

SERVICE MANUAL

E

Screw Compressor

Model: AS 36 / 8 bar

GL-Nr.: BA-AS36.L-1.7932.2-00
Index: 000215

Part No.:

Serial No.:

Manufacturer:

KAESER KOMPRESSOREN GmbH

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1 Technical Specification

1.1 Compressor Package

Model	AS 36
Permissible gauge working pressure	8 bar
Operating temperature, approx.	75 – 100 °C (related to the gauge working pressure and climatic conditions such as humidity in the air and ambient temperature).
Weight	490 kg

Drawings:

Dimensional drawing	T 8720.1
P & I flow diagram	FAS36STL-00065.00 (Pipework and instrument flow diagram)
Electrical diagram	SAS36-01001.00

1.2 Sound Pressure Level

Operational state of the compressor unit:

Full load, the compressor unit runs at: rated speed, rated pressure, rated capacity.

Setting up conditions:

Free field measurement

Measurement to CAGI/PNEUROP PN8 NTC 2.3:

Sound Pressure Level	70 dB (A)
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1.3 Motor

Drive motor:

Rated power	22 kW
Rated speed	1500 min ⁻¹
Protection class	IP 55

V-belt set:

Part number	6.2763.0
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1.4 Power Supply

(see chapter 6.3 for further details)

Mains voltage	400 ± 10% V 3~/PE
Frequency	50 Hz
Max. mains fusing (slowblow or gl class)	50 A
Power supply cable cross-section	4 x 10 mm ² (CU multicore cable)
Current flow	47 A

1.5 Pressure Relief Valve

Activating pressure 11,5 bar

1.6 Installation Requirements

Max. height above sea level 1000 m
 Min. ambient temperature 3 °C
 Max. ambient temperature 40 °C
 Min. cooling air/inlet air temperature 3 °C
 Max. cooling air/inlet air temperature 40 °C
 Air inlet opening 0,45 m²
 Exhaust air for solution A (see chapter 6.1):
 Forced ventilation with exhaust fan 6000 m³/h at 100 Pa
 Exhaust air for solution B (see chapter 6.1):
 Exhaust air used for space heating:
 Heating duct w x h 530 x 560 mm

1.7 Oil Capacities

Total oil capacity 15 l

After oil change or after long period of storage

Amount required to top up the airend 0,5 l

1.8 Recommended Coolant

KAESER screw compressors are filled with the following coolant. This coolant is highly suitable for all operating conditions:

KAESER SIGMA FLUID PLUS

This coolant was especially developed for use in screw compressors.

Topping up the coolant:

Always use the same brand and type of coolant (see label on the separator tank).

Coolant change and change of coolant type:

The compressor package must be completely drained before refilling with coolant or changing the type of coolant. As far as is possible, remove all existing scale and deposits in the cooling system. It is possible that the separator cartridge may have to be changed soon after changing the type of coolant because of existing deposits that have been freed. This is caused by the cleaning effect of the new coolant.

KAESER SIGMA FLUID PLUS has the following characteristics:

- | | | |
|----------------------|--------------|-------------------------|
| ● Viscosity at 40°C | DIN 51562-1 | 68 mm ² /s |
| ● Viscosity at 100°C | DIN 51562-1 | 10.6 mm ² /s |
| ● Density at 15°C | DIN 51757 | 842 kg/m ³ |
| ● Flash point (COC) | DIN ISO 2592 | 245°C |
| ● Pour point | DIN ISO 3016 | -30°C |

- Water separability at 54°C DIN 51599 30 min
- Very good oxidation stability
- Good anti-wear properties
- Excellent dispersant and detergent properties
- High viscosity index
- Very good demulse properties
- Low evaporation loss

A DIN/EN safety specification sheet covering this coolant can be requested from KAESER.

Coolant order number:

Sigma Fluid Plus 200 l	Order No.: 9.1454.0
Sigma Fluid Plus 20 l	Order No.: 9.1459.0
Sigma Fluid Plus 4 l	Order No.: 9.1468.0

1.9 Maintenance Interval for the Electric Motor

Renew the compressor motor bearing:

Under normal operating conditions, after 12000 h*
(ambient temperature up to 25°C)

Under unsuitable operating conditions, after 6000 h*
(ambient temperature up to 40°C)

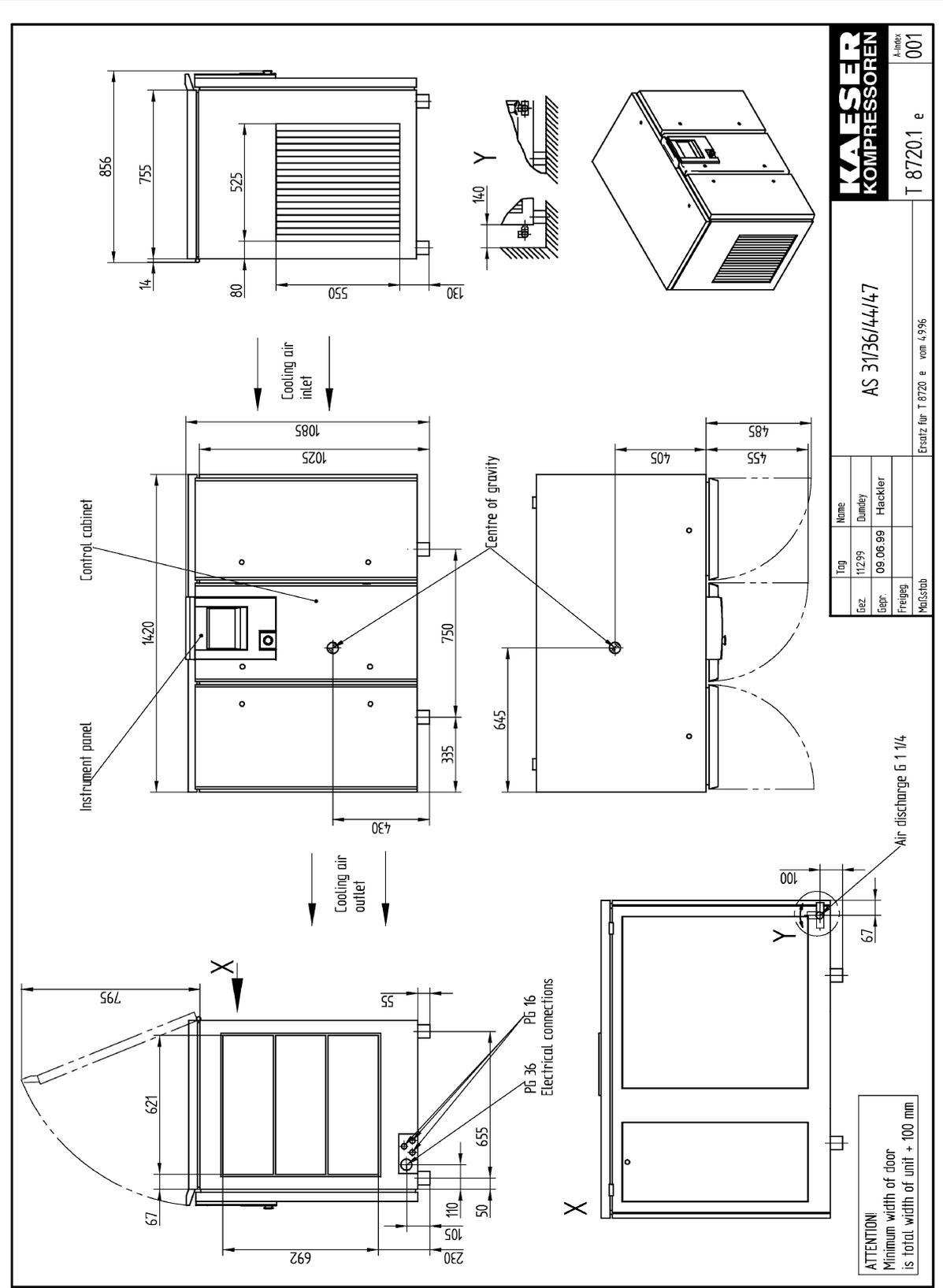
at the latest after 3 years

*service hours

1.10 Dimensional Drawing

(see following page)

Technical Specification



KAESER
KOMPRESSOREN

AS 31/36/44/47

Titel	Name
Erz.	Dumsky
Gepr.	Hackler
Freigeig.	
Maßstab	

A-Index
001

T 8720.1 e

Ersatz für T 8720 e vom 4.9.96

Entwicklungsbedingte Änderungen vorbehalten. Zeichnung darf nur über CAD geändert werden.

Diese Zeichnung ist unser Eigentum und darf gemäss Urheberrecht ohne unsere vorherige schriftliche Genehmigung nicht vervielfältigt oder Dritten zugänglich gemacht werden.

2 Safety Regulations

Read this service manual carefully and observe cautionary references before putting this compressor package into operation and before carrying out any maintenance.

2.1 Explanation of Symbols and References



This symbol is placed before all references to safety where danger to life and limb can occur. It is especially important that these regulations are observed and that extreme care is taken. For their own protection, all other users must be informed of these safety regulations. Observe general safety and accident prevention regulations as well as the safety regulations laid down in this service manual.

Attention!

This symbol is placed by text where considerable attention must be paid so that recommendations, regulations, references and correct sequence of work are adhered to and that damage and/or destruction of the compressor package and/or other equipment is prevented.



This symbol identifies environmental protection measures.



This symbol indicates operations to be carried out by the user.

- This bullet identifies listings.

2.2 General Safety Instructions



Work on power driven systems may only be carried out by trained or specialized personnel.

Work on electrical equipment in the compressor package may only be carried out by a trained electrician or trained personnel under the supervision of a trained electrician according to electrical engineering regulations.

Before work is carried out on electrical systems, carry out the following measures in the sequence shown.

1. Switch off the main switch
2. Ensure the main switch cannot be switched on again
3. Check that no voltage is present

Pipework under pressure should be vented or shut off if not stated otherwise in the service manual.

Attention!

Any modification or conversion carried out without prior consultation with KAESER and without KAESER's prior written consent will invalidate the warranty.

European Standards must be observed during installation, operation, maintenance and repair of the compressor package.

Valid national safety regulations must be complied with if the corresponding European Standards are not yet incorporated into national legislation.

Users of compressor packages located outside the jurisdiction of European Standards are obliged to comply with the safety and accident prevention regulations concerning the compressor package that are valid in the country of use. If necessary, corresponding measures must be taken to ensure compliance with these national regulations before the compressor package is put into operation.

We also recommend observation of the following:

- Allow no open flame and flying sparks in the place of installation.
- During any necessary welding on or near the compressor package ensure that sparks or high temperatures cannot cause fire or explosion.
- Ensure that clean air without damaging impurities is fed to the compressor package.
- Do not allow the maximum ambient temperature to be exceeded (see chapter 1.6), otherwise special measures must be agreed between the manufacturer and the customer.
- Carry out oil changes according to the service manual.
- Do not mix oils of different types.
- Maintain and monitor the operating temperature to manufacturer's specifications to avoid build-up of condensate in the oil circulation.
- Use only oils recommended by the manufacturer.
- If maintenance work is carried out on any part of the oil circulation system, top up the oil in the oil separator tank to the maximum level, run the compressor and keep it under constant observation for a short period. Check the oil level again and top up with oil to replace the oil taken up by the piping and the cooling system.
- Change the filter cartridge in the oil separator tank as soon as the pressure drop across the cartridge reaches 1 bar. Check constantly.

2.3 Electrical Safety

The electrical installation of the compressor package must conform to the requirements of European Standards EN 1012-1 and EN 60204-1. The regulations of the local electricity authority must also be complied with.

For this reason, the following measures must be carried out by the user to ensure the safe operation of the compressor package:

- Compressor packages fitted with a drive motor of 3 kW or above and a current rating of 16 amperes or above must be fitted with a lockable main switch (see EN 60204-1, P 5.3) and mains fuses.
- The type of main switch used is dependent on the power consumption of the drive motor (see chapter 1.4 for value).
- The type of protective circuit breaker used is dependent on the starting characteristic of the drive motor.
- See chapter 1.4 for recommended cable cross-sections and fuses.

2.4 Spare Parts

Original KAESER parts are designed and matched to meet the technical requirements of the air system. Only the use of original KAESER spare parts and KAESER SIGMA cooling oil guarantees safe and reliable operation.

2.5 Compressed Air Installation

If a compressed air installation is extended or changed, check the blowoff pressure of the pressure relief valves on the air receiver tanks and in the pipework before the new compressor package is installed.

If the blowoff pressure is too low, fit a pressure relief valve with correspondingly higher blowoff pressure.

2.6 Environmental Protection

Condensate drainage



The condensate accumulating during compression must be fed via a suitable drainage system into special canisters and disposed of according to environmental regulations.

Lubricants / consumable materials / replacement parts



Ensure that all lubricants, consumable materials and replacement parts accumulating during operation and servicing of the compressor package are disposed of according to environmental regulations.



The following points must be observed when handling lubricating and cooling materials:

Avoid contact with skin and eyes.
Do not inhale vapours and oil mist.
Do not eat or drink when handling such materials.
Fire, open flame and smoking are strictly forbidden.

3 General



The service manual must always be available for use at the location of the compressor package.

3.1 Correct use

The compressor package is intended solely for the purpose of generating compressed air. Any other use is considered incorrect. The manufacturer cannot accept liability for any consequential damage caused by such incorrect use; the user alone is liable for any risks incurred.

Correct use of the compressor also encompasses adherence to the installation, disassembly, commissioning, operational and maintenance conditions laid down by the manufacturer.

This compressor package may only be used for industrial purposes.

3.2 Incorrect use



Never direct compressed air toward persons. Compressed air is a concentrated form of energy and as such is dangerous to life.

3.3 Compressed Air Treatment



Never use compressed air from oil injected compressor packages for breathing purposes and production methods where the air has direct contact with food, without subjecting the compressed air to additional treatment.

3.4 Copyright

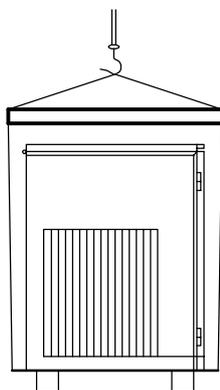
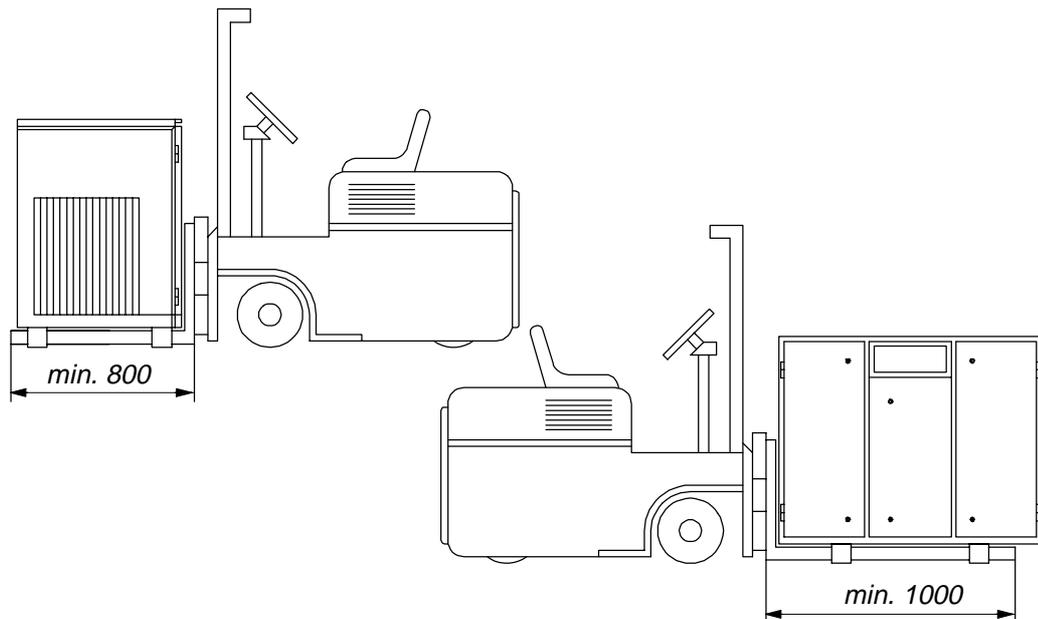
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4 Transport

4.1 Transport Instructions

We recommend a fork lift truck or lifting equipment for transporting the compressor package to avoid damage to the cabinet and framework.



Attention :
Do not exert any side forces on the compressor unit when transporting with lifting equipment!

4.2 Packaging

A factor deciding the type of packaging is the transport route. The packaging conforms to regulations laid down by the German Federal Association of Wood, Pallet and Export Packaging (HPE), and by the German Machinery and Plant Association (VDMA), if not otherwise contractually agreed.

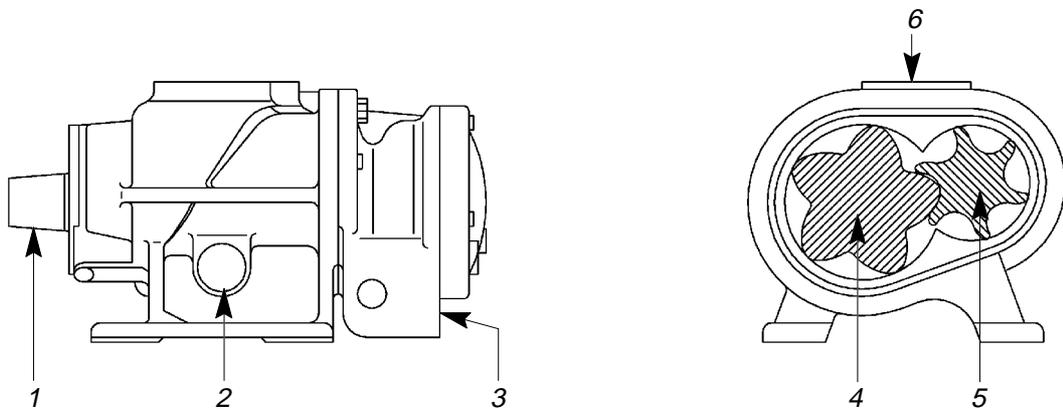


Dispose of packaging according to environmental regulations and recycle where possible.

5 Technical Description

5.1 Principle of Compression

The stationary compressor package is fitted with a single stage, oil-injected air end. Two rotors, the driven male rotor and the female rotor, both mounted in roller bearings, are fitted in the air end. As the rotors rotate, air is drawn into the upper side through the inlet port and is compressed on the lower side. The oil that is injected into the lower side absorbs heat generated by compression, prevents metallic contact between the rotors, seals the rotors and the housing from each other and also lubricates the roller bearings. The compressed air and oil mixture leaves the air end via the discharge port.



- 1 Drive shaft
- 2 Oil injection
- 3 Discharge port

- 4 Male rotor
- 5 Female rotor
- 6 Air inlet port

5.2 Short Description

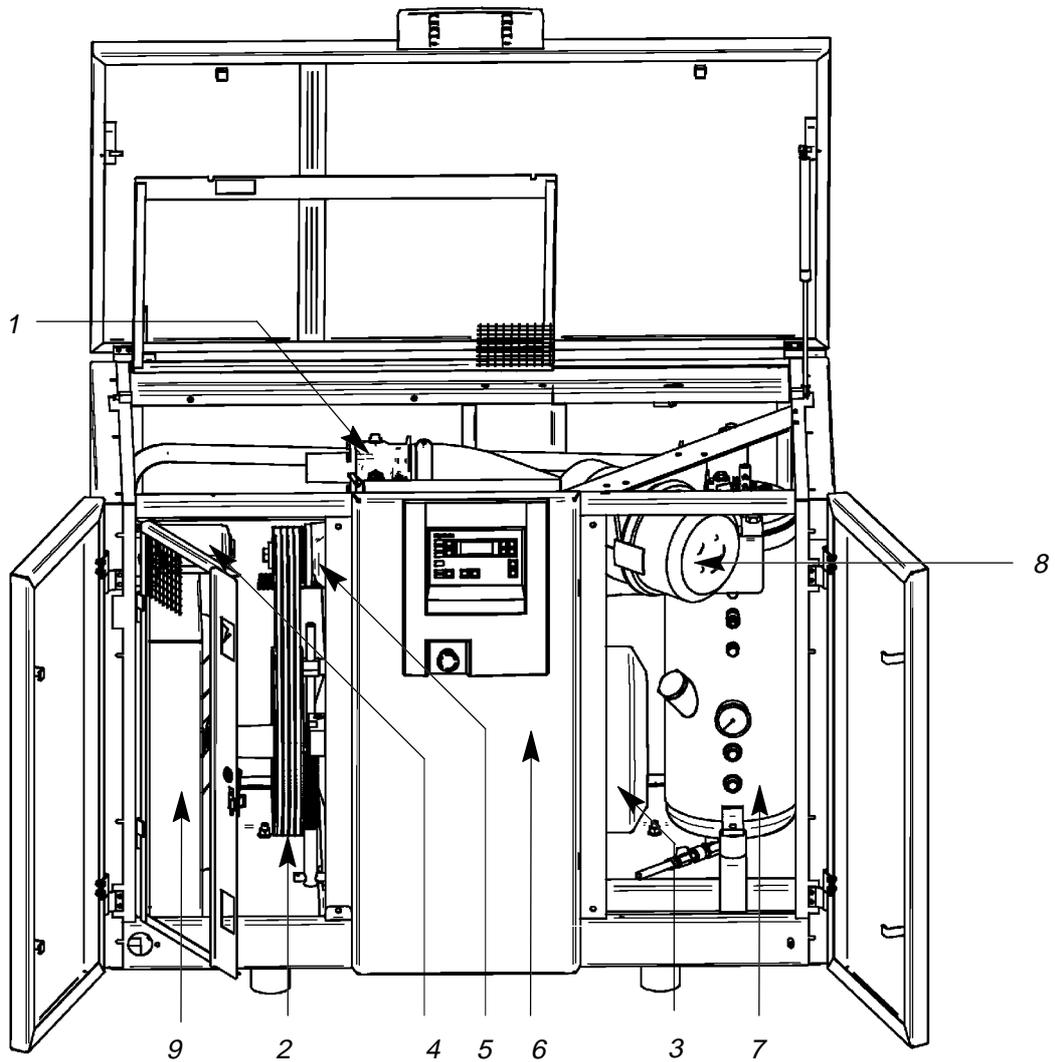
The compressor block is driven via V-belts from an electric motor.

An oil separator cartridge is fitted into the oil separator tank allowing practically oil free compressed air supply.

The regulation of the compressor package ensures that compressed air is generated within set pressure limits.

A safety function protects the compressor package against failure of important systems through automatic shut-down.

The fan ensures ventilation of the compressor package and also sufficient cooling air for the air-cooled oil and air cooler.



- | | |
|---------------|-------------------------|
| 1 Inlet valve | 6 Control cabinet |
| 2 V-belts | 7 Oil separator tank |
| 3 Drive motor | 8 Air filter |
| 4 Oil filter | 9 Oil cooler/Air cooler |
| 5 Air end | |

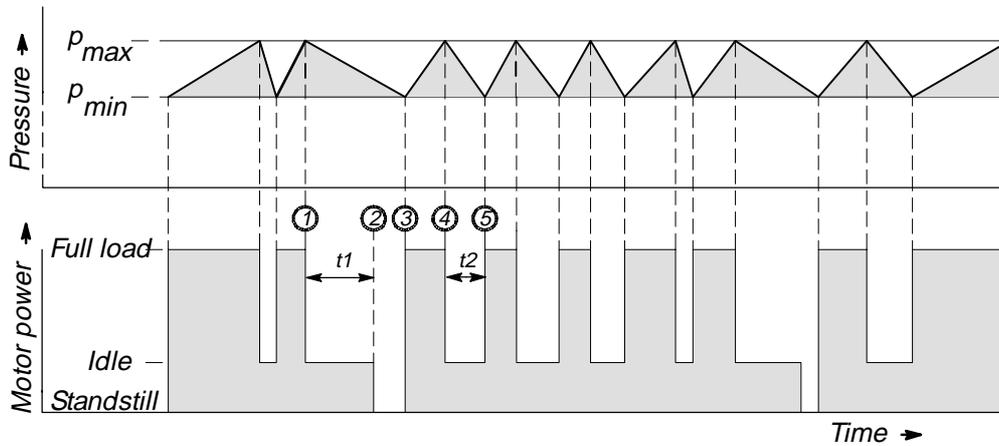
5.3 Pipe and Instrument Flow Diagram (P & I Diagram)

(see following pages)

1	2	3	4	5	6	7	8
1	Air filter			9	Oil temperature controller		
2	Inlet valve			10	Oil filter		
3	Drive motor			10.2	Main flow nozzle		
4	Airend			11	Oil cooler		
4.1	Strainer			11.1	Hose coupling - Oil drain		
4.2	Pressure switch - Wrong direction of rotation			12	Minimum pressure check valve		
5.2	PT100 sensor			13	Air cooler		
6	Oil separator tank			13.1	Hose coupling		
6.1	Pressure gauge			16	Dirt trap		
6.2	Hose coupling (oil end)			17	Nozzle		
6.3	Hose coupling (air end)			18/19	Combined control/vent valve		
6.4	Oil sight glass: oil level maximum			18	Control valve		
6.5	Oil sight glass: oil level minimum			19	Vent valve		
6.6	Shut-off valve with hose coupling - Oil drain			20	Shut-off valve - Vent line		
7	Pressure relief valve			21	Silencer		
8	Oil separator cartridge			59.1	Pressure measuring transducer - Air main pressure		

		P-I Diagram legend AS 36	
Ursprung:		FAS36STL-00065.00	
Ersatz durch:		Blatt 2	
Ersatz für:		E	

5.4 DUAL Control

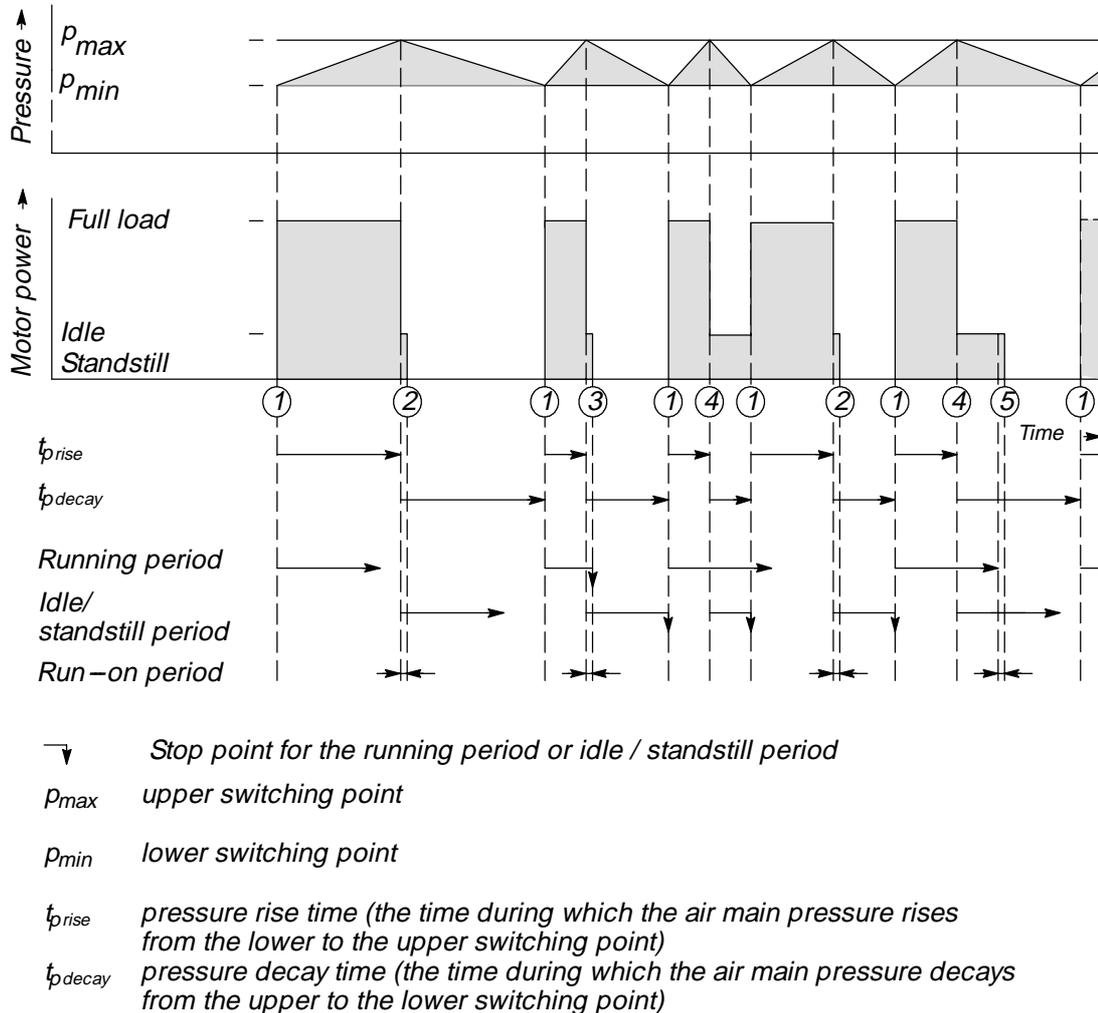


In DUAL Control mode (combined idle and start–stop) the compressor normally runs at **full–load, idle** or **standstill**.

The controller regulates the compressor package between **load** and **idle**.

If the compressor package runs in idle for longer than the preset period (1) to (2), for example $t_1 = 6$ min, the drive motor is stopped completely (2). When the lower switching point p_{min} (3) is reached the compressor package is automatically started again. Pressure rises to the upper switching point p_{max} (4), and the compressor package switches to idle. If the pressure falls again to, for example, p_{min} (5) within a shorter period (4) to (5), then the compressor is automatically switched from idle to load.

5.5 QUADRO Control



Functional description

Two fixed periods – the **running period** and **idle/standstill period** – are taken as the criterion for selection of the operating mode of the compressor package when the air main pressure reaches the upper switching point. These two periods are set according to the maximum permissible starting frequency of the drive motor.

The running period starts every time the compressor package is switched on. It lasts as long as the drive motor runs and stops when the compressor package switches to standstill.

The idle/standstill period starts every time the operating mode changes from full load to idle. It runs during idle and also when the compressor package is switched to standstill after the idle period. It stops when the compressor package switches to full load.

Every switching off point is delayed by the run – on period, during which time the compressor package vents.

The following switching cycles are possible:

- If the air main pressure decays to the lower switching point, the compressor package switches to full load (1) irrespective of its previous operating mode. If the drive motor was at a standstill the opening of the inlet valve is delayed to allow an unloaded compressor package start.

- If the air main pressure rises to the upper switching point and the running period has already expired, the compressor package is switched off after the run–on period has expired (2).
- If the air main pressure rises to the upper switching point before the running period has expired then the pressure decay time of the previous switching cycle is taken as the criterium for the selection of the operating mode:
 - If the pressure decay time t_{pdecay} was longer than the period set for the idle/standstill period, the compressor package is switched to standstill after the run–on period has expired (3).
 - If the pressure decay time t_{pdecay} was shorter than the period set for the idle / standstill period, the idle mode is selected (4), that is, the inlet valve closes and the compressor is vented with running motor. When the running period expires the compressor package switches to standstill only after the run–on period has also expired (5).

5.6 VARIO Control Mode

Functional description:

The idle period is automatically lengthened or shortened by the variable idle control in relation to the number of motor starts. The number of motor starts during the preceding hour are measured.

A high switching frequency leads to longer idle periods.

A low switching frequency leads to shorter idle periods.

6 Installation

6.1 Installation Requirements

Attention!

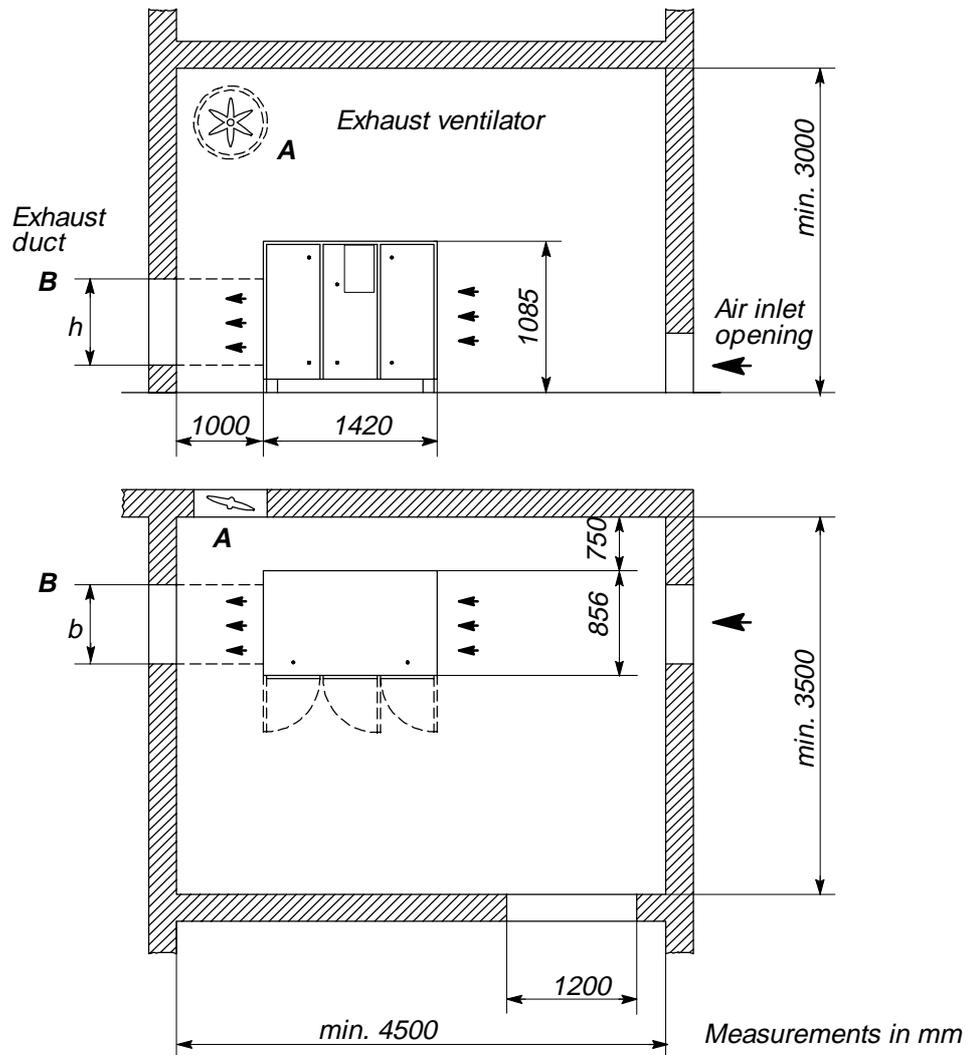
Ensure that the compressor package is level.
 The floor must be solid with good loading characteristics.
 See chapter 1.1 for the weight of the compressor package.

Safe operation of the compressor package is only ensured if the ambient temperature remains within the limits stated in chapter 1.6).

If the compressor package is used in the open, take care that it is protected against the direct rays of the sun and against the ingress of dust and rain.

Install the compressor package as detailed in the following diagram. Keep to the minimum distances shown to allow free access to the compressor package.

Adequate ventilation of the compressor space is ensured only if the minimum values (see chapter 1.6) are adhered to.



Solution A: forced ventilation

The exhaust fan fitted in the compressor space must provide adequate ventilation relative to the size of the compressor package (see chapter 1.6).

Solution B: exhaust air used for space heating

The hot air is forced through a duct into the room to be heated.

Attention!

The choice of exhaust air ducting, length of ducting and number of bends can affect the compressor cooling system and must be approved by the manufacturer.

Reliable, safe operation of the compressor package is only warranted if the temperature limits (see chapter 1.6) of the air in the compressor space are kept to.

6.2 Connection of the Compressed Air Supply

The unit is set up ready to operate. Connect the discharge outlet to the user pipework using a flexible connection hose.

6.3 Electrical Connection



The connection to the main power supply and the protective measures required are to be carried out by an authorized electrician to the requirements of European Standard EN 1012–1 and EN 60204–1 and to the regulations of the local electricity authority.

The compressor package is wired ready for connection to the main power supply as detailed in the electrical diagram. Feed the supply cable through the PG fitting on the the base frame (or on the upper side of the package) and the control cabinet.

Terminals for a sequencer and volt–free contacts "Motor Running" and "Compressor ON – No Alarm" are fitted as standard (volt–free contacts are normally–open contacts and open circuit protected).

Attention!

The user of a compressor is obliged to carry out the following measures:

Compressor packages fitted with a drive motor greater than 3 kW and a current rating greater than 16 ampere must be installed with a lockable main isolating switch and main fuses.

The type of main switch used is dependent on the power consumption of the drive motor (see chapter 1.4 for the value).

The type of protective power circuit breaker used is dependent on the starting characteristic of the drive motor.

Attention!

The cross–section of the supply cable and the fuse ratings are specified to DIN VDE 0100 part 430 and 523 for an ambient temperature of 30 °C. For other operating conditions, e.g. higher ambient temperatures or longer supply lines (over 50 m) check and determine the cross–section of the cable and the fuse ratings according to DIN VDE 0100 and local electricity authority regulations.

See chapter 1.4 for recommended cable cross–sections and fuses.

Attention!

The compressor package can be operated over a rated voltage range of 380V to 420V at a tolerance of $\pm 5\%$ without reduction in performance because of the wide voltage range of the winding fitted in the drive motor.

If the compressor is operated at a mains voltage other than 400V then the tapplings on the control transformer must be changed to -5% for a mains voltage of 380V or $+5\%$ for a mains voltage of 420V.

Initial Start

7 Initial Start

7.1 Points to be Observed before Initial Start

Every compressor package is given a test run in the factory and carefully checked before shipment. The test run confirms that the compressor package conforms to the specification data and runs perfectly. However, independent of the checks made at the factory, the compressor package could be damaged during transport. For this reason, we recommend that the compressor package is examined for such possible damage. Observe the compressor package carefully during the first hours of operation for any possible malfunction.

Attention!

Important functional components in the compressor package (such as minimum pressure/check valve, pressure relief valve, inlet valve and combination valve) are adjusted and fitted to precise setting up regulations. Alterations to these components are not allowed without previous consultation with the manufacturer.



The minimum pressure/check valve, pressure relief valve and inlet valve are spring biased.

7.2 Points to be Observed before Starting:



IF THESE OR OTHER INSTRUCTIONS (WARNING; ATTENTION) ARE NOT COMPLIED WITH, ACCIDENTS CAN OCCUR CAUSING INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

If a power failure occurs, the compressor package starts again automatically (normal setting) provided the pressure in the air main is lower than the pressure threshold parameter entered in SIGMA CONTROL.

Do not operate the compressor with open access doors, screen doors or with panels removed as personnel could be injured by rotating parts and electrical equipment.

- ☞ Remove all packaging materials, tools and transport securing devices on and in the compressor package.
- The operator is expected to employ safe working techniques and to follow all prescribed operating and safety regulations when operating this compressor package.
- The user of this compressor package is responsible for its safe operating condition.
- Do not operate this compressor package in spaces where heavy dust conditions, toxic or inflammable gases could exist.
- Do not connect the compressor package to a supply voltage other than that stated on the nameplate.
- Do not install the compressor package in a space subject to freezing temperatures. The air temperature conditions at the air-intake must be kept to (see chapter (1.6).
- If exhaust air ducts are to be installed they must be at least the cross-section of the cooling air outlet of the compressor package and may not exceed the permitted pressure loss prescribed by the compressor manufacturer.
- During installation of the compressor package, ensure that a distance of at least 1 m is kept between the air intake of the package and any wall.

Initial Start

- ☞ Check the oil level in the oil separator tank (see chapter 9.12).
- Check that the airend rotates in the correct direction (see chapter 7.4).
- ☞ Check the tension of the V-belts (see chapter 9.4).
- ☞ The shut-off valve (6.6, see chapter 5.3) must be closed.
- ☞ The shut-off valve (20, see chapter 5.3) must be open.



Carry out the following work only when power is removed from the compressor package.

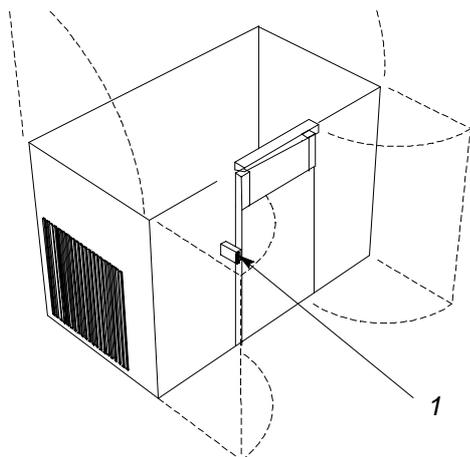
Check all screws on the electrical connections for tightness (carry out this check again after 50 operating hours).

- This compressor package is fitted with a running-in oil filter. Replace the filter after the running-in period of 200 hours has elapsed (see chapter 9.14).

7.3 Door Interlock Switch Check

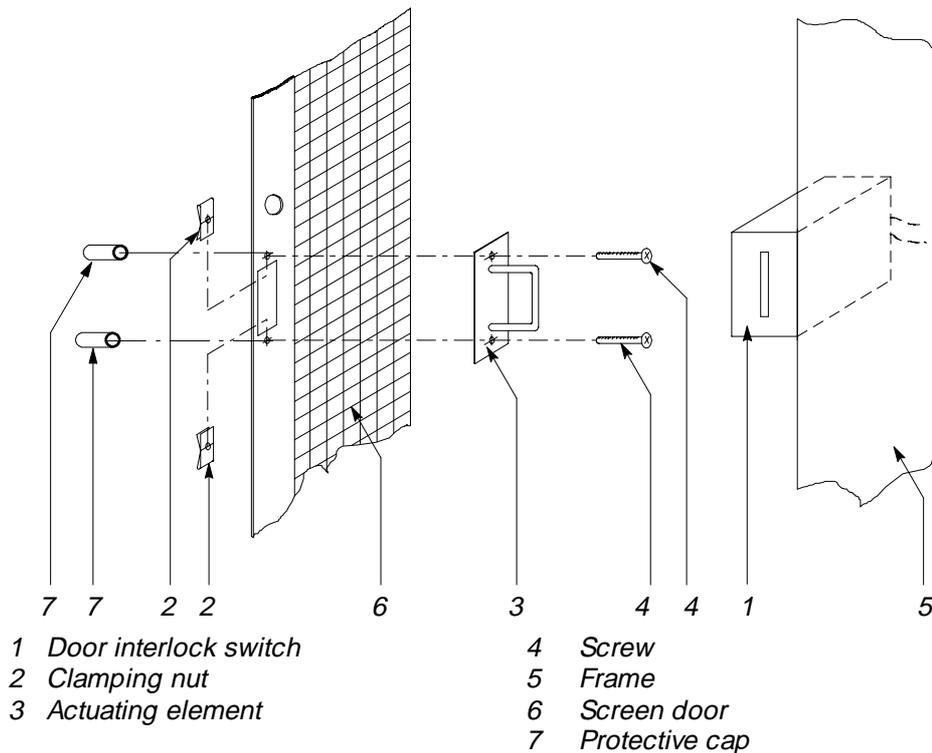


It is not permitted to operate the compressor package without a correctly functioning door interlock switch.



1 Door interlock switch

Initial Start



Visual door interlock switch check

- ☞ Check that the interlock switch operates smoothly by opening and closing the left-hand access door and the safety screen door.

Attention!

If the actuating element (3) is incorrectly aligned, inadvertent shut-down of the compressor can occur.

The actuating element (3) should lie flat, without mechanical tension, in the interlock switch (1) when the screen door is closed.

If necessary, re-align the actuating element (3).

- ☞ Loosen the bolts (4).
- ☞ Align the actuating element (3) so that it glides smoothly into the interlock switch (1).
- ☞ Compensate for the existing spacing between the actuating element (3) and the interlock switch (1) by fitting washers between the clamping nut (2) and the actuating element (3).
- ☞ Tighten the bolts (4) again.

Functional check of the interlock switch

Attention!

A functional check of the door interlock switch must be made after initial start.

- ☞ Start the compressor package (see chapter 8.4).
- ☞ Open the left-hand access door and the safety screen door – the compressor package will shut down immediately if the door interlock switch functions correctly.
- ☞ Close the left-hand access door and the safety screen door.
- ☞ Reset the alarm message by pressing the acknowledge (reset) key (11, see chapter 8.3.1) on SIGMA CONTROL.

The compressor package is now ready to start again.

Initial Start

7.4 Direction of Rotation Check

Attention! The compressor package is wired for connection to a clockwise phase sequence.

A check of the direction of rotation can be made by testing the phase sequence.

Arrows showing the direction of rotation are located on the motor and on the air end housing.

If the direction of rotation is incorrect, change over the supply conductors L1 and L2.

Attention! If the air end rotates in the wrong direction, the compressor package is automatically shut down by the pressure switch (4.2, see chapter 5.3).

7.5 Setting up the Motor Overload Trip



Disconnect the supply voltage to the compressor package by switching off and locking out the main switch before any adjustments are carried out on the compressor package. See chapter 2.3 for the main switch.

The trip is set to the standard adjustment at the factory.

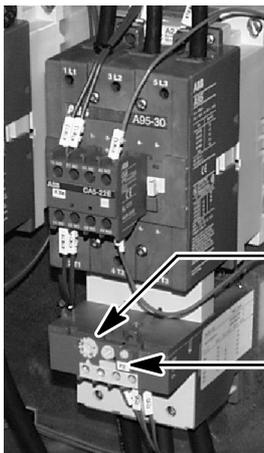
Compressor motor: star–delta start

In the star–delta configuration the phase current is fed via the motor overload trip. This phase current is 0.58 times the rated motor current.

See motor nameplate for the rated motor current.

Value:

To prevent the overload circuit breaker from triggering (because of voltage fluctuations, temperature influences or component tolerances), the set value can be up to 15% higher than the arithmetical phase current.



- 1 Motor phase current adjustment
- 2 Reset button

7.6 Setting the Air Main Pressure Threshold

The air main pressure threshold is preset at the factory. It can be changed in SIGMA CONTROL to match customer's operational requirements if the password is known. For further details, consult the SIGMA CONTROL service manual.

Initial Start

7.7 Measures to be taken before Initial Start

Take the following measures before initial start, after an oil change or a shutdown period of three months or longer:

7.7.1 Pour a small quantity of oil into the air inlet port.



Switch off and lock out the main switch.



Do not add oil unless the compressor package is completely vented.

See chapter 9.10 to vent the compressor.

- ☞ Unscrew the filler plug (1) on the inlet valve (2) and pour the prescribed quantity of oil (see chapter 1.7) into the airend.
- ☞ Turn the airend counterclockwise by hand using the belt pulley.
- ☞ Screw the plug back in again.

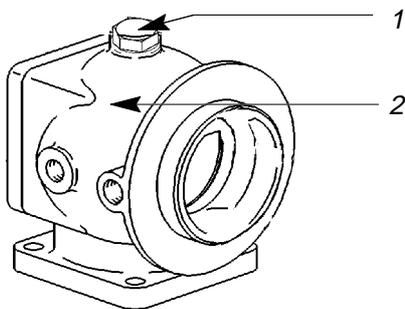
Attention!

This oil must be of the same type as used to run the compressor (see label near the oil filler plug on the oil separator tank).

If no additional oil is available then remove the required amount of oil from the oil separator tank. See chapter 9.13 for this procedure.

If the compressor package was shut down for longer than 12 months, further measures must be taken before putting it back into operation. Consult the manufacturer first.

- ☞ Open the shut-off valve between the compressor package and the air main.



- 1 Filler plug
- 2 Inlet valve

7.7.2 Running the compressor package in idle

At initial start run the compressor package in idle for 20 seconds by pressing the load/idle key (5, see chapter 8.3.1).

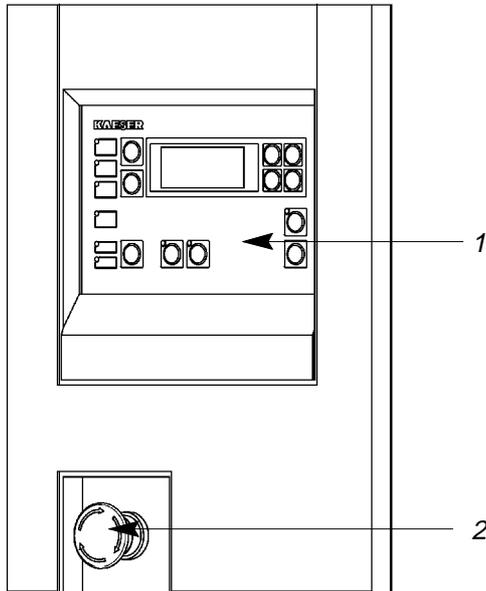
This measure ensures that the compressor package has sufficient time to flood the oil circulation.

7.8 Checklist

- Is the floor at the place of installation solid and level?
 yes no
- Is the space large enough for the compressor package or its components?
 yes no
- Are inlet and exhaust air apertures available in sufficient size and number?
 yes no
- Are all components of the compressor package easily accessible?
 yes no
- Is the power supply cable of sufficient cross-section?
(have electrical connection carried out by qualified electrician or company familiar with local conditions)
 yes no
- Is a shut off valve fitted by the user?
 yes no
- Is a flexible connecting hose or axial compensator fitted between the compressor package and the air main?
 yes no
- Have all screws, bolts and electrical connections been checked for tightness?
 yes no
- Has the oil level in the oil separator been checked?
 yes no
- Is a main switch fitted (suited to the motor starting characteristics)?
 yes no
- Has the setting of the drive motor overload current trip been checked?
 yes no
- Have you ensured that there are no other air components located in the exhaust air flow of the compressor package?
 yes no
- Have service personnel been instructed on safety regulations?
 yes no

8 Operation

8.1 Control Panel



- 1 SIGMA CONTROL
- 2 EMERGENCY STOP pushbutton

8.2 SIGMA controller

The SIGMA controller (1) is fitted in the control cabinet in the compressor package and serves as the control panel. It has 11 keys and 9 LEDs. Operation of the compressor package is determined by the settings programmed into the controller.

Further details on individual function keys, LEDs and plain text display relating to possible alarms and service messages, display of events, etc. are given in the service manual supplied for the SIGMA CONTROL controller.

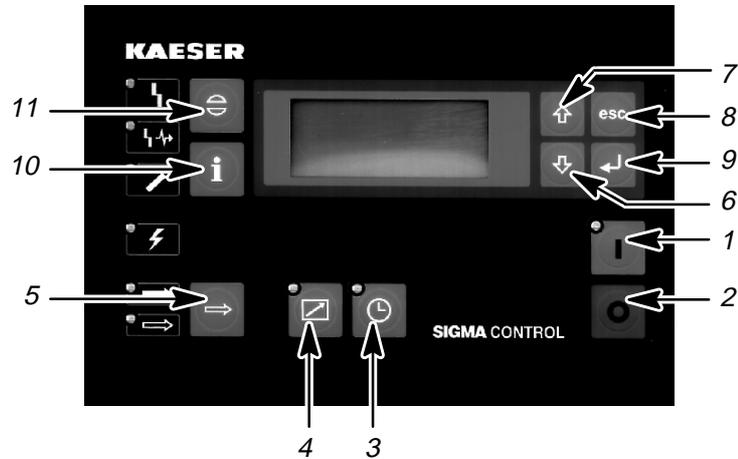
8.3 Emergency Stop Pushbutton

The Emergency Stop pushbutton shuts down the compressor package immediately.

If the Emergency Stop pushbutton is pressed because of an existing hazard, then this must be eliminated before the compressor package is reset. To accomplish this the following procedure must be carried out:

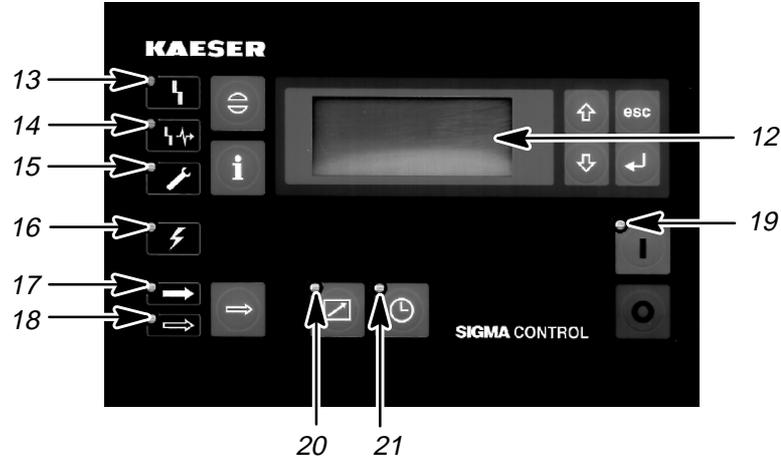
- ☞ Unlatch the Emergency Stop pushbutton by turning in the direction of the arrows.
- ☞ Acknowledge the alarm message on the controller by pressing the acknowledge (reset) key. (function keys see chapter 8.3.1.)

8.3.1 Function keys



- | | |
|--------------------|----------------------------|
| 1 ON key ("I") | 6 Menu scroll – DOWN key |
| 2 OFF key ("0") | 7 Menu scroll – UP key |
| 3 Timer ON/OFF key | 8 Escape key |
| 4 Remote ON key | 9 Return key |
| 5 Load/idle key | 10 Info – event key |
| | 11 Acknowledge (reset) key |

8.3.2 Light emitting diodes and plain text display



- | | |
|---------------------------------|----------------------|
| 12 Four–line display | 17 Load LED |
| 13 Alarm LED | 18 Idle LED |
| 14 Communication alarm LED | 19 Compressor ON LED |
| 15 Warning – maintenance LED | 20 Remote ON LED |
| 16 Power ON LED (to controller) | 21 Timer ON LED |

Operation

8.4 Compressor Package ON/OFF

Attention!

Do not switch the the compressor package on and off with the main switch. The compressor must always be switched ON and OFF with keys (1) and (2).

Local ON:

☞ Switch on the main switch.

The controller carries out a self–test. The self–test sequence is visible in the display (12). Afterwards, the green LED (16) illuminates permanently.

☞ Press the ON key (1)– LED (19) illuminates.

The compressor status is indicated by LEDs (17) and (18):

Attention!

If LED (19) is illuminated and both LEDs (17) and (18) are extinguished the compressor package is at standstill but on duty.

The compressor package can start at any moment.

Local OFF:

☞ Press the OFF key (2) – LED (19) extinguishes.

☞ Switch off and lock out the main switch.

See chapter 2.3 for details of the main switch.

8.5 Acknowledgement of Alarms

If an alarm occurs the compressor package is shut down immediately and the red LED (13) on SIGMA CONTROL flashes.

The bottom line in the display (12) shows the actual fault causing the alarm.

A list of alarms that may occur during operation is included in the SIGMA CONTROL service manual.

☞ Remove the fault.

☞ Acknowledge alarm with the reset key (11) – LED (13) extinguishes.

The compressor package is now ready to start again.

Attention!

If the compressor was shut down with the EMERGENCY STOP push-button, then reset by rotating the latched pushbutton in the direction of the arrow before acknowledging the alarm.

8.6 Acknowledgement of Service Messages

When maintenance is due the yellow LED (15) on SIGMA CONTROL flashes.

Attention!

Before any maintenance is due an initial warning is displayed to allow coordination of service and maintenance personnel and provision of necessary servicing materials. (lubricants, spare parts, etc.).

Maintenance due is shown in the display (12).

A list of service messages that may occur during operation is included in the SIGMA CONTROL service manual.

☞ Carry out the maintenance work.

☞ Acknowledge service message with the reset key (11) – LED (15) extinguishes.

Attention!

When the respective maintenance has been carried out, the remaining interval period (programmed interval until the next maintenance is due) must be reset.

Detailed information on resetting service counters is to be found in the service manual for SIGMA CONTROL.

9 Maintenance

9.1 Observe the following during all Maintenance and Servicing Work



Work on power driven systems may only be carried out by trained or specialized personnel.

Work on electrical equipment may only be carried out by a qualified electrician or trained personnel under the supervision of a qualified electrician according to electrical engineering regulations.

The compressor package restarts automatically after a power failure (standard setting).

Condition: the air main pressure is lower than the pressure set on the SIGMA CONTROL.

Switch off and lock out the main switch before attempting any maintenance work (see chapter 2.3 for the main switch).

Ensure that no maintenance personnel are working on the compressor package, that all panels are screwed back on again and that all access doors are closed before starting the compressor.

See chapter 8.4 to start the compressor package.



Carry out a visual and functional check of the door interlock switch after any maintenance and servicing work.

See chapter 7.3 for details.



The following points must be observed when handling lubricating and cooling materials:

Avoid contact with skin and eyes.

Do not inhale vapours and oil mist.

Do not eat or drink when handling such materials.

Fire, open flame and smoking are strictly forbidden.



Ensure that all lubricants, consumable materials and replacement parts accumulating during operation and servicing of the compressor package are disposed of according to environmental regulations.

Attention!

The plug-in nipple with ball valve and attached hose required to vent the oil separator tank for maintenance work such as topping up the oil, oil changes and filter changes is located behind the right-hand access door on the upright.

9.2 Regular Maintenance

Interval	Work to be done	See chapter
24 h after initial start	Check the tension of the V-belts	9.4
50 h after initial start	Check all electrical connections for tightness	
200 h after initial start	Change the oil filter	9.14
Weekly	Check the oil level	9.12
	Check the filter mats for clogging	9.6
500 h	Check the tension of the V-belts	9.4
	Clean the air filter*	9.7
1000 h	Check the oil cooler and air cooler for clogging	9.11
	Clean or renew the filter mats*	9.6
2000 to 3000 h	Change the oil filter*	9.14
	Change the air filter*	9.7
8000 to 9000 h**	Change the oil*	9.13
	Change the oil separator cartridge*	9.15
Annually	Check all electrical connections for tightness	
	Check the pressure relief valve	9.9
6000/12000 hours or after three years at the latest	Have the compressor motor bearings renewed by the KAESER Service*	9.8

* The maintenance period can vary depending on the motor switching frequency and environmental conditions.

** Only applies to Sigma Fluid Plus (see label on oil separator). If other oils are used contact an authorized KAESER service agency. National regulations concerning oil changes must be strictly adhered to.

We urgently recommend that a record is kept of all servicing done (see chapter 11.2) and that the compressor package – especially safety devices – are checked annually by an authorized KAESER service agency.

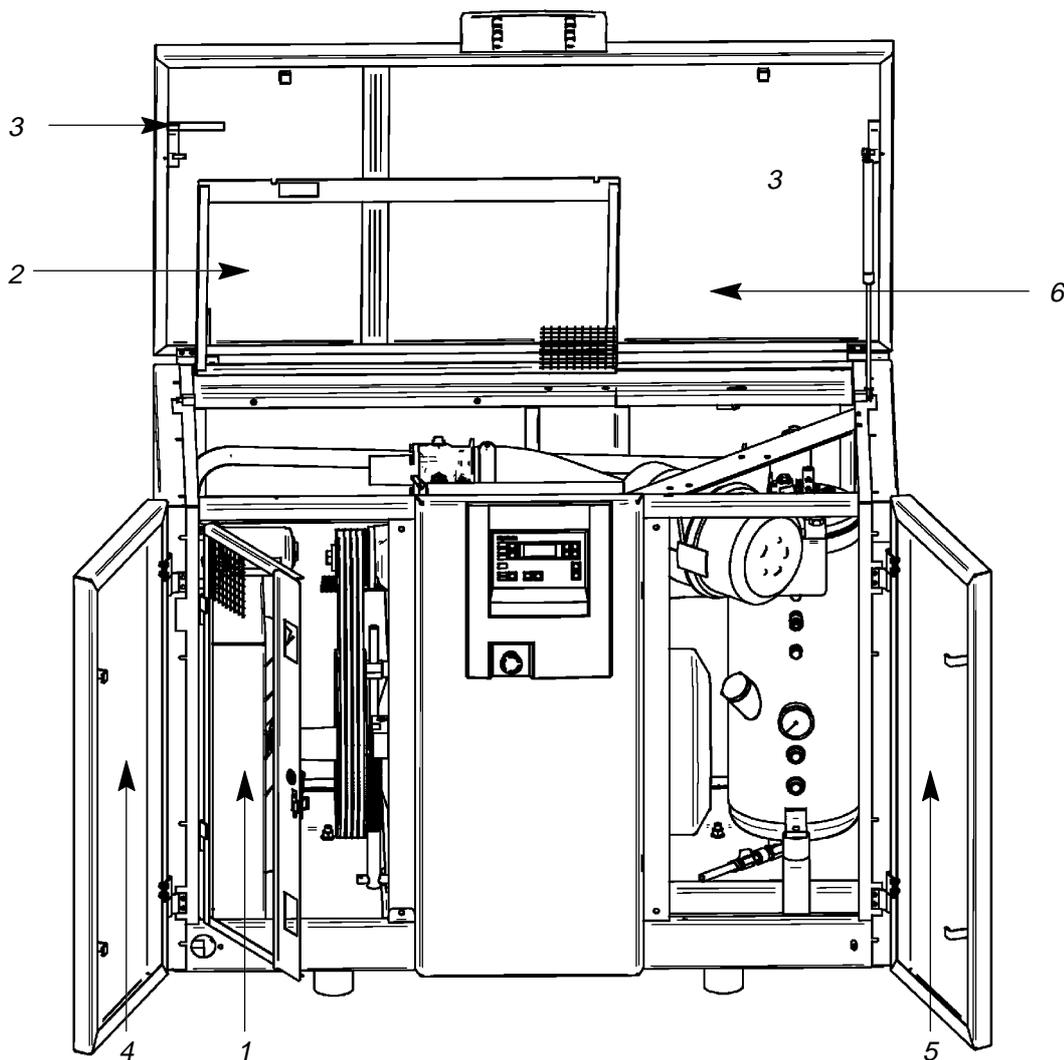
9.3 Opening and Closing the Compressor Package

To open:

- ☞ Open the left-hand access door, screen door and the right-hand access door.
- ☞ Lift up the top cover.
- ☞ Lift the upper safety screen and secure in the retaining hook (3).

To close:

Close all screens and access doors correctly.



- 1 *Screen door*
- 2 *Upper safety screen*
- 3 *Retaining hook for safety screen*
- 4 *Left-hand access door*
- 5 *Right-hand access door*
- 6 *Top cover*



Close all access doors and panels correctly before starting the compressor package.

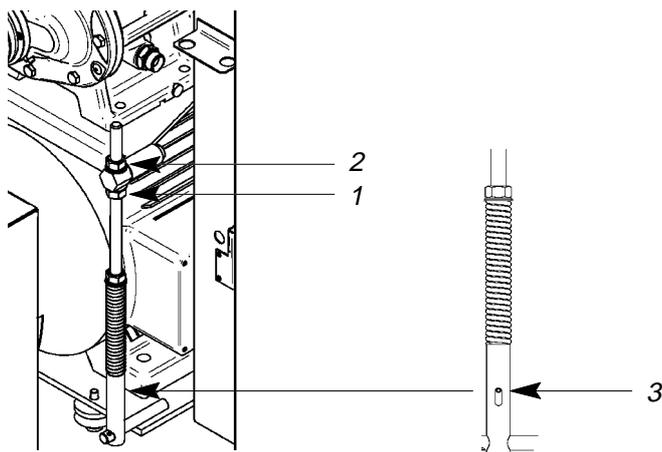
9.4 Checking the Tension of the V-belts

☞ Switch off the compressor package (see chapter 8.4).



Switch off and lock out the main switch to prevent accidents during maintenance.

Check the tension of the V-belts after the first 24 hours of operation and then every 500 hours of operation.



- 1 Hexagonal nut
- 2 Hexagonal nut
- 3 Marking pin

The V-belt tension is automatically adjusted within a limited range by the pressure spring of the belt tensioning device.

Re-tension the V-belts if they have stretched to the point where the marking pin (3) is located at the top end of its indicator slot.

- ☞ Loosen the hex nut (2).
- ☞ Re-tension the V-belts with the hex nut (1) until the marking pin (3) is located at the bottom end of its slot.
- ☞ Tighten the hex nut (2).



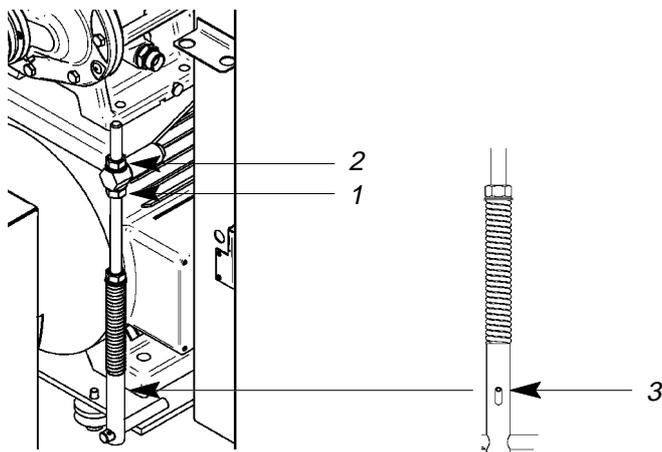
Close all access doors and panels correctly before starting the compressor package.

9.5 Changing the V-belts

- ☞ Switch off the compressor package (see chapter 8.4).



Switch off and lock out the main switch to prevent accidents during maintenance.



- ☞ Loosen the hex nut of the swing frame adjustment (2, see chapter 9.4)
- ☞ Screw the hex nut (1, see chapter 9.4) until the V-belts are loose.
- ☞ Remove the V-belts.

Attention!

It is essential that replacement belts are all precisely the same length in each set and absolutely oil-proof. For this reason we recommend that only original KAESER V-belts are used.

- ☞ Place the new V-belts over the fan blade, turn the fan and guide the belts over the remaining fan blades.
- ☞ Lay the new V-belts over the motor pulley and compressor pulley without straining them.
- ☞ Set the V-belt tension (see chapter 9.4).

Attention!

Check the tension after two hours of operation and then again after 24 hours of operation, as experience shows that the V-belts stretch mostly during this time period.



Close all access doors and panels correctly before starting the compressor package.

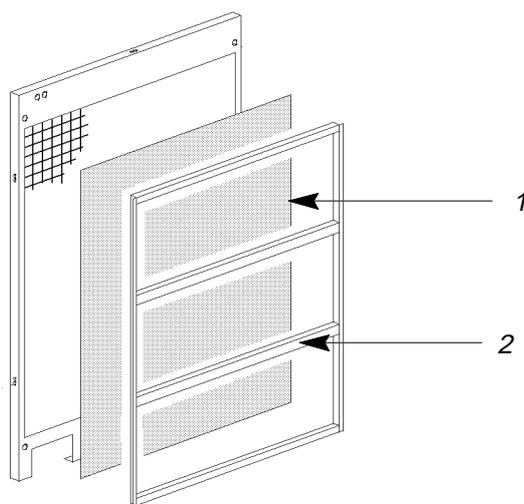
9.6 Cleaning or Renewing the Filter Mat

Check the filter mat weekly for clogging and clean, or renew if necessary as detailed in the regular maintenance table (see chapter 9.2) .

☞ Switch off the compressor package (see chapter 8.4).



Switch off and lock out the main switch to prevent an accidental compressor run.



- 1 Filter mat
- 2 Holding frame

Removal and fitting:

- ☞ Open the snap fasteners (turn the cross-head with a screwdriver anti-clockwise by 90°) and remove the holding frame.
- ☞ Fit the holding frame and close the snap fasteners (turn the cross-head with a screwdriver clockwise by 90° then press until the fasteners snap in).

Cleaning:

Rinse the mat in water of approximately 40°C, if necessary, use a mild washing powder. The mat can also be tapped, vacuum cleaned or blown out with compressed air. Rinse out oily dust using warm water with a mild solvent additive.

Attention!

If the mat is heavily soiled or has been cleaned often (maximum five times), then replace it.

Maintenance

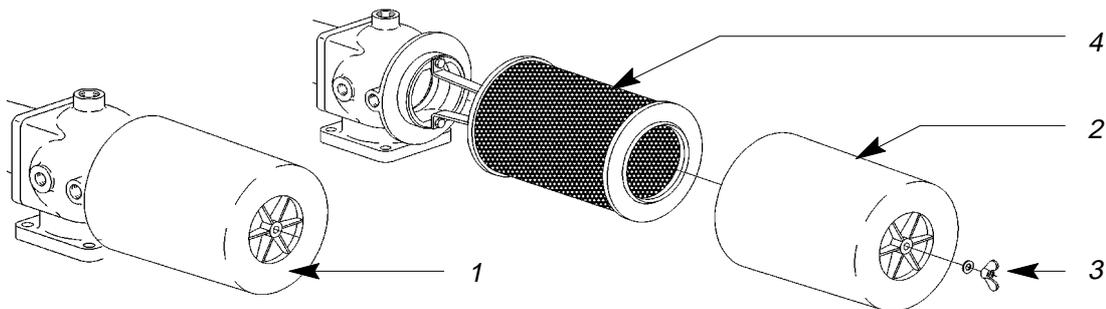
9.7 Cleaning or Renewing the Air Filter

Clean the air filter after every 500 service hours.

- ☞ Stop the compressor unit (see chapter 8.4).



Switch off and lock out the main switch to prevent an accidental compressor run.



- 1 Air filter
- 2 Air filter cap
- 3 Wing nut for opening air filter housing
- 4 Air filter cartridge

To open the air filter housing:

- ☞ Unscrew the wing nut (3) and remove the air filter cap (2) and the filter cartridge (4).
- ☞ Clean the air filter cap and sealing surfaces.

Cleaning the air filter cartridge (4) by tapping:

- ☞ Tap the air filter cartridge several times on the front with the ball of the hand.

Attention! Do not use force otherwise the air filter cartridge may be damaged.

- ☞ Clean all sealing surfaces.

Cleaning the air filter cartridge with compressed air:

- ☞ Blow dry compressed air at a pressure of not more than 5 bar at a slant from the inside to the outside of the air filter cartridge surfaces.

Attention! Do not clean the air filter cartridge with fluids. If the air filter cartridge is heavily contaminated or was already cleaned several times (max. five times), renew.

To close the filter housing:

- ☞ Insert the filter cartridge (4) and replace the air filter cap (2).
- ☞ Screw on the wing nut (3) tightly.



Close all access doors and panels correctly before starting the compressor package.

9.8 Greasing the Electric Motor

Compressor motor:

The electrical motor bearings are permanently greased.

Attention! Have the motor bearings replaced using the KAESER Service in accordance with the maintenance schedule (see chapter 1.9).

Maintenance

9.9 Checking the Pressure Relief Valve on the Oil Separator Tank

To check the operating pressure of the pressure relief valve the final pressure of the compressor package must be increased above the pressure parameter entered in the controller.

See chapter 1.5 for the operating pressure of the pressure relief valve.

Attention!

The pressure relief valve must be checked by an authorized KAESER service agency when the interval quoted in the regular maintenance table (see chapter 9.2) has expired.

Detailed information is to be found in the service manual for SIGMA CONTROL.

9.10 Venting the Compressor Package

☞ Shut down the compressor package (see chapter 8.4).

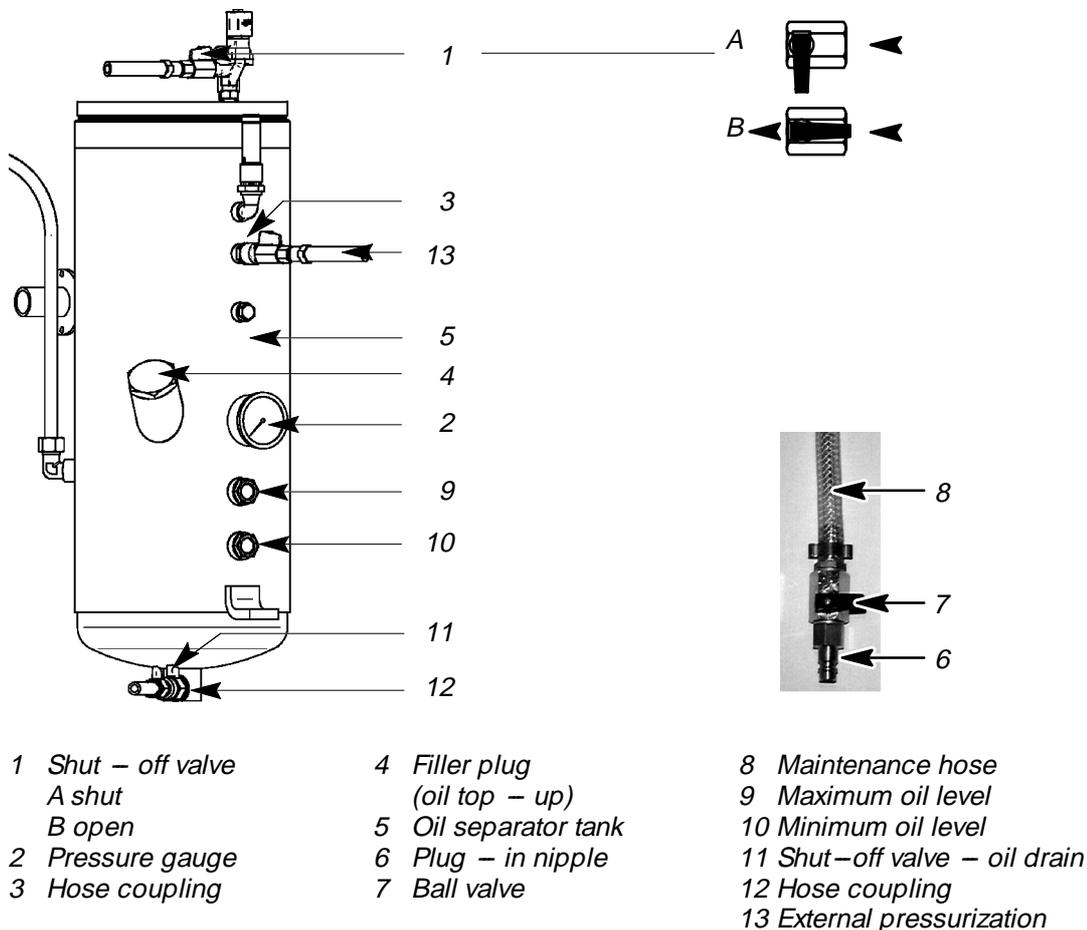


Switch off and lock out the main switch to prevent an accidental compressor run.

☞ Close the shut-off valve between the compressor package and the air main.

The oil circulation vents automatically.

Venting the oil separator tank:



- ☞ The pressure gauge on the oil separator tank must indicate zero bar.



Oil mist can escape when the oil separator tank is vented.

- ☞ Insert the nipple with attached hose (6) – **ball valve closed** – in the hose coupling (3) on the oil separator tank.
- ☞ Slowly open the ball valve (7) and the remaining pressure in the oil separator tank escapes.
- ☞ Remove the nipple with attached hose (6) from the hose coupling (3) on the oil separator tank.

Venting the air cooler:

- ☞ Insert the nipple with attached hose (6) – **ball valve closed** – in the hose coupling (3, chapter 9.11) on the air cooler.
- ☞ Slowly open the ball valve (7), the air cooler and pipework up to the minimum pressure/check valve are depressurized.
- ☞ Remove the nipple with attached hose (6) from the hose coupling on the air cooler.



Close all access doors and panels correctly before starting the compressor package.

9.11 Cleaning the Oil Cooler and Air Cooler

The oil cooler and air cooler must be checked for clogging regularly. Heavy clogging may cause high temperatures in the oil circulation.

See regular maintenance table for cooler service interval (chapter 9.2).

- ☞ Switch off the compressor unit under full load (see chapter 8.4).



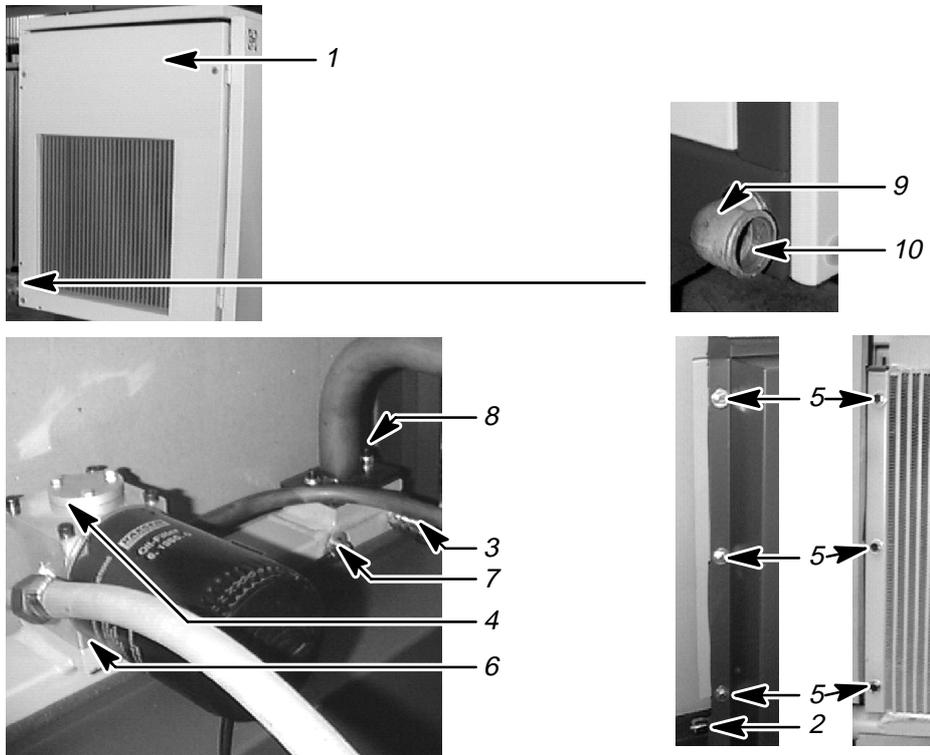
Switch off and lock out the main switch to prevent an accidental compressor start.



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

- ☞ Venting the compressor package (see chapter 9.10).

9.11.1 Removing and cleaning the oil/air cooler



- | | |
|-------------------------------------|---|
| 1 Cover panel | 6 Connecting flange |
| 2 Oil cooler hose coupling | 7 Pipe screw fitting |
| 3 Air cooler hose coupling | 8 Flexible hose connection (air cooler inlet) |
| 4 Combination valve with oil filter | 9 Angle |
| 5 Hexagonal screw | 10 Compressed air connection |

- ☞ Unscrew the cover panel (1).
- ☞ Unscrew the compressed air line of the air main from the compressed air connection (10) and, if necessary, the elbow (9) from the air cooler.
- ☞ Unscrew the flexible pipe connection (8) at the air cooler inlet and hose connector (7).
- ☞ Unscrew the combination valve (4) from the connecting flange (6) on the oil cooler, lift slightly, catch any escaping oil with a cloth and dispose of according to environmental care regulations
- ☞ Remove the O rings from the combination valve (4) and check them for damage.
- ☞ Close up the pipes and the openings on the combination valve, air cooler and oil cooler.

Attention!

Support the air/oil cooler before unscrewing the hex bolts (5).

- ☞ Unscrew the hex bolts (5) and carefully lift out the air/oil cooler.



Do not direct compressed air, water or steam jets at persons. These jets represent contained energy and as such are dangerous to life!



Clean the soiled cooler with water or steam jet only in washing areas that that are suitable for such cleaning work and provided with an oil separator!

- ☞ Clean the cooler cells with compressed air, water or steam jet.
- ☞ Reassemble in the reverse order.

Attention!

Seat the O rings correctly in the connecting flange (6) when fitting the combination valve (4).

- ☞ See chapter 9.12 for topping up the oil.
- ☞ Open the shut-off valve between the compressor package and the air main.



Close all access doors and panels correctly before starting the compressor package.



Carry out a trial run.

When the operating temperature is reached (see chapter 1.1) shut down the compressor package (see chapter 8.4) and lock out the main switch to prevent an accidental compressor run.

Carry out a visual check for leaks.

9.12 Topping up the Oil

Check the oil level weekly at the oil level sight glass with the compressor shut down. If necessary, top up the oil to the maximum level. To do this shut down the compressor in the full load phase and wait five minutes for the oil level to settle. Do not exceed the maximum level (centre of the oil level gauge).

- ☞ Shut down the compressor package under full load (see chapter 8.4).



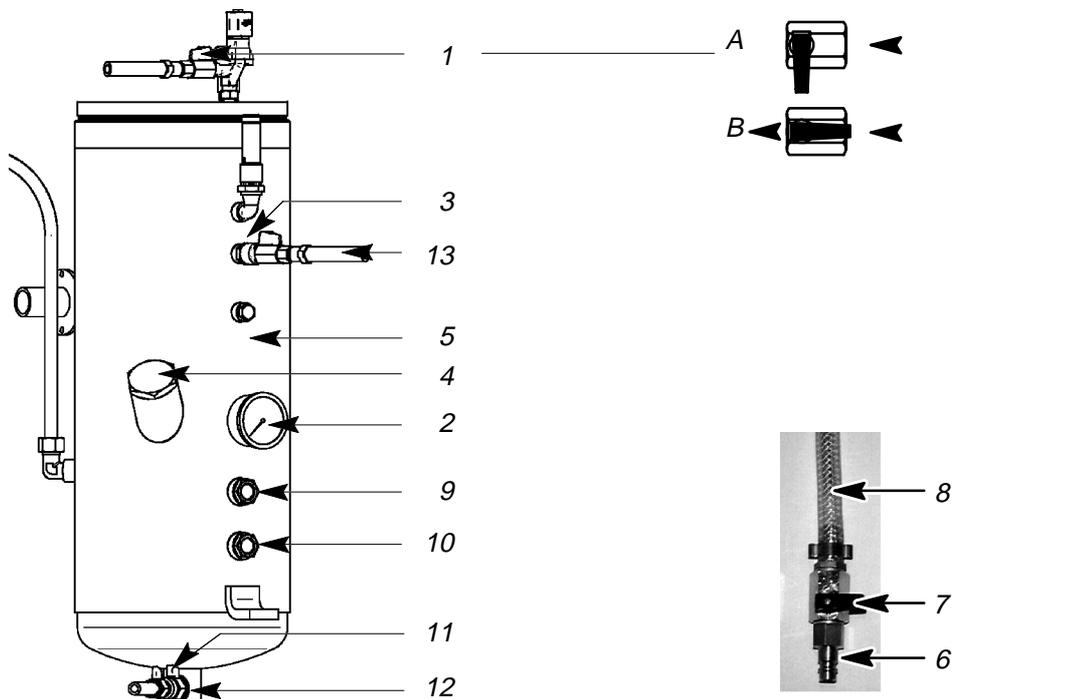
Switch off and lock out the main switch to prevent an accidental compressor run.



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

- ☞ Venting the compressor package (see chapter 9.10).

Maintenance



- | | | |
|--|---------------------------------|-------------------------------|
| 1 Shut – off valve
A shut
B open | 4 Filler plug
(oil top – up) | 8 Maintenance hose |
| 2 Pressure gauge | 5 Oil separator tank | 9 Maximum oil level |
| 3 Hose coupling | 6 Plug – in nipple | 10 Minimum oil level |
| | 7 Ball valve | 11 Shut–off valve – oil drain |
| | | 12 Hose coupling |
| | | 13 External pressurization |

- ☞ Unscrew the oil filler plug (4) on the oil separator tank.
- ☞ Top up the oil to the maximum mark.
- ☞ Check the sealing ring of the filler plug (4) for damage and then replace the filler plug (4).
- ☞ Open the shut–off valve between the compressor package and the air main.



Close all access doors and panels correctly before starting the compressor package.

Attention!

After carrying out the oil change or oil cooler cleaning (with removal of the oil cooler) run the compressor package up to operating temperature to ensure that the combination valve closes and that the oil cooler is flooded with oil.

Afterwards, repeat the procedures “Venting the Compressor Package” (chapter 9.10) and “Topping up the Oil” (chapter 9.12).

Attention!

Always use the same brand and type of oil when topping up (see label on the oil separator tank).

If the type of oil is changed, drain the old oil completely and renew the oil filter.

Never use different types of oil.

Maintenance

9.13 Oil Change (Oil Separator and Oil Cooler)

Carry out the oil change with the compressor at operating temperature.



Hot oil; beware of scalding!

The oil change interval is dependent on the degree of cooling air contamination and on the ambient temperature.

If the compressor package is operated close to the maximum permissible ambient temperature (see chapter 1.6), the oil must be changed more often, if necessary, the interval should be halved.

See regular maintenance table (chapter 9.2) for oil change interval.

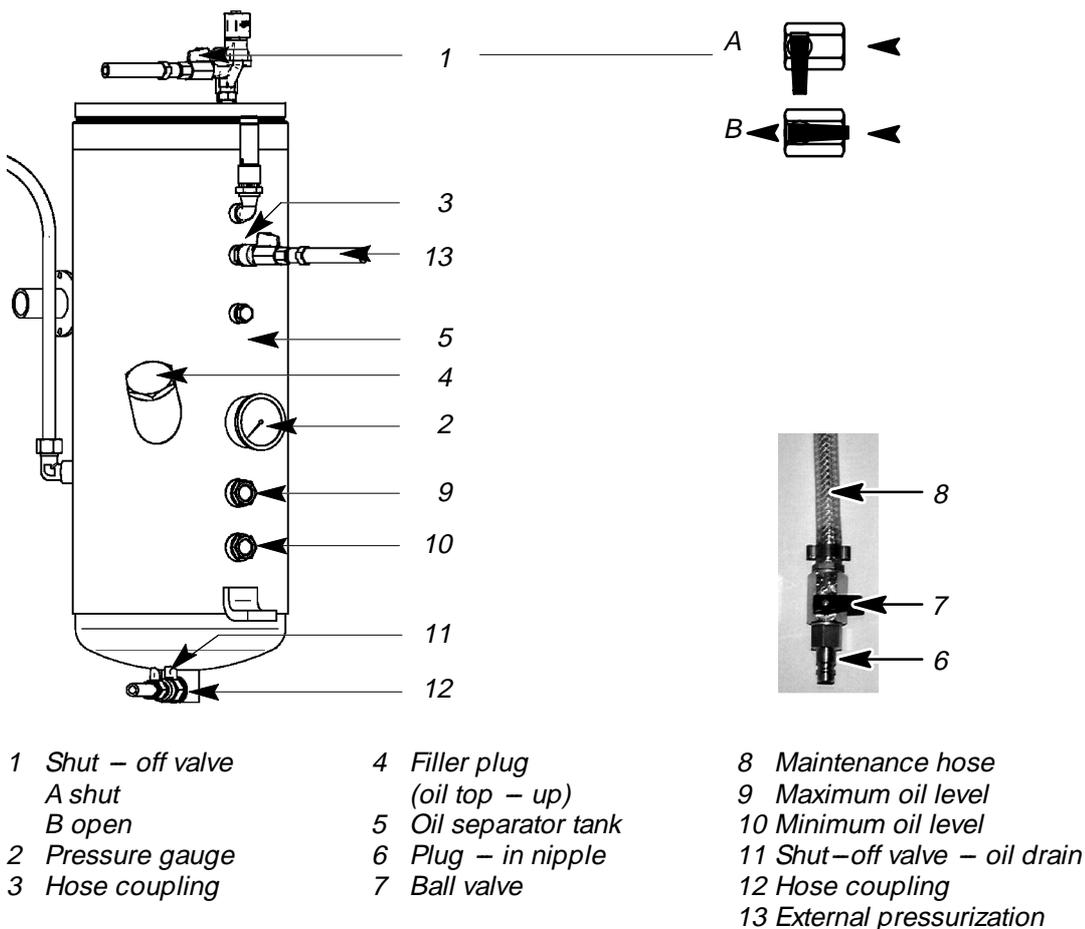
Attention!

Drain the oil out of the separator tank, cooler and the pipework completely. See chapter 9.13.4 for putting back into operation.

☞ Shut down the compressor package under full load (see chapter 8.4).



Switch off and lock out the main switch to prevent an accidental compressor run.



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

☞ Venting the compressor package (see chapter 9.10).

9.13.1 Draining the oil using external pressure source

Draining the oil on the oil separator tank:

- ✎ Insert the nipple with attached hose (6) – **ball valve closed** – in the hose coupling (3) on the oil separator tank (5).
- ✎ Apply separate pressurization to the attached hose. Pressurize the oil separator tank (5) by slowly opening the ball valve (7) until the pressure gauge (2) on the oil separator tank (5) shows approximately 3 bar.
- ✎ Remove the nipple with attached hose (6) from the hose coupling (3) on the oil separator tank (5).
- ✎ Prepare a clean container to catch escaping oil.

Attention!

The container must be large enough to hold the total oil content of the compressor package (see chapter 1.7).

- ✎ Insert the nipple with attached hose (6) – **ball valve closed** – in the hose coupling (12) on the oil separator tank (5).
- ✎ Hang the attached hose into the container and secure.
- ✎ Open the shut-off valve (11).
- ✎ Slowly open the ball valve (7). The remaining pressure in the oil circulation forces out the oil. When air escapes, close the ball valve (7) immediately.
- ✎ Close the shut-off valve (11).
- ✎ Remove the nipple with attached hose from the hose coupling (12) on the oil separator tank (5).

Drain the oil from the oil cooler:

- ✎ Place the canister under the oil cooler.
- ✎ Insert the nipple with attached hose – **with the ball valve closed** – into the hose coupling (2, chapter 9.11) on the oil cooler.
- ✎ Hang the hose in the canister and secure.
- ✎ Slowly open the ball valve (7). The remaining pressure in the oil circulation forces out the oil.
- ✎ Remove the nipple with attached hose from the hose coupling (2, chapter 9.11) on the oil cooler.



Dispose of the used oil according to environmental care regulations.

- ✎ Open the shut-off valve (1).

9.13.2 Adding oil



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

- ✎ Venting the compressor package (see chapter 9.10).
- ✎ Unscrew the oil filler plug (4) on the oil separator tank.

Maintenance

Attention!

Always use the same brand and type of oil when topping up the oil. (see label on the oil separator tank).

If a different type of oil is used drain the old oil completely and always renew the oil filter.

Never mix different types of oil.

- ☞ Top up the oil to the maximum mark.

For oil quantity see chapter 1.7.

- ☞ Check the sealing ring on the oil filler plug (4) for damage and then screw in the oil filler plug.

9.13.3 Draining the oil using own compressed air

- ☞ Shut down the compressor package under full load (see chapter 8.4).



Switch off and lock out the main switch to prevent an accidental compressor run.

- ☞ Close the shut-off valve between the compressor package and the air main.

The compressor oil circulation vents automatically.

- ☞ The pressure gauge on the oil separator tank must indicate zero bar.
- ☞ Close the shut-off valve (1).



Close all access doors and panels correctly before starting the compressor package.

- ☞ Start the compressor package (see chapter 8.4) and allow to run for approximately 30 seconds.
- ☞ Shut down the compressor package under full load (see chapter 8.4).



Switch off and lock out the main switch to prevent an accidental compressor run.

- ☞ Check the actual pressure on the pressure gauge (2). Open the shut-off valve (1), let the pressure on the pressure gauge (2) sink to approximately 3 bar and then close the shut-off valve (1) again.
- ☞ Drain the oil from the oil separator tank and the oil cooler. Proceed as detailed in chapter 9.13.1.
- ☞ Open the shut-off valve (1).
- ☞ Top up with oil as described in chapter 9.13.2.

9.13.4 Measures for putting back into operation

- ☞ Carry out measures detailed in “Pouring a small quantity of oil into the air inlet port” see chapter 7.7.1.
- ☞ Carry out measures detailed in “Running the compressor package in idle” see chapter 7.7.2.
- ☞ Carry out the measures detailed in “Venting the compressor package” see chapter 9.10.
- ☞ Top up with oil, see chapter 9.13.2.

Maintenance

- ☞ Open the shut-off valve between the compressor package and the air main.
- ☞ Switch on the compressor package, see chapter 8.4, and allow to run until the operating temperature is reached, see chapter 1.1.
- ☞ Top up the oil again, see chapter 9.12.



Close all access doors and panels correctly before starting the compressor package.



Carry out a trial run.

When the operating temperature is reached (see chapter 1.1) shut down the compressor package (see chapter 8.4) and lock out the main switch to prevent an accidental compressor run.

Carry out a visual check for leaks.

9.14 Oil Filter Change



Hot oil; beware of scalding.

During the running in period, a running-in oil filter cartridge is fitted to clean the oil system.

Attention!

Replace the running-in oil filter cartridge with a standard oil filter cartridge after approximately 200 operating hours.

A further filter change is recommended after the interval quoted in the regular maintenance table (see chapter 9.2) or when the corresponding service message is displayed on SIGMA CONTROL (see chapter 8.1). The filter must be changed after every oil change.

9.14.1 Removal and replacement of the oil filter

- ☞ Shut down the compressor package under full load (see chapter 8.4).

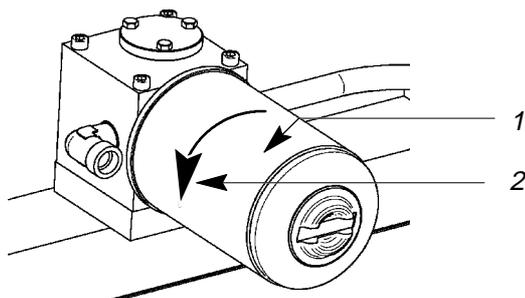


Switch off and lock out the main switch to prevent an accidental compressor run.



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

- ☞ Venting the compressor package (see chapter 9.10).



- 1 Oil filter cartridge
- 2 Turn in this direction to unscrew the cartridge

- ☞ Spin off the used or contaminated oil filter counter-clockwise and catch escaping oil in a suitable container.



Dispose of the used filter and used oil carefully according to environmental regulations.

- ☞ Clean the sealing faces carefully with lint free cloth.
- ☞ Lightly oil the gasket of the new oil filter before screwing into position.
- ☞ Spin on the new oil filter clockwise by hand until the gasket fits tightly.

Attention!

Do not use a tool as this may cause damage to the oil filter and the gasket.

- ☞ Check the oil level (see chapter 9.12).
- ☞ Open the shut-off valve between the compressor package and the air main.



Close all access doors and panels correctly before starting the compressor package.



Carry out a trial run.

When the operating temperature is reached (see chapter 1.1) shut down the compressor package (see chapter 8.4) and lock out the main switch to prevent an accidental compressor run.

Carry out a visual check for leaks.

Maintenance

9.15 Changing the Oil Separator Cartridge

The service life of the oil separator cartridge is strongly influenced by the degree of contamination of inlet air and on strict adherence to the recommended maintenance intervals of the air and oil filters.

We recommend that the oil separator cartridge is changed with the oil or when the relevant service message is displayed on SIGMA CONTROL (see chapter 8.1).

☞ Shut down the compressor package under full load (see chapter 8.4).

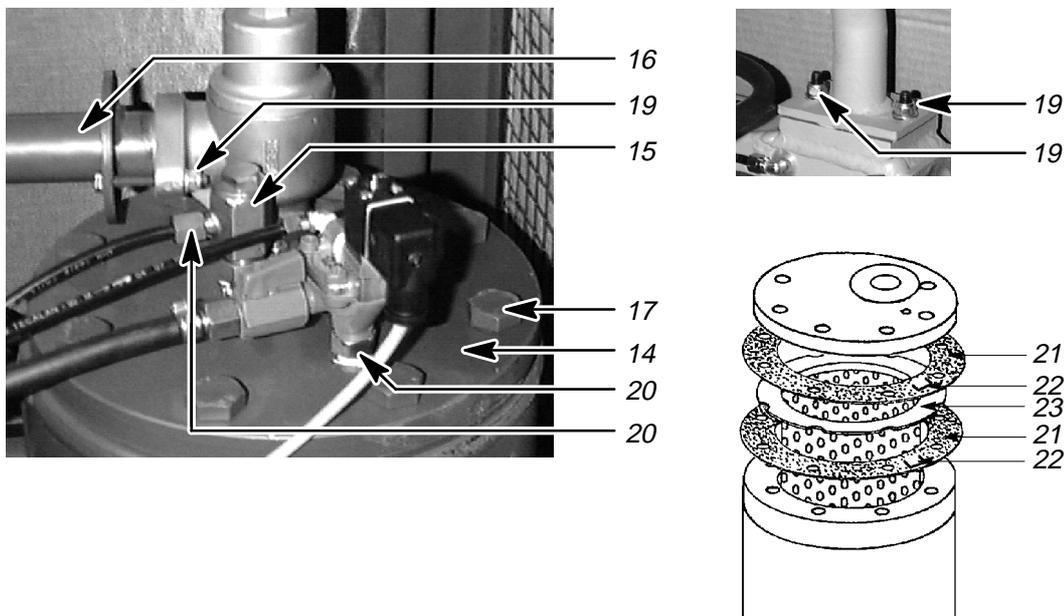


Switch off and lock out the main switch to prevent an accidental compressor run.



Before opening or removing pressurized components (pipes, hoses, tanks, etc.) it is imperative that the compressor package is completely depressurized.

☞ Venting the compressor package (see chapter 9.10).



14 Cover
15 Dirt trap
(with copper pipe)
16 Air pipe

17 Hexagonal screw
19 Self-locking nut
20 Union nut

21 Gasket
22 Metal clip
23 Oil separator cartridge

☞ Loosen the union nuts (20) and lay the parts with the connections carefully to one side – pull out the copper pipe at position (15).

☞ Unscrew the self locking nuts (19) on both ends of the air pipe (16) (on the oil separator tank and the air cooler) and remove the air pipe (16).

☞ Unscrew the bolts (17) holding down the cover plate (14) and carefully remove the cover plate.

☞ Remove the old oil separator cartridge (23), with gaskets (21) and dispose of according to environmental regulations.

☞ Clean the sealing surfaces of the oil separator tank.

Attention!

The oil separator cartridge is disposable and cannot be cleaned.

- ☞ Insert the new oil separator cartridge (23) with the new gaskets (21), fit and tighten down the cover plate (14) with the bolts (17).
- ☞ Renew the screen filter and the O ring of the dirt trap (15) when the oil separator cartridge is renewed.
- ☞ Reassemble in the reverse order.
- ☞ Open the shut-off valve between the compressor package and the air main.



The metal parts of the oil separator cartridge are electrically conductive and thus require "electrically conductive gaskets". The gaskets (21) are fitted with metal clips (22) that fulfil this requirement and provide an electrical path to the oil separator tank and to the frame of the compressor package.

Do not remove the metal clips.



Close all access doors and panels correctly before starting the compressor package.



Carry out a trial run.

When the operating temperature is reached (see chapter 1.1) shut down the compressor package (see chapter 8.4) and lock out the main switch to prevent an accidental compressor run.

Carry out a visual check for leaks.

10 Spare Parts and After Sales Service

10.1 Service parts and expendable parts

Description	No. off	Order No.
Oil filter (Operating temperature < 90°C)	1	6.1985.1
Oil filter (Operating temperature ≥ 90°C e.g. South-East-Asia)	1	6.1985.10030
Air filter cartridge	1	6.2055.0
Filter mat	1	6.1687.0
Oil separator cartridge Complete set	1	6.2011.1
Comprising:		
Separating cartridge	1	
Gasket	2	
Dirt screen filter	1	
O Ring	1	

See chapter 1.3 for details of the V-belt set.

	KAESER KOMPRESSOREN GmbH D-96410 Coburg, Postfach 2143 Germany, Tel.: (09561) 640-0 Fax.: (09561) 640-130		
	Model	<input type="text"/>	
	Part No.	<input type="text"/>	
	Serial No.	<input type="text"/>	
	Year	<input type="text"/>	
	Rated power	<input type="text"/> kW	
	Rated motor speed	<input type="text"/> min ⁻¹	
	Permiss. gauge working press.	<input type="text"/> bar	

Important for all queries:

☞ Enter the data on your compressor's nameplate in the nameplate shown above.

Always quote the data on the nameplate when making a query or ordering spares.

Attention!

Always order original spares from the compressor manufacturer to avoid lowering the quality of your compressor package.

10.2 Service and Maintenance Agreement

We recommend that you take out a service and maintenance agreement with an authorized KAESER service agency. This is your best guarantee of reliable air supplies.

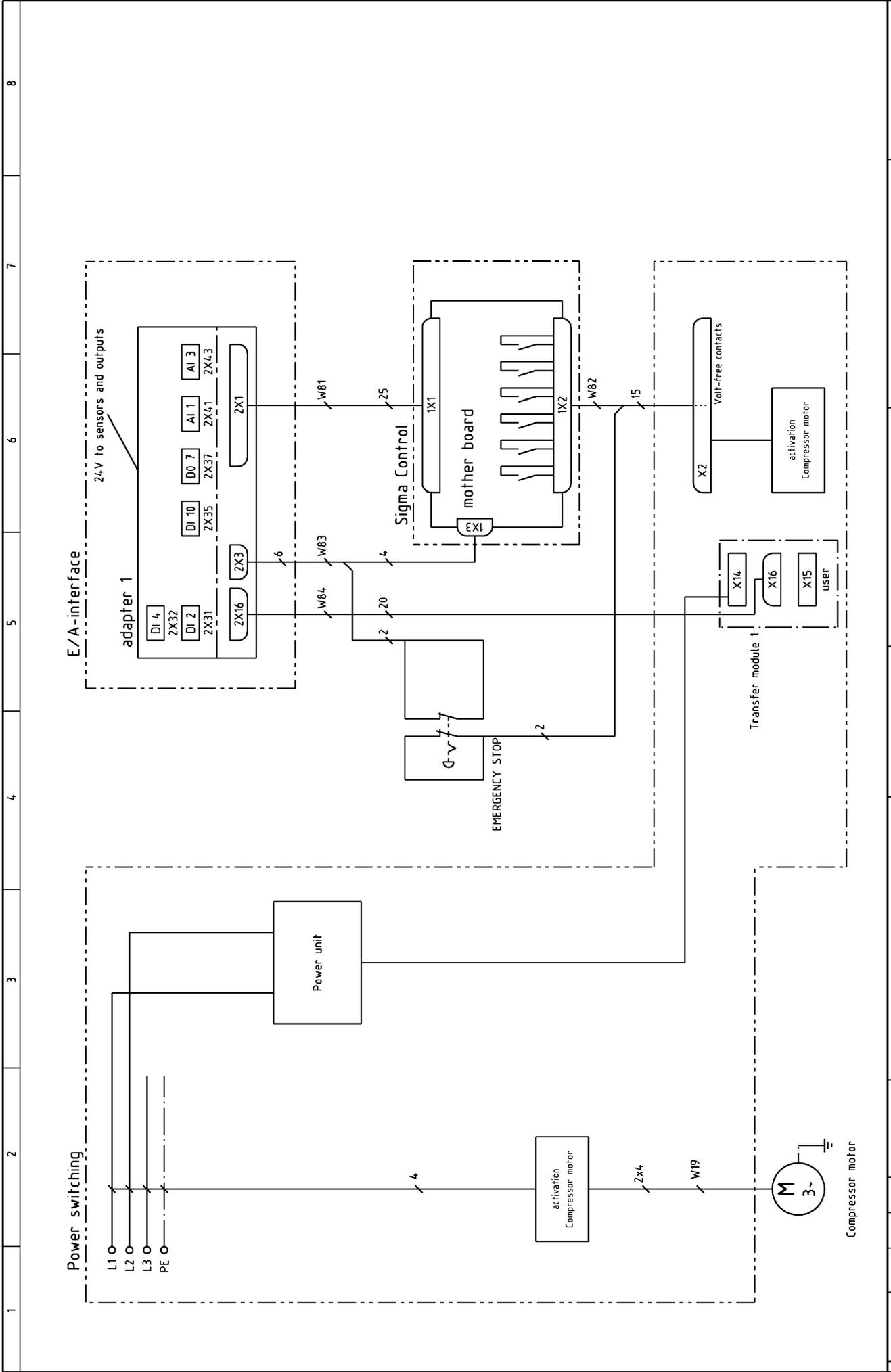
11 Appendix

11.1 Electrical Diagram

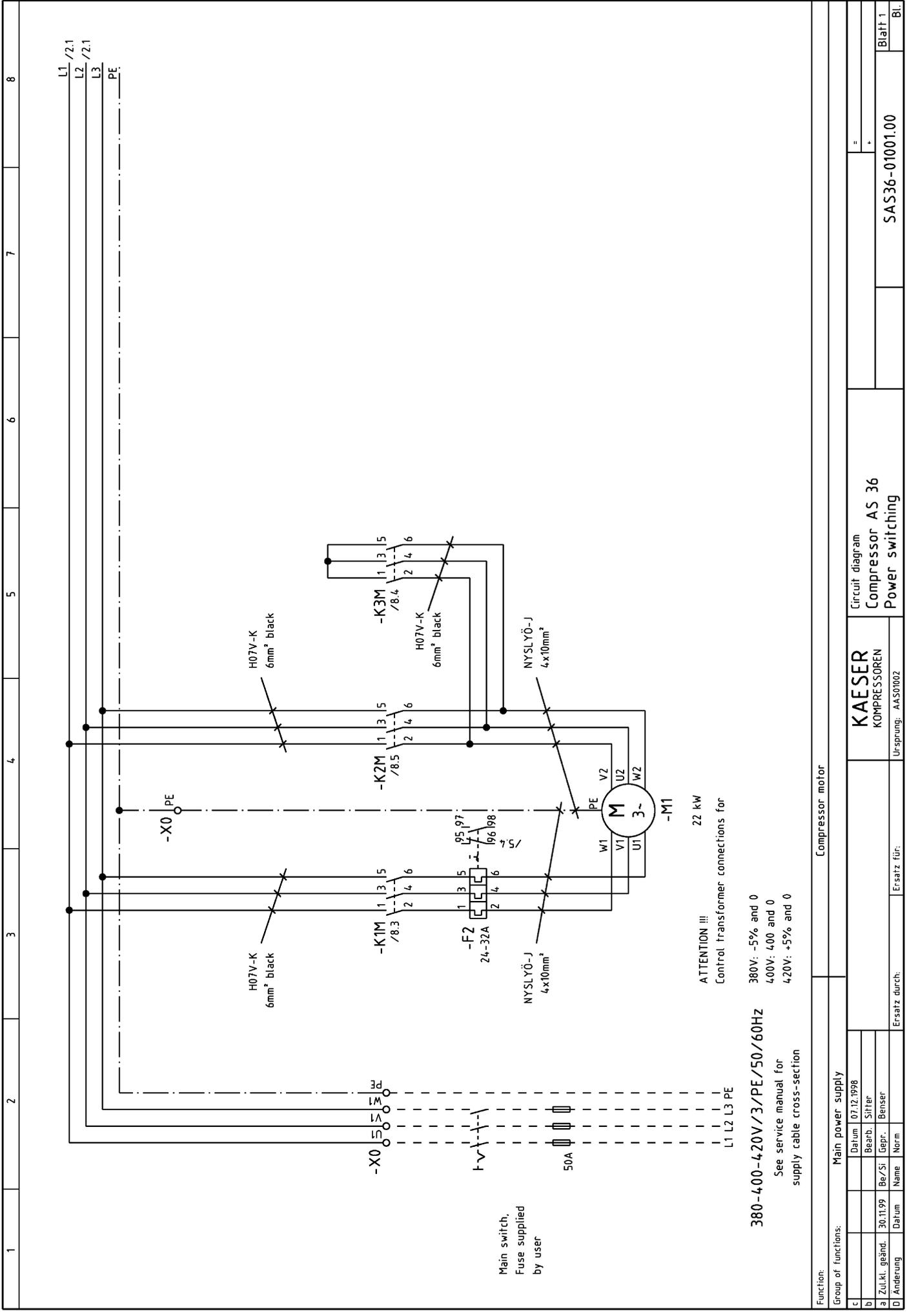
1	2	3	4	5	6	7	8
<p>Electrical diagrams Compressor AS 36 380-400-420V 50/60Hz</p>							
<p>Manufacturer: Kaeser Kompressoren GmbH Postfach 2143 96410 Coburg</p>							
c		Datum		07.12.1998		E	
b		Bearb.		Sittler			
a		Be/SI		Gepr.		Bensler	
A		Änderung		Datum		Ersatz durch:	
		Name		Norm		Ersatz für:	
		KAESEK		KOMPRESSOREN		Ursprung:	
		Cover page		Compressor AS 36		Sigma Control	
		=		+		DAS36-01001.00	
						Blatt 1	
						Bl.	

Lfd. Nr. No.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page		DAS36-01001.00	1	
2	List of contents		ZAS36-01001.00	1	
3	Block diagram		UAS36-01001.00	1	
4	Circuit diagram	Power switching	SAS36-01001.00	1	
5	Circuit diagram	Control voltage tapping	SAS36-01001.00	2	
6	Circuit diagram	Power supply unit	SAS36-01001.00	3	
7	Circuit diagram	mother board/Inputs	SAS36-01001.00	4	
8	Circuit diagram	mother board/Inputs	SAS36-01001.00	5	
9	Circuit diagram	mother board/Inputs	SAS36-01001.00	6	
10	Circuit diagram	mother board/Outputs	SAS36-01001.00	7	
11	Circuit diagram	mother board/Outputs	SAS36-01001.00	8	
12	Circuit diagram	Volt-free contacts	SAS36-01001.00	9	
13	Electrical equipment identification		SAS36-01001.00	01	
14	Equipment parts list	Control cabinet	Gas36-01001.00	1	
15	Terminal schedule	Terminal strip -X0	KAS36-01001.00	1	
16	Terminal schedule	Terminal strip -X2	KAS36-01001.00	2	
17	Terminal schedule	Terminal strip -X11	KAS36-01001.00	3	
18	Terminal schedule	Terminal strip -X14/-X15	KAS36-01001.00	4	
19	Component layout	Mounting plate	AAS36-01001.00	1	

c	Datum	07.12.1998	List of contents		=
b	Bearb.	Sittler	Compressor AS 36		*
a	Gepr.	Bensler	KAESEKOMPRESSOREN		
B	Änderung	Datum	Name	Ersatz durch:	Ursprung:
					ZAS36-01001.00
					Blatt 1
					Bl.



c		Datum	07.12.1998	Block diagram		=	
b		Bearb.	Sittler	Compressor AS 36		+	
a		Gepr.	Benser	UAS36-01001.00		Blatt 1	
c		Änderung	Datum	Name	Norm	Bl.	
		Ersatz durch:		Ersatz für:		Ursprung: AAS01002	



L1 /2.1
L2 /2.1
L3 /2.1
PE

-X0 PE

H07V-K 6mm² black

-K3M /8.4

-K2M /8.5

-K1M /8.3

-F2 24-32A

Main switch,
Fuse supplied
by user

50A

NYSLY0-J 4x10mm²

H07V-K 6mm² black

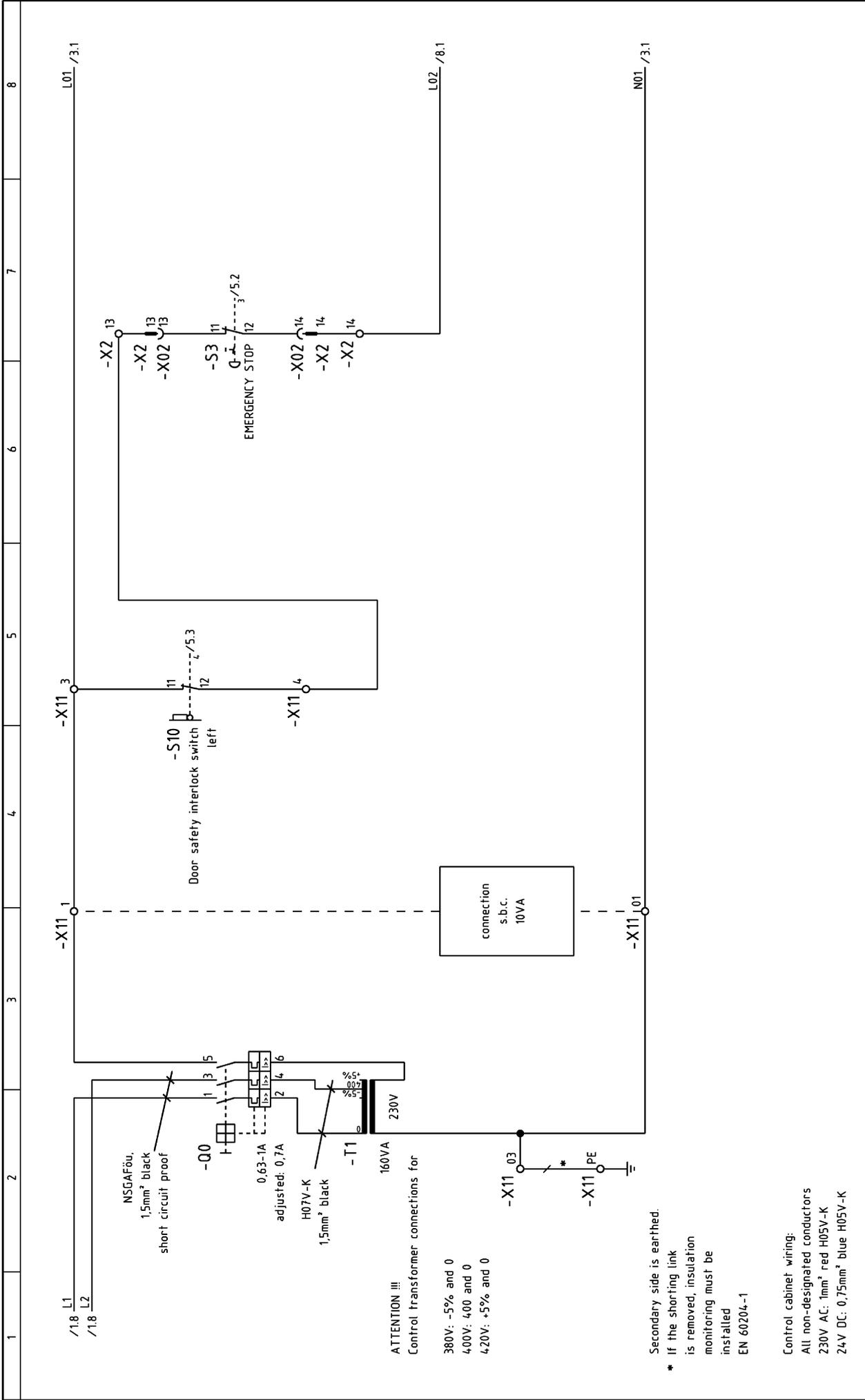
NYSLY0-J 4x10mm²

W1 V1 U1
W2 V2 U2
-M1 3~

ATTENTION !!!
Control transformer connections for
22 kW

380V: -5% and 0
400V: 400 and 0
420V: +5% and 0
See service manual for
supply cable cross-section

Function:		Compressor motor	
Group of functions:		Main power supply	
c		Datum	07.12.1998
b		Bearb.	Silber
a	Zufl. geänd.	Be/SI	Gepr. Benser
D	Änderung	Datum	Norm
		Ersatz durch:	Ersatz für:
		KAESER KOMPRESSOREN Ursprung: AAS01002	
		Circuit diagram Compressor AS 36 Power switching	
		=	
		+	
		SAS36-01001.00	
		Blatt 1	
		Bl.	

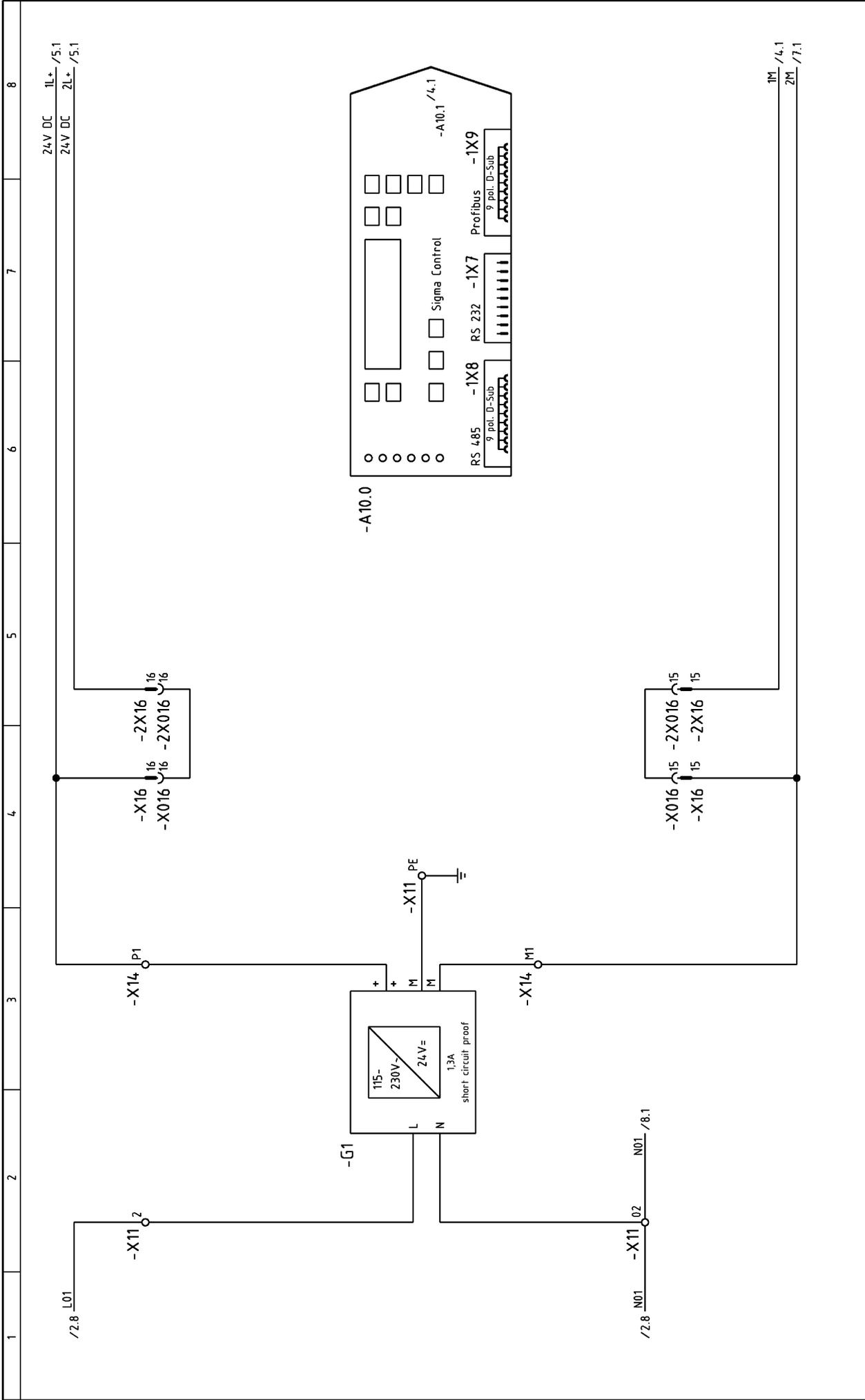


ATTENTION !!!
 Control transformer connections for
 380V: -5% and 0
 400V: 400 and 0
 420V: +5% and 0

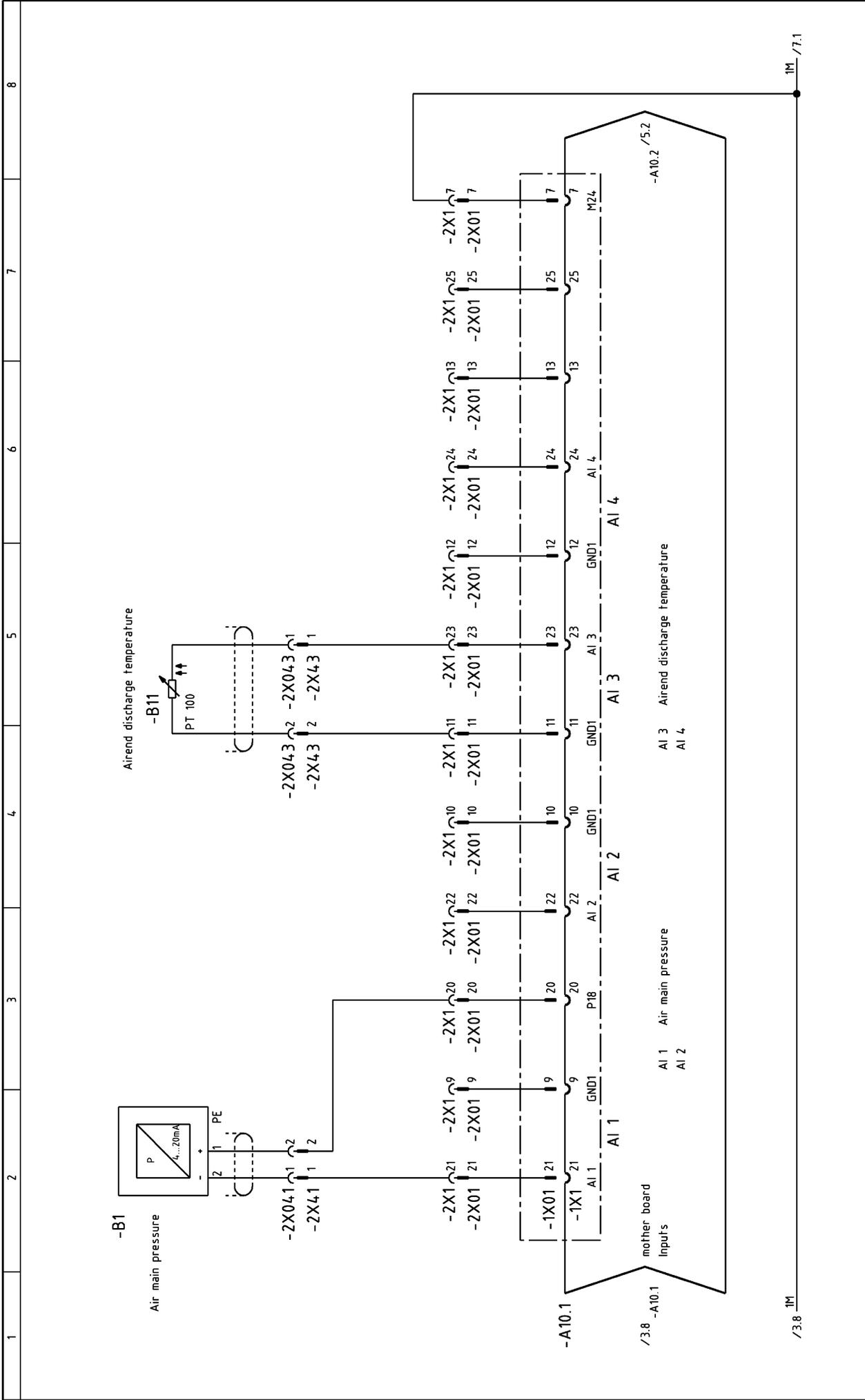
Secondary side is earthed.
 * If the shorting link is removed, insulation monitoring must be installed
 EN 60204-1

Control cabinet wiring:
 All non-designated conductors
 230V AC: 1mm² red H05V-K
 24V DC: 0.75mm² blue H05V-K

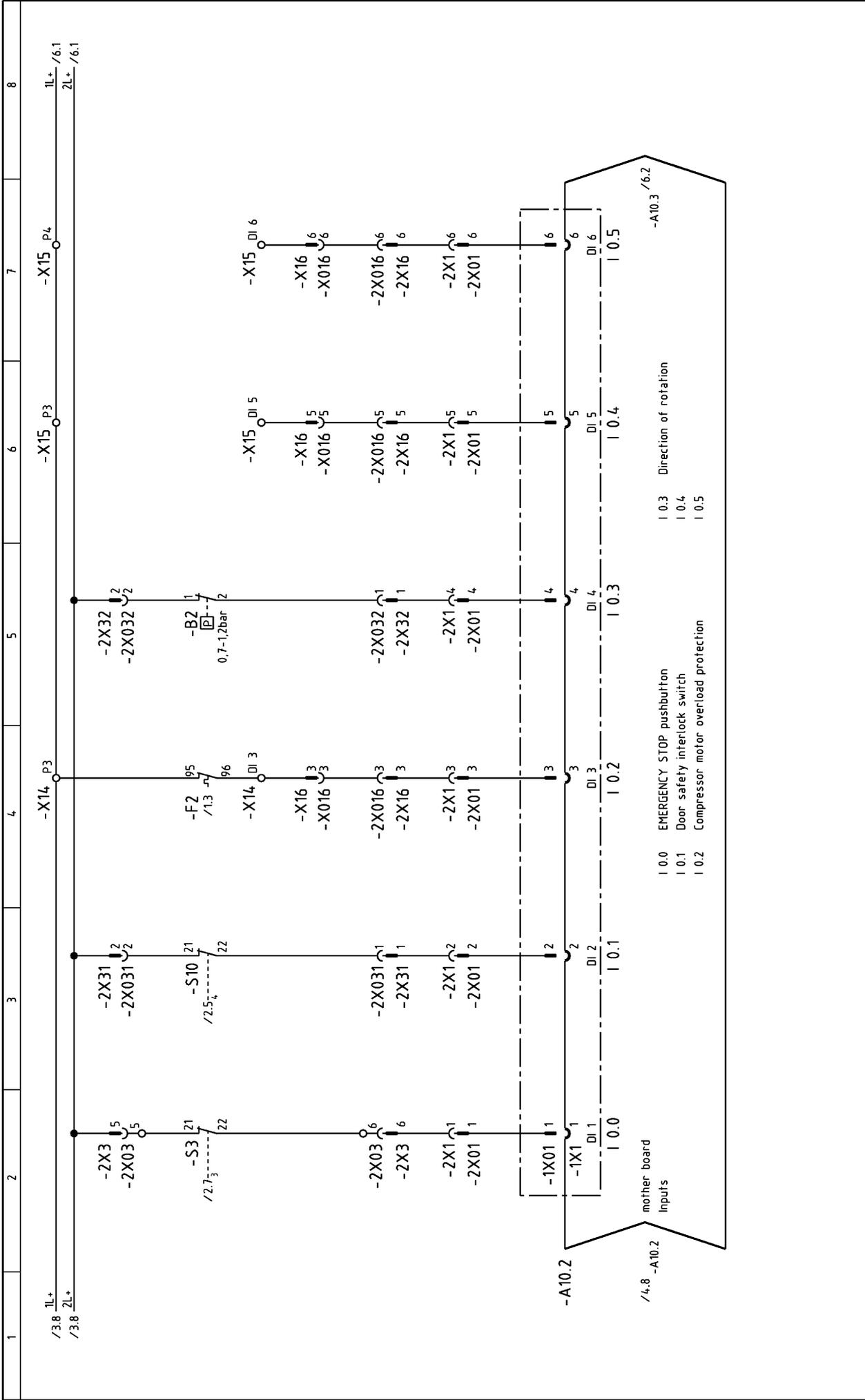
Function:		230V/1-/50/60Hz		Door safety interlock switch		EMERGENCY STOP	
Group of functions:		Control voltage tapping		Safety chain			
c	Datum	07.12.1998	Bearb.	Silber	=		
b	Datum		Gepr.	Bensler	+		
a	Datum		Gepr.	Bensler			
d	Änderung	Datum	Name	Norm	SAS36-01001.00		
Ersatz durch:					Blatt 2		
Ersatz für:					Bl.		



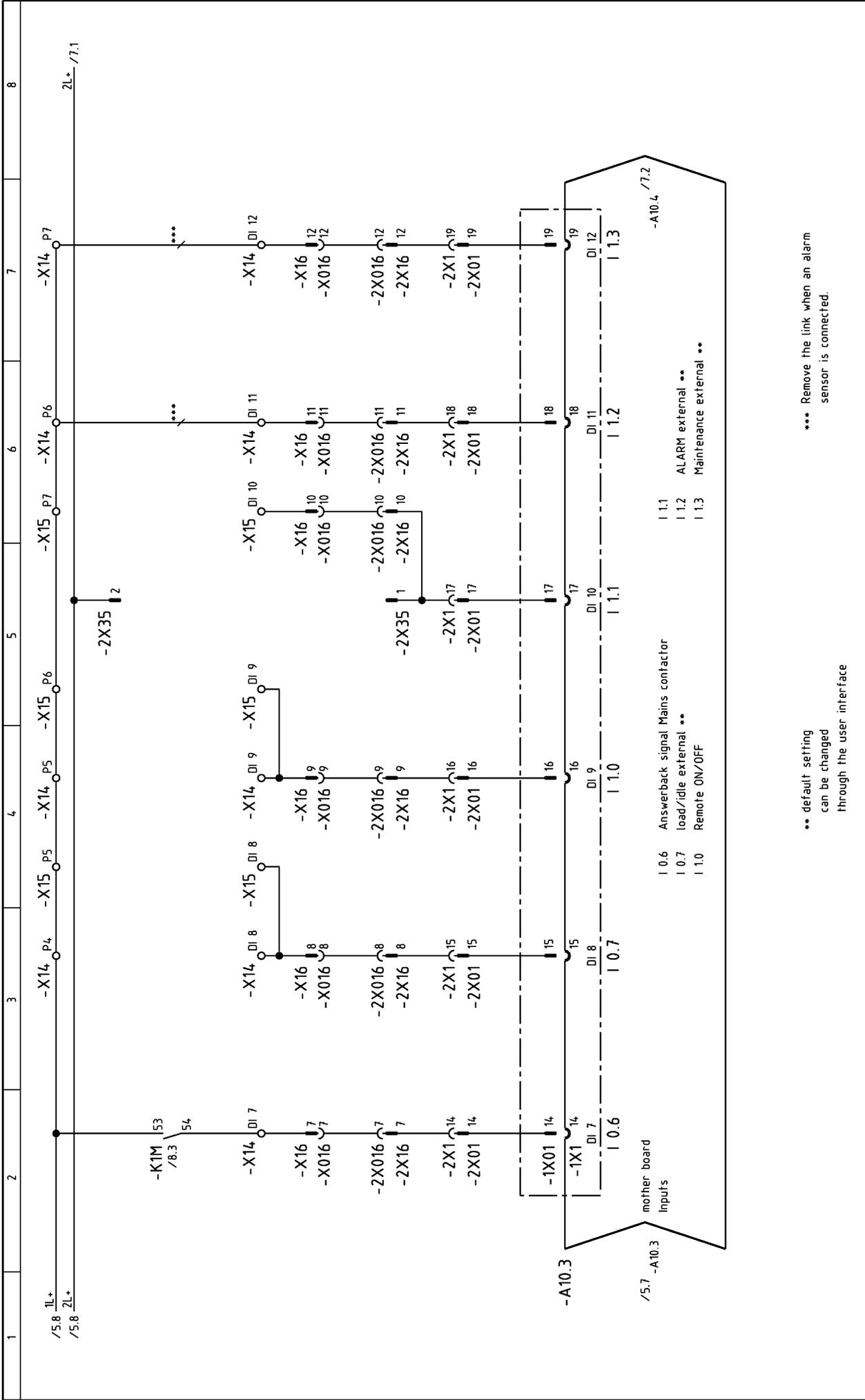
Function:		24V DC		Transfer module		adapter 1	
Group of functions:		Control voltage tapping		KAESER		Circuit diagram	
c		Datum	07.12.1998	KOMPRESSOREN		Compressor AS 36	
b		Bearb.	Silber	KOMPRESSOREN		Power supply unit	
a		Gepr.	Benser	KOMPRESSOREN		Blatt 3	
D	Änderung	Datum		Ersatz durch:		Bl.	
				Ersatz für:		SAS36-01001.00	
				Ursprung: AAS01002			



Function:		Pressure control	
Group of functions:		Circuit diagram	
c	Datum	07.12.1998	=
b	Bearb.	Silber	*
a	Gepr.	Bensser	
D	Änderung	Datum	Norm
		Ersatz durch:	
		Ersatz für:	
		KAESER	
		KOMPRESSOREN	
		Compressor AS 36	
		mother board/Inputs	
		Ursprung: AAS01002	
		SAS36-01001.00	
		Blatt 4	
		Bl.	



Function:		Alarm/maintenance indications	
Group of functions:		Circuit diagram	
c	Datum	07.12.1998	
b	Bearb.	Sittler	
a	Gepr.	Bensler	
D Änderung	Datum	Name	Norm
		Ersatz durch:	
		Ersatz für:	
		Ursprung: AAS01002	
		KAESER KOMPRESSOREN	
		Compressor AS 36 mother board/Inputs	
		=	
		SAS36-01001.00	
		Blatt 5	
		Bl.	

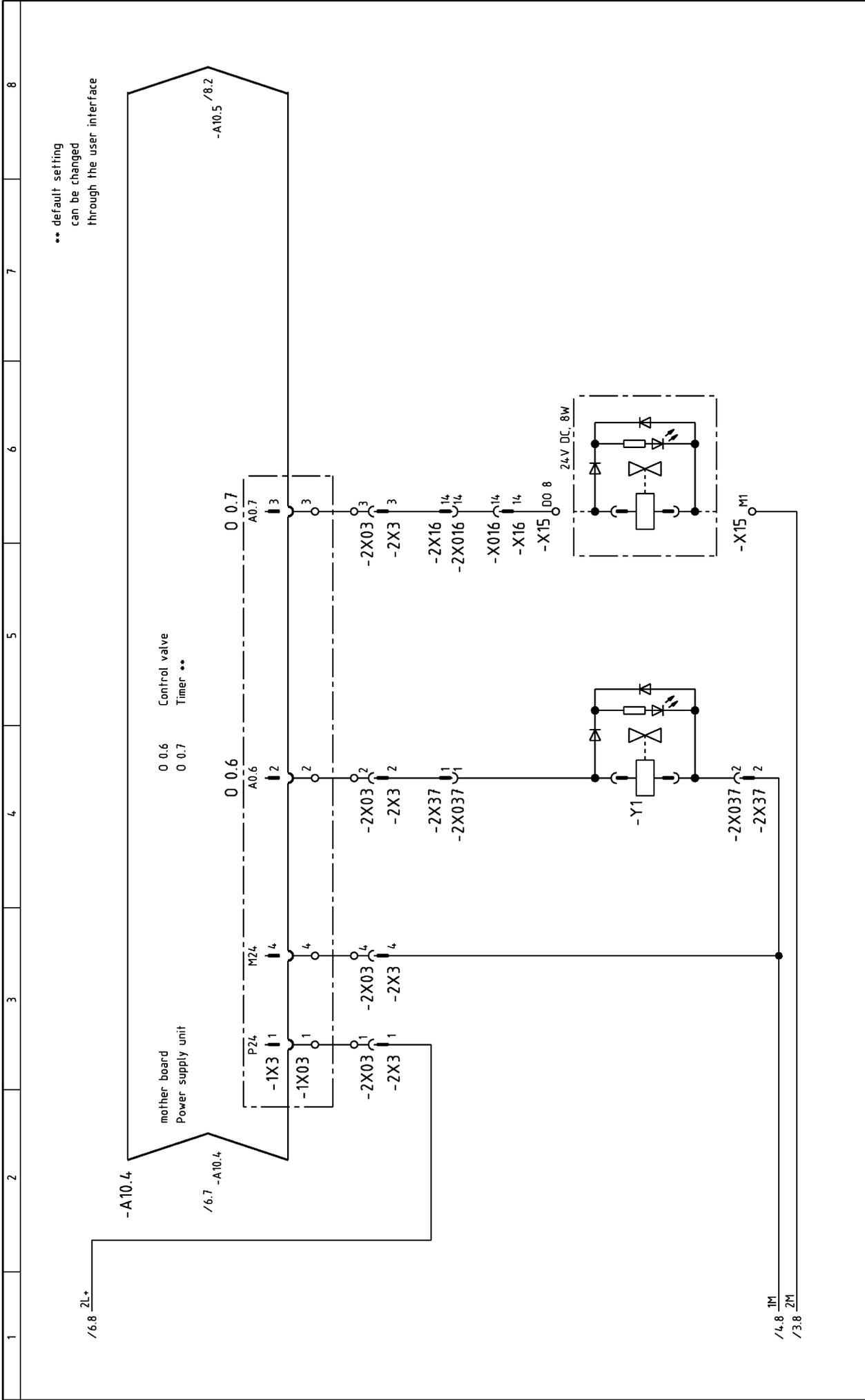


Function:		Alarm/maintenance indications	
Group of functions:		Circuit diagram	
		Compressor AS 36	
		mother board/Inputs	
		KAESER	
		KOMPRESSOREN	
		Ursprung: AAS01002	
		Ersatz durch:	
		Ersatz für:	
		Datum	
		07.12.1998	
		Bearb. Siltner	
		Gepr. Benser	
		Name	
		Norm	
		Datum	
		Ersatz durch:	
		SAS36-01001.00	
		Blatt 6	
		Bl.	

** default setting can be changed through the user interface

*** Remove the link when an alarm sensor is connected.

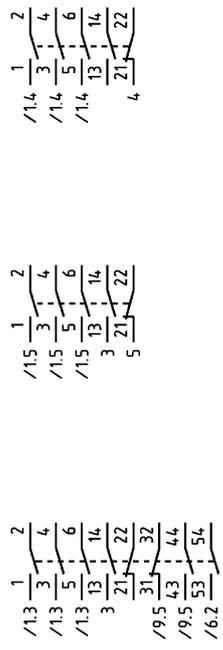
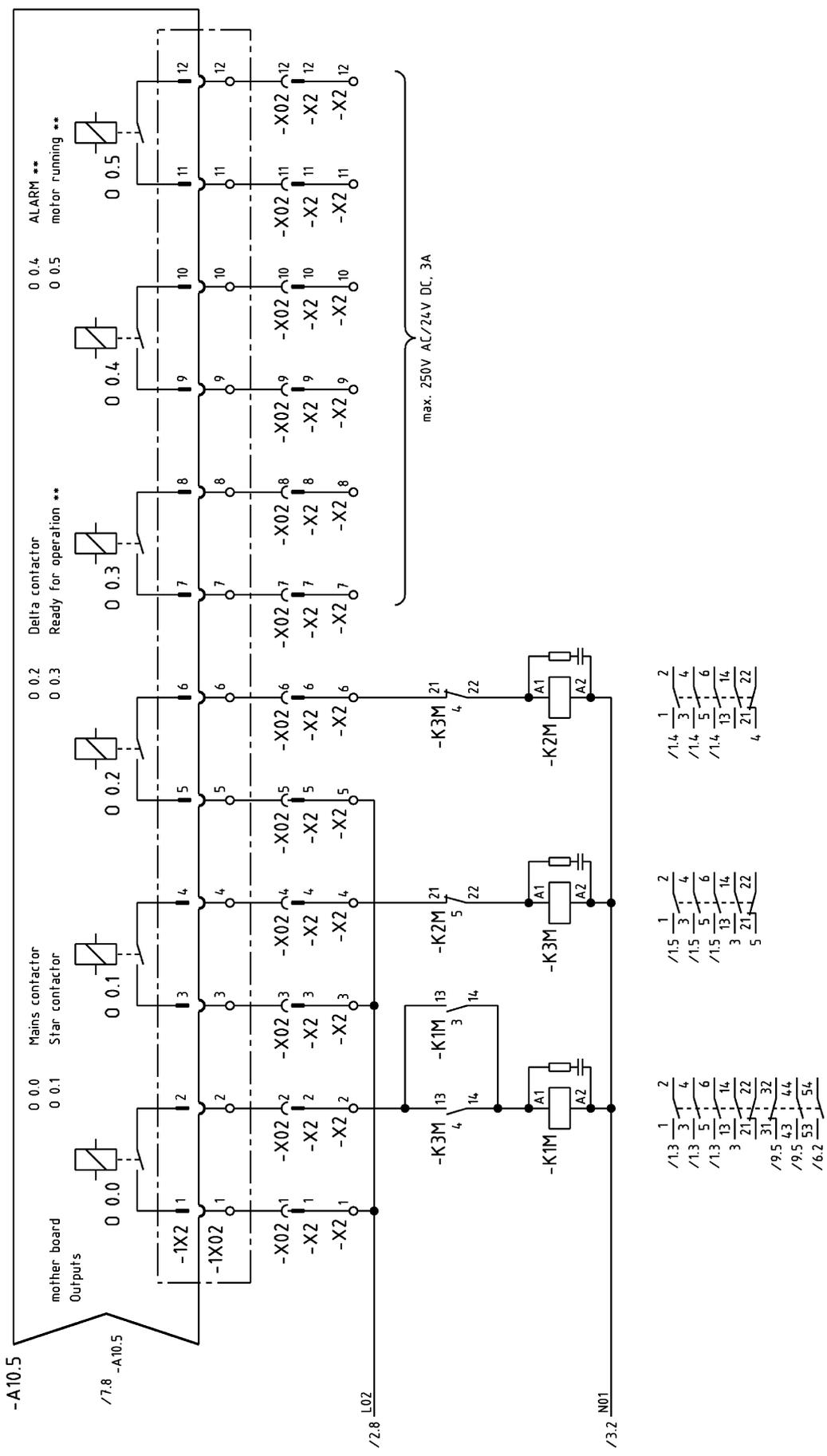
- I 0.6 Answerback signal Mains contactor
- I 0.7 load/idle external **
- I 1.0 Remote ON/OFF
- I 1.1 ALARM external **
- I 1.2 Maintenance external **
- I 1.3 Maintenance external **



** default setting
can be changed
through the user interface

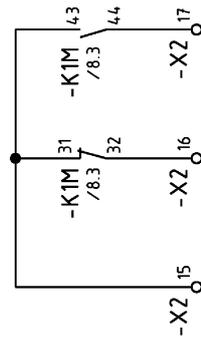
Function:		Inlet/ Venting		Condensate drain, User's connection	
Group of functions:		mother board		mother board	
c	Datum	07.12.1998			
b	Bearb.	Silber	Circuit diagram		
a	Gepr.	Benser	Compressor AS 36		
D	Änderung	Datum	Name	Norm	Ersatz durch:
					Ursprung: AAS01002
					KAESER
					KOMPRESSOREN
					mother board/Outputs
					SAS36-01001.00
					Blatt 7
					Bl.

** default setting
can be changed
through the user interface



Function:		Star-delta changeover		Volt-free contacts, User's connection	
Group of functions:		Circuit diagram		=	
c	Datum	07.12.1998			
b	Bearb.	Silber	Compressor AS 36		
a	Gepr.	Benser	mother board/Outputs		
D	Änderung	Datum	Name	Norm	Blatt 8
			Ersatz durch:	Ursprung: AAS01002	SAS36-01001.00
					Bl.

Volt-free contacts User's connection



max. 250V AC/24V DC, 3A

All non-designated conductors,
1,5mm² orange H07V-K

Funktion:		motor running	
Group of functions:		Volt-free contacts	
c	Datum	07.12.1998	=
b	Bearb.	Silber	*
a	Gepr.	Bensler	
D	Änderung	Datum	Name
Ersatz durch:		Ersatz für:	
KAESEKOMPRESSOREN		Circuit diagram Compressor AS 36 Volt-free contacts	
Ursprung:		SAS36-01001.00	
		Blatt 9	
		Bl.	

