

R1

Edition April 2024
Technical changes in the sense of
product improvement reserved!

Oil



Overview

Contents

Contents

		Page
Overview	Contents	2
	General information / Safety information / Maintenance	2
Installation	Installation of flange and burner	3
	Service position	3
	Connecting the electrical supply	3
	Oil connection	3
	Oil pump	4
Function	Checking control box function - Flame control	5
	Flame monitor QRB	5
Start-up	Nozzle selection	6
	Insert nozzle	6
	Adjustment of the ignition electrodes	6
	Air adjustment	6
	Start-up (R1-L / R1-V-L)	6
Design	Design -L (actuator SA2-F)	7
	Design -V (with oil preheater)	7
	Design -B (with service hour meter)	7
Service information	Adjustment boiler - burner	8
	Connection of the chimney	8
	Flue gas thermometer	8
	Explosion drawing and parts list R1-V-L	9
	Wiring diagrams and legend	10
	Adjustment table	12
	Fault diagnosis	13
	Declaration of conformity	14
	Technical data	15
	Working ranges	16
	Boiler connection dimensions	16
	Burner dimensions	16

General information

GIERSCH oil burners R1 are the result of many years of research and development work. Whilst our commitment is to supply you with the finest possible products, please note that for the best results, these oil burners must be properly calibrated during commissioning to meet local site conditions.

Care and accuracy when setting the burner will result in higher efficiency and lower fuel costs, to the satisfaction of our mutual customer.

To achieve low-emitting and economic combustion, the following information must absolutely be observed!

Tested and licensed according to DIN EN 267 for fuel oil EL according to DIN 51603.

Manually operated shut-off valve

A manually operated shut-off valve must be installed upstream of the burner or regulator to isolate the burner. It must be easily accessible.

Filter and venting device

A filter must be installed upstream of the burner to prevent the ingress of foreign matter. Suitable equipment must be provided for venting the fuel supply line.

Safety instructions

Observe the technical rules as well as the legal prescriptions and those of the building supervision when installing and operating the plant.

Installation, oil and flue gas connection, initial start-up, electrical connection as well as maintenance and overhaul work may only be performed by specialists.

For connecting the electrical supply, the VDE or ÖVE regulations and the regulations of the responsible electric supply company must be considered. Work at electrical equipment may only be performed by a specialist in accordance with the relevant VDE and ÖVE prescriptions.



Danger of injuries at rotating fan on start-up in service position.

Maintenance

§ 9 of the heating installation decree requires regular maintenance of the plant to ensure a reliable and safe function of the appliance.

The appliance must be maintained yearly.

We recommend to conclude a maintenance contract with admitted specialists.

Key for code designation:

-B = with service hour meter

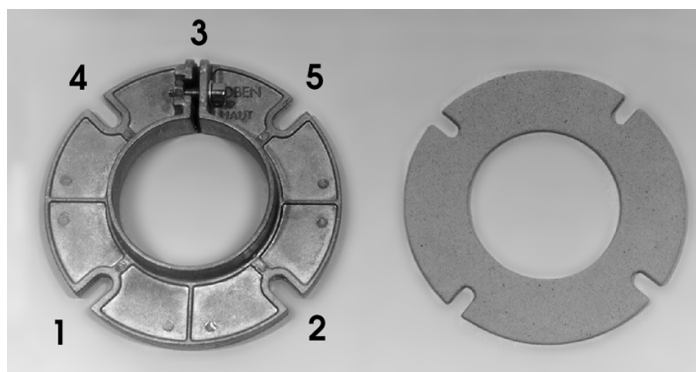
-L = with air damper

-V = with oil preheater

-WLE = for warm air heating with DKW 972 for R1-L

Installation of flange and burner

- Install the sliding flange and the gasket loosely on the boiler door.
- Slide burner into place.
- Observe the tightening sequence of the screws.
- Lift burner when tightening the screws.



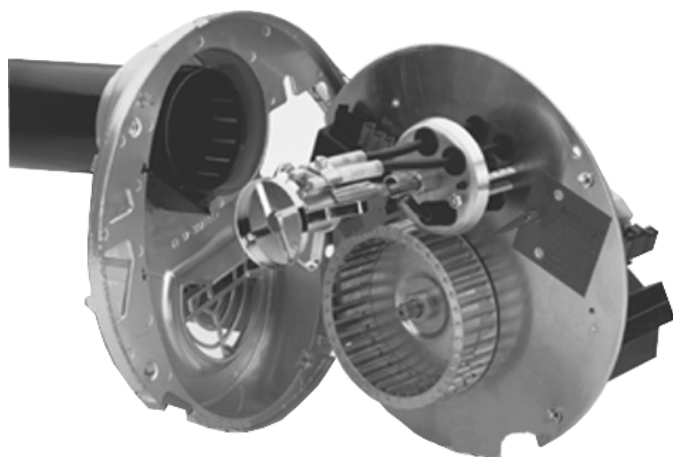
The sliding flange allows you to adjust the immersion depth of the burner pipe perfectly to the corresponding combustion chamber.

Service position

- Loosen the snap closures and withdraw the base plate.
- Engage the buttons on the base plate into the crossed slots in the housing.

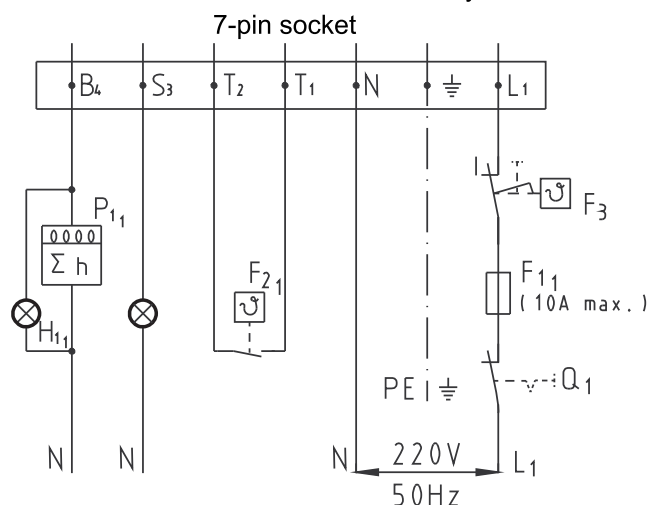


Danger of injuries at rotating fan on start-up in service position.



Connecting the electrical supply

- Wire the electrical supply to the socket as shown in the wiring diagram.
- **OBSERVE THE LOCAL REGULATIONS!**
- Protect the power supply with a 10 amp quick fuse or 6,3 amp slow fuse.
- Use a flexible cable!
- Check connections if burner is already connected



For explanation of symbols, see page 12

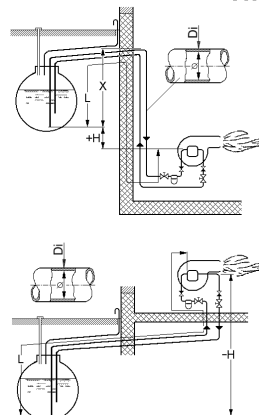
Oil connection

The table shows the maximum admissible lengths of supply lines. The values refer to fuel oil EL 4.8cSt and the inside diameter of the oil feed pipes. The calculated resistance for the supply lines include allowance for 4 elbows, 1 valve and 1 check valve for the resistance. The length X should not exceed 4 m, due to eventual degasifications of the oil.

- Connect the oil pump to the oil lines using the flexible couplings supplied.
- The pump should be connected with flow and return lines (two-pipe system).
- In case of tanks set at higher levels, the pump can be converted to a single pipe system.

Presumption: kinem. viscosity 6mm²/s at 20°C, T_{oil} = 10°C

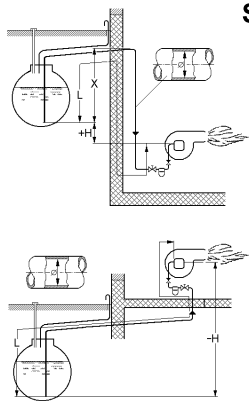
Two-pipe system



Pump	Di [mm]	H [m]								
		4	3	2	1	0	-1	-2	-3	-4
Suntec or Danfoss	6	21	18	16	13	11	8	5	-	-
	8	67	58	50	42	34	25	17	9	-
	10	100	100	100	100	82	62	42	21	-

Installation

Oil pump



Single pipe system

The pump pressures indicated on the adjusting tables are approximate values only and can be regulated to suit area conditions, if necessary.

Attention:

The full pump pressure at the manometer of the oil pump „Suntec AS47“ is achieved after oil release only!

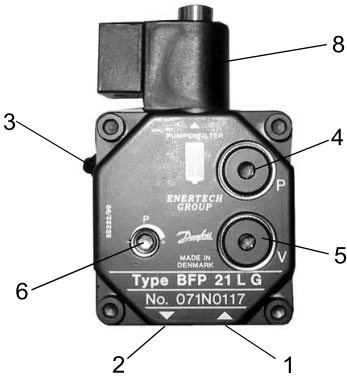
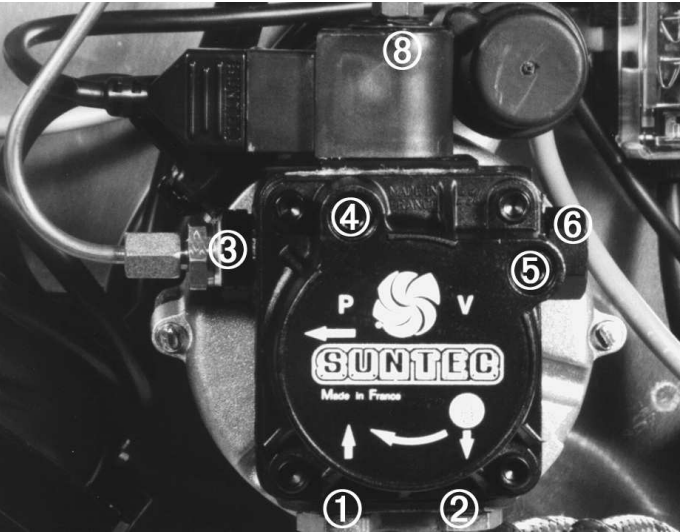
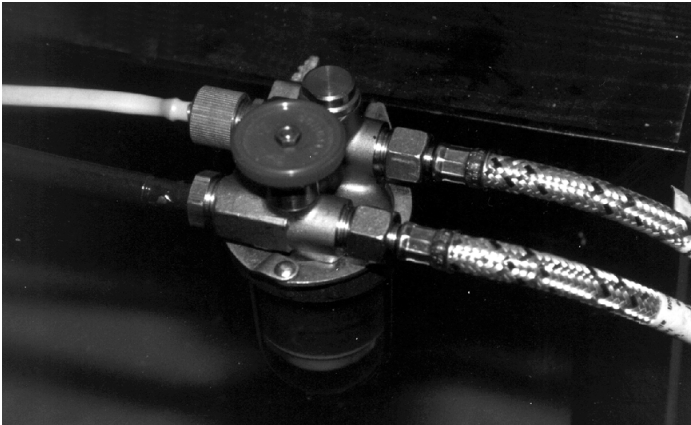
Suntech

- 1 = Feed
- 2 = Return
- 3 = Pressure tube connection
- 4 = Pressure measuring connection
- 5 = Vacuum measuring connection
- 6 = Pressure adjustment
- 8 = Magnetic valve

oil- flow rate [kg/h]	Di [mm]	H [m]								
		4	3	2	1	0	-1	-2	-3	-4
bis 2,5	4	77	68	58	49	40	31	22	13	-
	6	100	100	100	100	100	100	87	64	18
	8	100	100	100	100	100	100	100	100	56
2,5 - 5,0	4	39	34	29	25	20	16	11	6	-
	6	100	100	100	100	100	79	56	32	9
	8	100	100	100	100	100	100	100	65	28
5,0 - 10,0	4	19	17	15	12	10	8	-	-	-
	6	98	86	74	63	51	39	28	16	4
	8	100	100	100	100	100	100	88	51	14
10,0 - 23,0	6	42	37	32	27	22	17	12	7	-
	8	100	100	100	85	69	54	38	22	6

For single pipe operation, unscrew the deviation plug in the return opening and seal the return opening with a gasket and metal plug.

For conversion to single pipe system, we recommend to use a fuel oil filter in the return line. For this, the pump remains in two-pipe operation. Install flow and return burner pipes at the filter. Open the oil tap at the filter and start up the burner.



Danfoss:

- 1 = Feed
- 2 = Return
- 3 = Pressure tube connection
- 4 = Pressure measuring connection
- 5 = Vacuum measuring connection
- 6 = Pressure adjustment
- 8 = Magnetic valve

Oil pump

The pump pressure can be adjusted according to the respective capacity (see adjusting table p. 14). For this:

- Remove the sealing plug No. 4.
- Screw in the pressure gauge and adjust the pump pressure with the regulating screw No. 6

	R1 (-L)	R1-V (-L)
Factory setting:	13 bar	8 bar
We recommend:	10-15 bar	7-10 bar

Checking control box function - Flame control



Danger to life due to electric shock!

Disconnect the power supply before working on live parts!

Troubleshooting only by authorized specialist personnel!

(Remote) unlocking only by authorized specialists.

Carry out the following checks after commissioning and after servicing the burner.

Burner start with dimmed flame detector:

- Fault switch-off end "TSA".

Burner start with externally lit flame detector:

- Fault switch-off also 40 s at the latest.

Burner operation with flame arrest simulation:

- To do this, darken the flame detector during operation and leave it in this state.

Repetition followed by fault switch-off end "TSA" fault cause diagnosis

Safety and switching functions

In the event of a flame failure during operation, the fuel supply is switched off immediately and the appliance goes into fault mode. After an interruption in the power supply restart takes place in any case.

In the event of a flame signal during pre-ventilation immediately triggers a fault.

Display during commissioning

Color code table of the multicolored signal light	
Condition	Color
Waiting time, other waiting states	
Oil preheater heats	yellow
Ignition phase, ignition activated	yellow blinking
Operation, flame OK	green
Operation, poor flame	green blinking
External light during burner start	green-red
Low voltage	yellow-red
Fault, alarm	red
Fault code status, see fault code table	red blinking
Interface diagnosis	Red flickering light

Fault diagnosis

The red fault signal light "LED" lights up after fault shutdown. In this state, visual fault diagnostics can be activated according to the fault code table by pressing the release button for > 3 s.

Pressing the unlock button again for > 3 s activates the interface diagnostics. The interface diagnosis only works without the AGK20... unlocking button extension attached.

If the interface diagnosis was activated by mistake, recognizable by the faint red flickering light of the "LED" signal light, it can be switched off again by pressing the unlocking button again for > 3 s. The correct switchover moment is signaled by a yellow light pulse.

Flashing code "red" of the fault signal light (LED)	Possible causes
blinking 2x	No flame formation at the end of the switching time (TSA) - Defective or dirty fuel valves - Defective or dirty flame monitor - Poor burner setting, no fuel - Defective ignition device
blinking 3x	
blinking 4x	external light during burner start
blinking 5x	
blinking 6x	
blinking 7x	Flame breaks off too frequently during operation (repetition limitation) - Defective or dirty fuel valves - Defective or dirty flame monitor - Poor burner setting
blinking 8x	Time monitoring oil preheater
blinking 9x	
blinking 10x	Wiring fault or internal fault, output contacts, other fault

During fault diagnosis, the control outputs are de-energized and the burner remains switched off. Exit the fault cause diagnosis and restart by unlocking the burner.

Press the unlock button for approx. 1 s (< 3 s).

Flame monitor QRB

The flame monitor is used to monitor burning oil flames and to control ignition sparks.

Trouble-free burner operation is only guaranteed if the intensity of the UV radiation at the installation location of the sensor is sufficiently high for it to ignite safely during each half-wave.

Start-up

Nozzle selection

Function check:



A safety check of the flame monitoring system must be carried out on initial commissioning as well as after inspections or longer periods of system downtime.

Start-up test with darkened flame monitor:

At the end of the safety period, the burner must go to fault.

Start-up with exposed flame detector:

After approx. 20s pre-ventilation, the burner must go to fault.

Standards start-up; if burner is in operation, darken flame detector.

New start-up attempt, after the end of the safety period the burner must go to fault.



Nozzle selection

The mentioned oil throughputs of the adjustment table (p.14) refer to a viscosity of c. 1.8 cSt for pre-heated fuel oil and c. 4.8 cSt for fuel oil with c. 20°C. The dimension „A“ refers to a height of c. 200 m above sea level and to a room air temperature of c. 20°C and the usual furnace pressure. The nozzle recommendations of the nozzle selection table must strictly be adhered to, as optimum combustion values are obtained under these conditions only. We recommend Danfoss nozzles S.

Insert nozzle

- Unplug the ignition cable.
- Loosen the screw at the baffle plate holder and remove the baffle plate.
- Unscrew the plastic plug from the nozzle holder.
- DO NOT DAMAGE THE SEALING SURFACE!
- Choose the nozzle using the adjustment table (p. 14) and screw into place.
- Remount the baffle plate up to the sealing ring resp. to the pre-heater and tighten the screw.
- Plug in ignition cable, insert base plate into housing and secure with snap closures.

Adjustment of the ignition electrodes

The ignition electrodes are works-regulated. Dimensions (Fig.) for checking only.

R1 (-L) (-V)

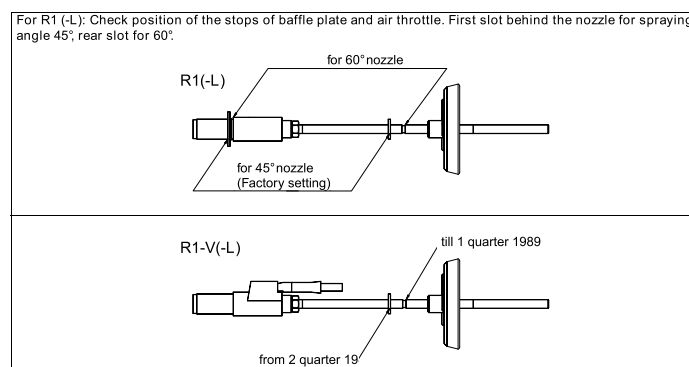
3 for 60° nozzle

5 for 45° nozzle

Air adjustment (measure „A“)

Dimension „A“ (see adjustment table p. 14) serves as a guide for burner adjustment.

Dimension „A“ describes the position of the nozzle connection with baffle plate in the burner tube cone. Clockwise rotation of setting nut: The air throughput is increases, the CO₂ rate in the flue gas reduced. On measuring the CO₂ at the measuring point in the flue gas tube, the correct adjustment of „A“ is continuously checked.



Start-up (R1-L / R1-V-L)

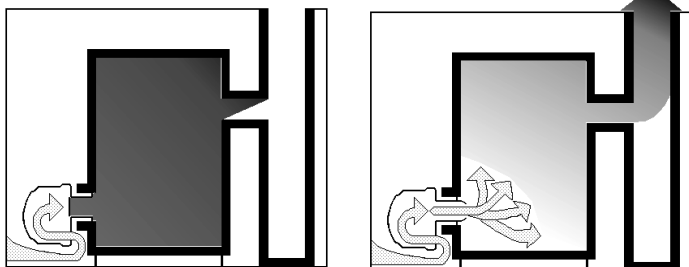
Start-up of burner: During standstill, the air damper is closed. After opening the air damper, ignition and pre-aeration (c.15 sec.) are switched on. Then the magnetic valve opens and releases the oil. Then the required pump pressure is set according to the adjustment table (page 14). After a short operation period, measurements (CO₂, soot and flue gas temperature) can be taken. If necessary, the air quantity can be readjusted by means of the setting nut.

Design - L (with actuator SA2-F)

For burners of design -L, an air damper prevents cooling of the furnace during standstill. The air damper of single-stage burners is controlled by the actuator SA2-F.

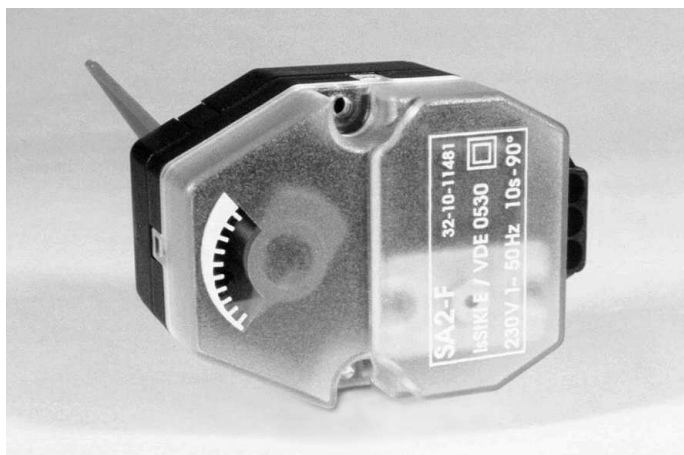
This actuator opens the air damper electrically by a lever. The air damper is closed by elastic force in the actuator. The air damper position („Open“ or „Closed“) can be recognized from the red indicating lever.

Do not actuate the red lever manually, as this may destroy the mechanism!



With Giersch saving automation:
the boiler keeps warm during the
heating periods!
⇒ Less energy consumption!

Without saving automation:
cold air cools the combustion cham-
ber.



Design -B (with service hour meter)

The service hour meter gives an exact record of the operating time. It is connected in parallel to the magnetic valve Y6. The service hour meter can be supplied with the burner, or as an add-on item at a later date.

Annual consumption can be worked out if the oil throughput per hour is known. The GIER SCH Oil-Control can be used to find out actual running costs.

The obtained values can be used e.g. to find out the annual consumption. Longer working phases increase the annual consumption.

Design -V (with oil preheating)

Oil preheating is part of the burner firing programme and remains in operation until the burner is switched off by the controlling thermostat.

A light in the lower part of the control box shows when the preheater is in use. The burner has a cold start lock out that operates via a thermostat in the oil preheater, which releases the current to the control box only after heating up. The preheater is integrated into the nozzle holder and has a controlled heating capacity, which works via a PTC resistor.

Service information

Adjustment boiler - burner

Adjustment boiler - burner

For less emission and economic combustion an exact adjustment of boiler - burner is necessary. Under consideration of the combustion chamber resistance, a burner will be chosen for the boiler in accordance with the working scopes (page 16).

Connection of the chimney

For optimum plant efficiency, the correct flue dimensions are needed. These parameters correspond to those in DIN 4705 and DIN 18 160 and the respective boiler and burner capacities.

In case of flues in continuous operation, according to DIN 18 160, Part 1 Group I, the flue gas volume of the total rated heat loading has to be considered when preparing the calculations. The effective chimney height starts from the burner level. Apart from that, installers must comply with all local and national building regulations.

When choosing the flue type, make sure that the risk of condensation resp. cold inner chimney wall is minimized.



We recommend the installation of a draught stabilizer.

Thus, it is ensured that:

- Variations in the draught are compensated
- Moisture in the chimney are minimized
- Standing losses are minimized

Insert a connecting piece into the chimney with a gradient in the direction of flow, of 30° to 45°. Insulate the waste gas tubes with lagging.

Important!

During the sanitation of an existing plant often overdimensioned chimney cross sections or unsuited chimneys for low temperature function etc. are indicated. It may be advisable to consult with the cleaning contractor before installation so that any changes needed to facilitate maintenance can be built into the original design (e.g. installation of a refined steel tube, centrifuge of the fire place, assembling of a suction blower, etc.).

Flue gas thermometer

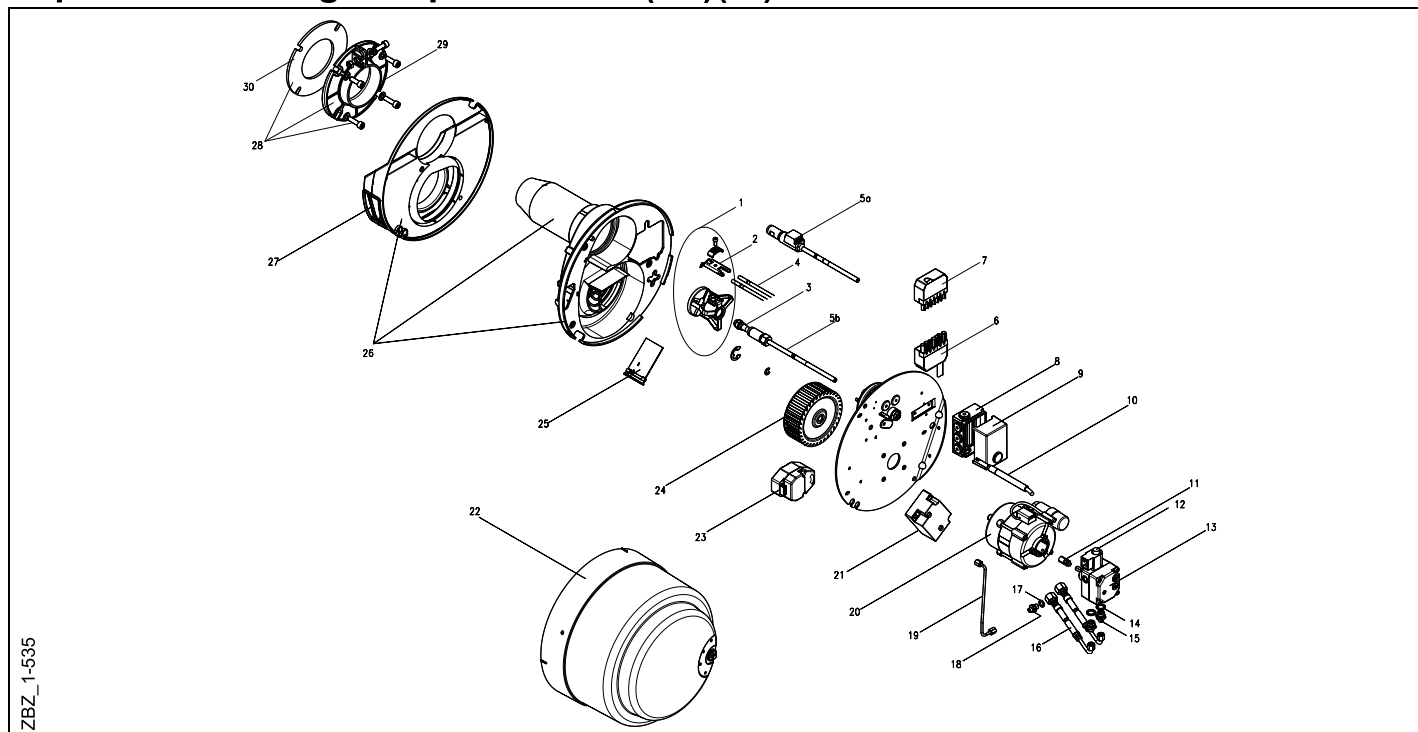
The heating plant should have a flue gas thermometer to control flue gas temperature - the hotter the flue gas, the greater the heat loss.

High flue gas temperatures increase sediment, which reduces efficiency of the heating plant.

Increasing flue gas temperatures signal that the plant requires cleaning and resetting by qualified service staff.

Nominal heat capacity in kilowatts	Limits for flue gas losses %			
	installed before the 31.12.1982	installed from the 1.1.1983 on	installed from the 1.10.1988 on, in the area mentioned in Art. 3 of the Unification Treaty from the 3.10.1990 on, or considerably modified by the 31.12.1997	installed from the 1.1.1998 on
over 4 to 25	15	14	12	11
over 25 to 50	14	13	11	10
over 50	13	12	10	9

Explosion drawing and parts list R1(- V)(-L)



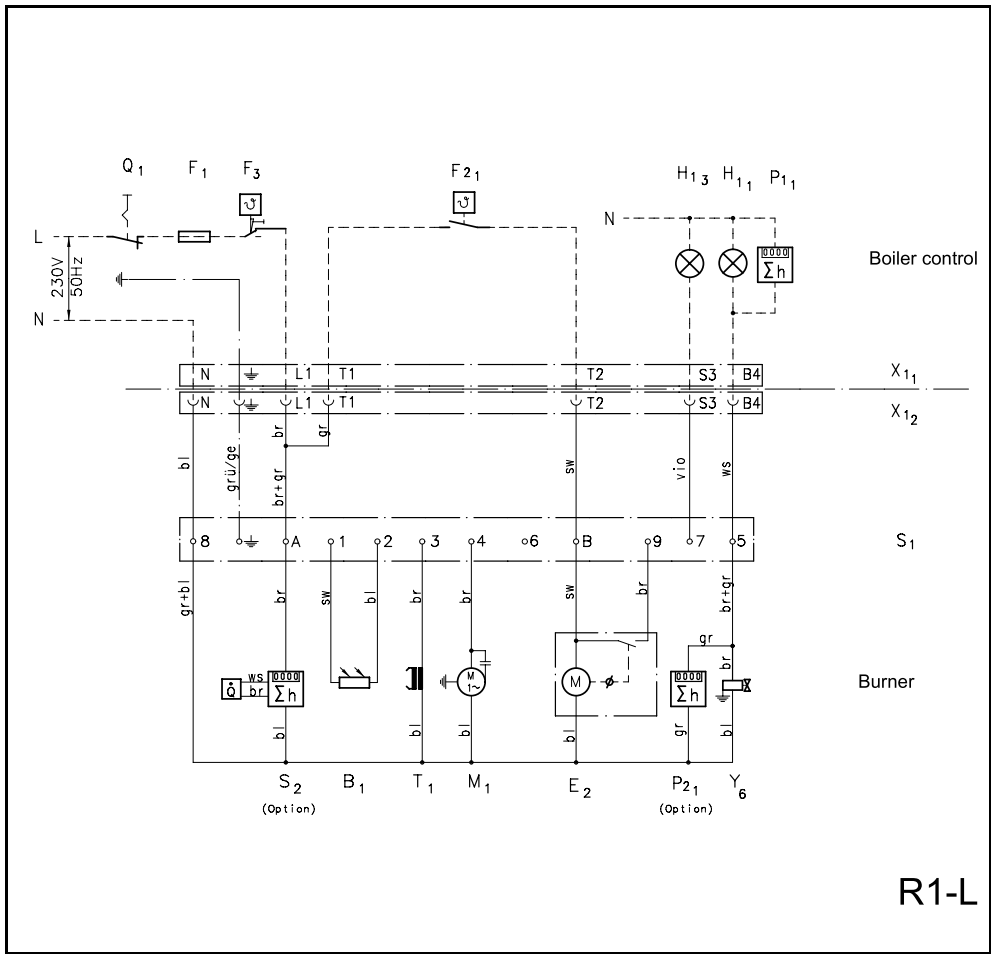
Pos.	Designation	PU ¹⁾	Art.-no.
1	Baffle plate with holder and twin electrode cpl.		31-90-20869
2	Twin electrode	5	31-50-11411
3	Nozzle		auf Anfrage
4	Ignition cable 440 mm of lengh.	2	47-50-26739
5a	Preheater incl. nozzle connection		51-90-20450
5b	Nozzle connection or R1		51-90-20972
6	Plug 7-pole black-brown	5	37-50-11015
7	Jack 7-pole black-brown		37-90-20731
8	Lower part of control box 9-pol.		31-90-22807
9	Control box TF 830.3		37-90-10936
9	Control box DKW 972 Mod. 05 50/60 Hz for WLE		47-90-21731
9	Control box DKW 972 as a substitute for MMO 872		47-90-22543
10	Photo electric cell MZ 770		37-90-10118
11	Couplinf for motor	10	37-50-11586
12	Solenoid valve for Oilpump Suntec AS, AT and ALE		47-90-12582
12	Solenoid valve for Oilpump Danfoss BFP		57-90-10919
13	Oilpump Suntec AS 47D cpl.		47-90-12644
13	Oilpump Danfoss BFP 21LG cpl.		47-90-10834
14	Sealing ring 13 x 18 x 2	50	37-50-11293
15	Hose nipple NW4 R1/4 x 6LL	10	47-50-20862
16	Oil hose NW4 1200 mm of lengh cpl.	2	47-50-10802
17	Sealing ring 10 x 14 x 2	50	37-50-10788
18	Pressure pipe nipple R1/8	5	37-50-20200
19	Pressure pipe R1 for Danfoss/Suntec		31-90-10929
20	Motor 230 V / 50 Hz 90 W with cable		31-90-11582
21	elektr. ignition transformator mod. 26/35		47-90-24469
22	Burner top		31-90-10102
23	Actuator SA2-F		57-90-11592
24	Fan ø120 x 42 mm		31-90-10106
25	Air damper	5	37-50-20971
26	Housing with burner tube for R1		31-90-11604
27	Integrated silencer		31-90-21660
28	Montage kit cpl. to make up for No. 28, 29, 30		31-90-11421
30	Flange gasket for R1	5	31-50-10104

PU = packing unit 1, 5, 10, 20, 50 pieces

Service information

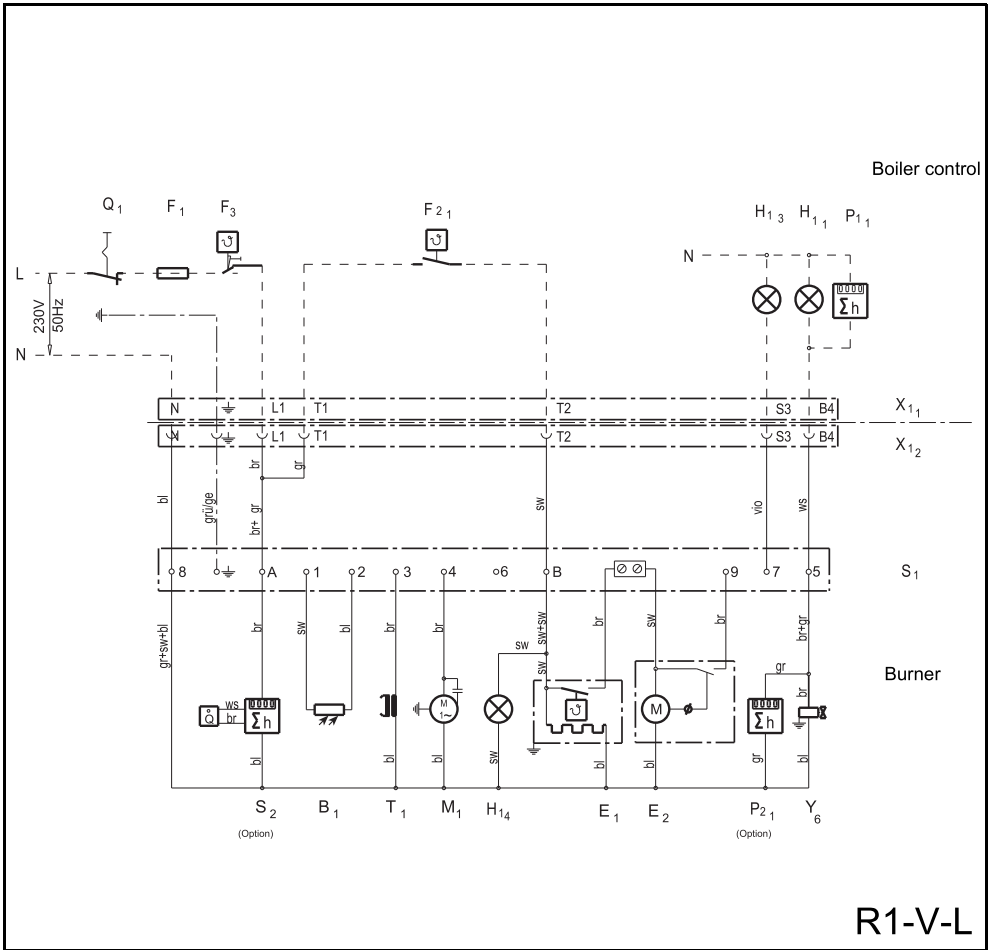
Wiring diagrams

Wiring diagrams

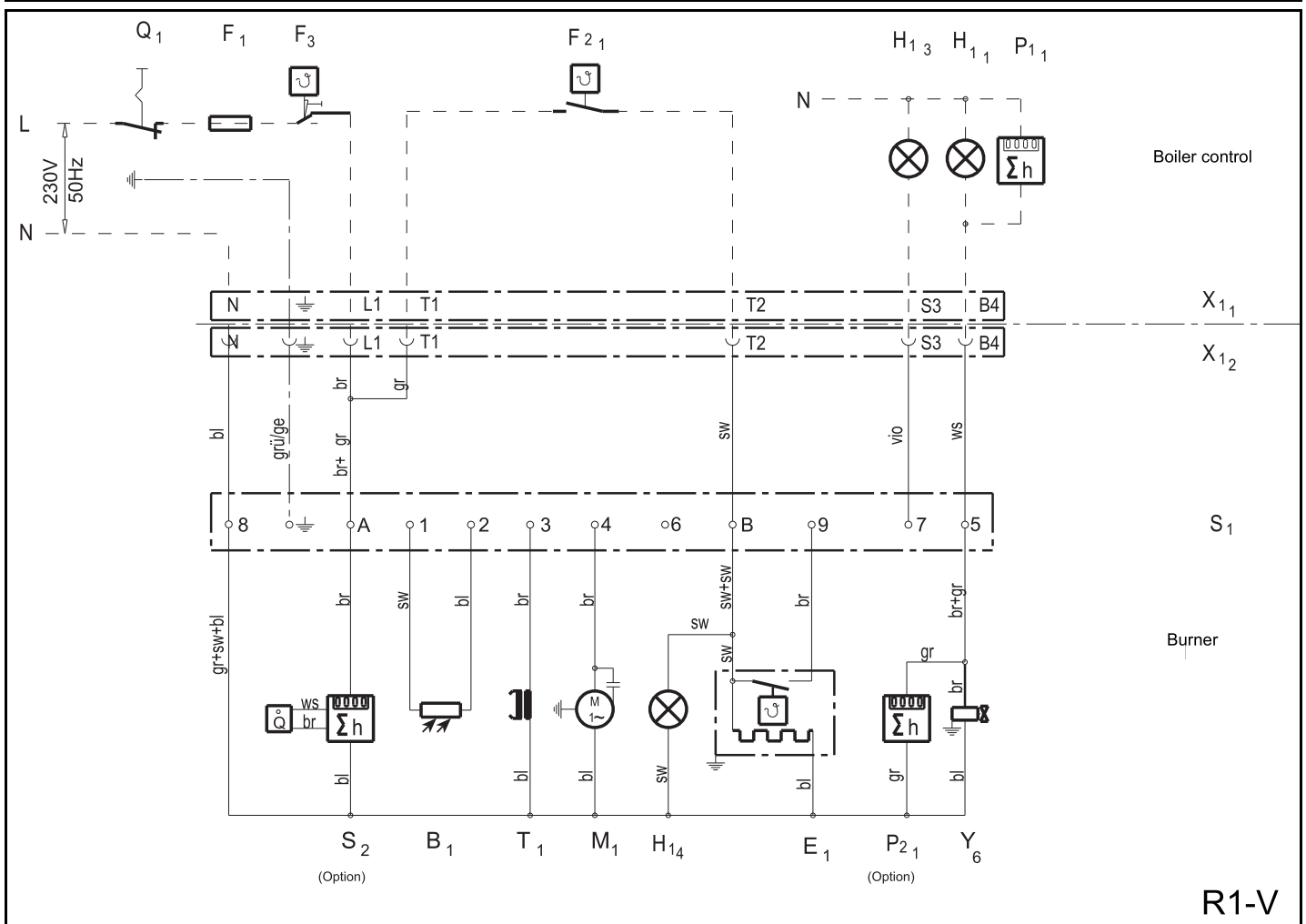


- B₁ Photo-electric cell
- E₁ Preheater
- E₂ Air damper actuator
- F₁ Ext. fuse (max. 10 amp recommended)
- F₂₁ Ext. temperature controller
- F₃ Ext. safety temp. limiter
- H₁₁ Ext. pilot lamp
- H₁₃ Ext. lamp fault message
- H₁₄ Oil preheater pilot lamp
- P₁₁ Ext. service hour meter
- P₂₁ Service hour meter burner (option)
- Q₁ Heating main switch
- M₁ Burner motor
- T₁ Ignition transformer
- Y₆ Oil magnetic valve
- X₁₁ Plug boiler control
- X₁₂ Jack burner
- S₁ Combustion unit Satronic TF 830 / DKW 972
- S₂ Oil Control
- PE = protective conductor

bl = blue
br = brown
ge = yellow
gr = grey
grü = green
sw = black
vio = violet
ws = whitr



R1-V-L

[illegible]

Service information

Adjustment table

Adjustment table



The values given in the tables are only setting values for start-up. The system settings required in each case must be redefined if values such as boiler output, calorific value and altitude deviate. A correction is required in any case.

Type / Burner capacity kW	Boiler capacity with η_k 92% kW	Nozzle spraying angle °S	Nozzle size Danfoss S gph	Pump pressure bar	Oil throughput- c. kg/h	Rough air adjustment Measure "A" mm
R1-L with integrated silencer						
17.5	16	60	0.40	10	1.5	5.5
20.5	19	60	0.40	14	1.7	6.5
24	22	60	0.50	12	2.0	8.5
28	26	60	0.55	12	2.4	9.5
32.5	30	60	0.60	13	2.7	11.5
36	33	45	0.65	11	3.0	12.5
41	37.5	45	0.75	13	3.5	14.5
47.5	43.5	45	0.85	14	4.0	17.5
53	48	45	1.00	12	4.4	18.5
R1-V-L with integrated silencer						
13	12	60	0.40	8	1.1	4.0
15	14	60	0.40	10	1.3	4.5
18	16.5	60	0.50	8	1.5	5.5
20	18.5	60	0.50	10	1.7	6.5
21.5	20	60	0.55	8	1.8	7.0
23	21	60	0.55	9	1.9	7.5
25	23	60	0.60	8	2.1	8.0
26.5	24.5	60	0.60	10	2.2	9.5
29.5	27	45	0.65	10	2.5	10.5
32.5	30	45	0.75	10	2.7	11.5
35.5	32.5	45	0.85	9	3.0	13
38.5	35.5	45	0.85	10	3.2	13.5
41	37.5	45	1.00	9	3.5	15
45	41.5	45	1,10	8	3,8	16
48.5	44.5	45	1.10	9	4.1	16.5
51.5	47.5	45	1.10	10	4.3	18.5
53	49.5	45	1.25	10	4.6	20.5

Fault diagnosis

Establishment	Cause	Elimination
Burner motor does not run	Fuse defective Safety thermostat locked Temperature of the controller adjustment exceeded Control box defective Motor defective Oil preheater: Heating or releasing thermostat defective Servomotor does not open resp. switch through Coupling motor–pump defective Operating voltage to low	replace unlock after drop in temperature, renewed trial to start replace replace replace replace replace take care for enough operating voltage
Burner does (not) start and locks out after end of the safety time	a) with flame: Photo-electric cell contaminated, defective, not fitted or adjusted correctly Control box defective Viewing glass of mixing device contaminated b) without flame: no ignition Burner receives no oil: Oil line valves closed Oil tank empty Filter contaminated Oil line leaky Pump defective Foot valve leaky Nozzle contaminated or defective Magnetic valve defective Filter in magnetic valve clogged Outside light Coupling motor–pump defective Oil preheater clogged Operating voltage more than 15% under nominal value	clean, replace, refit replace clean check ignition electrodes and adjustment, ignition transformer and cables open refill with oil clean seal replace seal clean nozzle filter or replace nozzle replace clean filter or replace magnetic valve see Function control Control box replace replace take care for enough operating voltage
Flame extinguishes during operation	Oil supply used up Nozzle filter clogged Oil filter or oil flow lines clogged Air locks Magnetic valve defective	fill up with oil clean nozzle filter or replace nozzle clean filter and lines check suction line and fittings replace
Mixing device very much oiled or has very much coke deposit	Wrong nozzle size Incorrect quantity of combustion air Furnace room not enough ventilated	Wrong adjustment correct the adjustment measures replace readjust the burner take care of sufficiently big aeration apertures
Burner runs intermittently	Too much oil throughput	install a control box with checking device

Service information

Declaration of conformity



Wir denken Wärme weiter.

Enertech GmbH, Adjutantenkamp 18, 58675 Hemer

☎ 0 23 72/965-0 ☎ 0 23 72/6 1240 ✉ info@giersch.de 🌐 www.giersch.de

Declaration of conformity for oil burners

We, Giersch GmbH, Adjutatenkamp 18 in D-58675 Hemer, Germany declare under our sole responsibility that

Oil burner, type **R1 and R1-V**

conforms to the stipulations of the directives

MD2006/42/EC
EMC2004/108/EC
BED92/42/EEC
LVD2006/95/EC
ErP2009/125/EG

and is marked as follows



EN 267 Bericht OB 2902016T1 TÜV Rheinland Energy GmbH

Hemer, 05.04.2024

A handwritten signature in blue ink, appearing to read 'J. Becker'.

Josef Becker
Geschäftsführer

Art. No. 89-10-80875-GB • Print 04-2024

Geschäftsführer
Dr. Josef Becker
Vorsitzende des Aufsichtsrates
Helene Richmond

Amtsgericht Iserlohn
HRB 8776
Ust-IdNr.
DE 815685219

Postanschrift
Postfach 3063
58662 Hemer

Bankverbindung
ENERTECH GmbH
IBAN: DE44 2004 0000 0240 0703 00
BIC: COBADEFFXXX
Commerzbank AG | Hamburg

Technical data

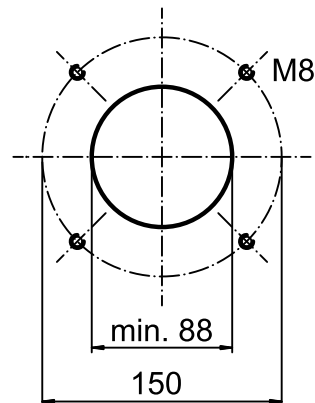
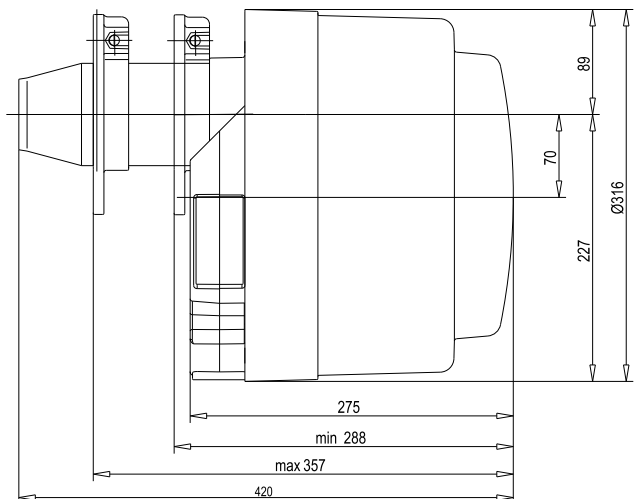
	R1 (-L)	R1-V (-L)
Burner capacity	1,2 - 4,5 kg/h =14 - 53 kW	1,0 - 4,5 kg/h =12 - 53 kW
recommended boiler capacity	12,5 - 48 kW 11-41 Mcal/h	11 - 48 kW 9,5-41 Mcal/h
voltage		
max. current consupcion	1,9 A	2,7 A
Motor	90 W	
weight in kg	12	
noise emission in dB(A)	≤ 60	
Emissions class	3	
NO _x limit vlue	< 120 mg/kWh	

Service information

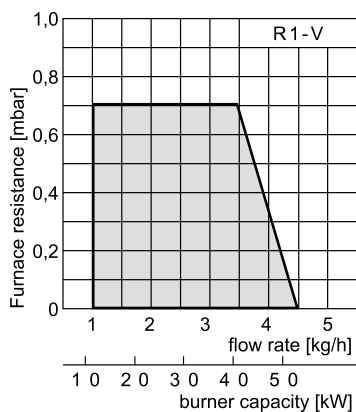
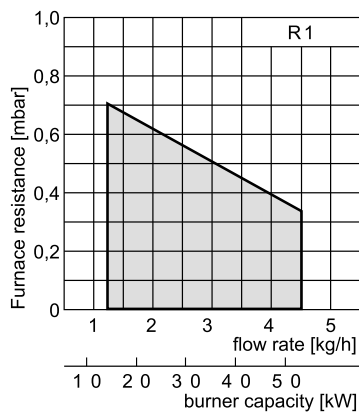
Burner dimensions / boiler connection dimensions

Burner dimensions / boiler connection dimensions

(Alle dimensions in mm)



Working range



TÜV-tested working areas in accordance with DIN EN 267.

The working range refers to an altitude of approx. 200 m above sea level and a room temperature of 20° C

All information in this technical documentation as well as the drawings, photos and technical descriptions placed at your disposal remain our property and may not be duplicated without our written permission given in advance. Subject to alterations.



Giersch GmbH • Brenner und Heizsysteme
Adjutantenkamp 18 • D-58675 Hemer •
Telefon 02372/965-0 • Telefax 02372/61240
E-Mail: kontakt@giersch.de • Internet: <http://www.giersch.de>

