880910

Technical Manual
25 S - 110 S

Status: Oct. 2009

Contents

Edition: **Oct. 2009**

Heater description

Kroll warm air heaters type S are directly-fired and highly variable units.
Contrary to other heating systems, they can be installed inside the room. The devices are exclusively made for industrial use in halls and large capacities of each kind, especially in locations where heat is immediately needed.

The Kroll warm air heaters (S) are made of high-quality material and are manufactured clean cut. Thus, they guarantee trouble-free operation and durability. Special attention is given to quick and simple installation as well as to easy servicing.

The *casing* is constructed of a solid galvanized framework. The screwed panels consist of 1,25 mm galvanized and powder-coated steel sheet – inside and outside. Due to the framework construction and the removable panels, the warm air heaters can be dismounted.

***Radiator :* The complete combustion chamber and the heat exchanger are made of chrome-alloyed, highly heat-resistant stainless steel. The unit of the combustion chamber and heat exchanger works by a 3-way-draught-system. They are re-screwed via a flanged joint. Thus, the whole unit can easily be disassembled into two pieces which allows a quick set up even in small rooms and easy replacement/renewal of parts.**

***Fan:* In the lower part of the cabinet, silent tangential fans and maintenance-free ball bearings are mounted. Driving is made directly or via a standart three-phase motor with V-belt-drive. All heaters are standard equipped with three thermostats which have the following regulators: TR-, TW- and safety temperature controller STB.**

As standard version, the heaters have a plenum with three-sides outlet with horizontally and vertically adjustable lamellas. On request (against additional charge), other outlet variants or ducting systems are available.

***General information*: As to the installation of the units, the respective security specifications and directives of your country have to be respected. The decrees for carrying out "Immissions security regulation" and according to this the enacted legal decrees have to be observed as described in your country.**
You are only allowed to use oil or gas burners which have been tested especially for this type of heater. If the heaters are delivered by the manufacturer including oil or gas burners, the separate manual of the burner has to observed.

Please pay especially attention:

- **to the official directives for the installation of warm air heaters**
- **to the generally relevant security requirements**
- **to setup and operate according to your country's regulations**
- **to grant a fuel supply according to your country's regulations**
- **the VDE-regulations**
- **to the fact that warm air heaters are fireplaces and thus categorically subject to authorisation and notifiable**
- **the regulations for prevention of accidents and other safety-relevant regulations and directives.**

As to the installation of the units, the respective security specifications and valid directions of your country have to be observed.

Where to install the heater

Before you choose the place where the heater will be installed, make sure that your requirements do not work against:

a) fire protection
b) **function (e.g. room heating, with plenum or ducting system, low or high pressure at the place of installation...)**
c) specific requirement (heat demand, air delivery, demand of outer or ambient air, air humidity, room temperature, air distribution, necessary space…)
d) connection to the chimney
e) possibilites of doing installation, repair and maintenance
f) relation of room volume to rated heating power, especially in naturally ventilated rooms

The natural air delivery is sufficient for the combustion if for example the room volume in m³ is equivalent to the 10-fold rated heat load in kW of all heating units in the room and if the windows and doors assure a natural ventilation.

Good and natural ventilation means for example:
1. **the room volume in m³ is at least equivalent to the 30-fold rated heat load of all heating units in the room and the doors and windows assure a natural ventilation. OR:**
2. **the room has got openings for supply air and exhaust air near floor or ceiling which cannot be closed and whose size corresponds to the 0,0003-fold rated heat load in kW of all heating units in the room.**

Suction of comburstion air:

The combustion air should be free of any harmful substances. If, due to production process, harmful substances (such as chloride, CKW, FKCW etc.) appear which could reach the warm air heater, the combustion air for the burner must be taken from outside and a burner case has to be used (see accessories).

A sufficient supply of combustion air is assured if it is taken in from:

- **the room where the warm air heater is installed if this room meets the requirements to the relation of room volume to total heating efficiency (4 m³ / kW) according to the construction supervision);**
- **the room where the warm air heater is installed if it is heated by the warm air heater driven by outside air or secondary air with a granted rate of outside air; there has no fixed relation between room and power to be observed;**
- **the room where the warm air heater is installed if it has got openings to outside which cannot be locked up, according to the requirements of construction supervision;**
- **the outside through a pipe connected to the burner (or its housing) whose profile is large enough; it must be adapted to the available throughput of the burner and the line resistances (including the suction protection grill) in order to grant a perfect combustion.**

Complete with suction components and and plenum with 3-sides-outlet; with drive; switch box; thermostat, completely wired.

Standard version

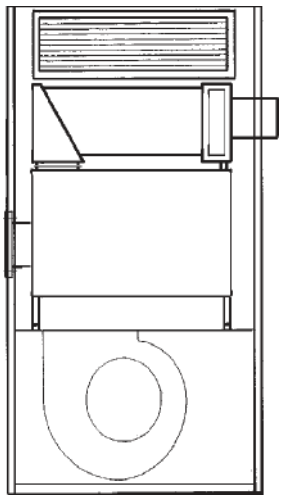
Without intake and outlet components, for higher pressure; with drive, switch box, thermostat; completely wired, lying or standing version.

Ducting version

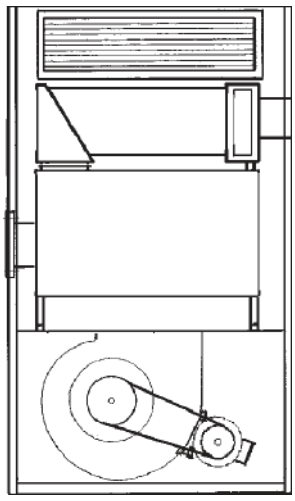
Technical data 25 S - 110 S

Warm air heater for oil or gas burner. For direct outlet with air outlet louvres. Complete with air intake parts and air outlet blind, outlet to three sides, with drive, integrated switch box and thermostat, flue gas socket to the back, completely wired, with drilled burner plate. Burner against extra charge.

Technical data							
Warm air heater Standard oil-fired		**25S**	**40S**	**55S**	**70S**	**95S**	**110S**
Combustible		**Fuel oil**					
Rated heating power	kW	25,5	37,5	50,5	64	88	100
Rated heat load	kW	28	40	55	70	95	110
Consumption combustible	kg/h	2,36	3,4	4,64	5,9	8,00	9,30
Rated air rate	m^3/h	1.450	2.710	3.400	4.300	6.000	7.000
Air rate	m^3/h	1.650	2.900	3.700	5.000	6.750	7.650
Nominal pressure		Free air outlet					
Temperature rise	~ tLK	43	42	45	44	44	44
Difference in flue gas temperature	~ tAK	170	165	160	165	160	170
Efficiency of firing	%	91	91,5	92	91,5	92,5	91
Requested chimney draught		0	0	0	0	0	0
On-resistance (combustion chamber)	Pa	30	30	35	60	70	90
Electric power consumption	V/Hz/ A	230~/50/ 2,1	230~/50/ 3,65	230~/50/ 6,84	230~/50/ 6,9	400/3~ 3,6	400/3~ 3,6
Electrical connection	kW	0,44	0,8	1,5	1,5	1,68	1,68
Fan motor power	kW	0,26	0,62	1,3	1,2	1,5	1,5
Flue gas tube Ø	mm	130	130	130	180	180	180
Noise level oil burner	dB(A)	68	71	71	69	69	69
Dimensions							
Lenght	mm	715	865	975	1085	1.150	1.150
Width	mm	455	505	585	665	765	765
Height	mm	1275	1500	1645	1835	1.895	1.985
Weight without burner	kg	93	124	157	191	245	265
Type of Protection		IP 44					
CE – Ident-No. According to EC-Directive for gas-fired heaters		CE-0085BS5025					

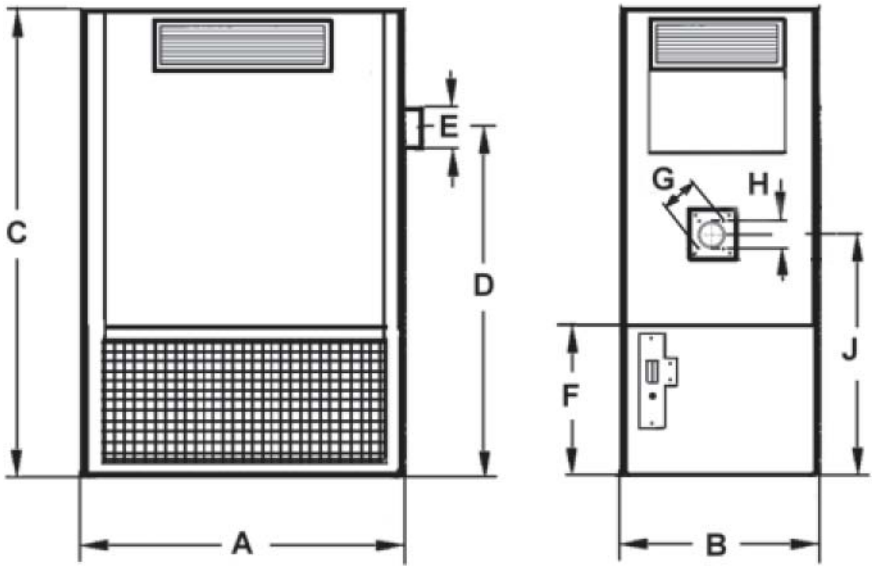


25S to 70S



95S to 110S

Size measurment table



Type	A	B	C	D	EØ	F	G Ø	H Ø	J	Weight
25S	715	455	1275	910	130	385	150	130	595	93
40S	865	505	1500	1110	130	495	150	130	750	124
55S	975	585	1645	1195	130	505	150	130	805	157
70S	1085	665	1835	1425	180	605	150	130	995	191
95S	1150	765	1895	1545	180	645	170	130	1075	245
110S	1150	765	1985	1545	180	645	170	130	1075	265

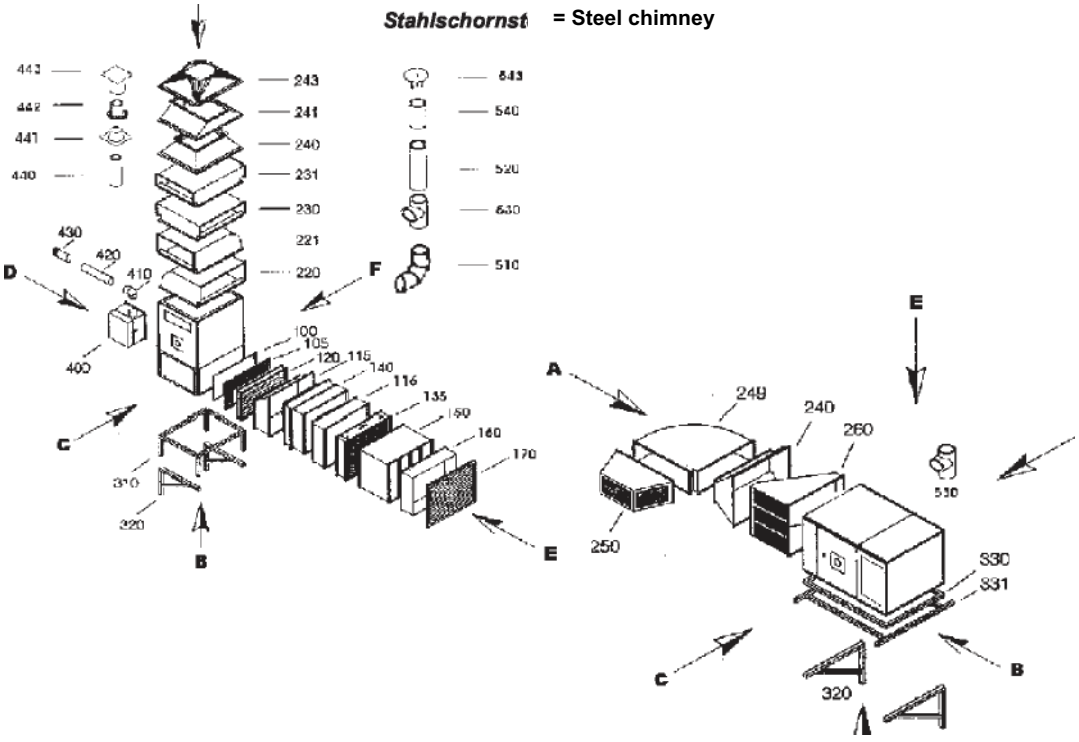
Alle dimensions in mm

Technical data K-units

K = for ducting system

Oil or Gas-fired warm air heater. K-unit for connecting accessories and ducting systems.
Intake open to 3 sides (D, E, F), without hood; with drive, switch box, thermostat; completely wired.

External Outlet pressure Pa		100				150				200				250				300				350			
Type	VN (1,2/20°C)	Motor		Current consumption	Lp	Motor		Current consumption	Lp	Motor		Current consumption	Lp	Motor		Current Consumpt.	Lp	Motor		Current consumpt.	Lp	Motor		Stromauf nahme	Lp
	m³/h	kW	V	A	dB(A)	kW	V	A	dB(A)	kW	V	A	dB(A)	kW	V	A	dB(A)	kW	V	A	dB(A)	kW	V	A	dB(A)
25 S	1450	0,38	230	1,7	64	0,65	230	2,8	65	0,65	230	2,8	65	0,65	230	2,8	66	1,0	230	5,3	68	1,0	230	5,3	68
40 S	2710	0,65	230	2,8	68	1,1	230	6,2	69	1,1	230	6,2	69	1,1	230	6,2	70	1,28	230	6,6	71	1,28	230	6,6	72
55 S	3400	0,9	230	3,6	69	1,1	230	4,2	70	1,1	230	4,2	70	1,1	400	2,3	71	1,1	400	2,3	72	1,1	400	2,6	73
70 S	4300	1,1	230	4,2	69	1,5	400	3,6	70	1,5	400	3,6	70	1,5	400	3,6	71	1,5	400	3,6	72	2,2	400	5,2	73
95 S	6000	1,5	400	3,6	68	2,2	400	5,2	69	2,2	400	5,2	69	2,2	400	5,2	70	2,2	400	5,2	72	3,0	400	6,6	73
110 S	7000	1,5	400	3,6	69	2,2	400	5,2	70	2,2	400	5,2	70	3,0	400	6,6	71	3,0	400	6,6	73	3,0	400	6,6	74



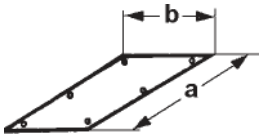
View „C“ (front)
If you look frontally at the burner

The warm, air heaters for ducting systems can be equipped or supplemented with the shown accessories. The accessories are made of galvanised sheet metal.

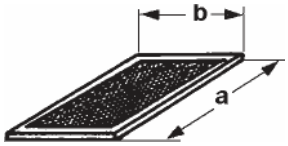
	standing	lying on the left	lying on the right
A =	up	left	right
B =	down	right	left
C =	front	front	front
D =	left	down	up
E =	right	up	down
F =	back	back	back

1	Suction components	2	Outlet components	3	Fixation components	5	Flue gas com
100	Dummy cover		Outlet components 200 and 220 for ducting systems	320	Wall console	510	Flue gas elbow
105	Air circulation grid (mounted at standard version depending on requested power)	205	False cover	330	Base frame for floor	520	Flue gas pipe
115	Transition piece	207	Connection frame for ducting system	331	Base frame for ceiling suspension	530	Flue gas cleaning-Tee
116	Transfer adapter	210	Standart plenum for direct air outlet			540	Roof connection
120	Louver (at least double-sided with automatic reversal)	220	Plenum to the long side	**4**	**Air supply elements for burner**	541	Roof plate
135	Cassette filter	221	Plenum to the front side	400	Burner casing	542	Rosette
140	Fire lid	230	T-cowl to the long side	410	Suction elbow	543	Rain hood
150	Silencer	231	T-cowl to the short side	420	Suction pipe		
160	Wall socket	240	Plenum to the top, longside	430	Suction parts with screen (wall duct)		
170	Weather-protective grid	241	Plenum to the top, front side	440	Roof duct		
		243	Plenum to the top, rounded	441	Roof plate		
		249	Elbow	442	Rosette		
		250	Plenum	443	Rain hood		

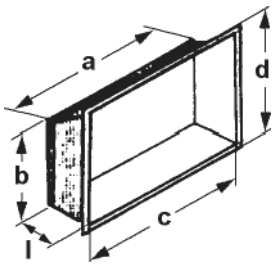
1 Suction components



100 Base frame dummy cover						
Alongside						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	635	785	895	1005	1070	1070
b	385	495	505	605	640	640
Frontal						
a	375	425	505	585	685	685
b	385	495	505	605	640	640

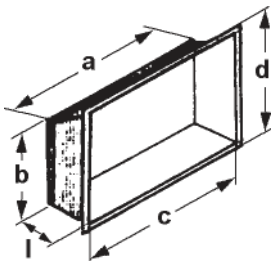


105 Air circulation grid						
Alongside						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	375	785	895	1005	685	685
b	385	495	505	605	640	640
Frontal						
a	375	425	505	585	685	685
b	385	495	505	605	640	640

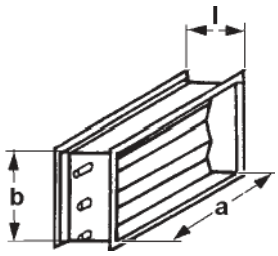


115 Transition piece						
Alongside	(between warm air heater and fire lid)					
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	635	985	795	905	970	970
b	285	395	405	505	545	545
c	711	711	797	894	894	894
d	400	400	503	565	634	634
l	250					
Profile	20					
Frontal	(between warm air heater and fire lid)					
a	275	325	405	485	585	585
b	285	395	405	505	545	545
c	711	711	797	894		
d	400	400	603	565		
l	250					
Profile	20					

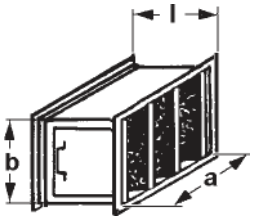
116 Transition piece						
	Alongside and frontal (between fire lid + cassette filter)					
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	711	711	797	894	894	894
b	400	400	503	565	634	634
c	690	690	690	600	900	900
d	390	390	390	600	600	600
l	250					
Profile	20					



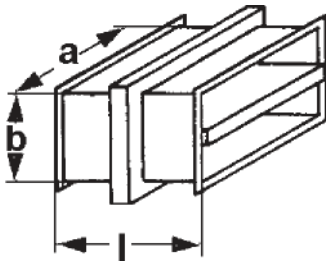
1 Suction accessories



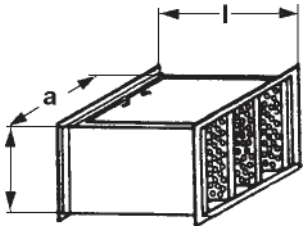
120 Louver						
Alongside	(Adjustment manually or by motor)					
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	500	700	800	900	1000	1000
b	315	450	450	450	560	560
l	120					
Profile	20					
Frontal	(Adjustment manually or by motor)					
a	300	400	450	450	630	630
b	315	450	450	450	560	560
l	120					
Profile	20					
135 Pocket air filter G4						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	690	690	690	600	600	900
b	390	390	390	600	600	900
l	250					
Profile	20					



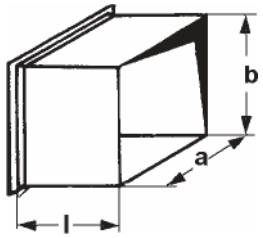
140 Fire lid	Alongside and frontal					
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	711	711	797	894	894	894
b	400	400	503	565	634	634
l	500					
Profile	20					

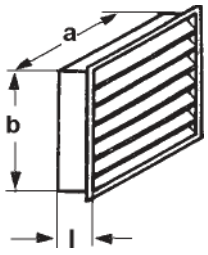


1. Suction accessories

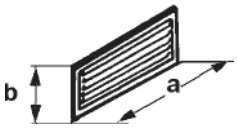


150 Silencer	alongside and frontal					
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a						
b						
l	To be designed separately according to calculation					
Profile						
160 Wall socket and plug-in-socket						
Wall socket						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a						
b						
l	According to calculation; lenght depending on thickness of the wall					
Profile 1-sided						
Plug-in-socket						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a						
b						
l	According to calculation, silencer without idnication					
Profile 1-sided						
170 Weather protection grid						
Free cross-section = a x b x 0,6						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a						
b						
l	According to calculation, silencer without idnication					

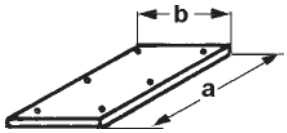




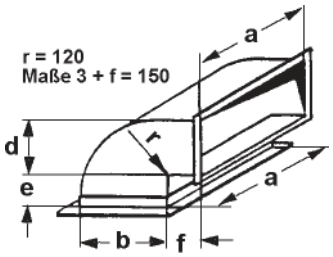
2. Outlet accessories



200 Delivery air grid, horizontal + vertical louvers						
Alongside (nominal dimensions)						
Measures[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	325	425	525	625	825	625
b	125					
frontal (nominal dimensions)						
Measures[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	325	325	425	525	625	625
b	125					

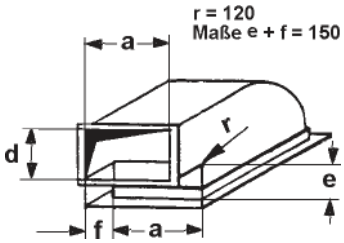


205 Dummy cover						
alongside						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	350	450	550	650	850	650
b	160	160	160	160	160	260
frontal						
a	350	350	450	550	650	650
b	160	160	160	160	160	260

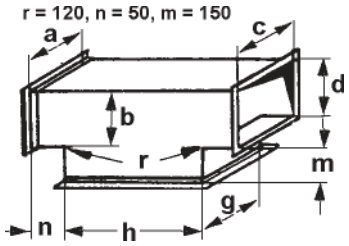


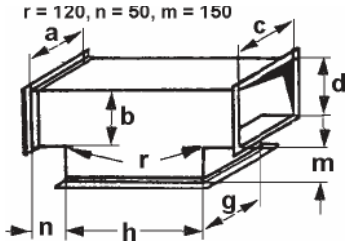
220 Plenum						
alongside to the front						
Measure [mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	615	765	875	985	1055	1055
b	355	405	485	565	665	665
d	180	220	250	280	320	320
Profile	20					

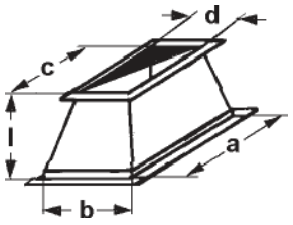
221 Plenum						
frontal to the side						
Measure [mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	355	405	485	565	665	665
b	615	765	875	985	1055	1055
d	200	240	270	300	400	400
Profile	20					

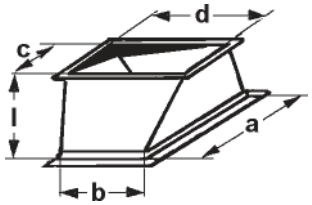


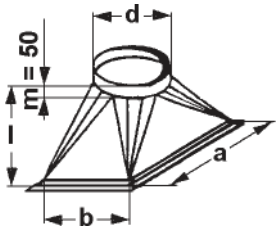
2. Outlet accessories





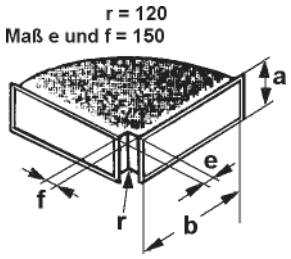


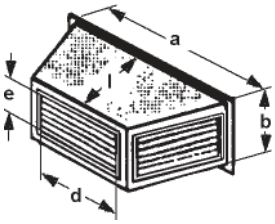


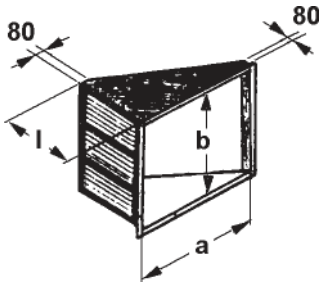


alongside						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a / c / g	615	765	875	985	1055	1055
b / d	180	220	250	280	320	320
h	355	405	485	565	665	665
Profile	20					
231 Outlet T-hood						
frontal						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a / c / g	355	405	485	565	665	665
b / d	180	220	250	280	320	320
h	615	765	875	985	1055	1055
Profile	20					
240 Plenum						
Alongside up						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a	615	765	875	985	1055	1055
b	355	405	485	565	665	665
c / d	According to indication					
l	500					
Profile	20					
241 Plenum						
Frontal up						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a	615	765	875	985	1055	1055
b	355	405	485	565	665	665
c / d	According to indication					
l	500					
Profile	20					
243 Plenum						
Upside round						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a	615	765	875	985	1055	1055
b	355	405	485	565	665	665
d Ø	355	400	450	500	600	600
l	500					
Profile	20					

2. Outlet accessories

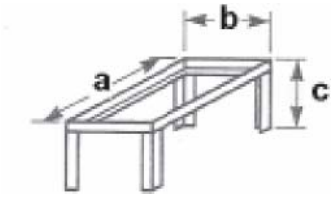




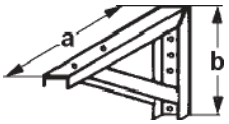


For plenum type 250						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	According to indication					
b	According to indication					
Profile	20					
250 Plenum						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	According to indication					
b	According to indication					
l	530	630	630	630	730	730
d	310	410	510	510	610	310
e	110	110	110	210	210	210
Profile	20					
260 Plenum						
Standard louvers, horizontal lamellas						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	615	755	875	985	1055	1055
b	355	405	485	565	665	665
l	500	600	700	700	900	900
Profile	20					
Louver	2x 425x125	2x 525x125	2x 625x125	2X 625x225	3X 825x125	3X 825x125

3 Mounting parts



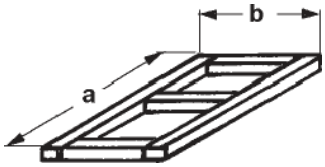
310 Standing frame						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	725	875	985	1095	1160	1160
b	465	515	595	675	775	775
c	500	500	500	500	500	500
Profile	50 x 50					

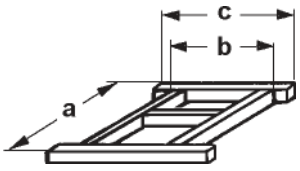


320 Wall bracket alongside						
By pairs						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	540	590	640	720	820	820
b	375	445	450	510	585	585
Tube	40 x 40 x 3					

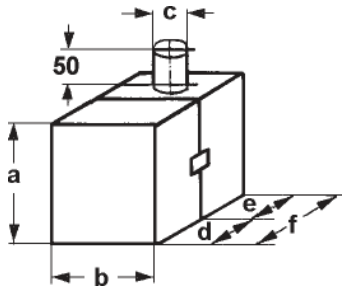
330 Basic frame						
For lying version						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	1270	1495	1640	1830	1890	1890
b	635	785	895	1005	1070	1070
Tube	50 x 30 x 3,0					

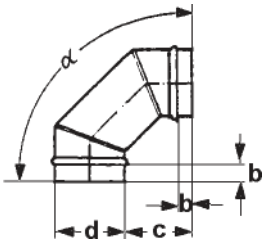
331 Basic frame						
Ffor ceiling mounting and lying version						
Measure[mm]	25 S	40 S	55 S	70 S	95 S	110 S
a	1270	1495	1640	1830	1890	1890
b	635	785	895	1005	1070	1070
c	800	950	1060	1170	1230	1230
Tube	50 x 30 x 3,0	50 x 30 x 3,0	50 x 30 x 3,0	50 x 30 x 3,0	50 x 30 x 3,0	50 x 30 x 3,0

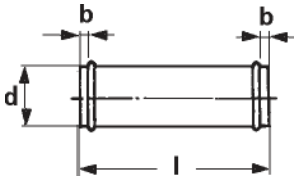


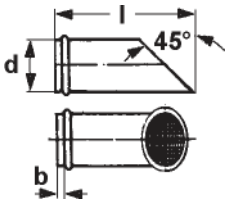


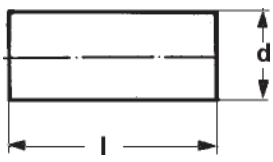
4. Burner – fresh air supply











Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
a	450	450	450	490	490	490
b	375	470	470	490	490	490
c	150					
d	200	200	200	300	300	300
e	200					
f	400	400	400	500	500	500
Profile	20					

410 Aspiration elbow

Measure[mm	25 S	40 S	55 S	70 S	95 S	
d Ø	150	150	150	150	150	
b	70	70	70	70	70	
c	150	150	150	150	150	
á						90°

420 Aspiration tube

Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
d Ø	150	150	150	150	150	150
b	70	70	70	70	70	70
l	1000	1000	1000	1000	1000	1000

430 Suction end piece

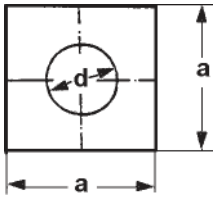
With strainer

Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
d Ø	150	150	150	150	150	150
b	70	70	70	70	70	70
l	500	500	500	500	500	500

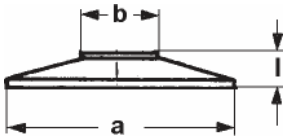
440 Roof duct

For roof

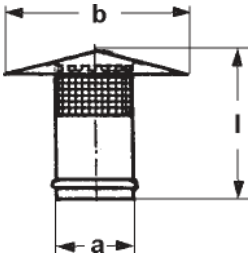
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
Aspiration tube Ø	150	150	150	150	150	150
d Ø	250	250	250	250	250	250
l	500	500	500	500	500	500



441 Roof plate						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
Aspiration tube	150	150	150	150	150	
a	750	750	750	750	750	
d Ø	251	251	251	251	251	

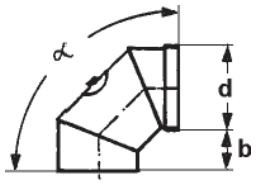


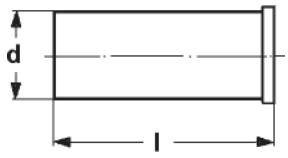
442 Rosette						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
Aspiration tube Ø	150	150	150	150	150	150
a Ø	300	300	300	300	300	300
b Ø	151	151	151	151	151	151
l	50	50	50	50	50	50

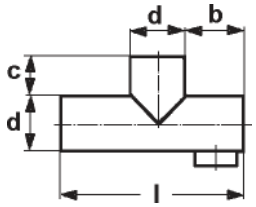


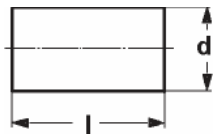
443 Rain hood						
Measuremm]	25 S	40 S	55 S	70 S	95 S	110 S
Aspiration tube Ø	150	150	150	150	150	150
a Ø	150	150	150	150	150	150
b Ø	380	380	380	380	380	380
l	500	500	500	500	500	500

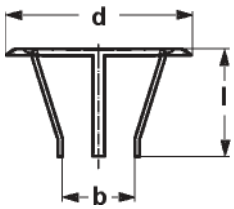
5. Flue accessories











With door 90						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
d Ø		130	130	180	180	180
b		130	130	180	180	180
á	90°					
520 Flue gas pipe						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
d Ø	130	130	130	180	180	180
l	1000					
530 Flue gas cleaning T-piece						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
d Ø	130	130	130	180	180	180
b	300					
c	130	130	150	150	150	150
l	1000					
540 Roof duct pipe						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
Flue gas pipe Ø	130	130	130	180	180	180
Ø	230	230	230	280	280	280
l	1000					
543 Rain hood						
Measure[mm	25 S	40 S	55 S	70 S	95 S	110 S
Flue gas pipe Ø	130	130	130	180	180	180
d Ø	340	340	340	430	430	430
b	131	131	131	181	181	181
l	260					

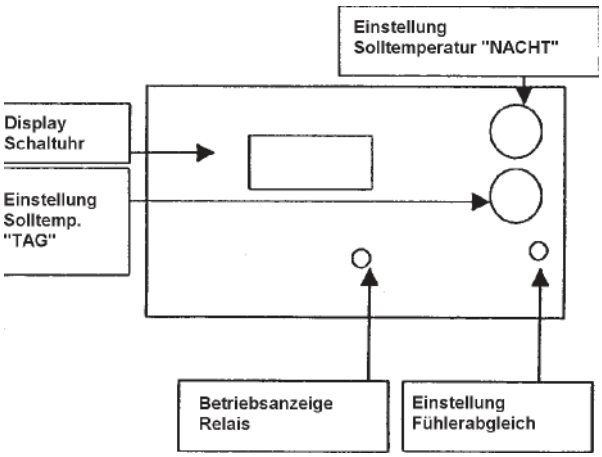
Mounting

Installation must only be made by an authorized electrical specialist!
Faulty operations may damage the control unit!
We are not liable for damages caused by wrong connection and/or improper use.

- Before working with the unit, switch the wires to neutral.
- **Wires can also have line voltage when the unit is switched off!**
- Connection must only be made by authorized professionals!
- In order to connect the unit, open it by loosening the 4 knurled screws. Remove the **lower** plastic plate.
- The unit must only be drilled through at the indicated spots in the corners of the box's bottom. Drilling through the rear panel of the unit may cause perilous touch voltage, destroys the unit and expires all warranty claims.
- Connection must be made according to the enclosed simplified diagram!
- The unit is only supposed to be connected to fix-installed wires.
- The VDE 0100 (GermanElectrical Engineering Association) and EN 60730, part 1, have to be observed.
- The regulations of the local electric supply company musst be observed.
- The temperature sensor must be mounted in a way that it can measure the average room temperature (do not place it near supply air or outlet air ducts).
- In order to avoid interferences, the sensor-wires shall not be installed together with other current-carrying wires.
- If the unit does not work, please check first of all, if the connection has been done corerctly and if the power supply is adequate.
- During installation of the unit, make sure that power supply wires (such as network supply) encounter low voltage wires (such as sensor wires and control wires for hatches) – minimum distance 4 mm with basic-insulated conductors. Furthermore, make sure that all connection conducturs are protected against self-loosening (according to EN 60730, part 1). This can be assured by using cable connectors to tether the wires.

Control elements

Optic display: time with hours, minutes, seconds, day, month, weekday.



Temperature range	See imprint on front panel
Differential gap	+/- 0,5 K
Sensor KTY-semiconductor	(no need to pay attention to polarity)
Setpoint value setting	rotary knob white ? Day rotary know black ? Night
Other settings	see clock timer
Working voltage	230 V AC
Power input	ca. 2,0 VA
Electric connections	screw connections
Box material	plastic
Fixation	at the wall
Protection	IP 54
Weight	ca. 420 g
allowed ambient temp.	---------- - 10 + 50
storing temp.	..... -10 + 70°C

Description of electric thermostat, one-stepped with clock timer for switching to day and night mode.

1. Brief description

The sensor measures the current temperature via a temperature sensor and controls a relay depending on a difference to set temperature. The set temperature can be fixed separately for day and night.

2. Function

2.1 Set temperature

The set temperatures are being fixed by means of the two regulation buttons at the front panel. If the current actual temperature differs from the fixed set temperature, a relay is switched on. The switchpoint results from the set temperature ± the differential gap

2.2 Differential gap

The differential gap (difference between the switch-on temperature and the switch-off temperature) is set by the manufacturer to ± 0,5.

2.3 Sensor entry

The temperature sensor is connected to the designated clips 7 and 8. It is not necessary to pay attention to the polarity. The permitted length of the wire at 1,5 mm² is 100 m

2.4 Exit

The relay contact (changer) is led out potential-freely to the clips.

2.5 Versor Supply Voltage

The unit is constructed for a connection to 230V/50Hz AC-voltage. It does not have a mains switch. It is only constructed to be connected to fix-installed wires.

A clock timer is installed with which you can switch from day mode to night mode. If the display of the clock shows *ON* , the set temperature control works for day mode (sun), if the display of the clock shows *OFF*, the set temperature control works for night mode (moon).

The link plug for cooling/heating is only accessible after the clock timer has been dismounted. The delivery status can only be achieved by the manufacturer.

The potentiometer to adjust the switch-hysteresis is accessible through the drill-hole on the left of the clock timer. Delivery status total hysteresis 1K. Changeable only by the manufacturer

In case of a power failure, a gold cap has been installed which grants a bridging time of at least 12 hours for the saved data of the clock timer. The loading time for the gold cap is about 30 minutes.

How to adjust the clock timer

1. Push all 3 buttons (Reset: alle data to 0)
2. Push at the same time MODE and – (switches to quartz clock mode) – a crossed radio tower appears.

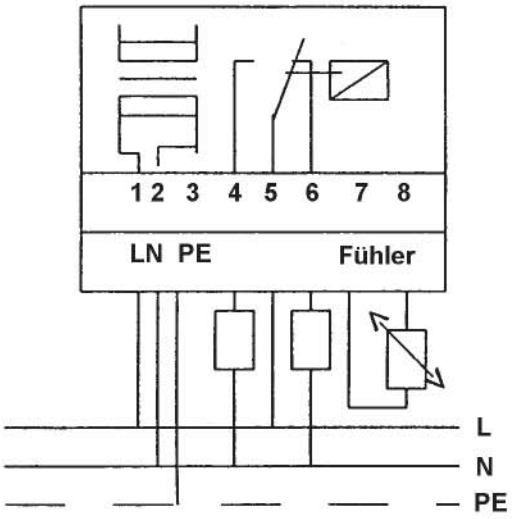
Sliding switch on P (program):

1. The time is blinking, adjust it with the +/- buttons (keep it pushed – fast mode)
2. Press Mode for shortly
3. The date is blinking, adjust Day and Month with the +/- buttons
4. Press Mode shortly
5. Mo is blinking, adjust the weekday with the +/- buttons
6. Press Mode shortly
7. P1 is blinking, push Mode and keep it pushed until 3 bars blin EIN. Adjust the switch-on-time (start of the day mode) with the +/- buttons
8. Press Mode shortly.
9. 3 bars at P1AUS are blinking. Adjust the switch-off-time (end of day mode/beginning of night mode) with the +/- buttons.
10. Press Mode shortly
11. The weekday, when P1 shall be carried out, is blinking. Now, you can either adjust each weekday separately or one of the 3 weekdays-blocks. If, for example, the weekdays-block Mo-Su is adjusted, the circuit times which are saved in the memory cell, will be carried out each day.
    Now adjust the weekday or weekdays-block at which P1 shall be carried out with the +/- buttons and confirm them by pushing Mode shortly.
12. P2 is blinking: redo the points 7 to 11. If no other switch point is neede, turn the slide switch to A.
13. P3 is blinking: redo the points 7 to 12
14. etc. Maximum 9 switching couples are possible.
15. Put the slide switch to A. The programmed times will be executed. The current state of switching is being shown in the display by EIN (set temperature for day mode) or AUS (set temperature for night mode

How to cancel switching times:
Every programmed switching time can be cancelled separately. Put the slide switch to P and press Mode until the corresponding memory capacity is blinking. Adjust it to 23:59 o'clock with the +/- buttons and wait until the time is blinking. Press the + button shortly. Now, the three bars are appearing again. Press Mode and the time is cancelled..

Position M of the slide switch
In this position, the switching output can be (de)activated with the +/- buttons.

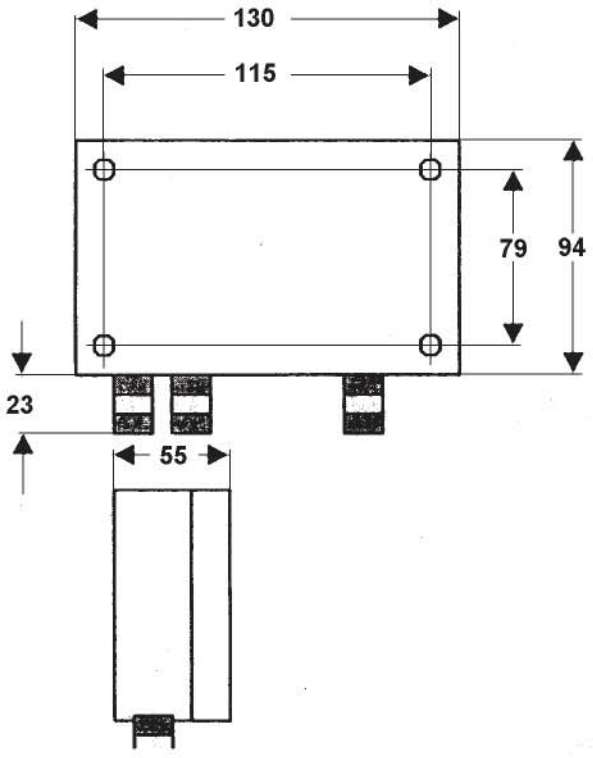
Wiring diagram



1 Mains 230 V L1
2 Mains 230 V N
3 PE
4 Relay shutter (heating)
5 Relay together (heating)
6 Relais (opener)
7 Sensor
8 Sensor

(4, 5, 6 pottial-free)

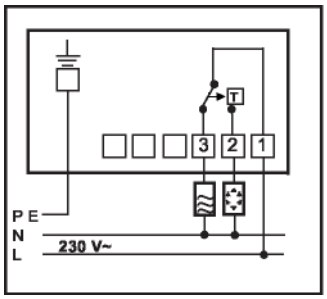
Fixing dimensions

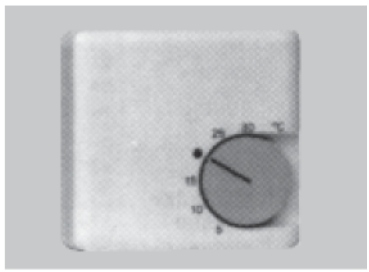


Room thermostat - RT
Ref. 006859

In plastic casing 71 x 71 x 30 mm for on-wall mounting
Switching capacity Heating 10 (4)A.

Temperature range 6 - 30 °C
Differential gap 0,5 K
Protective system IP 30

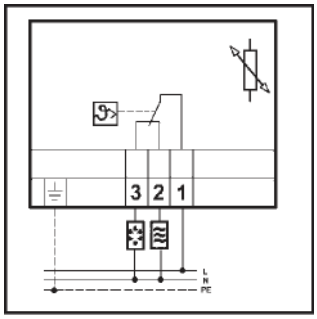




Room thermostat - RTI
industrial version
Ref. 005434

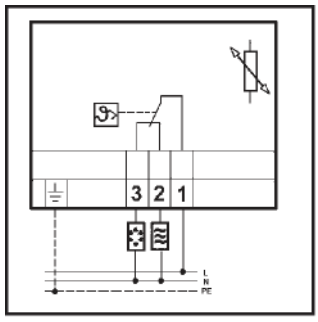
(DIN EN 60730/VDE 0631)
Plastic casing
105 x 94 x 65 mm for on-wall mounting
Switching capacity 16 (4)A.
at 230 VAC

Temperature range 0 - 40 °C
Differential gap 2 K
Protective System IP 54 AP

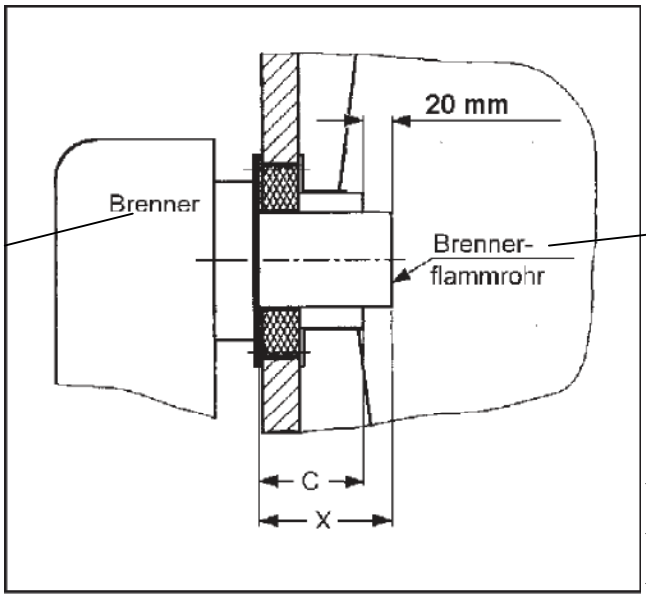


Room thermostat - RTIA
industrial version
Ref.005951

With covered temperature adjustment,
the rest as ref. 005434



Burner - mounting



Type of heater	25 S – 110 S
C = min.	130 mm

The burner which is delivered by the manufacturer is mounted on the front panel with 4 flange screws. The manual, which is provided in the delivery, must be observed!

Burners of other manufacturers must be mounted according to their manufacturer's instructions.

The combustion chamber must not be overstrained or underloaded.
Do not lower the flue gas temperature below 160 Kelvin over the room temperature (this causes the formation of condensate). In order to avoid the creation of condensate, 2-stage burners are only allowed to be used in part-load operational range during the starting mode.

The warm air heater must only be used with an oil fan burner according to DIN 4787 or a gas fan burner according DIN 4788 with natural gas or liquefied gas. The burner must be equipped with a flame sensor which is approved for the warm air heater (according to DIN 4794 sheet 2).

The instrument block of the burner is loosely enclosed and has to be mounted on site. Installation, gas connection, first adjustment and the first assembley must only be made by an approved specialist.

The combustible flow must correspond to the heating power as ordered.
Adjust the burner in a way that the combustion chamber's load is constant.
The tips of the flame must not touch the rear panel!
The recommended nozzle angle for oil burners is 60°.

The lenght of the flame tube "X" must have at least the dimensions "C". It is recommended that the flame tube sticks into the combustion chamber for 20 mm. If necessary, a fire tube extension has to be used.

Burner plate

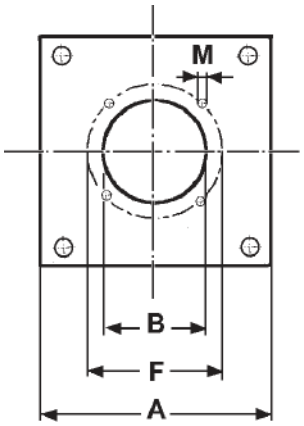
The drillings for the fixation of the burner are in the middle of the burner plate and correspond to the following table. Different dimensions for the diameters B and F only if explicitely ordered.

Electrical connection of burners

Kroll warm air heaters are manufactured in a way that normal burners of each certified brand can be used. The electrical connection for the burner, which is delivered by the manufacturer of the warm air heater (230 V AC), is made by a 7-pole fast-mounting plug-in connection, which is mounted at the warm air heater. A fixed wiring is done from 3 ~ 400 V burner versions).

Heating oil connection

A sufficient fuel supply has to be guaranteed.
The installation of the heating oil supply must be done by authorized professionals only according to the regulations for oil-fired warm air heaters which are valid in your country. You must especially pay attention that the cross section of the pipes will be designed for the complete line resistance, the suction height and an increased viscosity in case of lower temperatures.
If necessessary, an oil feeding system has to be used!
The suction pipe has to be equipped with a foot valve at the bottom of the tank.



Measure (in mm)				Type of heater		
	25 S	**40 S**	**55 S**	**70 S**	**95**	**110 S**
A	**250**					
B Ø	**130**					
F Ø	**150**				**170**	
M	**8**					

ATTENTION :

Also with low outside temperatures, enough free-flowing heating oil has to be at the burner's disposal. The creation of paraffin can already start at 5°C. In order to avoid this, appropriate actions have to be implemented.

Gas connection

The necessary amount of gas and gas pressure must always be available during the heater is working, according to the heater's power.

The installation of the gas connection must be done by an authorized professio according to DIN 4756 and/or the DGW working sheet G600 for gas-fired warm air heaters and the TRF for liquified gas. Gas pressure regulators and shut-off cocks have to be prepared by the customer on site.

The power cross section has to be designed according to the gas connection, performance resistance and the gas pre-pressure. Before the initial operation, the gas supply pipe has to be cleaned completely. You also have to check its density.

Eduction of the flue gas

In general, the heaters have to be connected to their own chimneys. The chimney types have to be according to DIN 18160 part one, the chimney dimensions according to DIN 4705 part 1 and/or 2. In order to grant an optimum function of the fireplace, the chimney should be installed near the ridge, overlapping it for at least 0,5 m. If back pressures are to be expected, e.g. through fall winds or through neighbour buildings, you must consider them when making the chimney head.

In general, steel chimneys will exceptionally be approved if there are no concerns regarding fire prevention.

For the flue gas pipes and connection pieces between heater and chimney, DIN 1298 is valid. The length of the connection pieces should not be more than 2 m.

The flue gas connection must always be made to an approved chimney. The chimneys can either be bricked or made of metal.

Commissioning of the fan motor

1. **Checking the drive**
   a) Check the fan's direction of rotation, watch direction marker on the box.
   b) Check the initial tension of the driving belt.
   c) Check if all screws of the complete drive are really tightened.

2. **Rated current – checking the current consumption**
   In order to avoid incorrect measurements, all provided air inlet sheets or dummy sheets must be mounted and the grills in the air duct/plenum must be opened. The existing mains voltage must be checked.

   a) Direct start
      The measured rated current (Ampere) must not exceed the value indicated on the type plate of the motor. Adjust the thermic overcurrent relay according to the rated current of the driving motor.
   b) Y – start
      The measured rated current (Ampere) must not exceed the value indicated on the type plate of the motor. Multiply the rated current of the driving motor with the factor 0,58 and adjust the thermic overcurrent relay to this calculated value. In order to avoid measuring errors, every phase should be measured separately.

3. **Thermic overcurrent relay**
   By removing a fuse, the function of the overcurrent relay/its adjusted value can be checked. If the relay is working properly/the values have been adjusted properly, the relay should release after about 30 seconds.

4. **Too high current consumption**
   If the motor consumes too much current although the electric connections have been done properly and although the motor gets enough voltage, you must not bridge the thermic overcurrent activator or adjust it higher! You must check the air intake and the air outlet (also ducting pressure) and solve the problem from that side.

Initial operation

The initial operation of the unit and ist burner must be done by authorized qualified personnel (e.g. heating installers). Doing this, all control, regulation and safety devices must be checked according to their function and their correct adjustment

- check if all screws and nuts of the fixation of fan and burner are tightened correctly
- check the tension of the driving belt
- if necessary, open the air outlet grills and adjust as required
- check the adjustments of the temperature control TW (burner 80°C) and the temperature regultator (fan 40°C)
- switch on the main switch/fuse which is provided by the customer
- check the fan's direction of rotation (operating switch in position „ventilation“)
- adjust the room thermostats on a higher temperature than the current actual room temperature
- open fuel supply
- put the operating switch in position “heating“

ATTENTION:

After the first 40 hours of operation in heating mode, the screws of the cleaning cap at the heating register as well as the screws between combustion chamber and heat exchanger must be controlled and, if necessary, retightened. In order to do this, the case cleaning cover above the burner must be opened. This procedure also has to be done at the regular maintenance.

Commissioning of the fan motor

The fuel/gas throughput has to be adjusted according to the heat load of the unit (see type plate of the unit).

The burner has to be adjusted to optimal values according the manufacturer's specifications, at least to the values indicated in the Federal Emission Control Law (BImSchG of Germany).

The chimney draught has to be measured once when the chimney is cold and once when it is warm. To avoid the danger of falling below the dew point (which would cause corrosion in the heat exchanger), the temperature difference of the flue gas (Ät) of 160 Kelvin must not be under-run.

The initial operation of gas-fired units must only be done by authorized professional personnel.
A measurment report must be made and must be handed over to the operator to be kept. The operator must be made familiar with the unit.

Heating

- **switch on the main switch/fuse which is provided by the customer**
- **open fuel supply**
- **put the operating switch in position "heating"**
- **adjust the room thermostats to the desired room temperature**

When heat is required, the fan burner will start automatically. The supply air fan will only switch on when the set temperature is reached. This avoids cold air to be blown out. Now, the unit works automatically according to the pre-adjusted room temperature.

Ventilating

- **put the operating switch in position "ventilating"**
  The unit works as permanent ventilation. There is no possibility of regulation by a thermostat.

Decommissioning

- **put the operating switch in position "0"**
  The supply air fan will continue to run in order to coll down heat exchanger. It may start several times until the unit will completely turn off.

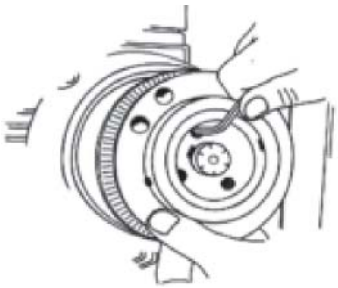
Never switch the unit off by using the main or emergency switch (except in case of emergency) before the unit has completely cooled down.

In case the unit is supposed to stay turned off for a longer time, the mains switch on site/fuses should be turned off after the decommissioning and the fuel supply should be shut off.

Changing the fan belt

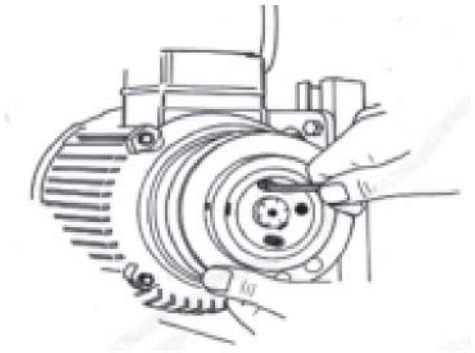
Dismounting the V-belt pulley

- release the tension of the fan belt and dismount it
- turn out the inner hexagon-cap screw (see pic. 1)
- turn in one screw into the threaded hole of the socket an tighten it. This releases the socket.
- the loosened screw can now be pulled from the shaft by hand.



Mounting the V-belt pulley

- After cleaning and degreasing, the pulleys and the socket are put together again: the holes must cover each other, then you can screw in the inner hexagon-cap screw loosely.
- push pulley and socket onto the shaft and align them
- motor and fan pulley must align exactly
- tighten the inner hexagon-cap screws all exactly the same way (see pic. 2)



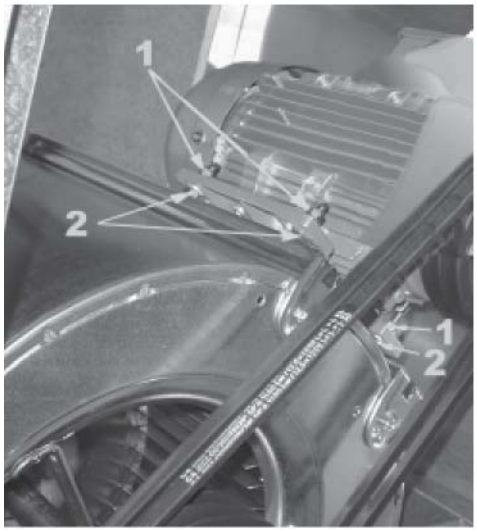
Tightening the V-belt

Before the initial operation and during the maintenance (which has to be done regularly), the V-belt must be checked concerning ist tension and if it is not loose. If necessary, the V-belt must be re-adjusted or changed.

1.) Re-adjustment of the V-belt between driving motor and fan:

- Loosen the upper and lower 4 screws (1) at the side the motor and change the distance by turning the 4 lower screws (2).

-



Assembly of air inlet and air outlet accessories

1.) Mounting of plenum (pressure side)

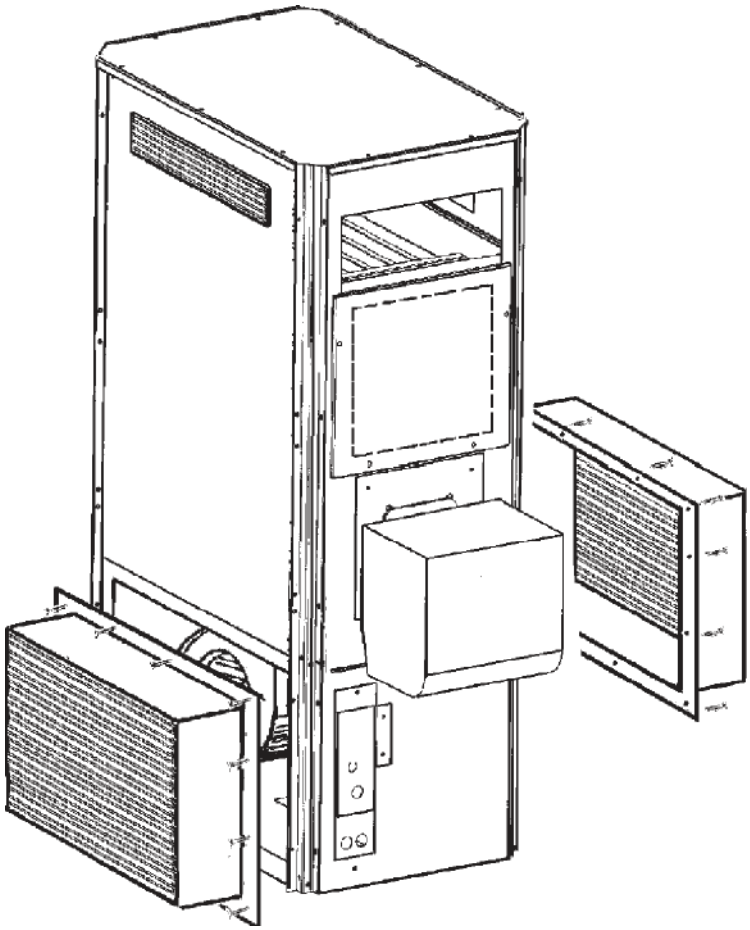
- **The attachment of pressure side accessories has to be done with self-tapping screws. A sealing tape has to be put between accessory and heating unit.**

Mounting the accessories:

1. **glue the sealing tape between plenum and unit**
2. **fix the plenum with self-tapping screws (2, z.B. 5,5 x 19 mm) inside the cabinet's frame. The fixation of the components is done the same way.**

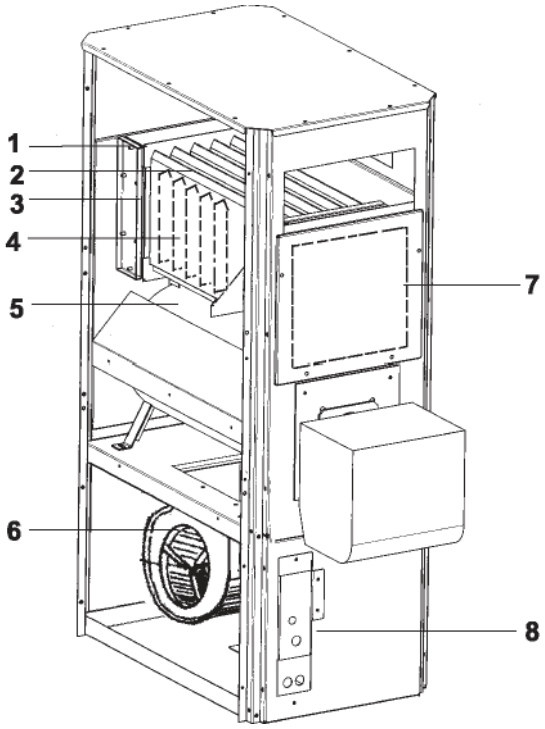
2.) Mounting of accessories (aspiration side)

The attachment of aspiration side accessories has to be done with self-tapping screws in the edges of the cabinet (put on). A sealing tape has to be put between accessory and heating unit.

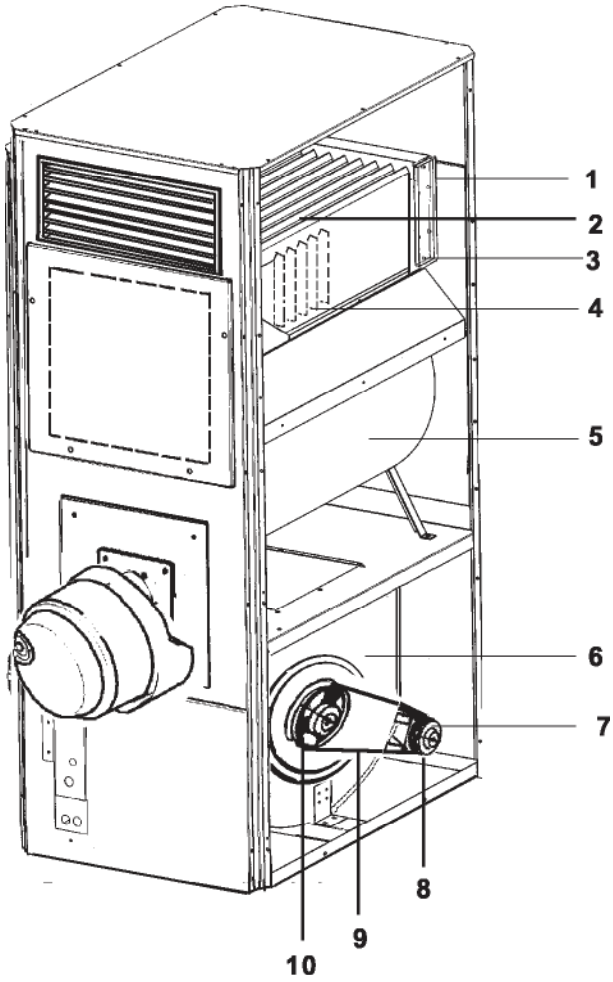


25S to 70S

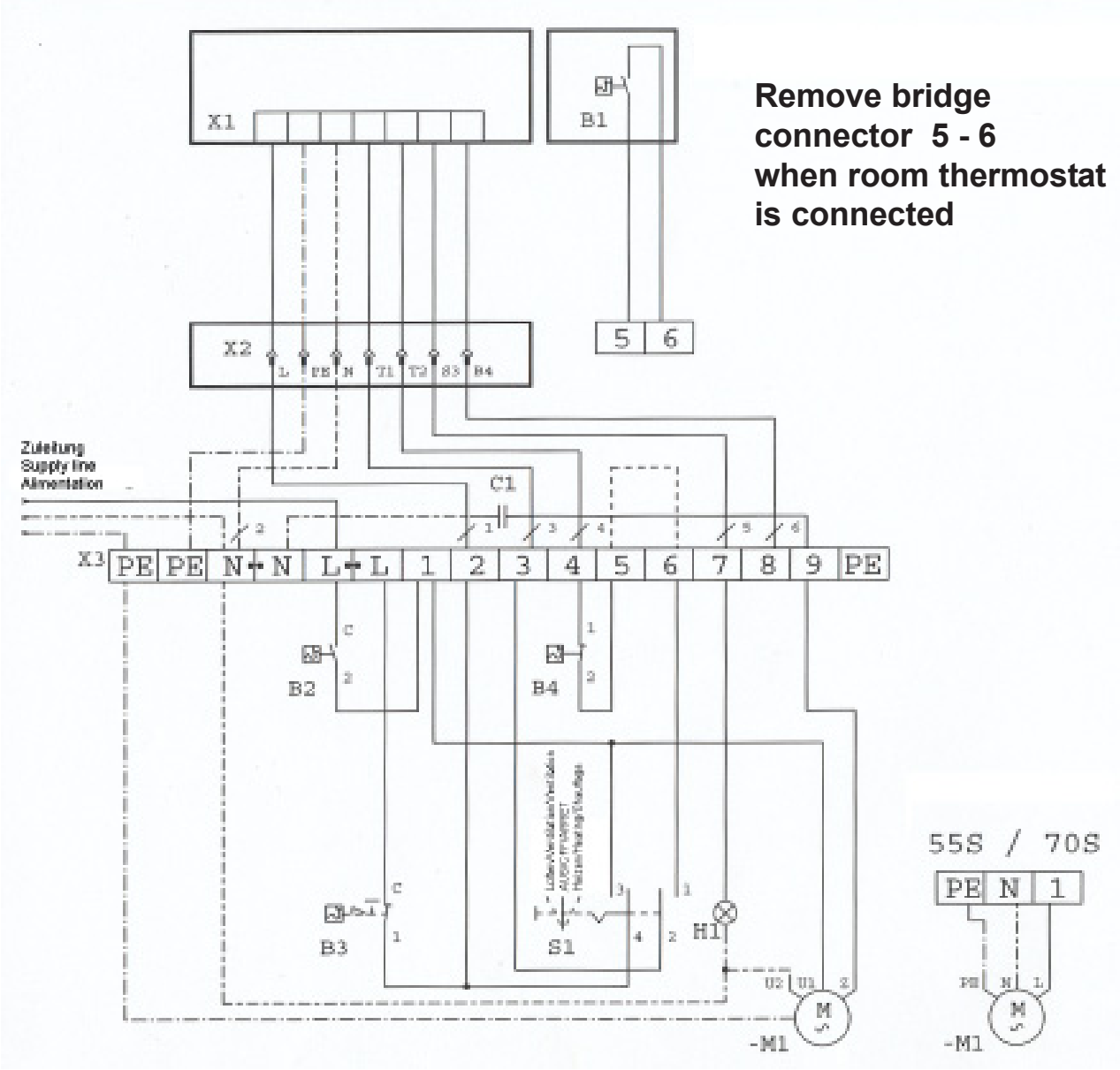
1 Sealing tape
2 Heat exchanger
3 Cleaning cover
4 Turbulators
5 Combustion chamber
6 Fan
7 Cleaning cover with sealing tape
8 Control box



95 S to 110 S



1 Sealing tape
2 Heat exchanger
3 Cleaning cover
4 Turbulators
5 Combustion chamber
6 Fan
7 Motor
8 Belt pulley for the motor
9 V-belt
10 Belt pulley for fan

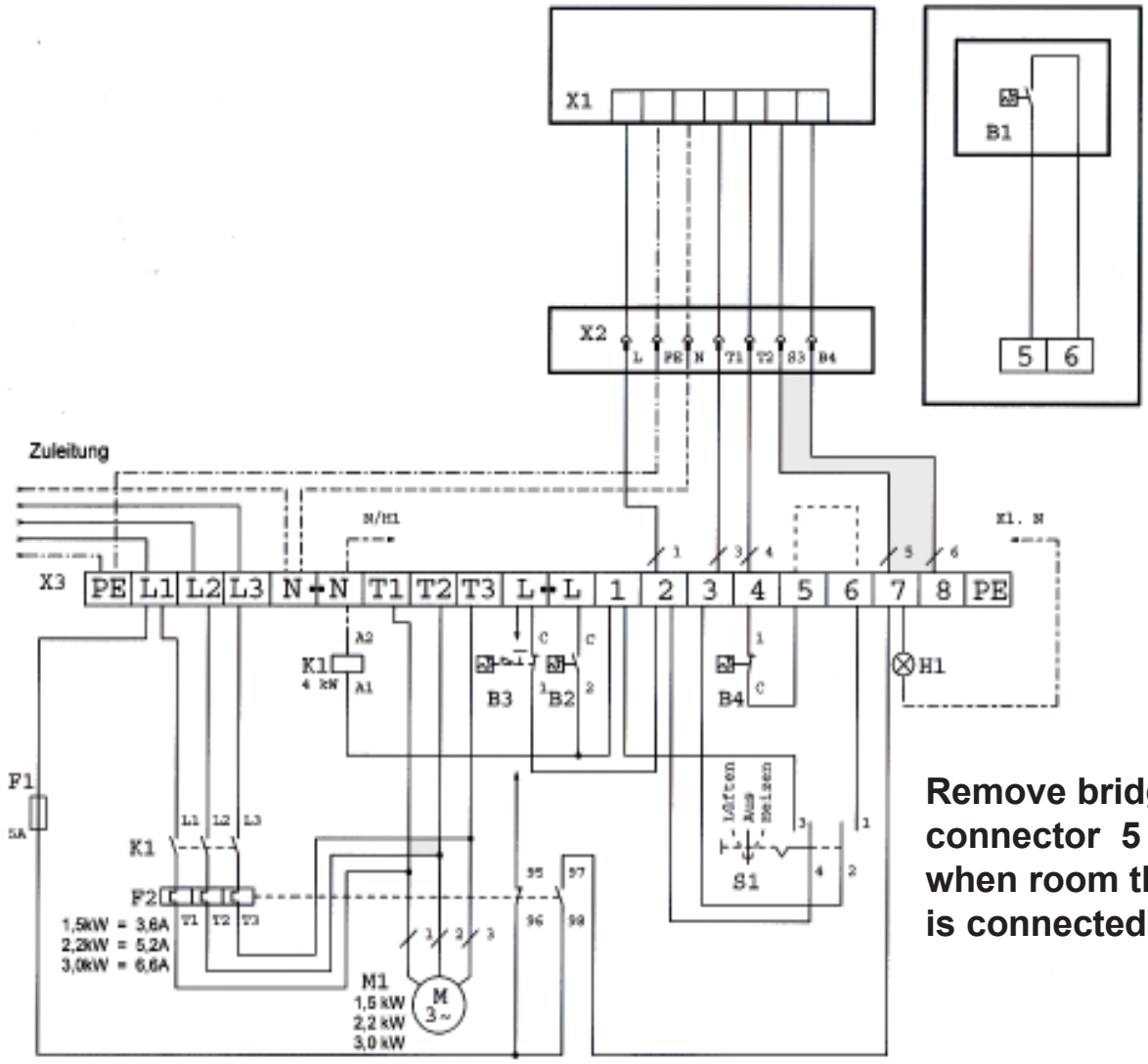


Remove bridge connector 5 - 6 when room thermostat is connected

B1	Raumthermostat (Option)	B1	Room thermostat (Option)	S1	Thermostat d'ambiance (Option)
B2	Lüfterthermostat	B2	Thermostat fan	B2	Thermostat ventilateur
B3	Sicherheitstemperatur-begrenzer	B3	Overheat thermostat	B3	Limiteur de température
B4	Brennerthermostat	B4	Burner thermostat	B4	Thermostat du brûleur
C1	Motorenkondensator	C1	Capacitor for motor	C1	Condensateur pour moteur
H1	Störlampe	H1	Indicator light	H1	Lampe de dérangement
M1	Lüftermotor	M1	Fan motor	M1	Moteur ventilateur
S1	Wahlschalter	S1	Selector switch	S1	Commutateur
TK1	Thermokontakt	TK1	Thermojunction	TK1	Contact
X1	Feuerungsautomatik	X1	Burner control	X1	Commande automatique du brûleur
X2	Brennerstecker	X2	Burner plug	X2	Prise du brûleur
X3	Klemmleiste Schaltgehäuse	X3	Connecting strip Control box	X3	Barre à bornes boîtier De commande

Schaltplan / Circuit diagram / Schéma électrique

für 400 V Motoren / for 400 V Motors / pour 400V Moteurs



Remove bridge connector 5 - 6 when room thermostat is connected

B1	Raumthermostat (Option)	B1	Room thermostat (Option)	S1	Thermostat d'ambiance (Optional)
B2	Lüfterthermostat	B2	Thermostat fan	B2	Thermostat ventilateur
B3	Sicherheitstemperatur-begrenzer	B3	Overheat thermostat	B3	Limiteur de température
B4	Brennerthermostat	B4	Burner thermostat	B4	Thermostat du brûleur
F1	Steuersicherung	F1	Fuse	F1	Fusible
F2	Motorschutzrelais	F2	Motor-protection relay	F2	Relais tôle de capotage
H1	Störlampe	H1	Indicator light	H1	Lampe de dérangement
K1	Motorschütz	K1	Contactor	K1	Contacteur
M1	Lüftermotor	M1	Motor ventilation	M1	Moteur entilateur
S1	Wahlschalter	M1	Selector switch	M1	Commutateur
TK1	Thermokontakt Lüftermotor (falls vorhanden)	TK1	Thermojunction fan motor (if available)	TK1	Contact thermique moteur ventilateur (si existant)
X1	Feuerungsautomatik	X1	Burner control	X1	Commande automatique du brûleur
X2	Brennerstecker	X2	Burner plug	X2	Prise du brûleur
X3	Klemmleiste Schaltgehäuse	X3	Connecting strip Control box	X3	Barre à bornes boîtier de commande

EG - Konformitätserklärung
EC - Declaration of conformity
Déclaration de conformité CE

Der Hersteller
The manufacturer
Le fabricant

Kroll GmbH
Pfarrgartenstraße 46
71737 Kirchberg
Deutschland

Dokumentationsbevollmächtigter
Authorized person for documentation
Personne authorisée pour la documentation

erklärt hiermit, dass folgende Produkte
herewith declares that the following products
explique par ce document que les produits suivants

Produktbezeichnung Description Désignation du produit	Stationäre Warmlufterzeuger Stationary air heaters Générateur d'air chaud stationaire
Typenbezeichnung Type Type	**25S, 40S, 55S, 70S, 95S, 110S**

allen einschlägigen Bestimmungen der folgenden Richtlinien entspricht
correspond to all relevant regulations of the following guidelines
Correspondent à tous les spécifications des directives suivantes

2006/42/EG	Maschinen Machines Machines
2006/95/EG	Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen Electrical devices for use within certain voltage limits Matériel électrique pour utilisation dans certaines limites de voltage
2004/108/EG	Elektromagnetische Verträglichkeit Electromagnetic compatibility Compatibilité électromagnetique
2009/142/EG	Gasverbrauchseinrichtungen / Gas appliances directives / Directives de gaz

Folgende harmonisierte Normen wurden angewandt
The following harmonized norms have been applied
Les normes harmonisées suivantes ont été appliquées

EN 1020-1997
EN 1020-A1:2001

Kirchberg, 01. Juni 2014

Anton Huber

Geschäftsführer / Director / Directeur

Bei nicht bestimmungsgemäßer Verwendung , Aufstellung, Wartung , wie in der Betriebsanleitung vorgegeben oder eigenmächtigen Änderungen an der werkseitig gelieferten Geräteausführung erlischt jeglicher Gewährleistungsanspruch.
Im Übrigen gelten unsere „Verkaufs- und Lieferbedingungen“
Technische Änderungen im Sinne der Produktverbesserung vorbehalten.

Any use, installation, maintenance that is not effected according to the rules as asserted in the technical manual, or unauthorized modifications on the original version as delivered from manufacturer leads to expiration of any right to warranty.
Furtheron our „Conditions of Sales and Delivery“ are valid.
Technical modification for product improvement are subject to change without notice.

Toute utilisation, installation et maintenance qui ne soit pas effectué conformément aux directives fixés dans le manuel technique, ainsi que toute modification à l’appareil livré du fabricant dans sa version originale, entraîne l’expiration du droit de garantie.
En plus, nos „Conditions de vente et de livraison“ sont en vigueur.
Sous réserve de modification technique dans le sens d’amélioration du produit.

Kroll GmbH
Pfarrgartenstraße 46
D-71737 Kirchberg/Murr
Telefon (0049) 07144 / 830 200
Telefax (0049) 07144 / 830 201
e-mail vertrieb@kroll.de
Internet www.kroll.de
Service Hotline (0049) 07144 / 830 222