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**Operating instructions
Segmented flame tube SICAFLEX®**



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Safety

Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This product must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

Explanation of symbols

■, **1**, **2**, **3**... = Action
 > = Instruction

Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

⚠ DANGER

Indicates potentially fatal situations.

⚠ WARNING

Indicates possible danger to life and limb.

! CAUTION

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

Changes to edition 05.14

The following chapters have been changed:
 – Checking the usage

Checking the usage

Intended use

SICAFLEX®

Segmented flame tubes SICAFLEX® are used to guide hot flue gases in single ended radiant tubes in conjunction with a self-recuperative burner.

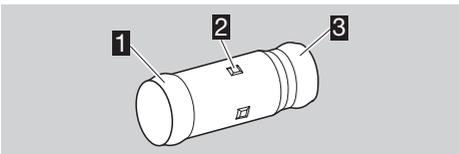
This function is only guaranteed when used within the specified limits – see page 4 (Technical data). Any other use is considered as non-compliant.

Type code

Code	Description
SICAFLEX®	Segmented flame tube
	Size [mm]
100	100
142	142
152	152
162	162
175	175
202	202
300	300
	Min. SER ID [mm]
/088	88
/127	127
/133	133
/147	147
/157	157
/186	186
/280	280
	SICAFLEX® OD [mm]
/084	84 (± 1)
/123	123 (± 1)
/129	129 (± 1)
/143	143 (± 1)
/153	153 (± 1)
/182	182 (± 1)
/275	275 (+ 1/- 3.5)
	Length [mm]
-300	300
-250	250
-200	200
-150	150
F	Narrow end cut off
M	Wide end cut off
-	
D	SICAFLEX® OD different from standard
Z	Special version*

* Further information on request

Part designations



- 1** Bayonet joint, wide end
- 2** Support bumps
- 3** Bayonet joint, narrow end

Installation

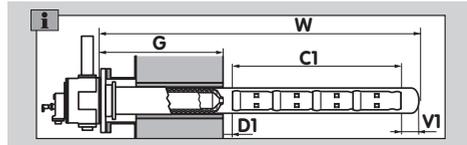
! CAUTION

Please observe the following to ensure that the segmented flame tube SICAFLEX® is not damaged during installation and operation:

- Only fit the segmented flame tube SICAFLEX® once the radiant tube has been installed.
- Avoid sudden strain.

Determining the flame tube length

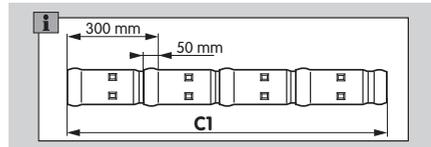
Determine the flame tube length (C1) before installing the segmented flame tubes SICAFLEX® in the radiant tube. The length of the flame tube is the result of radiant tube length (W) minus burner length (G), recirculation gap (D1) and deflector gap (V1).
 $C1 = W - G - D1 - V1$.



- 1** Determine radiant tube length (W).
- 2** Read off burner length (G), see type label on the burner.
- 3** The recirculation gap (D1) is burner-specific. When using ECOMAX®, the following dimensions apply:
 ECOMAX 0–3 = 30 mm,
 ECOMAX 4–5 = 50 mm.
- 4** Calculate the deflector gap (V1):
 0.5 to 1.5 times the internal diameter of the radiant tube (for SER-C: 0.7 to 1.5 times the internal diameter).

In the case of vertical installation, the deflector gap depends on the height of the cruciform spacer, see page 4 (Cruciform spacer).

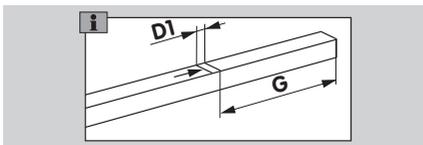
- ▷ When using standard elements (300 mm), a flame tube length (C1) of $n \times 250 \text{ mm} + 50 \text{ mm}$ is possible. For other lengths, see type code ($n = \text{number}$).



Determining the insertion depth

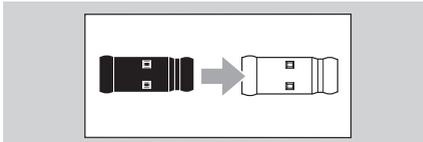
The insertion depth is equal to the sum of the burner length (G) and the length of the recirculation gap (D1).

- 1** Mark the insertion depth on a wooden rod or similar object.

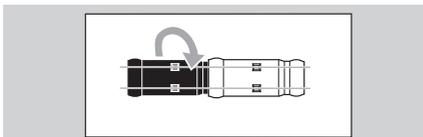


Assembling the segmented flame tubes SICAFLEX® to form a single flame tube

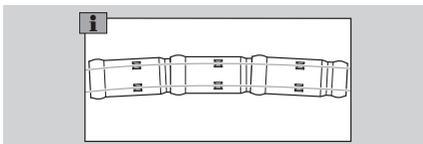
- 1 Assemble the first two segmented flame tubes so that they fit together exactly.



- 2 Twist these two segmented flame tubes together until the Bayonet joint engages and the support bumps are lined up.



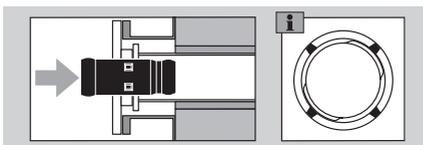
- 3 Repeat these steps until the desired flame tube length has been reached.
- ▷ In the event of a flexure in the radiant tube, the segmented flame tubes SICAFLEX® adjust themselves accordingly.



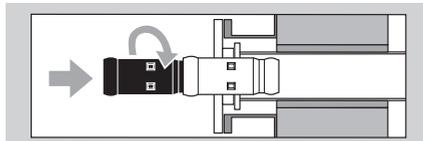
Installing segmented flame tubes SICAFLEX® in a horizontal radiant tube

When fitting several segmented flame tubes together to form a single long flame tube, we recommend assembling the segmented flame tubes inside the radiant tube due to the high weight to be expected.

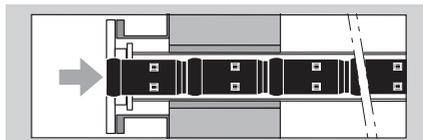
- 1 Slide the first segmented flame tube with the narrow end forwards until it is halfway inserted in the radiant tube.
- ▷ Align the support bumps in a 45° angle to the horizontal.



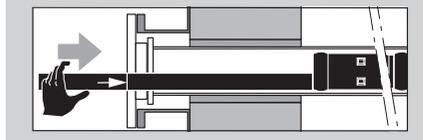
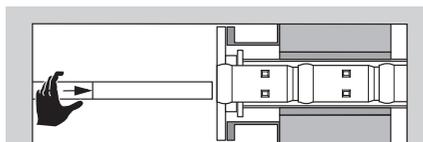
- 2 Slide the next segmented flame tube into the tube which has already been inserted so that they fit together exactly and twist the segmented flame tubes together until the Bayonet joint engages and the support bumps are lined up.



- 3 Repeat these steps until the desired flame tube length has been reached.
- 4 Slide the assembled segmented flame tubes into the radiant tube until the end is flush with the front edge of the radiant tube.



- 5 Using the mark on the wooden rod, slide the flame tube into its final position in the radiant tube.



- ▷ The burner can now be installed.

Installing segmented flame tubes SICAFLEX® in a vertical radiant tube

Assemble the segmented flame tubes until the desired flame tube length is reached, see page 3 (Assembling the segmented flame tubes SICAFLEX® to form a single flame tube).

The assembled flame tube and cruciform spacer are to be lowered into the vertical radiant tube using a piece of string.

! CAUTION

Only use string which will completely combust when the furnace is subsequently heated. Use string with an adequate load-carrying capacity.

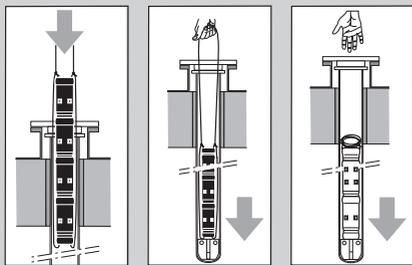
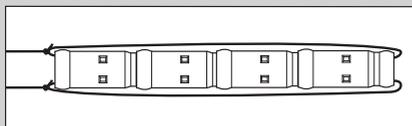
- 1 Tie the cruciform spacer to a piece of string and lower it into the radiant tube.

(roundness, diameter) must be checked before reinstalling the SICAFLEX®.

! CAUTION

External force, e.g. due to deformed (oval) radiant tubes, can cause damage to the SICAFLEX® which can in turn lead to consequential damage to the radiant tube and/or burner

- 2 Tie the segmented flame tubes which have been assembled to form a single flame tube to a piece of string and lower them into the radiant tube.



- ▷ The burner can now be installed.

Maintenance

We recommend that a check is carried out every six months.

- 1 Check the segmented flame tubes SICAFLEX® for damage (visual inspection). In the event of damage, remove the segmented flame tubes and replace them.
 - 2 Check the position of the flame tube, see page 2 (Determining the insertion depth) and correct if necessary.
- ▷ The SICAFLEX® segmented flame tube should be removed before rotating horizontal metallic radiant tubes to avoid damage to the ceramic flame tube. The dimensions of the radiant tube

Contact

If you have any technical questions, please contact your local branch office/agent. The addresses are available on the Internet or from Elster GmbH.

We reserve the right to make technical modifications in the interests of progress.

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