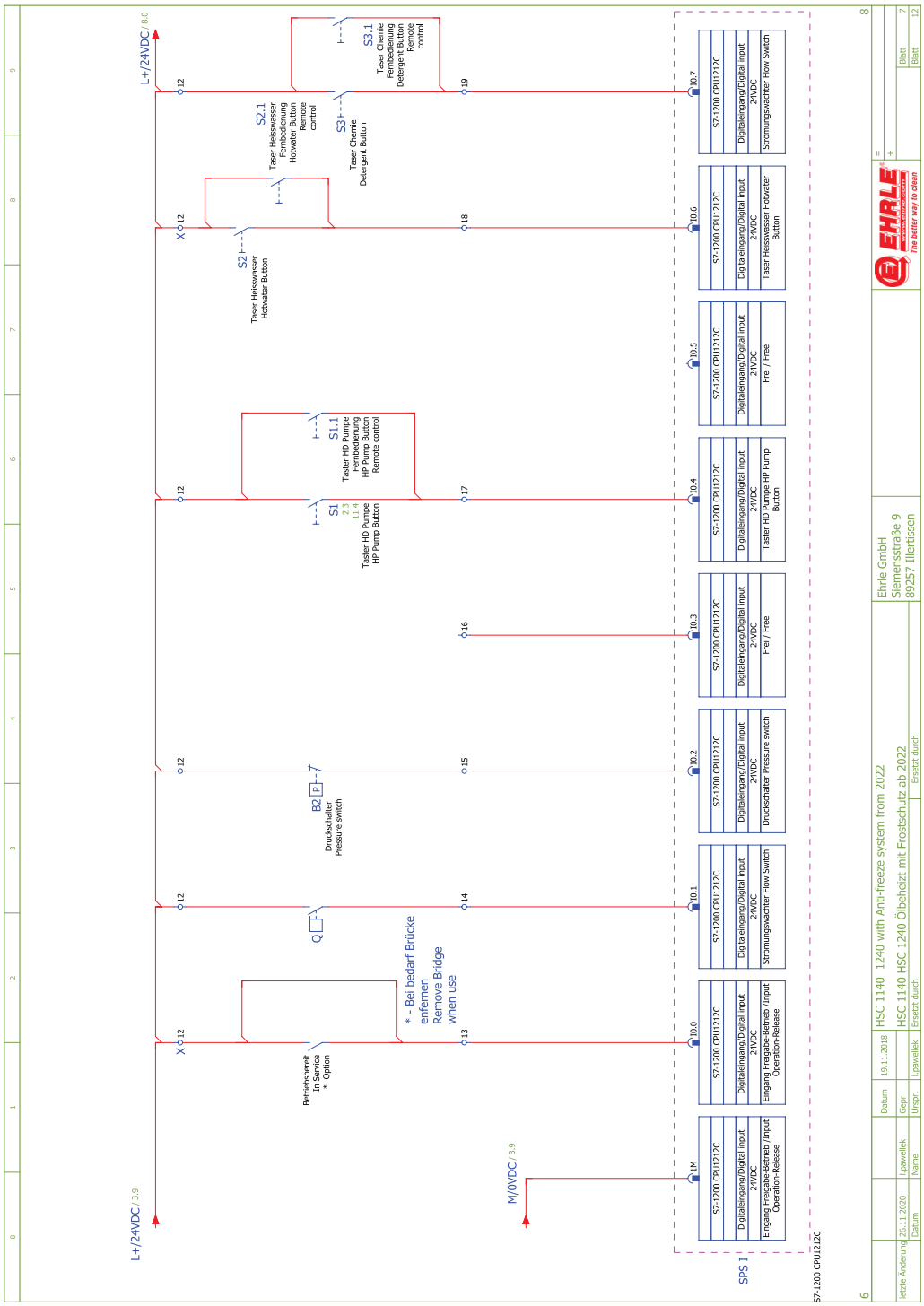


Fig. 10 - 23 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 8 of 12)

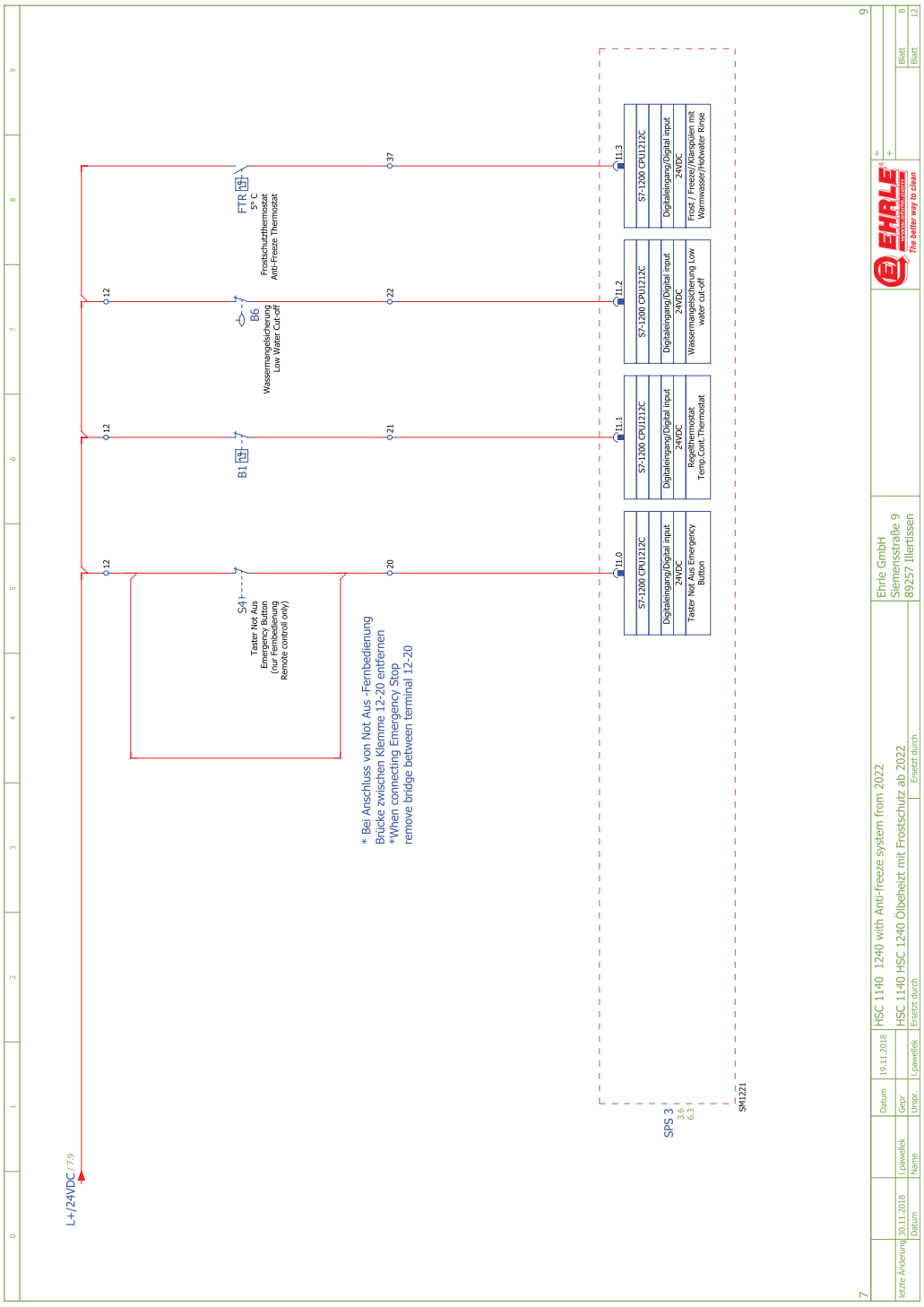


Fig. 10 - 24 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 9 of 12)

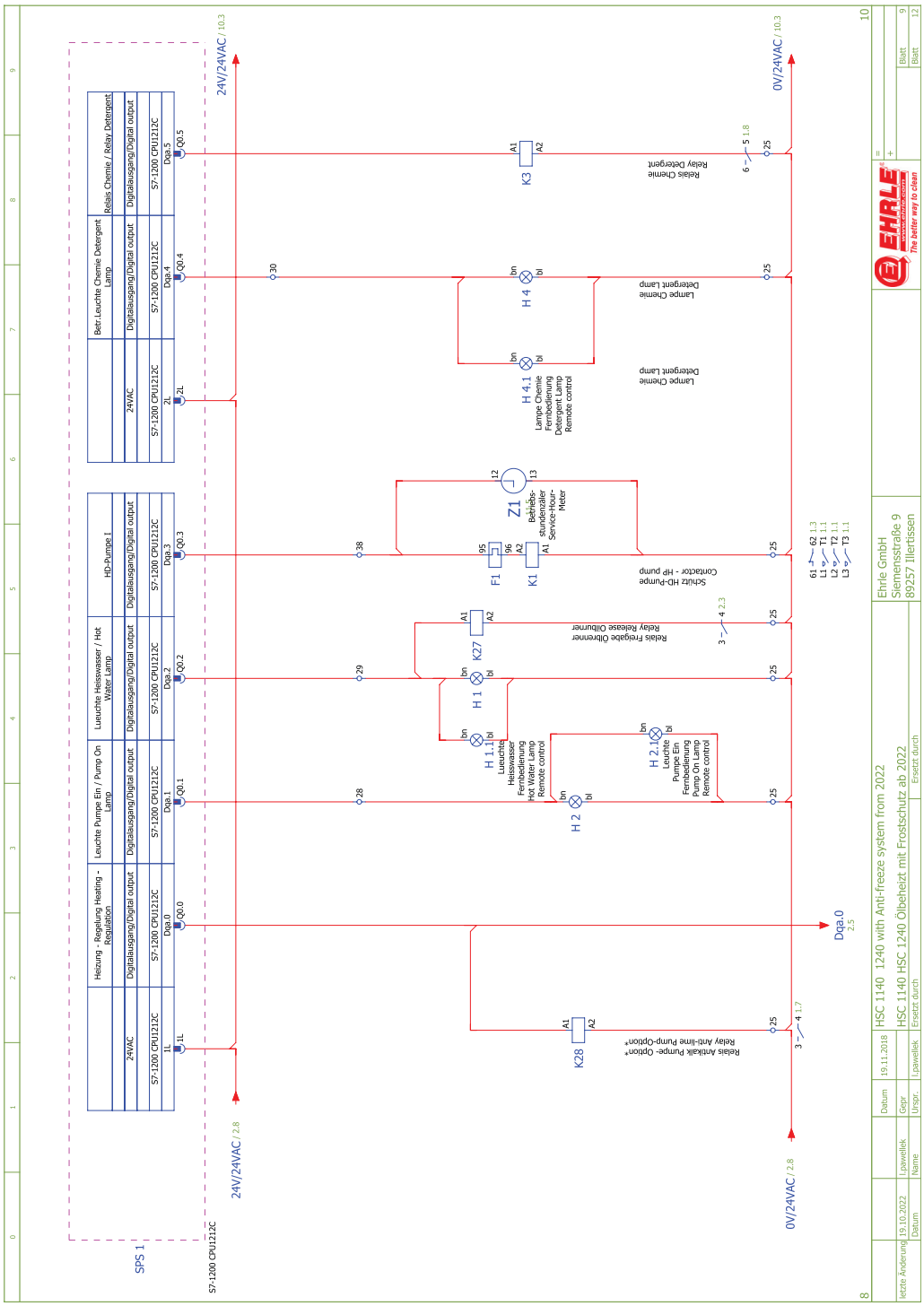


Fig. 10 - 25 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 10 of 12)

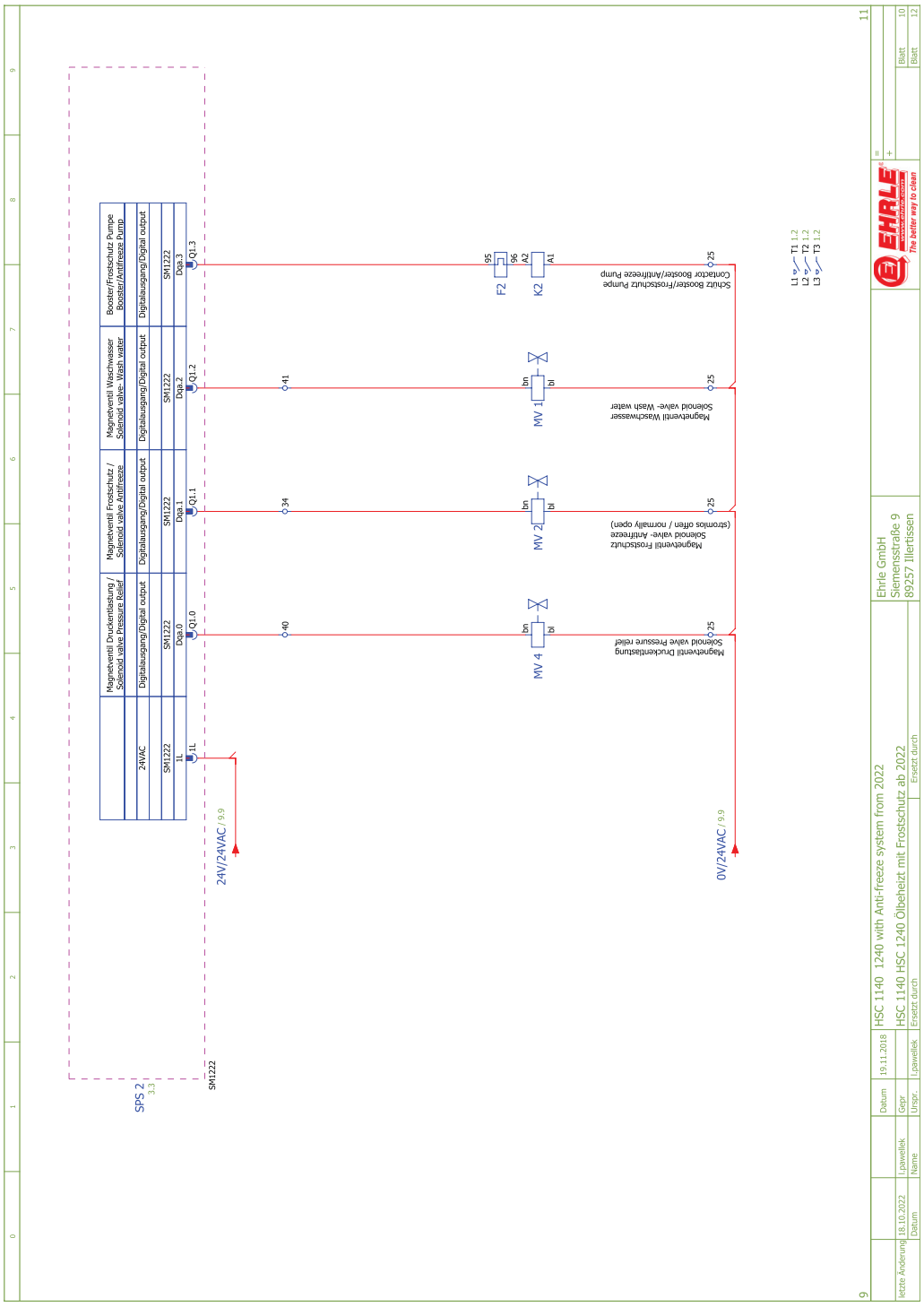


Fig. 10 - 26 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 11 of 12)

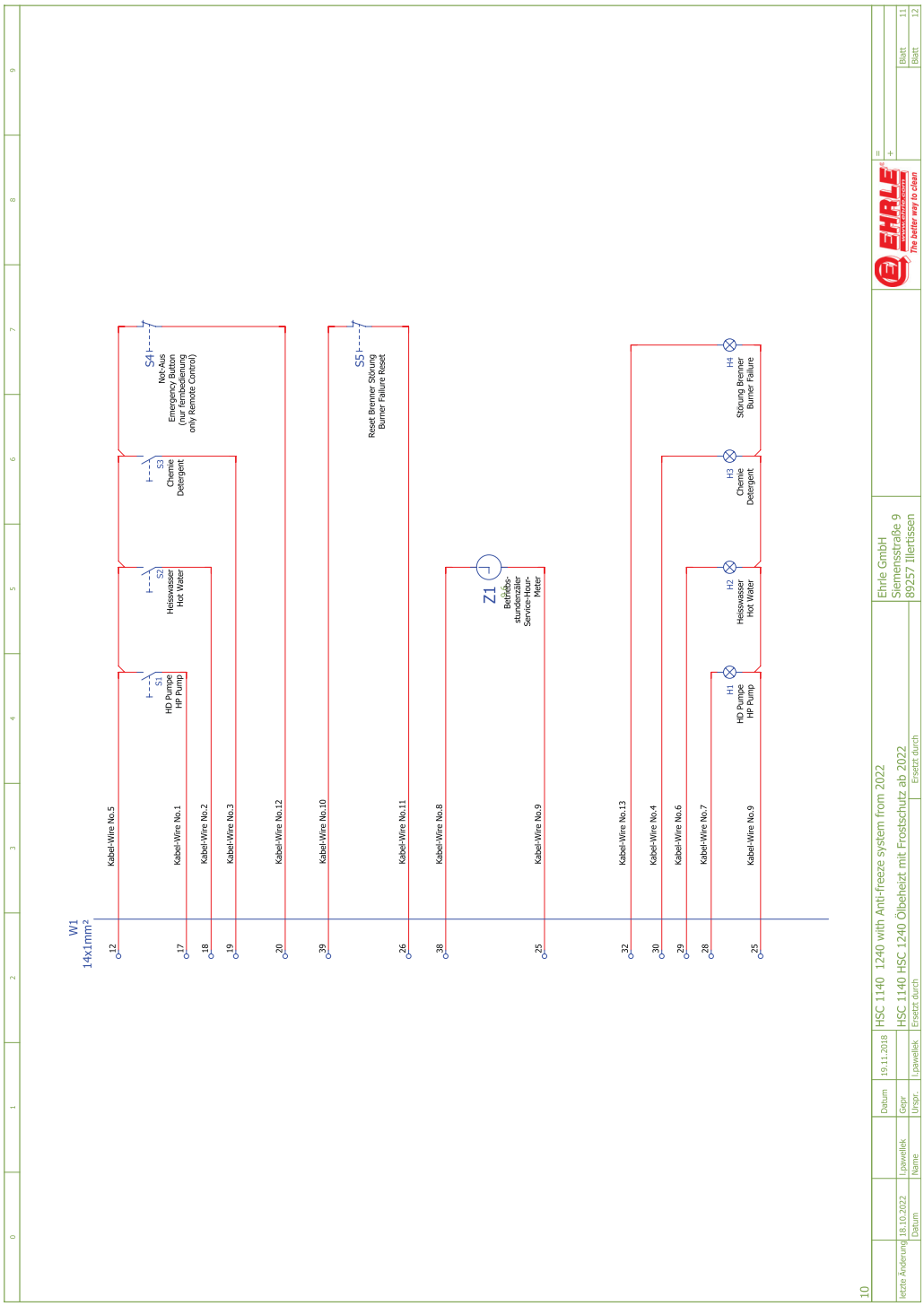


Fig. 10 - 27 HSC1140 FR Oil and HSC1240 FR Oil (Standard/INOX), circuit diagram (Page 12 of 12)

11 Notes

Proof of customer service

System type	Manufacture no.:	Commissioning on:

Inspection carried out on:

Findings:

Signature

Inspection carried out on:

Findings:

Signature

Inspection carried out on:

Findings:

Signature

Inspection carried out on:

Findings:

Signature

EHRLE GmbH • D-89165 Dietenheim / Germany

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