

Operating Manual

Screw Compressor

DSD

901811_00 E

Manufacturer:

KAESER KOMPRESSOREN SE

96410 Coburg • PO Box 2143 • GERMANY • Tel. +49-(0)9561-6400 • Fax +49-(0)9561-640130

<http://www.kaeser.com>

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1	Regarding this document	
1.1	Using this document	1
1.2	Further documents	1
1.3	Copyright	1
1.4	Symbols and labels	1
1.4.1	Warnings	1
1.4.2	Potential damage warnings	2
1.4.3	Other alerts and their symbols	2
2	Technical Specifications	
2.1	Type label	4
2.2	Options	4
2.3	Mass	5
2.4	Select Temperature	5
2.5	Ambient conditions	5
2.6	Ventilation	6
2.7	Pressure	6
2.8	Flow rate (constant delivery volume relative to intake conditions)	7
2.9	Cooling oil recommendation	7
2.10	Cooling oil charge quantity	9
2.11	Motors and power	11
2.11.1	Compressor drive motor	11
2.11.2	Fan motor	11
2.11.3	Fan motor	12
2.12	Noise emission [dB(A)]	13
2.13	Electrical connection	13
2.14	Power supply specifications	14
2.14.1	Mains frequency: 50 Hz	14
2.14.2	Mains frequency: 60 Hz	14
2.15	Water-cooling	15
2.15.1	Water cooling (Plate-type heat exchanger)	16
2.15.2	Water cooling (Bundled pipe heat exchanger)	18
2.16	Heat recovery	20
3	Safety and Responsibility	
3.1	Basic instructions	23
3.2	Specified use	23
3.3	Improper use	23
3.4	User's responsibilities	23
3.4.1	Observe statutory and universally accepted regulations	23
3.4.2	Determining personnel	24
3.4.3	Adherence to inspection schedules and accident prevention regulations	24
3.5	Dangers	25
3.5.1	Safely dealing with sources of danger	25
3.5.2	Safe machine operation	27
3.5.3	Organisational Measures	29
3.5.4	Danger Areas	29
3.6	Safety devices	30
3.7	Working life of safety functions	30
3.8	Safety signs	31
3.9	Emergency situations	33
3.9.1	Correct fire fighting	33
3.9.2	Treating injuries from handling cooling oil	34
3.10	Warranty	34
3.11	Environment protection	35

4 Design and Function	
4.1 Housing	36
4.2 Machine function	36
4.2.1 Safety devices	38
4.2.2 Floating relay contacts	38
4.3 Operating panel SIGMA CONTROL 2	38
4.4 Operating modes and control modes	41
4.4.1 Machine operating modes	41
4.4.2 Control modes	42
4.5 Options	43
4.5.1 Controller SIGMA CONTROL 2: Connection to control technology	43
4.5.2 Machine mountings	43
4.5.3 Water-cooling	44
4.5.4 Cooling air filter mat	45
4.5.5 Heat recovery	45
5 Installation and Operating Conditions	
5.1 Ensuring safety	47
5.2 Installation conditions	47
5.2.1 Determining location and clearances	47
5.2.2 Ensuring the machine room ventilation	48
5.2.3 Exhaust duct design	49
5.3 Operating the machine in a compressed air network	49
6 Installation	
6.1 Ensuring safety	50
6.2 Reporting Transport Damage	51
6.3 Connecting the machine with the compressed air network	51
6.4 Connecting the condensate drain	51
6.5 Connecting the external pressure transducer	53
6.6 Connecting the machine with the power supply	54
6.7 Options	54
6.7.1 Anchoring the machine	54
6.7.2 Connecting the water cooling	55
6.7.3 Connecting the heat recovery system	56
6.7.4 Connecting external control air	56
7 Initial Start-up	
7.1 Ensuring safety	58
7.2 Instructions to be observed before commissioning	59
7.3 Checking installation and operating conditions	59
7.4 Setting the overload protection cut-out	60
7.5 Setting the motor overload protection switch	60
7.6 Pouring cooling oil into the airend	60
7.7 Setting the MODULATING control	62
7.7.1 Switching MODULATING control to external control air	63
7.7.2 Switching MODULATING control to internal pressure control	63
7.8 Starting the machine for the first time	63
7.9 Setting the set point pressure	63
7.10 Setting the display language	64
8 Operation	
8.1 Switching on and off	65
8.1.1 Switching on	65
8.1.2 Switching off	65
8.2 Switching off in an emergency and switching on again	66

8.3	Using the remote control for switching on and off	66
8.4	Using the timer for switching on and off	67
8.5	Interpreting operation messages	68
8.6	Acknowledging alarm and warning messages	68
9	Fault Recognition and Rectification	
9.1	Basic instructions	70
9.2	Other faults	70
10	Maintenance	
10.1	Ensuring safety	72
10.2	Following the maintenance plan	73
10.2.1	Logging maintenance work	73
10.2.2	Resetting maintenance interval counters	73
10.2.3	Regular maintenance tasks	73
10.2.4	Cooling oil Change interval	75
10.2.5	Regular service tasks	75
10.3	Control cabinet: Clean or renew the filter mat	76
10.4	Cooler maintenance	76
10.5	Water-cooling maintenance	78
10.6	Cleaning or Renewing the Cooling Air Filter Mat	78
10.7	Maintain the heat recovery system	79
10.8	Air filter cartridge: Cleaning the pre-filter	80
10.9	Changing the air filter cartridge	81
10.10	Motor maintenance	82
10.11	Checking the Coupling	83
10.12	Testing the pressure relief valve	84
10.13	Check the safety shut-down due to excessive airend discharge temperature	85
10.14	Check the EMERGENCY STOP control device	85
10.15	Checking the cooling oil level	85
10.16	Venting the machine (de-pressurising)	86
10.17	Replenishing the cooling oil	88
10.17.1	Venting the machine (de-pressurising)	88
10.17.2	Topping up with cooling oil and trial run	89
10.18	Changing the cooling oil	90
10.19	Changing the compressor oil filter	95
10.20	Changing the oil separator cartridge	96
10.21	Maintaining the condensate drain	99
10.21.1	Condensate drain check	99
10.21.2	Changing the service unit	100
10.22	Assembling flexible pipe connections	102
10.23	Documenting maintenance and service work	104
11	Spares, Operating Materials, Service	
11.1	Note the nameplate	105
11.2	Ordering consumable parts and operating fluids/materials	105
11.3	KAESER AIR SERVICE	105
11.4	Replacement parts for service and repair	106
12	Decommissioning, Storage and Transport	
12.1	Decommissioning	113
12.1.1	Temporary de-commissioning	113
12.1.2	Long-term de-commissioning	113
12.2	Packing	114
12.3	Storage	114
12.4	Transport	114

12.4.1	Safety	114
12.4.2	Transport with a forklift truck	115
12.4.3	Transport with a hoist	115
12.5	Disposal	117
12.5.1	Dispose of the battery in accordance with local environmental regulations.	117
13	Annex	
13.1	Pipeline and instrument flow diagram (P&I diagram)	118
13.2	Pipeline and instrument flow diagram (P&I diagram) MODULATING control	124
13.3	Dimensional drawing	130
13.4	Electrical Diagram	134

Fig. 1	Maximum relative humidity of inlet air	6
Fig. 2	Location of safety signs	31
Fig. 3	Location of safety signs	32
Fig. 4	Housing overview	36
Fig. 5	Machine overview	37
Fig. 6	Keys - overview	38
Fig. 7	Indicators – overview	39
Fig. 8	RFID reader	40
Fig. 9	Machine mountings	44
Fig. 10	Water cooling (option K2)	44
Fig. 11	Water cooling (Option K9)	44
Fig. 12	Cooling air filter mat (option K3)	45
Fig. 13	Function of the heat recovery	46
Fig. 14	Recommended machine placement and dimensions [mm]	48
Fig. 15	Compressed pipework	51
Fig. 16	Connecting the condensate drain	53
Fig. 17	Connecting the water cooling	55
Fig. 18	Connecting the heat recovery system	56
Fig. 19	Inlet valve oil filling port	61
Fig. 20	Coupling	61
Fig. 21	MODULATING control: Setting the shut-off valve	62
Fig. 22	Switching on and off	65
Fig. 23	Switching off in an emergency	66
Fig. 24	Using the remote control for switching on and off	67
Fig. 25	Using the timer for switching on and off	68
Fig. 26	Acknowledging messages	69
Fig. 27	Switching cabinet ventilation	76
Fig. 28	Cleaning the cooler	77
Fig. 29	Cooling air filter mat	79
Fig. 30	Cleaning the pre-filter	80
Fig. 31	Air filter maintenance	81
Fig. 32	Motor maintenance	82
Fig. 33	Checking the coupling	83
Fig. 34	Check the EMERGENCY STOP control device	85
Fig. 35	Checking the cooling oil level	86
Fig. 36	Venting the machine	87
Fig. 37	Replenishing the cooling oil	88
Fig. 38	Changing the cooling oil, oil separator tank	91
Fig. 39	Changing the cooling oil, oil cooler	92
Fig. 40	Changing the cooling oil, airend	93
Fig. 41	Changing the cooling oil, heat recovery system	94
Fig. 42	Changing the oil filter	95
Fig. 43	Open the enclosure (oil separator cartridge changing)	97
Fig. 44	Changing the oil separator cartridge	98
Fig. 45	Open the enclosure (oil separator cartridge changing)	99
Fig. 46	Condensate drain check	100
Fig. 47	Changing the service unit	101
Fig. 48	Assembling flexible pipe connections	102
Fig. 49	Transporting with a forklift truck	115
Fig. 50	Transporting with a crane	116
Fig. 51	Battery labelling	117

Tab. 1	Danger levels and their definition (personal injury)	1
Tab. 2	Danger levels and their definition (damage to property)	2
Tab. 3	Type label	4
Tab. 4	Options	4
Tab. 5	Mass	5
Tab. 6	Select temperature	5
Tab. 7	Ambient conditions	5
Tab. 8	Ventilation	6
Tab. 9	Pressure relief valve activating pressure (50Hz)	6
Tab. 10	Pressure relief valve activating pressure (60Hz)	7
Tab. 11	Flow rate (50Hz)	7
Tab. 12	Flow rate (60 Hz)	7
Tab. 13	Cooling oil recommendation	8
Tab. 14	Cooling oil recommendation (food processing)	8
Tab. 15	Cooling oil recommendation (machines for snow cannons)	9
Tab. 16	Cooling oil charge (Option K1)	9
Tab. 17	Cooling oil charge (Option K2)	10
Tab. 18	Cooling oil charge (Option K9)	10
Tab. 19	Cooling oil charge (Option W2)	10
Tab. 20	Cooling oil charge (option W3)	10
Tab. 21	Compressor motor (50Hz)	11
Tab. 22	Compressor motor (60Hz)	11
Tab. 23	Fan motor (Option K1, 50Hz)	11
Tab. 24	Fan motor (Option K1, 60Hz)	12
Tab. 25	Fan motor (Option K2/K9; 50Hz)	12
Tab. 26	Fan motor (Option K2/K9; 60Hz)	12
Tab. 27	Noise emission [dB(A)]	13
Tab. 28	Supply details 400V / 3 / 50Hz	14
Tab. 29	Supply details 380V / 3 / 60Hz	14
Tab. 30	Supply details 440V / 3 / 60Hz	15
Tab. 31	Supply details 460V / 3 / 60Hz	15
Tab. 32	Water cooling K2: Individual design data	16
Tab. 33	Component specification (Option K2)	16
Tab. 34	Cooling water quality (Plate-type heat exchanger)	17
Tab. 35	Cooling water temperature ($\Delta T=10K$)	17
Tab. 36	Cooling water temperature ($\Delta T=30K$)	18
Tab. 37	Water cooling K9: Individual design data	18
Tab. 38	Component specification (Option K9)	18
Tab. 39	Cooling water quality (Bundled-pipe heat exchanger)	19
Tab. 40	Cooling water temperature ($\Delta T=10K$)	19
Tab. 41	Cooling water temperature ($\Delta T=30K$)	20
Tab. 42	Heat recovery: Individual design data	20
Tab. 43	Specification: Heat exchanger (Option W2/W3)	21
Tab. 44	Quality of the heat receiving medium	21
Tab. 45	Heat capacity (Option W2/W3)	22
Tab. 46	Flow rate / pressure drop (option W2)	22
Tab. 47	Flow rate / pressure drop (option W3)	22
Tab. 48	Inspection intervals according to regulations	25
Tab. 49	Danger Areas	30
Tab. 50	Category and Performance Level	30
Tab. 51	Safety signs	32
Tab. 52	Keys	38
Tab. 53	Indicators	40
Tab. 54	RFID reader	41

Tab. 55	Energy-saving control modes	42
Tab. 56	Components	43
Tab. 57	Condensate line	52
Tab. 58	Condensate collecting line	52
Tab. 59	Condensate collecting line: Line cross-section	52
Tab. 60	Re-commissioning after storage	59
Tab. 61	Installation conditions checklist	59
Tab. 62	MODULATING control: Setting the shut-off valve	62
Tab. 63	Machine identification	67
Tab. 64	Remote control identification	67
Tab. 65	Machine identification	68
Tab. 66	Other faults and remedies	70
Tab. 67	Advise others that the machine is being serviced.	72
Tab. 68	Regular maintenance tasks	74
Tab. 69	Cooling oil Change intervals	75
Tab. 70	Regular service tasks	75
Tab. 71	Dimensions of the flexible pipe connection	103
Tab. 72	Logged maintenance tasks	104
Tab. 73	Consumable parts	105

1 Regarding this document

1.1 Using this document

The operating manual is a component of the product. It describes the machine as it was at the time of first delivery after manufacture.

- Keep the operating manual in a safe place throughout the life of the machine.
- Supply any successive owner or user with this operating manual.
- Please insert any amendment or revision of the operating manual sent to you.
- Enter details from the machine nameplate and individual items of equipment in the table in chapter 2.

1.2 Further documents

Further documents included with this operating manual are:

- Certificate of acceptance / operating instructions for the pressure vessel
- Declaration of Conformity in accordance with the applicable directive
- Operating manual for SIGMA CONTROL 2

Missing documents can be requested from KAESER.

- Make sure all documents are complete and observe the instructions contained in them.
- Make sure you provide the data from the nameplate when ordering documents.

1.3 Copyright

This operating manual is protected by copyright. Any queries regarding the use or duplication of this documentation should be referred to KAESER. Correct use of information will be fully supported.

1.4 Symbols and labels

- Please note the symbols and labels used in this document.

1.4.1 Warnings

Warning notices indicate dangers that may result in injury when disregarded.

Warning notices indicate three levels of danger identified by the corresponding signal word:

Signal term	Meaning	Consequences of non-compliance
DANGER	Warns of an imminent threat of danger	Will result in death or severe injury
WARNING	Warns of possible danger	May result in death or severe injury
CAUTION	Warns of a potentially dangerous situation	May result in a moderate physical injury

Tab. 1 Danger levels and their definition (personal injury)

Warning notices preceding a chapter apply to the entire chapter, including all sub-sections.

1 Regarding this document

1.4 Symbols and labels

Example:



DANGER

These show the kind of danger and its source.

The possible consequences of ignoring a warning are shown here.

If you ignore the warning notice, the "DANGER" signal word indicates a lethal or severe injury will occur.

- The measures required to protect yourself from danger are shown here.

Warning notes referring to a sub-section or the subsequent action are integrated into the procedure and numbered as an action.

Example:



1. WARNING!

These show the kind of danger and its source.

The possible consequences of ignoring a warning are shown here.

If you ignore the warning notice, the "WARNING" signal word indicates that a lethal or severe injury may occur.

- The measures required to protect yourself from danger are shown here.

2. Always read and comply with warning instructions.

1.4.2 Potential damage warnings

Contrary to the warnings shown above, damage warnings do not indicate a potential personal injury.

Warning notices for damages are identified by their signal term.

Signal term	Meaning	Consequences of non-compliance
NOTE	Warns of a potentially dangerous situation	Damage to property is possible

Tab. 2 Danger levels and their definition (damage to property)

Example:



NOTICE

These show the kind of danger and its source.

Potential effects when ignoring the warning are indicated here.

- The protective measures against the damages are shown here.

- Carefully read and fully comply with warnings against damages.

1.4.3 Other alerts and their symbols



This symbol identifies particularly important information.

Material	Here you will find details on special tools, operating materials or spare parts.
Precondition	Here you will find conditional requirements necessary to carry out the task. Here conditions relevant to safety are named that will help you to avoid dangerous situations.
Option H1	➤ This symbol denotes lists of actions comprising one stage of a task. Operating instructions with several steps are numbered in the sequence of the operating steps. Information relating to one option only are marked with an option code (e.g., H1 indicates that this section applies only to machines with screw-in machine feet). Option codes used in this operating manual are explained in chapter 2.2.
	Information referring to potential problems are identified by a question mark. The cause is named in the help text ... ➤ ... as is a solution.
	This symbol identifies important information or measures regarding the protection of the environment.
Further information	Further subjects are introduced here.

2 Technical Specifications

2.1 Type label

The machine's nameplate provides the model designation and important technical information.

The nameplate is located below the control panel.

► Enter here the nameplate data as a reference:

Feature	Value
Rotary screw compressor	
Material No.	
Serial No.	
Year of manufacture	
Rated power	
Engine speed	
Maximum working pressure	
Ambient temperature	

Tab. 3 Type label

2.2 Options

The table contains a list of possible options. The options for this machine are shown near the nameplate.

► Enter options here as a reference:

Option	Option code	Provided?
MODULATINGcontrol	C1	
SIGMA CONTROL 2: Connection to control technology available	C3	✓
Bolt-down machine mounts	H1	
Air-cooling	K1	
Water cooling: Plate-type heat exchanger	K2	
Cooling air filter mat	K3	
Water cooling: Bundled-tube heat exchanger	K9	
Heat recovery ΔT=25 K	W2	
Heat recovery ΔT=55 K	W3	
Provided: ✓		
Not available: —		

Tab. 4 Options

2.3 Mass

The values shown are maximum values. The actual mass of individual machines depends on equipment fitted.

	DSD 145	DSD 175	DSD 205	DSD 240
Mass [kg]	3050	3190	3460	3530

Tab. 5 Mass

2.4 Select Temperature

	DSD 145	DSD 175	DSD 205	DSD 240
Minimum cut-in temperature [°C]	3	3	3	3
Typical airend discharge temperature during operation* [°C]	65–100	65–100	65–100	65–100
Maximum airend discharge temperature [°C] (automatic safety shutdown)	110	110	110	110

* The machine continuously changes the airend discharge temperature corresponding to the ambient temperature.

Tab. 6 Select temperature

2.5 Ambient conditions

	DSD 145	DSD 175	DSD 205	DSD 240
Maximum elevation AMSL* [m]	1000	1000	1000	1000
Permissible ambient temperature [°C]	3–45	3–45	3–45	3–45
Cooling air temperature [°C]	3–45	3–45	3–45	3–45
Inlet air temperature [°C]	3–45	3–45	3–45	3–45

* Higher elevation permissible only after consultation with the manufacturer.

Tab. 7 Ambient conditions

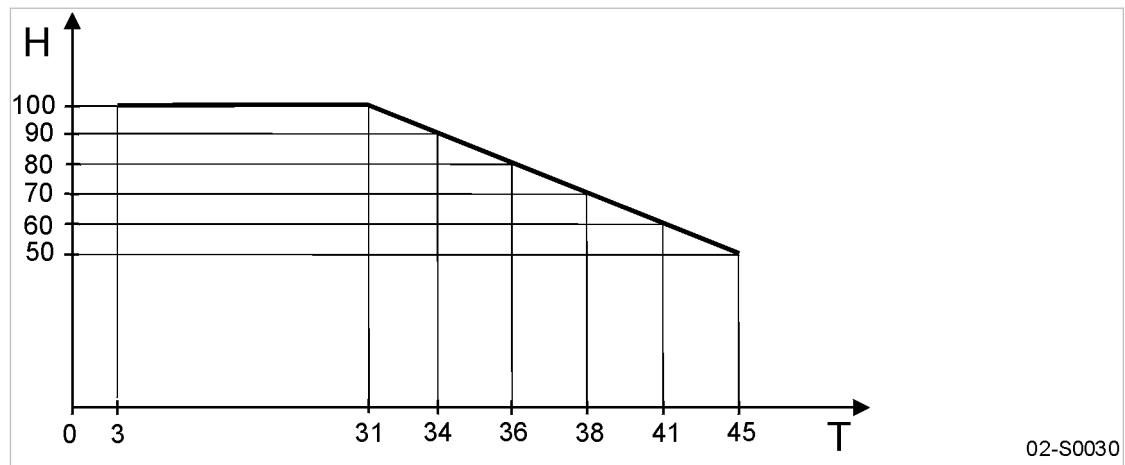


Fig. 1 Maximum relative humidity of inlet air

T Inlet air temperature [°C]
H Maximum relative humidity of inlet air [%]

2.6 Ventilation

The values given are minimum guide values.

	DSD 145	DSD 175	DSD 205	DSD 240
Inlet aperture □ see figure 14 [m ²]	1.8/0.3*	2.1/0.3*	2.7/0.4*	3.2/0.5*
Extractor for forced ventilation:	26000 5000*	30000 5000*	38000 6000*	45000 7000*
Flow rate [m ³ /h] at 100 Pa				

* Option K2 / K9

Tab. 8 Ventilation

2.7 Pressure

Maximum working pressure: see nameplate

Pressure relief valve activating pressure at 50 Hz [bar]:

Max. working pressure [bar]	DSD 145	DSD 175	DSD 205	DSD 240
8.5	—	10	10	10
9	11.5	—	—	—
12	—	14	14	14
15	—	—	16*	16*

* China: 15.9

Tab. 9 Pressure relief valve activating pressure (50Hz)

2 Technical Specifications

2.8 Flow rate (constant delivery volume relative to intake conditions)

Pressure relief valve activating pressure at 60 Hz [bar]:

Max. working pressure [bar]	DSD 145	DSD 175	DSD 205	DSD 240
8.5	—	—	10	10
9	11.5	11.5	—	—
12	14	—	14	14
15	—	—	—	16

Tab. 10 Pressure relief valve activating pressure (60Hz)

2.8 Flow rate (constant delivery volume relative to intake conditions)

Flow rate [m^3/min] at 50 Hz mains frequency:

Max. working pressure [bar]	DSD 145	DSD 175	DSD 205	DSD 240
8.5	—	16.8	20.8	25.0
9	13.8	—	—	—
12	—	13.2	16.3	20.0
15	—	—	12.8	15.8

Flow rate as per ISO 1217:2009. Annex C

Tab. 11 Flow rate (50Hz)

Flow rate [m^3/min] at 60 Hz mains frequency:

Max. working pressure [bar]	DSD 145	DSD 175	DSD 205	DSD 240
8.5	—	—	20.3	25.0
9	13.3	16.8	—	—
12	10.5	—	16.1	19.7
15	—	—	—	15.4

Flow rate as per ISO 1217:2009. Annex C

Tab. 12 Flow rate (60 Hz)

2.9 Cooling oil recommendation

A sticker showing the type of oil used is located near the oil separator tank filler.
Information on ordering cooling oil is found in chapter 11.

2 Technical Specifications

2.9 Cooling oil recommendation

Cooling oils for general applications

	SIGMA FLUID		
	MOL	S-460	S-570
Description	Mineral oil	Silicone-free synthetic oil	Synthetic oil
Application	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a low duty cycle.	Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a high duty cycle. Not suitable for East- / South-East-Asian countries.	Special oil for ambient conditions with high temperatures and humidity. Standard oil for all applications except in connection with foodstuffs. Particularly suitable for machines with a high duty cycle.
Approval	—	—	—
Viscosity at 40 °C	44 mm ² /s (DIN 51562-1)	45 mm ² /s (D 445; ASTM test)	52.8 mm ² /s (D 445; ASTM test)
Viscosity at 100 °C	6.8 mm ² /s (DIN 51562-1)	7.2 mm ² /s (D 445; ASTM test)	8.0 mm ² /s (D 445; ASTM test)
Flash point	220 °C (ISO 2592)	238 °C (D 92; ASTM test)	258 °C (D 92; ASTM test)
Density at 15 °C	—	864 kg/m ³ (ISO 12185)	0.869 kg/l (D 1298; ASTM test)
Pour point	-33 °C (ISO 3016)	-46 °C (D 97; ASTM test)	-54 °C (D 97; ASTM test)
Demulsibility at 54 °C	—	40/40/0/10 min (D 1401; ASTM test)	15 min (D 1401; ASTM test)

Tab. 13 Cooling oil recommendation

Cooling oils for applications in food processing

	SIGMA FLUID	
	FG-460	FG-680
Description	Synthetic oil	Synthetic oil
Application	Specifically for machines in applications where the compressed air may come into contact with foodstuff.	Special oil for ambient conditions with high temperatures and humidity. Specifically for machines in applications where the compressed air may come into contact with foodstuff.
Approval	USDA H-1, NSF Approved for the manufacture of food packaging, meat and poultry processing and other food processing applications.	USDA H-1, NSF Approved for the manufacture of food packaging, meat and poultry processing and other food processing applications.
Viscosity at 40 °C	50.7 mm ² /s (D 445; ASTM test)	70.0 mm ² /s (D 445; ASTM test)

2 Technical Specifications

2.10 Cooling oil charge quantity

	SIGMA FLUID	
	FG-460	FG-680
Viscosity at 100 °C	8.2 mm ² /s (D 445; ASTM test)	10.4 mm ² /s (D 445; ASTM test)
Flash point	245 °C (D 92; ASTM test)	245 °C (D 92; ASTM test)
Density at 15 °C	—	—
Pour point	—	—
Demulsibility at 54 °C	—	—

Tab. 14 Cooling oil recommendation (food processing)

Cooling oils for the operation with snow cannons

	SIGMA FLUID
	PANOLIN HLP SYNTH 46
Description	Saturated synthetic ester with additives (mineral oil free). Easily biologically degradable as per OECD criteria.
Application	Specifically designed for machines intended for the operation with snow cannons.
Approval	—
Viscosity at 40 °C	47 mm ² /s
Viscosity at 100 °C	8.1 mm ² /s
Flash point	>210 °C
Density at 15 °C	0.92 g/ml
Pour point	-35 °C
Demulsibility at 54 °C	—

Tab. 15 Cooling oil recommendation (machines for snow cannons)

2.10 Cooling oil charge quantity

The cooling oil volume depends on the optional heat recovery system. For machines with options W2 or W3, the volume required additionally for the heat recovery must be added to the charge.

Option K1 Air cooling

	DSD 145	DSD 175	DSD 205	DSD 240
Fluid volume* [l]	70	70	70	70

* plus the cooling oil volume of the heat recovery system.

2 Technical Specifications

2.10 Cooling oil charge quantity

	DSD 145	DSD 175	DSD 205	DSD 240
Topping up volume [l] (minimum–maximum)	5	5	5	5

* plus the cooling oil volume of the heat recovery system.

Tab. 16 Cooling oil charge (Option K1)

Option K2 Water cooling (Plate-type heat exchanger)

	DSD 145	DSD 175	DSD 205	DSD 240
Fluid volume* [l]	54	54	54	54
Topping up volume [l] (minimum–maximum)	5	5	5	5

* plus the cooling oil volume of the heat recovery system.

Tab. 17 Cooling oil charge (Option K2)

Option K9 Water cooling (Bundled pipe heat exchanger)

	DSD 145	DSD 175	DSD 205	DSD 240
Fluid volume* [l]	54	54	54	54
Topping up volume [l] (minimum–maximum)	5	5	5	5

* plus the cooling oil volume of the heat recovery system.

Tab. 18 Cooling oil charge (Option K9)

Option W2/W3 Heat recovery

Option W2	DSD 145	DSD 175	DSD 205	DSD 240
Additional charge volume [l]	7.8	9.0	16.2	11.4

Tab. 19 Cooling oil charge (Option W2)

Option W3	DSD 145	DSD 175	DSD 205	DSD 240
Additional charge volume [l]	6.6	6.6	7.8	10.2

Tab. 20 Cooling oil charge (option W3)

2.11 Motors and power
2.11.1 Compressor drive motor
Mains frequency: 50 Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Rated power [kW]	75	90	110	132
Rated speed [rpm]	1491	1493	1494	1492
Protection class	IP 55	IP 55	IP 55	IP 55
Motor bearing re-greas-ing interval [h]	2000	2000	2000	2000
Grease requirement, each bearing [g]	20	40	40	40

h = operating hours

Tab. 21 Compressor motor (50Hz)

Mains frequency: 60 Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Rated power [kW]	75	90	110	132
Rated speed [rpm]	1193	1794	1794	1793
Protection class	IP 55	IP 55	IP 55	IP 55
Motor bearing re-greas-ing interval [h]	2000	2000	2000	2000
Grease requirement, each bearing [g]	20	40	40	40

h = operating hours

Tab. 22 Compressor motor (60Hz)

2.11.2 Option K1
Fan motor
Mains frequency: 50 Hz

	DSD 145		DSD 175		DSD 205		DSD 240	
	Oil cooler	Com-pressed air cooler						
Rated power [kW]	2.2	0.75	2.2	0.75	2.2	1.5	2.2	1.5
Rated speed [rpm]	970	945	970	945	970	1445	970	1445
Protection class	IP 55	IP 55						

h = operating hours

	DSD 145		DSD 175		DSD 205		DSD 240	
	Oil cooler	Compressed air cooler						
Motor bearing re-greas-ing interval [h]	6000	6000	6000	6000	6000	6000	6000	6000
Grease requirement, each bearing [g]	5	5	5	5	5	5	5	5

h = operating hours

Tab. 23 Fan motor (Option K1, 50Hz)

Mains frequency: 60 Hz

	DSD 145		DSD 175		DSD 205		DSD 240	
	Oil cooler	Compressed air cooler						
Rated power [kW]	2.2/2.5*	0.75	2.2/2.5*	0.75	2.2/2.5*	0.75	2.2/2.5*	0.75
Rated speed [rpm]	1185	1155	1185	1155	1185	1155	1185	1155
Protection class	IP 55	IP 55						
Motor bearing re-greas-ing interval [h]	6000	6000	6000	6000	6000	6000	6000	6000
Grease requirement, each bearing [g]	5	5	5	5	5	5	5	5

h = operating hours

* 380V/60Hz

Tab. 24 Fan motor (Option K1, 60Hz)

2.11.3 Option K2/K9

Fan motor

Mains frequency: 50 Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Rated power [kW]	0.3	0.3	0.3	0.3
Rated speed [rpm]	1400	1400	1400	1400
Protection class	IP 54	IP 54	IP 54	IP 54

Tab. 25 Fan motor (Option K2/K9; 50Hz)

Mains frequency: 60 Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Rated power [kW]	0.3	0.3	0.3	0.3

2 Technical Specifications

2.12 Noise emission [dB(A)]

	DSD 145	DSD 175	DSD 205	DSD 240
Rated speed [rpm]	1460	1460	1460	1460
Protection class	IP 54	IP 54	IP 54	IP 54

Tab. 26 Fan motor (Option K2/K9; 60Hz)

2.12 Noise emission [dB(A)]

Mains frequency	DSD 145	DSD 175	DSD 205	DSD 240
50 Hz	69 / 67*	70 / 67*	72 / 68*	74 / 69*
60 Hz	70 / 68*	71 / 68*	73 / 69*	75 / 70*

Noise pressure level in operation at maximum working gauge pressure as per ISO 2151 and the basic standard ISO 9614-2, uncertainty: ± 3 dB(A)

* Option K2 / K9

Tab. 27 Noise emission [dB(A)]

2.13 Electrical connection

Basic requirements

The machine is designed in accordance with the conditions for an electrical power supply specified in EN 60204-1 (IEC 60204-1) section 4.3.

If no other conditions are specified by the operator, the thresholds described in this standard must be adhered to.

It is recommended that the user and the supplier reach an agreement on the basis of EN 60204-1, Annex B.

The machine requires a symmetrical three-phase power supply.

In a symmetrical three phase supply the phase angles and voltages are all the same.

The machine is fitted with a line filter causing leakage currents. Please take these leakage currents into account when designing on-site isolation monitoring.

This machine is designed for the operation in an industrial environment with proprietary supply network separated from the public supply by a transformer or generator. This machine must not be supplied by low-voltage overhead wires within the industrial installation.

The distance to sensitive radio communication devices of third parties must be at least 30 m. Ensure the line within the control cabinet to be as short as possible.

If external sensors or communications lines are to be connected to the machine, use shielded cables and insert the same through EMC connections into the switching cabinet.

The control voltage is earthed.



This machine may be supplied from an earthed TN or TT three-phase supply in which the **neutral point** is earthed.

The connection to an IT three-phase supply is permitted.

Use the protective conductor connectors of the feeder terminals to earth the machine.

Further information The wiring diagram in chapter 13.4 contains further details regarding the electrical power supply connection.

2.14 Power supply specifications

The following supply cable conductor cross sections and fusing (slow-blow class gG) are selected according to German DIN VDE 0100 Part 430 (IEC 60364-4-43) and DIN VDE 0298-4:2013-06 standards for these conditions:

- Multi-core copper conductors at an operating temperature up to 70 °C
- Cable length <50 m
- Ambient temperature of 30 °C
- Wiring type C, without cable contact
- Current carrying capacity: Table 3 Column 11
(European Harmonisation Directive HD 60364-5-52: 2011)
- Bundled cables: Table 21,
 - Single layer on wall or floor
 - Spacing ≥ outside diameter



- For other application conditions, check and determine the supply diameters according to DIN VDE 0100 and DIN VDE 0298-4:2013-06 or the local energy provider.

Other application conditions would include, for example:

- Higher ambient temperature
- Other cable installation method
- Other cable bundling
- Cable length >50 m

Further information The wiring diagram in chapter 13.4 contains further details of the electric supply connection data.

2.14.1 Mains frequency: 50 Hz

Rated voltage: 400V / 3 / 50Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Backup fuse [A]	160	200	224	315
Supply cable [mm ²]	4x70	4x95	4x120	4x150
Current drawn [A]	151/147*	176/172*	220/215*	260/255*

* Option K2 / K9

Tab. 28 Supply details 400V / 3 / 50Hz

2.14.2 Mains frequency: 60 Hz

Rated voltage: 380V / 3 / 60Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Backup fuse [A]	200/160*	200	224	315
Supply cable [mm ²]	4x70	4x95	4x120	2x4x70
Current drawn [A]	161 / 156*	192 / 187*	221 / 216*	278 / 274*

* Option K2 / K9

Tab. 29 Supply details 380V / 3 / 60Hz

Rated voltage: 440V / 3 / 60Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Backup fuse [A]	160	200	200	250
Supply cable [mm ²]	4x70	4x95	4x95	4x150
Current drawn [A]	141 / 137*	168 / 164*	195 / 191*	237 / 232*

* Option K2 / K9

Tab. 30 Supply details 440V / 3 / 60Hz

Rated voltage: 460V / 3 / 60Hz

	DSD 145	DSD 175	DSD 205	DSD 240
Backup fuse [A]	160	200/160*	200	250/224*
Supply cable [mm ²]	4x70	4x70	4x95	4x120
Current drawn [A]	135 / 131*	162 / 158*	191 / 187*	228 / 224*

* Option K2 / K9

Tab. 31 Supply details 460V / 3 / 60Hz

2.15 Option K2/K9 Water-cooling



Cooling oil may contaminate the cooling water if a leak occurs.

- A special heat exchanger must be used for heating drinking water.

The addition of antifreeze to the cooling water changes its physical properties. Anti-freezing agents will develop their corrosion-protecting effects only in a sufficient concentration.

- Match the parameters of the water cooling to the properties of the cooling water
- Consult KAESER SERVICE to ensure optimum cooling-system performance.
- Comply with the specified minimum requirements for the cooling water in order to avoid downtimes due to corrosion, calcification and contamination.

It is imperative that measures for cooling water treatment and filtration are implemented and performed.

KAESER can provide the names of companies specialising in cooling water analysis and the supply of suitable treatment devices.

The following design types are available:

- Option K2: Water cooling with plate heat exchanger: Chapter 2.15.1
- Option K9: Water cooling with bundled pipe heat exchanger: Chapter 2.15.2

Open cooling system

An open cooling system may be a cooling circuit with open cooling towers for cooling via evaporation. As a portion of the cooling water evaporates, it must be replenished regularly. During evaporation, the material content of the cooling water concentrates and the contact with ambient air can contaminate the cooling water. When replenishing cooling water, you must ensure the minimum requirements for the cooling water.

Closed cooling system

In a closed cooling system, the cooling water has not contact with the atmosphere. Thus, it cannot be contaminated by the atmosphere or enriched with oxygen, for example.

Continuous-flow cooling system

A continuous-flow cooling system is an open cooling system. Ground, surface or drinking water circulate once through the cooling system.

Further information The dimensional drawing in chapter 13.3 gives the flow direction, size and position of the connection ports.

2.15.1 Option K2**Water cooling (Plate-type heat exchanger)**

Typical layout examples are provided here. Conditions for each individual installation could vary from these guidelines.

- If required, enter your individual values in the prepared table.
- If the design data differ, request that the settings in SIGMA CONTROL 2 are checked by the KAESER SERVICE.

The primary winding of the heat exchanger is connected to the machine. The specifications refer to the secondary side of the heat exchanger.

Individual design data

	My value
Cooling water temperature rise [K]	
Flow rate [m^3/h]	
Pressure drop [bar]	

Tab. 32 Water cooling K2: Individual design data

2.15.1.1 Component specification:

Feature	Value
Material (Heat exchanger)	1.4401
Braze (Heat exchanger)	Copper (Cu)
Max. working pressure [bar]	10
Minimum permissible inlet temperature [$^{\circ}\text{C}$]	5
Max. permissible inlet temperature* [$^{\circ}\text{C}$]	40
Continuously possible outlet temperature [$^{\circ}\text{C}$]	55

* Consult KAESER about higher values.

2 Technical Specifications

2.15 Water-cooling

Feature	Value
Maximum permissible outlet temperature [°C] (Component limit value)	70
Maximum permissible flow rate [m ³ /h]	23
Unsuitable cooling media	Salt water Consult KAESER on the suitability of water.

* Consult KAESER about higher values.

Tab. 33 Component specification (Option K2)

2.15.1.2 Cooling water quality

Characteristics/content	Closed cooling system	Open cooling system
pH value	7.5 – 9.0	7.5 – 9.0
Hardness [°dH]	0 – 20	0 – 20
Carbonate hardness* [°dH]	<20	<4
Chlorides (Cl) [mg/l]	<100	<100
Iron (Fe), dissolved [mg/l]	<0.5	<0.2
Sulphate (SO ₄) [mg/l]	<300	<300
HCO ₃ /SO ₄ ratio	>1	>1
Electrical conductivity [μS/cm]	10 – 800	10 – 1500
Ammonia (NH ₄ ⁺) [mg/l]	<1	<1
Manganese (Mn), dissolved [mg/l]	<0.1	<0.1
Glycol [%]	20 – 40	—
Solids (particle size) [mm]	<0.1	<0.1
Bacterial count [CFU*/ml]	10,000	10,000
Suspended solids [ppm] (portion of undissolved matter)	<20	<20

* CFU: colony-forming units

Tab. 34 Cooling water quality (Plate-type heat exchanger)

2.15.1.3 Design data for the cooling system

Cooling water temperature rise 15 K

	DSD 145	DSD 175	DSD 205	DSD 240
Maximum permissible inlet temperature [°C]	40	40	40	40
Flow rate [m ³ /h]	4.7	5.4	6.8	8.1
Pressure drop [bar]	0.3	0.3	0.4	0.5

Tab. 35 Cooling water temperature ($\Delta T=10K$)

Cooling water temperature rise 30 K

	DSD 145	DSD 175	DSD 205	DSD 240
Maximum permissible inlet temperature [°C]	25	25	25	25
Flow rate [m ³ /h]	2.4	2.7	3.4	4.1
Pressure drop [bar]	0.2	0.2	0.25	0.3

Tab. 36 Cooling water temperature ($\Delta T=30K$)

2.15.2 Option K9

Water cooling (Bundled pipe heat exchanger)



Typical layout examples are provided here. Conditions for each individual installation could vary from these guidelines.

- If required, enter your individual values in the prepared table.
- If the design data differ, request that the settings in SIGMA CONTROL 2 are checked by the KAESER SERVICE.

The primary winding of the heat exchanger is connected to the machine. The specifications refer to the secondary side of the heat exchanger.

Individual design data

	My value
Cooling water temperature rise [K]	
Flow rate [m ³ /h]	
Pressure drop [bar]	

Tab. 37 Water cooling K9: Individual design data

2.15.2.1 Component specification:

Feature	Value
Material (Heat exchanger)	CuNi10Fe
Max. working pressure [bar]	10
Minimum permissible inlet temperature [°C]	5
Max. permissible inlet temperature* [°C]	40
Continuously possible outlet temperature [°C]	55
Maximum permissible outlet temperature [°C] (Component limit value)	70

* Consult KAESER about higher values.

2 Technical Specifications

2.15 Water-cooling

Feature	Value
Maximum permissible flow rate [m ³ /h]	16.3
Unsuitable cooling media	Salt water Consult KAESER on the suitability of water.

* Consult KAESER about higher values.

Tab. 38 Component specification (Option K9)

2.15.2.2 Cooling water quality

Characteristics/content	Closed cooling system	Open cooling system
pH value	6.0 – 9.0	6.5 – 9.0
Hardness [°dH]	0 – 20	0 – 20
Carbonate hardness* [°dH]	<20	<4
Chlorides (Cl) [mg/l]	<500	<250
Iron (Fe), dissolved [mg/l]	<0.5	<0.2
Sulphate (SO ₄) [mg/l]	<300	<300
HCO ₃ /SO ₄ ratio	>1	>1
Electrical conductivity [µS/cm]	10 – 2500	10 – 2500
Ammonia (NH ₄ ⁺) [mg/l]	<2	<1
Manganese (Mn), dissolved [mg/l]	<0.1	<0.1
Glycol [%]	20 – 40	—
Solid particles [mm] (Particle size)	<0.2	<0.2
Bacterial count [CFU*/ml]	10,000	10,000
Suspended solids [ppm] (portion of undissolved matter)	<20	<20

* CFU: colony-forming units

Tab. 39 Cooling water quality (Bundled-pipe heat exchanger)

2.15.2.3 Design data for the cooling system

Cooling water temperature rise 15 K

	DSD 145	DSD 175	DSD 205	DSD 240
Maximum permissible inlet temperature [°C]	40	40	40	40
Flow rate [m ³ /h]	4.7	5.4	6.8	8.1
Pressure drop [bar]	0.4	0.5	0.7	0.9

Tab. 40 Cooling water temperature ($\Delta T=10K$)

Cooling water temperature rise 30 K

	DSD 145	DSD 175	DSD 205	DSD 240
Maximum permissible inlet temperature [°C]	25	25	25	25
Flow rate [m ³ /h]	2.4	2.7	3.4	4.1
Pressure drop [bar]	0.2	0.2	0.3	0.4

Tab. 41 Cooling water temperature ($\Delta T=30\text{K}$)

2.16 Option W2/W3 Heat recovery

Typical layout examples are provided here. Conditions for each individual installation could vary from these guidelines.

The reasons may be (examples):

- Fluctuating condensate flow
- Working gauge pressure
- Intake conditions
- Ambient conditions
- Machine settings

Water is generally the heat-receiving medium. The water must meet the quality specified below in order not to damage the heat exchanger.



The specified flow rate relates to the maximum available heat capacity.

- If required, enter your individual values in the prepared table.
- If the design data differ, request that the settings in SIGMA CONTROL 2 are checked by the KAESER SERVICE.
- Consult KAESER SERVICE if you wish to use a different heat-receiving medium.

The primary side of the heat exchanger is connected to the cooling oil circuit of the machine. The specifications refer to the secondary side of the heat exchanger.

Individual design data

	My value
Heating from [°C]	
Heating to [°C]	
Temperature difference (ΔT) [K]	
Maximum available heat output [kW] (relative to ___ bar working pressure)	
Flow rate [m ³ /h]	

2 Technical Specifications

2.16 Heat recovery

	My value
Pressure drop [bar]	

Tab. 42 Heat recovery: Individual design data

Component specification:

Feature	Value
Material	1.4401
Braze	Copper (Cu)
Max. working pressure [bar]	10
Minimum permissible inlet temperature [°C]	5
Max. permissible inlet temperature* [°C]	45
Continuously possible outlet temperature [°C]	70
Maximum permissible outlet temperature [°C] (Component limit value)	100
Maximum permissible flow rate [m³/h]	23
Unsuitable cooling media	Salt water Consult KAESER on the suitability of water.

* Consult KAESER about higher values.

Tab. 43 Specification: Heat exchanger (Option W2/W3)

Quality of the heat receiving medium

Characteristics/content	Value
pH value	7.5 – 9.0
Hardness [°dH]	0 – 20
Carbonate hardness* [°dH]	<20
Chlorides (Cl) [mg/l]	<100
Iron (Fe), dissolved [mg/l]	<0.5
Sulphate (SO ₄) [mg/l]	<300
HCO ₃ /SO ₄ ratio	>1
Electrical conductivity [µS/cm]	10 – 800
Ammonia (NH ₄ ⁺) [mg/l]	<1
Manganese (Mn), dissolved [mg/l]	<0.1
Glycol [%]	20–40
Solids (particle size) [mm]	<0.1

* CFU: colony-forming units

Characteristics/content	Value
Bacterial count [CFU*/ml]	10,000
Suspended solids [ppm] (portion of undissolved matter)	<20

* CFU: colony-forming units

Tab. 44 Quality of the heat receiving medium

Heat capacity

Maximum heat capacity available	DSD 145	DSD 175	DSD 205	DSD 240
[kW]	59.5	71.1	88.4	106.5
[MJ/h]	214	256	318	383
[kcal/h]	51139	61135	75967	91574

Tab. 45 Heat capacity (Option W2/W3)

Option W2 Flow rate for heating from 45 °C to 70 °C (equivalent to ΔT = 25K)

	DSD 145	DSD 175	DSD 205	DSD 240
Flow rate [m³/h]	2.1	2.4	3.0	3.7
Pressure drop [bar]	0.2	0.2	0.25	0.30

Tab. 46 Flow rate / pressure drop (option W2)

Option W3 Flow rate for heating from 15 °C to 70 °C (equates to ΔT=55K)

	DSD 145	DSD 175	DSD 205	DSD 240
Flow rate [m³/h]	0.9	1.1	1.4	1.7
Pressure drop [bar]	0.10	0.10	0.10	0.10

Tab. 47 Flow rate / pressure drop (option W3)

3 Safety and Responsibility

3.1 Basic instructions

The machine is manufactured to the latest engineering standards and acknowledged safety regulations. Nevertheless, dangers can arise through its operation:

- danger to life and limb of the operator or third parties,
- impairments to the machine and other material assets.



Disregard of warning or safety instructions can cause serious injuries!

- Use this machine only if it is in a technically perfect condition and only for the purpose for which it is intended; observe all safety measures and the instructions in the operating manual.
- Immediately rectify (have rectified) any faults that could be detrimental to safety.

3.2 Specified use

The machine is intended solely for generating compressed air for industrial use. Any other use is considered incorrect. The manufacturer is not liable for any damages that may result from incorrect use. The user alone is liable for any risks incurred.

- Comply with the instructions in this operating manual.
- Operate the machine only within its performance limits and under the permitted ambient conditions.
- Do not use compressed air for breathing purposes unless it is specifically treated.
- Do not use compressed air for any application that will bring it into direct contact with foodstuffs unless it is specifically treated.

3.3 Improper use

Improper usage can cause damage to property and/or (severe) injuries.

- Only use the machine as intended.
- Never direct compressed air at persons or animals.
- Use hot cooling air for heating purposes only if there is no risk to the health of humans or animals. If necessary, hot cooling air should be treated by suitable means.
- Do not allow the machine to take in toxic, acidic, flammable or explosive gases or vapours.
- Do not operate the machine in areas in which specific requirements with regard to explosion protection are in force.

3.4 User's responsibilities

3.4.1 Observe statutory and universally accepted regulations

These are, for example, nationally implemented European directives and/or applicable national legislation, safety and accident prevention regulations.

3 Safety and Responsibility

3.4 User's responsibilities

- Observe relevant statutory and accepted regulations during installation, operation and maintenance of the machine.

3.4.2 Determining personnel

Suitable personnel are experts who, by virtue of their training, knowledge and experience as well as their knowledge of relevant regulations can assess the work to be done and recognize the possible dangers involved.

Authorised operators possess the following qualifications:

- they are of legal age,
- are conversant with and adhere to the safety instructions and sections of the operating manual relevant to operation,
- they have received adequate training and authorization to operate electrical and compressed air devices,
- Additional qualifications for machines with refrigeration dryers:
 - they must have training and qualification for safe operation of refrigeration devices.

Authorised installation and maintenance personnel have the following qualifications:

- they are of legal age,
 - must have read, be conversant with and adhere to the safety instructions and sections of the operating manual applicable to installation and maintenance,
 - are fully conversant with the safety concepts and regulations of electrical and compressed air engineering,
 - are able to recognize the possible dangers of electrical and compressed air devices and take appropriate measures to safeguard persons and property,
 - have received adequate training in and authorisation for the safe installation and maintenance of this machine.
 - Additional qualifications for machines with refrigeration dryers:
 - fully conversant with the safety concepts and regulations concerning refrigeration devices,
 - must be able to recognise the possible dangers of refrigeration devices and take appropriate measures to safeguard persons and property.
- Ensure that personnel entrusted with operation, installation and maintenance are qualified and authorised to carry out their tasks.

3.4.3 Adherence to inspection schedules and accident prevention regulations

The machine is subject to local inspection schedules.

Examples of German operation

- Carry out recurring inspections to *DGUV Regel 100 – 500*, chapter 2.11:
The user must ensure that the machine's safety devices are checked for function as required or at least annually.
- Carry out oil changes to *DGUV Regel 100 – 500*, chapter 2.11.
The user must ensure that the cooling oil is changed as required or at least annually and the oil change must be documented. Intervals may be varied if an analysis proves that the oil is still usable.

- Keep to inspection intervals in accordance with the Ordinance on Industrial Safety and Health with maximum intervals as laid down in §15.

Inspection	Inspection interval	Inspecting authority
Installation and equipment inspection	Before commissioning	Approved supervisory body
Internal inspection	Every 5 years after installation or the last inspection	Approved supervisory body
Strength test	Every 10 years after installation or the last inspection	Approved supervisory body

Tab. 48 Inspection intervals according to regulations

3.5 Dangers

Basic instructions

The following describes the various forms of danger that can occur during machine operation.

Basic safety instructions are found in this service manual at the beginning of each chapter in the section entitled 'Safety'.

Warning instructions are found before a potentially dangerous task.

3.5.1 Safely dealing with sources of danger

The following describes the various forms of danger that can occur during machine operation.

Electricity

Touching voltage carrying components can result in electric shocks, burns or death.

- Allow only qualified and authorised electricians or trained personnel under the supervision of a qualified and authorised electrician to carry out work on electrical equipment according to electrical engineering regulations.
- Before commissioning or re-commissioning the machine, the user must ensure adequate protection against electric shock from direct or indirect contact.
- Before starting any work on electrical equipment:
Switch off and lock out the power supply isolator and verify the absence of any voltage.
- Switch off any external power sources.
These could be connections to floating relay contacts or the electrical machine heating, for example.
- Use fuses corresponding to machine power.
- Check regularly that all electrical connections are tight and in proper condition.

Forces of compression

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following information concerns work on components that could be under pressure.

- Close shut-off valves or otherwise isolate the machine from the distribution network to ensure that no compressed air can flow back into the machine.

3 Safety and Responsibility

3.5 Dangers

- De-pressurise all pressurised components and enclosures.
- Do not carry out welding, heat treatment or mechanical modifications on pressurised components (e.g. pipes and vessels) as this influences the component's resistance to pressure. The safety of the machine is then no longer ensured.

Compressed air quality

The composition of the compressed air must be suitable for the actual application in order to preclude health and life-threatening dangers.

- Use appropriate systems for air treatment before using the compressed air from this machine as breathing air and/or for the processing of foodstuffs.
- Use foodstuff-compatible cooling oil whenever compressed air is to come into contact with foodstuffs.

Spring forces

Springs under tension or compression store energy. Uncontrolled release of this energy can cause serious injury or death.

Minimum pressure / check valves, pressure relief valves and inlet valves are powerfully spring-loaded.

- Do not open or dismantle any valves.

Rotating components

Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

- Do not open the enclosure while the machine is activated.
- Switch off and lock out the power supply disconnecting device and verify the absence of any voltage.
- Wear close-fitting clothes and a hair net if necessary.
- Make sure all covers and safety guards are in place and secured before re-starting.

Temperature

High temperatures are generated during compression. Touching hot components may cause injuries.

- Avoid contact with hot components.
These include, for example, compressor airends or blocks, oil and compressed air lines, coolers, oil separator tanks, motors and machine heaters.
- Wear protective clothing.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapours or parts of the machine.

Noise

The enclosure absorbs the machine noise to a tolerable level. This function will be effective only if the enclosure is closed.

- Operate the machine only with intact sound insulation.
- Wear hearing protection if necessary.
The blowing-off of the pressure relief valve can be particularly loud.

3 Safety and Responsibility

3.5 Dangers

Operating fluids/materials

The used operating fluids and materials can cause adverse health effects. Suitable safety measures must be taken in order to prevent injuries.

- Strictly forbid fire, open flame and smoking.
- Follow safety regulations when dealing with oils, lubricants and chemical substances.
- Avoid contact with skin and eyes.
- Do not inhale oil mist or vapour.
- Do not eat or drink while handling cooling and lubricating fluids.
- Keep suitable fire extinguishing agents ready for use.
- Use only KAESER approved operating materials.

Unsuitable spare parts

Unsuitable spare parts compromise the safety of the machine.

- Use only spare parts approved by the manufacturer for use in this machine.
- Use only genuine KAESER replacement parts on pressure bearing parts.

Conversion or modification of the machine

Modifications, additions to and conversions of the machine or the controller can result in unpredictable dangers.

- Do not convert or modify the machine!
- Obtain written approval by the manufacturer prior to any technical modification or expansion of the machine, the controller, or the control programs.

Extending or modifying the compressor station

If dimensioned appropriately, pressure relief valves reliably prevent an impermissible rise in pressure. New dangers may arise if you modify or extend the compressed air station.

- When extending or modifying the compressed air system:
Check the blow-off capacity of pressure relief valves on air receivers and compressed air lines before installing a new machine.
- If the blow-off capacity is insufficient:
Install pressure relief valves with larger blow-off capacity.

3.5.2 Safe machine operation

The following is information supporting you in the safe handling of the machine during individual product life phases.

Personal protective equipment

When working on the machine you may be exposed to dangers that can result in accidents with severe adverse health effects.

- Wear protective clothing as necessary.

Suitable protective clothing (examples):

- Safety work wear
- Protective gloves

- Safety boots
- Eye protection
- Ear protection

Transport

The mass and size of the machine require safety measures during its transport to prevent accidents.

- Use suitable lifting gear that conforms to local safety regulations.
- Allow transportation only by personnel trained in the safe movement of loads.
- Attach lifting gear only to suitable lifting points.
- Be aware of the centre of gravity to avoid tipping.
- Make sure the danger zone is clear of personnel.
- Do not step onto machine components to climb up the machine.

Assembly

- Use only electrical cables that are suitable and approved for the surroundings and electrical loads applied.
- Never dismantle compressed air pipes until they are fully vented.
- Only use pressure lines that are suitable and approved for the maximum working pressure and the intended medium.
- Do not allow connection pipes to be placed under mechanical stress.
- Do not induce any forces into the machine via the connections, so that the compressive forces must be balanced by bracing.

Installation

A suitable installation location for the machine prevents accidents and faults.

- Install the machine in a suitable compressor room.
- Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- Ensure accessibility so that all work on the machine can be carried out without danger or hindrance.
- If installed outdoors, the machine must be protected from frost, direct sunlight, dust, rain and splashing water.
- Do not operate in areas in which specific requirements with regard to explosion protection are in force.

For instance, the requirements of ATEX directive 2014/34/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".

- Ensure adequate ventilation.
- Place the machine in such a manner that the working conditions in its environment are not impaired.
- Comply with limit values for ambient temperature and humidity.
- The intake air must not contain any damaging contaminants.
Damaging contaminants are for instance: explosive or chemically instable gases and vapours, acid or base forming substances such as ammonia, chlorine or hydrogen sulfide.
- Do not position the machine in the warm exhaust air flow from other machines.
- Keep suitable fire extinguishing agents ready for use.

Commissioning, operation and maintenance

During commissioning, operation and maintenance you may be exposed to dangers resulting from, e.g., electricity, pressure and temperature. Careless actions can cause accidents with severe adverse effects for your health.

- Allow maintenance work to be carried out only by authorised personnel.
- Wear close-fitting, flame-resistant clothing. Wear protective clothing as necessary.
- Switch off and lock out the power supply disconnecting (isolating) device and check that no voltage is present.
- Check that there is no voltage on potential-free contacts.
- Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- De-pressurise all pressurised components and enclosures.
- Allow the machine to cool down.
- Do not open the cabinet while the machine is switched on.
- Do not open or dismantle any valves.
- Use only spare parts approved by KAESER for use in this machine.
- Carry out regular inspections:
for visible damages,
of safety installations,
of the EMERGENCY STOP command device,
of any components requiring monitoring.
- Pay particular attention to cleanliness during all maintenance and repair work. Cover components and openings with clean cloths, paper or tape to keep them clean.
- Do not leave any loose components, tools or cleaning rags on or in the machine.
- Components removed from the machine can still be dangerous.
Do not attempt to open or destroy any components taken from the machine.

De-commissioning, storage and disposal

Improper handling of old operating fluids and components represent a danger for the environment.

- Drain off fluids and dispose of them according to environmental regulations.
These include, for example, compressor oil and cooling water.
- Have refrigerant disposed of by authorized bodies only.
- Dispose of the machine in accordance with local environmental regulations.

3.5.3 Organisational Measures

- Designate personnel and their responsibilities.
- Give clear instructions on reporting faults and damage to the machine.
- Give instructions on fire reporting and fire-fighting measures.

3.5.4 Danger Areas

The table gives information on the areas dangerous to personnel.

Only authorised personnel may enter these areas.

3 Safety and Responsibility

3.6 Safety devices

Activity	Danger area	Authorised personnel
Transport	Within a 3 m radius of the machine.	Installation personnel for transport preparation. No personnel during transport.
	Beneath the lifted machine.	No personnel!
Installation	Within the machine. Within 1 m radius of the machine and its supply cables.	Installation personnel
Operation	Within a 1 m radius of the machine.	Operating personnel
Maintenance	Within the machine. Within a 1 m radius of the machine.	Maintenance personnel

Tab. 49 Danger Areas

3.6 Safety devices

Various safety devices ensure safe working with the machine.

- Do not change, bypass or disable safety devices.
- Regularly check safety devices for their correct function.
- Do not remove or obliterate labels and notices.
- Ensure that labels and notices are clearly legible.

Further information More information on safety devices is contained in chapter 4, section 4.2.1.

3.7 Working life of safety functions

Pursuant to ISO 13849-1:2008, Category and Performance Level (PL) of the machine's safety functions have been analyzed and assessed:

Safety function	Category	Performance Level
Safety shut-down at excessive airend discharge temperature	2	c
EMERGENCY STOP control device	1	c

Tab. 50 Category and Performance Level

The safety-relevant components of the safety functions are designed for a working life of 20 years. The working life starts with the commissioning, and is not extended by times during which the machine was not in use.

The following components are affected:

- Resistance thermometer (Pt100 sensor for measuring the compression discharge temperature)
 - EMERGENCY STOP control device
 - Mains contactor
1. The components of the safety functions must be replaced by KAESER SERVICE after a working life of 20 years.
 2. Have the KAESER SERVICE check the reliability of the safety functions.

3.8 Safety signs

The illustration shows the position of the safety signs on the machine. The table lists the various safety signs used and their meanings.

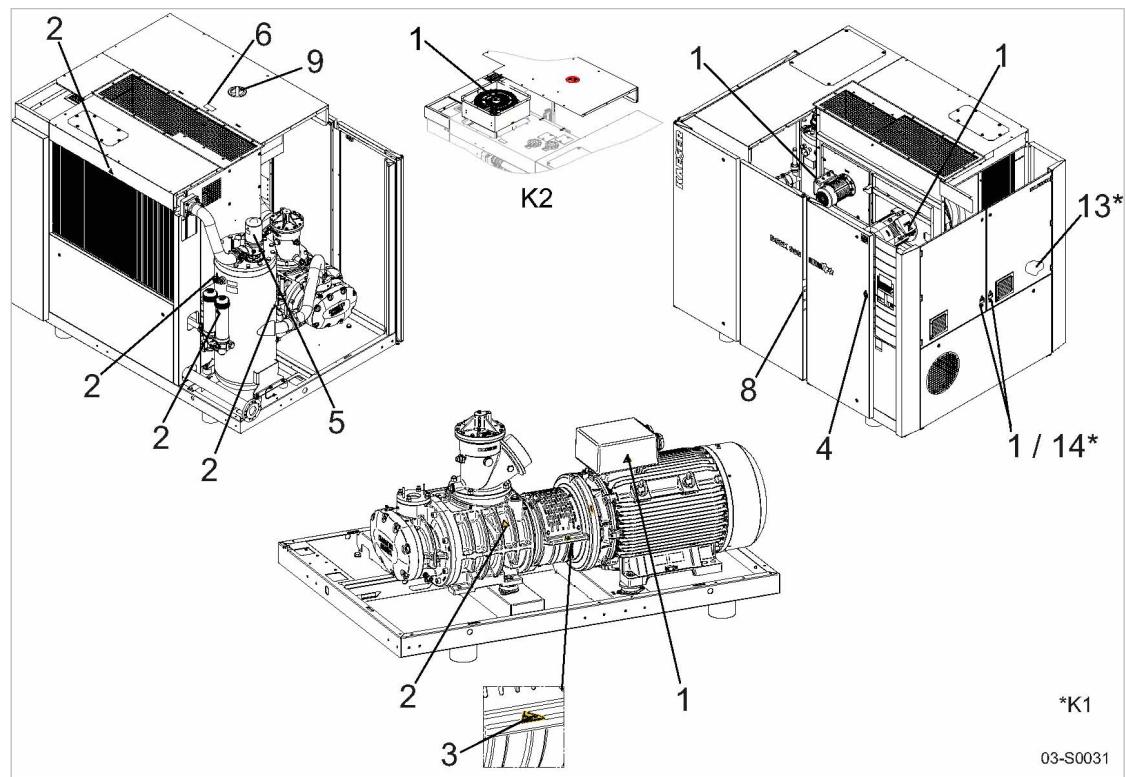


Fig. 2 Location of safety signs

3 Safety and Responsibility

3.8 Safety signs

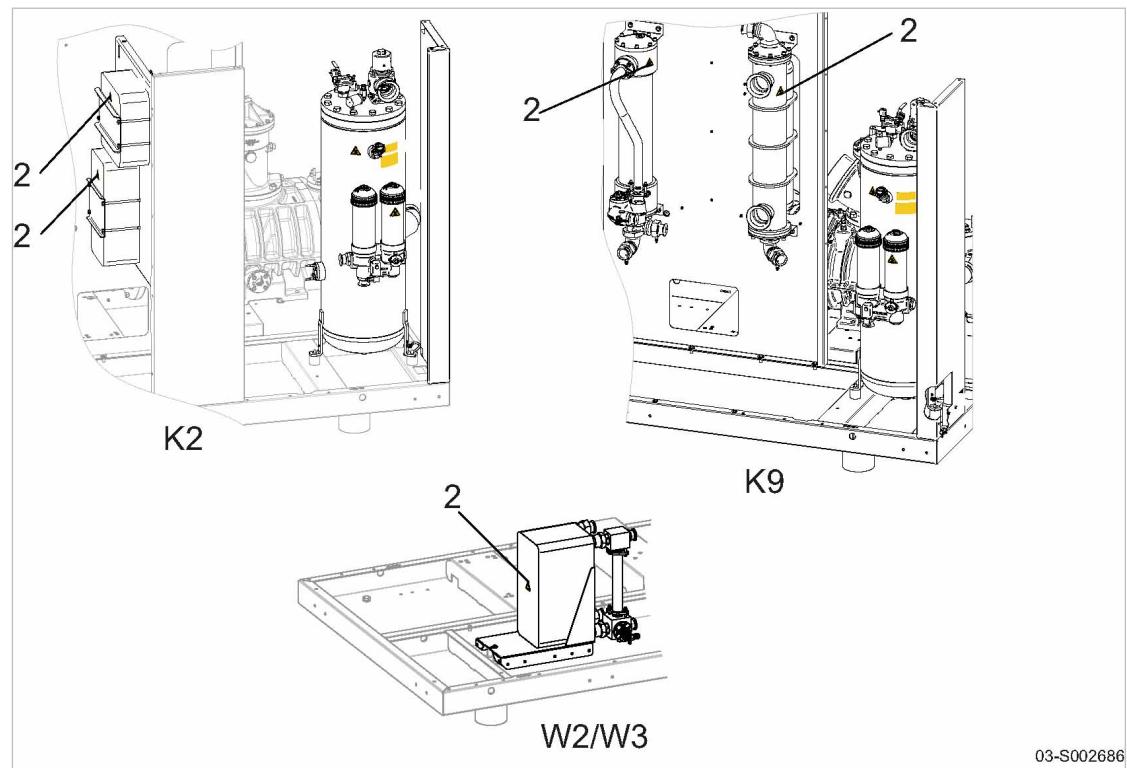


Fig. 3 Location of safety signs

Item	Sign	Meaning
1		<p>Danger of fatal injury from electric shock!</p> <ul style="list-style-type: none"> ➢ Before starting any work on electrical equipment: Switch off and lock out the power supply disconnecting device and verify the absence of any voltage.
2		<p>Hot surface! Risk of burns caused by contact with hot components!</p> <ul style="list-style-type: none"> ➢ Do not touch the surface. ➢ Wear long-sleeved garments (no synthetics such as polyester) and protective gloves.
3		<p>Risk of serious injuries (to the hands, in particular) or even severing of extremities from rotating components!</p> <ul style="list-style-type: none"> ➢ Operate the machine only with closed safety guards, access doors and panels. ➢ Switch off and lock out the mains isolating device and secure against unintentional reactivation.
4		<p>Personal injury or damage to the machine due to incorrect operation!</p> <ul style="list-style-type: none"> ➢ Read and understand the operating manual and all safety signs before switching on this machine.
		<p>Risk of injury caused by an automatic machine start!</p> <ul style="list-style-type: none"> ➢ Switch off and lock out the mains isolating device and secure against unintentional reactivation.

Item	Sign	Meaning
5		Risk of fatal injury when dismantling valves (spring-loaded or under pressure)! -> Do not open or dismantle valves. -> Call an authorised Service Technician in the event of a fault.
6		Serious injury, particularly to the eyes, from foreign objects ejected from rotating components. -> Do not allow anything to fall through the ventilation grille. -> Do not work above the machine if it is switched on.
8		Bearing damage due to re-greasing in standstill! -> Re-grease the bearings only with the motor running. -> Use only ESSO UNIREX N3 bearing grease. -> Adhere to the prescribed maintenance intervals and grease quantity.
9		Danger of falling or damage to the machine as a result of loading! -> Do not sit or walk on the enclosure. -> Do not place or store any load on the enclosure.
13		Danger to life due to high earth conductor current! -> Ensure that the earth conductor is sufficiently dimensioned! -> Before starting any work on electrical equipment: Switch off and lock out the power supply disconnecting device and verify the absence of any voltage.
14		Danger of fatal injury from electric shock! -> Before starting any work on electrical equipment: Switch off and lock out the power supply disconnecting device and verify the absence of any voltage. -> Before starting work on the frequency converter or intermediate circuit capacitors, wait for, at least, 5 minutes.

Tab. 51 Safety signs

3.9 Emergency situations

3.9.1 Correct fire fighting

Suitable measures

Calm and prudent action can save lives in the event of a fire.

- > Keep calm.
- > Give the alarm.
- > Shut off supply lines if possible.
Mains disconnecting device (all poles)
Cooling water (if present)
Heat recovery (if present)
- > Warn and move endangered personnel to safety.
- > Help incapacitated persons.
- > Close the doors.
- > When trained accordingly: Attempt to extinguish the fire.

3 Safety and Responsibility

3.10 Warranty

Extinguishing substances

- Suitable extinguishing media:
Foam
Carbon dioxide
Sand or soil
- Unsuitable extinguishing media:
Strong jet of water

3.9.2 Treating injuries from handling cooling oil

Eye contact:

Cooling oil can cause irritation.

- Rinse open eyes thoroughly for a few minutes under running water.
- Seek medical help if irritation persists.

Skin contact:

Cooling oil may irritate after prolonged contact.

- Wash thoroughly with skin cleaner, then with soap and water.
- Contaminated clothing should be dry-cleaned before reuse.

Inhalation:

Cooling oil mist may make breathing difficult.

- Clear air passages of oil mist.
- Seek medical help if difficulty with respiration continues.

Ingestion

- Wash out the mouth immediately.
- Do not induce vomiting.
- Seek medical aid.

3.10 Warranty

This operating manual does not contain any independent warranty commitment. Our general terms and conditions apply with regard to warranty.

A condition of our warranty is that the machine is used solely for the purpose for which it is intended and under the conditions specified.

Due to the multitude of applications for which the machine is suitable, the user is obliged to determine its suitability for his specific application.

Furthermore, we do not assume any warranty obligation for damages caused by:

- the use of unsuitable parts or operating materials,
- arbitrary modifications,
- incorrect maintenance,
- incorrect repair.

Correct maintenance and repair includes the use of genuine KAESER spare parts and operating materials.

- Obtain confirmation from KAESER that your specific operating conditions are suitable.

3.11 Environment protection

The operation of this machine may cause dangers for the environment.

- Do not allow cooling oil to escape to the environment or into the sewage system.
- Store and dispose of operating materials and replaced parts in accordance with local environment protection regulations.
- Observe national regulations.

This applies particularly to parts contaminated with compressor cooling oil.

4 Design and Function

4.1 Housing

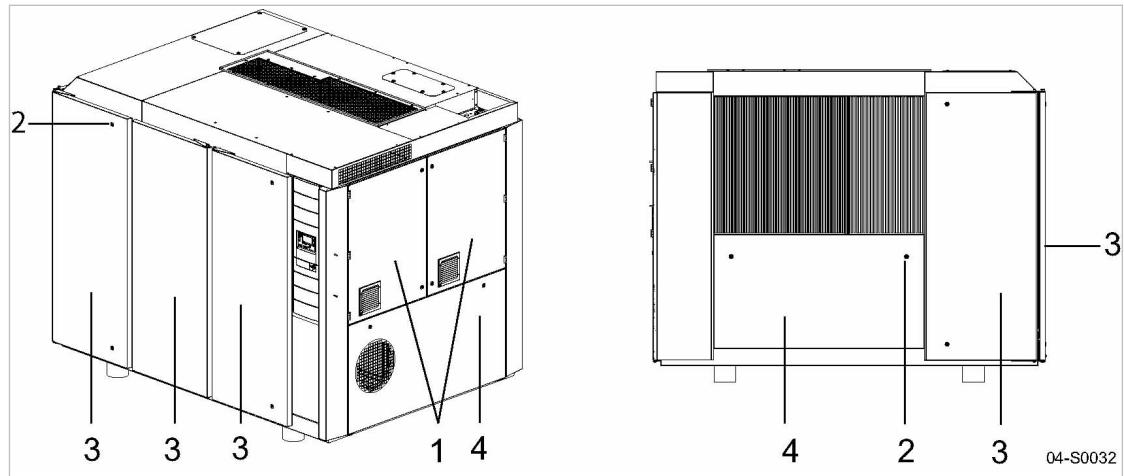


Fig. 4 Housing overview

- | | |
|--------------------------|-----------------------|
| [1] Control cabinet door | [3] Access door |
| [2] Latch | [4] Panel (removable) |

When closed, the enclosure serves various functions:

- Sound insulation
- Protection against contact with components
- Cooling air flow

The enclosure is not suitable for the following uses:

- Walking on, standing on or sitting on the machine.
- Loads of any kind should not be placed or stored on the machine.

Safe and reliable operation is only assured with the enclosure closed.

Access doors are hinged to swing open and removable panels can be lifted off.

The latches should be opened using the supplied key.

4.2 Machine function

The description uses an air-cooled machine as an example.

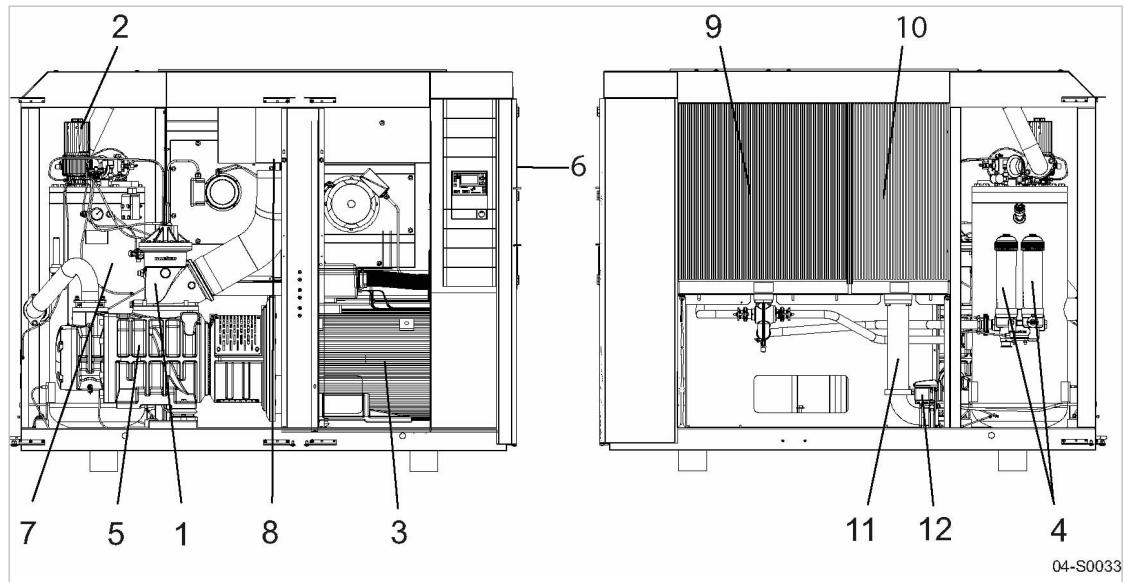


Fig. 5 Machine overview

- | | |
|--------------------------------|-------------------------|
| ① Inlet valve | ⑦ Oil separator tank |
| ② Minimum pressure check valve | ⑧ Air filter |
| ③ Compressor drive motor | ⑨ Oil cooler |
| ④ Oil filter | ⑩ Compressed air cooler |
| ⑤ Compressor block | ⑪ Centrifugal separator |
| ⑥ Control cabinet | ⑫ Condensate drain |

Ambient air is cleaned as it is drawn in through the filter ⑧.

The air is then compressed in the airend ⑤.

The airend is driven by an electric motor ③.

Cooling oil is injected into the airend. It lubricates moving parts and forms a seal between the rotors themselves and between them and the airend casing. This direct cooling in the compression chamber ensures a very low airend discharge temperature.

Cooling oil recovered from the compressed air in the oil separator tank ⑦ gives up its heat in the oil cooler ⑨. The oil then flows through the oil filter ④ and back to the point of injection. Air pressure within the machine keeps the oil circulating. A separate pump is not necessary.

A temperature-regulating valve driven by an electric motor keeps the cooling oil at optimum temperature. Together with SIGMA CONTROL 2, the electronic thermal management (Electronic Thermo Management – ETM) uses various parameters to keep the cooling oil temperature as low as possible. A low cooling oil temperature increases the machine's energy efficiency.

Compressed air, freed of cooling oil in the oil separator tank ⑦, flows through the minimum pressure / check valve ② into the air cooler ⑩. The minimum pressure/check valve ensures sufficient internal pressure to maintain cooling oil circulation.

The air cooler ⑩ cools the compressed air temperature to approximately 5 K to 10 K above the ambient temperature. A major portion of the existing humidity is removed from the compressed air and drained via the cyclone separator ⑪ with condensate drain ⑫.

4.2.1 Safety devices

The following safety devices are provided and must not be modified or disabled.

- EMERGENCY STOP control device:
Stops the machine immediately in an emergency situation. The motor is stopped. The pressure system is vented.
- Pressure relief valve:
The pressure relief valve protects the system against excessive pressure. It is factory set.
- Resistance thermometer:
Monitoring the airend discharge temperature protects the compressed air system from impermissible temperature rises.
- Housing and covers for moving parts and electrical connections:
Protect against accidental contact.

4.2.2 Floating relay contacts

Floating relay contacts are provided for the transfer of signals, messages.

Information on location, loading capacity and type of message or signal is found in the electrical diagram.



If the floating relay contacts are connected to an external voltage source, voltage may be present even when the machine is isolated from the power supply.

4.3 Operating panel SIGMA CONTROL 2

Keys

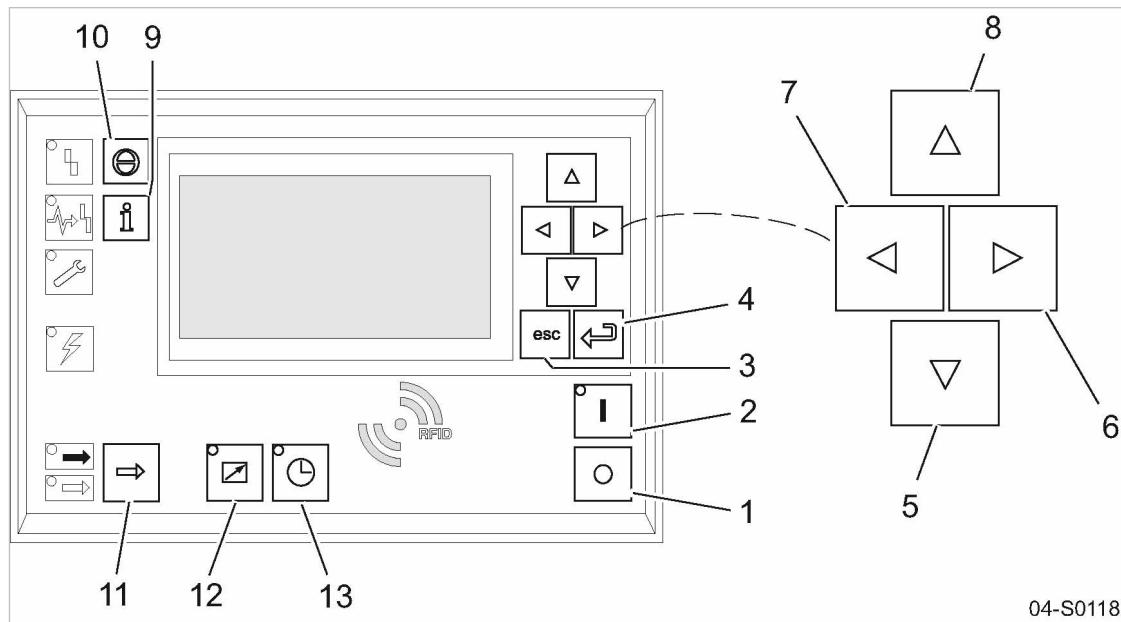


Fig. 6 Keys - overview

Position	Name	Function
1	«OFF»	Switches the machine off.

4 Design and Function

4.3 Operating panel SIGMA CONTROL 2

Position	Name	Function
2	«ON»	Switches the machine on.
3	«Escape»	Returns to the next higher menu option level. Exits the edit mode without saving.
4	«Enter»	Jumps to the selected menu option. Exits the edit mode and saves.
5	«Down»	Scrolls down the menu options. Reduces a parameter value.
6	«Right»	Jumps to the right. Moves the cursor position to the next right field.
7	«Left»	Jumps to the left. Moves the cursor position to the next left field.
8	«Up»	Scrolls up the menu options. Increases a parameter value.
9	«Information»	Operating mode: Displays the event memory.
10	«Acknowledgement»	Acknowledges alarms and warning messages. If permissible: Resets the fault counter (RESET).
11	«LOAD/IDLE»	Toggles between the LOAD and IDLE operating modes.
12	«Remote control»	Switches the remote control on and off.
13	«Time control»	Switches time control on and off.

Tab. 52 Keys

Indicators

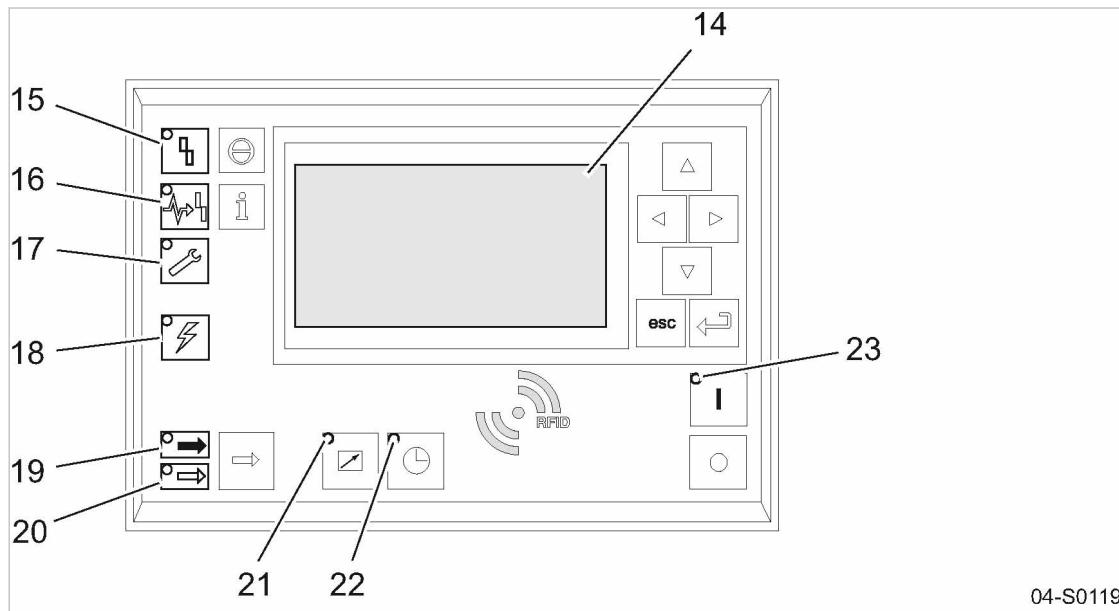


Fig. 7 Indicators – overview

Position	Name	Function
14	Display	Graphic display with 8 lines and 30 characters per line.
15	<i>Fault</i>	Flashes red to indicate a machine fault. Continuous red light after acknowledgement.
16	<i>Communications error</i>	Continuous red light to indicate a faulty communication connection, or an external fault message without machine shut-down.
17	<i>Warning</i>	Flashes in yellow in the following events: ■ Maintenance work due ■ Warning message Continuous yellow light after acknowledgement.
18	<i>Voltage applied to controller</i>	Continuous green light when voltage is applied to the controller.
19	<i>LOAD</i>	Continuous green light when the machine is running in LOAD.
20	<i>IDLE</i>	Continuous green light when the machine is running in IDLE. Flashes when the «LOAD/IDLE» toggle key is pressed.
21	<i>Remote control</i>	Continuous green light when the machine is in remote control.
22	<i>Time control</i>	Continuous green light when the machine is controlled by the timer.
23	<i>ON</i>	Continuous green light when the machine switched on.

Tab. 53 Indicators

RFID reader

RFID is the abbreviation for “Radio Frequency Identification” and enables the identification of persons or objects.

Placing a suitable transponder in front of the RFID reader of the controller will automatically activate the communication between transponder and SIGMA CONTROL 2.

A suitable transponder is the KAESER RFID equipment card. Two of them have been provided with the machine.

Typical application:

- Users log on to the machine.
(no manual input of the password required.)

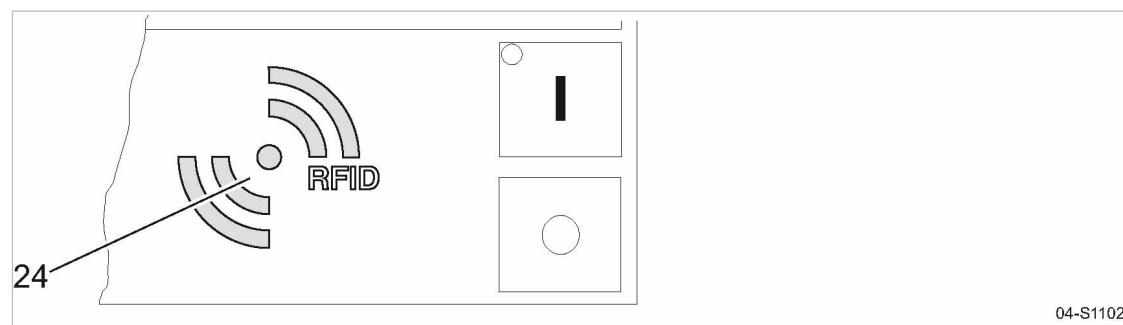


Fig. 8 RFID reader

Position	Name	Function
24	RFID	RFID reader for the communication with a suitable RFID transponder.

Tab. 54 RFID reader

Further information More information about the use of RFID technology is provided in the SIGMA CONTROL 2 operating manual.

4.4 Operating modes and control modes

4.4.1 Machine operating modes

STOP

The machine is connected to the power supply.
The *voltage applied to controller* LED lights green.
The machine is switched off. The *on* LED is extinguished.

READY

The machine has been activated with «ON»:

- The *on* LED lights green.
- The drive motor is stopped.
- The inlet valve is closed.
- The minimum pressure/check valve isolates the oil separator tank from the air system.
- The venting valve is open.

The compressor motor starts as soon as system pressure is lower than the set point pressure (cut-off pressure).

In addition, timing and/or remote control may affect the start of the motor.

LOAD

The compressor motor runs under load.

- The inlet valve is open.
- The compressor block delivers compressed air to the system.

IDLE

The compressor motor runs unloaded with low power consumption.

- The inlet valve is closed.
- The minimum pressure/check valve isolates the oil separator tank from the air system.
- The venting valve is open.

A small volume of air circulates through the bypass bore in the inlet valve, through the compressor block and back to the inlet valve via the venting line.

4.4.2 Control modes

Using the selected control mode, the controller switches the machine between its various operational states in order to maintain the gauge working pressure between the set minimum and maximum values, regardless of the drawn compressed air volume. The control mode also rules the degree of energy efficiency of the machine.

The shortest possible times for the various parameters is preset by the factory to ensure that the compressor motor earlier and more frequently is at standstill. If you want to change these parameters, select the shortest possible times in order for the machine working energy-efficiently.

The machine-dependant venting time between the LOAD and READY operating modes ensures load changes at minimum material stresses.

The following control modes can be set:

- DUAL
- QUADRO
- VARIO
- DYNAMIC

Supplementary mechanical flow rate regulation:

- Option C1 ■ MODULATING control

Energy-efficient control modes for various applications:

Application	Recommended control mode
Compressed air station with one machine or several machines supplying similar volumes.	DYNAMIC ¹⁾
Machine for peak load in a compressed air station	VARIO
Machine for intermediate load in a compressed air station	DYNAMIC ¹⁾
Machine for basic load in a compressed air station	DYNAMIC ¹⁾

¹⁾ At exceedingly high pressure fluctuations or frequent drive motor starts (current peaks), switch from DYNAMIC to VARIO.

Tab. 55 Energy-saving control modes

The DYNAMIC control mode is preset by the factory, unless a different agreement has been made with the manufacturer.

DUAL

In the DUAL control mode, the machine is switched back and forth between LOAD and IDLE to maintain the machine working pressure between the preset minimum and maximum values. When maximum pressure is reached, the machine switches to IDLE. When the preset *idling time* has elapsed, the machine switches to READY.

QUADRO

In contrast to DUAL mode, the machine will switch in QUADRO after short periods between LOAD to READY after being in IDLE.

Following extended times in the various operating modes, the machine switches from LOAD to READY.

In this event, the controller considers the time in READY mode as *standstill time*. The time in LOAD and IDLE operating modes are taken as *minimum runtime*.

VARIO

The VARIO mode is based on the DUAL control mode. The difference to DUAL is that the *idling time* is automatically lengthened or shortened to compensate for higher or lower machine starting frequencies.

DYNAMIC

In contrast to the the DUAL regulating mode, the machine will switch from LOAD to READY in DYNAMIC mode at low drive motor temperature.

At higher motor temperatures, the machine switches to IDLE until the compressor motor has cooled down enough. Subsequently, the machine to READY.

The lower the drive motor temperature, the sooner (and, therefore, more often and longer) it is stopped.

Option C1 MODULATING control

The MODULATING control is an additional mechanical regulation. It continuously changes the flow rate within the machine's control range.

A control valve, the proportional controller, changes the degree of opening of the inlet valve when the machine transports compressed air into the air network (LOAD)

The load and power consumption of the drive motor rises and falls with the air demand.

4.5 Options

The options available for your machine are described below.

4.5.1 Option C3

Controller SIGMA CONTROL 2: Connection to control technology

Connection to various control technology systems is possible.

SIGMA CONTROL 2

Main Control System (MCS):

- Slot for a communication module to connect to a control technology system

Input-Output-Module (IOM):

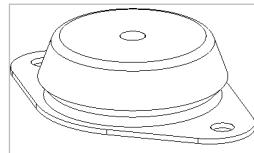
- Module with digital and analogue inputs and outputs

Tab. 56 Components

4.5.2 Option H1

Machine mountings

These mountings allow the machine to be anchored firmly to the floor.



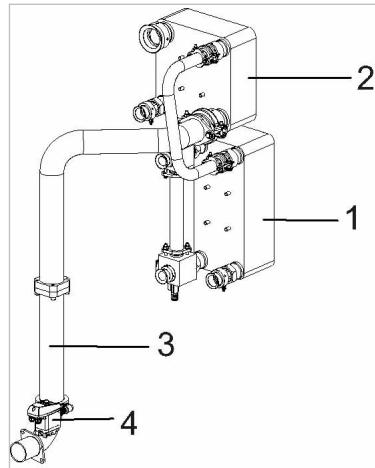
04-S0034

Fig. 9 Machine mountings

4.5.3 Option K2/K9 Water-cooling

Stainless steel plate-type heat exchanger (Option K2) or bundled pipe heat exchangers (Option K9) are used in machines with water cooling.

Option K2



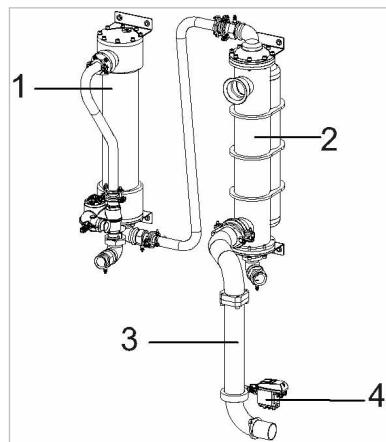
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Fig. 10 Water cooling (option K2)

- ① Oil cooler
- ② Compressed air cooler

- ③ Cyclone separator
- ④ Condensate drain

Option K9



04-S1296

Fig. 11 Water cooling (Option K9)

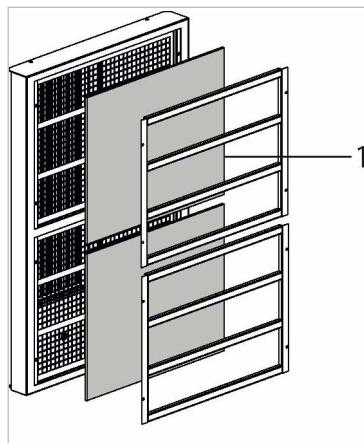
- ① Oil cooler
- ② Compressed air cooler

- ③ Cyclone separator
- ④ Condensate Drain

4.5.4 Option K3

Cooling air filter mat

The mat filters the cooling air and keeps the cooler surface clean.



04-S0306

Fig. 12 Cooling air filter mat (option K3)

① Cooling air filter mat

4.5.5 Option W2/W3

Heat recovery

The cooling oil circuit includes 2 valves regulating the cooling oil temperature:

- The machine's oil temperature regulator
- The heat recovery system's oil temperature regulator

The oil temperature regulator of the heat recovery system opens first and releases surplus heat into the heat recovery system. If the heat recovery system cannot remove sufficient heat, the oil temperature regulator of the machine opens to additionally release the cooling circuit via the oil cooler.

The heat available for recovery depends on the individual operating conditions of the machine.

Specify the following settings at SIGMA CONTROL 2:

- Activate/deactivate heat recovery
- If necessary, change the target value for the airend discharge temperature. Recommended setting: minimum 8K above water outlet temperature of the heat recovery system.



- The airend discharge temperature for the oil temperature regulator of the heat recovery system is factory-set to 80 °C, if not otherwise agreed upon with the manufacturer.

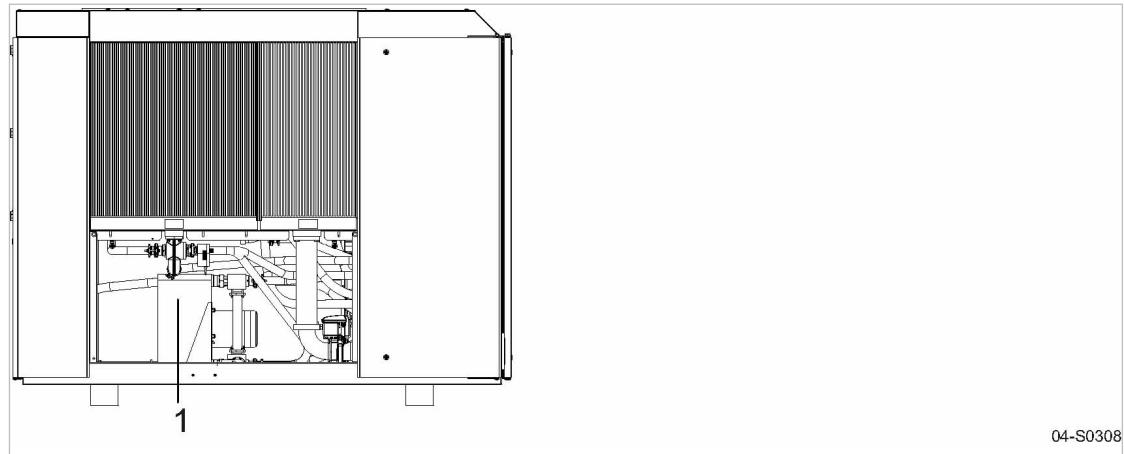
The machine runs with increased airend discharge temperature when heat recover is set to active, reducing the efficiency of the compressed air generation.



- Set heat recovery to *active* only if the machine's waste heat is utilised.

A plate-type heat exchanger is installed for heat recovery.

The plate-type heat exchanger transfers heat from the cooling oil to a heat-receiving medium.



04-S0308

Fig. 13 Function of the heat recovery

- ① Plate-type heat exchanger

Further information

See the operating manual of the SIGMA CONTROL 2 for information regarding the activation and deactivation of the heat recovery.

5 Installation and Operating Conditions

5.1 Ensuring safety

The conditions in which the machine is installed and operated have a decisive effect on safety.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Strictly forbid fire, open flame and smoking.
- If welding is carried out on or near the machine, take adequate measures to prevent sparks or heat from igniting oil vapours or parts of the machine.
- Do not store inflammable material in the vicinity of the machine.
- The machine is not explosion-proof!
Do not operate in areas in which specific requirements with regard to explosion protection are in force.
For instance, the requirements of ATEX directive 2014/34/EC "Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres".
- Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- Keep suitable fire extinguishing agents ready for use.
- Ensure that required ambient conditions are maintained.

Required ambient conditions may be:

- Maintain ambient temperature and humidity
- Ensure the appropriate composition of the air within the machine room:
 - clean with no damaging contaminants (e.g., dust, fibres, fine sand)
 - free of explosive or chemically unstable gases or vapours
 - free of acid/alkaline forming substances, particularly ammonia, chlorine or hydrogen sulfide.

5.2 Installation conditions

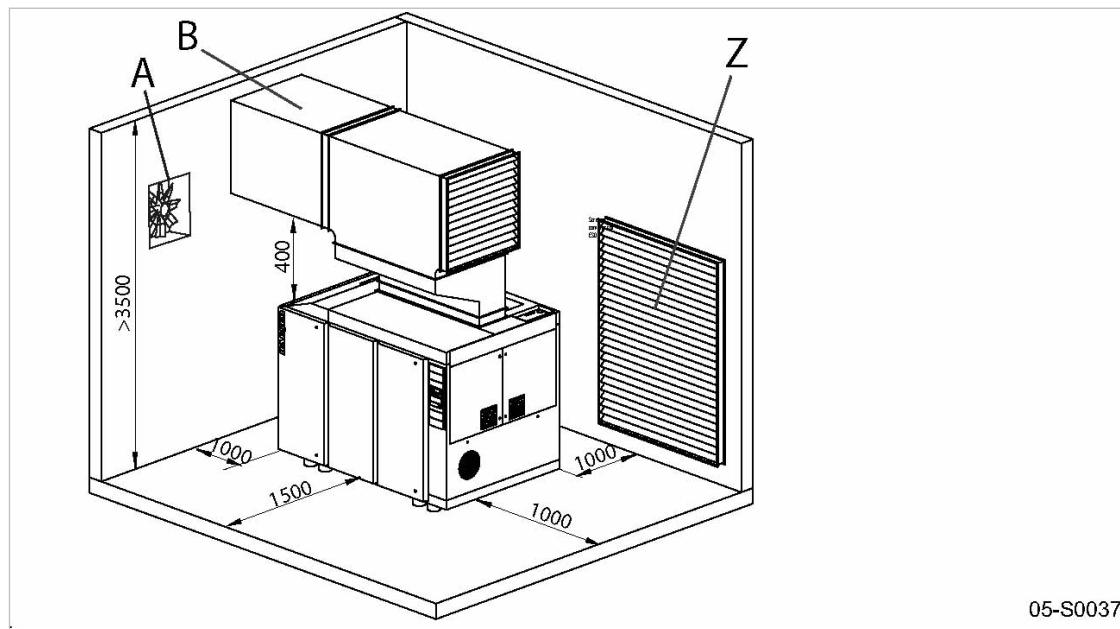
5.2.1 Determining location and clearances

The machine is intended for installation in an appropriate machine room. Information on distances from walls and ventilation of the machine room is provided below.



- The distances quoted are recommended distances and ensure unhindered access to all machine parts.
- Please consult KAESER if they cannot be kept to.

Precondition The floor must be level, firm and capable of bearing the mass of the machine.



05-S0037

Fig. 14 Recommended machine placement and dimensions [mm]

- [A] Exhaust fan
- [B] Exhaust air duct
- [Z] Air inlet aperture



1. **NOTICE!**

Ambient temperature too low.

Frozen condensate and highly viscous cooling oil can cause damage when starting the machine.

- Make sure that the temperature of the machine is at least +3 °C before starting.
- Heat the machine room adequately or install an auxiliary heater.

2. Ensure adequate lighting so that all work on the machine can be carried out without danger or hindrance.
3. Ensure that the indicators can be read without glare and that the controller display cannot be damaged by direct sunlight (UV radiation).
4. Ensure that all intake and exhaust apertures of the enclosure remain opened.
5. If installed outdoors, the machine must be protected from frost, direct sunlight, dust and rain.

5.2.2 Ensuring the machine room ventilation

Adequate ventilation of the machine room has several tasks:

- It prevents subatmospheric pressure in the machine room.
- It evacuates the exhaust heat of the machine and thus ensures the required operating conditions.



- Consult with KAESER if you cannot ensure the conditions for an adequate ventilation of the machine room.

1. Ensure that the flow volume of fresh air is at least the same as the volume taken by the machine and exhaust fan from the machine space.

2. Make sure that the machine and exhaust fan can only operate when the inlet aperture is actually open.
3. Keep the inlet and exhaust apertures free of obstructions so that the cooling air can flow freely through the room.
4. Ensure clean air in order to support the proper functioning of the machine.

5.2.3 Exhaust duct design

The machine can only overcome the air resistance at the cooling air inlet and exhaust determined by the duct design. Any additional air resistance will reduce airflow and deteriorate machine cooling.

- Consult the KAESER SERVICE representative before deciding on:
 - Design of the exhaust air ducting
 - Transition between the machine and the exhaust air duct
 - Length of the ducting
 - Number of duct bends
 - Design of flaps or shutters

Further information Further information on the design of exhaust air ducts can be found in chapter 13.3.

5.3 Operating the machine in a compressed air network

If the machine is supplying an air network, the network working pressure may not exceed 16 bar (China: 15.9 bar).

When charging a fully vented air system there is generally a very high rate of airflow through the air treatment devices. These conditions are detrimental to correct air treatment. Air quality suffers.

To ensure the desired air quality when charging a vented air network, we recommend the installation of an air main charging system.

- Consult KAESER for advice on this subject.

6 Installation

6.1 Ensuring safety

Follow the instructions below for safe installation.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Installation work may only be carried out by authorised personnel.
- Make sure that no one is working on the machine.
- Ensure that all service doors and panels are locked.

When working on live components

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorised electricians.
- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Check that there is no voltage on floating relay contacts.

When working on the compressed air system

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety concerns relate to any work on components that could be under pressure.

- Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- De-pressurise all pressurised components and enclosures.
- Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
- Do not open or dismantle any valves.

When working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.

Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Do not open the cabinet while the machine is switched on.

Further information Details of authorised personnel are found in chapter 3.4.2.

Details of dangers and their avoidance are found in chapter 3.5.

6.2 Reporting Transport Damage

1. Check the machine for visible and hidden transport damage.
2. Inform the carrier and the manufacturer in writing of any damage without delay.

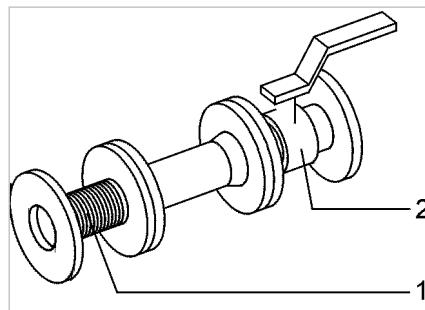
6.3 Connecting the machine with the compressed air network



Condensate in the compressed air network can damage the pipework:

- Install only corrosion-resistant pipes.
- Use fluoroelastomers as sealing material for seals.
- Note the electro-chemical voltage sequence.
- Consult with KAESER for suitable materials for the compressed air network.

Precondition The compressed air system is vented completely to atmospheric pressure.



06-S0047

Fig. 15 Compressed pipework

- ① Flexible pressure line or compensator
② Shut-off valve



- Do not induce any forces into the machine for which the compressive forces must be balanced by bracing.



1. **WARNING!**
Serious injury or death can result from loosening or opening components under pressure.
 - Vent all pressurized components and enclosures.
2. A shut-off valve must be installed by the user in the connection line.
3. Connect the machine to the compressed air network with a flexible pressure line or appropriate compensator.

Further information The dimensional drawing in chapter 13.3 provides the size and position of the connection ports.

6.4 Connecting the condensate drain

A threaded hose connection is provided to attach a condensate drain hose.



The condensate must be able to drain freely.

- Only machines with 16 bar maximum permissible working pressure may be connected to the condensate collecting line.

6 Installation

6.4 Connecting the condensate drain

Fig. 16 illustrates the recommended installation.

Condensate flows downward in the collecting line. This prevents condensate flowing back to the compressor.

If condensate flows at several points into the condensate collecting line, you must install shut-off valves in the condensate lines to shut the condensate line off before commencing maintenance work.

Condensate line

Feature	Value
Max. length ¹⁾ [m]	15
Max. delivery head [m]	5
Material (pressure-resistant, cor- rosion-proof)	Copper Stainless steel Plastics Hose line

¹⁾ For longer lengths, please contact the manufacturer before installation.

Tab. 57 Condensate line

Condensate collecting line

Feature	Value
Gradient [%]	>1
Max. length ¹⁾ [m]	20
Material (pressure-resistant, cor- rosion-proof)	Copper Stainless steel Plastics Hose line

¹⁾ For longer lengths, please contact KAESER before installation.

Tab. 58 Condensate collecting line

Compressed air flow rate ¹⁾ [m ³ /min]	Line cross-section ["]
<10	3/4
10 – 20	1
21 – 40	1 1/2
>40	2

¹⁾ Compressed air flow rate as guide for the condensate volume to be expected

Tab. 59 Condensate collecting line: Line cross-section

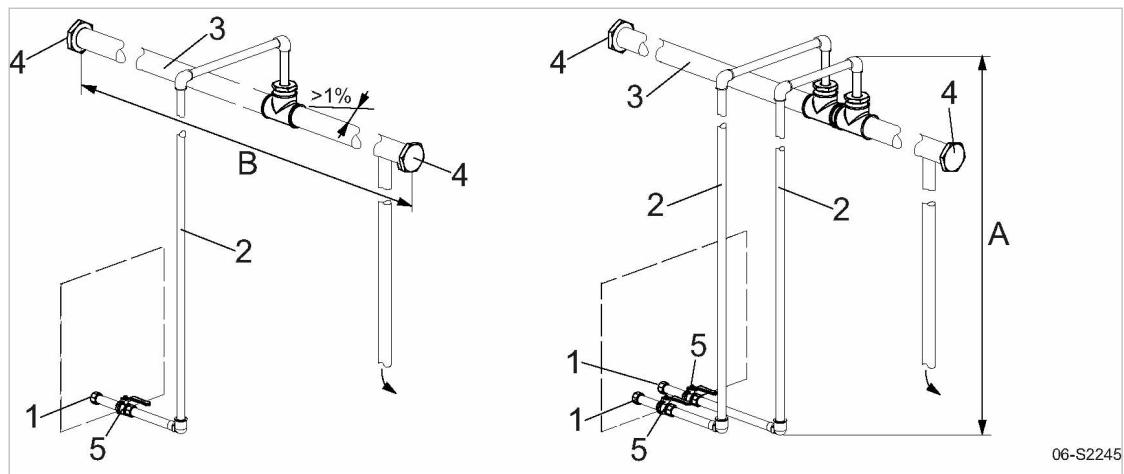


Fig. 16 Connecting the condensate drain

- | | |
|--|---|
| 1 Threaded connection
2 Condensate line
3 Condensate collecting line
4 Screw plug | 5 Shut-off valve
A Delivery head
B Length of the condensate collecting line |
|--|---|

Depending on the machine model, you may have several condensate drains.

► Directly connect every condensate drain to the condensate collecting line.



► Collect the condensate in a suitable container and dispose of in accordance with environmental regulations.

Further information The dimensional drawing in chapter 13.3 provides the size and position of the connection port.

6.5 Connecting the external pressure transducer

Material Retrofit kit: "External pressure transducer SIGMA CONTROL 2"
Use suitable screened, copper-core cable (e.g.: LIYCY 2x0.75 mm² for ambient temperatures up to 30 °C and wiring method C).

Precondition Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.

Cable length between the machine and the pressure transducer: <30 m

By means of a pressure transducer, the pressure in the compressed air network can be measured at any selected location and this signal used to regulate the compressor.

This ensures optimum compressor regulation with regard to the network pressure at the selected location.



Safety monitoring of the machine's internal pressure is unaffected.

Your authorized KAESER SERVICE technician will be glad to provide support on planning and executing an individual solution.

1. Install the pressure transducer at the selected location in the compressed air network.
2. Using a suitable cable, connect the pressure transducer to a spare analog input.



► Connect as large an area of the screening as possible to the mounting plate in the control cabinet or use an EMC fitting to make contact.

6 Installation

6.6 Connecting the machine with the power supply

3. When commissioning the machine with SIGMA CONTROL 2, select the <Network actual pressure> setting in the <All> menu.
4. Select and activate the used analog input (All).

Further information The electrical diagram in chapter 13.4 contains further details of the pressure transducer connection.

6.6 Connecting the machine with the power supply

- Precondition The power supply is switched off,
the device is locked off,
the absence of any voltage has been verified.

The tolerance limits of the mains voltage (power supply) are within the permissible tolerance limits of the rated voltage (machine).
1. The power supply must only be connected by authorised installation personnel or an authorised electrician.
 2. Carry out safety measures as stipulated in relevant regulations (IEC 364 or DIN VDE 0100, for example) and in national accident prevention regulations (BGV A3 in Germany). In addition, observe the regulations of the local electricity supplier.
 3. Test the overcurrent protection cut-out (backup fuse) to ensure that the time it takes to disconnect in response to a fault is within the permitted limit.
 4. Select supply cable conductor diameters and fusing in accordance with local regulations.
 5. The user is required to fit the machine with a lockable isolating device which must comply with the requirements of EN60204-1:2006, 5.3.
This could be, for example, a load disconnect switch with upstream fuse. If a circuit breaker is used it must be suitable for the motor starting characteristics.
 6. Check that the control voltage transformer is connected according to the supply voltage.
If not, change the connections to suit the power supply voltage.
 7. **DANGER!**
Danger of fatal injury from electric shock!
 - Switch off and lock out the power supply disconnecting device and check the absence of any voltage.
 8. Connect the machine to the power supply.
 9. Ensure that the cabinet again complies with the requirements of degree of protection IP54.



Further information The electrical diagram in chapter 13.4 contains further details of the power supply connection.

6.7 Options

6.7.1 Option H1 Anchoring the machine

- Use appropriate fixing bolts to anchor the machine.

Further information Details of the fixing holes are contained in the dimensional drawing in chapter 13.3.

6.7.2 Option K2/K9

Connecting the water cooling



- Take the electrochemical series into consideration and choose suitable materials for water connections.
- Keep the effect of pressure surge on the cooler as low as possible.
- Install an expansion tank to act as a damper if pressure surges cannot be avoided.
- Avoid a low inlet temperature for the cooling water as it can cause condensation. If required, contact KAESER for suitable insulation measures.

Temperature-controlled cooling water supply systems, to which numerous machines are connected, regulate water volumetric flow rate according to the difference in temperature between the supply and the return water. Individual machines may not receive an adequate cooling water flow rate with this system. Breakdowns are the result.



- KAESER can advise on how to ensure the cooling water supply via suitable control valves.



Fig. 17 Connecting the water cooling

- [A] Cooling water outlet
[B] Cooling water inlet
[10] Shut-off valve

- [12] Connection port with plug
[17] Pressure relief valve

1. The user is to provide the following fittings:
 - Dirt traps (grid size according to permissible particle size).
 - Shut-off valves [10] and connection ports [12] for maintenance and venting.
 - Pressure relief valve [17] to prevent build-up of excessive pressure.
Actuating pressure and blow-off capacity of the safety valve are governed by the user's installation design. The technical specification of the cooler must be taken into consideration.
2. Connect the cooling water lines to the fittings.
3. Open the shut-off valve on the cooling water outlet [A].
4. Slowly open the cooling water inlet shut-off valve [B] to gradually fill the cooler with water.
5. Bleed air from the water lines.

Further information

The dimensional drawing in chapter 13.3 gives the flow direction, size and position of the connection ports.

6.7.3 Option W2/W3

Connecting the heat recovery system



- Take the electrochemical series into consideration and choose suitable materials for connections.
- Keep the effect of pressure surges on the heat exchanger as low as possible.
- Install an expansion tank to act as a damper if pressure surges cannot be avoided.
- Install appropriate regulating devices if the heat transfer medium is to be kept constant.
- Avoid very low inlet temperatures of the heat transfer medium as it can cause condensation. If required, contact KAESER for suitable insulation measures.

**WARNING**

Cooling oil in the heat-receiving medium!

Oil may contaminate the medium if a leak occurs.

- Do not use the heat-receiving medium as drinking water.

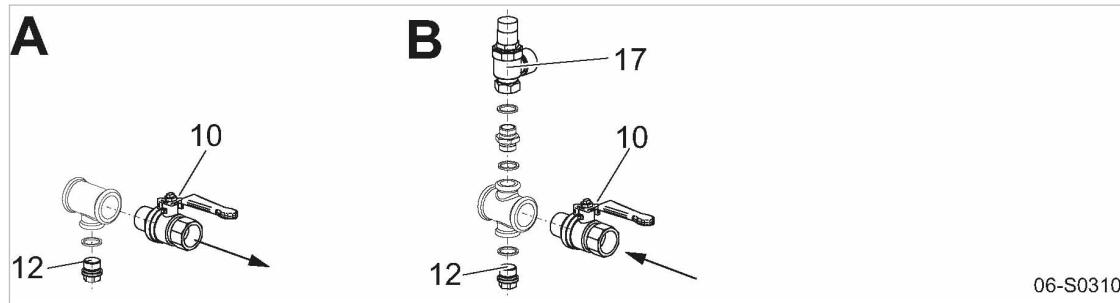


Fig. 18 Connecting the heat recovery system

- [A] Outlet
- [B] Inlet
- [10] Shut-off valve

- [12] Connection port with plug
- [17] Pressure relief valve

1. The user is to provide the following fittings:
 - Dirt trap with max. 0.1 mm strainer mesh
 - Shut-off valves [10] and connection ports [12] for maintenance and venting
 - Pressure relief valve [17] to prevent build-up of excessive pressure.
Actuating pressure and blow-off capacity of the safety valve are governed by the user's installation design. The technical specification of the heat exchanger must be taken into consideration.
2. Connect the supply lines and fittings.
3. Open the shut-off valve [10] at the inlet [A].
4. Slowly open the shut-off valve [10] at the inlet [B] to gradually fill the heat exchanger with the heat transfer medium.
5. Bleed the lines.

Further information

The dimensional drawing in chapter 13.3 gives the flow direction, size and position of the connection ports.

6.7.4 Option C1

Connecting external control air

A connection is provided for external control air to influence the MODULATING control.

The standard arrangement is for the MODULATING control to be influenced by internal machine pressure.

Material	<p>Control air line: up to 6 m length: Inner diameter >8 mm from 6 m length: Inner diameter >12 mm</p> <p>Suitable materials for the control air line: Copper pipe with brass fittings or plastic pipe.</p>
Precondition	<p>Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.</p> <p>The compressed air network is vented completely to atmospheric pressure.</p> <p>The connection of an external compressed air source allows the possibility of dirt or condensate entering the machine to cause damage. A filter should be fitted to prevent this.</p> <p>The connection point of the control line to the air network must be downstream of all compressed air treatment components.</p>
	 1. WARNING! Compressed air! Compressed air and components under pressure can injure or cause death if the contained energy is suddenly released. ➤ Fully vent all pressurised components and enclosures.
	2. Install a suitable filter in the control air line and then connect the line to a suitable point in the compressed air network.
	3. Connect the control air line to the machine.
Result	The external control air is connected. As soon as you switch the MODULATING control over to external control air, the pressure in the compressed air network controls the compressor's flow rate.
Further information	Refer to chapter 13.3 for information regarding the connection points. For details on how to switch MODULATING control over to external control air, please refer to chapter 7.7.1.

7 Initial Start-up

7.1 Ensuring safety

Here you will find instructions for a safe commissioning of the machine.
Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Commissioning tasks may only be carried out by authorised personnel!
- Make sure that no one is working on the machine.
- Ensure that all service doors and panels are locked.

When working on live components

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorised electricians.
- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Check that there is no voltage on floating relay contacts.

When working on the compressed air system

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety concerns relate to any work on components that could be under pressure.

- Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- De-pressurise all pressurised components and enclosures.
- Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
- Do not open or dismantle any valves.

When working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death.

Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Do not open the cabinet while the machine is switched on.

Further information Details of authorised personnel are found in chapter 3.4.2.

Details of dangers and their avoidance are found in chapter 3.5.

7.2 Instructions to be observed before commissioning

Incorrect or improper commissioning can cause injury to persons and damage to the machine.

- Commissioning may only be carried out by authorised installation and service personnel who have been trained on this machine.

Special measures for re-commissioning after storage

Storage period longer than:	Remedy
3 months	<ul style="list-style-type: none"> ➢ Manually fill the airend with cooling oil.
12 months	<ul style="list-style-type: none"> ➢ Change the oil filter. ➢ Change the oil separator cartridge. ➢ Change the cooling oil. ➢ Have the motor bearings checked by an authorized KAESER SERVICE technician.
36 months	<ul style="list-style-type: none"> ➢ Have the overall technical condition checked by an authorised KAESER SERVICE technician.

Tab. 60 Re-commissioning after storage

7.3 Checking installation and operating conditions

- Check and confirm all the items in the checklist before commissioning the machine.

To be checked	See chapter	Confirmed?
<ul style="list-style-type: none"> ➢ Are the operators fully conversant with safety regulations? 	–	
<ul style="list-style-type: none"> ➢ Have all the positioning conditions been fulfilled? 	5	
<ul style="list-style-type: none"> ➢ Is a user's lockable power supply disconnecting device installed? 	6.6	
<ul style="list-style-type: none"> ➢ Are the tolerance limits of the mains voltage (power supply) within the permissible tolerance limits of the rated voltage (machine)? (see nameplate in the control cabinet) 	13.4	
<ul style="list-style-type: none"> ➢ Are the power supply cable conductor cross-sections and fuse ratings adequate? 	2.14	
<ul style="list-style-type: none"> ➢ Drive motor overload protection switch set according to the mains voltage? 	7.4	
<ul style="list-style-type: none"> ➢ Fan motor overload protection switch set according to the mains voltage? 	7.5	
<ul style="list-style-type: none"> ➢ Have all electrical connections been checked for tightness? ➢ Has the inspection been repeated after 50 operating hours following the initial commissioning? 	–	
<ul style="list-style-type: none"> ➢ Has the connection to the air system been made with a shut-off valve and a hose or compensator? 	6.3	
<ul style="list-style-type: none"> ➢ Sufficient cooling oil in the separator tank? (oil level indicator outside the red zone) 	10.15	
<ul style="list-style-type: none"> ➢ Is there sufficient cooling oil in the airend? 	7.6	

To be checked	See chapter	Confirmed?
➤ Condensate drain connected?	6.4	
➤ Is the machine firmly anchored to the floor? (Option H1)	6.7.1	
➤ Is the supply of cooling water ensured? (Option K2/K9)	6.7.2	
➤ Are all access doors closed and latched and removable panels in place and secured?	–	

Tab. 61 Installation conditions checklist

7.4 Setting the overload protection cut-out

Electrical diagram 13.4 gives the location of the overload relay.

With star-delta starting, the phase current is fed via the overload relay. This phase current is 0.58-times the rated motor current.

To prevent the overload relay being triggered by voltage fluctuations, temperature influences or component tolerances, the setting can be higher than the arithmetical phase current.

- Check the settings of the overload relay.



The overload relay shuts the machine down despite being correctly set?

- Contact the authorised KAESER SERVICE.

7.5 Setting the motor overload protection switch

Electrical diagram in chapter 13.4 gives the setting values for the motor overload protection switch.

In direct on-line starting, the current for the fan motor is fed via the motor overload protection switch.



To prevent the motor overload protection switch from being triggered by voltage fluctuations, temperature influences or component tolerances, the setting can be higher than the rated motor current.

- Check the motor overload protection switch setting.



The overload protection switch shuts the machine down despite being correctly set?

- Contact the authorised KAESER SERVICE.

7.6 Pouring cooling oil into the airend

Before starting the compressor for the very first time and before re-starting after a shutdown period of more than 3 months it is necessary to manually add a quantity of cooling oil into the airend. In order to avoid that the cooling oil exceeds the permissible level, drain the required quantity from the de-pressurised oil separator tank.

Chapter 10.18 provides detailed information on how to drain cooling oil from the oil separator tank.

- Material 4 litre cooling oil from separator tank
- Precondition The power supply isolating device is switched off,
the device is locked off,
the absence of any voltage has been verified.
The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.

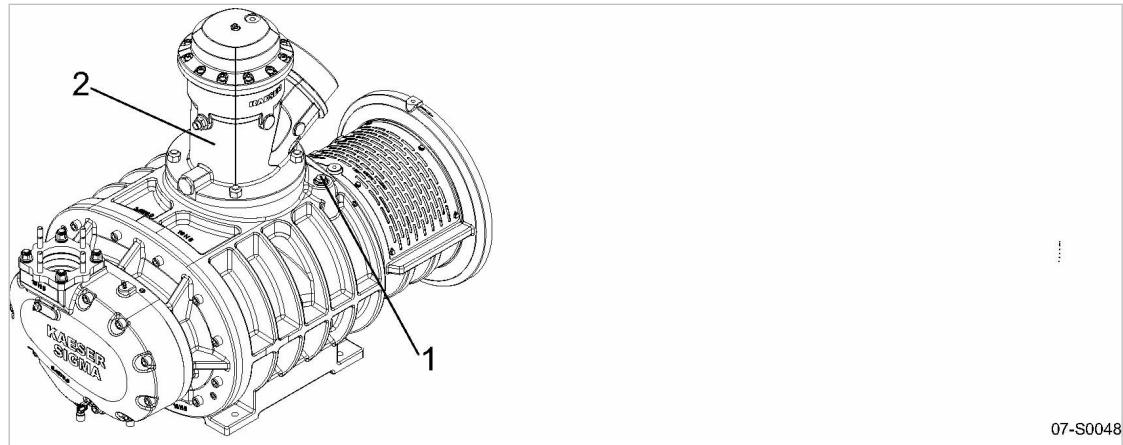


Fig. 19 Inlet valve oil filling port

- ① Screw plug
- ② Inlet valve

1. Unscrew the filler plug from the inlet valve.
2. Pour the stipulated amount of cooling oil into the airend and replace the filler plug.

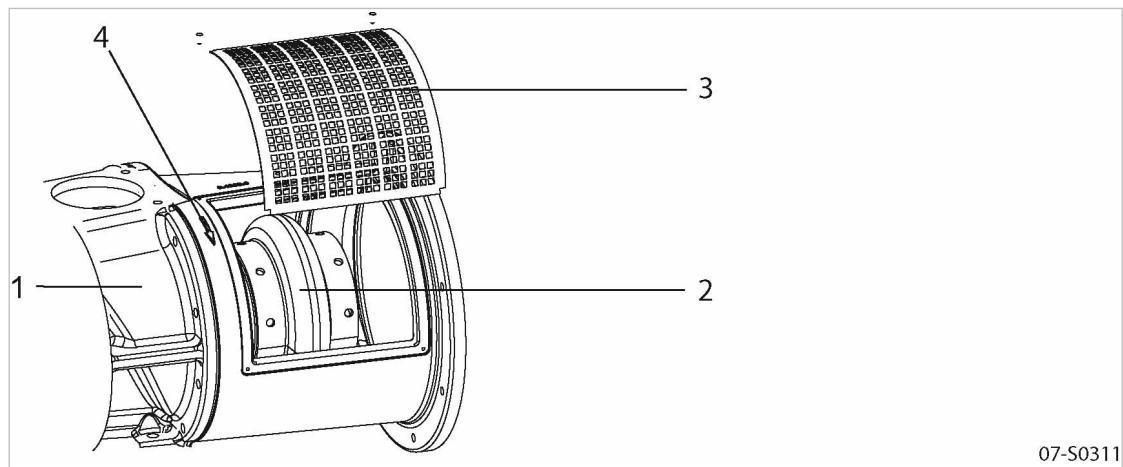


Fig. 20 Coupling

- | | |
|------------|---------------------------------------|
| ① Airend | ③ Safety screen |
| ② Coupling | ④ Arrow showing direction of rotation |
1. Unscrew the safety screen ③.
 2. Turn the airend ④ by turning the coupling ① by hand in the direction indicated by the arrow ②.
 3. Replace the safety screen ③.

7.7 Option C1

Setting the MODULATING control

Use a shut-off valve to activate and deactivate the MODULATING control. If the MODULATING control is deactivated, the machine always delivers the maximum possible flow rate in LOAD mode. The MODULATING control can be performed via internal or external control air.



The MODULATING control is preset at the factory to internal pressure control unless a special agreement has been made with the manufacturer.

As a result of insufficient "buffer" capacity or due to downstream compressed air treatment components (e.g. dryers or filters), the control behaviour of the compressor may be negatively affected by varying differential pressures when using MODULATING control. The MODULATING control will "hunt".

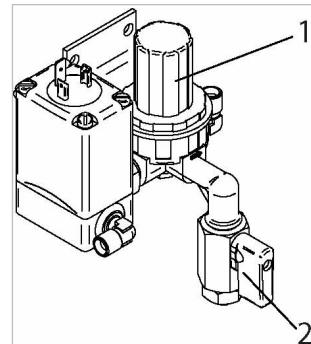
- In order to prevent this "hunt" behaviour, we recommend that the compressor be connected to external control air that the MODULATING control be switched over to external control air in the SIGMA CONTROL 2 (refer to chapter 6.7.4 and 7.7.1).

Activating and deactivating the MODULATING control

MODULATING control	Shut-off valve
switch on	open
switch off	close

Tab. 62 MODULATING control: Setting the shut-off valve

- Precondition Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.



07-S1293

Fig. 21 MODULATING control: Setting the shut-off valve

- ① Control valve (proportional control)
- ② Shut-off valve

- Open or close the shut-off valve, depending on the required control mode.



The regulating valve is factory set. Consult with KAESER SERVICE prior to making any changes.

7.7.1 Switching MODULATING control to external control air

1. Set the pressure switching point to 5.5 bar in the menu <Configuration → Control mode → Modulating>.

Result The pressure in the network controls the machine's flow rate.

7.7.2 Switching MODULATING control to internal pressure control

1. Set the pressure switching point to 16 bar in the menu <Configuration → Control mode → Modulating → External control pressure>.

Result The pressure in the compressor controls the machine's flow rate.

7.8 Starting the machine for the first time

Precondition Nobody is working at the machine.
All access doors are closed.
All removable panels are in place and secured.

1. Open the shut-off valve to the air network.
2. Switch on the power supply isolating device.

After the controller has carried out a self-test, the green *Controller on* LED is lit continuously.

3. If required:
Change the display language as described in chapter 7.10.
4. Press the «ON »key.

The compressor motor runs up and after a short time the machine switches to LOAD and delivers compressed air.



- Watch for any faults occurring in the first hours of operation.
- After the first 50 operating hours, check all electrical connections and tighten where necessary.



- Does the machine stop when the compressor motor rotates in the wrong direction?
- Switch off and lock out the power supply isolating device, and verify the absence of voltage.
 - Changeover phase lines L1 and L2.
 - Acknowledge any existing alarm messages and switch the machine on again.

7.9 Setting the set point pressure

The system pressure pA is factory set to the highest possible value.

Adjustment is necessary for individual operating conditions.



Do not set the set point pressure of the machine higher than the maximum working pressure of the compressed air system.

The machine may not toggle more than twice per minute between LOAD and IDLE.

To reduce the cycling (toggling) frequency:

- Increase the difference between cut-in and cut-out pressure.
- Add a larger air receiver downstream to increase buffer capacity.

- Set the set point pressure as described in the SIGMA CONTROL 2 operating manual.

7.10 Setting the display language

The controller can display text messages in several languages.

You can set the language for texts on the display. This setting will be retained even when the machine is switched off.

1. In operating mode, switch to the main menu with the «Return» key.
2. Press the «UP» or «DOWN» keys until the current language is shown as active line (inverse):

6.1 bar	80.0 °C	
_____	de_DE Deutsch	Current language (active line)
►1 xxxxxxxxxx		Submenu
►2 xxxxxxxxxx		Submenu
►3 xxxxxxxxxx		Submenu
►4 xxxxxxxxxx		Submenu
►5 xxxxxxxxxx		Submenu
►6 xxxxxxxxxx		Submenu

3. Use the «Return» key to switch to setting mode.
The language display flashes.
4. Move to the required language with «UP »or «DOWN».
5. Confirm the setting with the «Enter» key.

Result The display texts are now in the selected language.

Further information Detailed information can be found in the SIGMA CONTROL 2 operating manual.

8 Operation

8.1 Switching on and off

Always switch the machine on with the «ON» key and off with the «OFF» key.

A power supply disconnecting device has been installed by the user.

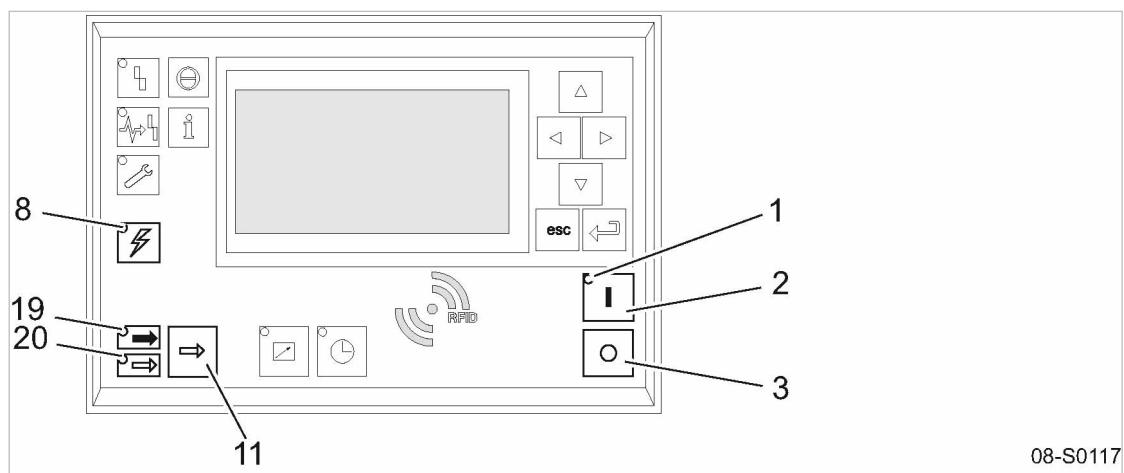


Fig. 22 Switching on and off

- | | |
|--|-----------------------------|
| [1] <i>ON</i> LED | [11] «LOAD/IDLE» toggle key |
| [2] «ON» key | [19] <i>LOAD</i> LED |
| [3] «OFF» key | [20] <i>IDLE</i> LED |
| [8] <i>Voltage applied to controller</i> LED | |

8.1.1 Switching on

Precondition No personnel are working on the machine.

All access doors and panels are closed and secure.

1. Switch on the power supply isolating device.
The *Voltage applied to controller* LED lights green.
2. Press the «ON» key.
The *ON* LED lights green.



If a power failure occurs, the machine is **not** prevented from re-starting automatically when power is resumed.
It can re-start automatically as soon as power is restored.

Result The compressor motor starts as soon as system pressure is lower than the set point pressure (cut-off pressure).

8.1.2 Switching off

1. Press the «OFF» key.
The machine switches to IDLE and the *IDLE* LED flashes. The SIGMA CONTROL 2 displays *Stopping*. The *ON* LED extinguishes as soon as the automatic shut-off action is completed.
2. Switch off and lock out the power supply disconnecting device.

8.2 Switching off in an emergency and switching on again

Result The *Voltage applied to controller* LED extinguishes. The machine is switched off and disconnected from the mains supply.

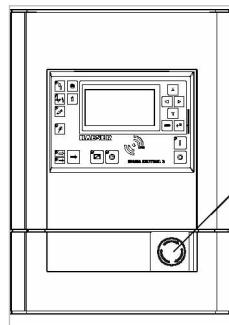


In rare cases, you may want to shut down the machine immediately and cannot wait until the automatic shut-down process is finished.

- Press «OFF» once again.

8.2 Switching off in an emergency and switching on again

The EMERGENCY STOP control device is located below the control panel.



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Fig. 23 Switching off in an emergency

⑨ EMERGENCY STOP control device

Switching off

- Press the EMERGENCY STOP control device.

Result The EMERGENCY STOP control device remains latched after actuation.

The compressor's pressure system is vented and the machine is prevented from automatically restarting.

Switching on

Precondition The fault has been rectified

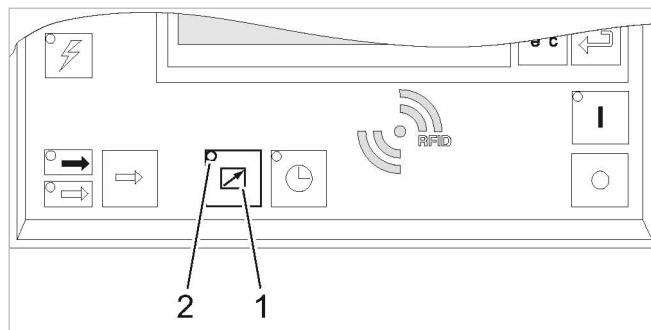
1. Turn the EMERGENCY STOP control device in the direction of the arrow to unlatch it.
2. Acknowledge any existing alarm messages.

Result The machine can now be started again.

8.3 Using the remote control for switching on and off

Precondition A link to the remote control centre exists.

8.4 Using the timer for switching on and off



08-S0120

Fig. 24 Using the remote control for switching on and off

- ① «Remote control» key
- ② *Remote control/LED*

1. Attach an easily seen notice to the machine that warns of remote operation.

⚠ WARNING

Remote control: Risk of injury caused by unexpected starting!

- Make sure that the power supply disconnecting device is switched off before commencing any work on the machine.

Tab. 63 Machine identification

2. Label the starting device in the remote control centre as follows:

⚠ WARNING

Remote control: Risk of injury caused by unexpected starting!

- Before starting, make sure that no one is working on the machine and that it can be safely started.

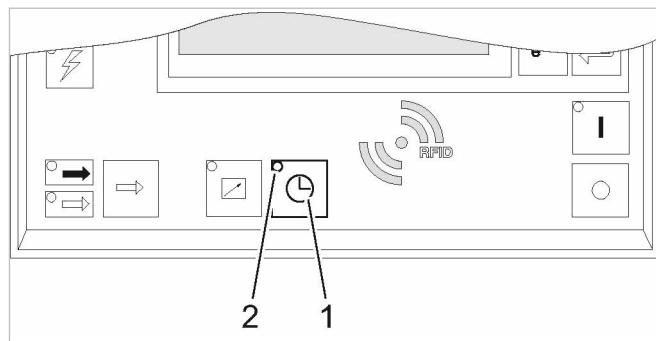
Tab. 64 Remote control identification

3. Press the «remote control» key.

The *remote control/LED* lights. The machine can be remotely controlled.

8.4 Using the timer for switching on and off

Precondition The clock is programmed.



08-S0121

Fig. 25 Using the timer for switching on and off

- ① «Timer» key
- ② TimerLED

1. Attach an easily seen notice warning of time-controlled operation:

⚠ WARNING

Time control: Risk of injury caused by unexpected starting!

- Make sure that the power supply disconnecting device is switched off before commencing any work on the machine.

Tab. 65 Machine identification

2. Press «Timer».

The *Timer* LED lights. The timer switches the machine on and off.

8.5 Interpreting operation messages

The controller will automatically display operation messages informing you about the current operational state of the machine.

Operating messages are identified with the letter O.

Further information Detailed information can be found in the SIGMA CONTROL 2 operating manual.

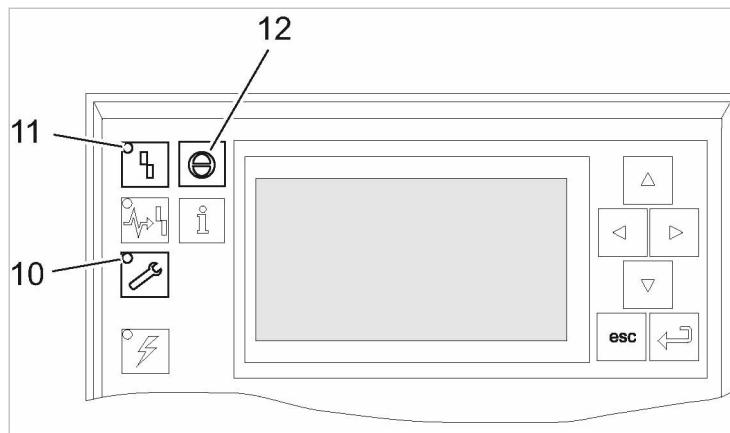
8.6 Acknowledging alarm and warning messages

Messages are displayed on the "new value" principle:

- Message coming: LED flashes
- Message acknowledged: LED illuminates
- Message going: LED off

or

- Message coming: LED flashes
- Message going: LED flashes
- Message acknowledged: LED off



08-S0122

Fig. 26 Acknowledging messages

- [10] Warning LED (yellow)
- [11] Fault LED (red)
- [12] «Acknowledge» key

Alarm message

An alarm shuts the machine down automatically. The *Fault* LED flashes red.
The system displays the appropriate message.

Precondition The fault has been rectified

- Acknowledge the message with the «acknowledge» key.
The *Fault* LED extinguishes.
The machine is again ready for operation.



- If the machine was switched off with the EMERGENCY STOP button:
 - Unlatch the EMERGENCY STOP button (turn in direction of the arrow) before acknowledging the alarm message.

Further information Please refer to the SIGMA CONTROL 2 operating manual for a list of possible fault messages during operation.

Warning message

If maintenance work is to be carried out or if the warning is displayed before an alarm, the *Warning* LED flashes yellow.
The system displays the appropriate message.

Precondition The danger of an alarm is passed,
maintenance has been carried out.

- Acknowledge the message with the «acknowledge» key.
The *Warning* LED extinguishes.

Further information Please refer to the SIGMA CONTROL 2 operating manual for a list of possible warning messages during operation.

9 Fault Recognition and Rectification

9.1 Basic instructions

Error messages are classified in these categories:

- Warning:
 - Warning messages *W*
- Fault (with indication):
 - Alarm messages *A*
 - System messages *Y*
 - Diagnostic messages *D*
- Other faults (without indication): See chapter 9.2

The messages valid for your machine are dependent on how the individual machine is equipped.

1. Do not attempt fault rectification measures other than those given in this manual!
2. In all other cases:
 - Have the fault rectified by an authorised KAESER SERVICE representative.

Further information See the operating manual of SIGMA CONTROL 2 for details regarding the various messages.

9.2 Other faults

Fault	Possible cause	Remedy
Machine runs but produces no compressed air.	Inlet valve not opening or only opening partially.	Call KAESER SERVICE.
	Venting valve not closing.	Call KAESER SERVICE.
	Leaks in the pressure system.	Check pipework and connections for leaks and tighten any loose connections.
	Compressed air demand exceeds the volumetric flow rate from the compressor.	Check the air system for leaks. Shut down consumer(s).
	Hose coupling or maintenance hose still plugged into the quick-release coupling on the oil separator tank.	Remove coupling or maintenance hose.
Cooling oil runs out of the intake filter.	Oil level in the oil separator tank too high.	Drain off oil until the correct level is reached.
	Inlet valve defective.	Call KAESER SERVICE.
Compressor switches between LOAD and IDLE more than twice per minute.	Receiver too small.	Increase size of receiver.
	Airflow into the compressed air network restricted.	Increase air pipe diameters. Check filter elements.
	The differential between cut-in and cut-out pressure too is small.	Check switching differential.

Fault	Possible cause	Remedy
Cooling oil leaking into the machine interior.	Hose coupling or maintenance hose still plugged into the quick-release coupling on the oil separator tank.	Remove coupling or maintenance hose.
	Oil cooler leaking.	Call KAESER SERVICE.
	Leaking pipe joints.	Tighten pipe joints. Replace seals.
Cooling oil consumption too high.	Unsuitable oil is being used.	Change to SIGMA FLUID cooling oil.
	Oil separator cartridge split.	Changing the oil separator cartridge
	Oil level in the oil separator tank too high.	Drain off oil until the correct level is reached.
	Oil return line clogged.	Check the dirt trap strainer in the oil return line.

Tab. 66 Other faults and remedies

10 Maintenance

10.1 Ensuring safety

Follow the instructions below to ensure safe machine maintenance.

Warning instructions are located before a potentially dangerous task.



Disregard of warning instructions can cause serious injuries!

Complying with safety notes

Disregard of safety notes can cause unforeseeable dangers!

- Follow the instructions in chapter 3 'Safety and Responsibility'.
- Maintenance work may only be carried out by authorized personnel.
- Use one of the safety signs below to advise others that the machine is currently being serviced:

Sign	Meaning
	Don't activate the machine.
	Warning: The machine is being serviced.

Tab. 67 Advise others that the machine is being serviced.

- Before switching on, make sure that nobody is working on the machine and all access doors and panels are closed.

When working on live components

Touching voltage carrying components can result in electric shocks, burns or death.

- Work on electrical equipment may only be carried out by authorized electricians.
- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Check that there is no voltage on potential-free contacts.

When working on pressure system

Compressed air is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following safety concerns relate to any work on components that could be under pressure.

- Close shut-off valves or otherwise isolate the machine from the compressed air network to ensure that no compressed air can flow back into the machine.
- De-pressurise all pressurised components and enclosures.
- Check all hose couplings in the compressed air system with a hand-held pressure gauge to ensure that they all read 0 bar.
- Do not open or dismantle any valves.

When working on the drive system

Touching voltage carrying components can result in electric shocks, burns or death. Touching the fan wheel, the coupling or the belt drive while the machine is switched on can result in serious injury.

- Switch off and lock out the power supply isolating device and verify the absence of voltage.
- Do not open the cabinet while the machine is switched on.

Further information	Details of authorized personnel are found in chapter 3.4.2. Details of dangers and their avoidance are found in chapter 3.5.
---------------------	---

10.2 Following the maintenance plan

10.2.1 Logging maintenance work



The maintenance intervals given are those recommended for KAESER original components with average operating conditions.

- In adverse conditions, perform maintenance work at shorter intervals.
- Adverse conditions are, e.g.:
- high temperatures
 - much dust
 - high number of load changes
 - low load
- Adjust the maintenance intervals with regard to local installation and operating conditions.
 - Document all maintenance and service work.

This enables the frequency of individual maintenance tasks and deviations from our recommendations to be determined.

Further information	A prepared list is provided in chapter 10.23.
---------------------	---

10.2.2 Resetting maintenance interval counters

According to the way a machine is equipped, sensors and/or maintenance interval counters monitor the operational state of important functional devices. Required maintenance work is shown on SIGMA CONTROL 2.

Precondition	Maintenance performed and maintenance message acknowledged.
	<ul style="list-style-type: none">➤ Reset the maintenance interval counter as described in the SIGMA CONTROL 2 operating manual.

10.2.3 Regular maintenance tasks

The table below lists the required maintenance tasks.

- Take note of the controller's service messages and carry out tasks punctually, taking ambient and operating conditions into account:

Interval	Maintenance task	See chapter
Weekly	Check the cooling oil level. Control cabinet: Check the filter mat.	10.15 10.3
	Check the condensate drain.	10.21
up to 1 000 h	Clean the cooler. Option K3: Check the filter mat.	10.4 10.6
up to 3 000 h	Option K3: Change the filter mat. Control cabinet: Change the filter mat.	10.6 10.3
up to 6 000 h Every 2 years at the latest.	Condensate drain: Change the Service Unit	10.21.2
Display: SIGMA CONTROL 2	Air filter cartridge: Clean or change pre-filter. Air filter: Change the air filter cartridge. Maintain the motor bearings. Check the coupling.	10.8 10.9 10.10 10.11
Display: SIGMA CONTROL 2 At least annually	Change the compressor oil filter.	10.19
Display: SIGMA CONTROL 2 Every 3 years at the latest.	Change the oil separator cartridge.	10.20
Variable, see table 69	Change the cooling oil.	10.18
Annually	Check the pressure relief valve. Check the function: Safety shut-down due to excessive airend discharge temperature Check the EMERGENCY STOP device. Check the cooler for leaks. Maintain the water-cooling. Maintain the heat recovery system. Check that all electrical connections are tight.	10.12 10.13 10.14 10.4 10.5 10.7 –

h = operating hours

Tab. 68 Regular maintenance tasks

10.2.4 Cooling oil Change interval

Duty cycles and ambient conditions are important factors influencing the number and length of the oil change intervals.



KAESER SERVICE will support you in determining appropriate intervals and provide information on the possibilities of oil analysis.

- Observe national regulations regarding the use of cooling oil in oil-injected rotary screw compressors.
- Check operating conditions and adjust intervals as necessary; log the results in table 69 for future reference.

	Maximum permissible oil change interval [operating hours/years]		
SIGMA FLUID	Favourable operating conditions*	Unfavourable operating conditions	My operating conditions
S-460	6000**/2	4000/1	
S-570	6000**/2	4000/1	
MOL	3000/1	2000/1	
FG-460	3000/1	2000/1	
FG-680	3000/1	2000/1	
PANO-LIN HLP SYNTH 46	3000/1	2000/1	

* Cool to moderate ambient temperatures, low humidity, high duty cycle

** Change intervals of >6000 operating hours are not permissible without an oil analysis.

Tab. 69 Cooling oil Change intervals

10.2.5 Regular service tasks

The table below lists necessary service tasks.

- Have an authorized KAESER SERVICE technician carry out service tasks.
- Have service tasks carried out punctually taking ambient and operating conditions into account.

Interval	Service task
Display: SIGMA CONTROL 2	Service valves. Compressor drive motor: Replace the motor bearings.
	Fan motor Replace the motor bearings.
up to 36 000 h	Have the plastic pipes and hose lines been replaced.
Every 6 years at the latest.	
up to 36 000 h	Replace the control cabinet fan.

h = operating hours

10 Maintenance

10.3 Control cabinet: Clean or renew the filter mat

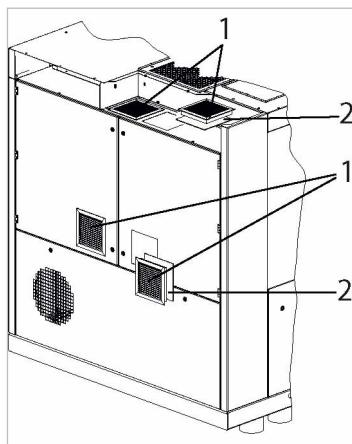
Interval	Service task
After 20 years at the latest h = operating hours	Replace safety-relevant components of the safety functions.
Tab. 70 Regular service tasks	

Tab. 70 Regular service tasks

10.3 Control cabinet: Clean or renew the filter mat

A filter mat is placed behind every ventilation grille. Filter mats protect the control cabinet from ingress of dirt. If the filter mats are clogged, adequate cooling of the components is no longer ensured. In such a case, clean or replace the filter mats.

- | | |
|--------------|--|
| Material | Warm water and household detergent
Spare parts (as required) |
| Precondition | The power supply isolating device is switched off,
the device is locked off,
the absence of any voltage has been verified.
The machine has cooled down. |



10-S0057

Fig. 27 Switching cabinet ventilation

- ① Ventilation grille
- ② Filter mat

1. Carefully remove the ventilation grille and take out the filter mat.
2. Beat the mat or use a vacuum cleaner to remove loose dirt. If necessary, wash with lukewarm water and household detergent.
3. Change the filter mat if cleaning is not possible or if the change interval has expired.
4. Insert the filter mat in the frame and latch in the ventilation grille.

10.4 Option K1 Cooler maintenance

Regularly clean the cooler. This ensures reliable cooling of the machine and the compressed air. The frequency is mainly dependent on local operating conditions.

A leaking cooler results in loss of cooling oil and compressed air.



Clogged coolers are indicative of unfavourable ambient conditions. Such ambient conditions clog the cooling air ducts in the machine's interior and the motors resulting in increased wear and tear.

- Have the authorised KAESER Service clean the cooling air ducts.

Material Brush and vacuum cleaner
 Face mask (as required)

Precondition The power supply isolating device is switched off,
 the device is locked off,
 the absence of any voltage has been verified.
 The machine has cooled down.

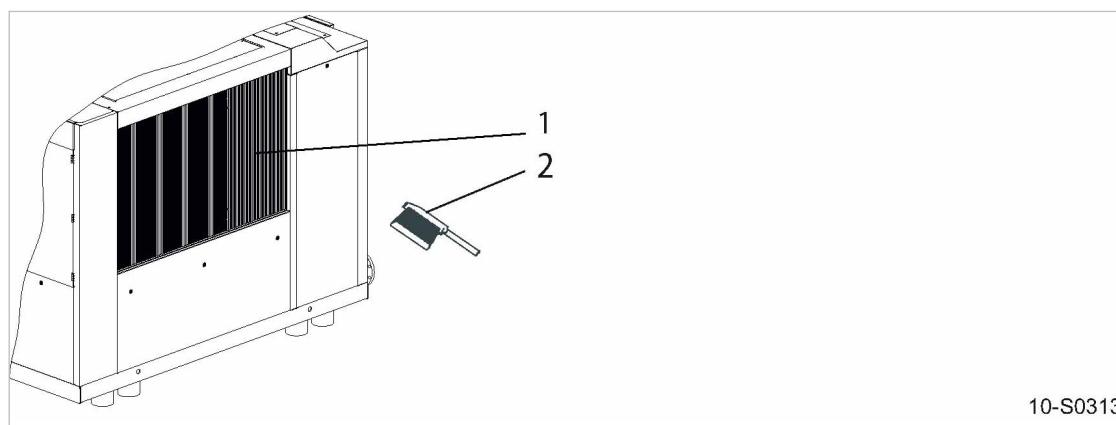


Fig. 28 Cleaning the cooler

- ① Cooler
- ② Brush

Cleaning the cooler

Do not use sharp objects to clean the cooler. It could be damaged.

Avoid creating clouds of dust.

- Dry brush the oil and air coolers and use a vacuum cleaner to suck up the dirt.

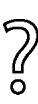


The air and oil coolers can no longer be properly cleaned?

- Have stubborn clogging removed by an authorized KAESER Service Technician.

Check the cooler for leaks

- Carry out visual inspection: Did cooling oil escape?



Is a cooler leaking?

- Have the defective cooler repaired immediately by KAESER Service.

10.5 Option K2/K9

Water-cooling maintenance



Cooler clogging causes overheating and machine damage.

- Observe the block discharge temperature to detect any tendency to rise.

Check the cooler regularly for leaks and contamination. Frequency of checking is dependent on the characteristics of the cooling water.

Precondition	The power supply isolating device is switched off, the device is locked off, the absence of any voltage has been verified.
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Checking for leaks

Pressure in the cooling oil circuit is generally higher than that in the cooling water system. If a leak occurs, oil will run into the cooling water.

1. Check the cooler visually for leaks.
2. Have an authorised KAESER SERVICE technician check the cooler for internal leaks at least once a year.

Cleaning

- An authorised KAESER SERVICE technician should clean the cooler when the airend discharge temperature is 10 °C above the annual average.

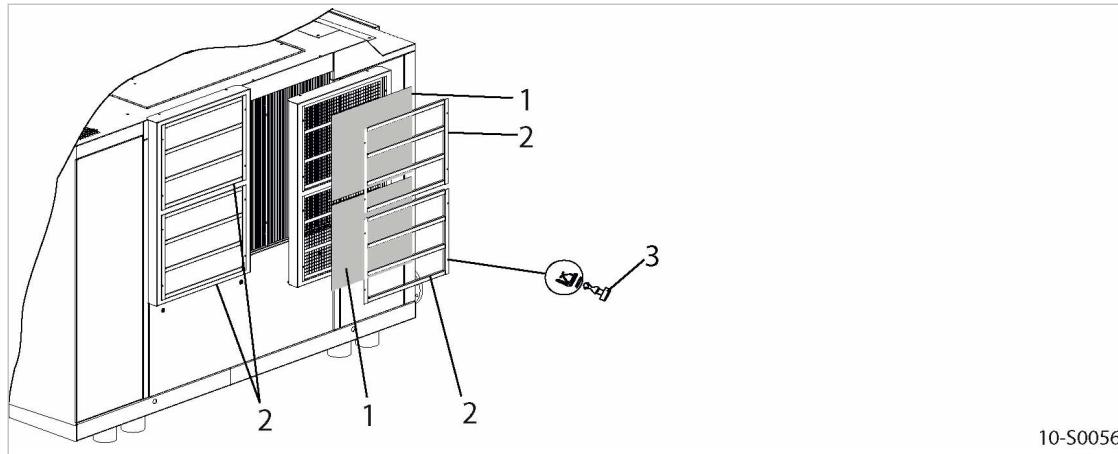
10.6 Option K3

Cleaning or Renewing the Cooling Air Filter Mat

The filter mat help to keep the cooler clean. If the filter mat is clogged, adequate cooling of the components is no longer ensured.

Material	Warm water and household detergent Spare parts (as required)
----------	---

Precondition	The machine is switched off.
--------------	------------------------------



10-S0056

Fig. 29 Cooling air filter mat

- [1] Cooling air filter mat
- [2] Retaining frame
- [3] Fixing

Removal

1. Open the fixing [3] by turning 90° anti-clockwise with a screwdriver.
2. Remove the frame [2].

Cleaning



- Renew the mat if cleaning is not possible or has already been carried out five times.
- Beat the mat [1] or use a vacuum cleaner to remove loose dirt.
If necessary, wash the mat in lukewarm water (about 40 °C) and household detergent then rinse thoroughly.

Refitting

- Replace the frame and close the fixings.
Use a screwdriver to turn the fixings 90° clockwise until they latch.

10.7 Option W2/W3

Maintain the heat recovery system

Deposits in the heat exchanger can significantly reduce its capacity to transfer heat.

Check the heat exchanger regularly for leaks and contamination. Frequency of checking is dependent on the characteristics of the heat transfer medium.

Pressure in the cooling oil circuit is generally higher than that in the heat recovery system. If a leak occurs, oil will run into the heat-receiving medium. Increased cooling oil loss can indicate a leaking heat exchanger.

Precondition Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.

10.8 Air filter cartridge: Cleaning the pre-filter

1. Check the heat exchanger visually for leaks.
2. Have KAESER SERVICE check the heat exchanger for internal leaks and clean if contaminated.

10.8 Air filter cartridge: Cleaning the pre-filter

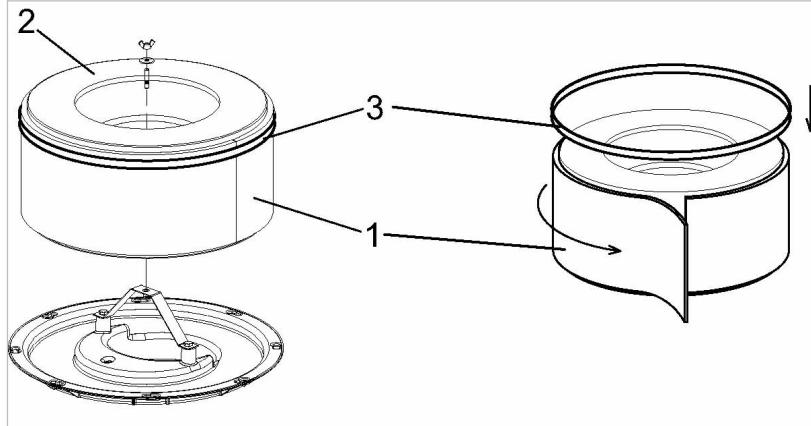


The air filter cartridge is enveloped in a fleece pre-filter as protection against coarse dust.

- The pre-filter must be cleaned as soon as SIGMA CONTROL 2 displays the *0066* warning message. The pre-filter may be washed only once.

Material Warm water and household detergent
Spare parts (as required)

Precondition Cut-off the electrical power supply via the power supply isolating device,
ensure that the device is locked off,
verify the absence of any voltage.
The machine has cooled down.



10-S002772

Fig. 30 Cleaning the pre-filter

- ① Pre-filter
- ② Air filter cartridge
- ③ Hook-and-loop tape

1. Remove the air filter cartridge ② as described in chapter 10.9.
2. Remove the pre-filter ① from the air filter cartridge and rinse with warm water to which you have added household detergent.
3. Wrap the dry pre-filter ① centred around the air filter cartridge ② and fasten with hook-and-loop tape ③ as shown.
The pre-filter must completely cover the air filter cartridge's filter material.
4. Install the air filter cartridge ② as described in chapter 10.9.



Are the following warning messages displayed *0013* or *0028*?

- Replace the pre-filter together with the air filter cartridge.

Further information Further details are provided in chapter 10.9.

10.9 Changing the air filter cartridge



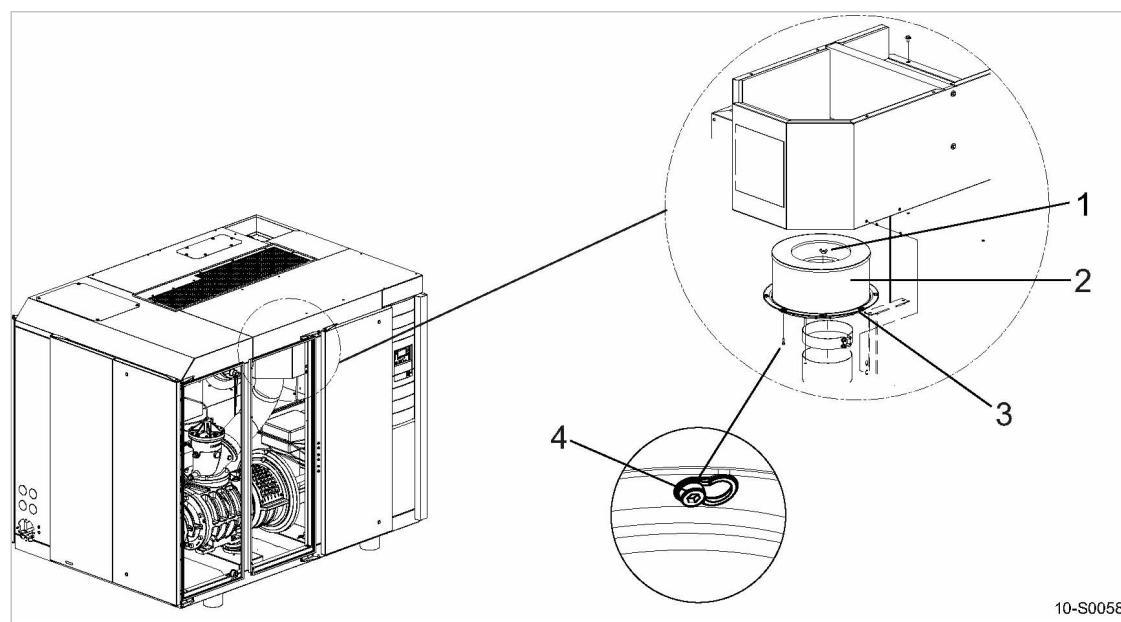
Check that all sealing surfaces match each other. The use of an unsuitable air filter cartridge can permit dirt to ingress into the pressure system and cause damage to the machine.

Do not clean the air filter cartridge. A damaged air filter cartridge can permit dirt to ingress the pressure system and cause damage to the machine.

Material Air filter cartridge, pre-filter

Precondition Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.

The machine has cooled down.



10-S0058

Fig. 31 Air filter maintenance

① Nut

② Air filter cartridge

③ Cover

④ Screws



1. **CAUTION!**

Risk of injury from falling air filter! Weight approx. 5 kg!

➤ Support the cover ③.

2. Lightly loosen screws ④ and lift out the cover ③ together with the air filter cartridge ②.
3. Unscrew the nut ① and remove the air filter cartridge together with the fastened pre-filter (Fig. 30). Dispose of unit.
4. Clean all parts and sealing surfaces.
5. Wrap the pre-filter (Fig. 30) centred around the new air filter cartridge and fasten in place with hook-and-loop tape.
The pre-filter must completely cover the air filter cartridge's filter material.
6. Insert the new air filter cartridge (with fastened pre-filter) in the cover and fasten with the nut ①.
7. Reinstall cover and secure in the machine with screws ④.

8. Close all access doors and replace all enclosure panels.
9. Switch on the electrical power supply via the power supply isolating device and reset the maintenance interval counter.

10.10 Motor maintenance

In motors with bearings with re-lubricating facility, the lubricating nipples are located at the outside of the machine. The grease lines are filled at the factory.



Use only the high temperature grease ESSO UNIREX N3 for the motor bearings. Damage to bearings caused by the use of other brands of grease is excluded from the warranty.

Material Grease gun with ESSO UNIREX N3
Cleaning cloths

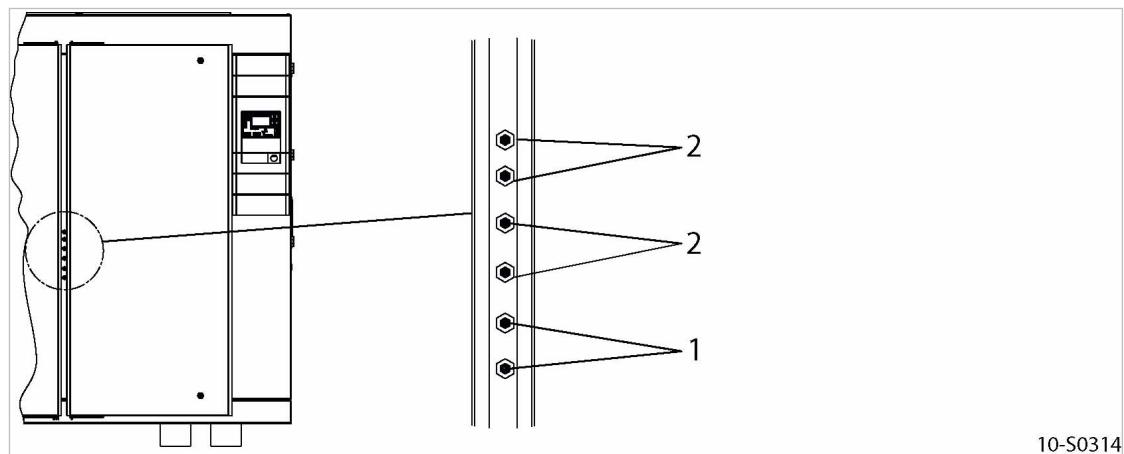


Fig. 32 Motor maintenance

- ① Grease nipple (compressor motor)
- ② Grease nipple fan motor

Compressor drive motor:



The required quantity of grease is stated on the motor nameplate.

Precondition Compressor motor / engine running

1. Clean the lubricating nipple with a cloth before greasing.
2. Grease both bearings with a grease gun.
3. Reset the maintenance interval counter.

Option K1 Fan motor:



The required quantity of grease is stated on the fan motor nameplate.

Precondition Fan motor running

1. Clean the lubricating nipple with a cloth before greasing.

2. Grease both bearings with a grease gun.
3. Reset the maintenance interval counter.

Option K2/K9 Fan motor:

- Have the fan motor checked by a KAESER SERVICE technician during the course of a visit.

10.11 Checking the Coupling

A defective coupling is recognisable by:

- noisy running,
- surface cracks,
- colour change.

**WARNING**

Danger of injury from rotating coupling!

- Never switch the machine on without the safety screen in place over the coupling.

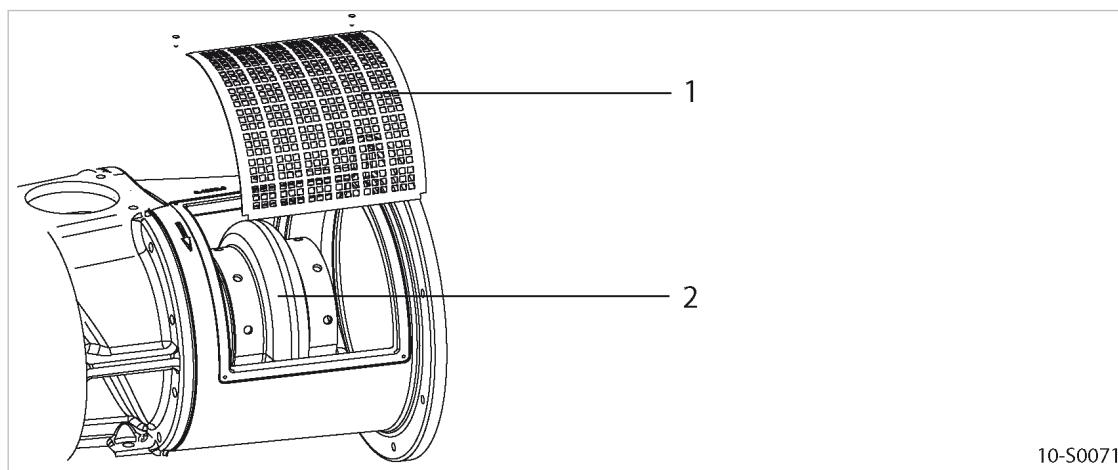


Fig. 33 Checking the coupling

- ① Safety screen
- ② Coupling

Check for uneven or noisy running

Precondition The machine is running

- Check the coupling for noisy or uneven running

Make a visual check for damage

Precondition The power supply disconnecting device is switched off.
The disconnecting device is locked in the off position.
A check has been made that no voltage is present.
The machine has cooled down.

1. Remove the securing screws and take off the safety screen.

10.12 Testing the pressure relief valve

2. Turn the coupling my hand and look for damage or colour change.
3. Refit the safety screen.
4. Close all access doors and replace all enclosure panels.



Has the coupling cracks or colour changes?

- Have a damaged coupling changed by an authorised KAESER Service Technician.

10.12 Testing the pressure relief valve

In order to check the pressure relief valve, the machine's working pressure is raised above the activating pressure of the valve.

Blow off protection and air system pressure monitoring are switched off during the test. In normal operation, the blow-off protection will switch off the machine before the pressure relief valve responds. During the inspection, the blow-off protection will switch off the machine only when the activating pressure of the pressure relief valve has been exceeded by 1 bar.



- Follow the detailed description of this procedure in the SIGMA CONTROL 2 operating manual
- Never operate the machine without a correctly functioning pressure relief valve.
- Have a defect pressure relief valve replaced immediately.

**WARNING**

Excessive noise is caused when the pressure relief valve blows off!

- Close all access doors, replace and secure all removable panels.
- Wear hearing protection.

Precondition The machine is switched off.

1. Close the user's shut-off valve between the machine and the air distribution network.
2. Read off the activating pressure on the valve.
(the activating pressure is usually to be found at the end of the part identification)
3. Log on to SIGMA CONTROL 2 with access level 2.
4. Observe the display of pressure on SIGMA CONTROL 2 and call up the test function.
5. **WARNING!**
Risk of burns due to released cooling oil and compressed air when blowing off the pressure relief valve!
 - Close all access doors, replace and secure all removable panels.
 - Wear eye protection.
6. End the test as soon as the pressure relief valve blows off or working pressure exceeds the activating pressure of the pressure relief valve by nearly 1 bar.
7. If necessary, vent the machine and replace the defective pressure relief valve.
8. Deactivate the test function
9. Open the user's shut-off valve between the machine and the air distribution network.



10.13 Check the safety shut-down due to excessive airend discharge temperature.

The machine should shut down if the airend discharge temperature reaches a maximum of 110 °C.

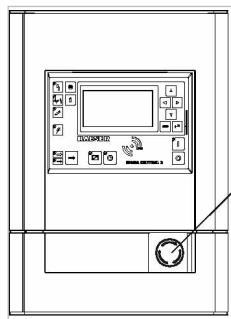
- Check the safety shutdown function as described in the SIGMA CONTROL 2 operating manual.



The machine does not shut down?

- Have the safety shut-down function checked by an authorised KAESER SERVICE technician.

10.14 Check the EMERGENCY STOP control device



08-S0051

Fig. 34 Check the EMERGENCY STOP control device

⑨ EMERGENCY STOP control device

Precondition Compressor motor running

1. Press the EMERGENCY STOP control device.

The compressor motor stops, the pressure system is vented, and the machine is prevented from automatically re-starting.



The compressor motor does not stop?

The safety function of the EMERGENCY STOP device is no longer ensured.

- Shut down the machine immediately and call KAESER SERVICE.

2. Turn the EMERGENCY STOP device in the direction of the arrow to unlatch it.

3. Acknowledge the alarm message.

10.15 Checking the cooling oil level



In frequency-controlled compressors (SFC) the oil level indicator is only accurate when the machine is running at or near maximum speed.

The lower the pressure at the compressed air outlet, the higher the speed.

SIGMA CONTROL 2 displays this value.

Precondition The machine has been running at least 5 minutes in LOAD mode.

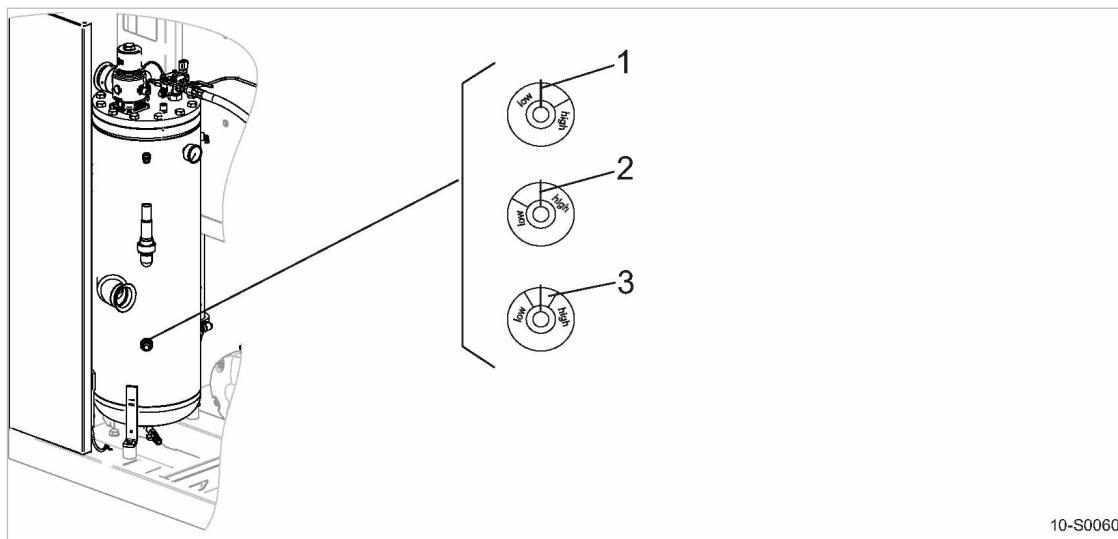


Fig. 35 Checking the cooling oil level

- ① Minimum oil level
- ② Maximum oil level
- ③ Optimum oil level



1. **CAUTION!**
Danger of burning - hot surfaces!
➤ Wear long-sleeved clothing and protective gloves.
2. Check the cooling oil level with machine running under LOAD.

Result As soon as the minimum level is reached: Replenish the cooling oil.

10.16 Venting the machine (de-pressurising)

Venting takes place in three stages:

- Isolate the compressor from the air system.
- Vent the oil separator tank.
- Manually vent the air cooler.



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

Material The maintenance hose with hose coupling and shut-off valve needed for venting is stowed beneath the oil separator tank.

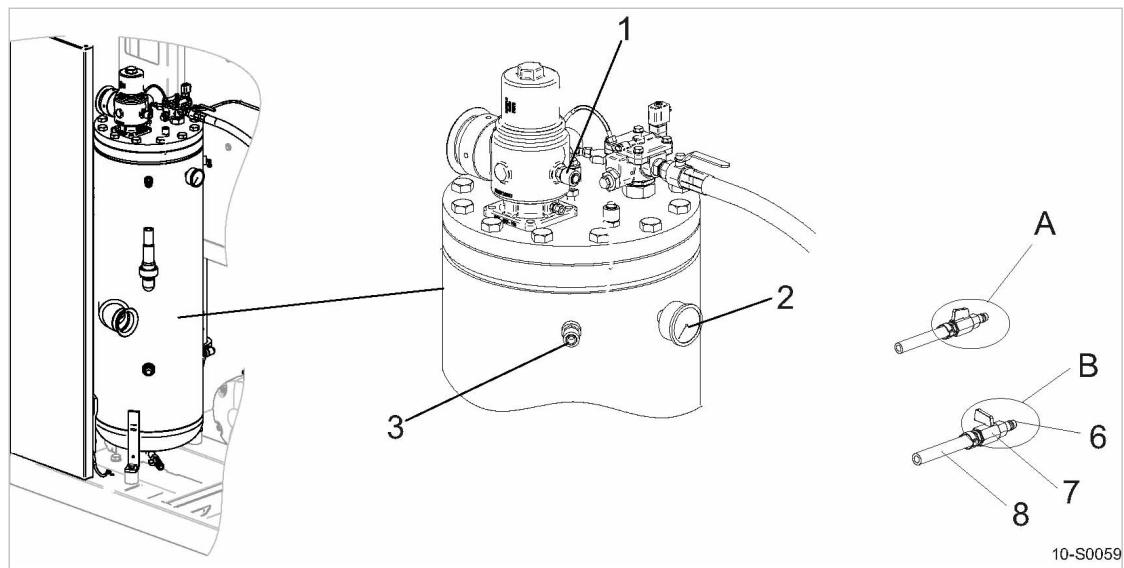
Precondition The power supply isolating device is switched off, the device is locked off, the absence of any voltage has been verified.



- CAUTION**
Escaping oil mist is damaging to health.
- Do not direct the maintenance hose at persons while venting.
 - Do not inhale the oil mist.

10 Maintenance

10.16 Venting the machine (de-pressurising)



10-S0059

Fig. 36 Venting the machine

- | | | | |
|---|--|---|-----------------------|
| ① | Hose coupling (air cooler venting) | ⑦ | Shut-off valve |
| ② | Pressure gauge | A | Shut-off valve open |
| ③ | Hose coupling (oil separator tank venting) | B | Shut-off valve closed |
| ⑥ | Plug-in nozzle | ⑧ | Maintenance hose |

Isolating the machine from the air system

- Close the user's shut-off valve between the machine and the air distribution network.



If no shut-off valve is provided by the user, the complete air network must be vented.



Venting the oil separator tank

The oil circulation vents automatically as soon as the machine is stopped.

- Check that the oil separator tank pressure gauge reads 0 bar.

- The pressure gauge does not read 0 bar after automatic venting?
- Make sure that the shut-off valve is closed or that the complete air system is vented.
 - With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ③.
 - Slowly open the shut-off valve ⑦ to release pressure.
 - Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.
 - If manual venting does **not** bring the oil separator tank pressure gauge to zero: Contact the KAESER Service.



Manually venting the air cooler

After shutting down the compressor and venting the oil separator tank, the machine is still under pressure from the air system or the section from the shut-off valve to the minimum pressure/check valve.

1. With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ①.
2. Slowly open the shut-off valve ⑦ to release pressure.
3. Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.

10.17 Replenishing the cooling oil



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

- Material** The maintenance hose with hose coupling and shut-off valve needed for venting is stowed beneath the oil separator tank.
- Precondition** The power supply isolating device is switched off,
the device is locked off,
the absence of any voltage has been verified.

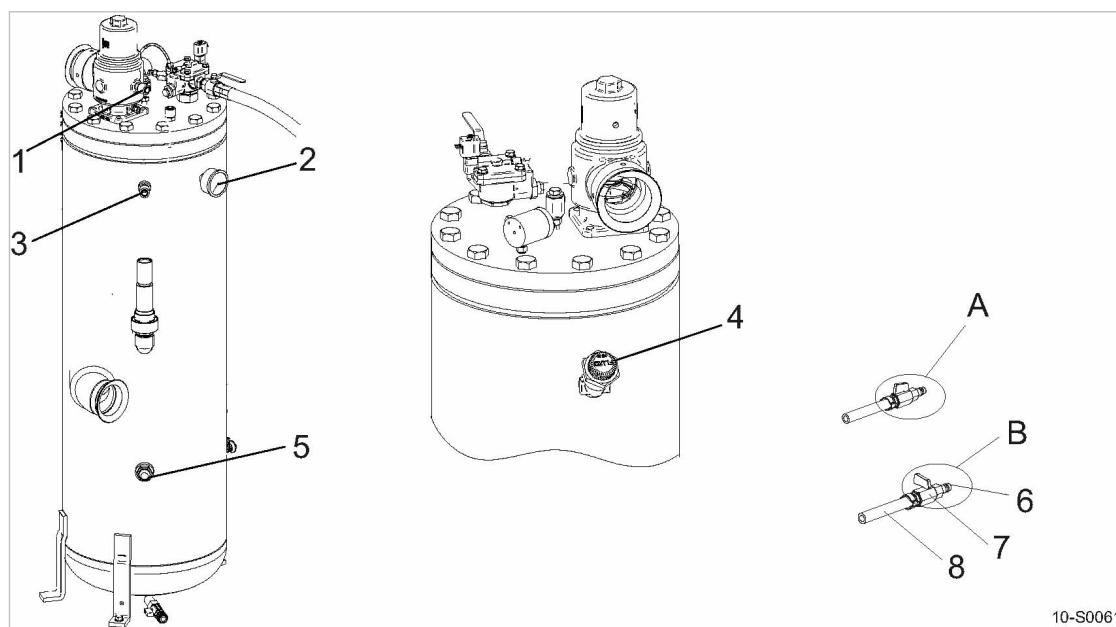


Fig. 37 Replenishing the cooling oil

- | | | | |
|---|--|---|-----------------------|
| ① | Hose coupling (air cooler venting) | ⑥ | Plug-in nozzle |
| ② | Pressure gauge | ⑦ | Shut-off valve |
| ③ | Hose coupling (oil separator tank venting) | A | Shut-off valve open |
| ④ | Oil filler port with plug | B | Shut-off valve closed |
| ⑤ | Cooling oil level indicator | ⑧ | Maintenance hose |

1. Vent the machine as described in section 10.17.1.
2. Fill with cooling oil and test run as described in section 10.17.2.

10.17.1 Venting the machine (de-pressurising)

Venting takes place in three stages:

- Isolate the compressor from the air system.
- Vent the oil separator tank.
- Manually vent the air cooler.

**CAUTION**

Escaping oil mist is damaging to health.

- Do not direct the maintenance hose at persons while venting.
- Do not inhale the oil mist.

Isolating the machine from the air system

- Close the user's shut-off valve between the machine and the air distribution network.



- If no shut-off valve is provided by the user, the complete air network must be vented.

Venting the oil separator tank

The oil circulation vents automatically as soon as the machine is stopped.

- Check that the oil separator tank pressure gauge reads 0 bar.



The pressure gauge does not read 0 bar after automatic venting?

- Make sure that the shut-off valve is closed or that the complete air system is vented.
- With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ③.
- Slowly open the shut-off valve ⑦ to release pressure.
- Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.
- If manual venting does **not** bring the oil separator tank pressure gauge to zero: Contact the KAESER Service.

Manually venting the air cooler

After shutting down the compressor and venting the oil separator tank, the machine is still under pressure from the air system or the section from the shut-off valve to the minimum pressure/check valve.

1. With the shut-off valve closed, insert the male hose fitting ⑥ into the hose coupling ①.
2. Slowly open the shut-off valve ⑦ to release pressure.
3. Disconnect the male hose fitting ⑥ and close the shut-off valve ⑦.

10.17.2 Topping up with cooling oil and trial run**Replenishing the cooling oil**

A sticker on the oil separator tank specifies the type of oil used.

**1. WARNING!**

Compressed air!

Compressed air and devices under pressure can injure or cause death if the contained energy is released suddenly.

- De-pressurise all pressurised components and enclosures.

**2. NOTICE!**

The machine could be damaged by unsuitable oil!

- Never mix different types of oil.
- Never top up with a different type of oil to that already used in the machine.

3. Slowly unscrew the filler plug ④.

10.18 Changing the cooling oil

4. Top up to bring the oil to the correct level.
5. Renew the filler plug's gasket if necessary and screw the plug into the filler port.

Starting the machine and carrying out a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the air distribution network.
3. After approx. 10 minutes of operation: Check the cooling oil level and top up if necessary.
4. Switch off the machine and check visually for leaks.

10.18 Changing the cooling oil

Drain the oil completely from the following components:

- Oil separator tank
 - Oil cooler
 - Compressor block
 - Heat exchanger (Option W2/W3)
- Always change the oil filter and oil separator cartridge when changing the oil.
- Contact KAESER SERVICE if condensate is detected in the cooling oil. It is necessary to adapt the block discharge temperature to individual ambient conditions.

Compressed air helps to expel the oil. This compressed air can be taken either from the compressor itself or from an external source.

An external source of compressed air is necessary in the following cases (examples):

- The machine is not operational.
- The machine is to be restarted after a long period of standstill.



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

Material

Cooling oil

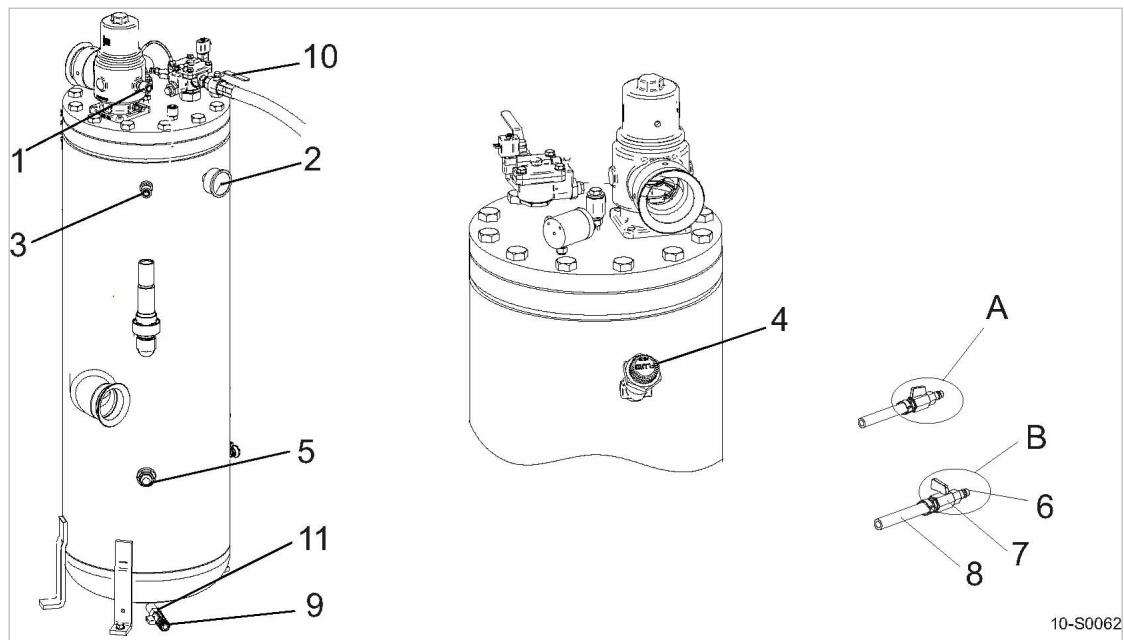
Cooling oil receptacle

The maintenance hose with hose coupling and shut-off valve is stowed beneath the oil separator tank.

**CAUTION**

There is risk of burns from hot components and oil!

- Wear long-sleeved clothing and gloves.


Fig. 38 Changing the cooling oil, oil separator tank

- | | | | |
|---|--|---|-------------------------------|
| ① | Hose coupling (air cooler venting) | Ⓐ | Shut-off valve open |
| ② | Pressure gauge | Ⓑ | Shut-off valve closed |
| ③ | Hose coupling (oil separator tank venting) | ⑧ | Maintenance hose |
| ④ | Oil filler port with plug | ⑨ | Hose coupling (oil drainage) |
| ⑤ | Cooling oil level indicator. | ⑩ | Shut-off valve (venting line) |
| ⑥ | Plug-in nozzle | ⑪ | Shut-off valve (oil drainage) |
| ⑦ | Shut-off valve | | |

Changing the oil with internal pressure	Oil change with an external compressed air source
<p>The machine has been running at least 5 minutes in LOAD mode.</p> <p>The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.</p> <ol style="list-style-type: none"> 1. Close the shut-off valve ⑩ in the venting line. 2. Select IDLE running. 3. Start the machine and watch the oil separator tank pressure gauge ② until it reads 3–5 bar. 4. Switch off and lock out the power supply disconnecting device and verify the absence of any voltage. 5. Wait at least 2 minutes to allow the oil to flow back to the separator tank. 	<p>Cut-off the electrical power supply via the power supply isolating device, ensure that the device is locked off, verify the absence of any voltage.</p> <p>The machine is fully vented, the pressure gauge on the oil separator tank reads 0 bar.</p> <p>An external source of compressed air is available.</p> <ol style="list-style-type: none"> 1. Close the shut-off valve ⑩ in the venting line. 2. With the shut-off valve closed, insert the plug-in nozzle ⑥ into the hose coupling ③. 3. Connect the maintenance hose to the external air supply. 4. Open the shut-off valve ⑦ until the pressure gauge on the oil separator tank reads 3–5 bar. 5. Close the shut-off valve ⑦ and remove the male hose fitting from the coupling.

Draining the oil from the separator tank

1. Prepare a cooling oil receptacle.
2. With the shut-off valve closed, insert the plug-in nozzle ⑥ into the hose coupling ⑨.
3. Place the other end of the maintenance hose in the oil receptacle and secure it in place.
4. Open the shut-off valve ⑪.
5. Slowly open the shut off valve ⑦ in the maintenance hose to release oil and close immediately when air escapes.
6. Close the shut-off valve ⑪ and unplug the male hose fitting.

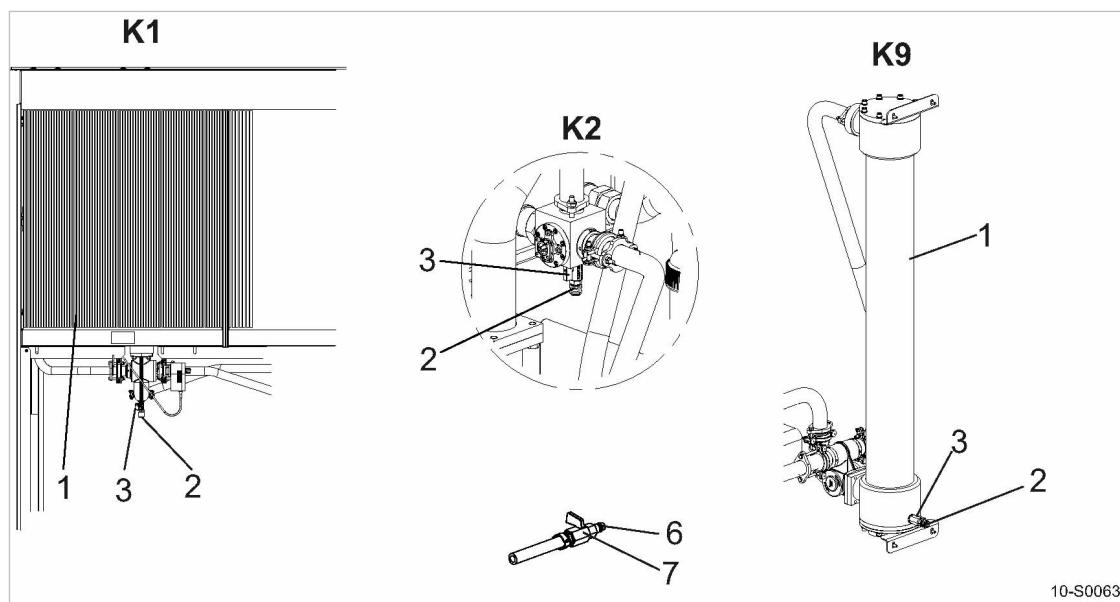
Draining the oil from the cooler


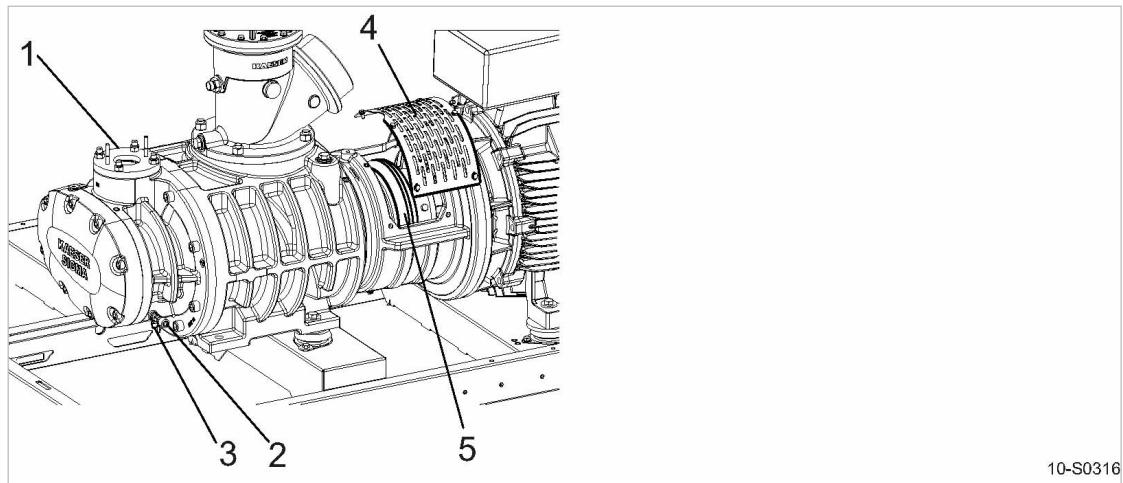
Fig. 39 Changing the cooling oil, oil cooler

- | | |
|---|------------------------------|
| ① | Oil cooler |
| ② | Hose coupling (oil drainage) |
| ③ | Shut-off valve |

- | | |
|---|----------------|
| ⑥ | Plug-in nozzle |
| ⑦ | Shut-off valve |

1. Prepare a cooling oil receptacle.
2. With the shut-off valve closed, insert the plug-in nozzle ⑥ into the hose coupling ②.
3. Place the other end of the maintenance hose in the oil receptacle and secure it in place.
4. Open the shut-off valve ③.
5. Slowly open the shut-off valve ⑦ and allow cooling oil and air to escape completely until the pressure gauge reads 0 bar.
6. Close the shut-off valve ③ and unplug the male hose fitting.

Draining the oil from the airend



10-S0316

Fig. 40 Changing the cooling oil, airend

- | | | | |
|---|-------------------------------|---|---------------|
| ① | Compressed air outlet, airend | ④ | Safety screen |
| ② | Hose coupling (oil drainage) | ⑤ | Coupling |
| ③ | Shut-off valve | | |

1. Prepare a cooling oil receptacle.
2. With the shut-off valve closed, insert the male hose fitting ⑥ (Fig. 38) into the hose coupling ②.
3. Place the other end of the maintenance hose in the oil receptacle and secure it in place.
4. Open shut-off valves ③ and ⑦ (Fig. 38)
5. Remove the coupling safety screen ④ and turn the coupling ⑤ by hand at least five revolutions until all the oil has run out.
6. Fit the safety screen again.
7. Close the shut-off valve ③ and unplug the male hose fitting.

Result The cooling oil is drained from the airend.

A small amount of cooling oil may flow back into the oil cooler and oil separator tank as a result of turning the coupling.

Remove this by repeating the steps for draining oil from the separator tank and oil cooler.

Option W2/W3 Draining the oil from the heat exchanger

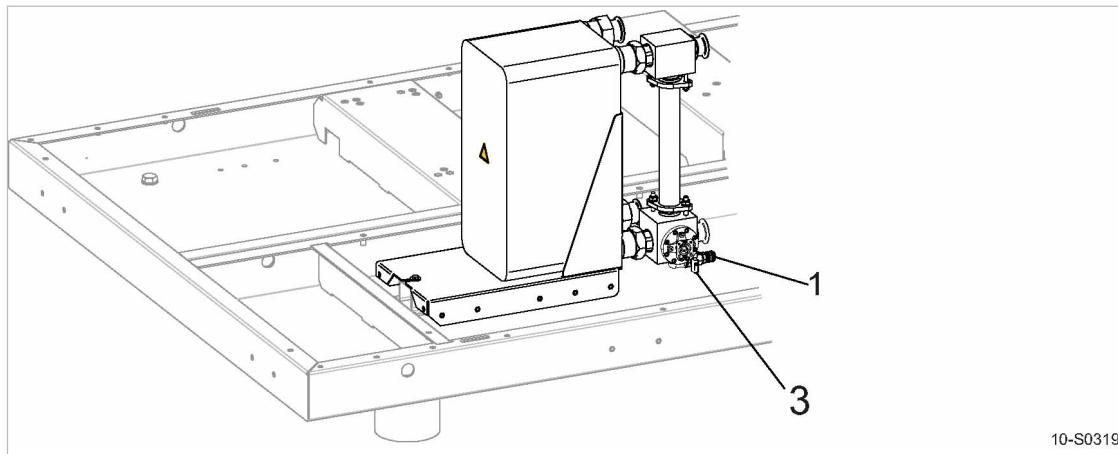


Fig. 41 Changing the cooling oil, heat recovery system

- ① Hose coupling
- ③ Shut-off valve

1. Prepare a cooling oil receptacle.
2. With the shut-off valve closed ⑥, insert the male hose fitting (Fig. 38) into the hose coupling ①.
3. Place the other end of the maintenance hose in the oil receptacle and secure it in place.
4. Open the shut-off valves ③ and ⑦ (Fig. 38) and allow the oil to drain completely.
5. Close the shut-off valve ③ and unplug the male hose fitting.

Filling with cooling oil



1. **WARNING!**
Compressed air!
Compressed air and components under pressure can injure or cause death if the contained energy is suddenly released.
► Fully vent all pressurised components and enclosures.
2. Open the filler plug ④ (Fig. 38) slowly.
3. Fill with cooling oil.
4. Check the filler plug and ring seal for damage and screw the plug back in again.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the air distribution network.
3. Switch on the electrical power supply via the power supply isolating device and reset the maintenance interval counter.
4. Start the machine and check the oil level again after about 10 minutes, topping up if necessary.
5. Switch off the machine and check for leaks.



- Dispose of used oil in accordance with environment protection regulations.

10.19 Changing the compressor oil filter



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

Material Spare part, number: 2
Cleaning cloths

Precondition The power supply isolating device is switched off,
the device is locked off,
the absence of any voltage has been verified.
The machine is fully vented,
the pressure gauge on the oil separator tank reads 0 bar.



CAUTION

There is risk of burns from hot components and oil!

- Wear long-sleeved clothing and gloves.

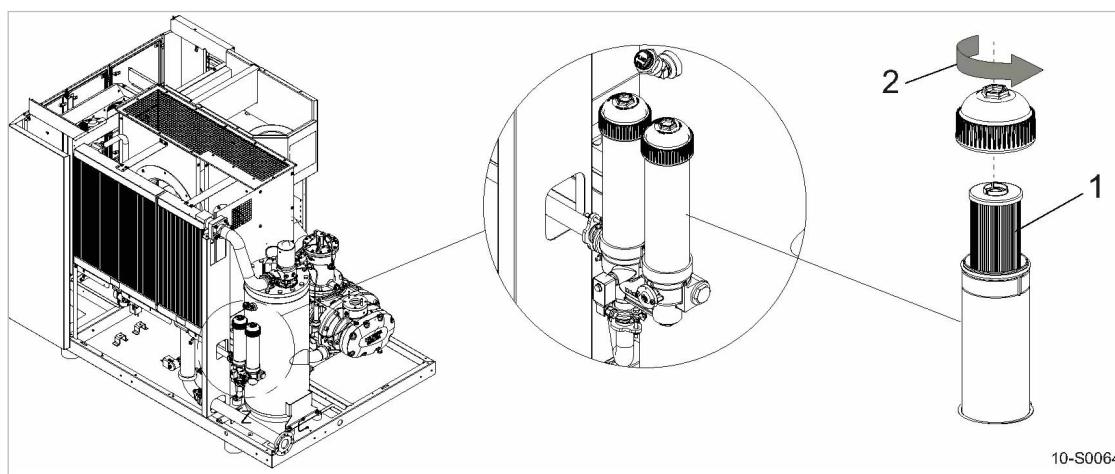


Fig. 42 Changing the oil filter

- ① Oil filter
- ② Direction of rotation for opening the filter housing

Changing the compressor oil filter



1. WARNING!

Compressed air!

Compressed air and devices under pressure can injure or cause death if the contained energy is released suddenly.

- Vent all pressurized components and enclosures.

2. Unscrew the cover of the filter housing.

3. Remove the old oil filter cartridge and dispose of according to environmental protection regulations.

4. Insert the new oil filter cartridge.

5. Ensure the correct torque when screwing the cover of the filter housing down.



The required torque is indicated on the cover.



- Dispose of parts and material contaminated with cooling oil according to environment protection regulations.

Starting the machine and performing a trial run

1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the air distribution network.
3. Switch on the power supply and reset the maintenance interval counter.
4. After approx. 10 minutes of operation: Check the cooling oil level and top up if necessary.
5. Switch off the machine and check for leaks.

10.20 Changing the oil separator cartridge



The oil separator cartridge cannot be cleaned.

The life of the oil separator cartridge is influenced by:

- contamination in the air drawn into the compressor,
- and adherence to the replacement intervals for:
 - Cooling oil
 - Oil filter
 - Air filter



The machine must be isolated from the compressed air network and completely vented before undertaking any work on the pressure system.

Material Spare part
 Cleaning cloth

Precondition Cut-off the electrical power supply via the power supply isolating device,
 ensure that the device is locked off,
 verify the absence of any voltage.

 The machine is fully vented,
 the pressure gauge on the oil separator tank reads 0 bar.

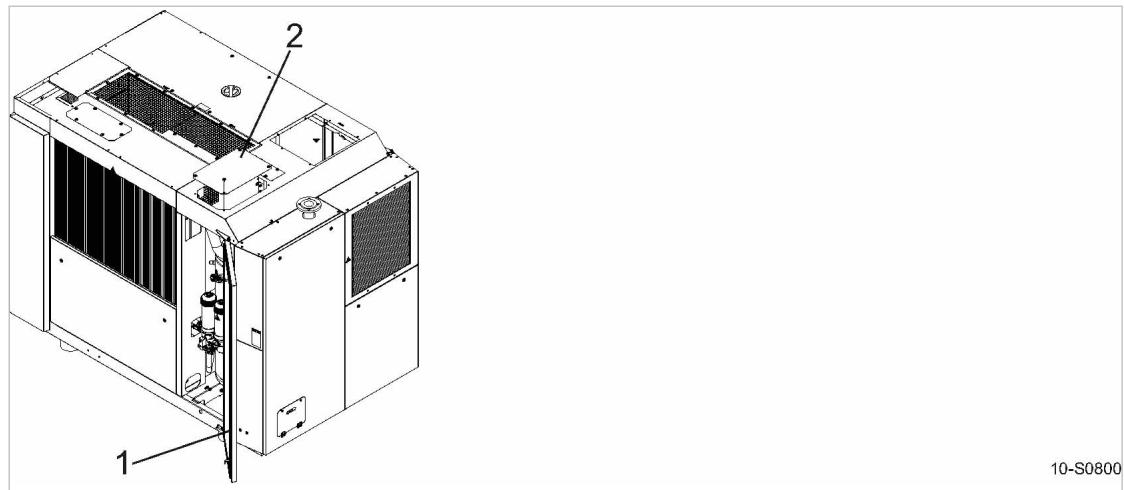
Open the enclosure

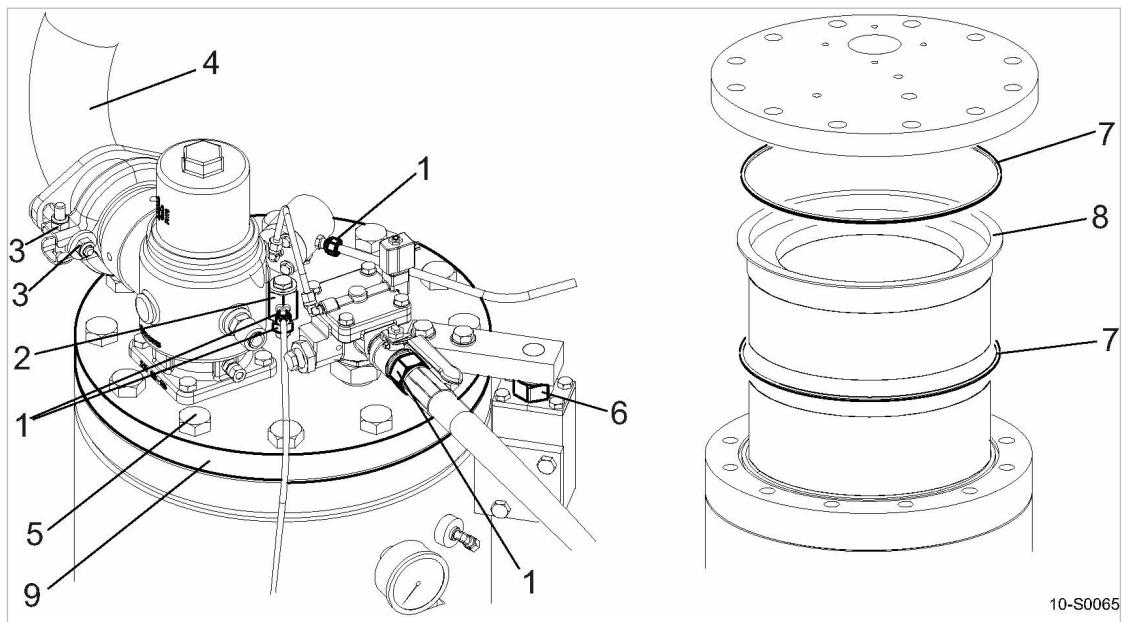
Fig. 43 Open the enclosure (oil separator cartridge changing)

- ① Access door
- ② Cover plate

1. Open the access doors ①.
2. Remove the cover plate ②.

Changing the oil separator cartridge

- Lift the oil separator cartridge with appropriate lifting tackle or with the aid of at least two people.



10-S0065

Fig. 44 Changing the oil separator cartridge

- | | | | |
|---|------------------|---|-------------------------|
| ① | Screw connection | ⑥ | Nut |
| ② | Dirt trap | ⑦ | Gasket |
| ③ | Screw connection | ⑧ | Oil separator cartridge |
| ④ | Air pipe | ⑨ | Cover |
| ⑤ | Fixing screw | | |


1. WARNING!

Compressed air!

Compressed air and components under pressure can injure or cause death if the contained energy is suddenly released.

► Fully vent all pressurised components and enclosures.

2. Unscrew the fitting ① and carefully put the parts to one side, then pull out the copper pipe from the dirt trap ②.
 3. Loosen the fitting ③ and disconnect the air pipe ④ completely if necessary.
 4. Remove the screws ⑤ securing the cover ⑨ of the oil separator tank.
 5. Use the nut ⑥ to lift the cover ⑨ of the separator tank and swing it to the side.
 6. Take out the old oil separator cartridge ⑧ together with the gaskets ⑦ and dispose of according to environmental regulations.
 7. Clean all sealing faces.
 8. Insert the new cartridge and gaskets.
 9. Swing the cover ⑨ over the tank and lower with the nut ⑥ until it rests on the tank rim.
The nut ⑥ becomes free and can be turned by hand when the cover is resting on the tank.
 10. Replace and tighten the tank cover ⑨ with screws ⑤.
 11. Renew the strainer and O-ring in the dirt trap ②.
 12. Secure the air pipe ④ with a new self-locking nut.
- ►
Follow the instructions in chapter 10.22 concerning flexible pipe connections.
13. Replace and tighten all fittings.



- Dispose of parts and material contaminated with cooling oil according to applicable environmental protection regulations.

Closing the enclosure

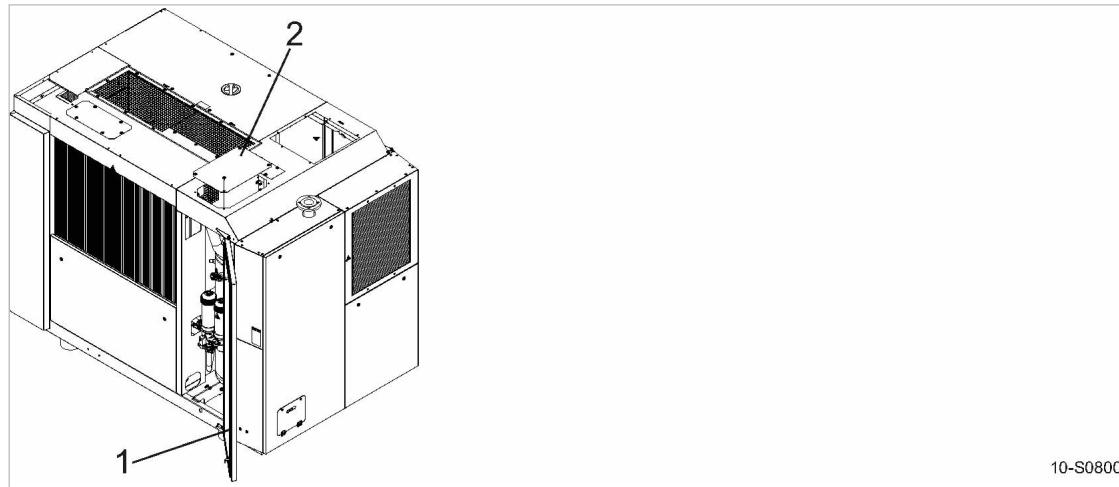


Fig. 45 Open the enclosure (oil separator cartridge changing)

- ① Access door
- ② Cover plate

1. Install the cover plate ②.
2. Close the access doors ①.

Starting the machine and performing a trial run

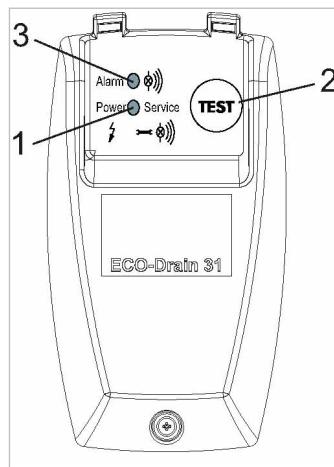
1. Close all access doors, replace and secure all removable panels.
2. Open the user's shut-off valve between the machine and the air distribution network.
3. Switch on the electrical power supply via the power supply isolating device and reset the maintenance interval counter.
4. After approx. 10 minutes of operation: Switch off the machine and check for leaks.

10.21 Maintaining the condensate drain

The condensate from the centrifugal separator is removed by an electronic condensate drain.

10.21.1 Condensate drain check

- Precondition
- The power supply disconnecting device is switched on.
 - Machine is pressurised.
 - The *Power* LED lights.



10-S0114

Fig. 46 Condensate drain check

- ① Power LED
- ② «TEST» key
- ③ Alarm LED



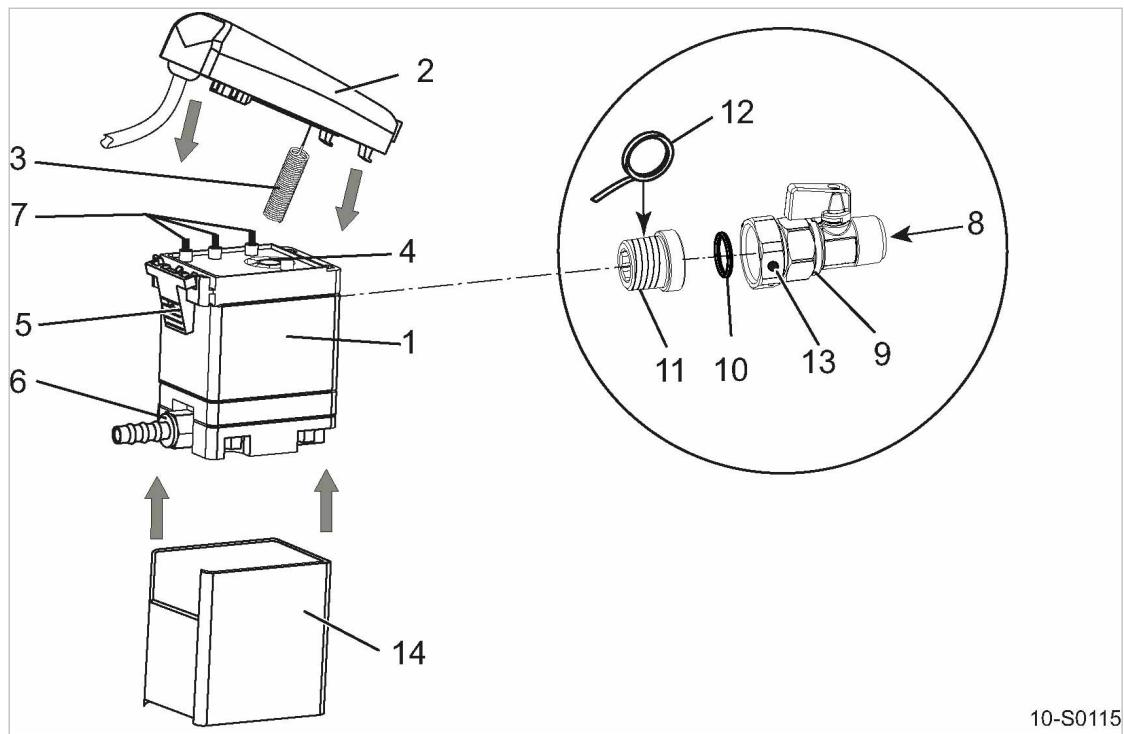
1. **CAUTION!**
Danger of burns from hot components near the condensate drain!
➤ Work with caution.
2. With one hand, lightly touch the condensate drain hose at the condensate drain.
3. With your other hand, push and hold the «TEST» key at the condensate drain for at least 2 seconds.

Result As soon as the condensate drain opens, you will feel a short burst at the condensate drain hose.
Replace the service unit if you do **not** experience a burst during manual test.

10.21.2 Changing the service unit

The condensate drain cannot be cleaned. The service unit must be changed if condensate does not drain.

Material Sealing tape for sealing the screw-in part
If required: O-ring 16x2 (5.1519.0)



10-S0115

Fig. 47 Changing the service unit

- | | |
|-----------------------------------|--------------------------------|
| [1] Service unit | [8] Condensate inlet |
| [2] Control module | [9] Shut-off valve |
| [3] Sensor | [10] O-ring |
| [4] Sensor opening | [11] Screw-in part |
| [5] Snap fastener | [12] Sealing tape |
| [6] Condensate drain hose fitting | [13] Union nut with vent holes |
| [7] Contact springs | [14] Insulation |

Removing the service unit



1. **WARNING!**
Serious injury or death can result from loosening or opening components under pressure.
➤ Fully vent all pressurised components and enclosures.
2. Close the shut-off valve [9] upstream of the condensate drain.
3. Unscrew the fitting [6] at the condensate line.
4. Press the snap fastener [5] and carefully remove the control module [2] from the service unit [1].
5. Carefully loosen the union nut [13] at the shut-off valve [9] until remaining residual air has escaped through the venting bores.
6. Unscrew the screw-in part [11] from the service unit and place aside.
7. Remove the insulation [14] from the service unit.

Installing the service unit

Use only KAESER service units to ensure correct function of the condensate drain.

Precondition Make sure that the top of the service unit and the contact springs are clean and dry.

1. Fit the insulation [14] to the service unit [1].

2. Carefully insert the sensor **③** of the control module **②** in the opening **④** at the service unit.
3. Place the snap fastener **⑤** of the control module into the service unit eyes.
4. Press the control module to the service unit until the snap fastener can be heard to click into place.
5. At the screw-in part **⑪**, replace old sealing material with new sealing tape.
6. Install the screw-in part in the service unit.
7. If necessary, insert a new o-ring **⑩**.
8. Tighten the union nut **⑬** at the shut-off valve **⑨**.
9. Attach the condensate hose.
10. Open the shut-off valve upstream of the condensate drain.
11. Close all access doors, replace and secure all removable panels.

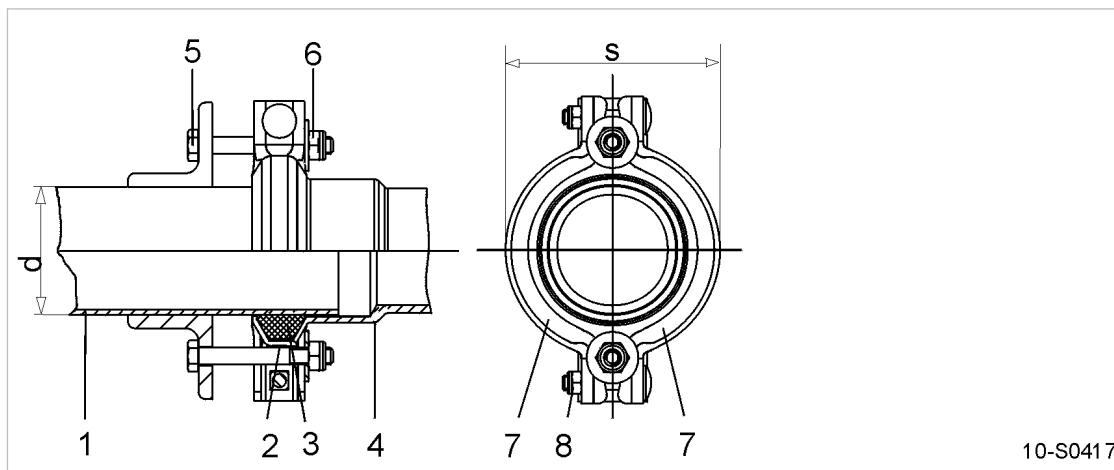
10.22 Assembling flexible pipe connections



With the machine depressurized, the clamping bolts must be freely movable by hand and parallel with the pipe.

In LOAD operation, all clamping bolts must be equally loaded.

➤ Replace the self-locking nuts.



10-S0417

Fig. 48 Assembling flexible pipe connections

①	Pipe	⑥	Self-locking nut
②	Seal holder	⑦	Pipe clamp halves
③	Gasket	⑧	Self-locking nut
④	Sleeve	d	Pipe diameter (outside)
⑤	Clamping screw	s	Dimension of the flexible pipe joint under tension.

Precondition The pipe **①** must be deburred and the sealing face clean and undamaged.

1. Slide the seal holder **②** and gasket **③** over the pipe **①**.
2. Slide the pipe end **①** into the bush **④** without pretension.
3. Slide the gasket **③** with seal holder **②** up the sealing face of the bush **④** taking care of pipe alignment.
4. Tighten up the clamping bolts **⑤** with the self-locking nuts **⑥**.

5. Lay the pipe clamp halves **7** over the seal holder **2** and bush **4** and tighten the self-locking nuts **8** until the dimension **s** is reached.

Pipe diameter: d [mm]	Clamp diameter: s [mm]
88.9	142.0 ± 2%
76.1	131.0 ± 2%
42.0	72.5± 2%
35.0	67.5± 2%

Tab. 71 Dimensions of the flexible pipe connection

11 Spares, Operating Materials, Service

11.1 Note the nameplate

The nameplate contains all information to identify your machine. This information is essential to us in order to provide you with optimal service.

- Please give the information from the nameplate with every enquiry and order for spares.

11.2 Ordering consumable parts and operating fluids/materials

KAESER consumable parts and operating materials are original products. They are specifically selected for use in KAESER machines.

Unsuitable or poor quality consumable parts and operating fluids/materials may result in damage to the machine or impair its proper function.

Personal injury may result from damage.



WARNING

There is risk of personal injury or damage to the machine resulting from the use of unsuitable spares or operating fluids/materials.

- Use only original parts and operating fluids/materials.
- Have an authorized KAESER SERVICE technician carry out regular maintenance.

Machine

Name	Number
Air filter: Pre-filter	1249
Air filter: Air filter cartridge	1250
Filter mat (control cabinet)	1100
Filter mat (Option K3)	1050
Oil filter	1200
Oil separator cartridge	1450
Cooling oil	1600
Condensate drain: Service module	9602
Bearing grease	100 g 400 g
	9.0915.0 6.3234.0

Tab. 73 Consumable parts

11.3 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- Authorised service technicians with KAESER factory training
- Increased operational reliability ensured by preventive maintenance
- Energy savings achieved by avoidance of pressure losses

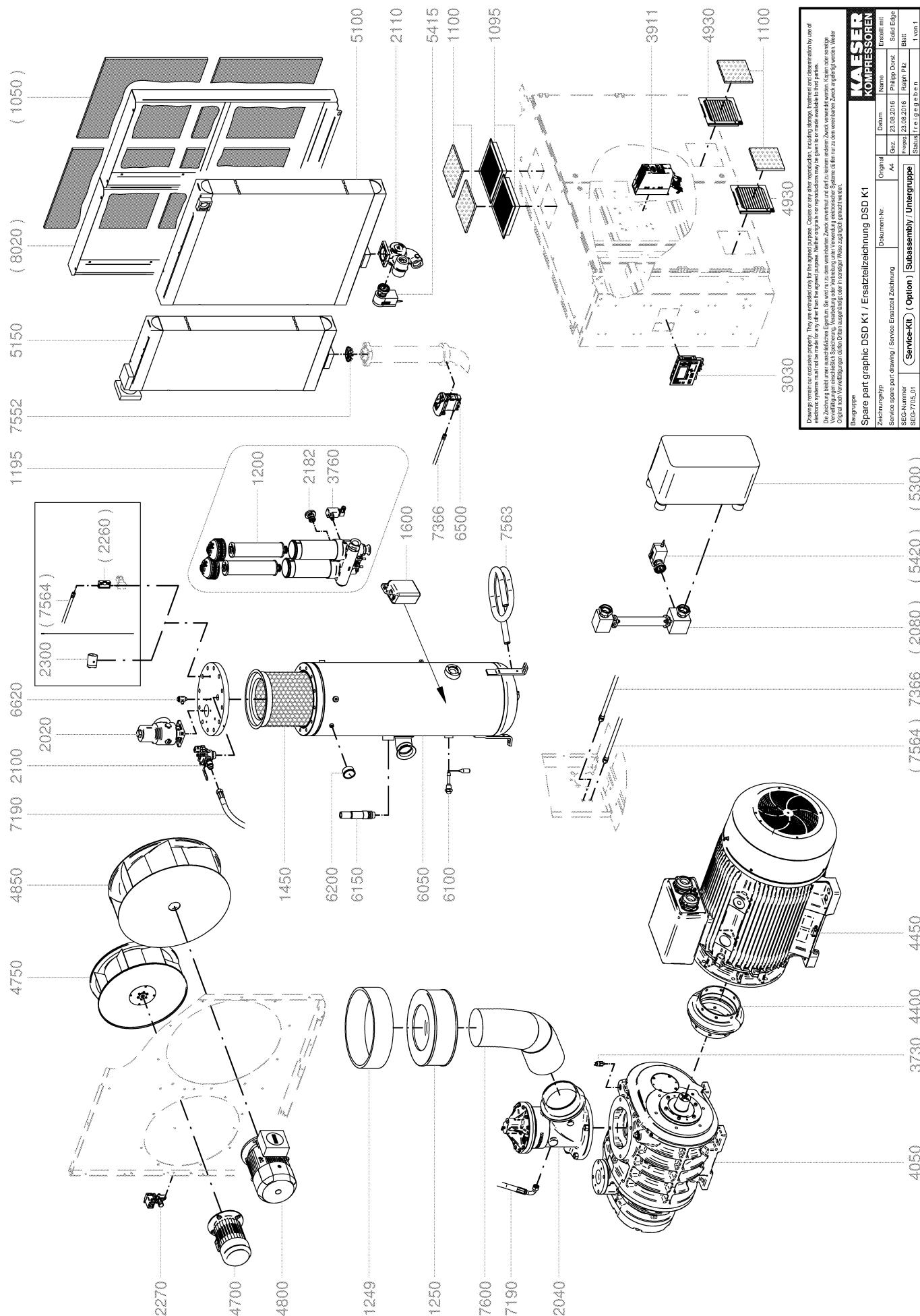
- optimum conditions for operation of the compressed air system,
 - The security of genuine KAESER spares.
 - Increased legal certainty as all regulations are kept to.
- It make sense to sign a KAESER AIR SERVICE maintenance agreement.
Your advantage:
lower costs and higher compressed air availability.

11.4 Replacement parts for service and repair

Use these parts lists to plan your material requirement according to operating conditions and to order the required spare parts.



- Make sure that any service or repair tasks not described in this manual are carried out by an authorized KAESER SERVICE technician.



11.4 Replacement parts for service and repair

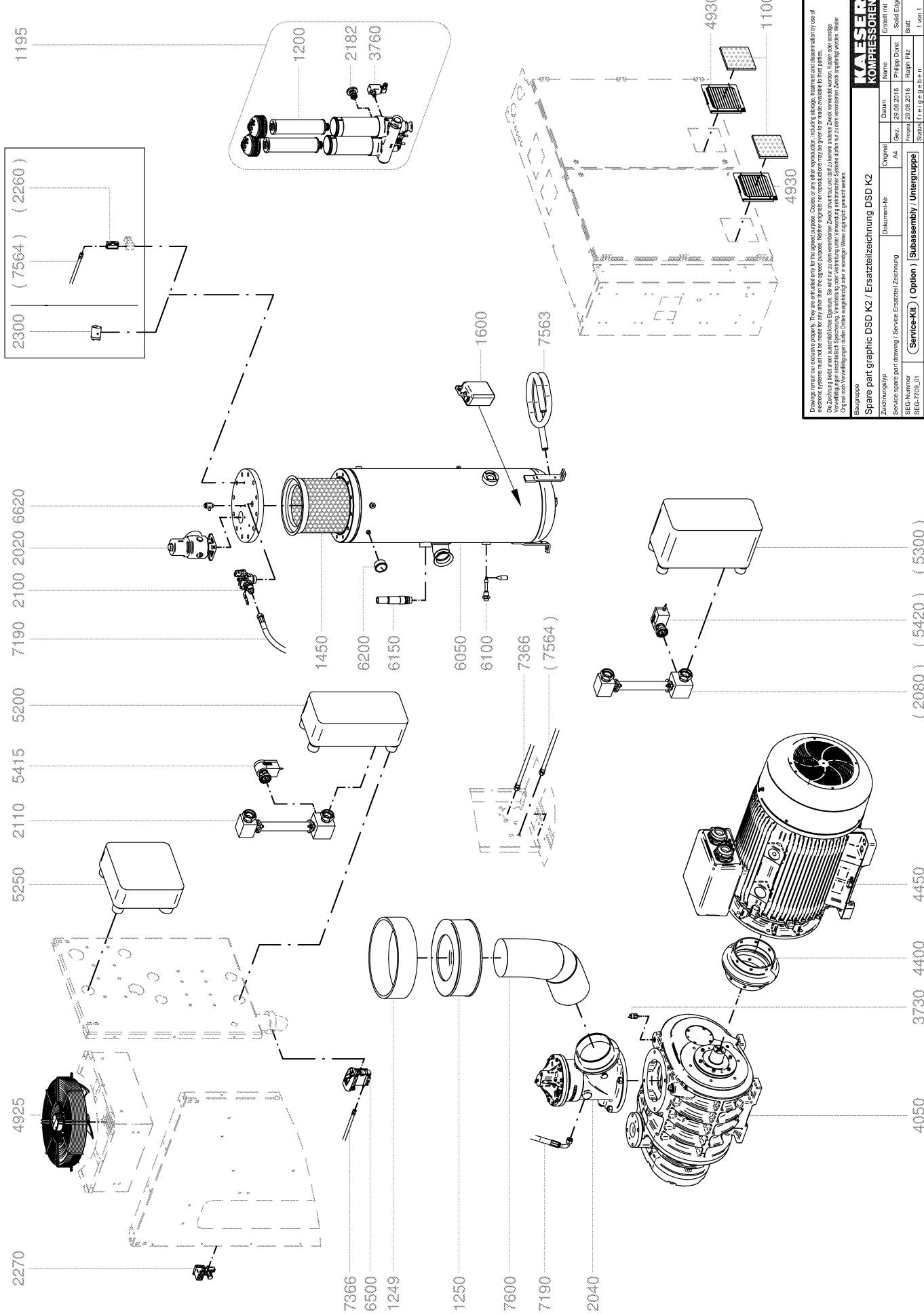
		Legend	KAESER KOMPRESSOREN
		DSD.3 K1	SEL-4180_01 E
Item	Description	Option	
1050	Filter mat, cooling air		
1095	Control cabinet breather		
1100	Filter mat, control cabinet		
1195	Oil filter with housing		
1200	Oil filter		
1249	Prefilter fleece		
1250	Air filter insert	x	
1450	Oil separator cartridge	x	
1600 *)	SIGMA FLUID		
2020	Minimum pressure/check valve		
2022 **)	Maintenance kit, MP/C valve		
2024 **)	Overhaul kit, MP/C valve		
2040	Inlet valve		
2042 **)	Maintenance kit, inlet valve		
2044 **)	Overhaul kit, inlet valve		
2080	Thermostatic valve (heat rec.)	x	
2082 **)	Maintenance kit, therm. valve		
2084 **)	Overhaul kit, therm. valve		
2100	Venting/control valve		
2102 **)	Maintenance kit, VC valve		
2104 **)	Overhaul kit, VC valve		
2110	Oil regulating valve		
2112 **)	Maintenance kit, oil reg. val.		
2114 **)	Overhaul kit, oil reg. valve		
2182 **)	Maintenance kit, overfl. valve		
2260	Changeover valve		
2264 **)	Overhaul kit, changeover valve		
2270	Proportional control		
2300	Pneumatic valve		
2302 **)	Maintenance kit, pneum. valve		
3030	SIGMA CONTROLLER		
3730	Rotating direction breaker		
3760	Pressure differential switch		
3911	Frequency converter, fan motor		
4050	SIGMA exchange airenad		
4400	Drive coupling		
4450	Drive motor		
4451	Drive motor bearing kit		
4700	Fan motor		
4701	Fan motor bearing kit		
4750	Fan motor blower wheel		
4800	Fan motor		
4801	Fan motor bearing kit		
4850	Fan motor blower wheel		
4930	Control cabinet fan		
5100	Oil cooler		
5150	Compressed air cooler		
5300	Heat exchanger (heat recovery)	x	
5415	Actuator		
5420	Actuator	x	
6050	Oil separator tank		
6100	Oil level indicator		
6150	Oil sep. tank safety valve		
6200	Oil sep. tank pressure gauge		
6500	Condensate drain		
9602	Condensate drain service-unit		
6620	Suction line dirt trap		
7190	Hose line		
7366	Condensate drain line		
7552	Centrifugal separator element		
7563	Hose line	x	
7564	Hose line		
7600	Inlet hose	x	
8020	Filter mat door cpl.		

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

*) see cooling oil recommendations

**) not for Helium unit



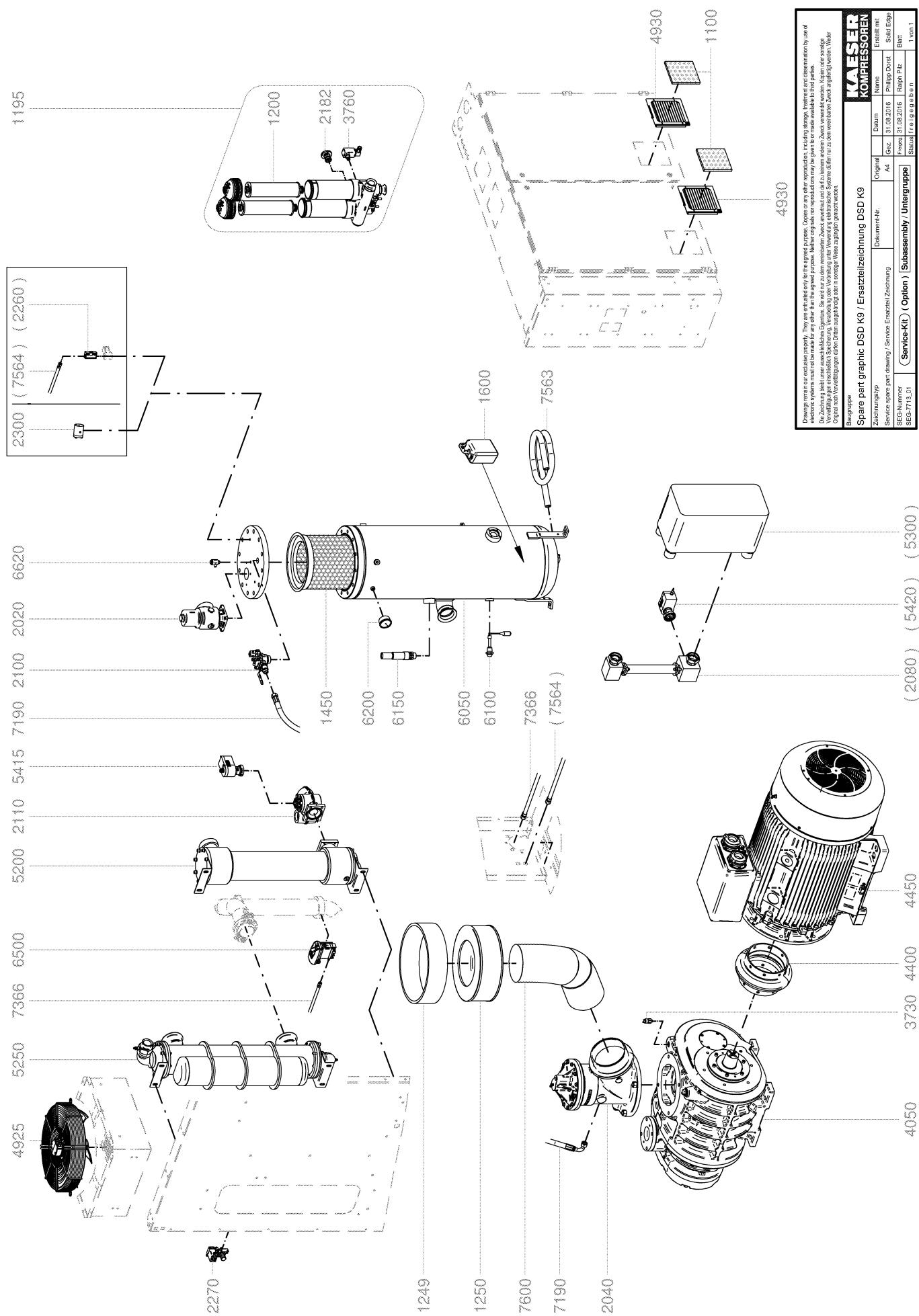
KAESER KOMPRESSOREN	
Zeilungssyp	Spare part drawing Service Ersatzteil Zeichnung
Service spare part drawing	Document-Nr. Original
SEG-Nummer	Aa Datum
SEG-7708.01	Philip Dost 29.08.2016
Baugruppe	Ges. Ralph Pilz 29.08.2016
	Blatt: 1 von 1

Legend		KAESER KOMPRESSOREN
DSD.3 K2		SEL-4184_01 E
Item	Description	Option
1100	Filter mat, control cabinet	
1195	Oil filter with housing	
1200	Oil filter	
1249	Prefilter fleece	
1250	Air filter insert	x
1450	Oil separator cartridge	x
1600 *)	SIGMA FLUID	
2020	Minimum pressure/check valve	
2022 **)	Maintenance kit, MP/C valve	
2024 **)	Overhaul kit, MP/C valve	
2040	Inlet valve	
2042 **)	Maintenance kit, inlet valve	
2044 **)	Overhaul kit, inlet valve	
2080	Thermostatic valve (heat rec.)	x
2082 **)	Maintenance kit, therm. valve	
2084 **)	Overhaul kit, therm. valve	
2100	Venting/control valve	x
2102 **)	Maintenance kit, VC valve	
2104 **)	Overhaul kit, VC valve	
2110	Oil regulating valve	
2112 **)	Maintenance kit, oil reg. val.	
2114 **)	Overhaul kit, oil reg. valve	
2182 **)	Maintenance kit, overfl. valve	
2260	Changeover valve	
2264 **)	Overhaul kit, changeover valve	
2270	Proportional control	
2300	Pneumatic valve	
2302 **)	Maintenance kit, pneum. valve	
3730	Rotating direction breaker	
3760	Pressure differential switch	
4050	SIGMA exchange airend	
4400	Drive coupling	
4450	Drive motor	
4451	Drive motor bearing kit	
4925	Exhauster, unit	
4930	Control cabinet fan	
5200	Oil cooler	
5250	Compressed air cooler	
5300	Heat exchanger (heat recovery)	x
5415	Actuator	
5420	Actuator	x
6050	Oil separator tank	
6100	Oil level indicator	
6150	Oil sep. tank safety valve	
6200	Oil sep. tank pressure gauge	
6500	Condensate drain	
9602	Condensate drain service-unit	
6620	Suction line dirt trap	
7190	Hose line	
7366	Condensate drain line	
7563	Hose line	x
7564	Hose line	
7600	Inlet hose	x

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

*) see cooling oil recommendations
 **) not for Helium unit



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KAESER KOMPRESSOREN	
Ersatzteil mit Service spare part drawing Service Ersatzteil Zeichnung	Document-Nr.: AA
SEG-Nummer: SEG-7713.01	Datum: 31.08.2016
	Name: Philipp Dost
	Zeichnung: Ralph Pilz
Baugruppe: Spare part graphic DSD K9 Option 1 Subassembly / Untergruppe	Blatt: 1 von 1

Legend		KAESER KOMPRESSOREN
DSD.3 K9		SEL-4188_01 E
Item	Description	Option
1100	Filter mat, control cabinet	
1195	Oil filter with housing	
1200	Oil filter	x
1249	Prefilter fleece	
1250	Air filter insert	x
1450	Oil separator cartridge	x
1600 *)	SIGMA FLUID	
2020	Minimum pressure/check valve	
2022 **)	Maintenance kit, MP/C valve	
2024 **)	Overhaul kit, MP/C valve	
2040	Inlet valve	
2042 **)	Maintenance kit, inlet valve	x
2044 **)	Overhaul kit, inlet valve	
2080	Thermostatic valve (heat rec.)	
2082 **)	Maintenance kit, therm. valve	
2084 **)	Overhaul kit, therm. valve	
2100	Venting/control valve	x
2102 **)	Maintenance kit, VC valve	
2104 **)	Overhaul kit, VC valve	
2110	Oil regulating valve	
2112 **)	Maintenance kit, oil reg. val.	
2114 **)	Overhaul kit, oil reg. valve	
2182 **)	Maintenance kit, overfl. valve	
2260	Changeover valve	
2264 **)	Overhaul kit, changeover valve	
2270	Proportional control	
2300	Pneumatic valve	
2302 **)	Maintenance kit, pneum. valve	
3730	Rotating direction breaker	
3760	Pressure differential switch	
4050	SIGMA exchange airend	
4400	Drive coupling	
4450	Drive motor	
4451	Drive motor bearing kit	
4925	Exhauster, unit	
4930	Control cabinet fan	
5200	Oil cooler	
5250	Compressed air cooler	
5300	Heat exchanger (heat recovery)	x
5415	Actuator	
5420	Actuator	x
6050	Oil separator tank	
6100	Oil level indicator	
6150	Oil sep. tank safety valve	
6200	Oil sep. tank pressure gauge	
6500	Condensate drain	
9602	Condensate drain service-unit	
6620	Suction line dirt trap	
7190	Hose line	
7366	Condensate drain line	
7563	Hose line	x
7564	Hose line	
7600	Inlet hose	x

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

*) see cooling oil recommendations
 **) not for Helium unit

12 Decommissioning, Storage and Transport

12.1 Decommissioning

De-commissioning is necessary, for example, under the following circumstances:

- The machine is (temporarily) not needed.
 - The machine is to be moved to another location.
 - The machine is to be scrapped.
- The following tasks must be carried out only by authorised personnel.

12.1.1 Temporary de-commissioning

Precondition The machine can be started at regular intervals.

- Run the machine once a week for at least 30 minutes under LOAD to ensure sufficient protection against corrosion.

12.1.2 Long-term de-commissioning

Precondition Immediately prior to de-commissioning, run the machine under LOAD for at least 30 minutes.

12.1.2.1 Draining condensate

If the machine is equipped with one or more condensate drain(s), drain condensate from every condensate drain.

Precondition The machine is switched off.

1. Drain condensate from all condensate drains and dispose according to applicable environment protection regulations.
2. Remove the user-supplied condensate conduits.



The condensate drains are not supplied with power when the machine is switched off?

- Detach and drain the condensate drains.

12.1.2.2 Isolating the machine from supply lines

Precondition The power supply isolating device is switched off, it has been locked off against unintentional reactivation and the absence of voltage has been verified.

The machine is fully vented.

The user's shut-off valve to the compressed air network is closed or the compressed air network has been fully vented.

1. Allow the machine to completely cool down.
2. Detach the power supply and connecting line to the compressed air network at the user side.
3. Option K2/K9:
Detach the user connecting lines and use compressed air (< 3 bar) to blow out the cooling water system until liquid no longer escapes.

4. Option W2/W3:

Detach the user connecting lines and use compressed air (< 3 bar) to blow out the heat recovery system until liquid no longer escapes.

5. Properly close all open connecting ports.

12.2 Packing

A wooden crate is required for overland transport to protect the machine from mechanical damage.

Other measures must be taken for the transport of machines by sea or air. Please contact KAESER SERVICE for more information.

Material Desiccant
Plastic sheeting
Wooden crate

Precondition The machine is decommissioned.
The machine is dry and cooled down.

1. Place sufficient desiccant silica gel or desiccant clay) in the machine.
2. Wrap the machine fully in plastic sheeting.
3. Protect the machine in a wooden crate against mechanical damages.

12.3 Storage

Moisture can lead to corrosion, particularly on the surfaces of the airend and in the oil separator tank.

Frozen moisture can damage components, valve diaphragms and gaskets.

The following measures also apply to machines not yet commissioned.



Please consult with KAESER if you have questions to the appropriate storage and commissioning.



1. **NOTICE!**

Moisture and frost can damage the machine!

- Prevent ingress of moisture and formation of condensation.
- Maintain a storage temperature of >0 °C.

2. Store the machine in a dry, frost-proof room.

12.4 Transport

12.4.1 Safety

Mass and centre of gravity determine the most suitable method of transportation. The centre of gravity is shown in the drawing in chapter 13.3.



➤ Please consult with KAESER if you intend to transport the machine in freezing temperatures.

Precondition Transport only by forklift truck or lifting gear and only by personnel trained in the safe transportation of loads.

- Ensure the danger area is clear of personnel.

12.4.2 Transport with a forklift truck

Precondition The whole machine is over the forks.



Fig. 49 Transporting with a forklift truck

1. Take note of the centre of gravity.
2. Drive the forks completely under the machine or palette and lift carefully.

12.4.3 Transport with a hoist

Only suitable and approved load-carrying and attachment devices ensure proper transport of the machine with a hoist (e.g., crane). Suitable crossbeams ensure sufficient distance of the attachment resources from the machine housing to prevent damage.

The machine is not equipped with fastening points.

Examples of unsuitable fastening points:

- Pipe sockets
- Flanges
- Attached components such as centrifugal separators, condensate drains or filters
- Rain protection covers



- Consult KAESER if you require suitable load-carrying and attachment devices or have questions regarding the correct use.

Precondition Load-carrying and attachment devices meet the local safety regulations.

The hoist, load-carrying and attachment devices or the lifted machine do not endanger personnel.

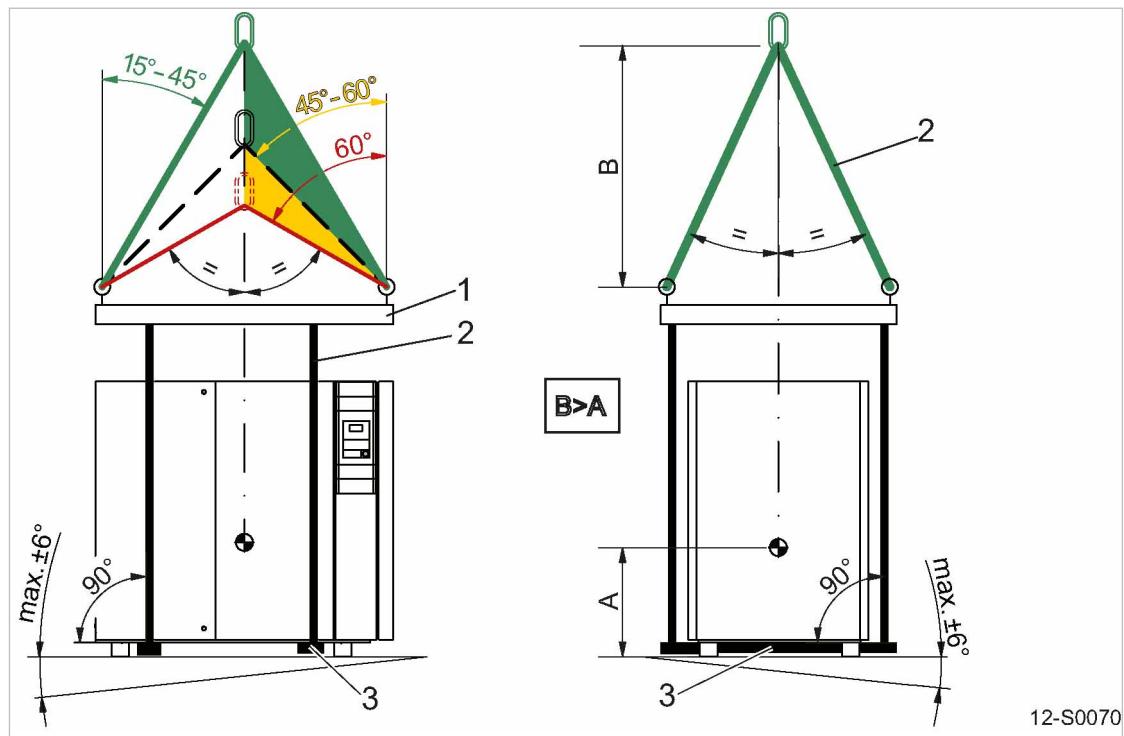


Fig. 50 Transporting with a crane

- ① Load carrying devices
- ② Attachment resources
- ③ Crossbeam



1. **WARNING!**
 - Risk of accident caused by incorrect use of load-carrying and attachment devices!
 - Comply with permissible load limits.
 - Comply with specific safety information of used load-carrying and attachment devices.
2. Properly use load-carrying and attachment devices:
 - Ensure proper distribution of the fastening points relative to the centre of gravity position (symmetrical load distribution).
 - Ensure equal slope angles of 15° to 45° for attachment devices with multiple strands.
 - Slope angles between 45° and 60° may be unsuitable.
 - Slope angles larger than 60° are prohibited.
 - Ensure the maximum incline of 6° of the machine to the horizontal.
 - Ensure sufficient distance of the attachment devices to the machine.
 - Ensure a positive stability height: Dimension B > Dimension A
 - Do not attach the attachment devices to any machine component.
3. Carry out a lifting test:

Slightly lift the machine to check whether machine remains in horizontal position and does not teeter.
4. Transport the machine only after a successful lifting test.

12.5 Disposal

When disposing of a machine, drain out all liquids and remove old filters.

Precondition The machine is decommissioned.

1. Completely drain the cooling oil from the machine.
2. Remove used oil filter and separator cartridge.
3. Hand the machine over to an authorised disposal expert.

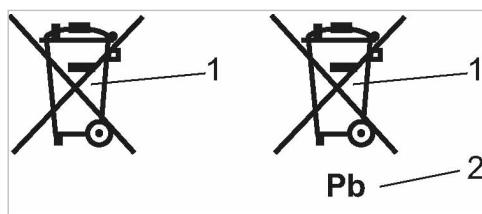


- Components contaminated with cooling oil must be disposed of in accordance with local environment protection regulations.

12.5.1 Dispose of the battery in accordance with local environmental regulations.

Batteries contain substances that are harmful to living beings and the environment. For this reason, batteries must not be disposed of with unsorted residential waste. They must be delivered to the national battery collection system. This procedure facilitates the handling and recycling of batteries.

The 2006/66/EC directive stipulates for the EU member states that old batteries are returned to the point of sale or delivered to a designated disposal system (free of charge). These disposal facilities may be local recycling yards for used electric and electronic devices and their points of sale.



12-A002674

Fig. 51 Battery labelling

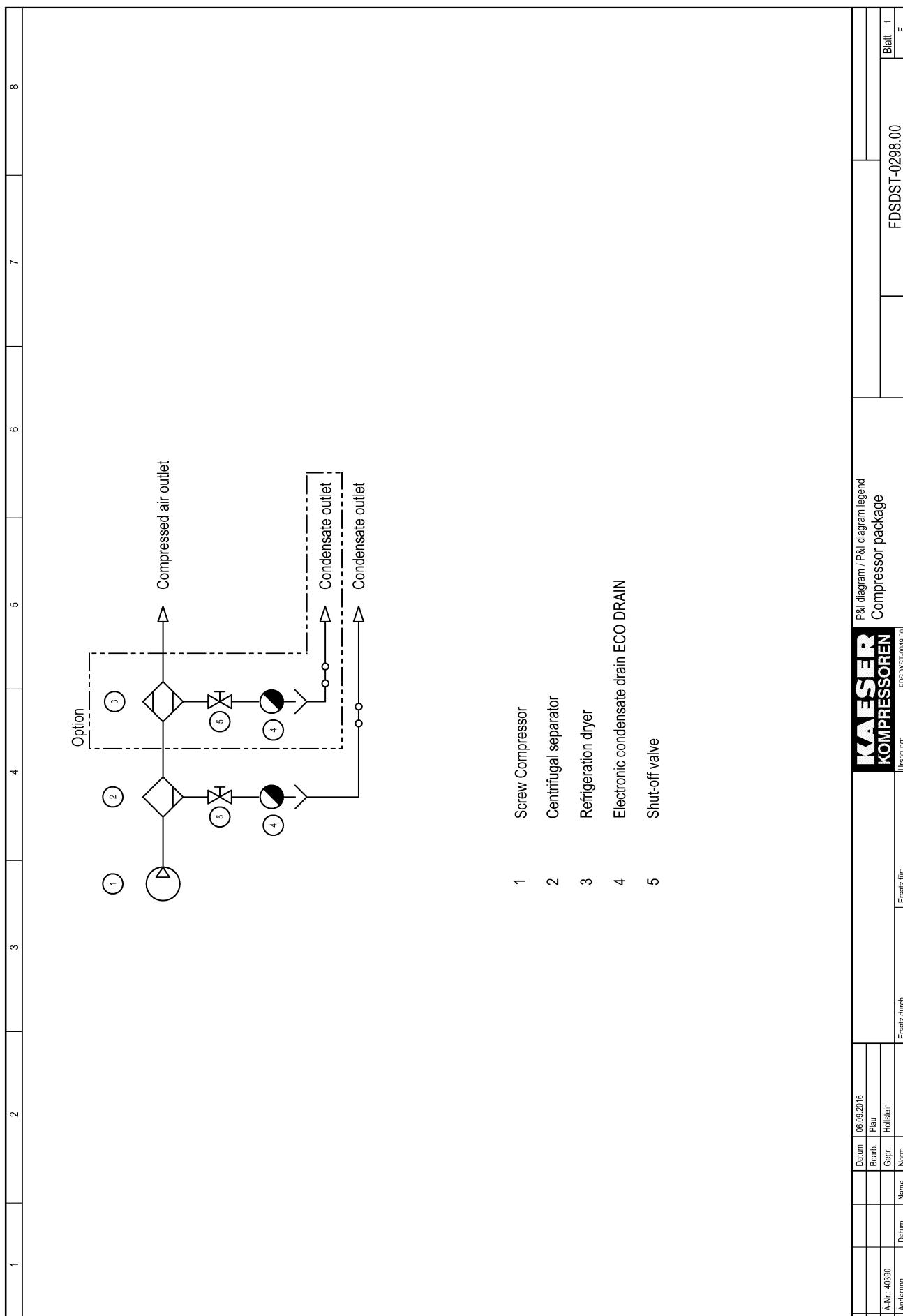
- ① Do not dispose of batteries with residential waste.
② Battery contains lead (if applicable)

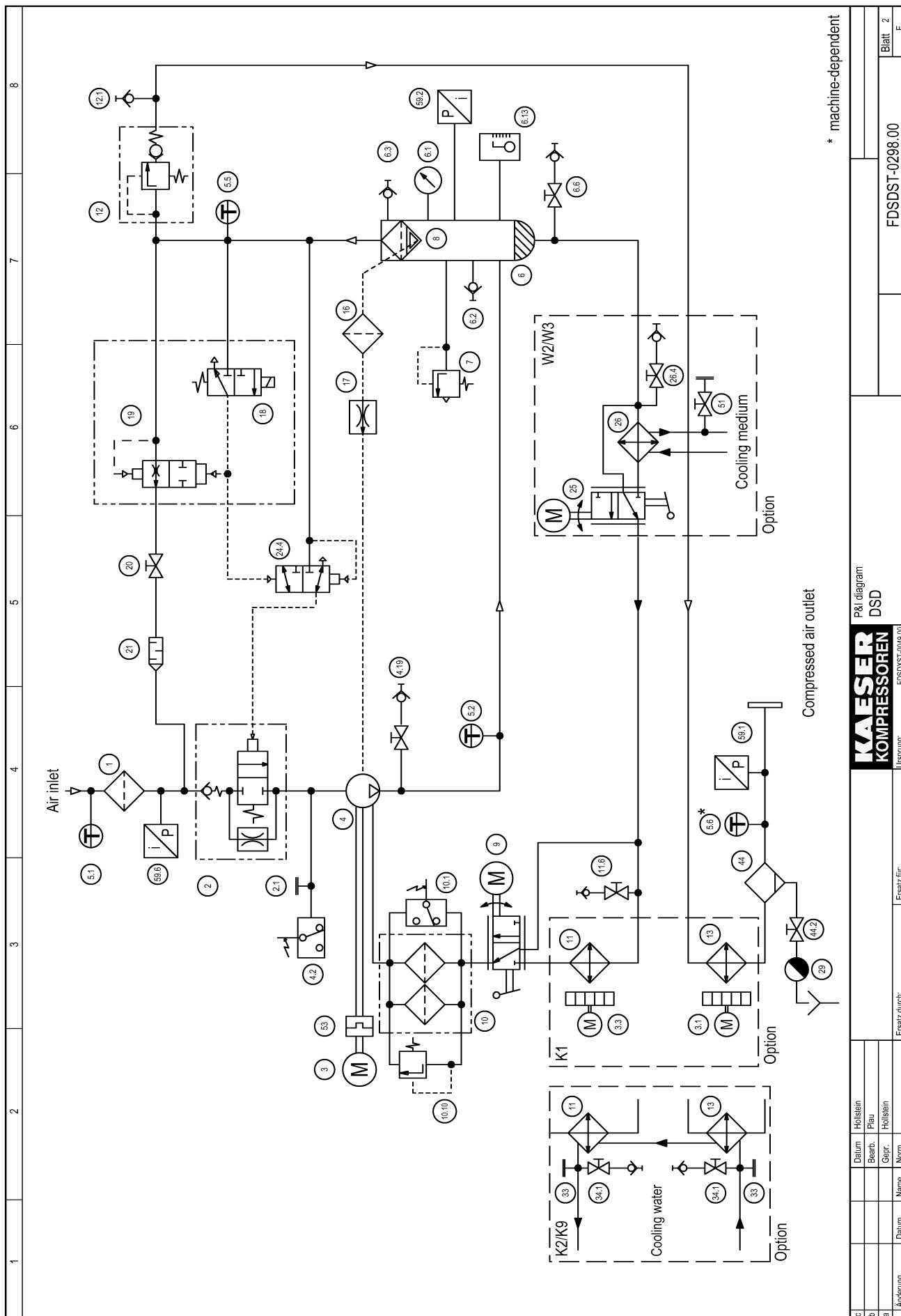
- Comply with national disposal regulations and dispose of batteries in an environmentally-friendly manner.



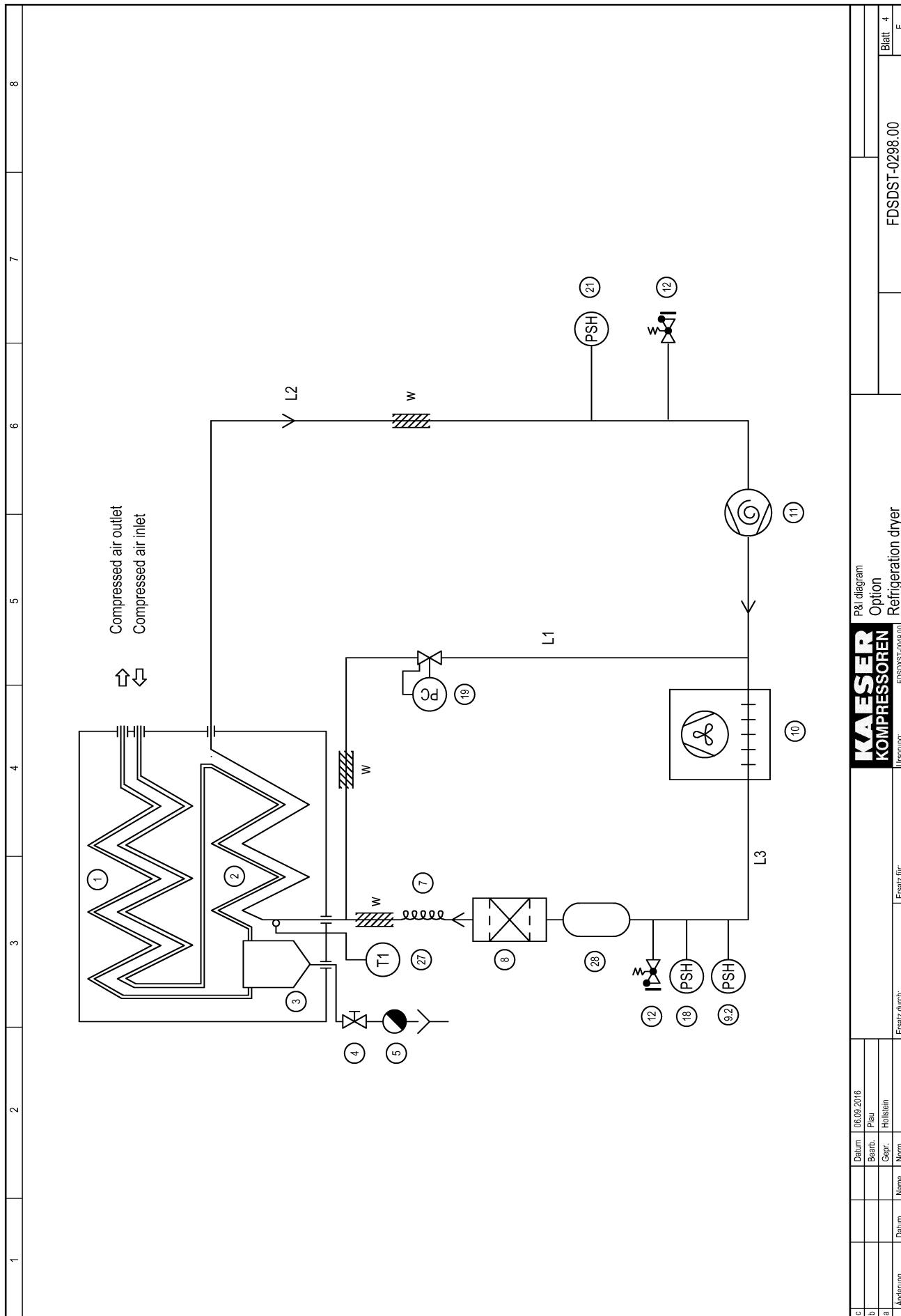
- You actively contribute to the protection of our environment when you bring used batteries to the appropriate recycling system.

13 Annex**13.1 Pipeline and instrument flow diagram (P&I diagram)**





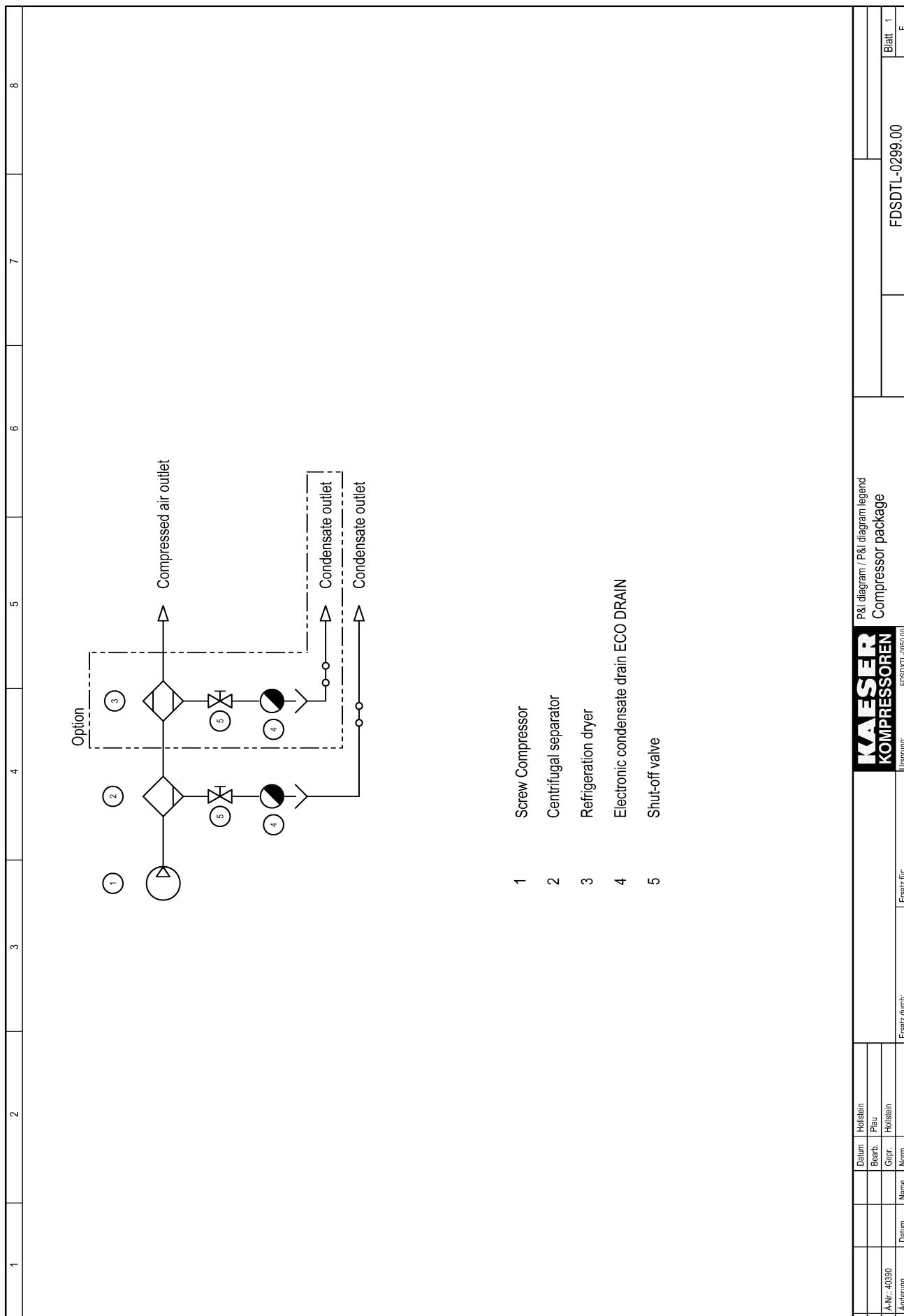
1		2	3	4	5	6	7	8
1	Air filter							
2	Inlet valve							
2.1	Oil filler port with plug							
3	Drive motor							
3.1	Fan motor - Compressed air cooler							
3.3	Fan motor - Oil cooler							
4	Airend							
4.2	Pressure switch - Wrong direction of rotation							
4.19	Shut-off valve with hose coupling - Oil drain device							
5.1	P1100 sensor - Inlet temperature							
5.2	P1100 sensor - Airend discharge temperature							
5.5	P1100 sensor - Oil separator tank							
5.6	P1100 sensor - Package discharge temperature *							
6	Oil separator tank							
6.1	Pressure gauge							
6.2	Hose coupling (Oil end)							
6.3	Hose coupling (Air end)							
6.6	Shut-off valve with hose coupling - Oil drain device							
6.13	Oil level indicator							
7	Pressure relief valve							
8	Oil separator cartridge							
9	Oil temperature regulator							
10	Oil filter							
10.1	Differential pressure switch - Oil filter							
10.10	Overflow valve							
11	Oil cooler							
11.6	Shut-off valve with hose coupling - Oil drain device							
12	Minimum pressure check valve							
12.1	Hose coupling							
								* machine-dependent
c				Datum	06.09.2016			
b				Bearb.	Piau			
a				Gepr.	Holstein			
Änderung	Datum	Name	Norm	Ersatz durch:	Ersatz für:			
							FDS DST-0298.00	
								Blatt 3 E

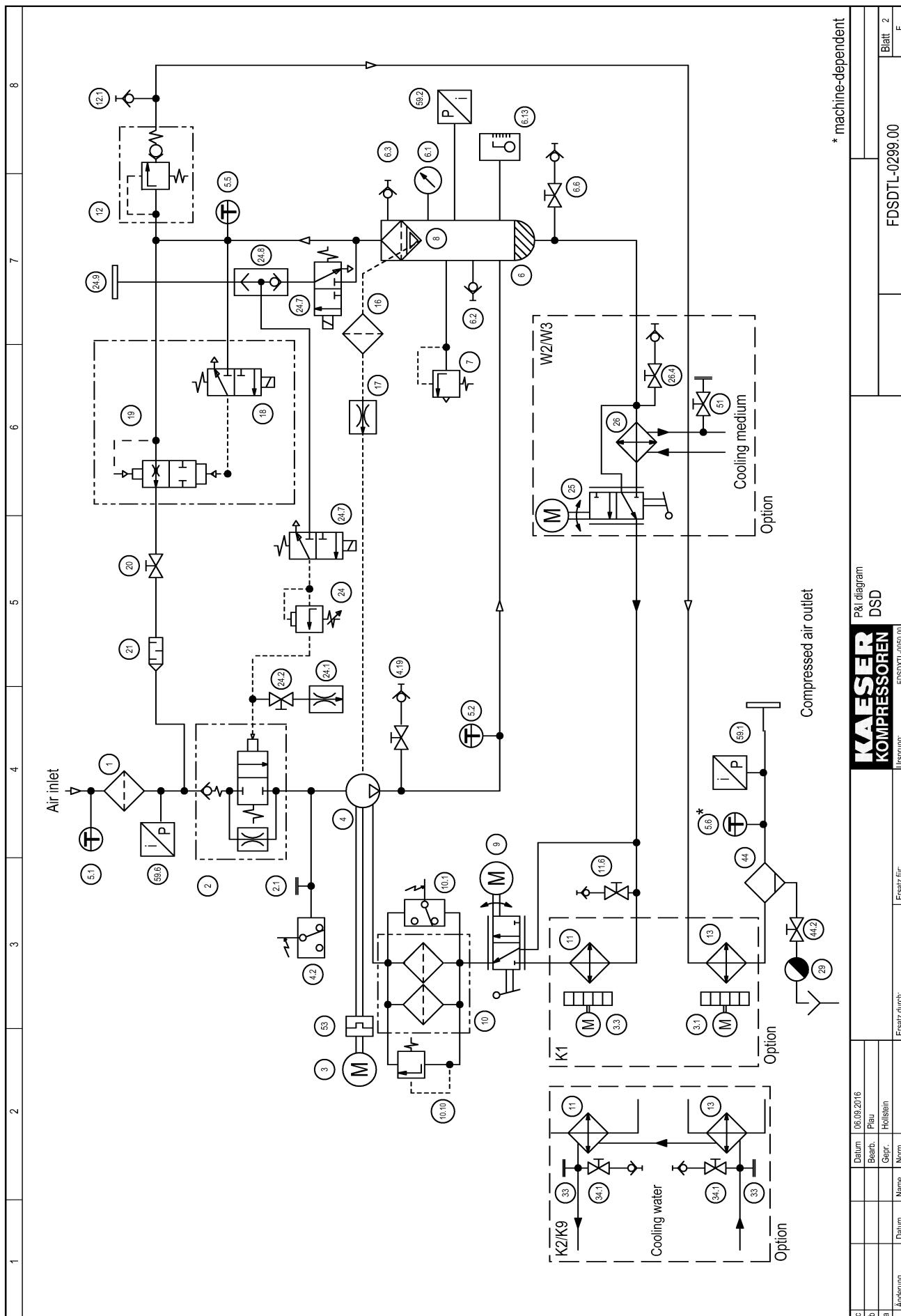


1	Air/air heat exchanger	heat-insulated	18	Pressure switch - Refrigerant condenser
2	Air/refrigerant heat exchanger (Evaporator)		19	Hot gas bypass regulator
3	Condensate separator		21	Pressure switch - Gassing pressure
4	Shut-off valve		27	Pt100 sensor
5	Condensate drain		28	Collection chamber
7	Capillary tube (Refrigerant injection)			
8	Filter dryers			
9.2	Pressure limiter		L1	Bypass line
10	Refrigerant condenser (Air-cooled condenser)		L2	CU-Pipe
11	Refrigerant compressor (hermetic)		L3	CU-Pipe
12	Service connection (Schrader valve)		w	heat-insulated
Conduits:				
c		Datum	06.09.2016	P&I diagram legend
b		Bearb.	Plau	Option
a		Gepr.	Holstein	Refrigeration dryer
Änderung	Datum	Name	Norm	Ursprung:
				FDS DST-0298.00
				Blatt 5
				E

13.2 Option C1

**Pipeline and instrument flow diagram (P&I diagram)
MODULATING control**





1	Air filter																			
2	Inlet valve																			
2.1	Oil filler port with plug																			
3	Drive motor																			
3.1	Fan motor - Compressed air cooler																			
3.3	Fan motor - Oil cooler																			
4	Airend																			
4.2	Pressure switch - Wrong direction of rotation																			
4.19	Shut-off valve with hose coupling - Oil drain device																			
5.1	Pt100 sensor - Inlet temperature																			
5.2	Pt100 sensor - Airend discharge temperature																			
5.5	Pt100 sensor - Oil separator tank																			
5.6	Pt100 sensor - Package discharge temperature *																			
6	Oil separator tank																			
6.1	Pressure gauge																			
6.2	Hose coupling (Oil end)																			
6.3	Hose coupling (Air end)																			
6.6	Shut-off valve with hose coupling - Oil drain device																			
6.13	Oil level indicator																			
7	Pressure relief valve																			
8	Oil separator cartridge																			
9	Oil temperature regulator																			
10	Oil filter																			
10.1	Differential pressure switch - Oil filter																			
10.10	Overflow valve																			
11	Oil cooler																			
11.6	Shut-off valve with hose coupling - Oil drain device																			
12	Minimum pressure check valve																			
12.1	Hose coupling																			
13	Compressed air cooler																			
16	Dirt trap																			
17	Nozzle																			

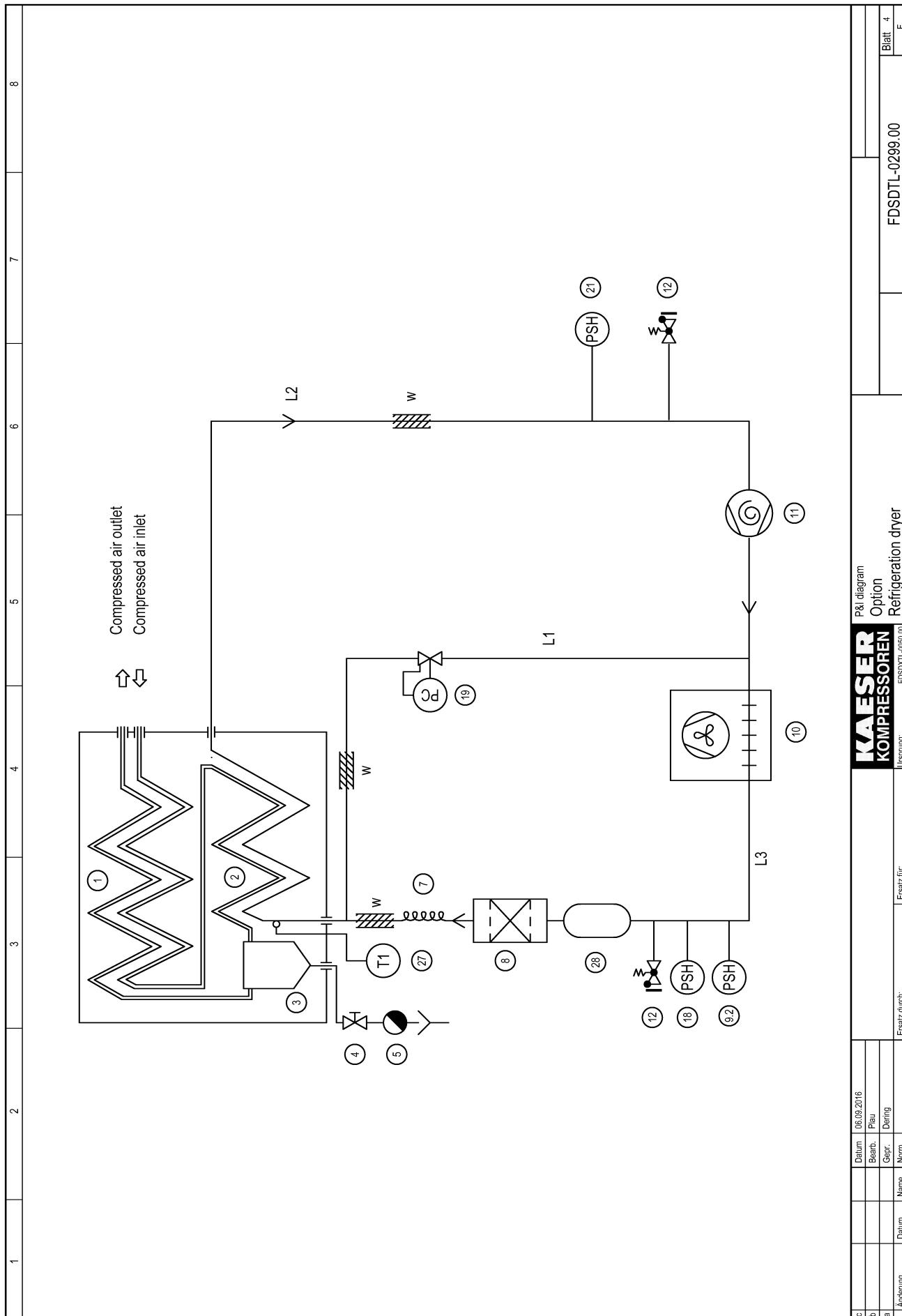
* machine-dependent

c			Datum	06.09.2016															
b			Bearb.	Piau															
a			Gepr.	Holstein															
Änderung	Datum	Name	Norm	Ersatz durch:															

KAESER
KOMPRESSOREN

 P&I diagram legend
 DSD
 FDSDTL-0299.00
 Ursprung: ESDX140501

 Blatt
 3
 E

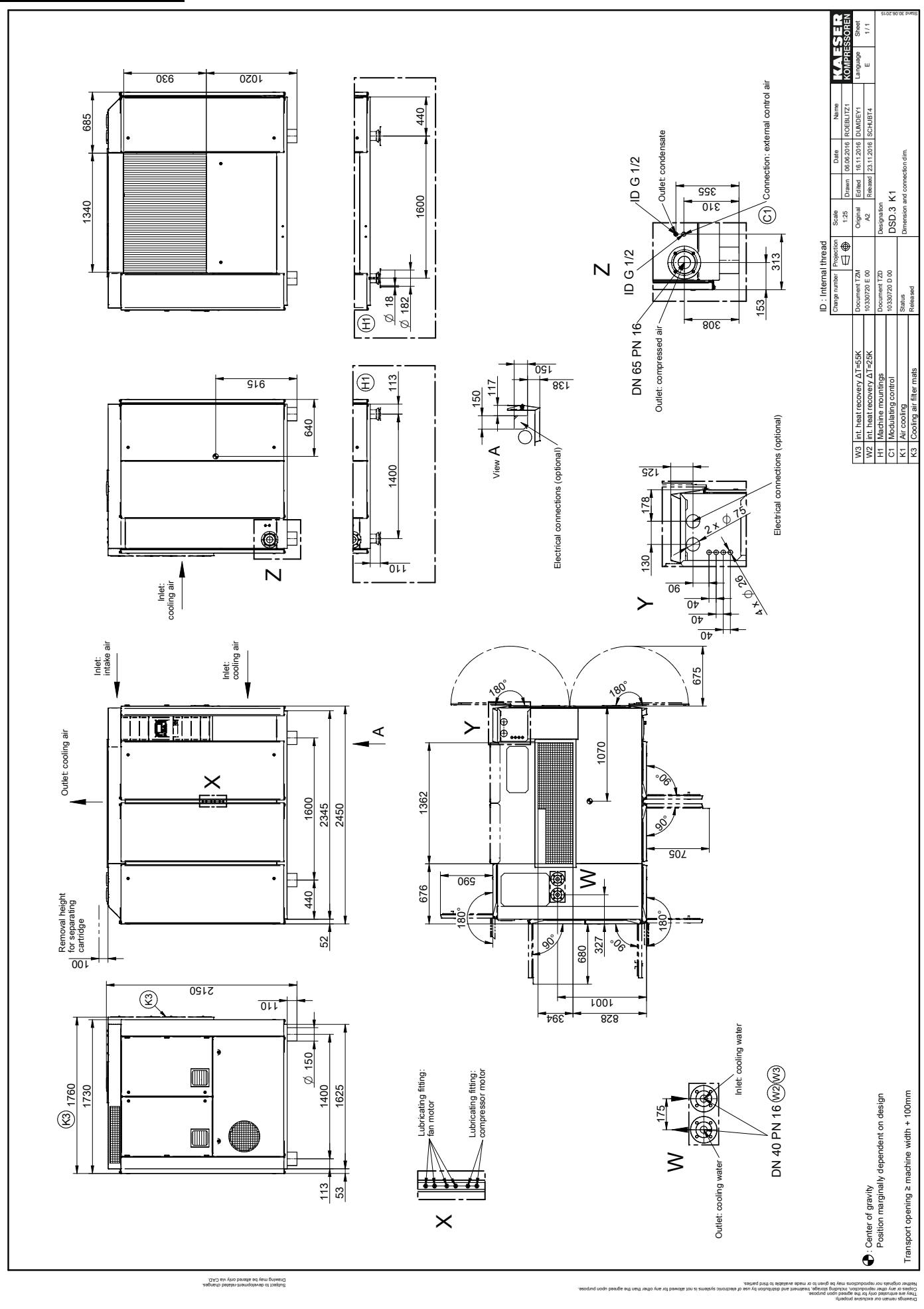


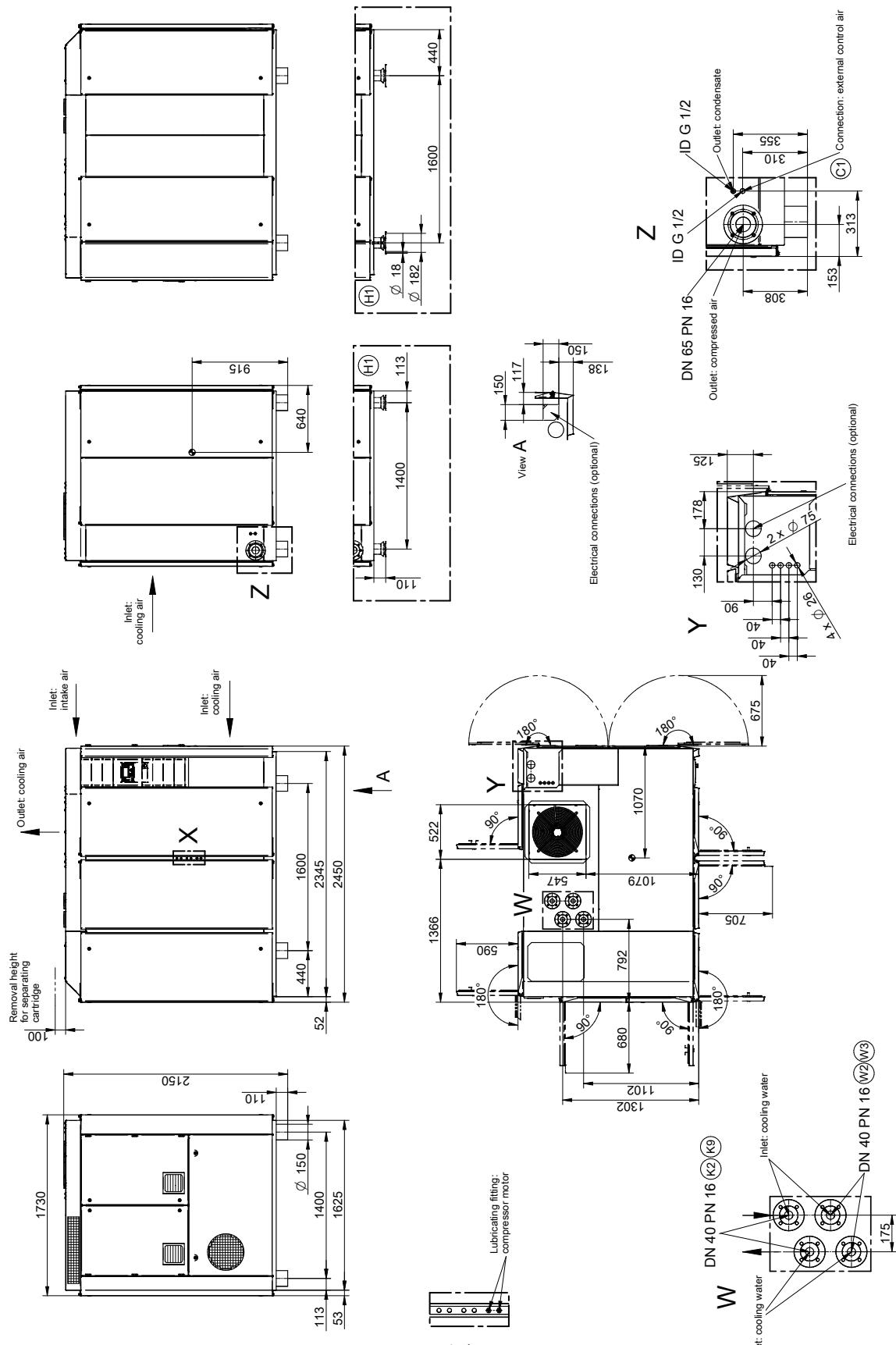
1	Air/air heat exchanger	heat-insulated	18	Pressure switch - Refrigerant condenser
2	Air/refrigerant heat exchanger (Evaporator)		19	Hot gas bypass regulator
3	Condensate separator		21	Pressure switch - Gassing pressure
4	Shut-off valve		27	Pt100 sensor
5	Condensate drain		28	Collection chamber
7	Capillary tube (Refrigerant injection)			
8	Filter dryers			
9.2	Pressure limiter		L1	Bypass line
10	Refrigerant condenser (Air-cooled condenser)		L2	CU-Pipe
11	Refrigerant compressor (hermetic)		L3	CU-Pipe
12	Service connection (Schrader valve)		w	heat-insulated

Conduits:

c		Datum	06.09.2016	
b		Bearb.	Piau	
a		Gepr.	Dreing	
Anforderung	Datum	Name	Norm	Ersatz durch:
				Ersatz für:
				FDSDTL-0299.00
				Blatt 5
				E

13.3 Dimensional drawing





ID : Internal thread		Change number	Projection	Scale	Date	Name
W3	In heat recovery AT-5EK	Document TZN	E	1:25	13.06.2016	ROBLITZI
W2	In heat recovery AT-2EK	Document TZN	A2	Original	25.11.2016	MUNDY
K2	Water cool. plate heat exch.	Document TZN	E	1:25	25.11.2016	SCHUBERT
K9	Water cool. bundled-pipe exch.	Document TZN	DSD 3 K2 K9	Released	25.11.2016	
H1	Machine mountings			Status		
C1	Modulating control			Released		

• Center of gravity
 Position marginally dependent on design
 Transport opening ≥ machine width + 100mm

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 Changes must be made in accordance with the latest version of the drawing.

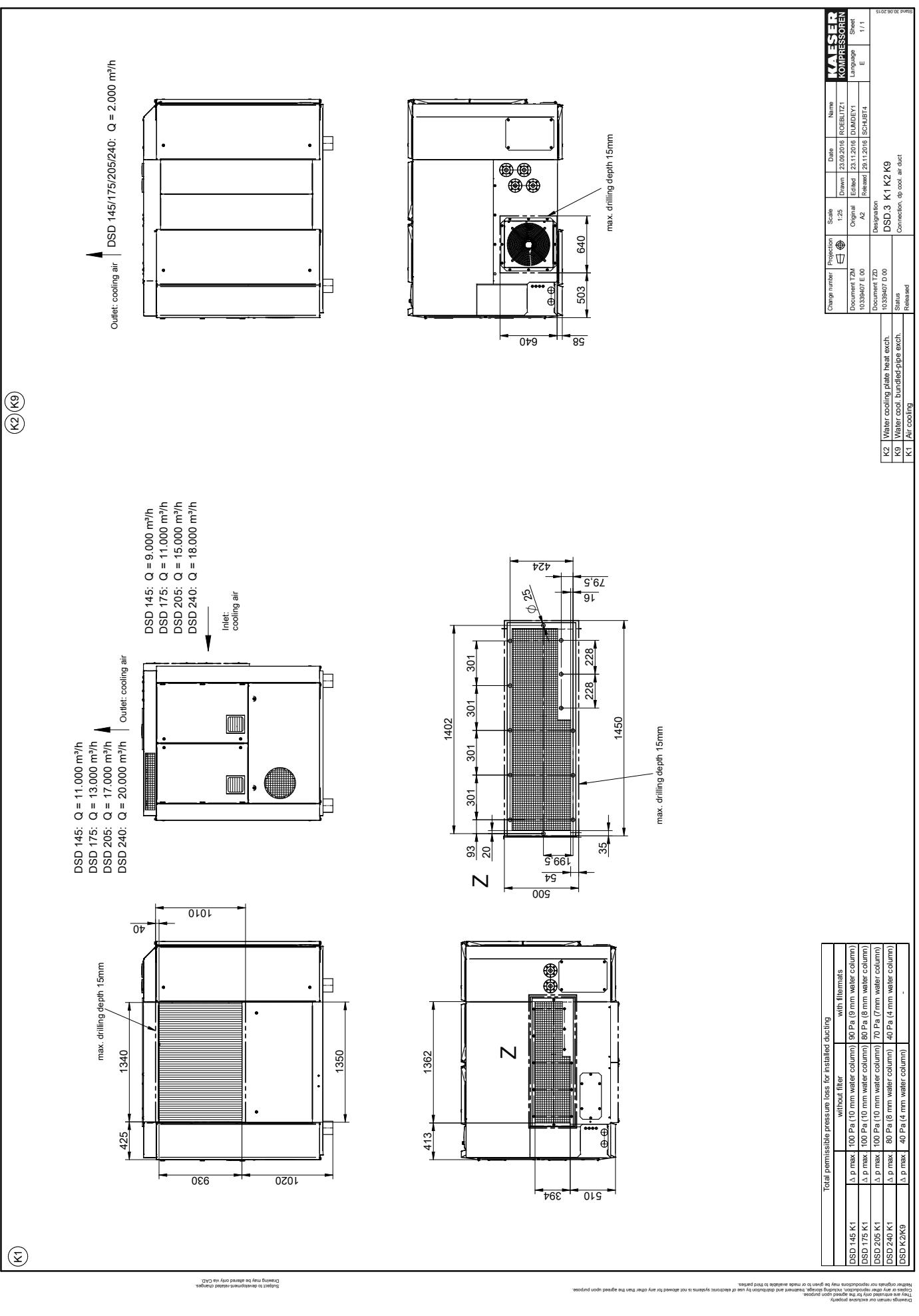
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(K1)

(K2)



Drawing number		Projection	Scale	Date	Name
Document T2M		Front	1:25	23.09.2016	ROBERTZ1
1038407 E 00		Bottom	A2	23.11.2016	DUODIEY1
		Right		Released 29.11.2016	SCHUBT4
		Sheet			1 / 1
		Designation T2D			
1038407 D 00					
K2 Water cooling plate heat exch					
K9 Water cool. bundled-pipe exch.					
K1 Air cooling					

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Dimensions and tolerances are given in millimetres.	Dimensions and tolerances are given in millimetres.
Drawings must be submitted in the agreed upon form.	Drawings must be submitted in the agreed upon form.
Drawings must be submitted in the agreed upon form.	Drawings must be submitted in the agreed upon form.

13.4 Electrical Diagram

1	2	3	4	5	6	7	8
Electrical diagrams							
Compressor series DSD							
Air cooled and Water cooled							
380V±10% 60Hz							
440V±10% 60Hz							
400V±10% 50Hz							
460V±10% 60Hz							
TT/TN power supply with common point grounding							
IT power supply with isolated neutral point							
ATTENTION !!!							
The document gives collective information on power supply voltages and frequencies for all machines.							
The voltage and frequency and local conditions under which any particular machine may be used are given on the nameplate of the machine and in the accompanying service manual.							
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KAESER KOMPRESSOREN							
Cover page Compressor series DSD							
c		Datum	02.09.2016	E		=	
b		Bearbeiter	Sitter			+	
a		Gepflegt	Gegner				
A Andeutung	Datum	Name	Nom	Ersatz durch:	Ersatz für:	Urgung:	page 1 Bl.
							DDSD-03037.00

Lfd. Nr.	Benennung Name	Zeichnungsnummer (Kunde) Drawing No. (customer)	Zeichnungsnummer (Hersteller) Drawing No. (manufacturer)	Blatt Page	Anlagenkennzeichen Unit designation
1	Cover page		DSD-03037.00	1	
2	List of contents		ZDSD-03037.00	1	
3	general instructions		UDSD-03037.00	1	
4	electrical equipment identification		UDSD-03037.00	2	
5	Equipment parts list		UDSD-03037.00	3	
6	Equipment parts list		UDSD-03037.00	4	
7	Equipment parts list		UDSD-03037.00	5	
8	Equipment parts list		UDSD-03037.00	6	
9	Equipment parts list		UDSD-03037.00	7	
10	Circuit diagram		SOSD-03037.00	1	
11	Circuit diagram		SOSD-03037.00	2	
12	Circuit diagram		SOSD-03037.00	3	
13	Circuit diagram		SOSD-03037.00	4	
14	Circuit diagram		SOSD-03037.00	5	
15	Circuit diagram		SOSD-03037.00	6	
16	Circuit diagram		SOSD-03037.00	7	
17	Circuit diagram		SOSD-03037.00	8	
18	Circuit diagram		SOSD-03037.00	9	
19	Circuit diagram		SOSD-03037.00	10	
20	Circuit diagram		SOSD-03037.00	11	
21	Circuit diagram		SOSD-03037.00	12	
22	Circuit diagram		SOSD-03037.00	13	
23	Circuit diagram		SOSD-03037.00	14	
24	Circuit diagram		SOSD-03037.00	15	
25	Circuit diagram		SOSD-03037.00	16	
26	Circuit diagram		SOSD-03037.00	17	
27	Terminal schedule		KDSD-03037.00	1	
28	Component layout		ADSD-03037.00	1	

general instructions

ATTENTION !!!

Install supplies, grounding and shock protection
to local safety regulations.

Do not make or break
live plug-in connectors.

control cabinet wiring for non-designated conductors

with multi-standard stranded conductors

primary circuits:

Control voltage AC ungrounded:

Control voltage AC grounded:

Control voltage DC ungrounded:

Control voltage DC grounded:

external voltage:

measuring circuits:

earth conductor:

black

red 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW

white 1mm² H05V/K, 18AWG UL-Style 1015, CSA-TEW

blue 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW

white/blue 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW

orange 1,5mm² H07V-K, 16AWG UL-Style 1015, CSA-TEW

violet 1mm² H05V-K, 18AWG UL-Style 1015, CSA-TEW

green/yellow H07V-K, UL-Style 1015, CSA-TEW

option C1 = Modulating control

option K1 = Air cooling

option K2/K9 = Water cooling

option W2/W3 = Heat recovery

1	2	3	4	5	6	7	8
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c		Datum	02.09.2016	=	KAESER KOMPRESSOREN	general instructions Compressor series DSD	SC2 MCS	UDSD-03037.00	page 1 7 Bl.
b		Bearbeiter	Stifter	+					

electrical equipment identification general components <ul style="list-style-type: none"> -B25 Overload relay, Compressor motor Fuse -F4 Overload protection switch, Frequency converter - option K1 -F5 Overload protection switch, Fan motor -F11 Overload protection switch, Control transformer -K54 Auxiliary contactor STO - option K1 -M1 Compressor motor M4, -M5 Fan motor -M7, -M8 Control cabinet ventilator -Q1 Mains contactor -Q2 Delta contactor -Q3 Star contactor -Q5 Fan motor contactor -R4 Mains choke, Frequency converter - option K1 -R14 Power supply filter, Frequency converter - option K1 S1 EMERGENCY STOP pushbutton -T4 Frequency converter -T11 Motor Oil cooler - option K1 -T21, -T22 Control transformer Power unit 	Control <ul style="list-style-type: none"> -K20 Main Control System SC2/MCS -X1 Ethernet -X2 IO-Bus -X3 RS485-FC (USS) -X4 Communication module (Bus) -X5 SD card slot -X6 Earth connection -K21 I/O-module SC2/OM-1 internal -X1 IO-Bus, Input -X2 IO-Bus, Output ->X3...X8 digital inputs -X4 Power supply unit, digital outputs ->X5...X9 Relay outputs -X6 Analog input, 4-20mA -X7 Analog input, PT100 external -X11...X13 analog inputs, 4-20mA -X14...X17 analog inputs, PT100 -X18...X29 digital inputs -X30...X32 digital outputs -K22 I/O-module SC2/OM-2 internal -X1 IO-Bus, Input -X2 IO-Bus, Output -X3 analog inputs, PT100 -X4 Power supply unit, digital outputs ->X5...X9 Relay outputs -X6 Analog input, Analog output 4-20mA -X8 digital inputs external -X11...X13 analog inputs, 4-20mA -X15 Analog output 4-20mA -X18...X19 digital inputs -X22...X24 analog inputs, PT100 -X29...X32 digital outputs 	sensors/actuators <ul style="list-style-type: none"> -B1 Pressure transducer, Air main pressure Direction of rotation pressure switch -B2 Oil filter differential pressure switch -B3 Pressure transducer, package internal pressure -B4 Differential pressure transducer Air filter -B7 Temperature probe -B40 Temperature probe Airend discharge temperature -B41 Temperature probe Oil separator tank air discharge -B42 Temperature probe, compressed air outlet temperature -B43 Temperature probe, inlet temperature -B60...B61, -B62 Temperature probe, Compressor motor -K1 Control valve -K5 Valve Modulating control, external control pressure - option C1 -K7 Valve Modulating control, Venting - option C1 -K10 condensate drain, Centrifugal separator -M20 Control valve Oil temperature Control valve Heat recovery - option W2/W3
terminal strips <ul style="list-style-type: none"> -X0 Terminal strip, Power supply -X11 Terminal strip, Control -X12 Terminal strip, Control valve 		KAESER KOMPRESSOREN <div style="display: flex; justify-content: space-between; align-items: center;"> electrical equipment identification Compressor series DSD SC MCS UDSD-03037.00 page 2 </div> <p style="text-align: right;">Ursprung:</p>
c b a C Änderung	Datum Bezeichner Gepruft Gegner	Datum Norm Ersatz durch: Ersatz für:
1 2 3 4 5 6 7 8		

model	performance-related components				page 3 7 Bl.
	DSD 145	DSD 175	DSD 205	DSD 240	
machine power supply	380 V±10 %, 60 Hz	380 V±10 %, 60 Hz	380 V±10 %, 60 Hz	380 V±10 %, 60 Hz	
Motor -M1	75 kW	90 kW	110 kW	132 kW	" + "
Motor -M4 (option K1)	2,5 kW	2,5 kW	2,5 kW	2,5 kW	
-M5 (option K1)	0,75 kW	0,75 kW	0,75 kW	0,75 kW	
-M5 (option K2/K9)	0,3 kW 380 V Δ	0,3 kW 380 V Δ	0,3 kW 380 V Δ	0,3 kW 380 V Δ	
supply terminals -X0:U1/V1/W1	3x 894.385.0 285-195 Handling Stripped length WAGO	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 25-95 mm²	3x 895545.0 285-1185 fig. 2, Sht. 15 45 mm 50-185 mm²	6x 894.385.0 285-195 fig. 2, Sht. 15 45 mm 50-185 mm²	UDSD-03037.00
PE-rail PE-terminal	7.3605.0 01068 Stripped length Torque	7.3605.0 01068 30 mm 15 Nm 16-120 mm² Wöhner	7.3605.0 01068 30 mm 15 Nm 16-120 mm² Wöhner	2x 7.3605.0 01068 30 mm 15 Nm 16-120 mm² Wöhner	SC2 MCS
supply connection	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 12+13, Sht. 17	
Contactor -Q1/-Q2	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	7.3140.01850 3RT1064-6AP36	7.3140.01720 3RT1065-6AP36	
Interference suppressor Siemens	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Contactor -Q3	7.6871.0 3RT1045-1AL20	7.6871.0 3RT1045-1AL20	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	
Interference suppressor	7.3140.00920 3RT1936-1CD00	7.3140.00920 3RT1936-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Auxiliary switch Siemens	7.3140.02200 3RH1921-1DA11	7.3140.02200 3RH1921-1DA11	--	--	
Overload relay -B25	7.6873.00230 3RB2056-1FC2 50-200 A Siemens setting: 99 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 119 A	7.6873.00250 3RB2066-1GC2 55-250 A setting: 137 A	7.6873.00250 3RB2066-1GC2 55-250 A setting: 174 A	
Overload protection switch -F4 (option K1)	7.8742.01200 3RV2021-1KA10 9,0-12,5 A Siemens setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	
Mains choke -R4 (option K1) Block	7.7831.00530 B 1506104 380 V	7.7831.00530 B 1506104 380 V	7.7831.00530 B 1506104 380 V	7.7831.00530 B 1506104 380 V	
Overload protection switch -F5 (option K1)	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,3 A	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,3 A	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,3 A	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,3 A	
Overload protection switch -F5 (option K2/K9)	7.8742.01110 3RV2021-1AA10 1,1-1,6 A setting: 1,3 A	7.8742.01110 3RV2021-1AA10 1,1-1,6 A setting: 1,3 A	7.8742.01110 3RV2021-1AA10 1,1-1,6 A setting: 1,3 A	7.8742.01110 3RV2021-1AA10 1,1-1,6 A setting: 1,3 A	
Auxiliary switch -F5 Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	Ersatz für: Ersatz durch:
Transformer -T11 Block	7.2239.2 B 0001091 400 VA, 380 V/230 V diagram 1	7.2239.2 B 0001091 400 VA, 380 V/230 V diagram 1	7.2238.10060 USTE630 630 VA, 208-600 V/2x 115 V diagram 2	7.2238.10060 USTE630 630 VA, 208-600 V/2x 115 V diagram 2	
Overload protection switch -F11 Siemens	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01140 3RV2021-1DA10 2,2-3,2 A setting: 2,7 A	7.8742.01140 3RV2021-1DA10 2,2-3,2 A setting: 2,7 A	
connection -W11	1x70 mm² black 500 V, 180°C	1x95 mm² black 500 V, 180°C	1x120 mm² black 500 V, 180°C	1x70 mm² black 500 V, 180°C	
connection -W13	1x35 mm² black 500 V, 180°C	1x35 mm² black 500 V, 180°C	1x70 mm² black 500 V, 180°C	1x70 mm² black 500 V, 180°C	
connection -W14	1x25 mm² black 500 V, 180°C	1x25 mm² black 500 V, 180°C	1x50 mm² black 500 V, 180°C	1x50 mm² black 500 V, 180°C	
connection -W15	7.3140.00940 3RT1946-4BA31	7.3140.00940 3RT1946-4BA31	7.3140.01800 3RT1956-4BA31	7.3140.01800 3RT1956-4BA31	
motor cable -W19	1x35 mm² 500 V, 90°C	1x35 mm² 500 V, 90°C	1x70 mm² 500 V, 90°C	1x70 mm² 500 V, 90°C	

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Equipment parts list
Compressor series DSD

model	performance-related components				page 4 7 Bl.
	DSD 145	DSD 175	DSD 205	DSD 240	
machine power supply	400 V±10 %, 50 Hz	400 V±10 %, 50 Hz	400 V±10 %, 50 Hz	400 V±10 %, 50 Hz	
Motor -M1	75 kW	90 kW	110 kW	132 kW	" +
Motor -M4 (option K1)	2,2 kW	2,2 kW	2,2 kW	2,2 kW	
-M5 (option K1)	0,75 kW	0,75 kW	1,5 kW	1,5 kW	
-M5 (option K2/K9)	0,3 kW 400 V Δ	0,3 kW 400 V Δ	0,3 kW 400 V Δ	0,3 kW 400 V Δ	
supply terminals -X0:U1/V1/W1	3x 894385.0 285-195 Handling Stripped length WAGO	3x 894385.0 285-195 fig. 2, Sht. 15 35 mm 25-95 mm²	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 45 mm 50-185 mm²	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 45 mm 50-185 mm²	
PE-rail PE-terminal	7.3605.0 01068	7.3605.0 01068	7.6455.0 SV 3454.500	7.6455.0 SV 3454.500	
	Stripped length Torque	30 mm 15 Nm 16-120 mm² Wöhner	30 mm 15 Nm 16-120 mm² Wöhner	35 mm 15 Nm 70-185 mm² Rittal	
supply connection	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	
Contactor -Q1/-Q2	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	7.3140.01730 3RT1056-6AP36	7.3140.01850 3RT1064-6AP36	
Interference suppressor Siemens	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Contactor -Q3	7.8740.00130 3RT2038-1AL20	7.6871.0 3RT1045-1AL20	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	
Interference suppressor	7.8740.05120 3RT2936-1CD00	7.3140.00920 3RT1936-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Auxiliary switch Siemens	---	7.3140.02200 3RH1921-1DA11	---	---	
Overload relay -B25	7.6873.00230 3RB2056-1FC2 50-200 A Siemens setting: 93 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 109 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 137 A	7.6873.00250 3RB2066-1GC2 55-250 A setting: 162 A	
Overload protection switch -F4 (option K1)	7.8742.01200 3RV2021-1KA10 9,0-12,5 A Siemens setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	
Mains choke -R4 (option K1) Block	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	
Overload protection switch -F5 (option K1)	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,0 A	7.8742.01130 3RV2021-1CA10 1,8-2,5 A setting: 2,0 A	7.8742.01150 3RV2021-1EA10 2,8-4,0 A setting: 3,3 A	7.8742.01150 3RV2021-1EA10 2,8-4,0 A setting: 3,3 A	
Overload protection switch -F5 (option K2/K9)	7.8742.01100 3RV2021-0KA10 0,9-1,25 A setting: 1,1 A	7.8742.01100 3RV2021-0KA10 0,9-1,25 A setting: 1,1 A	7.8742.01100 3RV2021-0KA10 0,9-1,25 A setting: 1,1 A	7.8742.01100 3RV2021-0KA10 0,9-1,25 A setting: 1,1 A	
Auxiliary switch -F5 Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	
Transformer -T11 Block	7.2239.2 B 0001091 400 VA, 400 V/230 V diagram 1	7.2239.2 B 0001091 400 VA, 400 V/230 V diagram 1	7.2239.2 B 0001091 400 VA, 400 V/230 V diagram 1	7.2238.10060 USTE630 630 VA, 208-600 V/2x 115 V diagram 2	
Overload protection switch -F11 Siemens	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01140 3RV2021-1DA10 2,2-3,2 A setting: 2,7 A	
connection -W11	1x70 mm² black 500 V, 180°C	1x95 mm² black 500 V, 180°C	1x120 mm² black 500 V, 180°C	1x150 mm² black 500 V, 180°C	
connection -W13	1x35 mm² black 500 V, 180°C	1x35 mm² black 500 V, 180°C	1x50 mm² black 500 V, 180°C	1x70 mm² black 500 V, 180°C	
connection -W14	1x25 mm² black 500 V, 180°C	1x25 mm² black 500 V, 180°C	1x25 mm² black 500 V, 180°C	1x50 mm² black 500 V, 180°C	
connection -W15	7.3140.01170 3RT1936-4BA31	7.3140.00940 3RT1946-4BA31	7.3140.01800 3RT1956-4BA31	7.3140.01800 3RT1956-4BA31	
motor cable -W19	1x35 mm² 500 V, 90°C	1x35 mm² 500 V, 90°C	1x50 mm² 500 V, 90°C	1x70 mm² 500 V, 90°C	

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Equipment parts list
Compressor series DSD

Ursprung:

c	Datum	02.09.2016
b	Bearbeiter	Sitter
a	Gepflegt	Cegner
C Änderung	Datum	Name

model	performance-related components				page 5 7 Bl.
	DSD 145	DSD 175	DSD 205	DSD 240	
machine power supply	440 V±10 %, 60 Hz	440 V±10 %, 60 Hz	440 V±10 %, 60 Hz	440 V±10 %, 60 Hz	" + "
Motor -M1	75 kW	90 kW	110 kW	132 kW	
Motor -M4 (option K1)	2,2 kW	2,2 kW	2,2 kW	2,2 kW	
-M5 (option K1)	0,75 kW	0,75 kW	0,75 kW	0,75 kW	
-M5 (option K2/K9)	0,3 kW	0,3 kW	0,3 kW	0,3 kW	
supply terminals -X0:U1/V1/W1	3x 894385.0 285-195 Handling Stripped length WAGO	3x 894385.0 285-195 fig. 2, Sht. 15 35 mm 25-95 mm ²	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 45 mm 50-185 mm ²	3x 895545.0 285-1185 fig. 2, Sht. 15 45 mm 50-185 mm ²	
PE-rail PE-terminal	7.3605.0 01068 Stripped length Torque	7.3605.0 01068 30 mm 15 Nm 16-120 mm ² Wöhner	7.3605.0 01068 30 mm 15 Nm 16-120 mm ² Wöhner	7.6455.0 SV 3454.500 35 mm 15 Nm 70-185 mm ² Rittal	
supply connection	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	
Contactor -Q1/-Q2	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	7.3140.01730 3RT1056-6AP36	7.3140.01730 3RT1056-6AP36	
Interference suppressor Siemens	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Contactor -Q3	7.8740.00100 3RT2035-1AL20	7.6871.0 3RT2035-1AL20	7.3140.01910 3RT1045-1AP36	7.3140.01910 3RT1054-1AP36	
Interference suppressor	7.8740.05120 3RT2936-1CD00	7.3140.00920 3RT1936-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Auxiliary switch Siemens	---	7.3140.02200 3RH1921-1DA11	---	---	
Overload relay -B25	7.6873.00230 3RB2056-1FC2 50-200 A Siemens setting: 87 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 104 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 121 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 148 A	
Overload protection switch -F4 (option K1)	7.8742.01200 3RV2021-1KA10 9,0-12,5 A Siemens setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	
Mains choke -R4 (option K1) Block	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	7.7831.00590 B 1511128 400-440 V	
Overload protection switch -F5 (option K1)	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 2,0 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 2,0 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 2,0 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 2,0 A	
Overload protection switch -F5 (option K2/K9)	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	
Auxiliary switch -F5 Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	Ersatz für: Umrüfung:
Transformer -T11 Block	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	
Overload protection switch -F11 Siemens	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	Ersatz durch: Diagramm 2
connection -W11	1x70 mm ² black 500 V, 180°C	1x95 mm ² black 500 V, 180°C	1x120 mm ² black 500 V, 180°C	1x150 mm ² black 500 V, 180°C	
connection -W13	1x25 mm ² black 500 V, 180°C	1x35 mm ² black 500 V, 180°C	1x50 mm ² black 500 V, 180°C	1x70 mm ² black 500 V, 180°C	
connection -W14	1x25 mm ² black 500 V, 180°C	1x25 mm ² black 500 V, 180°C	1x25 mm ² black 500 V, 180°C	1x25 mm ² black 500 V, 180°C	
connection -W15	7.3140.01170 3RT1936-4BA31	7.3140.00940 3RT1946-4BA31	7.3140.01800 3RT1956-4BA31	7.3140.01800 3RT1956-4BA31	
motor cable -W19	1x25 mm ² 500 V, 90°C	1x35 mm ² 500 V, 90°C	1x50 mm ² 500 V, 90°C	1x70 mm ² 500 V, 90°C	

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Equipment parts list
Compressor series DSD

model	performance-related components				page 6 7 Bl.
	DSD 145	DSD 175	DSD 205	DSD 240	
machine power supply	460 V±10 %, 60 Hz	460 V±10 %, 60 Hz	460 V±10 %, 60 Hz	460 V±10 %, 60 Hz	
Motor -M1	75 kW	90 kW	110 kW	132 kW	" +
Motor -M4 (option K1)	2,2 kW	2,2 kW	2,2 kW	2,2 kW	
-M5 (option K1)	0,75 kW	0,75 kW	0,75 kW	0,75 kW	
-M5 (option K2/K9)	0,3 kW	0,3 kW	0,3 kW	0,3 kW	
supply terminals -X0:U1/V1/W1	3x 894385.0 285-195 Handling Stripped length WAGO	3x 894385.0 285-195 fig. 2, Sht. 15 35 mm 25-95 mm ²	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 45 mm 50-185 mm ²	3x 895545.0 285-1185 fig. 2, Sht. 15 35 mm 45 mm 50-185 mm ²	
PE-rail PE-terminal	7.3605.0 01068	7.3605.0 01068	7.3605.0 01068	7.6455.0 SV 3454.500	
	Stripped length Torque	30 mm 15 Nm 16-120 mm ² Wöhner	30 mm 15 Nm 16-120 mm ² Wöhner	30 mm 15 Nm 16-120 mm ² Wöhner	35 mm 15 Nm 70-185 mm ² Rittal
supply connection	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	fig. 10+11, Sht. 16	
Contactor -Q1/-Q2	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	7.3140.01850 3RT1064-6AP36	7.3140.01850 3RT1064-6AP36	
Interference suppressor Siemens	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Contactor -Q3	7.8740.00100 3RT2035-1AL20	7.6871.0 3RT1045-1AL20	7.3140.01910 3RT1054-1AP36	7.3140.01910 3RT1054-1AP36	
Interference suppressor	7.8740.05120 3RT2936-1CD00	7.3140.00920 3RT1936-1CD00	7.3140.01490 3RT1956-1CD00	7.3140.01490 3RT1956-1CD00	
Auxiliary switch Siemens	---	7.3140.02200 3RH1921-1DA11	---	---	
Overload relay -B25	7.6873.00230 3RB2056-1FC2 50-200 A Siemens setting: 83 A	7.6873.00230 3RB2056-1FC2 50-200 A setting: 100 A	7.6873.00250 3RB2066-1GC2 55-250 A setting: 119 A	7.6873.00250 3RB2066-1GC2 55-250 A setting: 143 A	
Overload protection switch -F4 (option K1)	7.8742.01200 3RV2021-1KA10 9,0-12,5 A Siemens setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	7.8742.01200 3RV2021-1KA10 9,0-12,5 A setting: 11 A	
Mains choke -R4 (option K1) Block	7.7831.00600 B 1511129 460 V	7.7831.00600 B 1511129 460 V	7.7831.00600 B 1511129 460 V	7.7831.00600 B 1511129 460 V	
Overload protection switch -F5 (option K1)	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,9 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,9 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,9 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,9 A	
Overload protection switch -F5 (option K2/K9)	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	7.8742.01080 3RV2021-0HA10 0,55-0,8 A setting: 0,7 A	
Auxiliary switch -F5 Siemens	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	7.8742.05000 3RV2901-1E	
Transformer -T11 Block	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	7.2239.20070 USTE400 400 VA, 208-600 V/2x 115 V diagram 2	7.2238.10060 USTE630 630 VA, 208-600 V/2x 115 V diagram 2	7.2238.10060 USTE630 630 VA, 208-600 V/2x 115 V diagram 2	
Overload protection switch -F11 Siemens	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	7.8742.01120 3RV2021-1BA10 1,4-2,0 A setting: 1,7 A	
connection -W11	1x70 mm ² black 500 V, 180°C	1x70 mm ² black 500 V, 180°C	1x95 mm ² black 500 V, 180°C	1x120 mm ² black 500 V, 180°C	
connection -W13	1x25 mm ² black 500 V, 180°C	1x35 mm ² black 500 V, 180°C	1x70 mm ² black 500 V, 180°C	1x70 mm ² black 500 V, 180°C	
connection -W14	1x25 mm ² black 500 V, 180°C	1x25 mm ² black 500 V, 180°C	1x50 mm ² black 500 V, 180°C	1x50 mm ² black 500 V, 180°C	
connection -W15	7.3140.01170 3RT1936-4BA31	7.3140.00940 3RT1946-4BA31	7.3140.01800 3RT1956-4BA31	7.3140.01800 3RT1956-4BA31	
motor cable -W19	1x25 mm ² 500 V, 90°C	1x35 mm ² 500 V, 90°C	1x50 mm ² 500 V, 90°C	1x70 mm ² 500 V, 90°C	

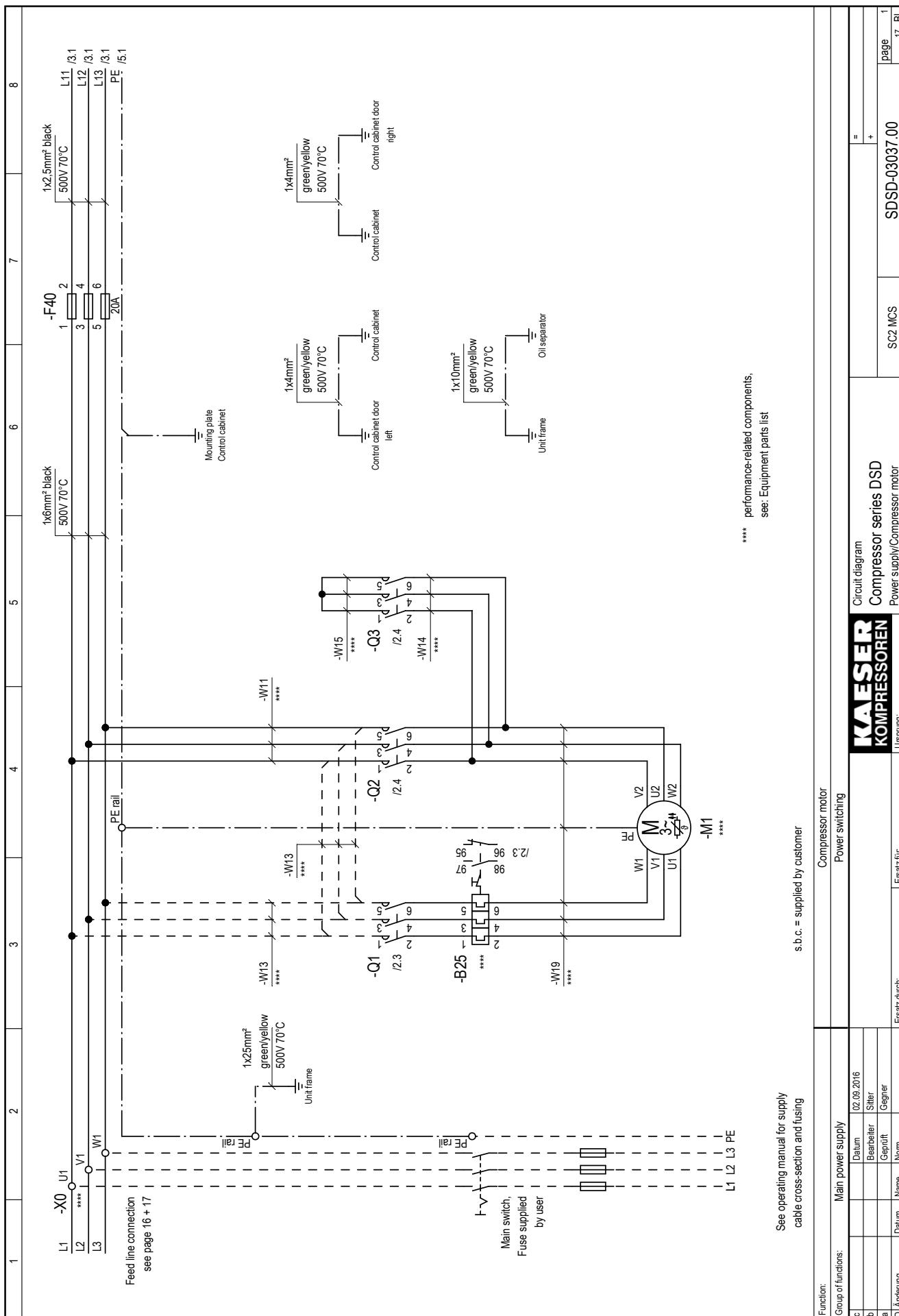
KAESER
KOMPRESSOREN

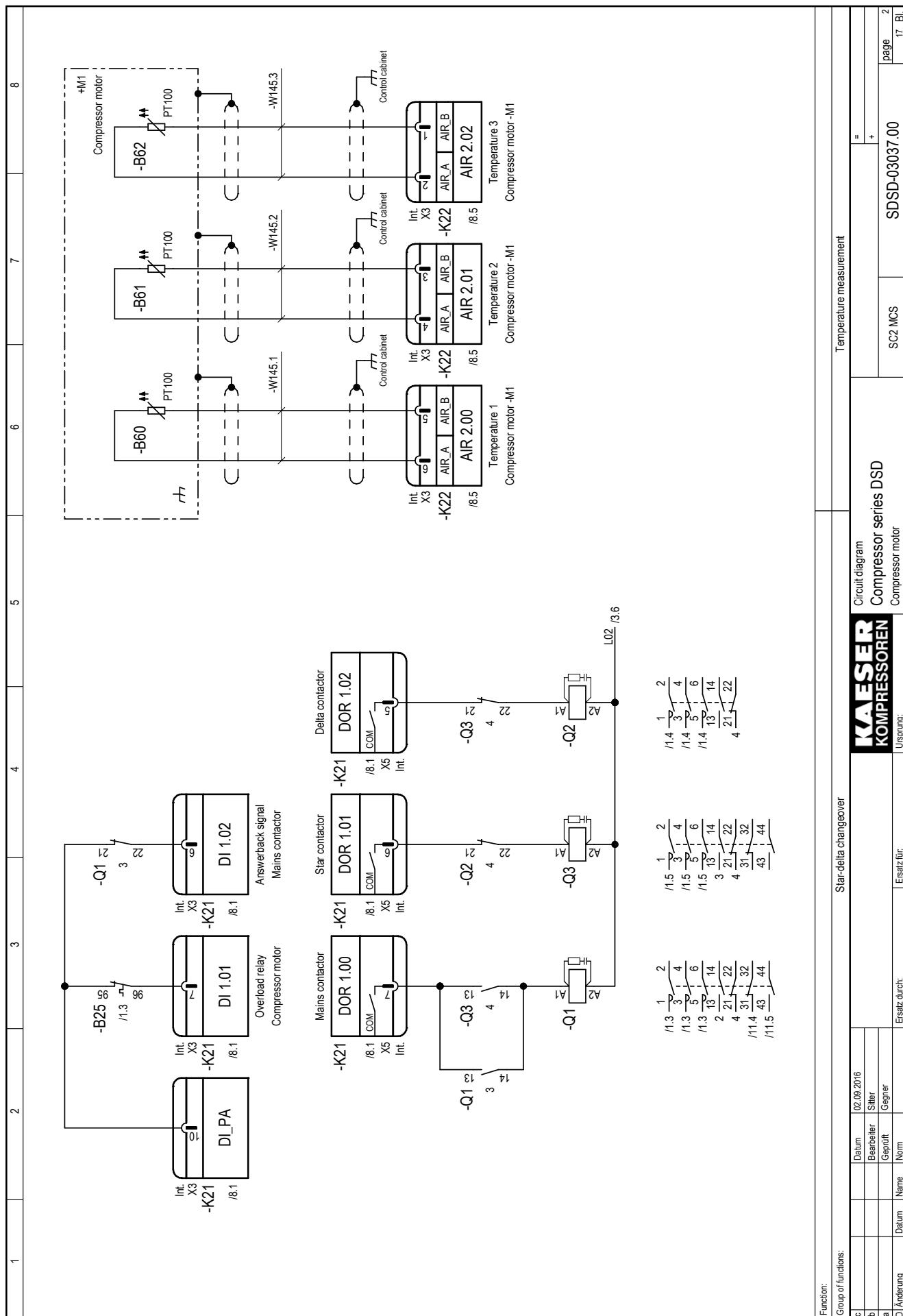
Equipment parts list
Compressor series DSD

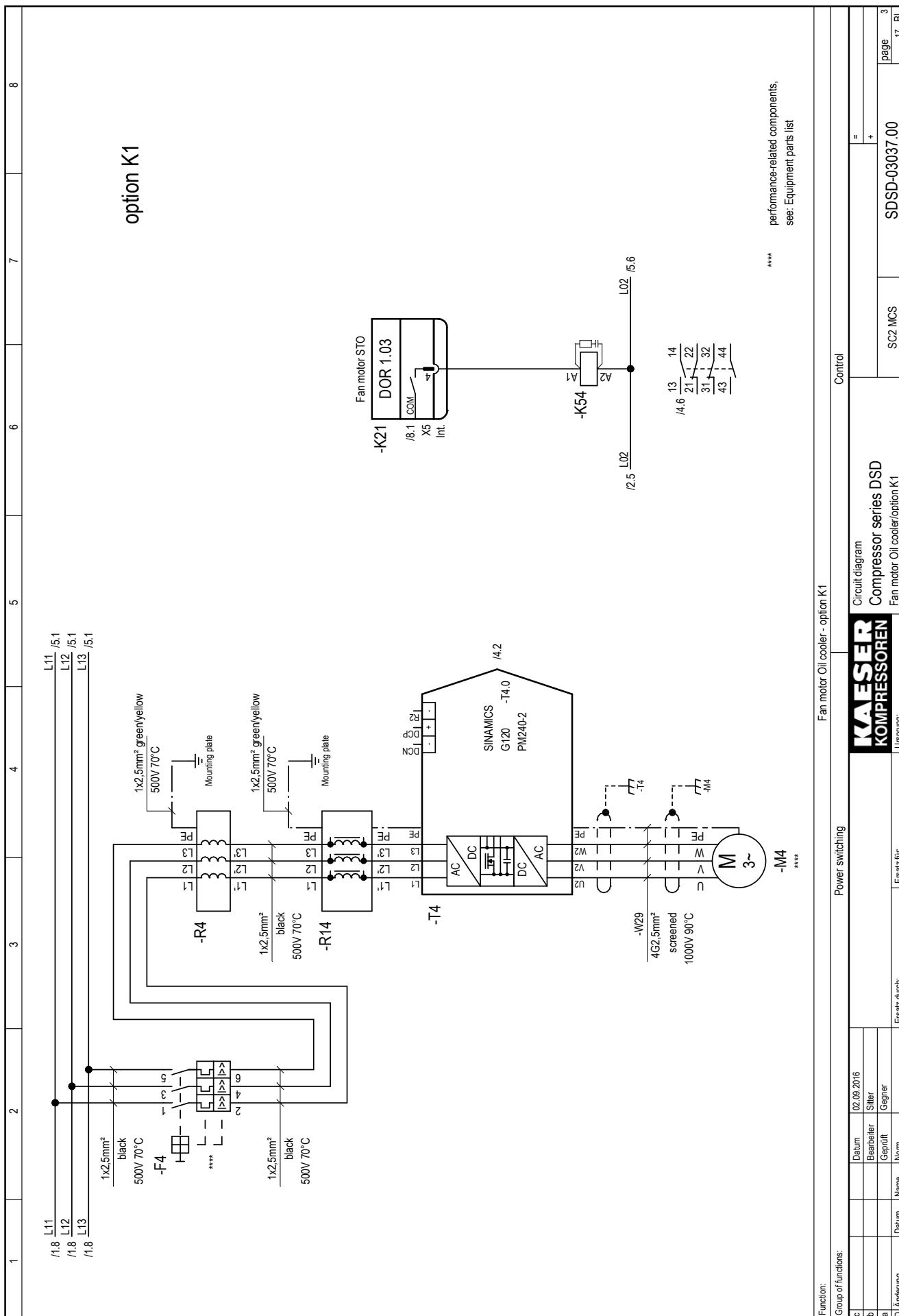
Ursprung:

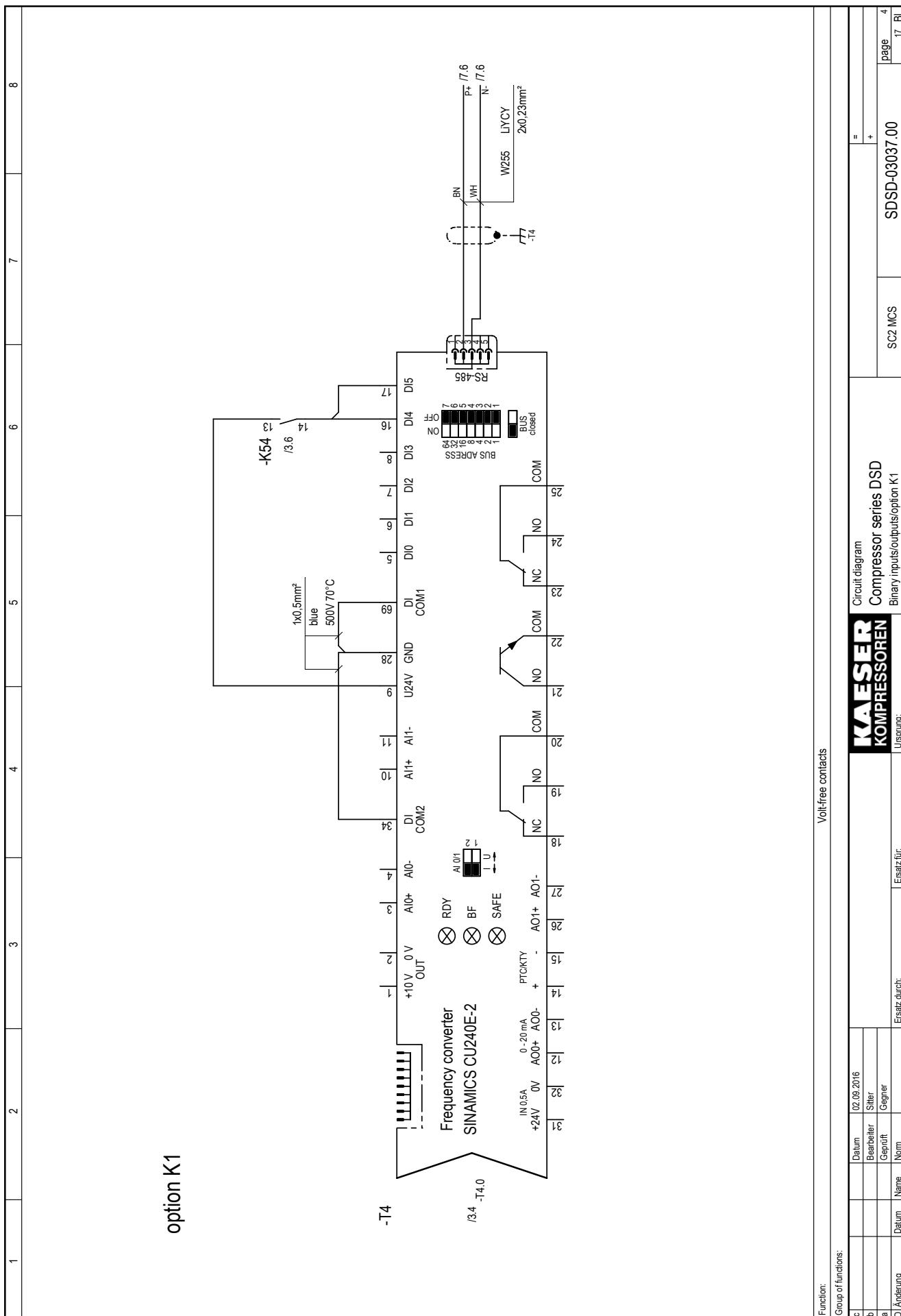
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b	Bearbeiter	Sitter
a	Gepflegt	Cegner
C Änderung	Datum	Name
		Ersatz durch:

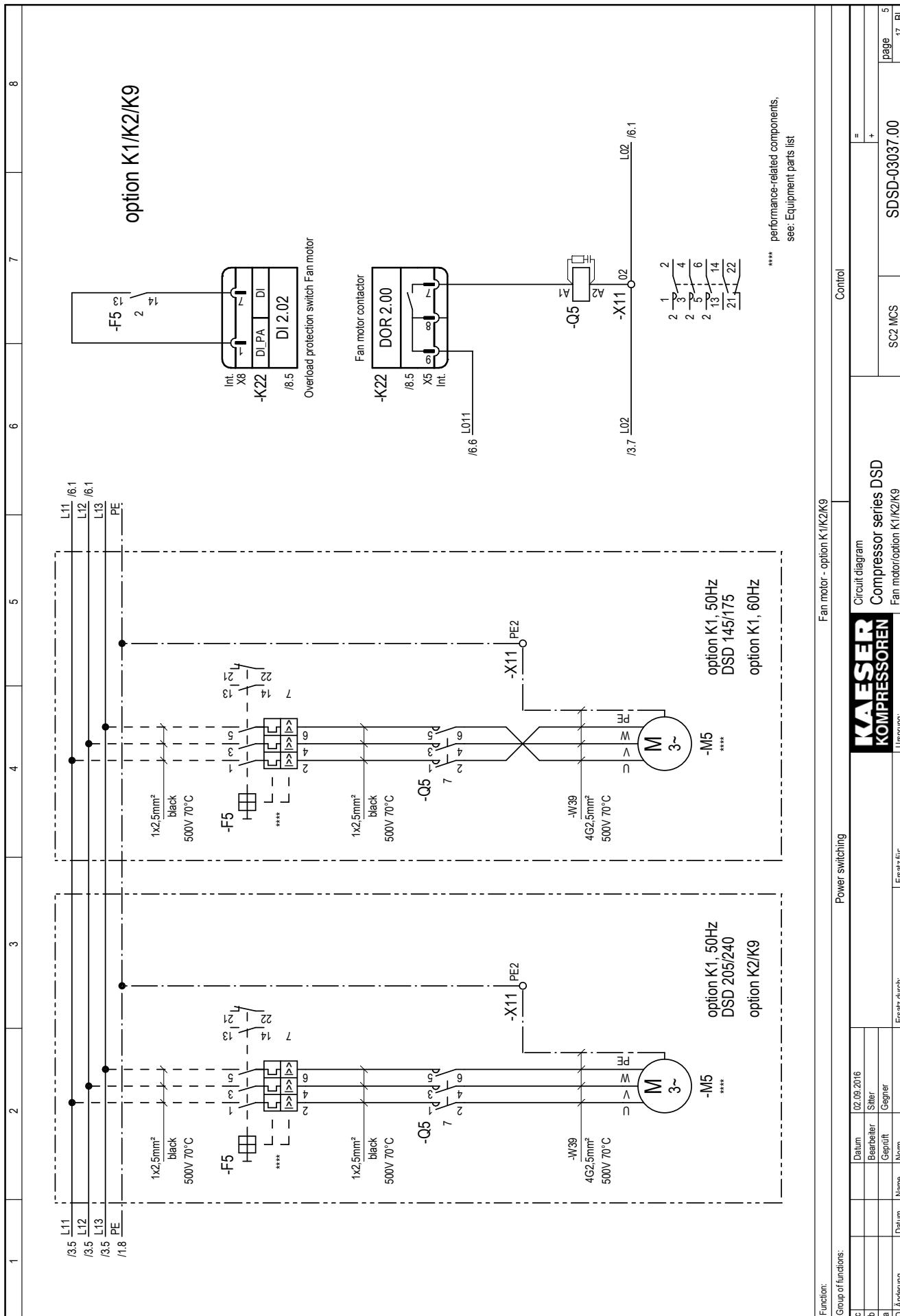
model	Common parts DSD.3			
machine power supply	380 V±10 %, 60 Hz 400 V±10 %, 50 Hz 440 V±10 %, 60 Hz 460 V±10 %, 60 Hz			
Fuse socket	-F40	7.3173.01080 10x38 3-pol 31113		
	Wöhner			
Fuse	-F40	3x 7.3173.00910 10x38 gG 20 A		
Power supply filter	-R14	7.8832.00010		
	(option K1)	FS33891-16-07		
	Schaffner	380-480 V, 16 A		
Frequency converter	-T4	7.8833.00050		
	(option K1)	6SL3210-1PE16-1UL1 2,2 kW, 380-480 V		
Control Unit		7.7830.00710 6SL3244-0BB12-1BA1 FW4.7		
	Siemens			
Auxiliary contactor	-K54	7.8740.04010		
	(option K1)	3RH2122-1AP00		
Interference suppressor		7.8740.05100		
	Siemens	3RT2916-1CD00		
Contactor	-Q5	7.8740.00040 3RT2023-1AL20		
Interference suppressor		7.8740.05110 3RT2926-1CD00		
Power supply	-T21/T22	7.7605P0 Prodrive PSDC24/2.5		
Compressor control	-K20	7.7601.0 Prodrive SIGMA CONTROL 2 MCS		
IO-module	-K21	7.7602.1 Prodrive SIGMA CONTROL 2 IOM-1		
IO-module	-K22	7.7603.1 Prodrive SIGMA CONTROL 2 IOM-2		
EMERGENCY STOP pushbutton	-S1	7.3217.0 QRUV		
Switching element		7.3218.0 Schlegel MH TOO		
Control cabinet ventilator	-M71/M8	7.2751.00011 LV300 / grey		
Outlet filter		7.2752.00010 Rübsamen&Herr GV300 / grey		
Terminal strip	-X11	7.7114.00100 99.724.5333.8		
Plug connection	-X11:7-8	7.3149.00940 Wieland Z7.280.6227.0		
Terminal strip	-X12	7.7114.00130 Wieland 99.739.5333.8		
-X11/-X12	Handling	fig. 1, Sht. 15		
				Equipment parts list Compressor series DSD
				KAESER KOMPRESSOREN
				Umrübung:
c		Datum	02.09.2016	
b		Bearbeiter	Sitter	
a		Gepufft	Gegner	
c	Andeutung	Datum	Name	Ersatz durch:
b			Nom.	
a				
c				page 7 Bl.





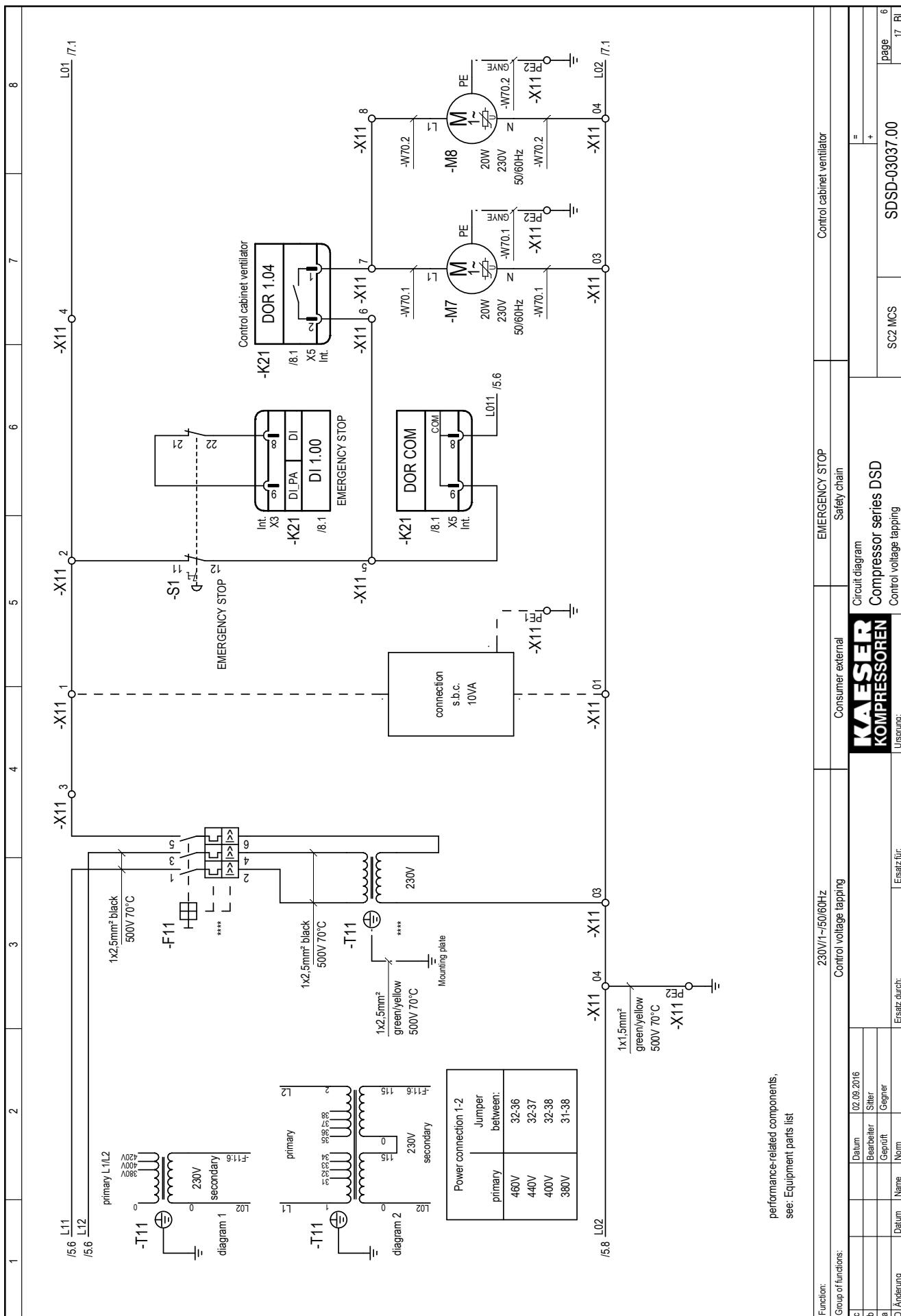


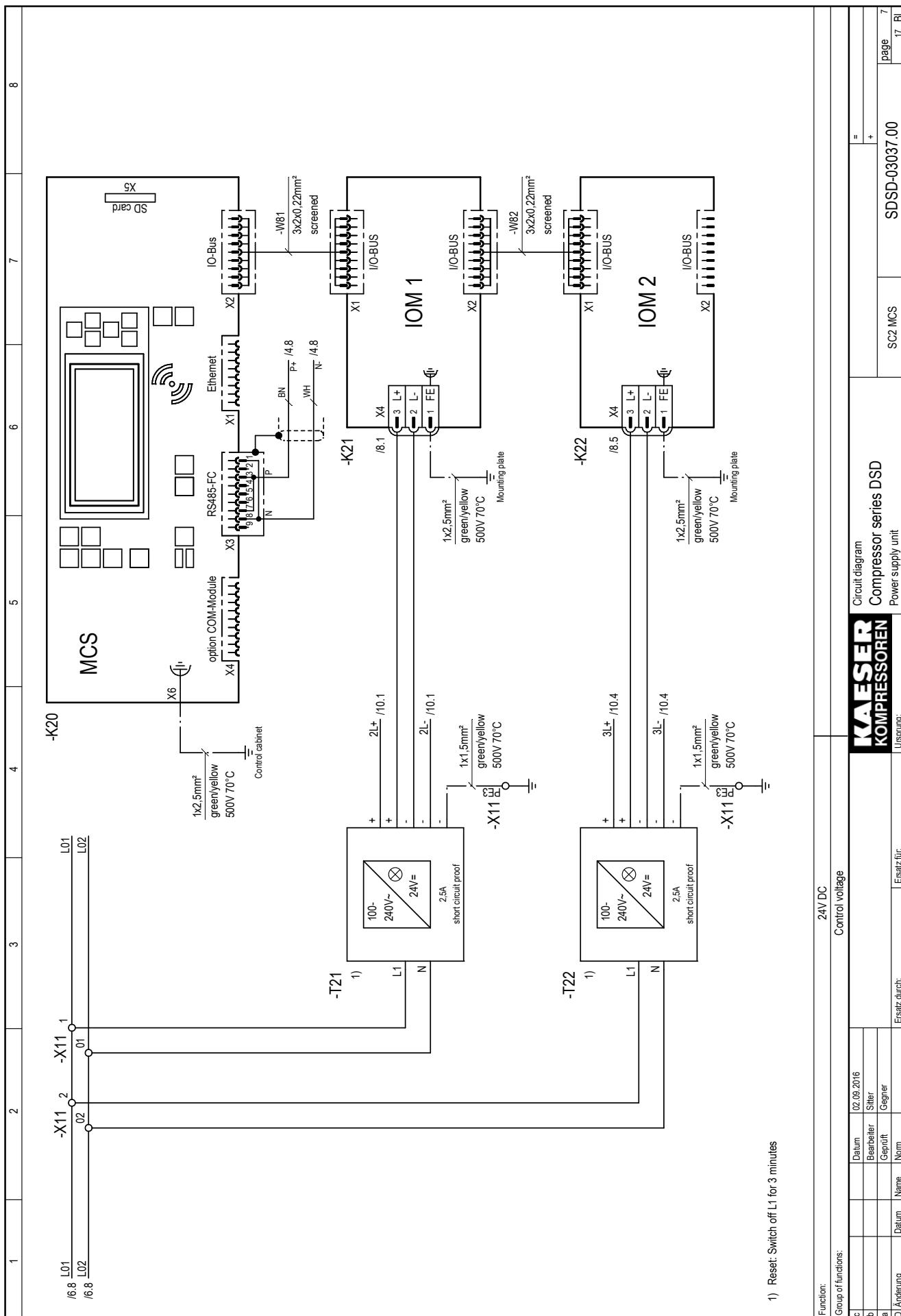




Function:
Group of functions:
c
b
a
d Änderung

Power switching		Control	
KAESER KOMPRESSOREN		Circuit diagram Compressor series DSD Fan motor/option K1/K2/K9 Ursprung:	
SC2 MCS	SDSD-03037.00	SC2 MCS	SDSD-03037.00
			page 5 17 Bl.





1) Reset: Switch off L1 for 3 minutes

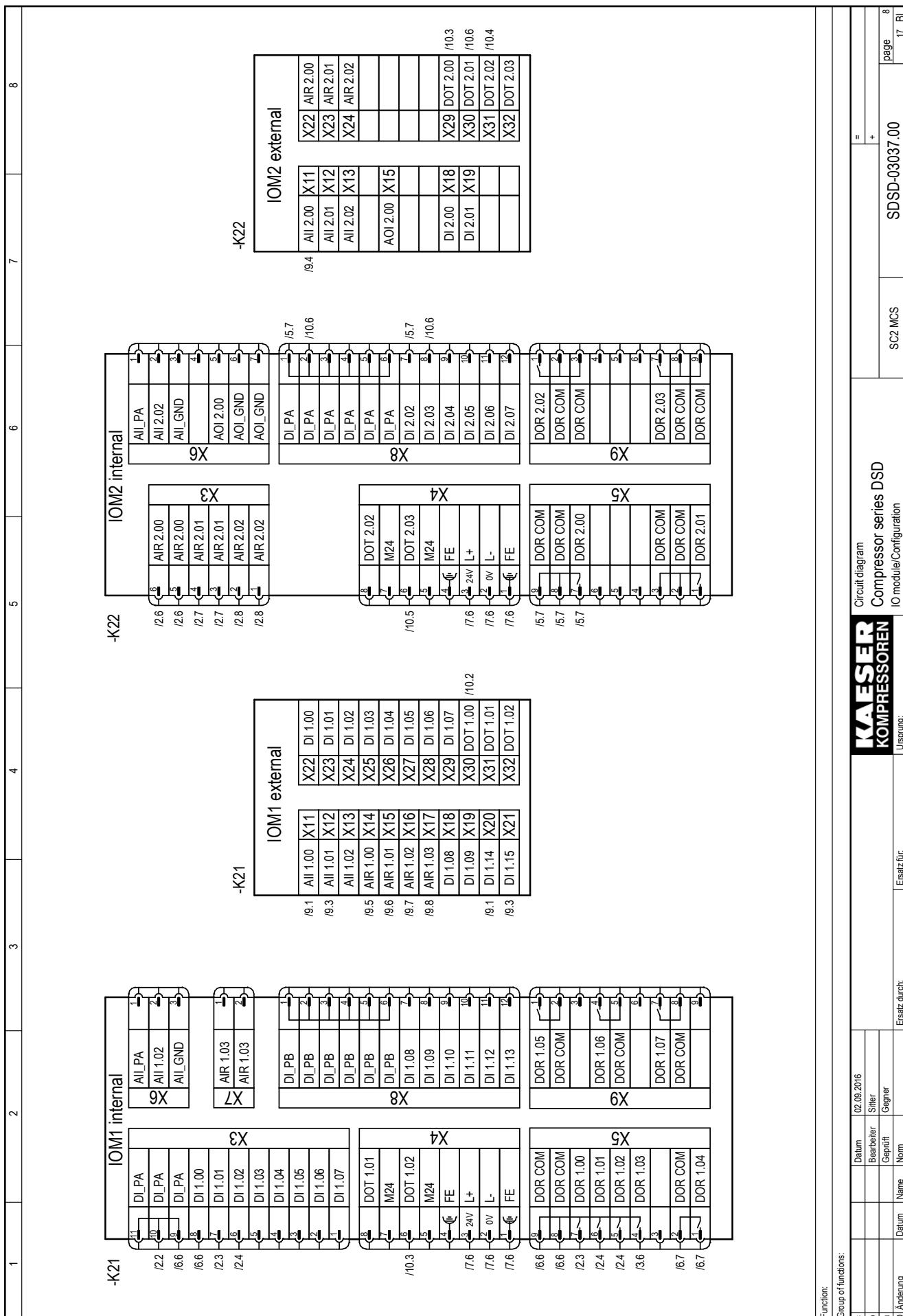
Function:		24V DC		Control voltage			
Group of functions:							
c		Bearbeiter	Datum	02.09.2016			=
b		Gepflegt					+
a		Gegner					
Änderung		Datum	Name	Ersetzt durch:	Ersatz für:	Page	
D			Norm			17	Bl.

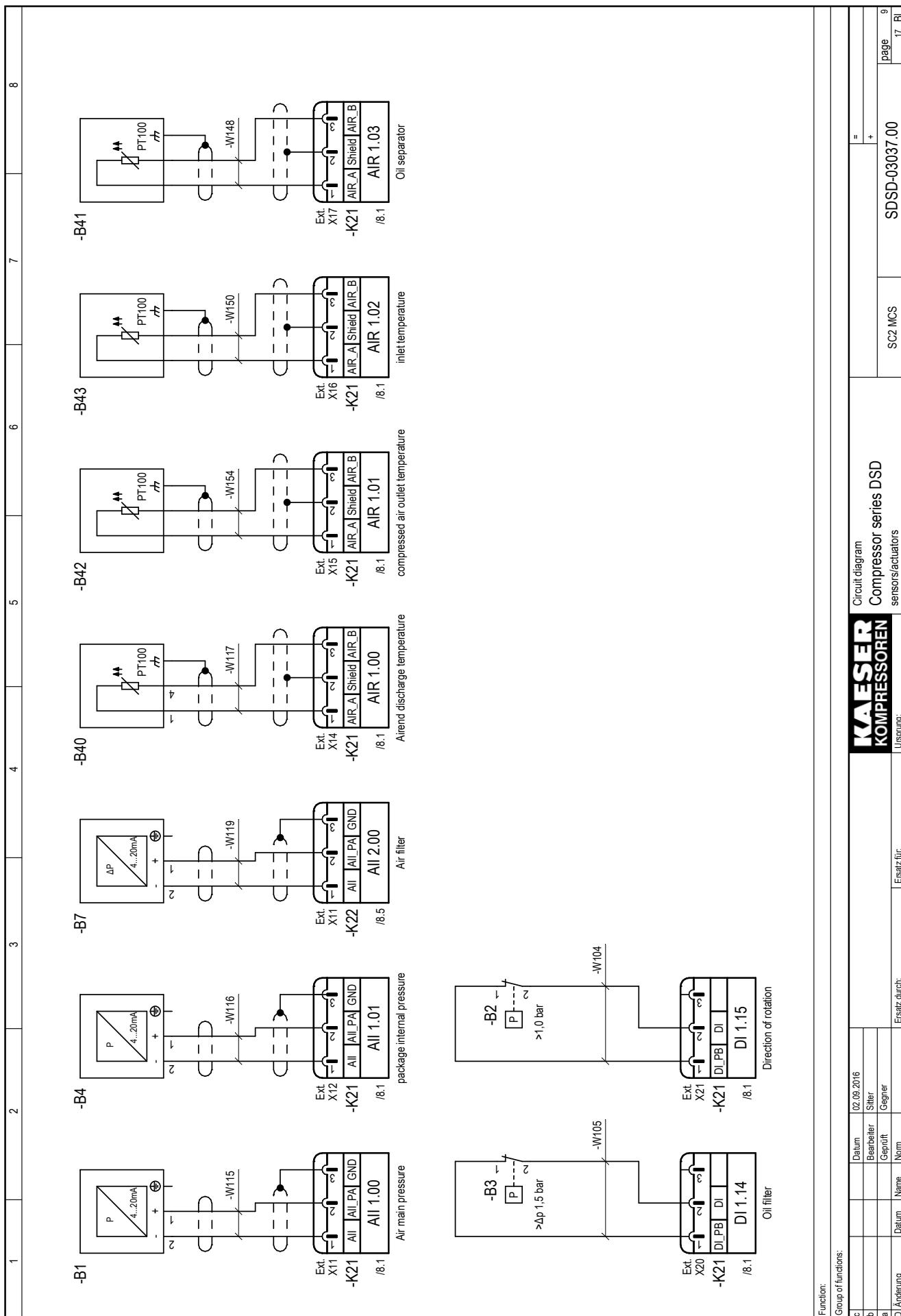
KAESER
KOMPRESSOREN

 Circuit diagram
 Compressor series DSD
 Power supply unit
 Ursprung:
 SC2 MCS

SDDSD-03037.00

page 7



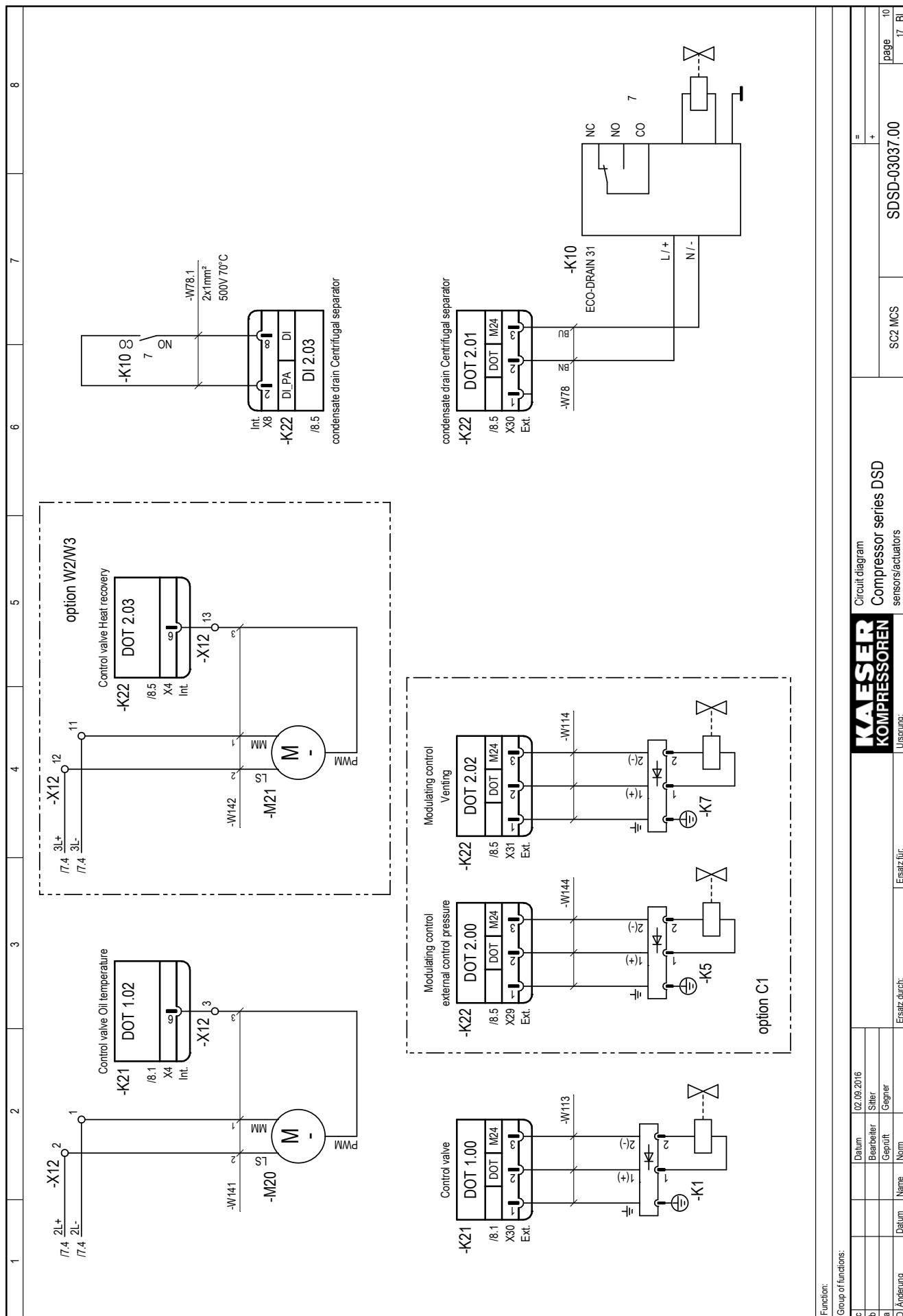


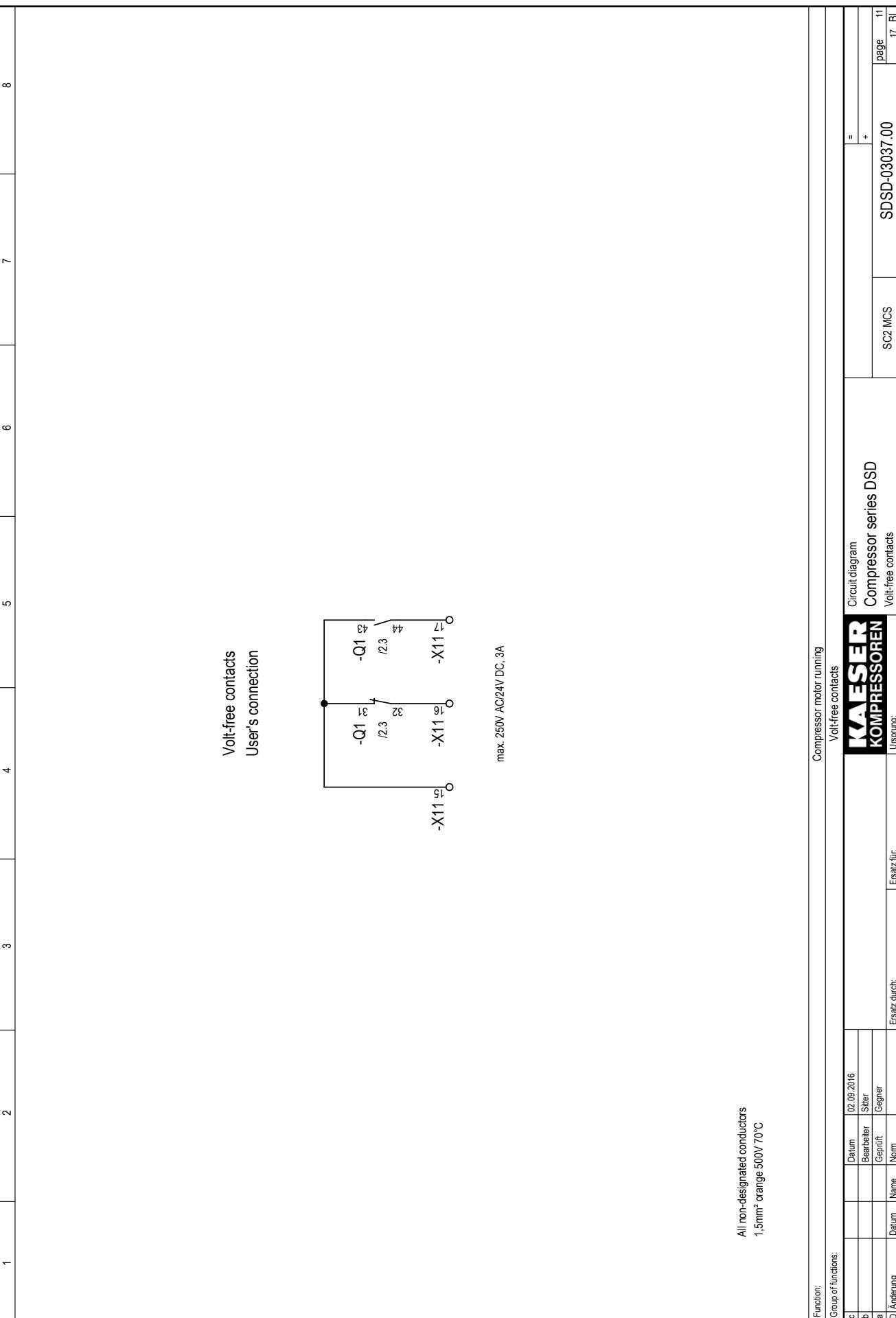
Group of functions:		KAESER KOMPRESSOREN	
c		Datum	02.09.2016
b		Bearbeiter	Sitter
a		Gepflegt	Gegner
d Änderung	Datum	Name	Ersatz für: Norm
			Ersatz durch:

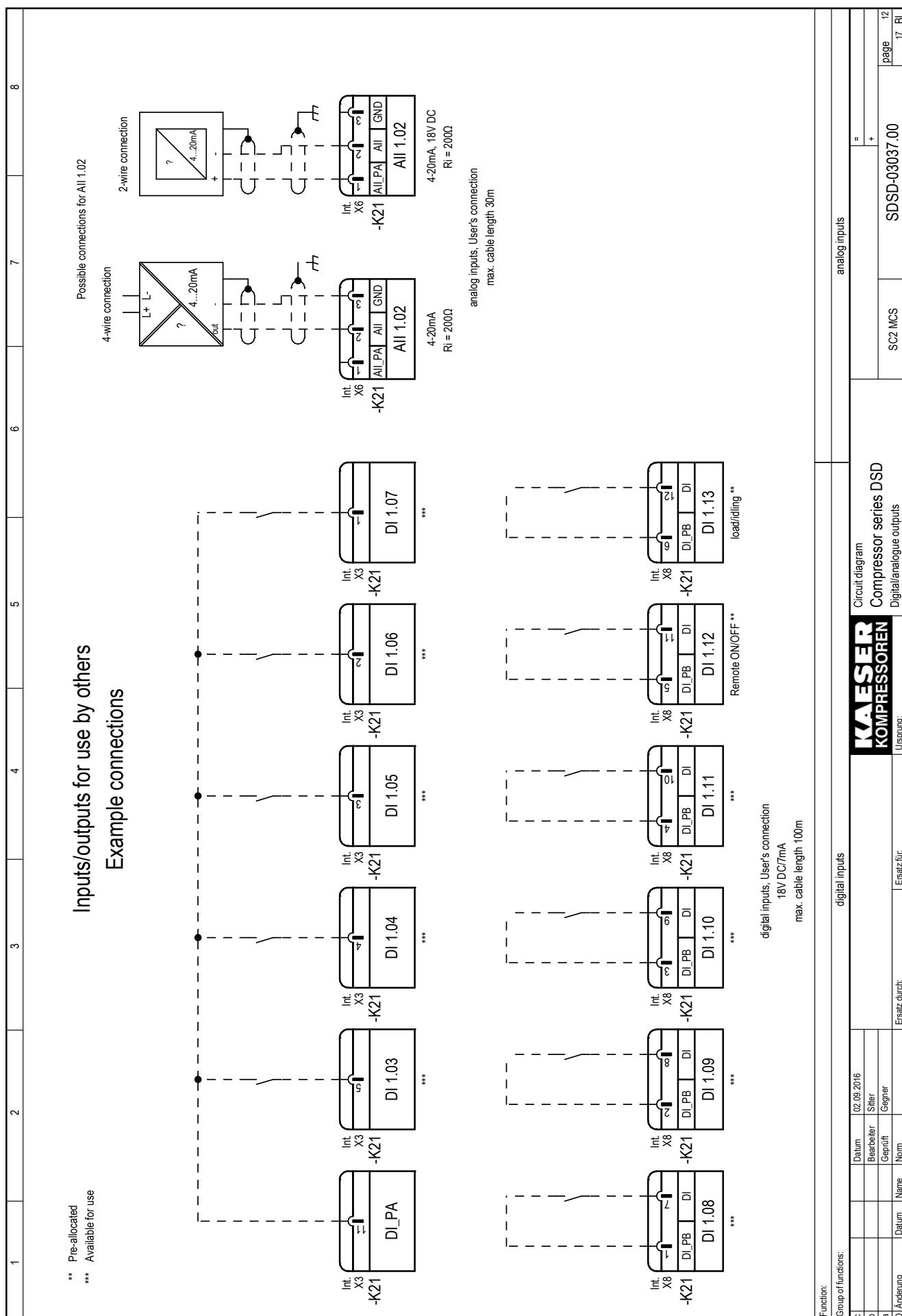
 SDDSD-03037.00
 SC2 MCS

page 9

17 Bl.



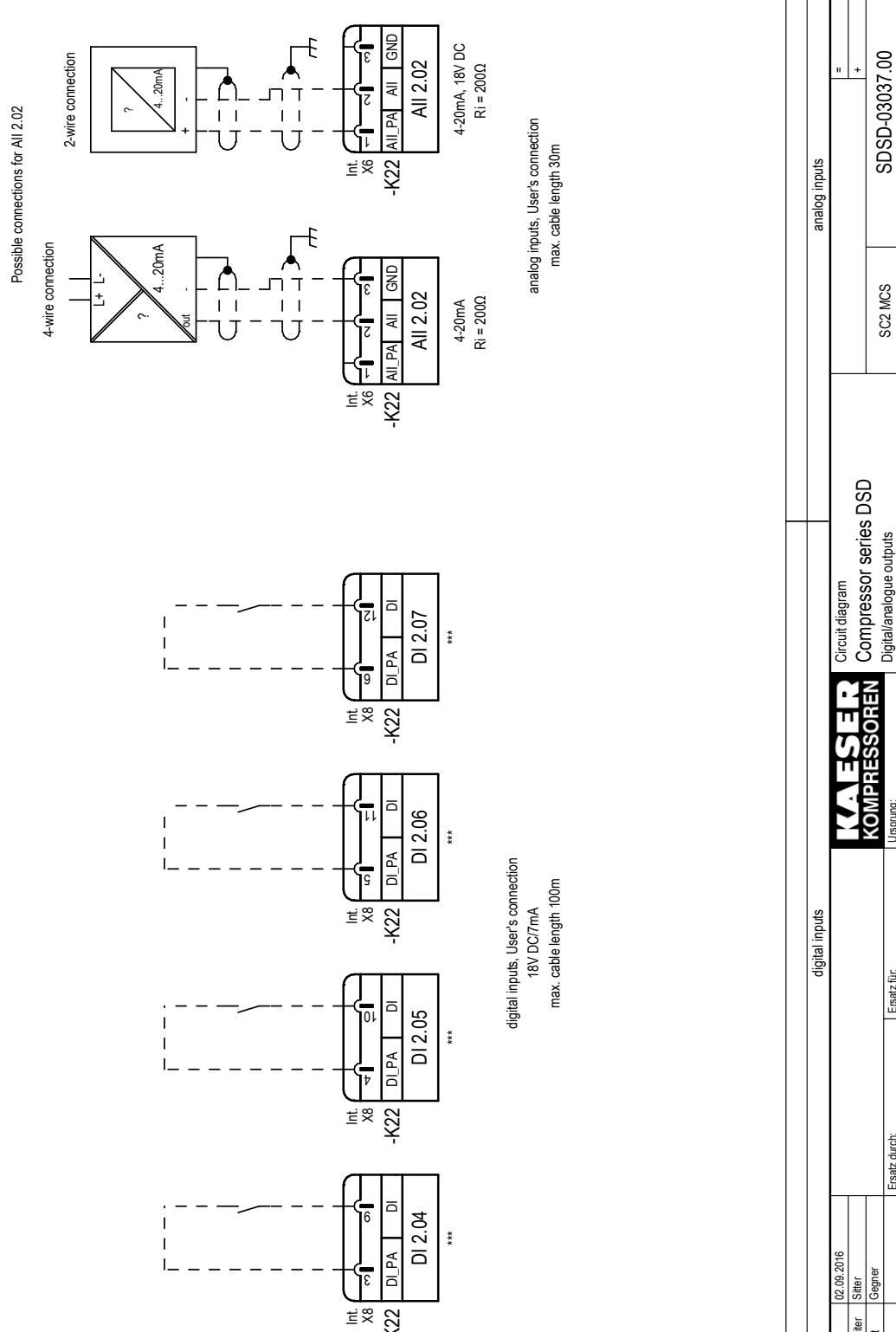




Inputs/outputs for use by others

Example connections

** Pre-allocated
*** Available for use



Function:		digital input		analog inputs	
Group of functions:					

c		Datum	02.09.2016	Circuit diagram	KAESER KOMPRESSOREN
b		Bearbeiter	Sitter	Compressor series DSD	=
a		Gepflegt	Gegner	Digital/analogue outputs	+ page 13
D Änderung	Datum	Name	Norm	Ersatz durch:	17 Bl.

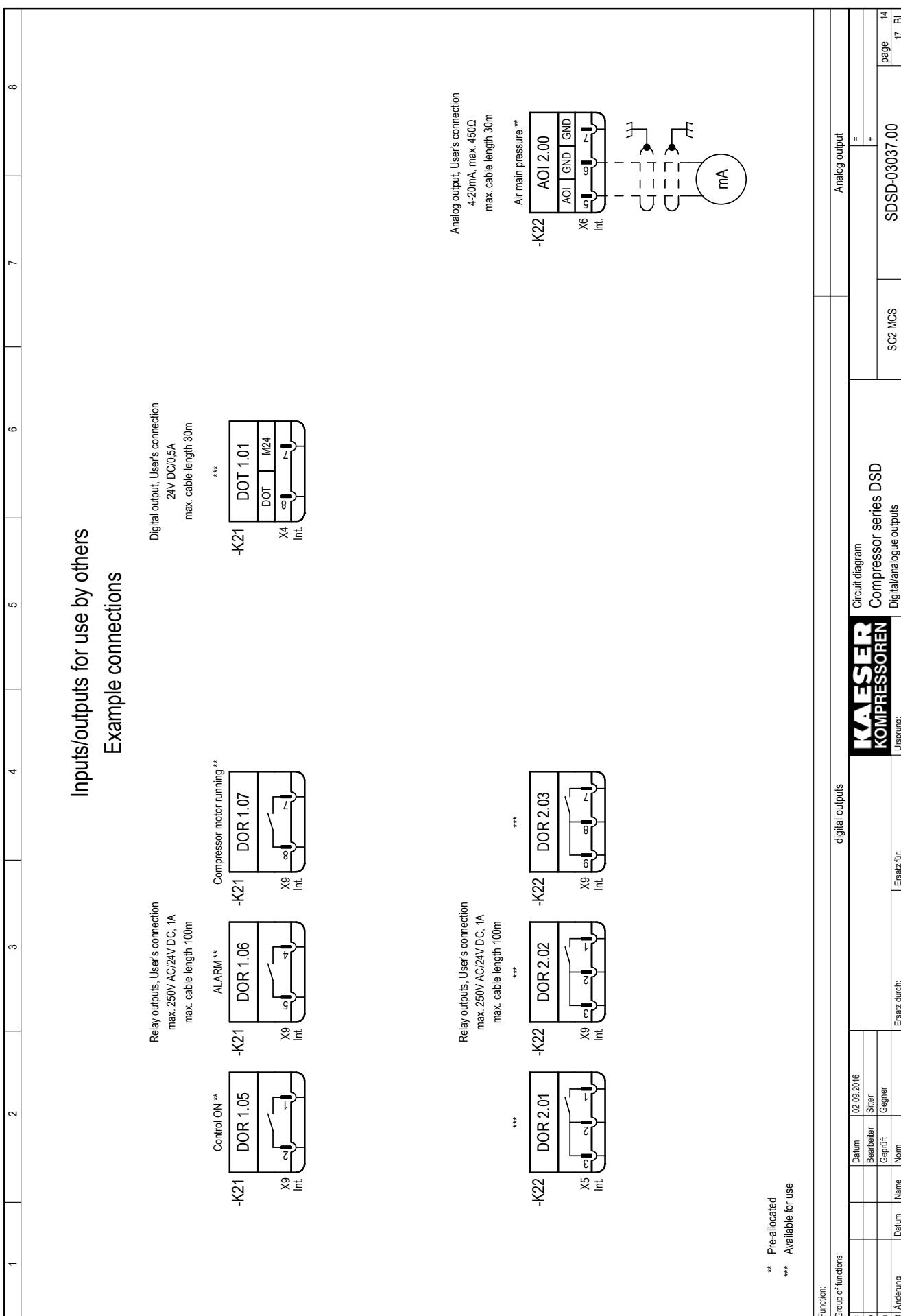


fig. 1: Handling: Control line terminal

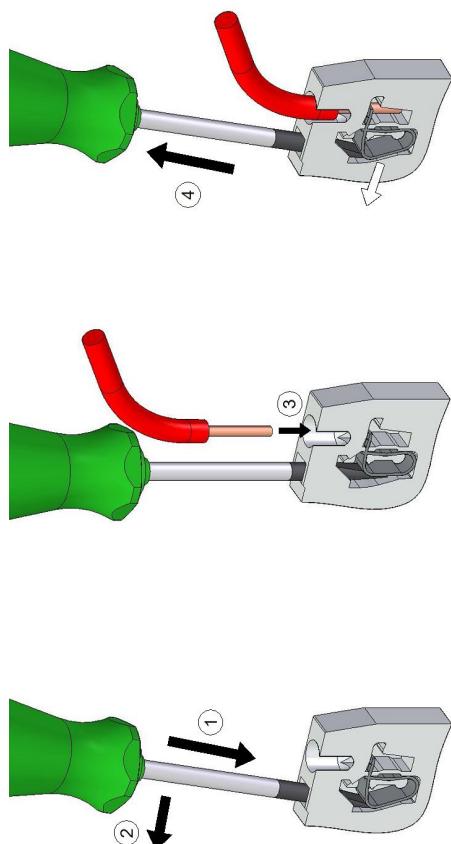
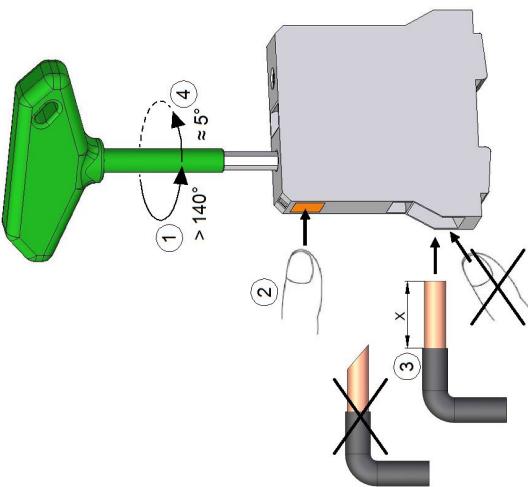


fig. 2: Handling: Supply terminal Wago



Circuit diagram Compressor series DSD Handling: Terminals		SC2 MCS		SDSD-03037.00	
c	b	a	d Änderung	Datum	Bezeichner
				02.09.2016	Stier
					Gepufft
					Gegner
				Ersatz durch:	
				Name	Norm

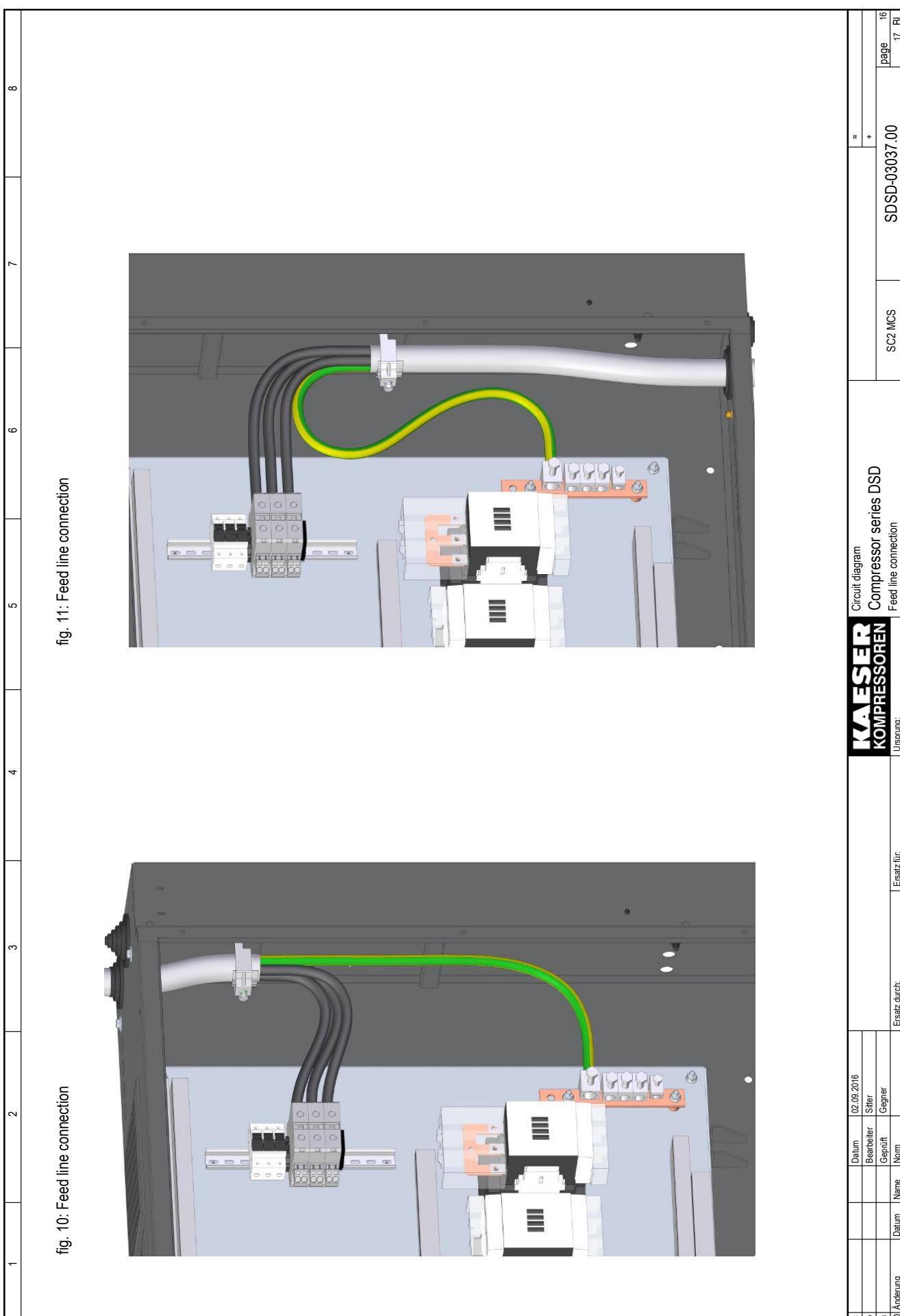


fig. 12: Feed line connection

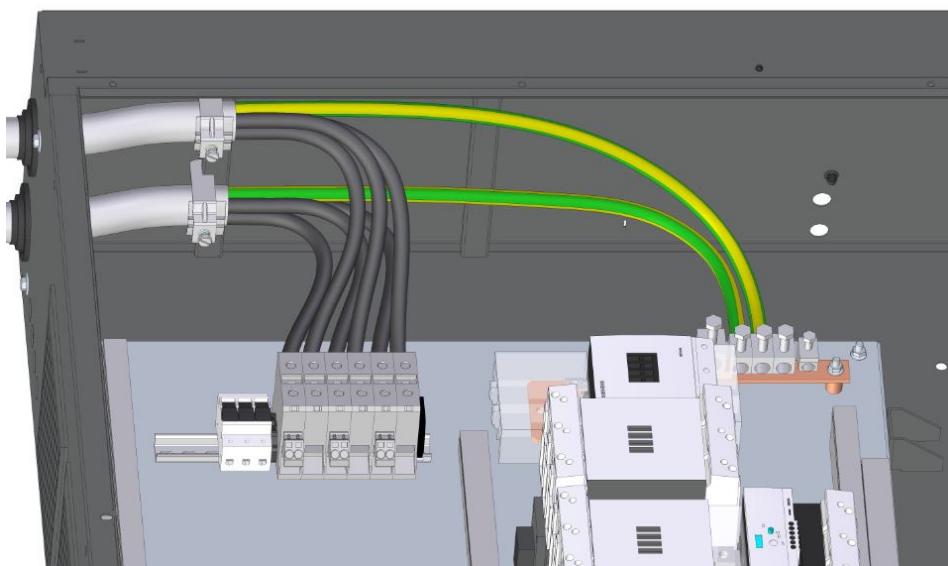
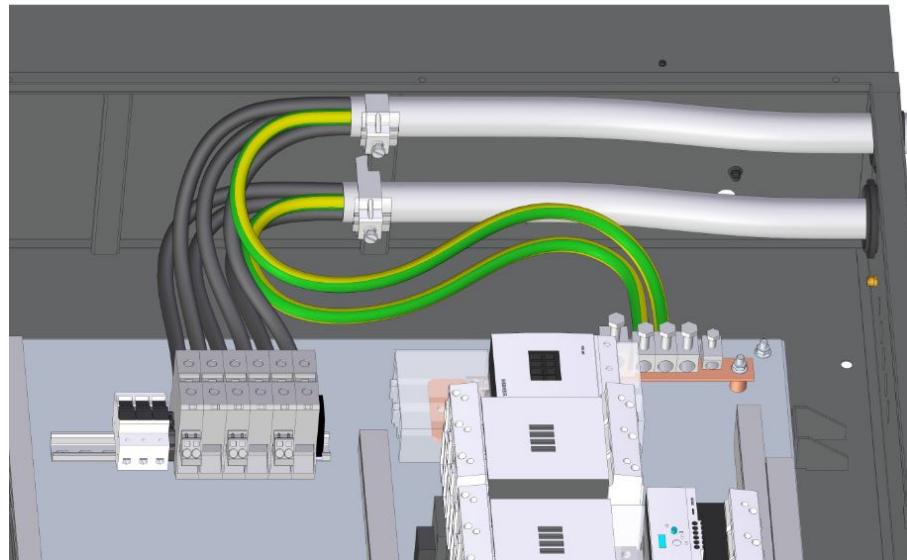


fig. 13: Feed line connection



c			Datum	02.09.2016	=
b			Bearbeiter	Sitter	+
a			Gepufft	Gegner	
D Änderung	Datum	Name	Nom	Ersatz für:	
				Ersatz durch:	
Original:					
KAESER KOMPRESSOREN					
Circuit diagram Compressor series DSD					
Feed line connection					
SC2 MCS					
SDSD-03037.00					
page 17					
17 Bl.					

Cable identification	Destination	Terminal strip	External cable	Component identification
Connection number	Location	Wire link	Terminal number	Component identification
Terminal strip: X11				
-S1 . 1	. 1	. 1	1	
-S1 . 11	. 11	. 11	2	T21
-S1 . 64	. 64	. 64	3	T21
-S1 . 65	. 65	. 65	4	T22
-Q5 . 01	. 01	. 01	5	F11
-M7 . N	. N	. N	6	T11
-M7 . 04	. 04	. 04	7	N
-K21-X5 . 9	. 9	. 9	8	S1
-K21-X5 . 6	. 6	. 6	9	12
-M8 . N	. N	. N	10	
-M8 . 67	. 67	. 67	11	
-M7 . L1	. L1	. L1	12	
-M8 . 6.7	. 6.7	. 6.7	13	
-M8 . 6.8	. 6.8	. 6.8	14	
-M7 . L1	. L1	. L1	15	
-PE1 . 6.2	. 6.2	. 6.2	16	
-PE1 . 5.3	. 5.3	. 5.3	17	
Terminal strip: X12				
-M20 . MM	1	1	10.2	T21
-M20 . LS	2	2	10.2	T21
-M20 . PWM	3	3	10.3	K21-X4
-M21 . MM	11	11	10.4	T22
-M21 . LS	12	12	10.5	K22-X4
-M21 . PWM	13	13	10.6	
Total 20 Terminals				
Total 6 Terminals				
2) option W2/W3				
1) Compressor/motor running				
W39 4G2,5mm ² 500V/70°C				
GNYE = green/yellow				

KAESER KOMPRESSOREN		Terminal schedule	
Compressor series DSD		Compressor series DSD	
Terminal strip X11-X12		Terminal strip X11-X12	
c		Datum	02.09.2016
b		Bearbeiter	Stiller
a		Gepflegt	
H Anleitung	Datum	Name	Ersetzt durch:
I Ursprung:		Norm	
			page 1 Bl 1
			KDSD-03037.00

