

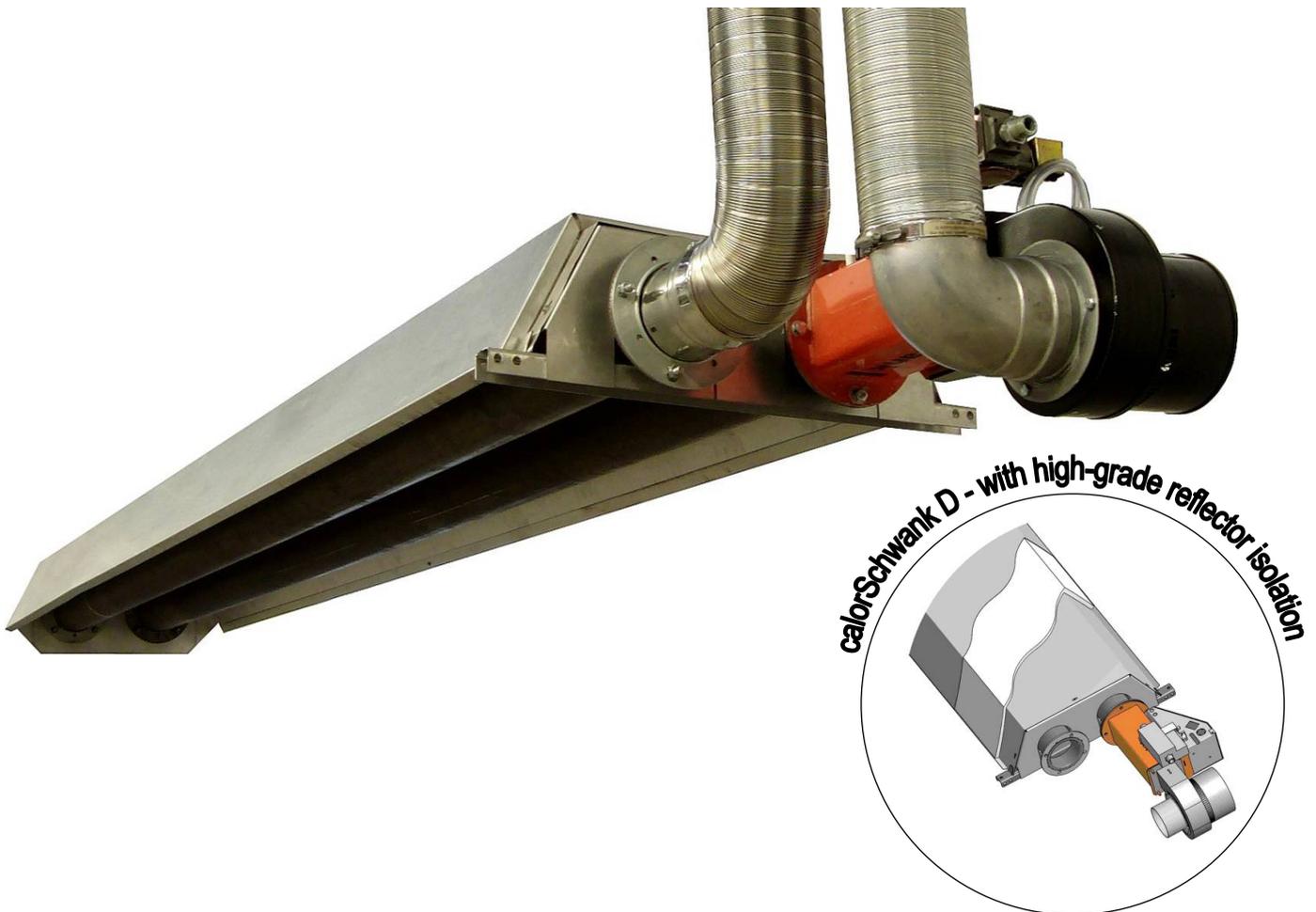
# infraSchwank D / calorSchwank D

## Radiant Tube Heater

15 U / 20 U / 30 U / 40 U / 50 U / 60 U

1-stage / modulating lambdaPlus

single heater and flue gas collection system [herringbone] type F



## Technical Manual

**CE** 0085BO0037

Technical Instructions  
Operating Instructions  
Legal Requirements  
Assembly Instructions  
Installation Instructions  
Commissioning  
Service Guide

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1	Introduction .....	4
2	Your Safety .....	4
	Notes for your safety.....	4
3	Scope of Delivery .....	5
4	Planning .....	7
	Position of suspension .....	7
	Positioning .....	8
	Air supply / Exhaust Requirements .....	9
5	Legal Requirements .....	17
6	Operation .....	18
	Switching on the heater .....	18
	Switching off the heater .....	18
	Fault.....	18
	Maintenance.....	18
7	Technical specification .....	19
	Technical data .....	21
8	Operating description .....	23
9	Assembly instructions .....	24
	Assembly radiant and burner kit .....	24
	Assembly burner kit exhaust gas collection system.....	30
10	Installation instructions.....	32
	Gas-pipe-system and mounting of heaters.....	32
	Exhaust flue installation single heater.....	34
	Installation exhaust collecting system [herringbone].....	34
	Electrical installation [wiring diagram] .....	35
	Electrical connection Operation without MODBUS control.....	35
	Electrical connection Operation with MODBUS control.....	36
	Electrical connection exhaust gas collecting system [herringbone system] .....	36
11	Commissioning instructions .....	42
	Before commissioning .....	42
	Parameter IC 4000/1 and setting .....	43
	Assignment MODBUS address.....	44
	External identification MODBUS address.....	44
	Adjusting nominal thermal load at single-stage operation .....	45
	Adjusting thermal loads for modulating operation lambdaPlus .....	45
	Commissioning exhaust gas collecting system [herringbone] .....	48
	Determination of nozzle pressure .....	49
12	Service guide / Trouble shooting .....	50
	Maintenance and annual check .....	50
	Error codes .....	51
	Troubleshooting / Error causes.....	52
13	Change of gas family .....	53
14	Accessories.....	54
	Ball guards.....	54
	Reflector elongation .....	57
	Set angled mounting tubes.....	58
	Gas filter groups .....	58
	Water protection box burner kit .....	59
	tetraSchwank .....	60
15	Spare parts .....	61
	Spare parts infraSchwank D / calorSchwank D 15-60U .....	62
	Spare parts burner kit infra D / calor D 15-60U .....	62
16	EC type examination certificate.....	63
17	EC declaration of conformity.....	65
18	Product information related to Ecodesign Regulation No 2015/1188.....	66

# 1 Introduction

Thank you for choosing a high efficiency SCHWANK radiant tube.

Your infraSchwank D / calorSchwank D is a modern and low-pollution tube heater for economic and comfortable heating of industrial and commercial buildings.

The design and operation of the heater are according to the requirements of the existing standards.

Please read this manual carefully before using the heater. Please follow carefully all instructions and warnings. The manufacturer will not be held responsible for damages resulting from installation errors or failure to comply with the manufacturer's instructions.

Grey marked text shows information to modulating operation for tube heaters infraSchwank D / calorSchwank D.

Follow carefully all warnings in chapter 2 "Your Safety".

These tube heaters are constructed exclusively for the application of large industrial and commercial space heating. Any other use is not permitted and therefore Schwank is not liable for any improper use.

# 2 Your Safety

You will find the following symbols in this manual:



**Danger!**

Note that you and others can be hurt.



**Attention!**

Note that the appliance can be damaged.



**Danger!**

Note that electrical shocks can be very dangerous. Pay attention while working on the electrical equipment.



**Advice!**

You find additional instructions about the application/handling of the heater.

## Notes for your safety

This appliance is designed according to the requirements of the existing standards. Nevertheless it is possible that dangers for you and others result from the installation and/or operating errors.

To avoid this, please read and follow the instructions carefully.

### General Notes

Only use the radiant tube if it is in a technically faultless condition.

This manual is an integral and essential part of the product and must be given to the user. Keep the manual near the heater.

Any person pursuing any of the following tasks must read this manual:

- operating
- assembling
- installation
- commissioning
- maintenance / trouble shooting

You need an explicit permission from the manufacturer for any kind of changes and reconstruction.

Use original spare parts only.

### Safety for the electrical equipment

Danger of electrical shocks!  
Electrical shocks can be very dangerous!  
The electrical installation must be carried out by a qualified service engineer following the existing national and international standards.

Check the electrical equipment regularly.  
Defect wires etc. must be replaced immediately.

The appliance must be cut off from the power supply while working with the electrical equipment. Make sure that nobody can connect the appliance to the power supply while you are installing or maintaining the unit.

### After-sales Service

For all installation operations, start-up, gas changes, etc. always consult a qualified service engineer.

In case of doubt, contact SCHWANK GmbH, phone + 49 [0] 221 / 7176 0.

### 3 Scope of Delivery

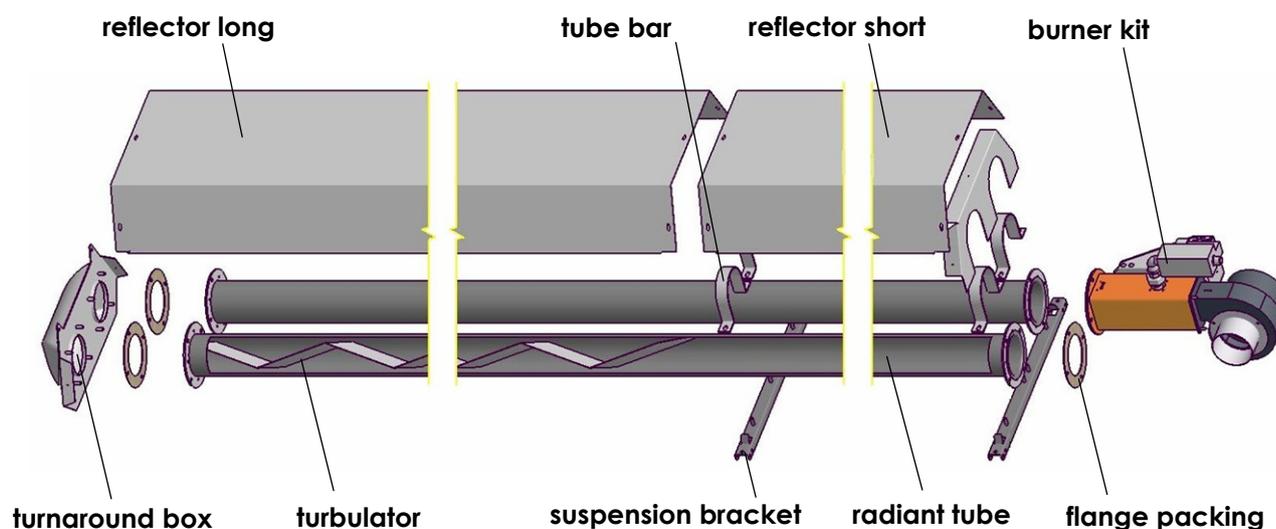


Fig. 1: Tube heater infraSchwank D / calorSchwank D 20U

#### Scope of delivery

The radiant tube infraSchwank D / calorSchwank D consists of following kits:

- Burner kit:  
Burner-unit with gas-burner, pre-mixing chamber, burner control unit IC 4000/1, gas combination valve [single-stage or modulating]  
air differential pressure switch, electrical plug connection and fan, burner kit complete preassembled
- Radiation kit:  
Radiant tubes with turnaround box, flange packing,  
Corrosion resistant and radiant-optimized reflector, end cap and brackets for hanging [calorSchwank D: isolated reflectors]

#### Accessories

- Central control unit SchwankControl Touch with temperatures and operating schedules, MODBUS control
- Central control SRT-1 with temperatures and operating schedules
- Gas cock [gas connection] with thermal shut-off device
- Gas hose connection
- Gas filter
- Supply air- / exhaust flue-system
- flue gas heat exchanger for the utilisation of condensing technology – tetraSchwank
- Adjustable steel wire suspension system [Gripple]
- Brackets for wall mounting of angled position [15-30°] for infraSchwank D / calorSchwank D 15-40U
- Flue gas diverter [type A]
- Ball protection grids [e.g. for sport halls]
- Reflector elongations
- Set for angled mounting
- Water protection cover box for burner kit [stainless steel]
- Flue gas adapter

**Structure of burner kit**

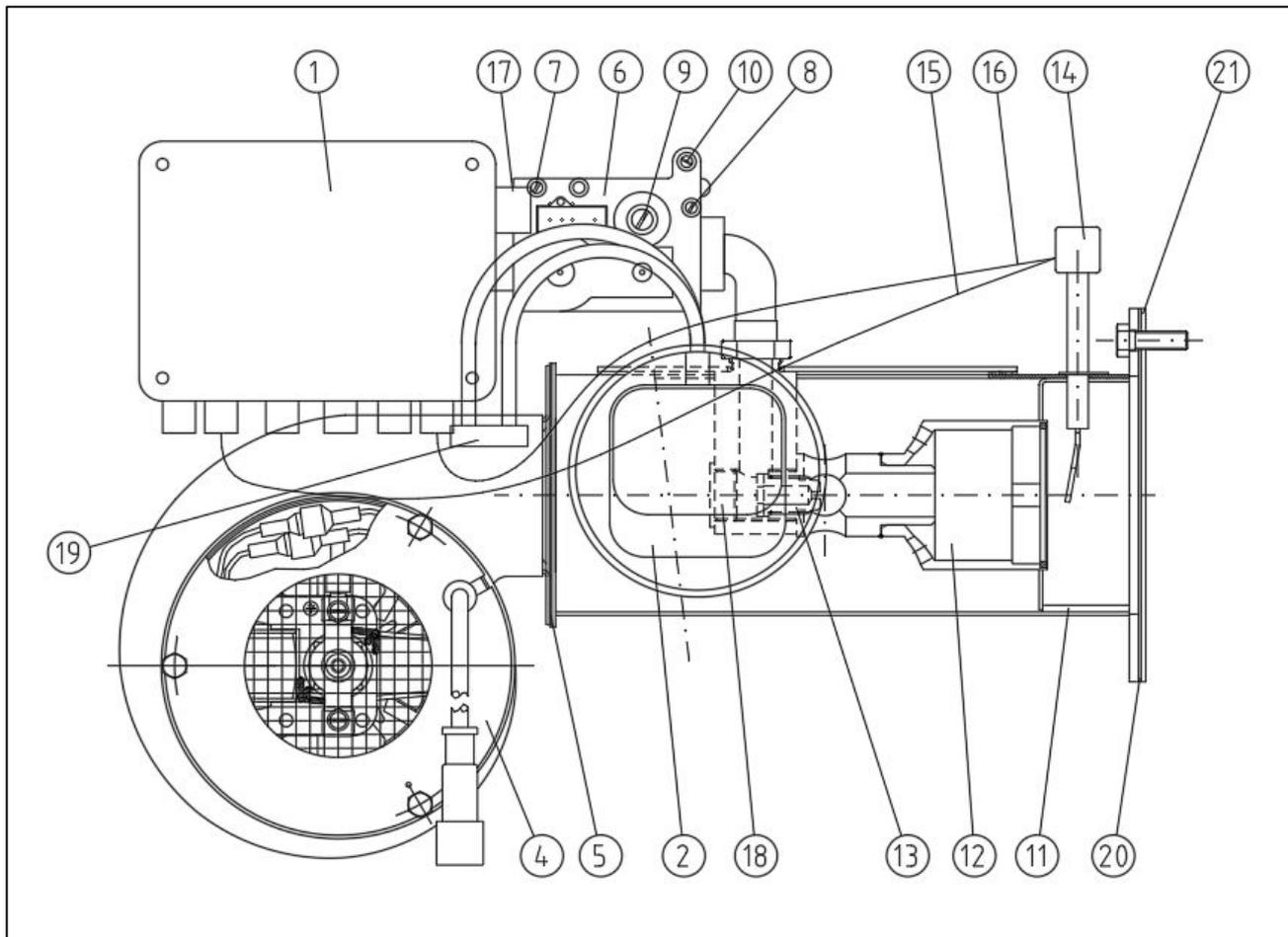


Fig. 2: Burner kit with burner control unit IC 4000/1

- |   |   |
|---|---|
| 1. Burner control unit IC4000/1                           | 15. Ignition cable                          |
| 2. Air pressure switch                                    | 16. Ionisation cable                        |
| 3. Fan air restrictor plate<br>[incoming side, not shown] | 17. 3-pin power supply socket               |
| 4. Fan  | 18. Locking screw                           |
| 5. Air baffle plate [only 15 / 20 / 30 / 40U]             | 19. Venturi                                 |
| 6. Gas combination valve<br>[1-stage, modulating]         | 20. Burner baffle [only 15 / 20 / 30 / 40U] |
| 7. Test nipple connection pressure                        | 21. Gasket                                  |
| 8. Test nipple nozzle pressure                            |   |
| 9. Adjustment screw nozzle pressure                       |   |
| 10. Adjustment screw start step valve                     |   |
| 11. Inspection glass                                      |   |
| 12. Burner cup  |   |
| 13. Burner nozzle   |   |
| 14. Ignition and ionisation electrode                     |   |

# 4 Planning

## Room temperature control

Radiant tube heating-systems must be equipped with a temperature control.

Section heating is allowed without temperature control.

## Position of suspension

### Suspension height

Radiant tubes must be positioned so that no one in the radiation area is exposed to an extreme high heat level. This is ensured when the minimum suspension heights shown in the following table are adhered to:

Nominal thermal load in kW	Suspension height in m [max. radiation intensity 200 W/m <sup>2</sup> ]	
	A = horizontal	B = angled [30°]
15	3.5 m	3.1 m
20	4.0 m	3.6 m
30	4.8 m	4.3 m
40	5.5 m	4.9 m
50	6.8 m	6.2 m
60	8.0 m	7.3 m

Tab 1: Minimum suspension heights

**Key:**

A = Minimum height when hanging horizontally  
 B = Minimum height when hanging angled

Type	a [cm]	b [cm]		c [cm]	d [cm]	
		infra	calor		infra	calor
15 U	110	20	10	50	15	15
20 U	110	20	10	50	15	15
30 U	130	20	10	50	15	15
40 U	170	25	10	50	25	15
50 U	230	35	10	70	35	15
60 U	300	45	10	100	35	15

Tab 2: Safe distances

**Key:**

a = Minimum radial safety distance [inside radiation area]  
 b = Minimum upper safety distance when hanging horizontally  
 c = Minimum upper safety distance when hanging angled  
 d = Minimum lateral distance to supply pipes outside radiation area

## Distances to flammable materials in the radiant area

Radiant tubes must be positioned so that the surface temperature of:

- components with flammable materials,
- flammable equipment, stored flammable materials

never rises above 85° C.

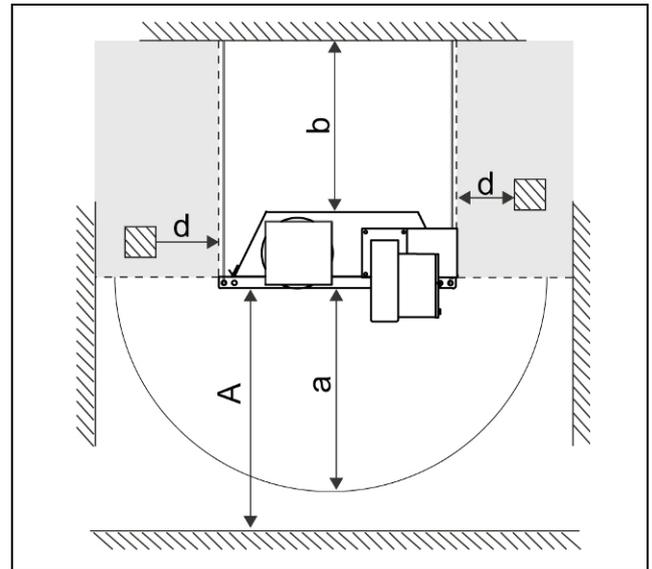


Fig. 3: Suspension heights and distances for horizontal application

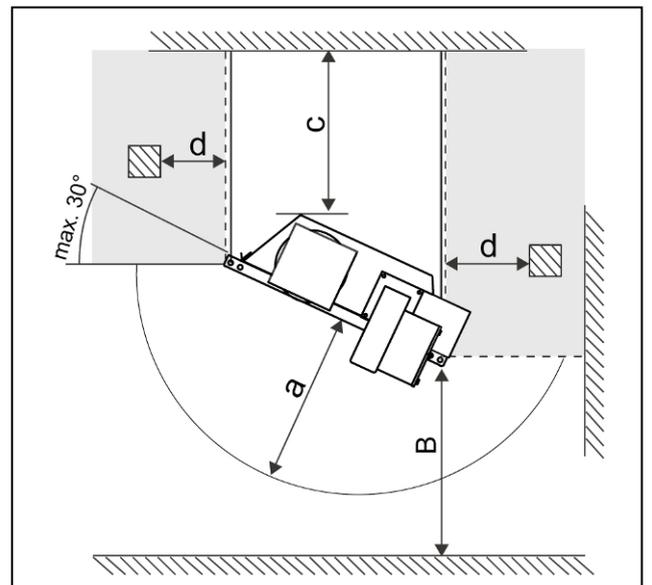


Fig. 4: Suspension heights and distances for angled application

## Direction of radiation

Radiant tubes infraSchwank D / calorSchwank D can be positioned horizontal or at an angle [max. 30° from vertical]. For this purpose suspension steel chains and cables are installed at the suspension brackets.

## Positioning

The radiant tube can be mounted with

- chains [links min. 4 mm]
- adjustable steel wire suspension system [Schwank accessories]

If you chose chains please use bolts with lock nuts for fixing the chain to the suspension bracket.



**The radiant tube has to be fixed by vertical chains etc. to the roof or to supporting devices.**

Chains and steel cables have to be fixed in vertical direction or slightly diagonally outwards above the fixing points of the suspension brackets to the roof or to supporting devices. Fixing of the suspension cables or chains diagonally inwards to the centre of the heater is not permitted [see Fig 5].



Please note that the radiant tube being in operation expands several centimetres because of thermal expansion. Avoid therefore inflexible suspension.

Do not use fixing elements like open hooks etc.

Hang the heater in balance. We recommend the use of turnbuckles or adjustable steel cable grips for ease of adjustment and balance.

Fixing points for chains or steel cables on the heater are shown in Fig. 15 and 16 on pages 20 and 21.



**Attention!**

If you do not align the burner kit correctly material damage and destruction of the heater may occur.



**Attention!**

Make sure that the heater has in longitudinal direction a slight slope [3 mm per meter] to the turnaround box [Fig. 6].

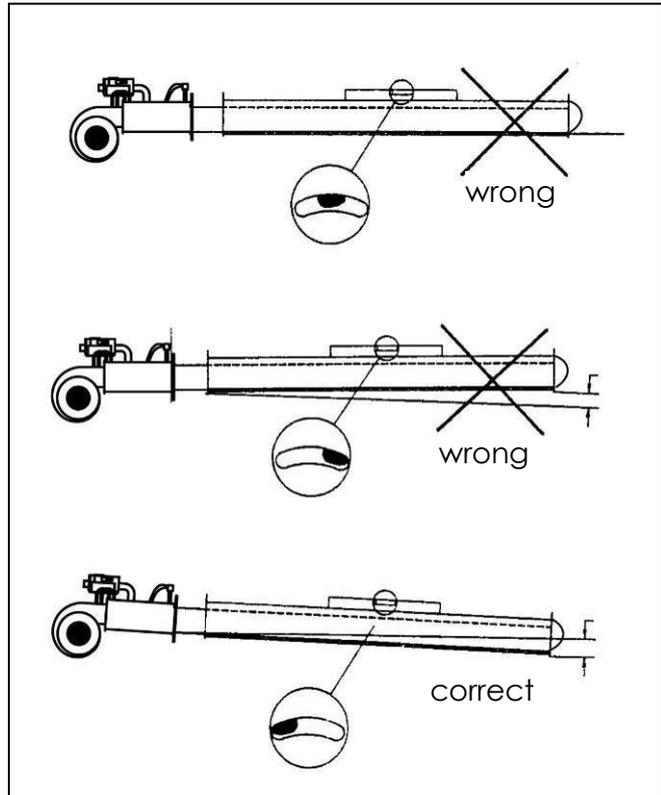


Fig. 6: Slope of radiant tube heater

**SCHWANK GmbH will not accept liability for damages caused by incorrect mounting of the burner unit. Correct mounting is the responsibility of the installer.**

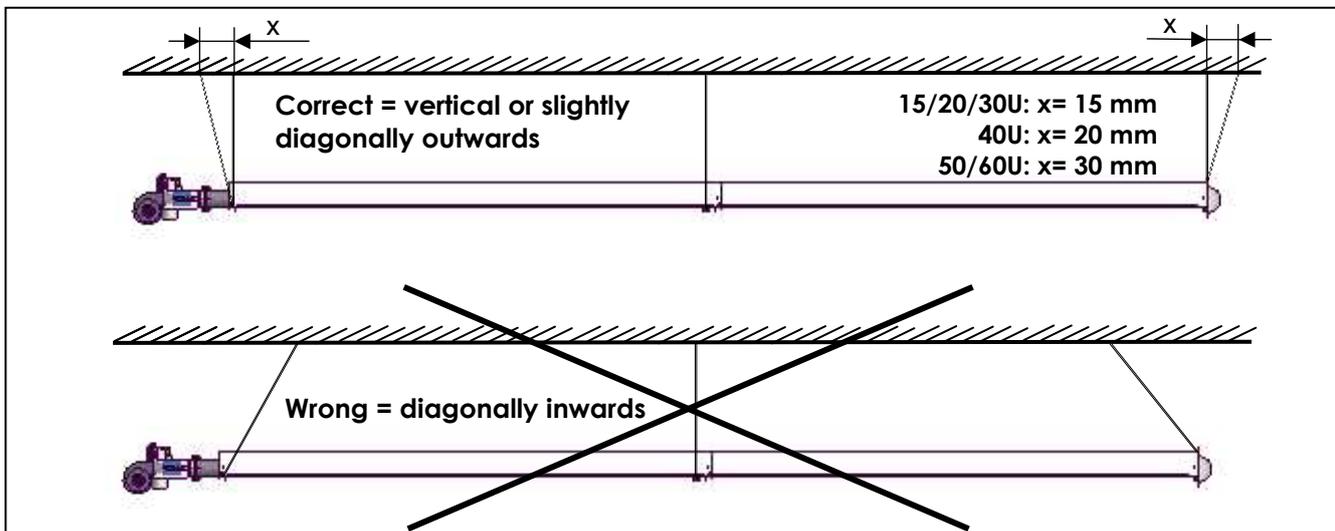


Fig. 5: Chains and steel wire mounting

## Air supply / Exhaust Requirements

The calculation of air supply / exhaust requirements of a building heated by radiant tube heaters is subject of European Directive EN 13410. Please follow local by-laws as well.

Please see the max. lengths of combustion air supply- and exhaust flue pipe on page 9 [Tab 3, point 3].

## Place of Installation

The room to be heated must have an air volume of minimum 10 m<sup>3</sup> for each kW of the nominal thermal load of the installed heater.

## Air supply [combustion air from inside the room, types A3 and B23]

Heating installations with combustion air from inside the room are only allowed in rooms without string air pollution. Otherwise use system with combustion air from outside [type C].

In halls and buildings with a normal air change by means of joints and gaps it is not necessary to install additional equipment to ensure combustion air supply.

## Air supply / exhaust systems

For the radiant tube infraSchwank D / calor SchwankD the following air supply / exhaust systems are possible:

1. **Indirect flue into the room**  
[Type A3 without exhaust system, combustion air from inside the room]
2. **Flued with individual exhaust system,**  
combustion air from inside the room  
[Type B23]
3. **Flued with individual exhaust system,**  
combustion air from outside the room  
[Type C]
4. **Flued with flue collecting system and central flue fan – combustion air either from inside or from outside** [according to EN 777, Type F]

1. **Indirect flue into the room**  
**[Type A3 without exhaust system combustion air from inside the room]**

The exhaust air of the tube heater has to be conducted from the inside of the room to the outside.

Conduction of the exhaust air may be carried out with one of the following 3 methods:

- a) **Thermal ventilation: Combustion air and exhaust air are to be conducted through** fixed outlets positioned on the roof or on the walls of the building.
- b) **Mechanical ventilation: Combustion air and exhaust air are to be conducted through** one or more fans positioned on the roof or on the walls of the building.
- c) **Natural ventilation: Combustion air and exhaust air are to be conducted through** outlets as a result of differences in pressure and in temperature between the internal and external side of a building.



**For exact dimensioning and positioning of supply air and exhaust air outlet of the building according to EN 13410 or G 638-2 please contact Schwank GmbH, phone +49 [0] 221 / 7176 0.**

**2. Exhaust flue with individual exhaust system - combustion air from inside the room [Type B23]**

Only use this system in rooms with no air pollution and without relevant pressure differences to outside. Otherwise use type C.

**3. Exhaust flue with individual exhaust system - combustion air from outside the room [Type C]**

Combustion air and exhaust air are to be conducted by a temperature stable, concentric pipe from a wall or roof entrance.

Max. length of the concentric pipe can be 6 m plus two 90° elbows.

The concentric pipe ends at a bifurcated pipe. Please ensure that the connection for exhaust air between heater and bifurcated pipe is a **flexible** pipe. Do not use back-pressure valves or dampers in the exhaust flue.

**4. Exhaust flue with flue collecting system and central flue fan**  
[according to EN 777, Type F]

The heating installation must not exceed 10 radiant tubes. The exhaust air of each tube is collected via a central collecting tube system by a central flue fan and led to the chimney. Planning, construction and layout of such installations must be carried out by Schwank employees, as well as commissioning. The strict observance of the Schwank layout-drawings and calculation figures are the precondition of the manufacturer's warranty.

With system F the radiant heaters will be installed with their individual flue fans. Please note that it is necessary to install in the collecting pipe behind each radiant heater and in the following collection pipes damper or a pressure-balancing device. This ensures a precise regulation and an even exhaust flue of each radiant tube.

infraSchwank D/ calorSchwank D, shape U		
Max. length between heater and roof/wall entrance	max. number of elbows (90°)	∅ of air/exhaust flue
6 m	2	100 mm

Tab. 3: air/exhaust routing



For detailed information regarding setting up and commissioning of a flue collection system please see corresponding sections in chapters 4, 10 and 11.

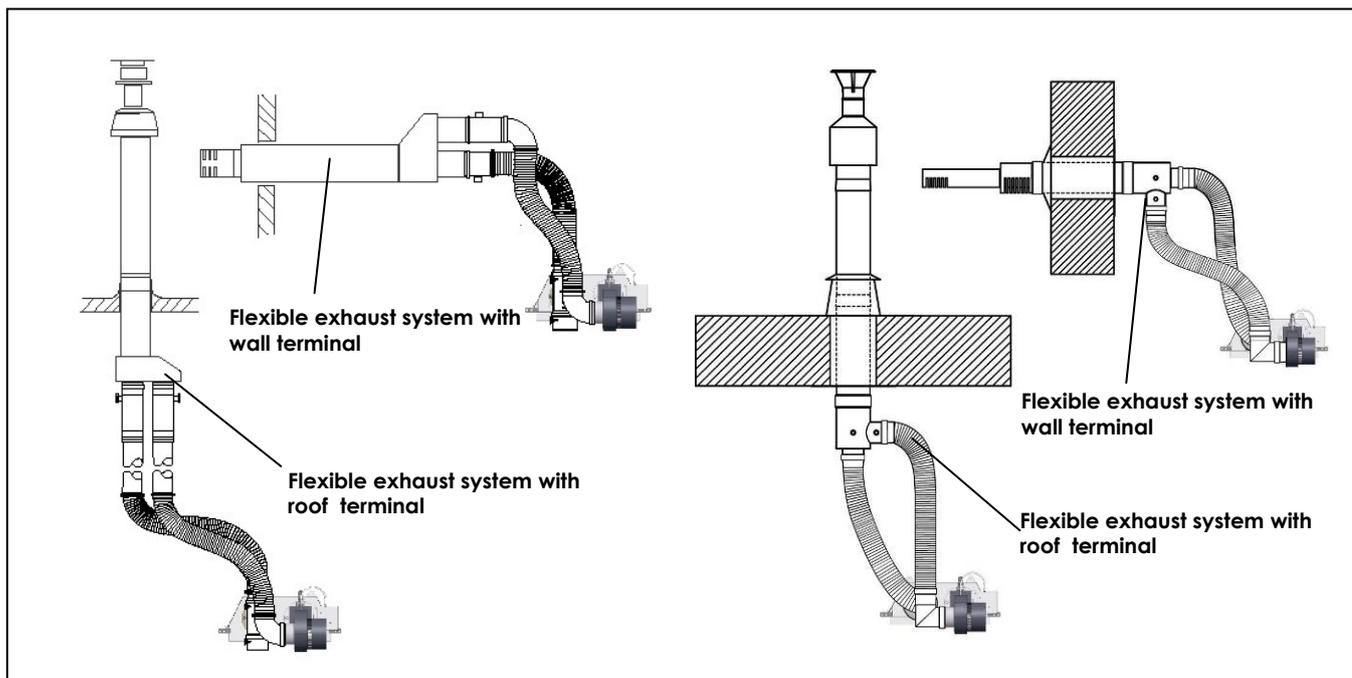


Fig. 7: Air/exhaust-system, version aluminium or stainless steel

**Flexible exhaust system infraSchwank D / calorSchwank D 15-40U [wall terminal]**

- version aluminium -



The stainless flexible pipe [exhaust line] must be installed uncut for the heater 40/50/60U. Make sure that there is no sink in the pipe.

Connection stainless steel flexible pipe to aluminium tube must be glued with heat-resistant sealing material and locked by means of self-tapping screws.

All socket connections on the exhaust and air line must be locked by means of self-tapping screws.

The wall terminal is mounted with a small gradient to outside to prevent intrusion of driving rain.

The 90° elbow at the sucking fan side is to mount with the opening on the top.

infraSchwank D / calorSchwank D type 50– 60 U cannot be operated using a wall terminal.



Please note the safety distance to flammable materials:

- single-wall exhaust pipe: 40 mm
- double-wall exhaust pipe + wall terminal: 0 mm



System certification tube heater infraSchwank D/ calorSchwank D with exhaust line system  
CE 0432-CPD-217915, System 0.2 / 0.5 [Muelink&Grol]



The wall duct is fastened with screws by means of the integrated flange plate on the building wall. The flange plate supports and secures the wall duct.

Following components are required for mounting the wall terminal aluminium design  
[Distance heater- terminal approx. 1.5 m]:

- Wall terminal M&G: Article no. 12221797
- Testing set C 15-20kW: Article no. 12676660
- Testing set C 30-40kW: Article no. 12676750

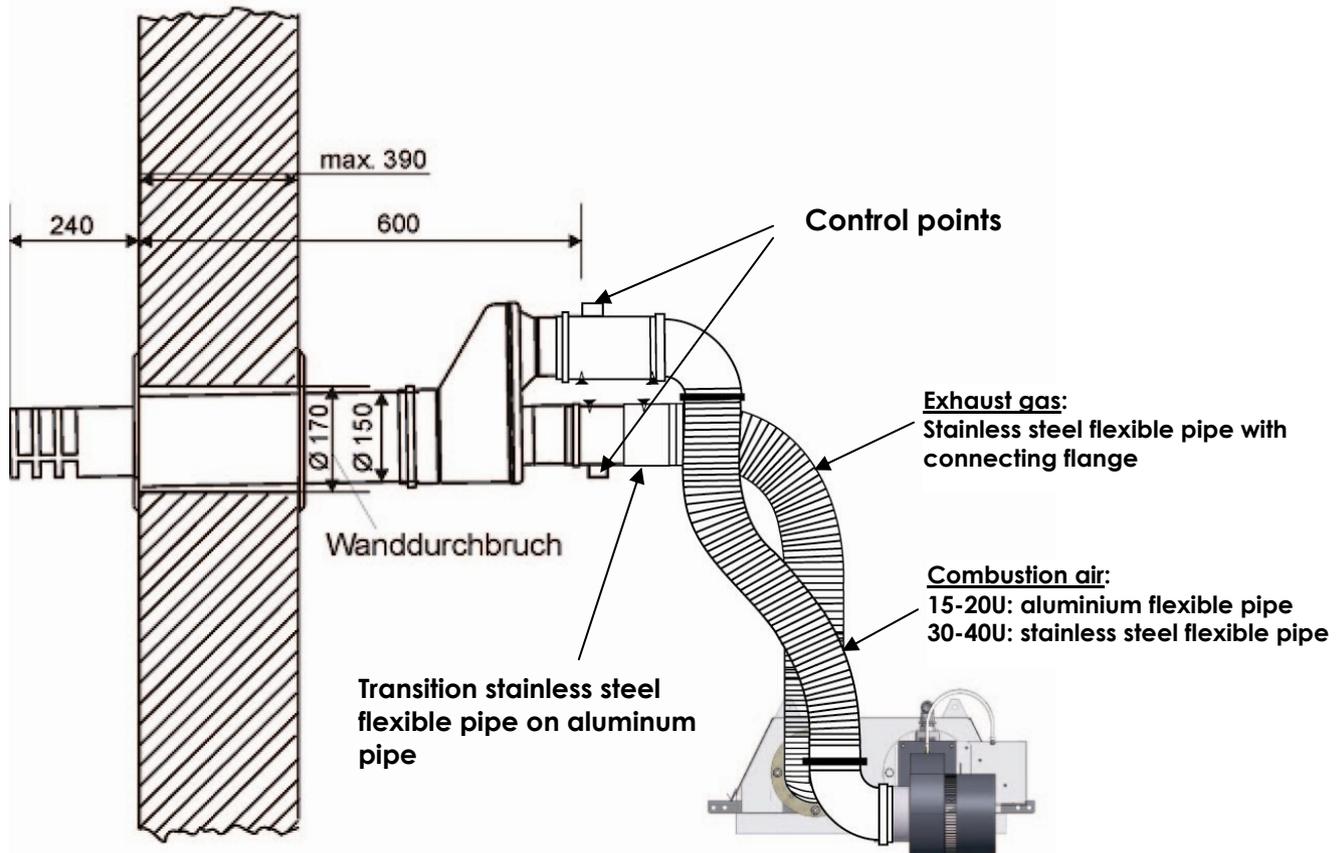


Fig 8: Position of control points 15 – 40U [wall terminal], version aluminium

**Flexible exhaust system infraSchwank D / calorSchwank D 15-60U [roof terminal]**

- version aluminium -



The stainless flexible pipe [exhaust line] must be installed uncut. Make sure that there is no sink in the pipe.

Connection stainless steel flexible pipe to aluminium tube must be glued with heat-resistant sealing material and locked by means of self-tapping screws. All socket connections on the exhaust and air line must be locked by means of self tapping screws.

The 90° elbow at the sucking fan side is to mount with the opening on the top.



Please note the safety distance to flammable materials:

- single-wall exhaust pipe: 40 mm
- double-wall exhaust pipe + roof terminal: 0 mm



The roof terminal is slide in from above into the roof socket. in from above into the roof socket. The fixing inside the building takes place via a clamp to the building ceiling.

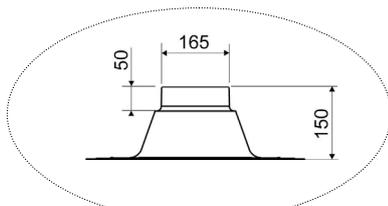


System certification tube heater infraSchwank D/ calorSchwank D with exhaust line system CE 0432-CPD-217915, System 0.2 / 0.5 [Muelink&Grol]

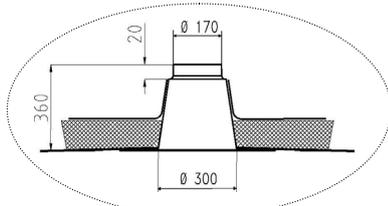
Following components are required for mounting the roof terminal aluminum version [Distance heater- terminal approx. 1.5 m]:

- Roof terminal M&G: Article no. 12221770
- Testing set C 15-20kW: Article no. 12676660
- Testing set 30-60kW: Article no. 12676750

**Dimension flat roof sockets**



Flat version – Article no. 12201087



High version – Article no. 12201788

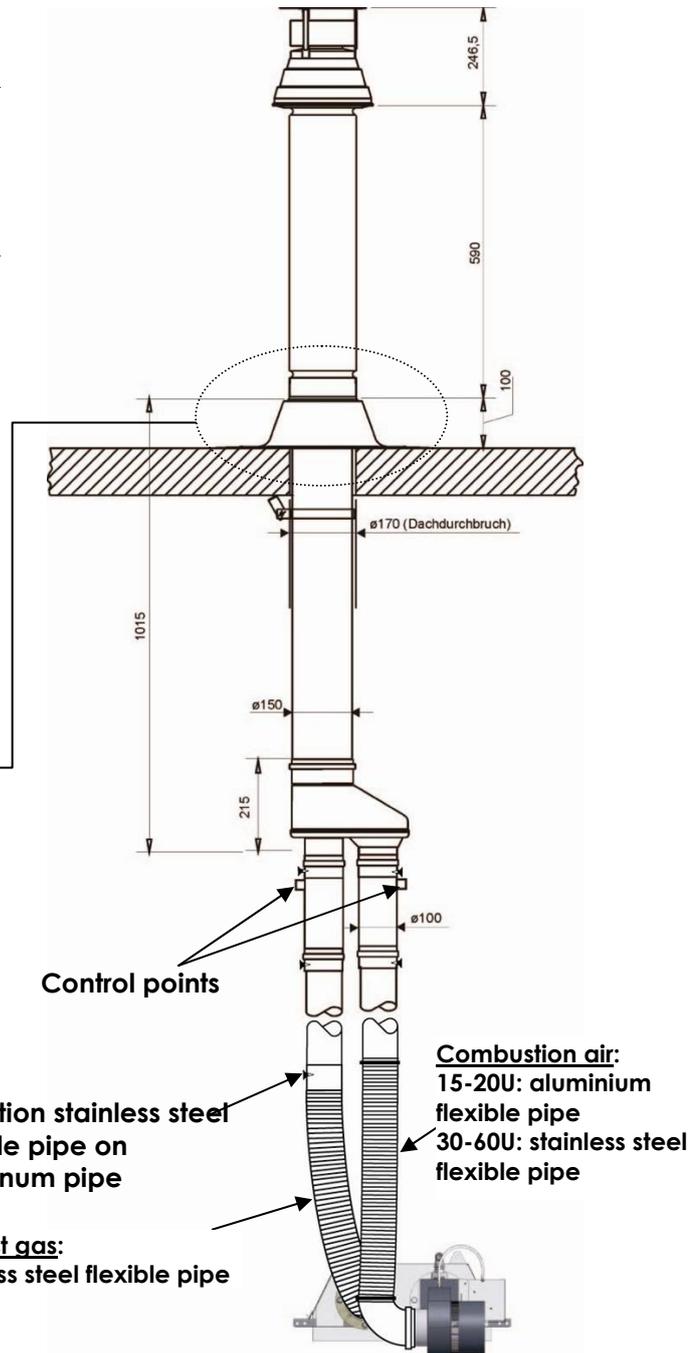


Fig. 9: Position of control points [roof terminal], version aluminium

**Flexible exhaust system deltaSchwank [wall terminal]  
infraSchwank D / calorSchwank D 15-60U  
- version stainless steel -**



Install stainless steel flexible pipe without sink.

Join parts of the roof terminal strongly together by compression and using of jointing and sealing paste [e.g. Ceramax]!

All joints inside the building tighten securely with clamp fittings!

The 90° elbow at the sucking fan side is to mount with the opening on the top.

The wall terminal is mounted with a small gradient to outside to prevent intrusion of driving rain.



Please note the safety distance to flammable materials:

- single-wall exhaust pipe: 80 mm
- double-wall exhaust pipe + wall terminal: 0 mm



System certification tube heater infraSchwank D/ calorSchwank D with exhaust line system

Future ew CE 0432-CPR-00055-209 /  
Future ew-flex CE 0036-CPR-00055-207 /  
Future dw CE 0432- CPR-00055-301  
[Schröder]



The wall terminal is fastened to the building wall with screws by means of the integrated flange plate. The flange plate supports and secures the wall terminal.

Following components are required for mounting the wall terminal stainless steel version [Distance heater- terminal approx. 1.5 m]:

**Stainless steel exhaust system wall terminal DN 100/160: Article no. 12202220**

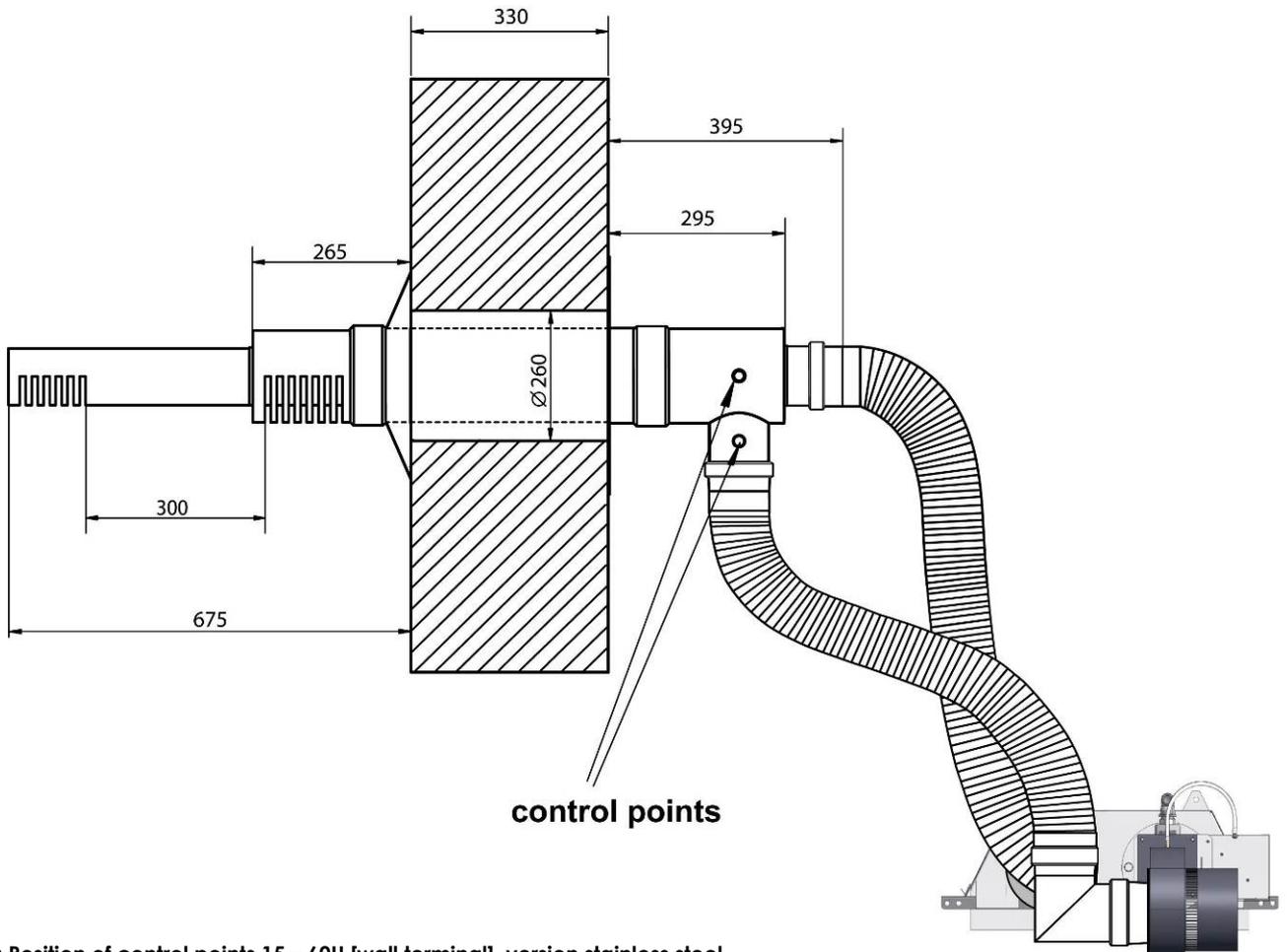


Fig. 10: Position of control points 15 – 60U [wall terminal], version stainless steel

**Flexible exhaust system [roof terminal]**  
**infraSchwank D / calorSchwank D 15- 60U**  
**- version stainless steel -**



Install stainless steel flexible pipe without sink.

Join parts of the roof terminal strongly together by compression and using of jointing and sealing paste [e.g. Ceramax]!

All joints inside the building tighten securely with clamp fittings!

The 90° elbow at the sucking fan side is to mount with the opening on the top.



Please note the safety distance to flammable materials:

- single-wall exhaust pipe: 80 mm
- double-wall exhaust pipe
- + roof terminal: 0 mm



System certification tube heater infraSchwank D/ calorSchwank D with exhaust line system

Future ew CE 0432-CPR-00055-209 /  
 Future ew-flex CE 0036-CPR-00055-207 /  
 Future dw CE 0432- CPR-00055-301  
 [Schröder]



The roof terminal is fastened with screws by means of the integrated flange plate on the building ceiling. The flange plate supports and secures the roof terminal.

Following components are required for mounting the roof terminal stainless steel version [Distance heater- terminal approx. 1.5 m]:

**Stainless steel exhaust system roof terminal DN 100/160 Article no. 12202080**

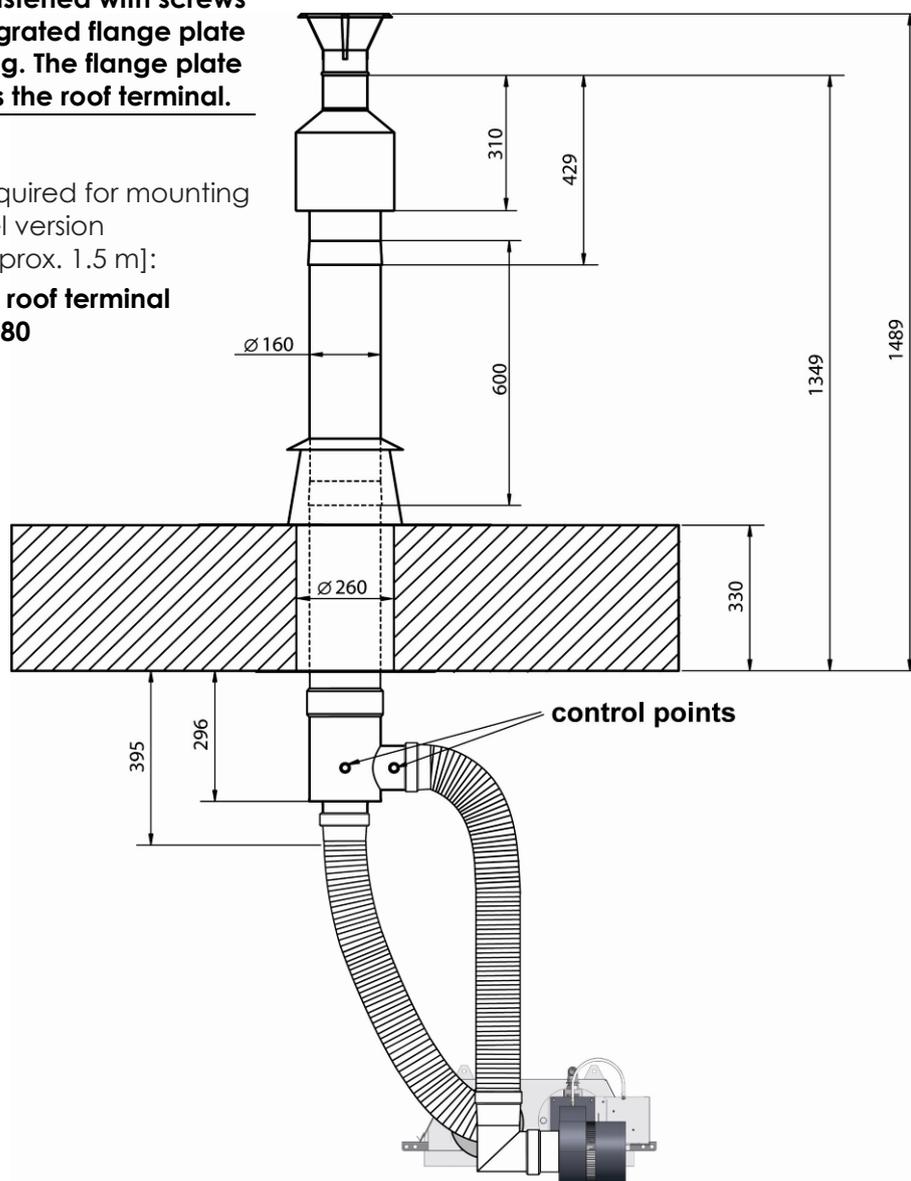


Fig. 11: Position of control points 15 – 60U [roof terminal], version stainless steel

**Exhaust system deltaSchwank [roof terminal]**

**with downstream heat exchanger tetraSchwank in room air operation and with outside air intake in fresh air operation**

**- version stainless steel -**



Install stainless steel flexible pipe without sink.

Join parts of the roof terminal strongly together by compression and using of jointing and sealing paste [e.g. Ceramax]!

All joints inside the building tighten securely with clamp fittings!

tetraSchwank heat exchanger should be mounted with slight slope [3 mm / 1 m] to the T-piece.



Please note the safety distance to flammable materials:

- single-wall exhaust pipe: 80 mm
- double-wall exhaust pipe + roof terminal: 0 mm



System certification tube heater infraSchwank D/ calorSchwank D with exhaust line system  
Future ew CE 0432-CPR-00055-209



The roof terminal is fastened with screws by means of the integrated flange plate on the building ceiling. The flange plate supports and secures the roof terminal.

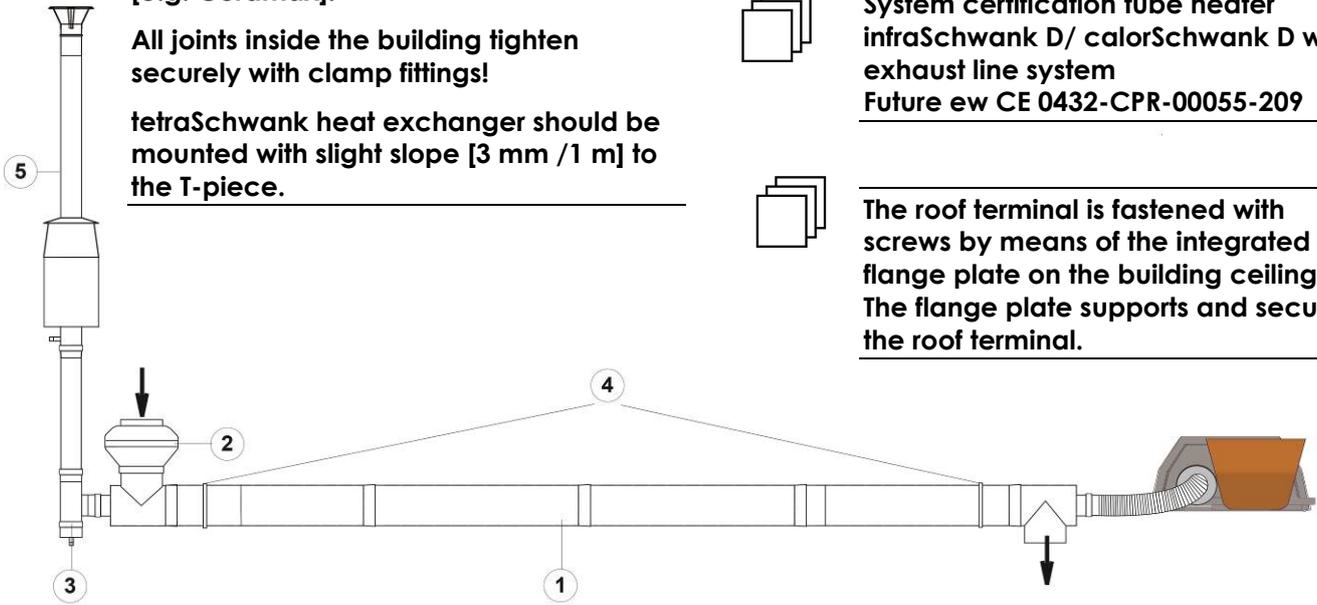


Fig 12: Installation tetraSchwank in room air operation, with roof terminal stainless steel

**Installations exhaust system with heat recovery:**

1. flue gas heat exchanger tetraSchwank - pre-assembled  
L= 4700 mm **Article no. 62000020**
2. ventilator tetraSchwank with protection grating
3. T-piece stainless steel with condensation outlet connection R 1/2"
4. fastening clamp for suspension, premounted
5. single-wall roof terminal with in room air operation **Article no. 12201941**  
double wall roof terminal with outside air intake in fresh air operation **Article no. 62000090**

Fig 13: Installation tetraSchwank with outside air intake in fresh air operation, with roof terminal stainless steel

Version 021 infra D Form\_U 16/19\_INT Technical specification subject to change

### Exhaust pipe collecting system [herringbone] with central fan System F approved according to EN 777 and DIN EN 416

Exhaust pipe collecting system consist of following main components:

- ⇒ Tube heater infraSchwank D/ calorSchwank D
- ⇒ Spiral duct and connection elements for exhaust collecting system [different dimensions]
- ⇒ Central low-pressure fan
- ⇒ Fan monitoring kit  
**Article no. 700 0012 0**



**Planning and calculation of the complete system including collecting pipes, fans and chimneys must only be done by Schwank. Planning details have to be strictly adhered to during mounting and assembly. Commissioning of the system should be carried out by Schwank.**

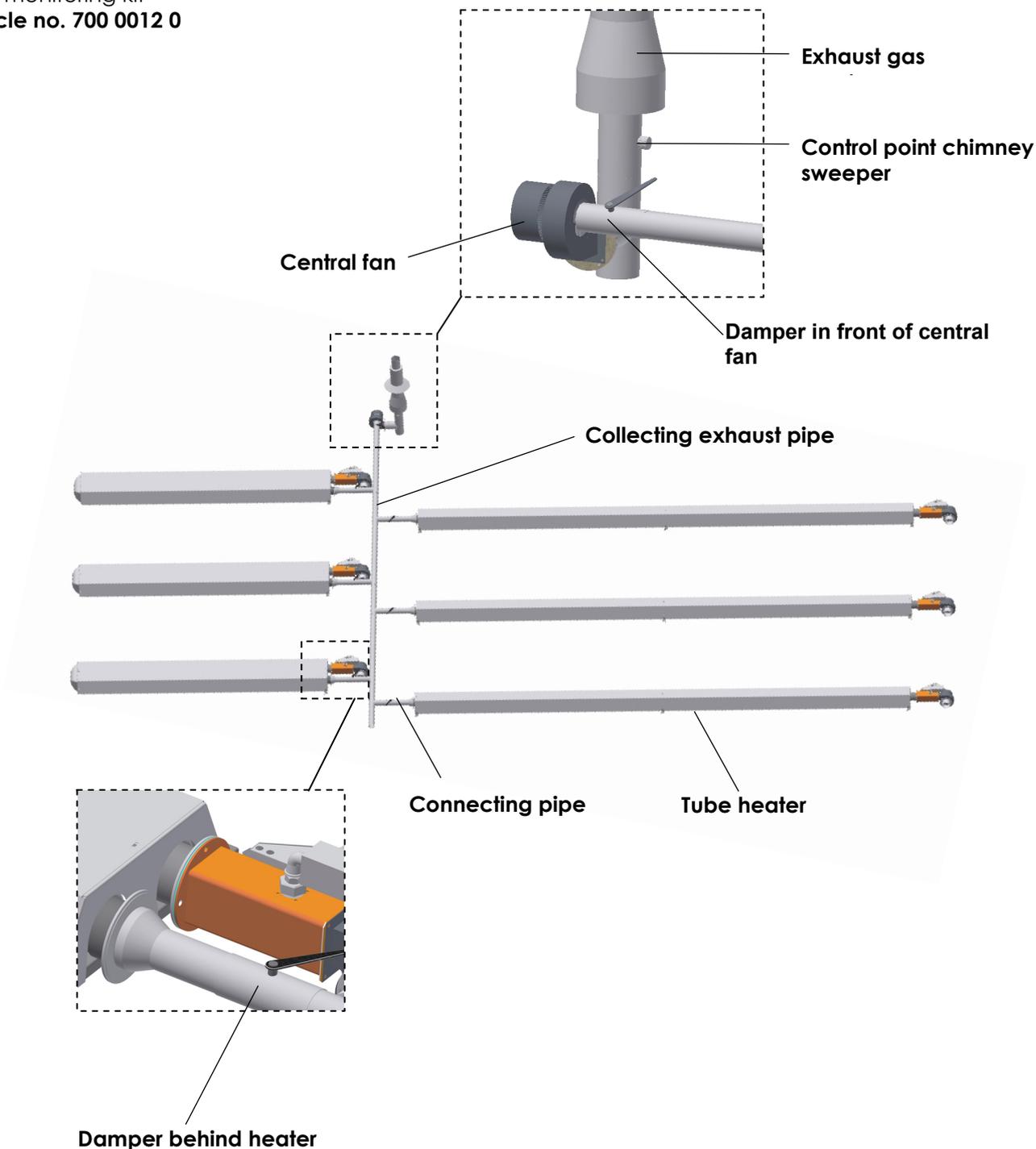


Fig. 14: Installation exhaust collecting system with central fan , system F [principle scheme]

## 5 Legal Requirements

We recommend that these installation guidelines should be observed with the relevant Building Standards Regulations of your country. Comply with any local by-laws and the current IEE Wiring Regulations.

Notwithstanding their limited scope, the appliance should be installed by a competent person in accordance with the relevant provisions of the Gas Safety [Installation and Use] Regulations. Caution must also be taken of any obligations arising from the Health and Safety of Work Act. Full compliance with all relevant regulations, including amendments in force at the time of installation is a requirement of our warranty.

In Germany the following rules, standards and regulations must be observed.

EnEV	Verordnung über energiesparenden Wärmeschutz und energiesparende Anlagentechnik bei Gebäuden
DIN EN 12831	Heizungsanlagen in Gebäuden Verfahren zur Berechnung der Norm-Heizlast
DIN EN 13384	Abgasanlagen
DIN V 18599	Energetische Bewertung von Gebäuden – Berechnung des
Nutz-	End- und Primärenergiebedarfs für Heizung, Kühlung, Trinkwasser und Beleuchtung
DVGW G 660	Technische Regeln für die mechanische Abführung der Abgase von Feuerstätten
VDE 0722	Elektrische Vorschriften
VDE 0100	Bestimmungen für das Errichten von Starkstromanlagen

Beachten Sie außerdem die Bestimmungen der jeweiligen

LBO	Landesbauordnung
FeuVO	Feuerungsverordnung der Länder
TAB	Technische Anschlussbedingungen der örtlichen Energieversorgungsunternehmen

## 6 Operation



**The installation must be carried out by a qualified engineer following the manufacturer's instructions.**

**SCHWANK will not accept liability damages caused by improper assembly and/ or operating of the heater. Proper assembly and operation is the responsibility of the user.**

### Switching on the heater

- ⇒ First switch on the central control unit SchwankControl Touch and activate a heating command.  
After a pre-purge period of about 25 sec. the ignition starts.

### Switching off the heater

- ⇒ Disable the heating command on central control unit SchwankControl Touch.

If the radiant tube is controlled by a thermostat the heater will be switched on and off automatically.

### Fault

If no flame is reported during the pre-purge period and the safety time [approx. 30 sec.] the heater repeats the ignition process. If there is no flame after the second ignition process the heater switches off automatically and is locked.



**Investigation and repair must be carried out by authorized personnel. After clearance of the fault the heater can be reset.**

- ⇒ The cause of the fault / error code is displayed on the central control unit SchwankControl Touch or can read out via corresponding service software IC 4000. See chapter 12 for error codes.

### Lock release [Reset]

- ⇒ Activate the reset command via the central control unit or interrupt the electric power supply for 3 seconds.

## Maintenance

Servicing of the heater is essential for continued efficient operation. Servicing should be carried out not less than once a year by a qualified service engineer. After any servicing, the heater must be recommissioned as detailed in **Chapter 12.**

# 7 Technical specification

**Appliance** Automatic heating device, heat transfer by means of infrared dark radiation.

**Fuel Types** Natural gas  
Propane

**Minimum connection pressure in front of valve**

Gas type	15-50U	60U
Natural Gas H	15 hPa	20 hPa
Natural Gas L	20 hPa	30 hPa
Propane	40 hPa	40 hPa



**Attention!**  
Max. connection pressure: 60 hPa

**Gas connection** 15-30U R=1/2" male  
40-60U R=3/4" male

**Exhaust gas connection** Flange at radiant tube end for exhaust connection Ø 100 [flexible stainless steel pipe / exhaust gas adapter]

**Electrical connection power supply**

Single-phase AC 230 V, N, PE - 50Hz

The connecting cable for the power supply is connected to the IC 4000/1 burner control with the provided 4-pin plug.

The power supply for the heater must be flexible with maximal wire cross-section - 3x 1.5 mm<sup>2</sup> Ölflex- or silicone cable

To set the bluTek-burner kit free of voltage it is only necessary to remove the plug of the power supply.

**Regulation**

The heating system is controlled via the central control unit SchwankControl Touch.

The corresponding heating commands for the heater are sent via MODBUS communication.

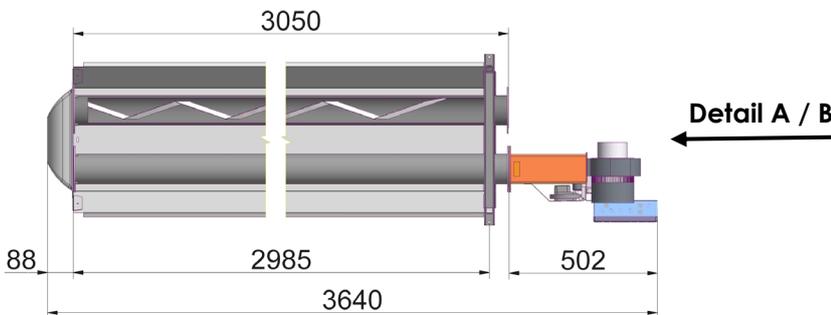
**Connection MODBUS control from SchwankControl Touch to IC 4000/1**

Use for MODBUS transmission max. 3x 0.5 mm<sup>2</sup> cable.

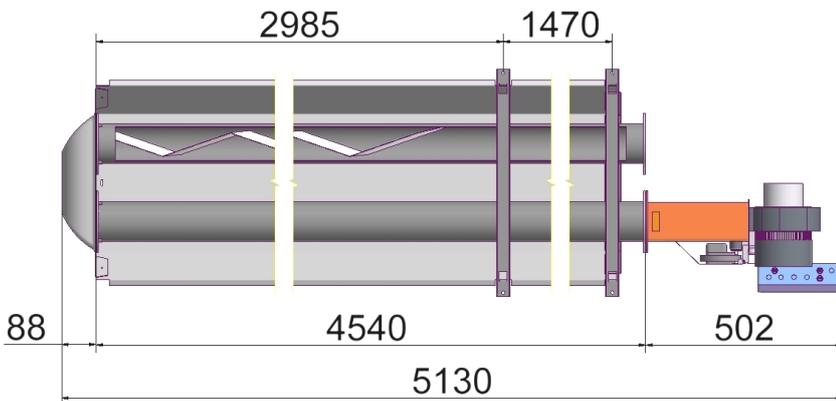
Route the cable through the lower cable gland into the housing of burner control unit IC 4000/1 and connected to the corresponding spring terminals on the circuit board.

Version 021 infra D Form\_U 16/19\_INT Technical specification subject to change

**infraSchwank D / calorSchwank D 15U**



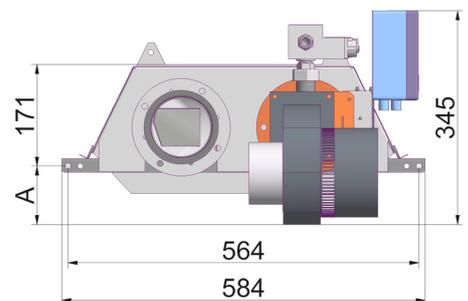
**infraSchwank D / calorSchwank D 20U**



**Detail A**

Cross dimensions at burner kit

15-40U A=80 mm  
50-60U A=100 mm



**Detail B**

Cross dimensions reflector valid for all types

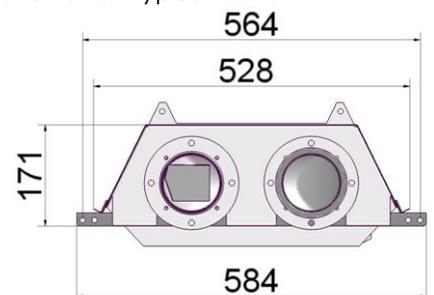
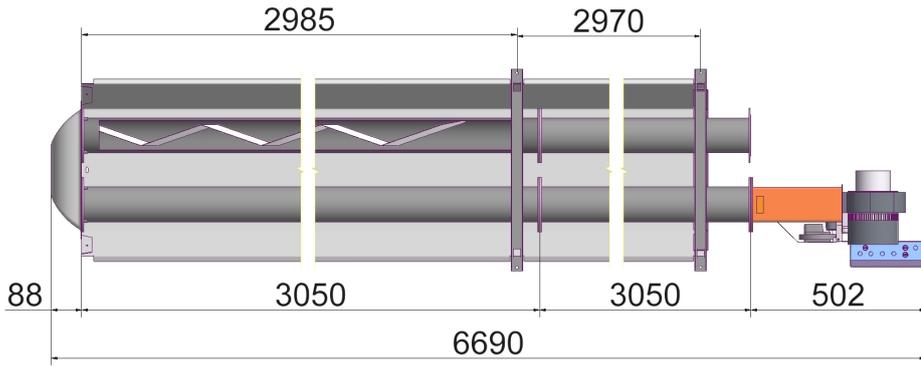
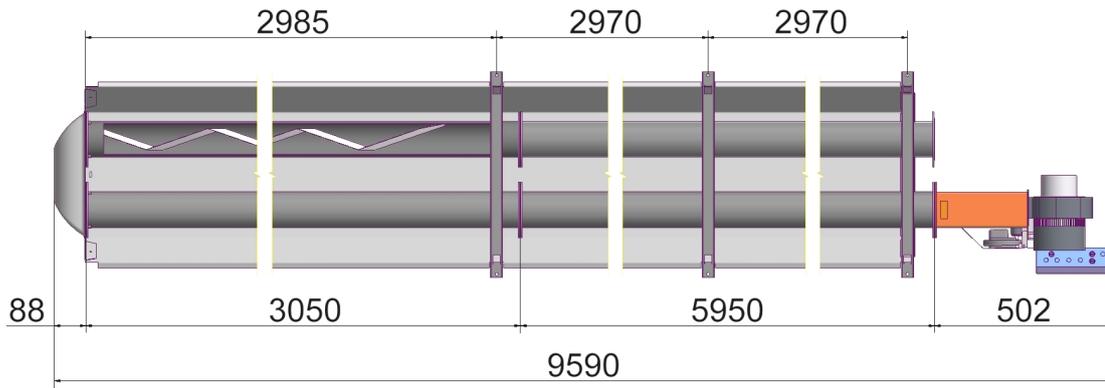


Fig. 15: Measurements infraSchwank D / calorSchwank D 15U, 20U [view from below]

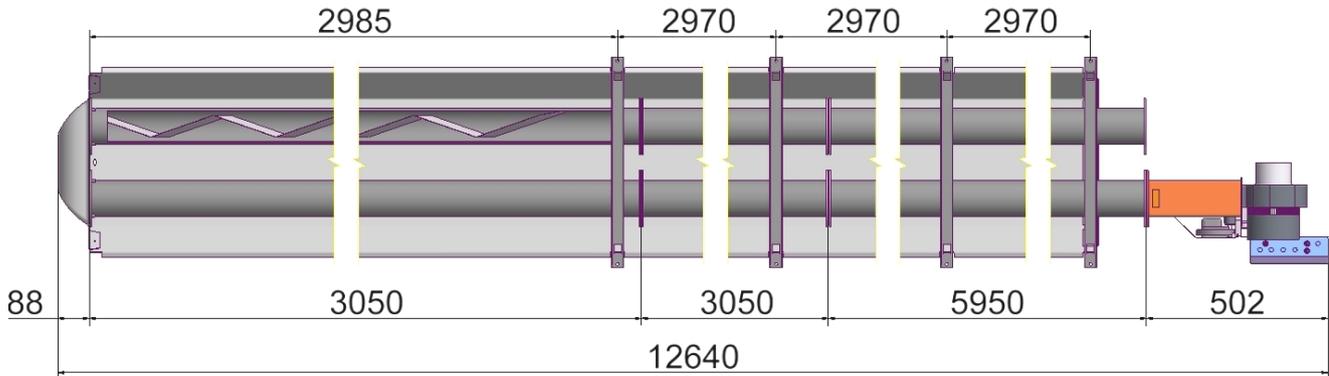
**infraSchwank D / calorSchwank D 30U**



**infraSchwank D / calorSchwank D 40U**



**infraSchwank D / calorSchwank D 50U**



**infraSchwank D / calorSchwank D 60U**

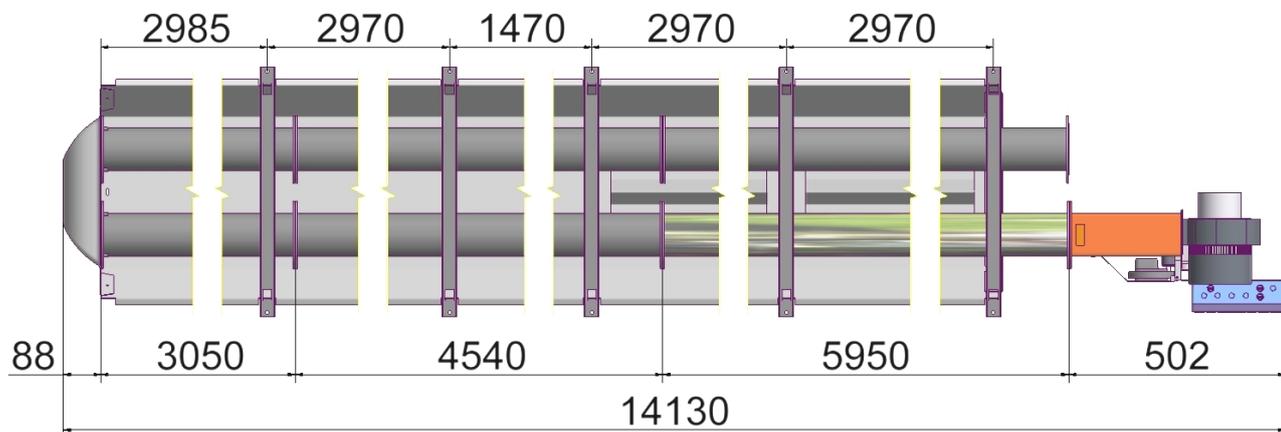


Fig. 16: Measurements infraSchwank D / calorSchwank D 30U, 40U, 50U and 60U [view from below]

**Technical data**  
for single and modulating operation lambdaPlus

Gas		infraSchwank D / calorSchwank D					
		15 U	20 U	30 U	40 U	50 U	60 U
<b>Nat. Gas H</b> <b>G 20</b> <sup>1)</sup>	Nominal heat load [kW]	15,0	19,0	29,0	39,0	49,0	60,0
	modulating min.- max. [kW]	15,0 - 11,2	19,0 - 14,3	29,0 - 22,0	39,0 - 30,0	49,0 - 38,0	60,0 - 48,0
	Gas consumption [m <sup>3</sup> /h]	1,50	1,91	2,91	3,91	4,91	6,02
<b>Nat. Gas L</b> <b>G 25</b> <sup>2)</sup>	Nominal heat load [kW]	15,0	19,0	29,0	39,0	49,0	60,0
	modulating min.- max. [kW]	15,0 - 11,2	19,0 - 14,3	29,0 - 22,0	39,0 - 30,0	49,0 - 38,0	60,0 - 48,0
	Gas consumption [m <sup>3</sup> /h]	1,75	2,22	3,38	4,55	5,72	7,00
<b>Propan</b> <b>G 31</b> <sup>3)</sup>	Nominal heat load [kW]	15,0	19,0	29,0	39,0	49,0	60,0
	modulating min.- max. [kW]	15,0 - 11,2	19,0 - 14,3	29,0 - 22,0	39,0 - 30,0	49,0 - 38,0	60,0 - 48,0
	Gas consumption [m <sup>3</sup> /h]	1,17	1,48	2,25	3,03	3,81	4,66
Weight infra / calor [kg]		54 / 68	75 / 95	92 / 119	130 / 171	166 / 221	185 / 245
Ø of air/exhaust flue [mm]		Ø 100					
Electrical consumption [W]		104			91		
Electrical protection		IP 20					
Gas connection [male]		R <sup>1/2</sup> "			R <sup>3/4</sup> "		
Electrical supply		230 V/ 50 Hz ~					
Ignition / Control		Spark ignition and ionisation control by automatic controller system					
CE-Identification		CE - 0085 BO 0037					

**Tab. 4: Technical data infraSchwank D / calorSchwank D**

<sup>1)</sup>H<sub>i,n</sub> = 9,97 kWh/m<sup>3</sup> / <sup>2)</sup> H<sub>i,n</sub> = 8,57 kWh/m<sup>3</sup> / <sup>3)</sup> H<sub>i,n</sub> = 12,87 kWh/kg

Gas	infraSchwank D / calorSchwank D					
	15 U	20 U	30 U	40 U	50 U	60 U
<b>Nat. Gas H</b> Gas nozzle	Ø 3,50	Ø 3,85	Ø 5,00	Ø 5,85	Ø 6,90	Ø 6,90
<b>G 20</b> <sup>1)</sup> Fan air restrictor plate	D 15	D 20	D 30	D 40	D 50+IA*	D 60+IA*
Air baffle plate	D 15	D 20	D 30+spin	D 40 U	/	/
Burner baffle plate	Ø 50	Ø 50	Ø 65	/	/	/
Nozzle pressure [hPa] 1-stage	10	10	10	10	10	14
modulating max./min.	10 / 7	10 / 7	10 / 7	10 / 7	10 / 7	14 / 9
min. fan voltage [VAC True RMS]	180	180	18	190	160	160
min. fan voltage [VAC average RMS]	165	165	165	180	130	130
Parameter PP03* [phase angle control]	13	13	13	18	5	5
Parameter PP07* [min. modulating current]	73	73	73	73	73	80
Parameter PP08* [max. modulating current]	97	97	97	97	97	110
start step pressure [hPa]	5	5	5	4	4	5
<b>Nat. gas L</b> Gas nozzle	Ø 3,50	Ø 3,85	Ø 5,00	Ø 5,85	Ø 6,90	Ø 6,90
<b>G 25</b> <sup>2)</sup> Fan air restrictor plate	D 15	D 20	D 30	D 40	D 50+ELW	D 60+ELW
Air baffle plate	D 15	D 20	D 30+spin	D 40 U	/	/
Burner baffle plate	Ø 50	Ø 50	Ø 65	/	/	/
Nozzle pressure [hPa] 1-stage	15,2	15,2	15,2	15,2	15,2	21,4
modulating max./min.	15,2 / 10	15,2 / 10	15,2 / 10	15,2 / 10	15,2 / 10	21,4 / 14
min. fan voltage [VAC True RMS]	180	180	18	190	160	160
min. fan voltage [VAC average RMS]	165	165	165	180	130	130
Parameter PP03* [phase angle control]	13	13	13	18	5	5
Parameter PP07* [min. modulating current]	85	85	85	85	85	105
Parameter PP08* [max. modulating current]	115	115	115	115	115	135
start step pressure [hPa]	7	7	7	6	6	8
<b>Propan</b> Gas nozzle	Ø 1,95	Ø 2,15	Ø 2,80	Ø 3,25	Ø 3,65	Ø 4,05
<b>G 31</b> <sup>3)</sup> Fan air restrictor plate	D 15	D 20	D 30	D 40	D 50+IA*	D 60+IA*
Air baffle plate	D 15	D 20	D 30+spin	D 40 U	/	/
Burner baffle plate	Ø 50	Ø 50	Ø 65	Ø 65	/	/
Nozzle pressure [hPa] 1-stage	37	37	37	37	37	37
modulating max./min.	37 / 25	37 / 25	37 / 25	37 / 25	37 / 25	37 / 25
min. fan voltage [VAC True RMS]	180	180	18	190	160	160
min. fan voltage [VAC average RMS]	165	165	165	180	130	130
Parameter PP03* [phase angle control]	13	13	13	18	5	5
Parameter PP07* [min. modulating current]	130	130	130	130	130	130
Parameter PP08* [max. modulating current]	155	155	155	155	155	155
start step pressure [hPa]	22	22	22	22	22	22

Tab. 5: Function parts burner kit infraSchwank D / calorSchwank D

<sup>1)</sup> H<sub>i,n</sub> = 9,97 kWh/m<sup>3</sup> / <sup>2)</sup> H<sub>i,n</sub> = 8,57 kWh/m<sup>3</sup> / <sup>3)</sup> H<sub>i,n</sub> = 12,87 kWh/kg

- IA = inlet angle plate
- fan voltage VAC as True RMS or RMS

## 8 Operating description

### Start-up

If heat demand exists, the fan will start up automatically. A differential pressure arises in the burner box, which is reported to the ignition unit via the differential pressure switch.

After a pre-purge period of about 25 seconds the automatic ignition starts [max. ignition time 5 sec.]. The twin solenoid valve with pressure regulator opens the gas supply to the burner in 2 steps. The burner flame is controlled by an ionisation electrode. The ignition is switched off, if the ionisation electrode reports a flame to the burner control unit IC 4000/1 within the safety time.

If the ignition process fails, the burner control IC 4000/1 repeats the start-up for one more time.

### Operation

A very long laminar flame is created in the first tube by the special burner construction. The hot flue heats the tube surface while being fed through the tubes by the fan. The hot tubes emit long-waved infrared radiation which is directed to the room by the reflector construction.

The radiant tube infraSchwank D / calorSchwank D work with a closed combustion system. The combustion air is taken from the room or from the outside. The flue is evacuated indirectly into the room or directly by the exhaust pipe or by a special air/exhaust pipe system.

For optimal adaption of heaters' performance to the heat demand of the building heaters are offered in modulating operation.

Start and ignition of the heater has always to be in full load. After a time of minimal 1 minute the heater can be switched to small step.

### Fault

If no flame is reported during the pre-purge period [including 1 repetition of ignition process], the burner control unit IC 4000/1 will switch off the radiant tube, error will give, fan runs in post-purge time for 30 seconds and then heater will lock it.

**Investigation and repair must be carried out by authorized personnel only. After clearance of the fault, the lock can be reset.**

**The cause of the fault / error code is displayed on the central control unit SchwankControl Touch or can read out via corresponding service software. See chapter 12 for error codes.**

Lock release can carry out by activate the reset command via the central control unit SchwankControl Touch or an interruption of the electric power supply for 3 sec. A new start-up begins. If no flame signal is reported to the burner control unit IC 4000/1 during operation, the gas valve shuts and stops the gas supply immediately. A new start-up process is repeated.



**Error codes and troubleshooting on pages 51 - 52**

### Monitoring of the combustion air supply

The combustion air supply is permanently controlled by the differential pressure switch during the operation.

If the differential pressure switch is not in rest position during the start-up the operation will not start. If the operating contact is not closed during the pre-purge the system will set in interference release.

If combustion air supply fails during operation [lack of air], the differential pressure switch will close the gas combination valve and stop the gas supply. A new start-up process is to be repeated.

## 9 Assembly instructions

### Assembly radiant and burner kit

#### Assembly

#### infraSchwank D / calorSchwank D 15U



#### Tools you need

- hexagonal wrench or ratchet [width: 10, 13]
- socket wrench [width: 7 and 8]

#### Note before mounting

- Note the distance measure of suspension brackets.
- Flanges are mounted with flange packing [each 4 screws/washers/lock washers/nuts M8].
- Start mounting the heater at the turnaround box connection.
- Turn welding line of the tubes to the side.
- Tube with turbulator [with paint mark] has to be mounted behind the turnaround box [flow direction]. The paint mark showing to the turnaround box!
- Tube bars have to be fixed by nuts/lock washers/3D-washers M8 on the suspension bracket.
- First the reflector will be fixed on the U-bend connection by screws/self-locking nuts/lock washers/3D-washers M5. For insulated reflectors [calorSchwank D] the reflector end with notch on sides shows to the turnaround box.
- The other reflector ending will be shoved under the clip of the suspension brackets. Reflector and front plate have to be fixed by screws/self-locking nuts/lock washers/3D-washers M5.
- Mounting of burner unit with valve on the top.

- **Flue gas connection [Type B23, C]**  
Flexible stainless steel pipe with connector flange has to be mounted at the end of the tube with a gasket.

- **Accessory for indirect flue into the room [Type A]**  
**Flue gas diverter code-no. 126 7018 0 or flue gas adapter code-no. 126 7035 0**  
Note that the flue gas diverter or adapter is mounted at the end of the tube.

Note that the flue gas diverter is mounted in a position so that the flue gas is diverted from the burner.

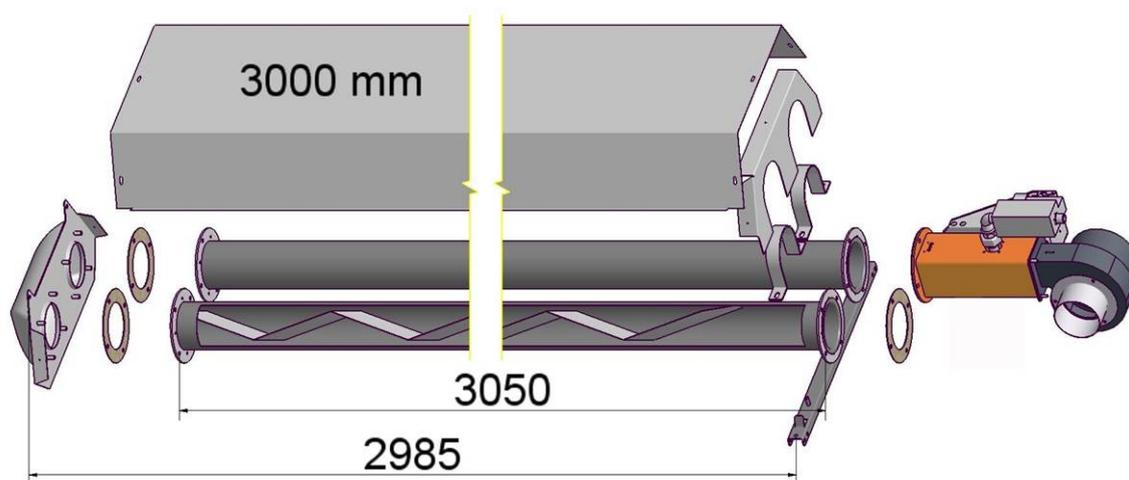


Fig. 17: Mounting of infraSchwank D / calorSchwank D 15U  
[all dimensions in mm]

## Assembly

### infraSchwank D / calorSchwank D 20U



#### Tools you need

- hexagonal wrench or ratchet [width: 10, 13]
- socket wrench [width: 7 and 8]

#### Note before mounting

- Note the distance measures of suspension brackets.
- Flanges are mounted with flange packing [each 4 screws/washers/lock washers/nuts M8].
- Start mounting the heater at the turnaround box connection.
- Turn welding line of the tubes to the side.
- Tube with turbulator [with paint mark] has to be mounted behind the turnaround box [flow direction]. The paint mark showing to the turnaround box!
- Tube bars have to be fixed by nuts/3D-washers/lock washers M8 on the suspension brackets.
- Start the reflector mounting at the turnaround box connection with the longest reflector L=3000 mm. Reflector will be fixed on the turnaround box connection by screws/self-locking nuts/lock washers/3D-washers M5. For insulated reflectors [calorSchwank D] the reflector end with notch on sides shows to the turnaround box.
- The other reflector endings will be shoved under the clips of the suspension brackets.
- The short reflector L=1500mm is mounted at the front of the heater.
- Reflectors will be jointly fixed by 3x M 5 screws and self-locking nuts.
- Reflector and front plate have to be fixed by screws/self-locking nuts/lock washers/3D-washers M5.
- Mounting of burner unit with valve on the top.

- **Flue gas connection [type B23, C]**  
Flexible stainless steel pipe with connector flange has to be mounted at the end of the tube with a gasket.

- **Accessory for indirect flue into the room [type A]**  
**Flue gas diverter code-no. 126 7018 0 or flue gas adapter code-no. 126 7035 0**  
Note that the flue gas diverter or adapter is mounted at the end of the tube.  
Note that the flue gas diverter is mounted in a position so that the flue gas is diverted from the burner.

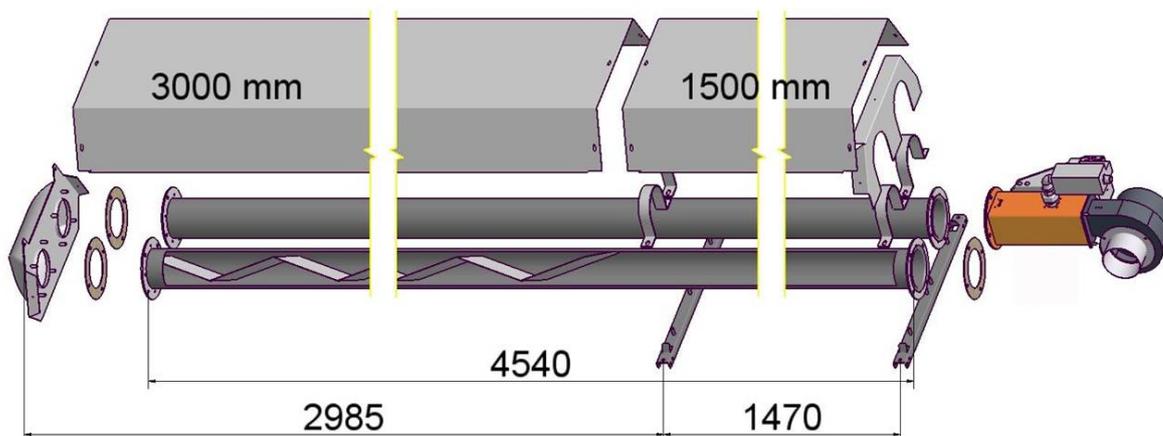


Fig. 18: Mounting of infraSchwank D / calorSchwank D 20U  
[all dimensions in mm]

## Assembly

### infraSchwank D / calorSchwank D 30U



#### Tools you need

- hexagonal wrench or ratchet [width: 10, 13]
- socket wrench [width: 7 and 8]
- hand rivet tool, drill machine, drill  $\varnothing$  4.9 mm

### Note before mounting

- Note the distance measures of suspension brackets.
- Flanges are mounted with flange packing [each 4 screws/washers/lock washers/nuts M8].
- Start mounting the heater at the turnaround box connection.
- Turn welding line of the tubes to the side.
- Tube with turbulator [with paint mark] has to be mounted behind the turnaround box [flow direction]. The paint mark showing to the turnaround box!
- **Supporting sleeve for first flange connection:** Insert half of the supporting sleeve into first heater tube [slot on top]. Drill  $\varnothing$  4.9 mm hole through the tube and sleeve and fix it by rivet. Mount the second tube and fix the sleeve by the rivet as well. Fix the rivets always in the opposite position lateral to the tube. Use only stainless rivets.
- Tube bars have to be fixed by nuts / 3D washers / lock washers M8 on the suspension brackets.
- Start the reflector mounting at the turnaround box connection. Reflector will be fixed on the turnaround box connection by by screws/self-locking nuts/lock washers/3D-washers M5. For insulated reflectors [calorSchwank D] the reflector end with notch on sides shows to the turnaround box.
- The other reflector endings will be shoved under the clips of the suspension brackets.
- Reflectors will be jointly fixed by 3x M 5 screws and self-locking nuts.
- Reflector and front plate have to be fixed by screws/self-locking nuts/lock washers/3D-washers M5.
- Mounting of burner unit with valve on the top.

- **Flue gas connection [Type B23, C]**  
Flexible stainless steel pipe with connector flange has to be mounted at the end of the tube with a gasket.

- **Accessory for indirect flue into the room [Type A]**  
**Flue gas diverter code-no. 126 7018 0 or flue gas adapter code-no. 126 7035 0**  
Note that the flue gas diverter or adapter is mounted at the end of the tube.  
Note that the flue gas diverter is mounted in a position so that the flue gas is diverted from the burner.

**Supporting sleeve**  
4 rivets [stainless steel]  $\varnothing$  4.8mm  
hole to drill  $\varnothing$  4.9mm

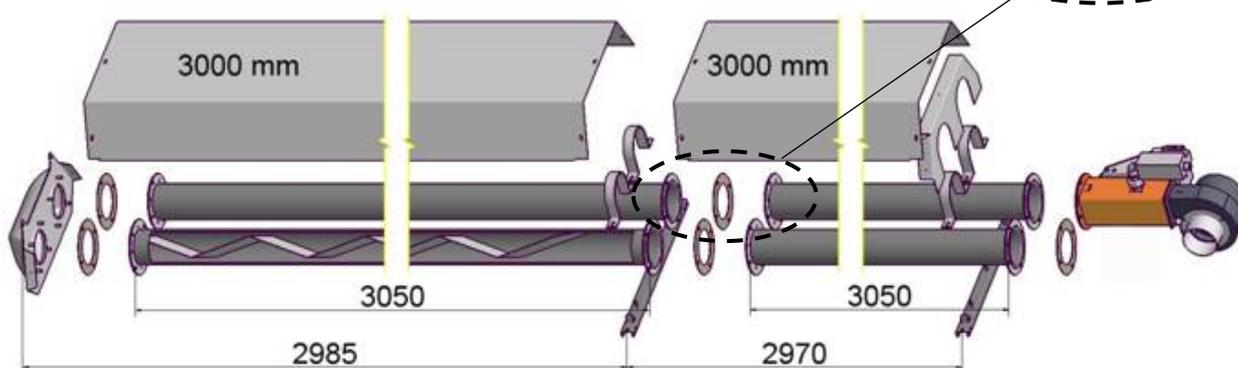
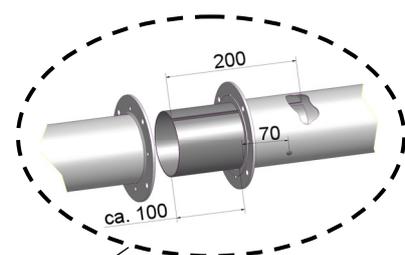


Fig. 18: Mounting of infraSchwank D / calorSchwank D 30U  
[all dimensions in mm]

## Assembly infraSchwank D / calorSchwank D 40U



### Tools you need

- hexagonal wrench or ratchet [width: 10, 13]
- socket wrench [width: 7 and 8]

### Note before mounting

- Note the distance measures of suspension brackets.
- Flanges are mounted with flange packing [each 4 screws/washers/lock washers/nuts M8].
- Start mounting the heater at the turnaround box connection.
- Turn welding line of the tubes to the side.
- Tube with turbulator [with paint mark] has to be mounted behind the turnaround box [flow direction]. The paint mark showing to the turnaround box!
- Tube bars have to be fixed by nuts/3D-washers/lock washers M8 on the suspension brackets.
- Start the reflector mounting at the turnaround box connection. Reflector will be fixed on the turnaround box connection by screws/self-locking nuts/lock washers/3D-washers M5. For insulated reflectors [calorSchwank D] the reflector end with notch on sides shows to the turnaround box.
- The other reflector endings will be shoved under the clips of the suspension brackets.
- Reflectors will be jointly fixed by 3x M 5 screws and self-locking nuts.
- Reflector and front plate have to be fixed by screws/self-locking nuts/lock washers/3D-washers M5.
- Mounting of burner unit with valve on the top.
- **Flue gas connection [Type B23, C]**  
Flexible stainless steel pipe with connector flange has to be mounted at the end of the tube with a gasket.
- **Accessory for indirect flue into the room [Type A]**  
**Flue gas diverter code-no. 126 7018 0 or flue gas adapter code-no. 126 7035 0**  
Note that the flue gas diverter or adapter is mounted at the end of the tube.  
Note that the flue gas diverter is mounted in a position so that the flue gas is diverted from the burner.

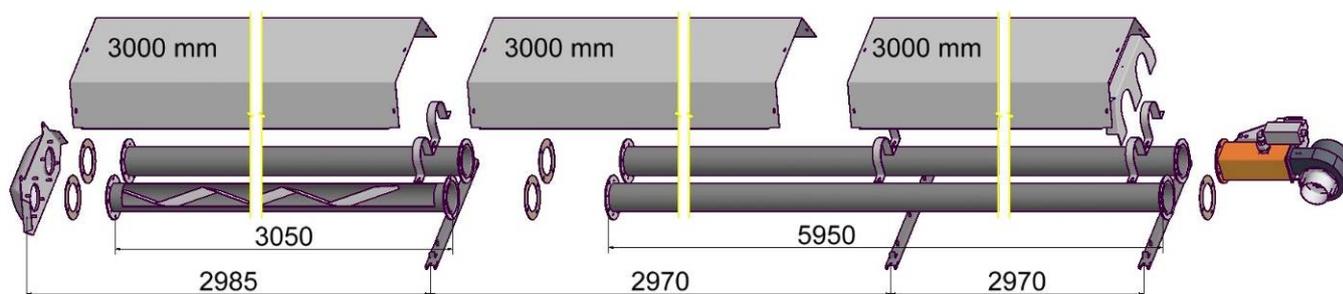


Fig. 19: Mounting of infraSchwank D / calorSchwank D 40U  
[all dimensions in mm]



## Assembly infraSchwank D / calorSchwank D 60U



### Tools you need

- hexagonal wrench or ratchet [width: 10, 13]
- socket wrench [width: 7 and 8]
- hand rivet tool

### Note before mounting

- Note the distance measures of suspension brackets.
- Flanges are mounted with flange packing [each 4 screws/washers/lock washers/nuts M8].
- Stainless steel tube L=5950 mm is the first tube after the burner unit. Tubes with same length are mounted parallel.
- Start mounting the heater at the turnaround box connection.
- Turn welding line of the tubes to the side.
- Tube bars have to be fixed by nuts/3D-washers/lock washers M8 on the suspension brackets.
- Bracket bars have to be fixed by screws/washers/ lock washers/nuts M8 on all suspension brackets.
- Start the reflector mounting at the turnaround box connection. Reflector will be fixed on the turnaround box connection by screws/self-locking nuts/lock washers/3D-washers M5. For insulated reflectors [calorSchwank D] the reflector end with notch on sides shows to the turnaround box.
- The other reflector endings lie on top to each other on the bracket bars.
- The short reflector L=1500 mm is mounted in the middle of the heater. Note the distance measure of suspension brackets.
- The intermediate reflectors have to be fixed with the both front reflectors [each reflector with 2 middle reflectors]. At the end of the main reflector sheet the middle reflector is riveted by 2 stainless steel rivets [this reflectors have already bores to accept the rivets]. At the other end an additional short angled bracket either shape V is fixed at the centre of the main reflector.
- Reflectors and bracket bar will be jointly fixed by 3x M 5 screws and self-locking nuts.
- Front plate, reflector and bracket bar have to be fixed by screws/self-locking nuts/lock washers/3D-washers M5.
- Mounting of burner unit with valve on the top.
- **Flue gas connection [Type B23, C]**  
Flexible stainless steel pipe with connector flange has to be mounted at the end of the tube with a gasket.

- **Accessory**  
for indirect flue into the room [Type A]  
**Flue gas diverter code-no. 126 7018 0 or**  
**flue gas adapter code-no. 126 7035 0**

Note that the flue gas diverter or adapter is mounted at the end of the tube.  
Note that the flue gas diverter is mounted in a position so that the flue gas is diverted from the burner.

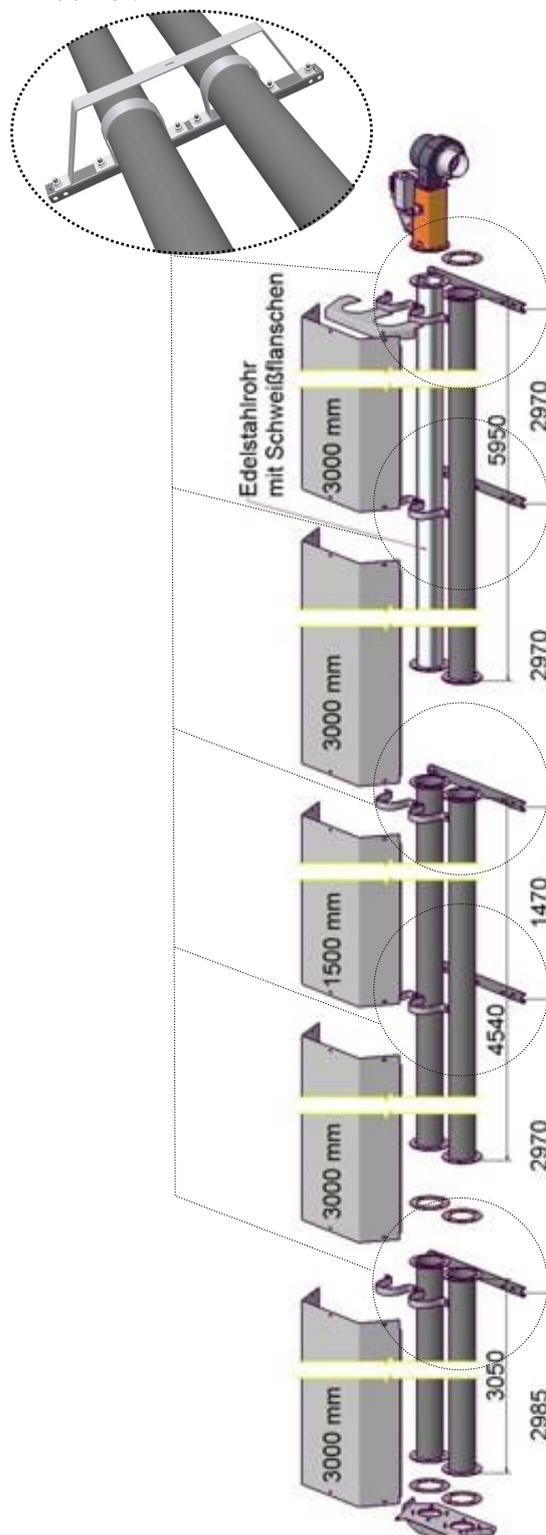


Fig. 21: Mounting of infraSchwank D / calorSchwank D 60U  
[all dimensions in mm]

## Assembly burner kit exhaust gas collection system

### Conversion kit burner kit single heater to exhaust gas collection system

Article No. 126999 9

Conversion kit includes the components for converting the burner kit for use in an exhaust gas collection system and provides the parts for connecting the exhaust side.

The following steps are required to convert the burner kit.

- ⇒ Remove the self-tapping screws of the air pressure switch [APS] fastening and fasten the 2/2-way valve bracket together with APS with added longer self-tapping screws [Fig. 24].
  - ⇒ Fix 2/2-way valve with added 2x M4 screws to the bracket. Connection bushing with hole 0.6 mm must be showing to the right [Fig. 25 and 26].
  - ⇒ Remove the measuring pipe differential pressure [- contact] between venturi fan and APS.
  - ⇒ Now fit two new measuring pipes between venturi fan / 2-2-way valve / APS[- contact]. Making sure that the measuring pipe with damping nozzle  $\varnothing$  0.6mm is mounted on the right side.
- Attention: Do not cover the bore of the connecting bushing [Fig. 26]!**
- ⇒ Place additional cable gland on right housing wall IC 4000/1.
  - ⇒ Connect connection cable 2/2-way valve [L, N] to the existing plug-in terminals within IC 4000/1 [type: WAGO, fan voltage output], clamp PE on PE GV 2, connect plug with 2/2-way valve and secure with screws.
  - ⇒ Close the housing lid IC 4000/1.
- ⇒ After burner kit conversion the exhaust components must be assembled [adaptor and damper]. Adaptor is mounted with the seal on the loose flange of the last radiant tube [Fig. 28].



Fig. 23 : Scope of delivery conversion kit

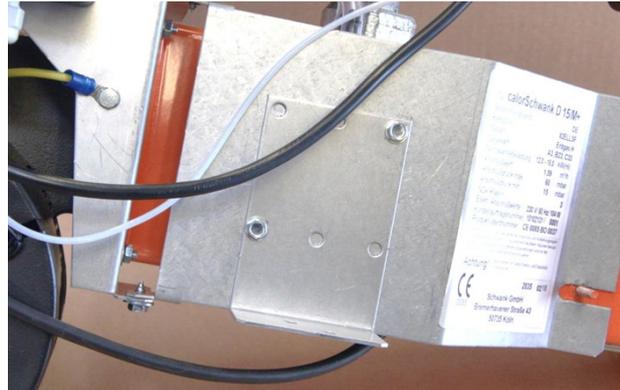


Fig. 24: Fit bracket for APS



Fig. 25 : Assembled APS on bracket

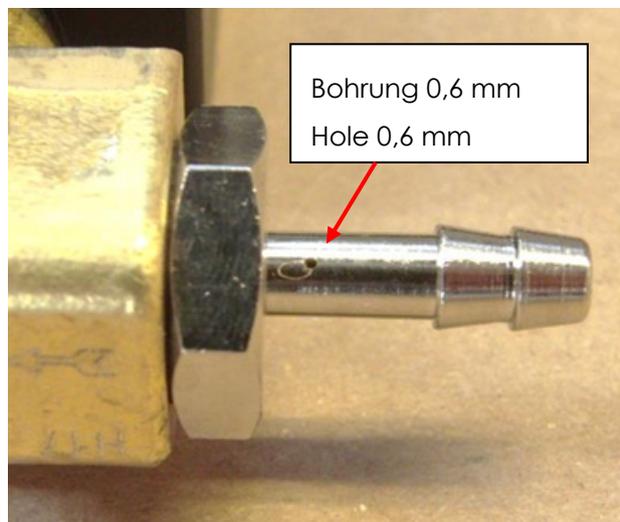


Fig. 26: Hole position connection bushing on right side

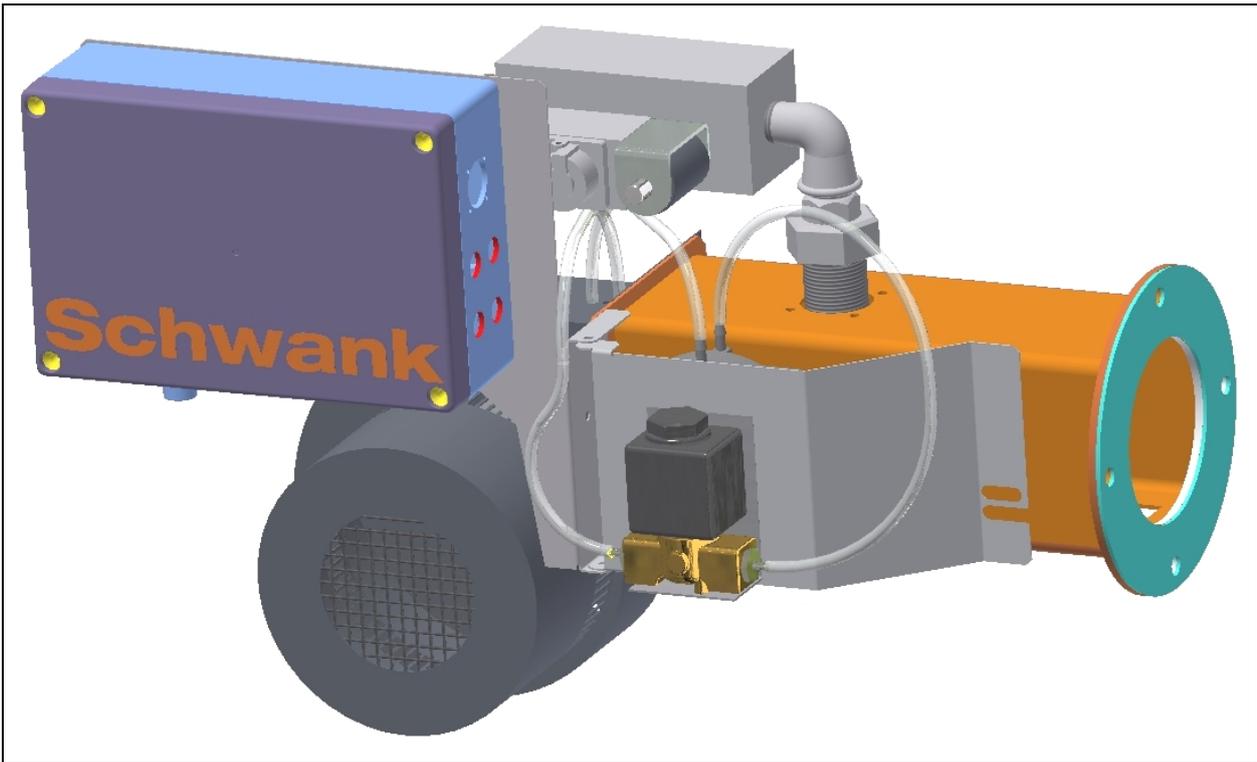


Fig. 27: View burner kit after conversion

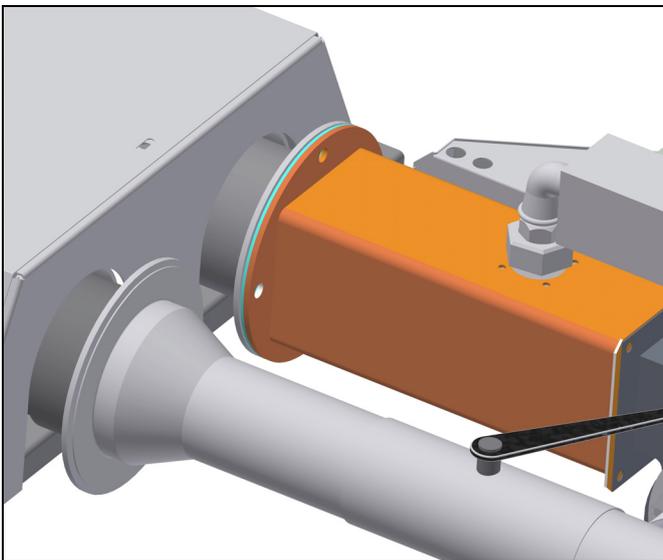


Fig. 28: Assembly connection parts exhaust gas

# 10 Installation instructions



**Danger of fire and explosion!**  
Unprofessional handling of gas pipes, gas connections and the appliance can produce gas leaks. It is highly dangerous if gas is ignited!

Working on gas pipes and the appliances is only allowed by approved installers.



Mount the flexible connection, so that it can compensate the longitudinal expansion of the tube.

Only use flexible connections for the radiant tube regarding:

- gas
- electricity and
- air [if necessary]

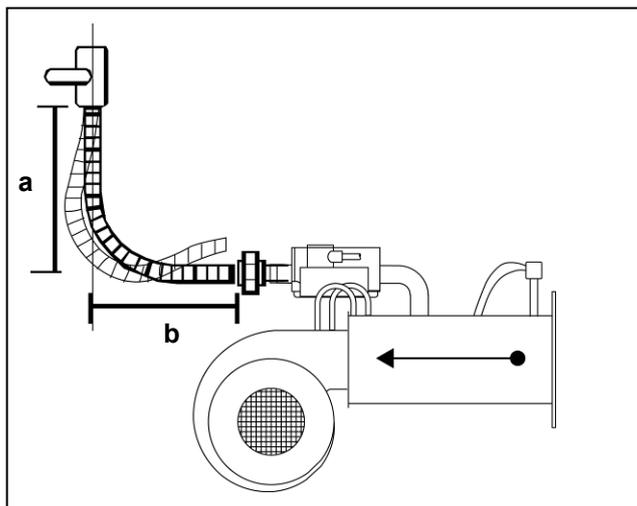


Fig. 29: Longitudinal expansion

## Gas-pipe-system and mounting of heaters

Connection of gas pipes to the appliance, supply and the mounting of the appliance is only allowed by professional personnel who is registered, holding a current certificate of competence and in accordance with the relevant provisions of the gas safety [installation and use] regulations.

Additional installation notices of national or local institutions must be observed. The pipe must be dimensioned in a way that the minimum connection pressure in front of the gas combination valve of the individual devices is available at the nominal thermal load of the entire system, according to table 6.

Please consider the pressure drop of the upstream mounted gas connection and gas filter. For the detailed pressure drop value of the Schwank gas-pipe-systems see table 7.

### Minimum connection pressures in front of valve

infraSchwank D / calorSchwank D shape U					
	type	min. connection pressure [hPa]	nozzle pressure		start step pressure [hPa]
			single stage [hPa]	modulating max -min. [hPa]	
Natural gas H*	15 - 50U	15	10	10 - 7	4 - 5
	60U	20	14	14 - 7	5
Natural gas L*	15 - 50U	20	15.2	15.2 - 10	6 - 7
	60U	30	21.4	21.4 - 14	8
Propane	15 - 60U	40	37	37 - 25	22

\* Natural gas H: Hi,n: 9.97 kWh/m<sup>3</sup> Natural gas L: Hi,n: 8.57 kWh/m<sup>3</sup>

Tab. 6: min. connection pressures with single-, two-stage or modulating operation in front of gas combination valve

### Pressure drop Schwank gas-pipe-systems

infraSchwank D / calorSchwank D shape U			
	Type	Gas pipe system	Pressure drop [hPa]
Natural gas H	15 - 30U	1/2" / L=800 mm	2
	40 - 60U	3/4" / L=800 mm	2.5
Natural gas L	15 - 30U	1/2" / L=800 mm	2
	40 - 60U	3/4" / L=800 mm	3
Propane	15 - 30U	1/2" / L=800 mm	1
	40 - 60U	3/4" / L=800 mm	1

Tab. 7: Pressure drop Schwank gas-pipe-systems



The max. connection pressure is 60 hPa!



In case of contaminated gas pipes and generally at gas pipes of welded black steel have to be mounted gas filter-groups directly in front of the heater. [see page 59].

**Note the following points while installing the gas-pipe-system:**

- ⇒ Use only gas lines as per national standards.
- ⇒ Never hang heaters on the gas pipes.
- ⇒ Mount a manual gas cock upstream of every radiant tube.
- ⇒ Close all gas cocks before carrying out the leak test and disconnect the connection between the gas cock and the burner to avoid damages to the gas regulator and gas combination valve.
- ⇒ Clean gas pipes before the installation of the heater. Reconnection after pressure control and expansion.

**Please observe the national standards.**



**Connect the heater with an approved flexible hose!**

- ⇒ Use the following hose length for infraSchwank D / calorSchwank D shape U

<b>15-30 kW</b>	<b>R 1/2"</b>	<b>length</b> <b>800 mm</b>	<b>Article no.</b> <b>19208450</b>
<b>40-60 kW</b>	<b>R 3/4"</b>	<b>length</b> <b>800 mm</b>	<b>Article no.</b> <b>19208460</b>

- ⇒ Mount a flexible hose only with 90° bend or with 2 x 90° elbow fittings in a 180° bend according to Fig 30, 31 and 32.
- ⇒ Keep the specified installation dimensions.
- ⇒ Incorrect mounting of flexible hoses shown in Fig 33 [sketches ① to ③].

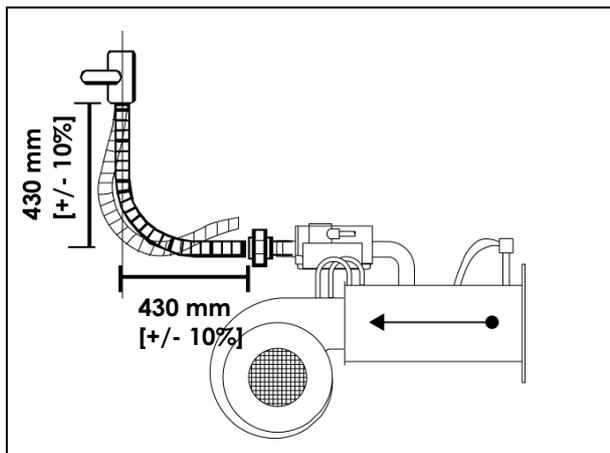


Fig. 30: Standard connection [vertical] 90° bend

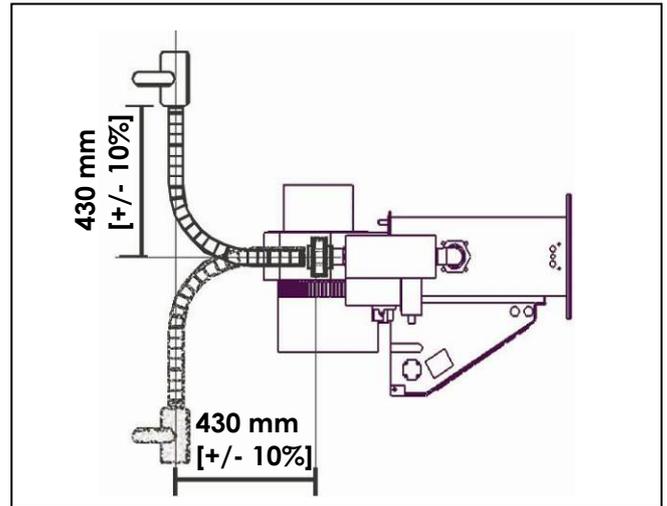


Fig. 31: Sideways connection 90° bend

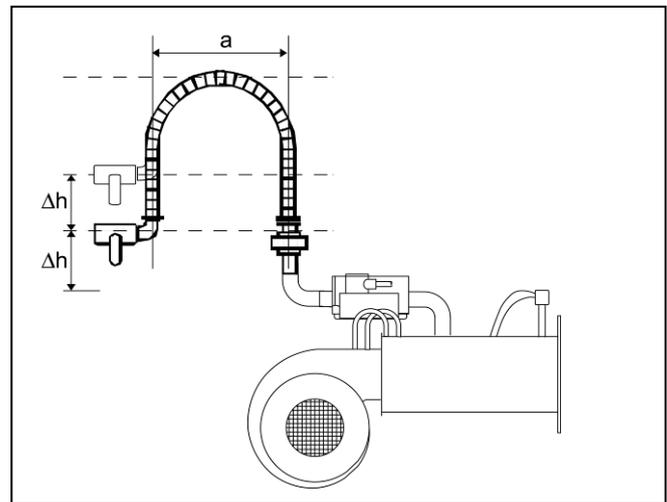


Fig. 32: Alternative flexible hose 180° -bend with 2 x 90° elbow

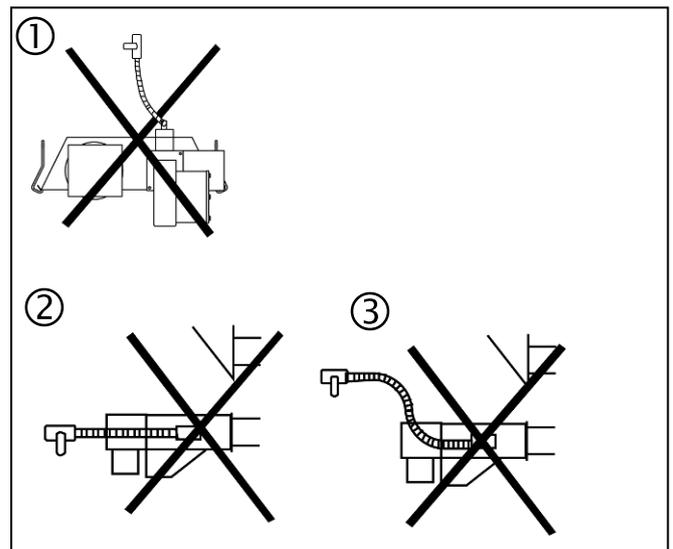


Fig. 33: Incorrect mounting of flexible hoses



**Gas connection has to be positioned with 90° or 180° bend in the axle of the heater to compensate the thermal expansion of the heater. Otherwise torsional forces will operate on the hose!**

**Avoid twisting of the flexible hose!  
When tightening the union, counter hold the nipple on the hose.**

**Pay attention that the flexible hose will not be mechanically damaged by tools etc. Do not buckle the hose.**

**Do not mount damaged flexible hoses!  
Damaged hoses can break due to the movement of the heater.**

## **Exhaust flue installation single heater**

**The exhaust system is available an accessory of the radiant tube heaters. The flue system is connected at the end of the radiant tube. Note the information in Chapter 4 „Planning“.**

## **Installation exhaust collecting system [herringbone]**

The installation of the flue collecting system must be carried out according to the planning of Schwank.

- ⇒ After mounting the heaters with their burner kits including the 2/2-way valve [see page 30] the connection set F [adapter and damper] have to be mounted at the end of the tube heater. The adapter must be fixed with a gasket at the flange of the last radiant tube.
- ⇒ The spiral tubes for the flue collecting system with different lengths and dimensions must be mounted according to Schwank planning. When assembling the tube elements any burrs or residue of oil and grease must be eliminated.
- ⇒ All connecting tubes and collecting tubes must be mounted with a small slope towards the central exhaust fan [about 0,3 %, means 30 mm per 10m]. Any dips and sinks in the tubes must be avoided [to prevent collection of condensate].
- ⇒ The spiral tube elements are connected by couplings. Each tube element must be fixed by two self-tapping screws at opposite sides. Screws may not be fixed at the bottom of the tubes.
- ⇒ After fixing the tube elements with screws all tube connections must be sealed carefully with high temperature silicon [temperature resistant at least up to 200 °C, named f.e. NOVASIL]. When starting the central exhaust fan for the first time all tube connections have to be checked for tightness.
- ⇒ If the Schwank planning requires a condensate run off, this part must be mounted directly in front of the exhaust fan [deepest point of the system]. The condensate run off has to be connected to a condensate pump or a siphon [min. water barrier height 30 cm].

## Electrical installation [wiring diagram]



**Danger of electric shock!**  
Electric shocks are highly dangerous!  
Working at the electrical equipment of the appliance is only allowed by professional personnel observing the current IEE regulations.



**Isolate the electrical supply while working at the electrical equipment of the appliance and safeguard the appliance against unintentional connection to the circuit.**



**The gas supply and electrical cable must be situated on the outside of the radiation and combustion heat. Only use heat-resistant cables near the tubes.**



**The power supply for the heater must be flexible connected with Ölflex- or silicone cable.**

## Electrical connection Operation without MODBUS control

### 1-stage operation

- ⇒ Route a flexible 3-wire electrical connection cable [max. 3 x 1.5 mm<sup>2</sup>] for power supply burner kit to the four-pin plug and connect the cable according to connecting scheme [Fig 34].
- ⇒ Connect 4-pin GDM socket with housing plug on burner control unit IC 4000/1 of the burner kit.
- ⇒ The power supply for the heater must be flexible with maximal wire cross-section of 3x 1.5 mm<sup>2</sup> Ölflex- or silicone cable
- ⇒ In order to disconnect burner kit from the electrical supply pull the plug out from IC 4000/1.



**The 4-pin GDM plug for the power supply burner kit is included in delivery of the kit.**

## Modulating operation lambdaPlus

- ⇒ In the standard case 230 VAC error signal is given via contact 3 at 4-pin plug.  
For modulating operation without MODBUS communication the modulation signal must now be connected to contact 3 of 4-pin plug [Fig. 34].
- ⇒ The wiring between the plug socket and board is already factory-made. For modulating operation without MODBUS communication the red cable on board IC 4000/1 has to be changed from LO [lock out] to M [modulating]!
- ⇒ Parameter value PP01 of burner control unit IC 4000/1 is 1 as factory setting [Modbus communication]. Therefore parameter value PP01 must be set as 0 for modulating operation without MODBUS communication [for procedure, see page 45].
- ⇒ Heater must be connected in such a way that it always starts at full load. This is ensured by central control unit SchwankControl Touch or manual control unit moduSchwank. After a time delay of at least 2 minutes you can switch to the partial load stage.
- ⇒ For necessary settings SchwankControl Touch without MODBUS communication please refer manual SchwankControl Touch.



**Make sure that the polarity of power supply is correct. If polarity incorrect control unit IC 4000/1 will not detect the modulation signal!**

Figures 36 and 37 show a complete wiring scheme without MODBUS communication [relay control] between the central control unit SchwankControl Touch and burner kits with burner control IC 4000/1.

Figure 39 shows a complete wiring scheme between the alternative control unit SRT-1 and burner kits with IC 4000/1 burner control unit.

## Electrical connection Operation with MODBUS control

- ⇒ Route a flexible 3-wire electrical connection cable [max. 3 x 1.5 mm<sup>2</sup>] for power supply burner kit to the four-pin plug and connect the cable according to connecting scheme [Fig 34].
- ⇒ Connect 4-pin GDM socket with housing plug on burner control unit IC 4000/1 of the burner kit.
- ⇒ The power supply for the heater must be flexible with maximal wire cross-section of 3x 1.5mm<sup>2</sup> Ölflex- or silicone cable
- ⇒ In order to disconnect burner kit from the electrical supply pull the plug out from IC 4000/1.



**The 4-pin GDM plug for the power supply burner kit is included in delivery of the kit.**

- ⇒ Route a flexible 3-wire MODBUS cable [max 3x 0.5mm<sup>2</sup>] for the Modbus connection into the free cable gland of the burner control unit IC 4000/1 and connect it according to the connection diagram [Fig 36].
- ⇒ Maximum length between junction box MODBUS and connection burner control unit IC 4000/1 may be 0.5m.
- ⇒ At the of each MODBUS communication circuit a terminal resistance 120 Ω must be set on the relevant burner control unit IC 4000/1. Resistor is already loosely plugged into each socket KN 8 of the burner control unit IC 4000/1. This socket must then be closed with the resistor.
- ⇒ The necessary MODBUS address assignment is explained on page 45.

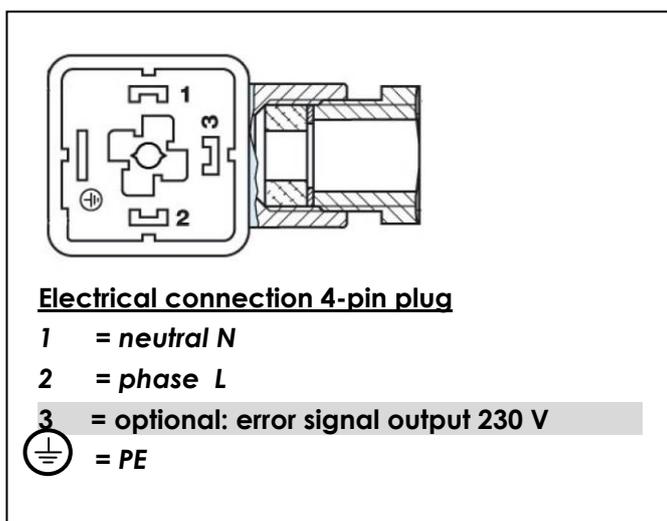


Fig 34: Electrical connection 4-pin plug

## Electrical connection exhaust gas collecting system [herringbone system]

After conversion of the heaters to operation with exhaust gas collection system they can be electrically connected as described above.

Fig. 38 shows the wiring diagram between the central control unit SchwankControl Touch control and the peripherally required SchwankControl SAV 1 extension kit and SAV fan monitoring kit.



**Further information and wiring schemes for more different electrical connection options [e.g. multi-zone operation, grouping of several central control units SchwankControl Touch,...] can be found in „Electrical Compendium“**

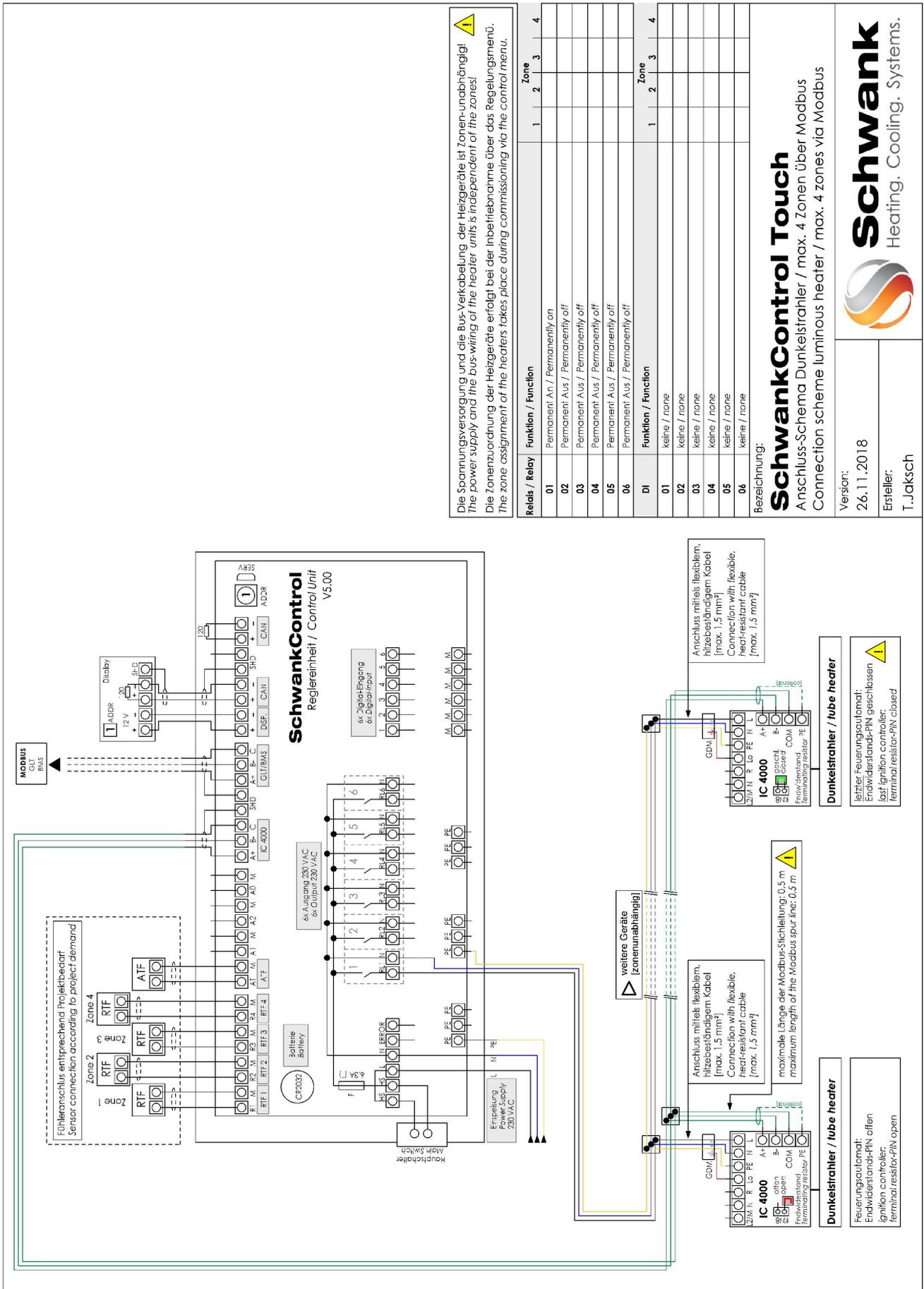


Fig. 35: Wiring scheme burner kit infraSchwank D / calorSchwank D with MODBUS control to SchwankControl Touch



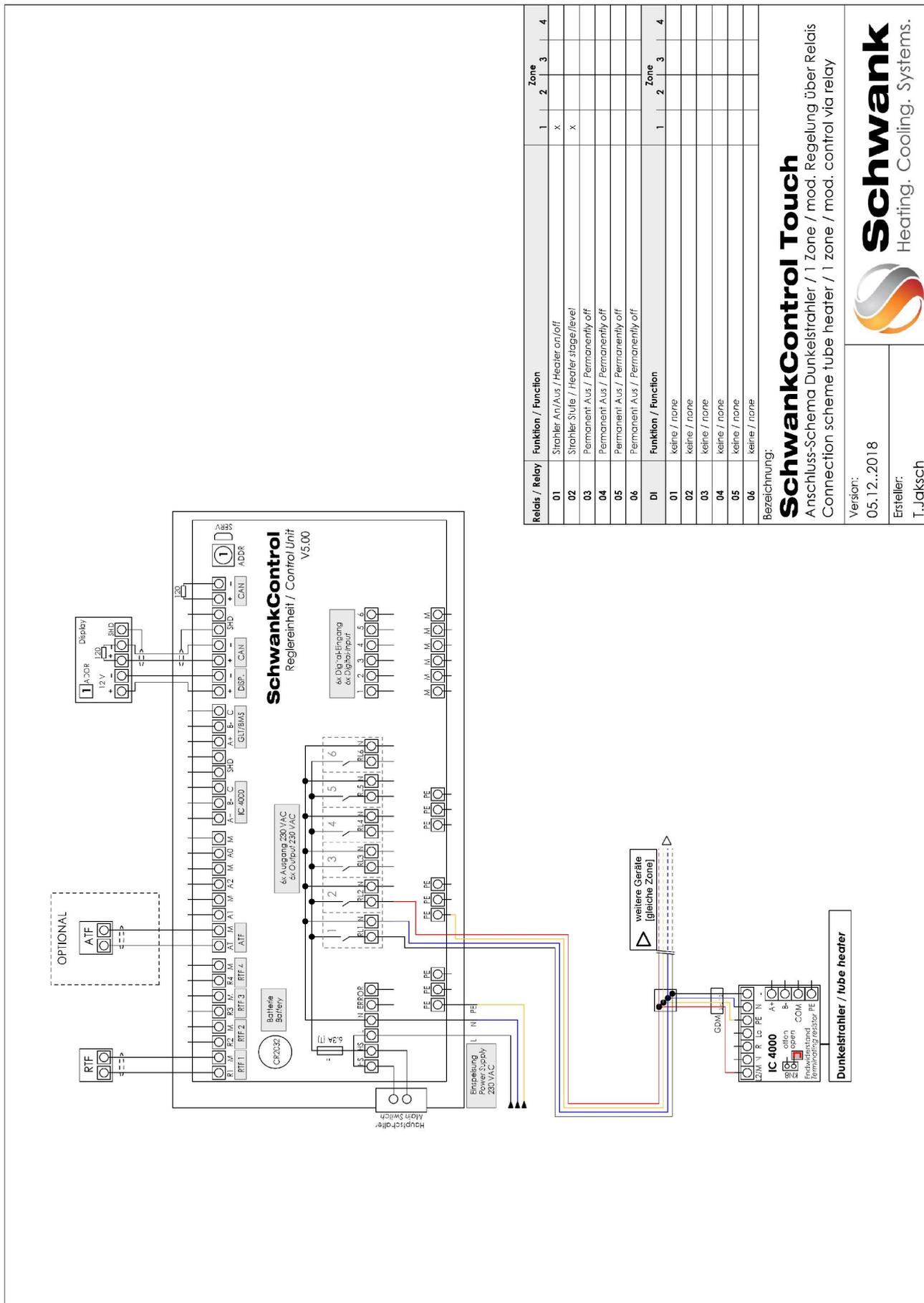


Fig. 37: Wiring scheme burner kit infraSchwank D / calorSchwank D modulating via relay control SchwankControl Touch - without MODBUS control

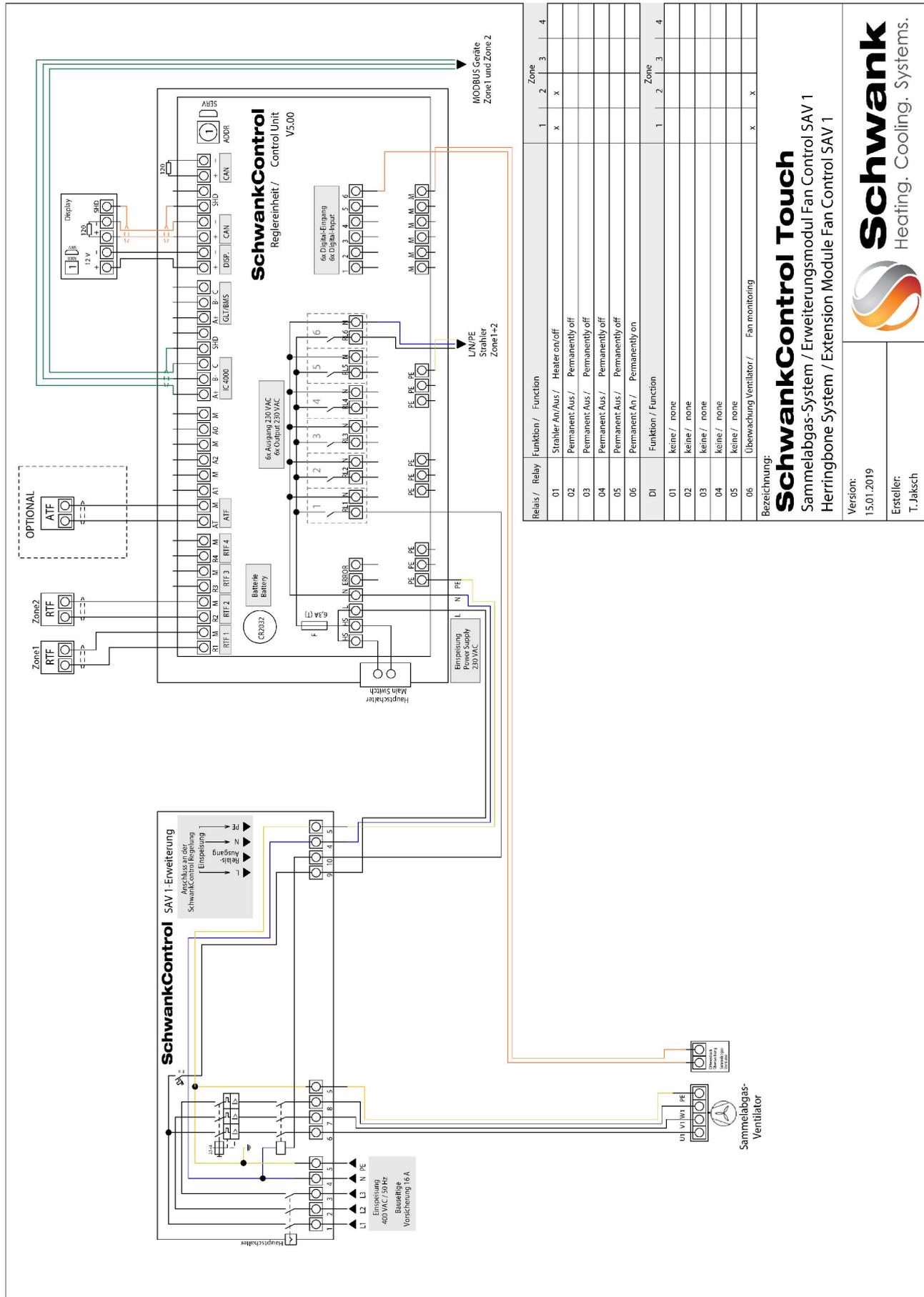


Fig. 38: Wiring scheme burner kit infraSchwank D / calorSchwank D exhaust gas collecting system with SchwankControl Touch / extension kit Fan Control SAV1

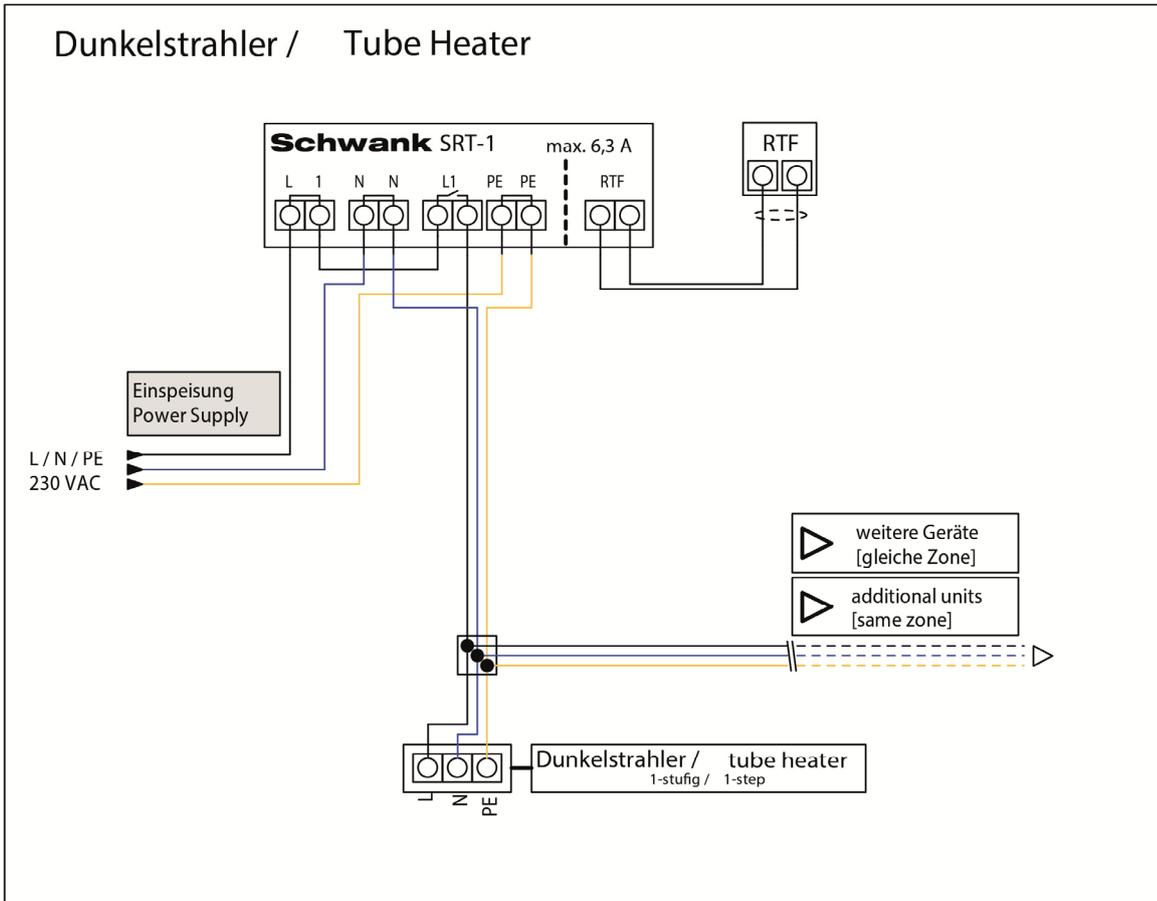


Fig. 39: Wiring scheme burner kit infraSchwank D / calorSchwank D 1-stage with alternative control unit SRT-1

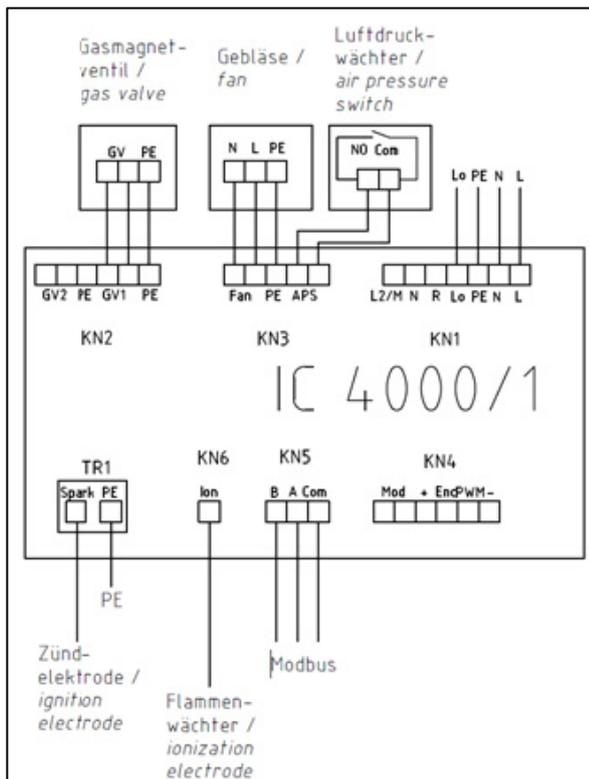


Fig. 40: Wiring diagram burner kit 1-stage infraSchwank D / calorSchwank D

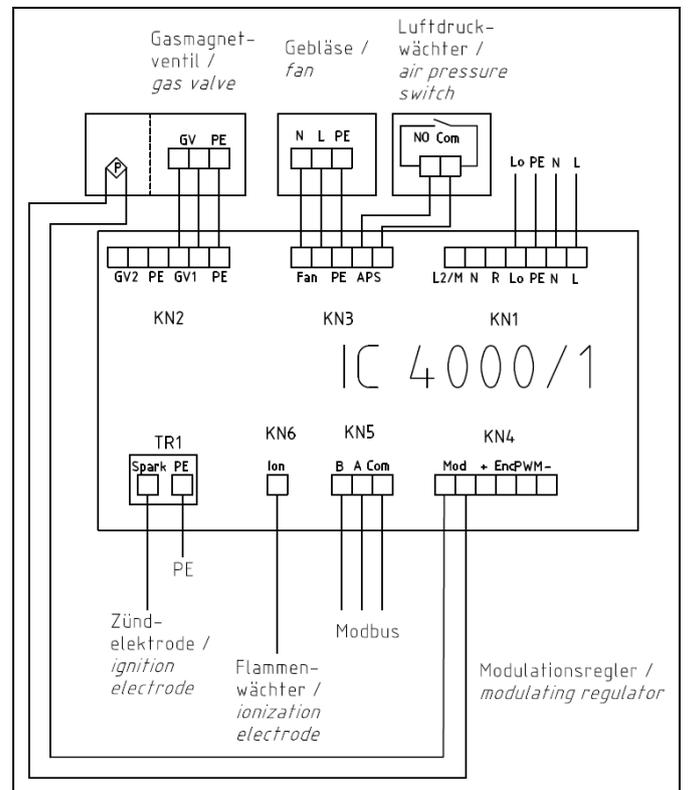


Fig. 41: Wiring diagram burner kit modulating infraSchwank D / calorSchwank D

# 11 Commissioning instructions

## Before commissioning

A qualified service engineer must carry out this operation. The correct operation and fixing of the heater is prerequisite for the warranty. Checking gas lines and flue system is not included in this service.



---

**The heaters are only pre-set by the manufacturer and must be adjusted for proper operation according to gas quality site on site. For this information contact your local gas company.**

---

Check the function of the following equipment:

- Exhaust flue
- Combustion air supply
- Control unit
- Safety equipment
- Safety of electrical circuit



---

**Pay attention when commissioning! Vaporization of remaining grease of metal units may cause greasy mist. This kind of mist disperses after approx. 30 minutes. During this time the room has to be ventilated.**

---

## Parameter IC 4000/1 and setting

The burner control unit IC 4000/1 is already factory preset.

The parameters can be read out by the Schwank Service Software IC 4000 [RS-485 interface board] and if necessary to be changed.

Parameter selection and settings can made manually direct at IC 4000/1 by the two push buttons SW 2 and SW 3 and the 7-segment display. For this, unscrew the lid of the IC 4000/1 burner control.

After power supply IC 4000/1 following sequence is shown on the 7-segment display:

1. segment test, all 7 segments light up
2. software version [two successive numbers]
3. burner control software: 1

Parameter	Parameter name and parameter value definitions	Factory setting	Set range
PP01	<b>Setting Communication</b> 0: No MODBUS control [e.g. ThermoControl M+] 1: MODBUS control by SchwankControl Touch	1	0 - 1
PP02	<b>Drive Fan</b> 0: Phase angle control driven 1: PWM driven	1	0 - 1
PP03 [Note 1]	<b>Value phase angle control fan</b> 0 – 80 @ power supply 230V: value „0“ = 153 V, value „80“ = 230 V	<b>according to type</b> see Tab. 5, page 22	0 - 80
PP07 [Note 1]	<b>minimal modulation current</b> 40 mA – “PP08 max modulation current – 5 mA” [Note 2]	<b>according to type</b> see Tab. 5, page 22	40 - 160
PP08 [Note 1]	<b>maximal modulation current</b> “PP07 min modulation current + 5 mA” – 165 mA [Note 2]	<b>according to type</b> see Tab. 5, page 22	45 - 165

**Note 1:** Parameter PP03, 07 and 08 only relevant for modulating operation lambdaPlus

**Note 2:**  $PP08 \text{ MAX MODULATION CURRENT} > = [PP07 \text{ MIN MODULATION CURRENT} + 5]$

**Tab 8: Parameter level IC 4000/1**

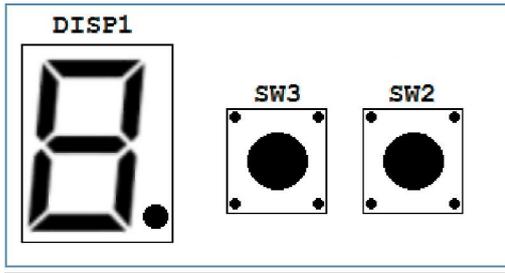


Fig 42: 7-segment display and push buttons IC 4000/1

ON normal working mode DISP1 is blank.

When you need to enter parameter setting:

- Press SW2 and SW3 buttons together for 3 seconds.
- Parameter number "1" is displayed on DISP1.
- Press SW2 to increase the parameter number, press SW3 to decrease the parameter number.
- When you reached the target parameter number, press SW2 and SW3 buttons together for 3 seconds to reach the **setting level for the value**.
- For parameters PP03, PP07, PP08 **parameter number** starts to flash on DISP1.
- For parameters PP01 und PP02 **parameter value** starts to flash on DISP1.
- Now you can increase the parameter value by pressing SW2, and decrease it by pressing SW3.
- To store the new parameter setting, press SW2 and SW3 buttons together for 3 seconds.
- Parameter menu is closed and DISP1 is blank again.



**Parameter settings menu has 10 minutes timeout. If you don't press any button for 10 minutes, control exits from parameters menu automatically without saving the settings.**

## Assignment MODBUS address

For every heater [= burner control unit] it is mandatory to assign an MODBUS address if it controlled by SchwankControl Touch. All heaters are assigned with the MODBUS address 1 in the delivery state. To change the MODBUS address, the lid of the IC 4000/1 burner control unit must be opened. The MODBUS address is set by the DIP switches in the lower right side of the board. A maximum of 31 addresses can be assigned per heating zone.

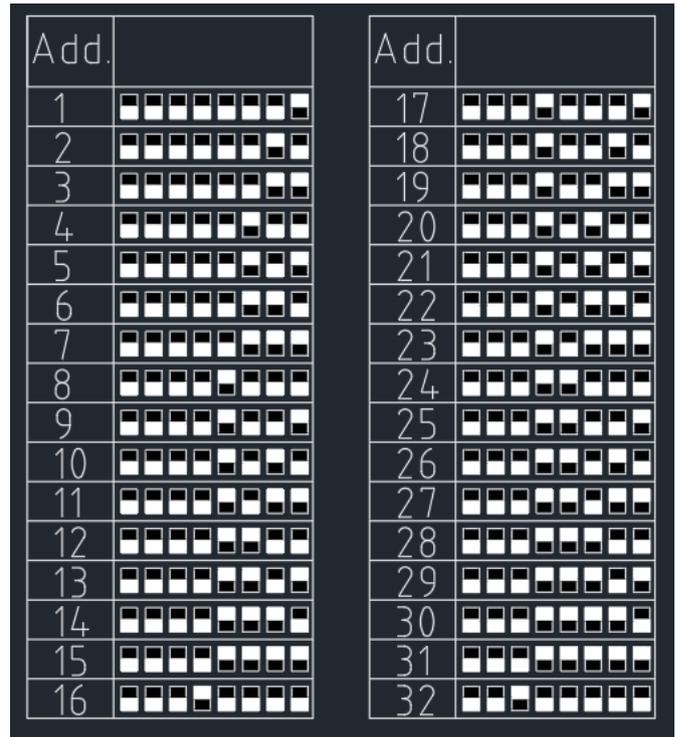


Fig 43: MODBUS addressing IC 4000/1 by DIP switches

- Dip switch position below
- Dip switch position above

## External identification MODBUS address

For a quick external identification of the assigned MODBUS address, please enter the corresponding address [number] on the provided MODBUS-address label by number stickers or with marker pen. MODBUS-address label is to stick on side panel IC 4000/1 housing.

## Adjusting nominal thermal load at single-stage operation



**Attention!**  
The pressure control unit is pre-adjusted on natural gas / propane. Do not put the appliance into operation uncontrolled.

### Adjusting the nozzle pressure

1. Open first the gas cock which is at the end of the flexible gas hose [Fig. 44].
2. Open the test nipple connection pressure. Connect the pressure measuring instrument to the test nipple and determine the connection pressure.  
**Close the test nipple after the measurement!**
3. Open the test nipple nozzle pressure. Connect the pressure measuring instrument to the test nipple and determine the nozzle pressure.
4. Turn the adjusting screw on the pressure regulator slowly in the "+" or "-" -direction while continuously watching the pressure measuring instrument. Stop turning as soon as the required nozzle pressure is reached. The required test nipple nozzle pressure for natural gas H [ $W_o = 14.85 \text{ kWh/m}^3$ ] and natural gas L [ $W_o = 12.15 \text{ kWh/m}^3$ ] is shown in Table 5. For natural gas with other  $W_o$ -Index [information from local gas company] you have to determine the required nozzle pressure based on the diagram on page 50.
5. Remove the protection cap **A** [Fig. 45]
6. Put the radiant tube into operation
7. Turn the adjusting screw **B** [Fig. 45] on the pressure regulator slowly in the "+" or "-" -direction while continuously watching the pressure measuring instrument. Stop turning as soon as the required nozzle pressure is reached.
8. Put the protection cap **A** on the valve after the adjusting.
9. **Close the test nipple after the measurement and check if the test nipple is gas-tight.**

### Checking adjustment

1. Turn the adjustment screw slightly to "-" -direction. Nozzle pressure must drop immediately. If this does not happen, you must readjust the jet pressure until the point is reached at which a decrease or increase in the nozzle pressure is noticeable on the measuring instrument.
2. **Close test nipple after the measurement!**
3. Remove the measuring instrument and check if the test nipple is gas-tight.

## Adjusting thermal loads for modulating operation lambdaPlus

It is necessary in addition to the mechanical factory setting of the modulating gas pressure to adjust the modulating regulator output current range and the corresponding fan voltage to match the existing gas quality and electrical power supply.

Proceed as follows

[Example: 30U; nozzle pressure: 12 / 8,5mbar; minimum fan voltage: 180 VAC value True RMS]

1. Open lid IC 4000/1.
2. Make sure that gas cock is closed.
3. Put the radiant tube into operation by activating chimney sweep command on SchwankControl Touch.
4. Select the **parameter level**. Press SW2 and SW3 buttons together for 3 seconds [Fig. 42] until PP01 is shown on the 7-segment display.
5. Press button SW2 [+] to reach PP03.
6. Select the **setting level for parameter**. Press SW2 and SW3 buttons together for 3 seconds [fig. 10, p. 15] until **PP03** starts flash on the display.  
Now press buttons SW3 [-] oder SW2 [+] until the observed voltage reaches the required minimum value for phase angle control drive [180V].
7. To store the new parameter setting, press SW2 and SW3 buttons together for 3 seconds and leave the setting level.
8. Open the gas cock which is at the end of the flexible gas hose.
9. Open the test nipple connection pressure. Connect the pressure measuring instrument to the test nipple and determine the connection pressure.
10. **Close test nipple after the measurement and check that the test nipple is gas-tight.**
11. Open the test nipple nozzle pressure. Connect the pressure measuring instrument to the test nipple and determine the nozzle pressure.
12. Put the protection cap **A** on the valve after the adjusting.
13. Switch on again the heater by a short dis- and reconnecting of the power plug [min. 3 sec.].
14. Similar to points 4 – 6 select the **setting level for parameter PP08**.

Now press buttons SW3 [-] oder SW2 [+] so that the measured nozzle pressure will be 1 mbar above the **required maximum value** [e.g. 13 hPa].

15. If the value cannot be reached, the **maximal mechanical limitation** at the modulating regulator [large adjusting screw **C**] needs to be amended.

Afterwards continue with adjusting to the required minimum value.

16. To store the new parameter setting, press SW2 and SW3 buttons together for 3 seconds and leave the setting level.

17. Select the **setting level for parameter PP07**.

Now press buttons SW3 [-] oder SW2 [+] so that the measured nozzle pressure will be 1 mbar below the **required minimum value** [e.g. 7,5 hPa].

18. If the value cannot be reached, the **minimal mechanical limitation** at the modulating regulator [small adjusting screw **B**] needs to be amended.

Afterwards continue with adjusting to the required minimum value.

19. To store the new parameter setting, press SW2 and SW3 buttons together for 3 seconds and leave the setting level.

20. Adjustment of the **mechanical pressure range of modulating regulator**: Be left in chimney sweep mode and disconnect the power supply modulating regulator.

21. Turn the large, outer adjusting screw **B** on the regulator slowly in the "+" or "-" -direction while continuously watching the pressure measuring instrument. Stop turning as soon as the required **nozzle pressure for minimum load** is reached [e.g. 8,5mbar].

22. Re-connect power supply and turn the small, inner adjusting screw **C** on the regulator slowly in the "+" or "-" -direction while continuously watching the pressure measuring instrument. Stop turning as soon as the required **nozzle pressure for maximum load** is reached [e.g. 12mbar].

23. To check the settings, repeat the procedure again.

24. Put the protection cap **A** on the valve after the adjusting.

25. **Close the test nipple after the measurement and check that the test nipple is gas-tight.**

26. Switch off the heater by deactivating chimney sweep command.



Fig. 44: Gas cock with integrated TSD

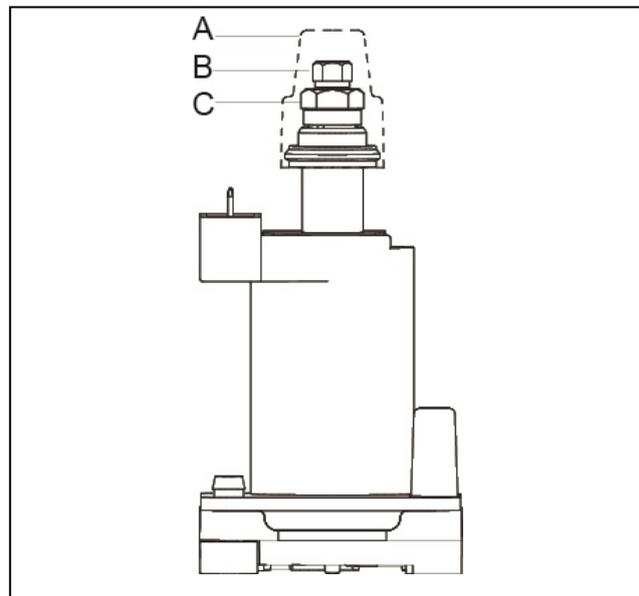


Fig. 45: modulating regulator with adjustment screws

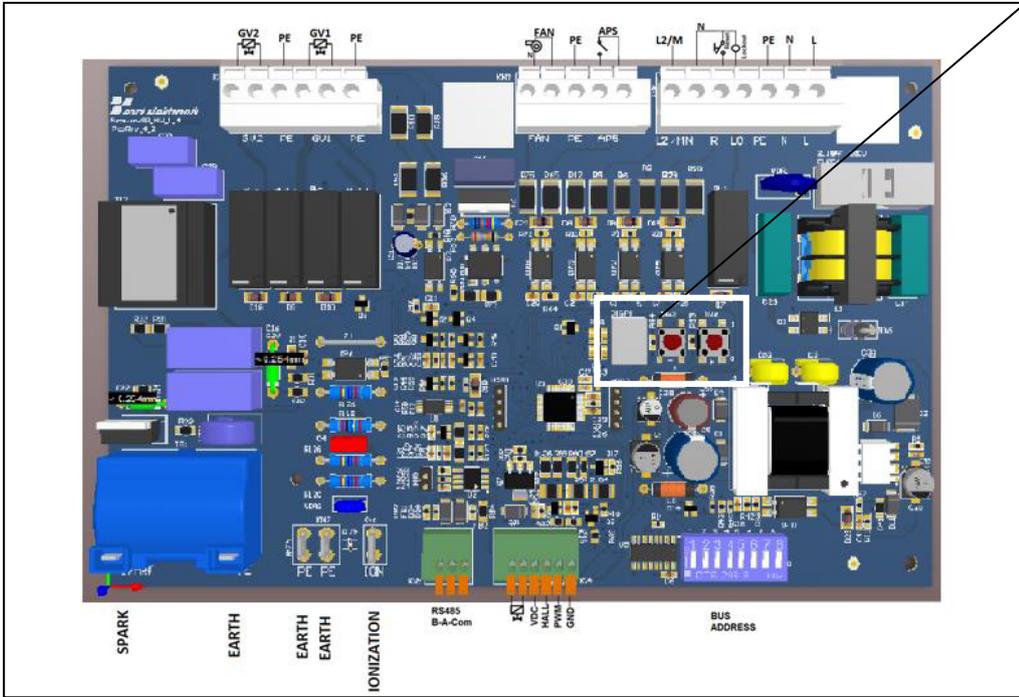
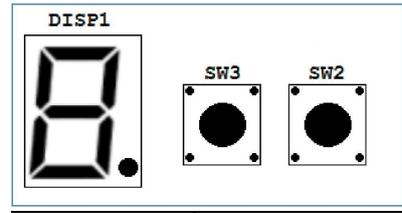
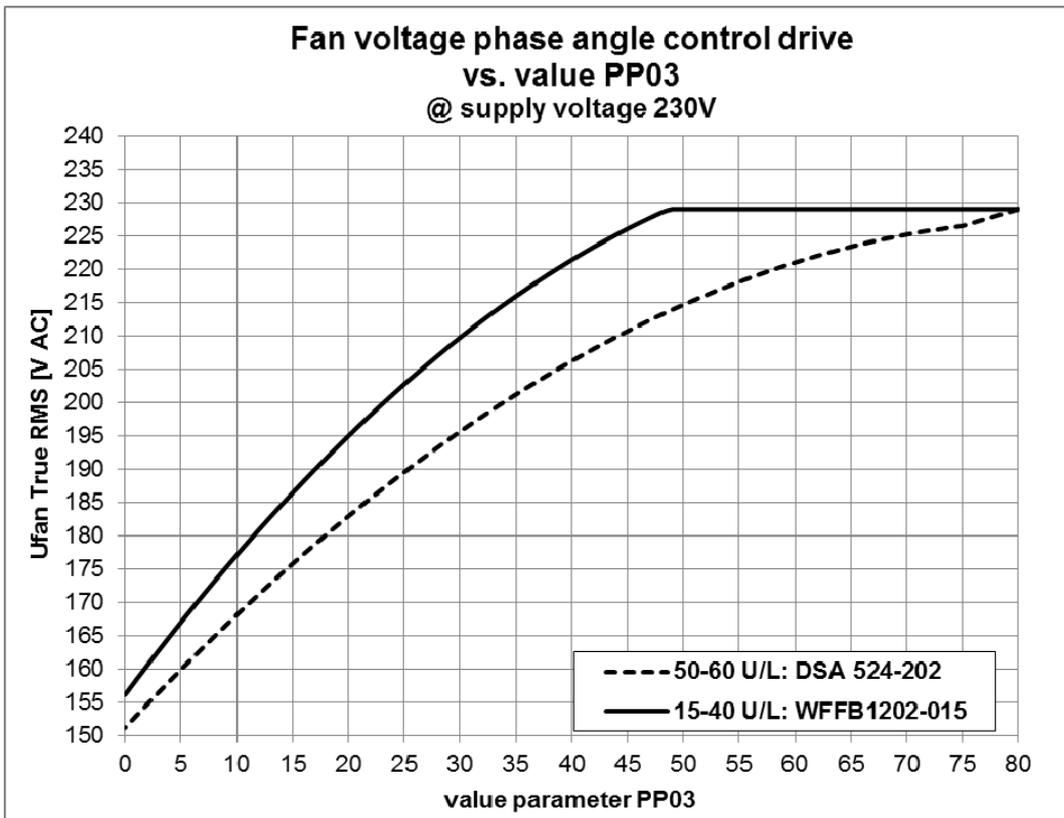


Fig. 46: Board IC4000/1 with 7-segment display and push buttons SW 2 / SW 3



Dia. 1: Fan voltage phase angle control drive vs. value PP03

## Commissioning exhaust gas collecting system [herringbone]

### Before first start up

For first start up and commissioning of the system please request a Schwank service engineer to attend. Adjustment by Schwank is a condition of our warranty.

Gas fired radiant tube heater systems have to be installed by a qualified engineer according to local laws and rules in force.

### Start up

- First check the complete electrical supply and connections of the system. All plugs at the burner units must be taken off. Check the correct connection of the plugs. After this the room temperature regulation system is switched on. Check the connection and the direction of the rotation of the central exhaust fan.
- Check the complete connecting and collecting tube system for a small slope towards the central fan [no sinks for condensate!].
- Check the slope from central exhaust fan to the chimney.
- Check the complete flue gas system for tightness with central exhaust fan on [burners off]. In case of leaks ensure tightness by high temperature silicon.  
**Correct start up and commissioning without system tightness is not possible!**
- Now the negative pressure at test nipple nozzle pressure is checked [burners off, dampers at the end of the tubes completely open]. The minimum negative pressure under these conditions must be  $>1\text{hPa}$ .  
In case the negative pressure level is lower please check again the tightness of the complete system. Also check that the damper in front of the central exhaust fan is open.

## Commissioning

- The safe evacuation of the exhaust gases of all heaters is ensured by correct adjusting of negative pressure. This is done by fixing the dampers at the end of the heaters and may be also the damper in front of the central exhaust fan at the following values.

### Required negative pressure level at test nipple nozzle pressure [cold conditions]:

- infra/calorSchwank D 15-60U:  $-0,8...-1,5\text{ hPa}$

- Adjustment with central fan on, burners off.
- Start the adjustment with the heater furthest away from the central exhaust fan. Take the negative pressure at the measurement nipple at the bottom of the burner unit. Therefore take off the silicon tube between nipple and solenoid valve. Negative pressure is adjusted by moving the damper at the end of the tube heater. After adjustment the silicon tube has to be connected again between the nipple and solenoid valve.
- Adjustment of the other burner now follows with the same procedure.
- Having adjusted all the heaters the negative pressure of the units may have changed. A second thorough check and adjustment of the negative pressure of the units is necessary. Then the positions of the dampers must be fixed by the screw.
- Now the heaters can be started up [opposite sequence to adjustment].

## Determination of nozzle pressure

Example for the determination of the nozzle pressure

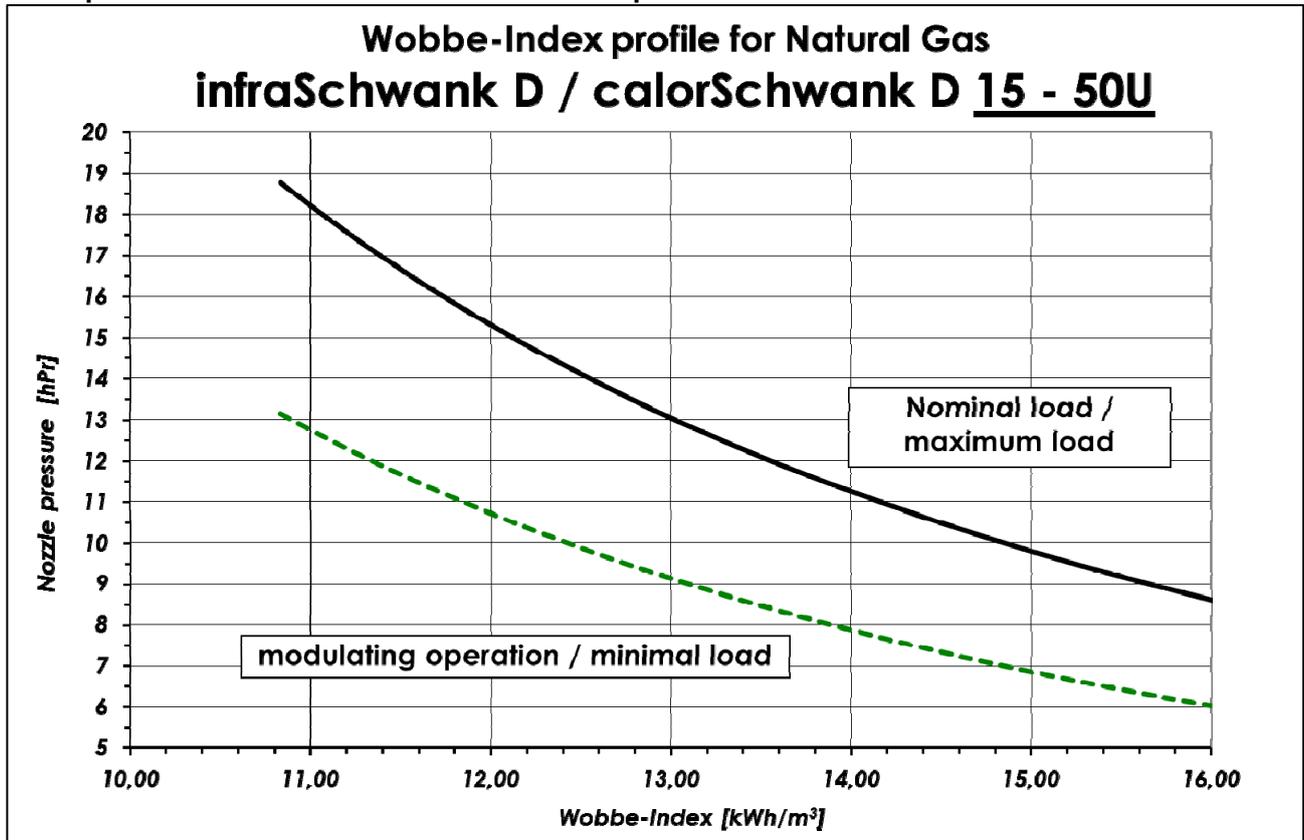


Diagram 2: Wobbe-Index profile Natural gas infraSchwank D / calorSchwank D 15 – 50U

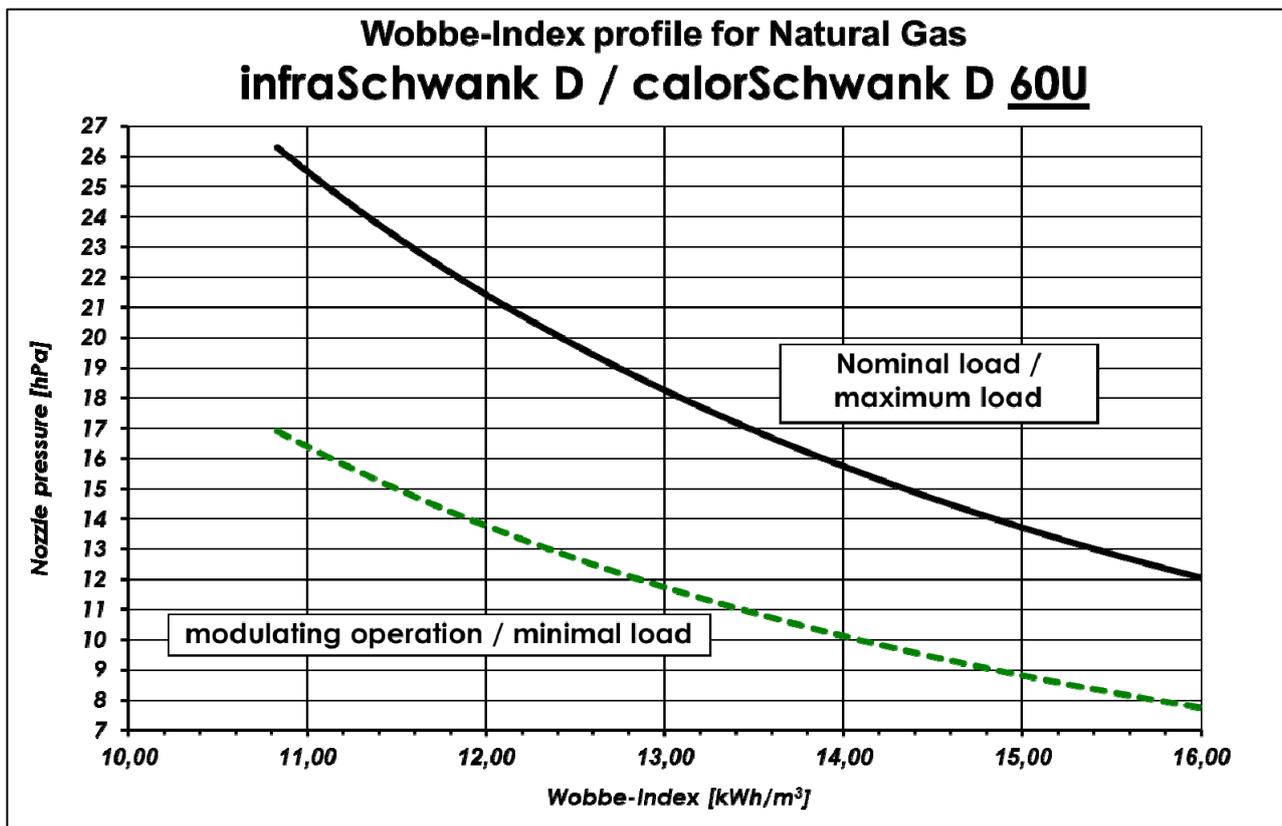


Diagram 3: Wobbe-Index profile Natural gas infraSchwank D / calorSchwank D 60U

## 12 Service guide / Trouble shooting

### Maintenance and annual check

A regular maintenance is the requirement for a faultless operation of the appliance.

According to the National Standard Regulations, heating-systems with radiant tubes must be checked at least once a year.

Maintenance and troubleshooting is only allowed by professional personnel that is competent and instructed in radiant tubes.



**Before starting work on the heater the gas cock has to be closed.**

Any deviations must be fixed immediately. Defect parts must be changed directly.

Maintenance work on gas valves, flame sensing and safety devices can only be maintained by the manufacturer or authorized personnel.



**After the end of the maintenance work, the device must be put back into operation!**

Maintenance must include the following checks:

- Check surface of combustion chamber tubes/radiant tubes and if fit necessary clean up.
- Check the slope of the tubes [3 mm/m in direction of the turnaround box connection]
- Check correct and firm connection of the reflectors and intermediate reflectors.
- Check tightness of gas-carrying parts and connections.
- Check the flexible gas hose for correct installation and tightness.
- Check electrical connection to the burner kit.
- Check the air/flue-system
- Check firm mounting and tightness of fan burner kit.
- Visual check impeller fan for damage traces and balanced run
- Check condensation pipes.
- Check the safety functions of the ignition- and ionisation-controls, gas valves and operation indicator
- Check functionality Functional test of control and regulation equipment, switchgear and signal lights
- Check gas filter in case of reduced line pressure, in case of pollution change filter pad [spare part kits gas filter]
- Check correct parameter setting.
- Check safety distances and information boards.

## Error codes

If an error occurs, all gas valves are closed and the lockout message output [230V] is activated and the error code is stored internally and transmitted by MODBUS to the central control unit SchwankControl Touch.

The fan still runs for 180 seconds in the post-purge time with maximum fan speed. After that, the heater is completely switched off and locked. The lock can be reset by activating the reset function SchwankControl Touch or switching off the power supply [min. 3 seconds] of the heater.

Error code "A" does not put the heater in a reset-requiring lock, but only switches off the heater.

<b>7</b>	Gas valve feedback error	Error in gas valve drive or feedback check circuitry
<b>8</b>	Ionization component error	Ionization signal is out of range
<b>10</b>	MODBUS signal missing error	If PP01=01 selected as MODBUS control and for more than 3 minutes no MODBUS signal has been received this error is given and heater switch off. Burner control is not locked.

Tab 9: Error code IC 4000/1

Error code	Error name	Description
<b>1</b>	ionization error during start	If flame is not detected for the 2 ignition attempts during start
<b>2</b>	ionization error during operation	If flame is not detected for the 2 ignition attempts after a flame loss
<b>3</b>	APS open error [APS= air pressure switch]	Error Is given if phase angle control type is selected [PP02=0] Error is given if APS contact opens during start or operation
<b>4</b>	APS closed error	Error Is given if phase angle control type is selected [PP02=0] Error is given if APS contact already closed during start
<b>5</b>	Encoder signal missing error	Error Is given if PWM control is selected [PP02=1] Error is given if no encoder signal detected or fan speed < 10 RPS. This error is given after 3 sec.
<b>6</b>	Unexpected "encoder signal" error	Error Is given if phase angle control type is selected [PP02=0] and encoder signal is detected > 30 RPS. This error is given after 3 sec.

## Troubleshooting / Error causes

### Error code 1:

- no gas [e.g. gas line not vented, gas cock closed]
- faulty gas valve
- Ignition and ionization electrodes damaged / dirty
- wrong setting gas throttling screw
- poor grounding

### Error code 2:

- poor low ionization current [ $<0,7\mu\text{A DC}$ ]
- too low connection pressure

### Error code 5:

- PWM fan don't run  
[e. g. impeller broken , motor broken]
- PWM cable broken

### Error code 7 + 8:

- internal error IC 4000/1

### Error code 9:

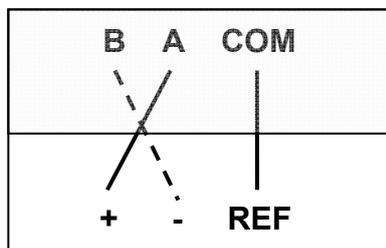
- Wrong setting fan speed parameters  
[PP04, PP05, PP06]
- Damaged fan [e.g. bearing failure]

### Error code 10:

- interruption MODBUS connection  $>3$  minutes
- wrong wiring between IC4000/1 and SchwankControl Touch

Example: right connection B and - / A and +

#### MODBUS Assignment IC 4000/1



#### MODBUS Assignment SchwankControl

Tab 10: Error causes

## 13 Change of gas family

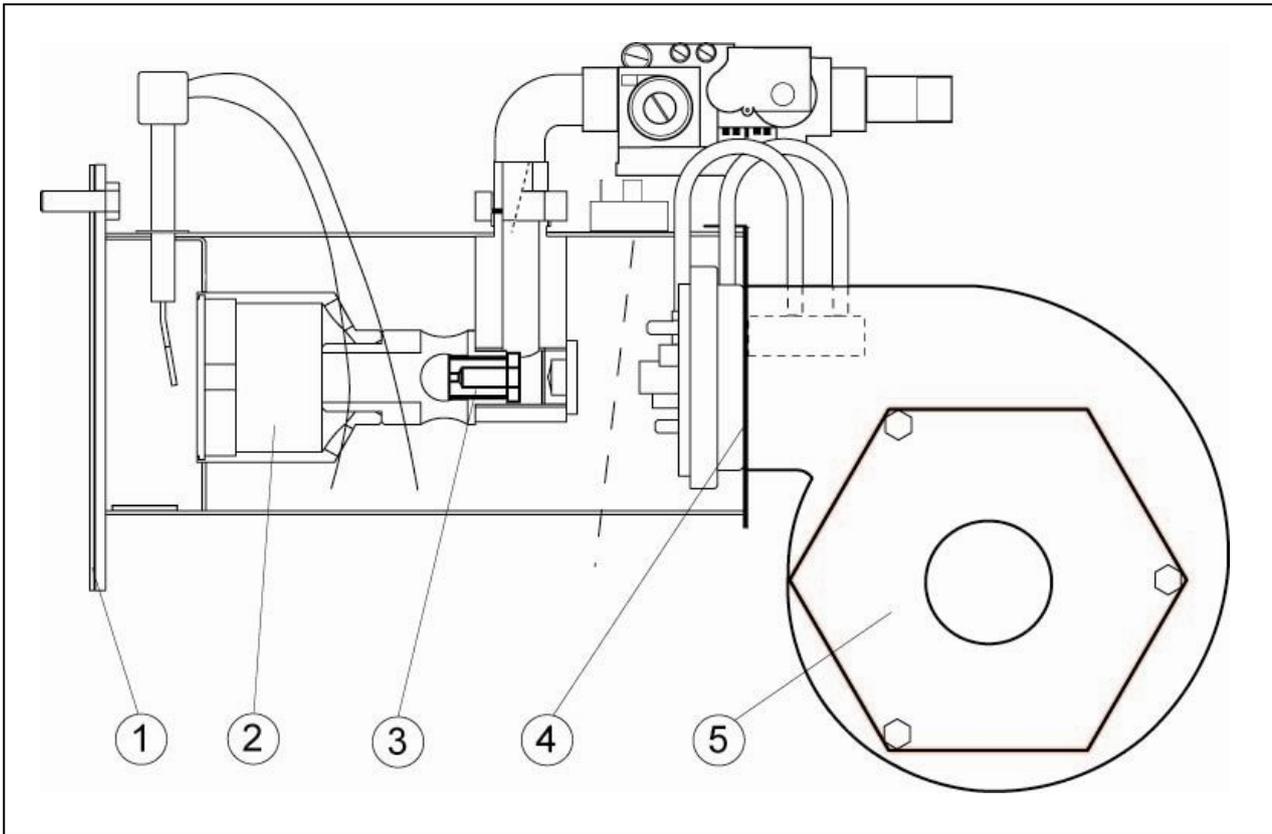


Fig. 47: Change of gas family

- ① Burner baffle [only 15 / 20 / 30 / 40U]
- ② Burner cup
- ③ Burner nozzle
- ④ Air baffle plate [only 15 / 20 / 30 / 40U]
- ⑤ Fan air restrictor

### Instruction to change the gas family

1. Change the burner nozzle
2. Change the burner ceramic tile or the whole burner cup only for 50 / 60U
3. Adjust the new nozzle pressure [see Tab. 5, page 23]
4. Adjust the new start step pressure [see Tab. 5, page 23]
5. Stick on the new rating label

# 14 Accessories

## Ball guards

Ball protection grids acc.18032-3 for using heaters in sport halls [grid 40x40mm].

### Delivery scope

Mounting set complete for each type of heater existing of:

infra/calorSchwank D shape U	15U	20U	30U	40U	50U	60U
Ball protection grid L=1443mm						1x
Ball protection grid L=1843mm	2x		2x	2x	2x	2x
Ball protection grid L=2203mm		1x				
Ball protection grid L=2963mm		1x	1x	2x	3x	3x
Protection grid burner top	1x	1x	1x	1x	1x	1x
Front protection cover burner	1x	1x	1x	1x	1x	1x
Protection grid burner end side	1x	1x	1x	1x	1x	1x
End bracket with stud bolts M8	1x	1x	1x	1x	1x	1x
Holding bracket [1x infra D +1x calor D]	1x		1x	1x	1x	1x
Angled bracket with stud bolt M8	4x	4x	6x	8x	10x	12x
Clamp	6x	6x	8x	10x	12x	14x
Set fixing material	1x	1x	1x	1x	1x	1x
<b>Article number</b>	<b>12670800</b>	<b>12674350</b>	<b>12670810</b>	<b>12670820</b>	<b>12670830</b>	<b>12674360</b>

Tab. 11: Overview delivery scope ball guards

### Assembling instruction

[Description for heater infra/calorSchwank D 30 U, other types similar]

1. Mounting heater as described in chapter 9, page 24-29].  
**Note the required sideways slope of the heater of 20mm in ball protection grid application [Fig. 48].**
2. Fix end bracket at inner side of turnaround box, open and close again 4 nuts M8 [Fig. 50]
3. Fix two angle brackets at each tube hanger [screws M8 x 60, nuts] [Fig. 51]  
Screw on angled brackets at the inner holes of suspension bracket  
**NOTE 50-60kW: Screws to fixing suspension bracket bars must be inserted from below.**
4. Holding bracket put loose on the first reflector [view from burner unit] and screw together with two angle brackets [screws M8 x 60, nuts], holding bracket remain axially movable

**NOTE: Use the right holding bracket – difference infraSchwank D or calorSchwank D – both in the delivery scope [Fig. 52]!**

5. At all junctions ball protection segment to the angle brackets the grid edges must be cut free to ensure a gap-free fitting of the ball protection segments grid to the reflector.
6. Assembling segments ball protection grids starts on the turnaround box [last suspension bracket for shape L]. Put first segment ball protection grid L=2963 mm **from below** on end bracket and angle brackets of the next suspension bracket – Put clamps on stud bolts M8 and mount with self-locking nuts Mount clamp loose on one stud bolt of angle bracket for further assembling next protection grid [Fig. 53].
7. Put next segment ball protection grid L= 1843 mm **from below** on angle brackets and mount clamp with self-locking nuts M8, clamp and angle bracket connect two segments ball protection grid to each other. Mount clamp loose on one stud bolt of angle

bracket for further assembling next protection grid.

8. Put next segment ball protection grid L= 1843mm **from below** on angle brackets and mount clamps with self-locking nuts M8 Last segment ball protection grid L= 1843mm protects the burner unit at the bottom. **NOTE 50-60kW: Ball protection grid on fan side has to be cut for mounting and compensation thermal length expansion of max. 8cm [Fig. 54]!**
9. After finish assembling of all ball protection grids fix holding bracket with 3x self-tapping screws on the reflector.
10. Push on protection grid burner top **from behind** over ball protection grid and burner up to the suspension bracket. Note that the lower short bending is on the left side in view from behind. Fix burner protection grid burner top with supplied cable straps or similar at bottom protection grid.
11. Protection grid burner top has to be cut holes depends on installation on-site for flue system and may be gas line. Connect flue system pipes and gas line. **NOTE: Select the cutouts large enough to compensate the thermal length expansion of the heater!**
12. Insert front protection cover burner between front cover plate reflector and burner unit and fix it with supplied cable straps or similar on protection grid burner top [Fig. 55].
13. Protection grid burner end side has to be cut hole depends on installation on-site for gas line. Fix with supplied cable straps or similar on protection grid burner top.



**Please note the required number and length of segments ball protection grids for each type of heater. Compare this to the tabular and graphical overview.**

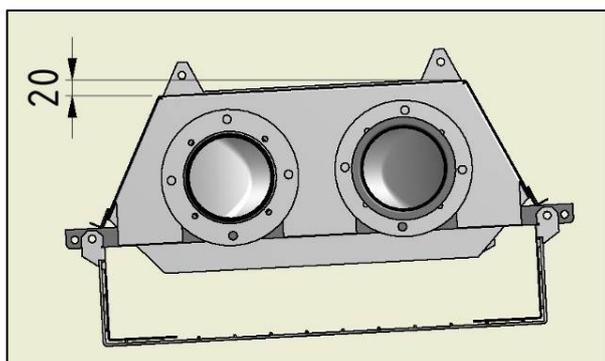


Fig. 48: sideways slope heater in ball protection application

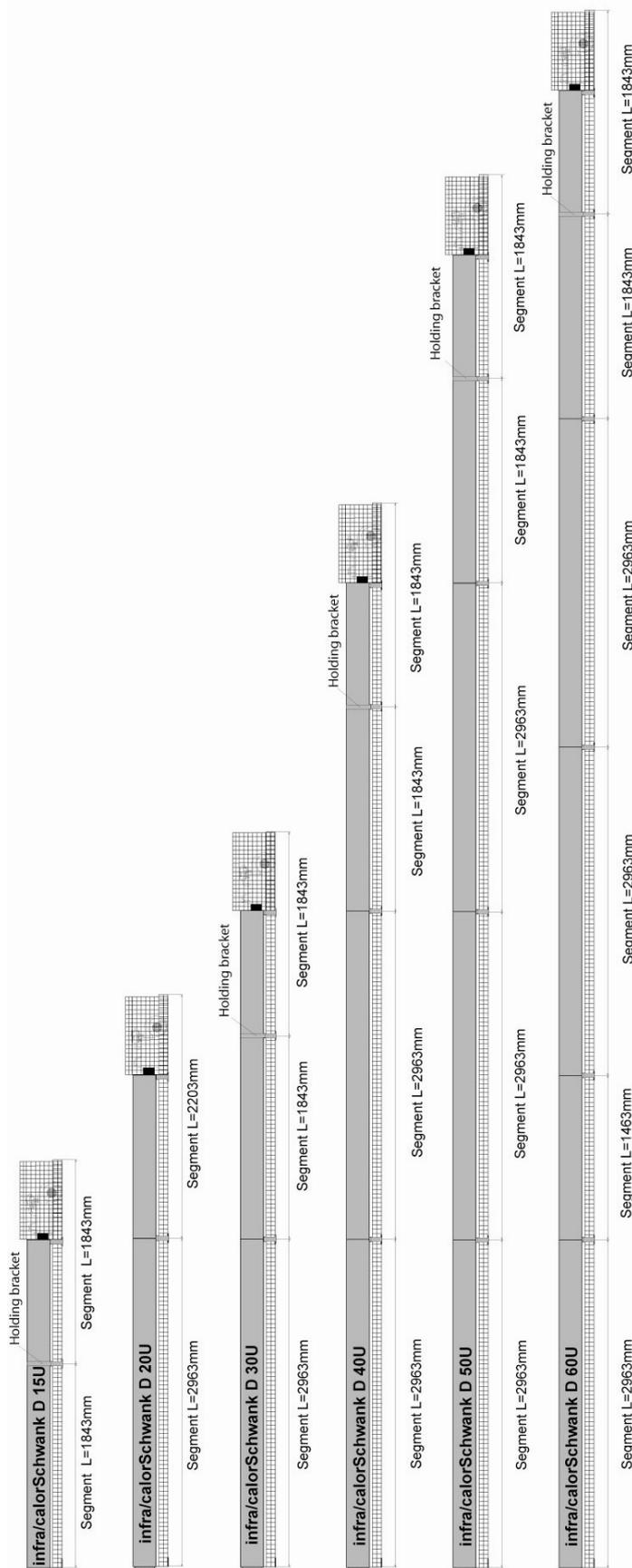


Fig. 49: Overview of ball guards



Fig. 50: Fixed end bracket on turnaround box



Fig. 53: Loose mounted clamp



Fig. 51: Fixed angle bracket on suspension bracket

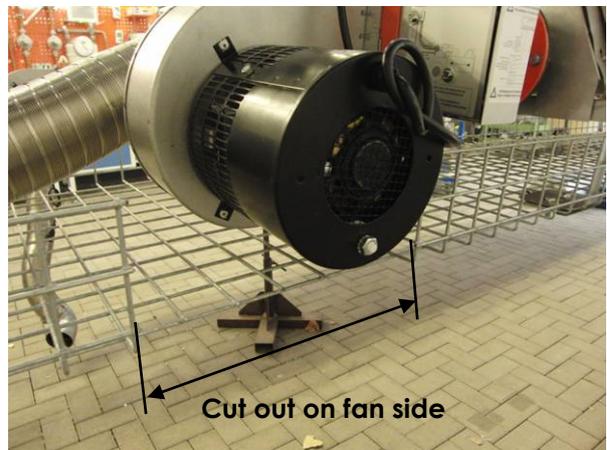


Fig. 54: Cut out on fan side for mounting and compensation thermal length expansion - only 50/60kW

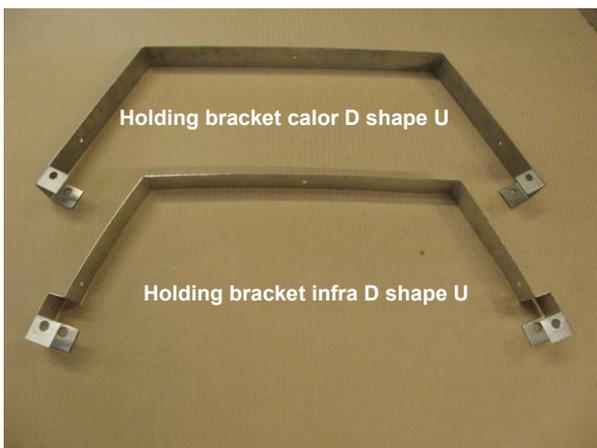


Fig. 52: Holding bracket infra D and calor D



Fig. 55: Fixing front protection cover burner on protection grid burner top

## Reflector elongation

Vertical elongation of reflectors  $b=415\text{mm}$  for thermal protection.

The numbers of reflector elongation [single sheets] is depending on required protection [one side both side, protection length] and the power of the radiant heater.

### Delivery scope

The required reflector elongation can be compiled depending on the extent of necessary protection out of the following basic elements:

- 02676300 reflector elongation  $L= 3000\text{ mm}$
- 02676310 reflector elongation  $L= 3000\text{ mm}$   
End segment U [only for for end segment heater shape U with turn around box]
- 02676320 reflector elongation  $L= 1500\text{mm}$

### Assembly instruction

1. Complete assembling heater with reflectors complete [see chapter 9, page 25-30].
2. Mount bolts with spacer sleeves and mounting brackets **A** at required positions [Fig. 56].
3. If required fasten mounting bracket **B** to turn around box by losing 4 lower hex. nuts M8, placing mounting bracket on tube flanges and fastening hex. Nuts [Fig. 58].
4. Place reflector elongation **C** on mounting brackets **A** and bolt them together with reinforcement plates **D** [self-securing nut M8] [Fig. 56].
5. Bolt reflector elongation loosely together at overlapping by means of M8 bolt/nuts.
6. In case of one-sided load on bolts mount additional mounting bracket **E** [Fig. 57].
7. If using mounting bracket **B** mount safety lock **F** [Fig. 58].



**In the case of heaters with end reflector the last hanger at the burner side must be placed at the junction of the reflector and the end reflector.**

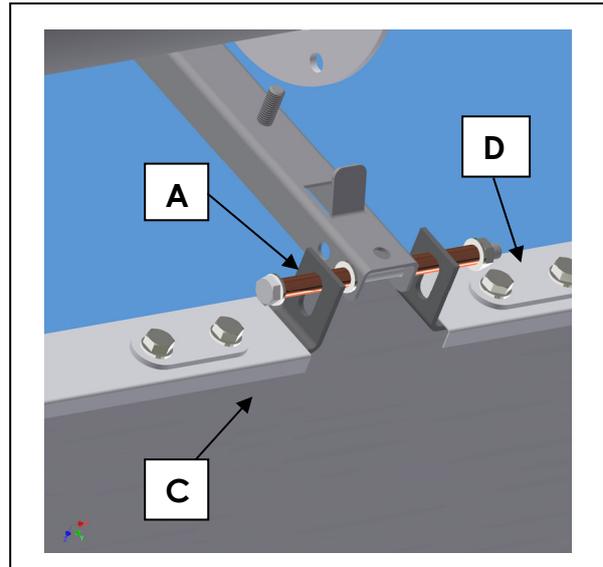


Fig. 56: Mounting of reflector elongation on hanger

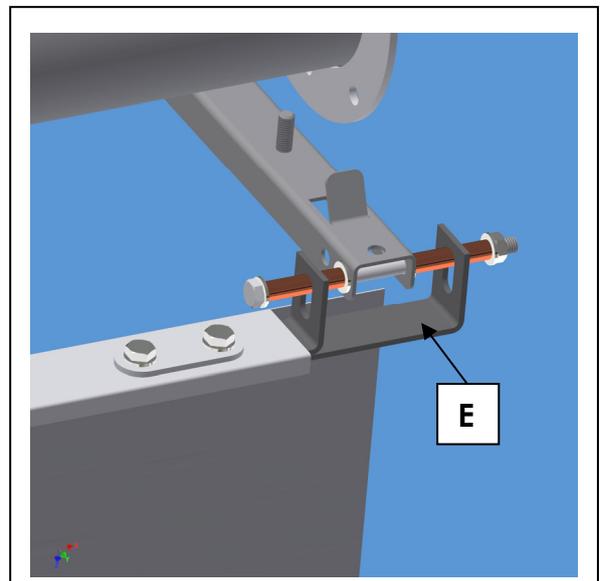


Fig. 57: Mounting of reflector elongation on first hanger with additional bracket

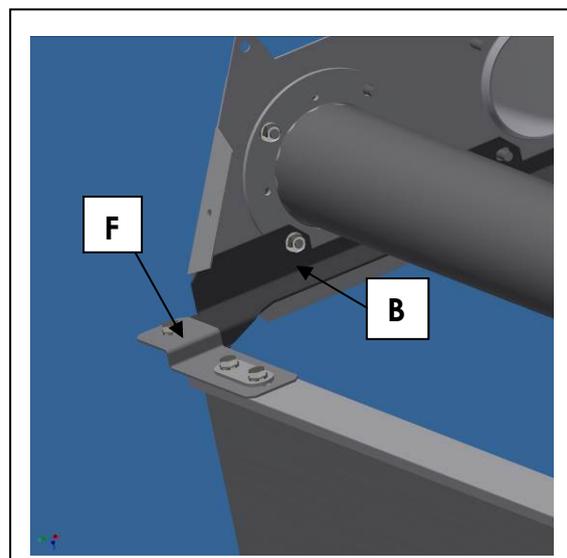


Fig. 58: Mounting of reflector elongation on turn around box with safety lock

### Set angled mounting tubes

Bracket to ensure form and position of reflectors when the heater is mounted angled [ $>15^\circ$ ]. Mount bracket to at each junction point reflector/reflector, not at reflector end caps. Set is only required for heaters 15 – 40kW.

### Delivery scope

Mounting set consist of:

- numbers of brackets
- mounting material

### Assembling instruction

1. Assembling and mounting of tubes complete without [see chapter 9, page 24-27].
2. Lay first reflector on turnaround box and first hanger, fix it at turnaround box with two screws.
3. Fix angled bracket **E** with screws and nuts M8 at first hanger, bracket under reflector.
4. Put on next reflector, reflectors are fixed to another by 3 screws/nuts M5, middle screw through angled bracket.
5. Further assembling as described in chapter 9, page 24-27.

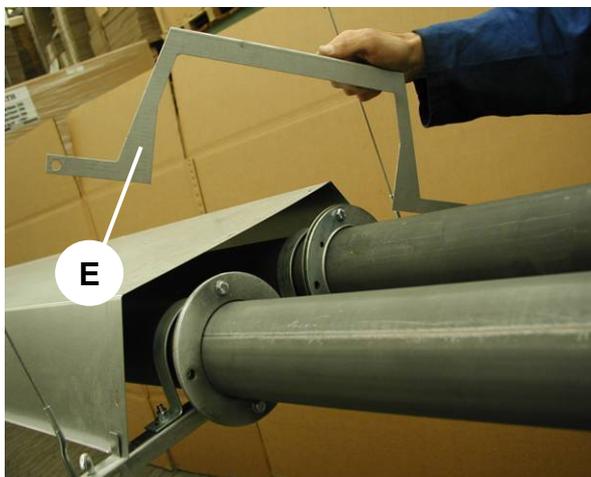


Fig. 59, 60: Assembling order reflector elongation

### Gas filter groups

To avoid technical problems with the gas combination valves which are caused by pollution of dust or rust coming out of the gas pipe have to be mounted a gas filter group  $\frac{3}{4}$ " [gas filter + premounted double nipple] for each tube heater 50/60U.

For tube heaters 15-30U a similar gas filter group  $\frac{1}{2}$ " has to be ordered in case the gas pipe is made of black steel [welded].

**gas filter group Rp  $\frac{1}{2}$ "  
for 15-30kW**

**Art.-no: 192 0756 0**

**gas filter group Rp  $\frac{3}{4}$ "  
for 40-60kW**

**Art.-no: 192 0757 9**

### Assembly instruction

Direct installation between flexible gas pipe and valve burner unit, with a slight radial slope for better cleaning the filter bottom! In case of strong polluted filter pad use the corresponding spare part set for gas filter.

Pay attention to the flow direction of the filter!



Fig. 61: Mounted gas filter group at tube heater

## Water protection cover burner kit

Protection cover of the burner kit 15-60U with protection class IP 55 against water or aggressive mediums, cover complete in stainless steel.

In delivery scope a mounting set existing of:

- Protection cover with inlet air adapter [premounted and sealed] ①, hinged cover plate and premounted surrounding rubber seal
- Gas inlet connection with union fitting [premounted] ②,
- Gasket for mounting water protection cover and radiant tube ③

### Montagehinweise

1. Divide gas inlet connection ② at the union fitting.
2. Install with sealant the half of the divided gas inlet connection with coupling fitting to male thread gas connection burner unit.  
**Note 40-60kW: First replace reducing nipple  $\frac{3}{4}$ "x  $\frac{1}{2}$ " from burner unit!**
3. Install with sealant the half of the divided gas inlet connection with coupling fitting to male thread gas connection burner unit.  
**Note 40-60kW: First replace reducing nipple  $\frac{3}{4}$ "x  $\frac{1}{2}$ " from burner unit!**
4. Pass other half gas inlet connection through PG gland and connect with burner unit. Union fitting first tighten by hand.  
Access to the burner kit for assembling is given via the inspection opening on the top of the cover.
5. Stick gasket ③ on protection box with silicon. Mount complete protection box with burner kit inside at radiant tube flange with gasket between tube flange and protection box. Fix front fixing bolt of the burner unit tight with flange radiant tube.
6. Tighten union fitting of the gas inlet connection with tool.
7. Assemble electrical connection through PG gland and connect with device plug, if necessary pass MODBUS communication cable through the second PG gland.
8. Fit tight the counter nuts of all PG glands.
9. Connect the heater with an approved flexible gas hose.  
**Note 40-60kW: Mount reducing nipple  $\frac{3}{4}$ "x  $\frac{1}{2}$ " on outer thread gas inlet connection with sealant!**
10. Start tube heater, check gas pressures.
11. Close hinged cover plate and inspection opening water protection box with wing screws.

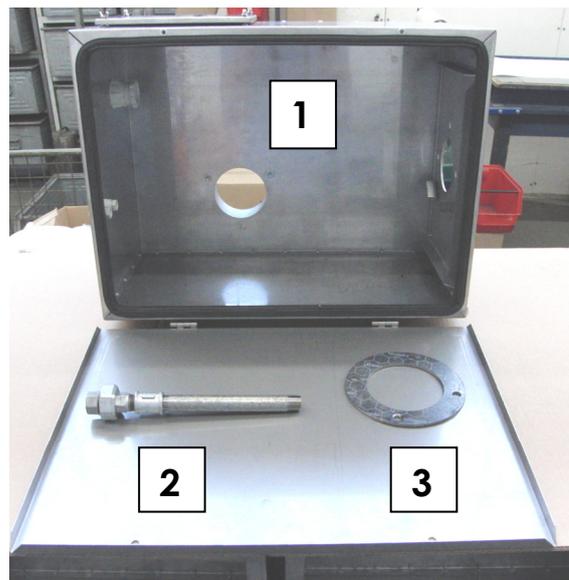


Fig. 62: Scope of delivery water protection cover



Fig. 63: Mounted burner kit in protection cover with gas inlet and electrical connections



Fig. 64: Complete mounted and closed water protection cover

## tetraSchwank

Increase energy efficiency through *utilisation* of condensing technology from the exhaust gas heat by counter flow exchanger between the heater and wall/roof terminal.

### Assembly instruction

- Before starting installation tetraschwank the ventilator must be plugged with high-temperature resistant sealing compound and secured with at least 3 sheet metal screws.
- Mount grating of suction opening and fixing bracket on the ventilator with sheet metal screws. Ventilator must be hang separate.
- Note the suction direction of the ventilator.
- Note the outflow direction downwards of the ventilator.
- tetraSchwank heat exchanger should be mounted with slight slope [3 mm/1m] to the T-piece.
- An extension of the flue gas installation is permitted only in exceptional cases.
- tetraSchwank must be suspended by two premounted fastening clamps. Chains or steel cables have to be fixed in vertical direction.
- A condensate drain must be fitted with a siphon at the T-piece.
- Condensate pipes must be installed with a slope to the discharge into the sewer system.
- Connect the ventilator as shown in Fig. 41 to the central control unit Schwank Control Touch.

### Electrical connection ventilator

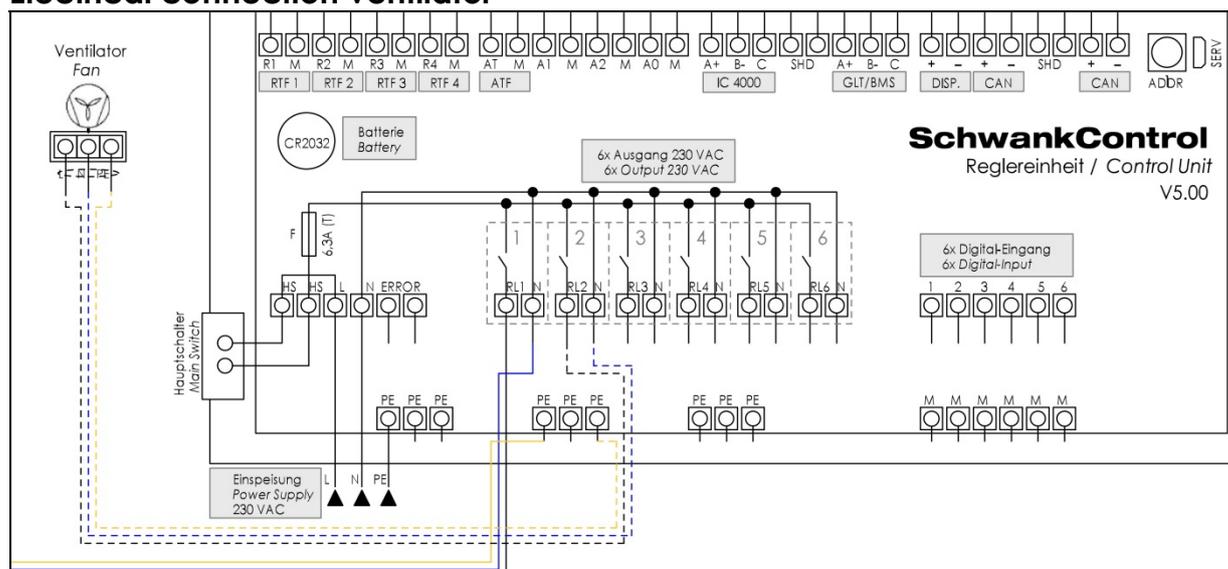


Fig. 65: Electrical connection tetraSchwank to SchwankControl Touch

## 15 Spare parts

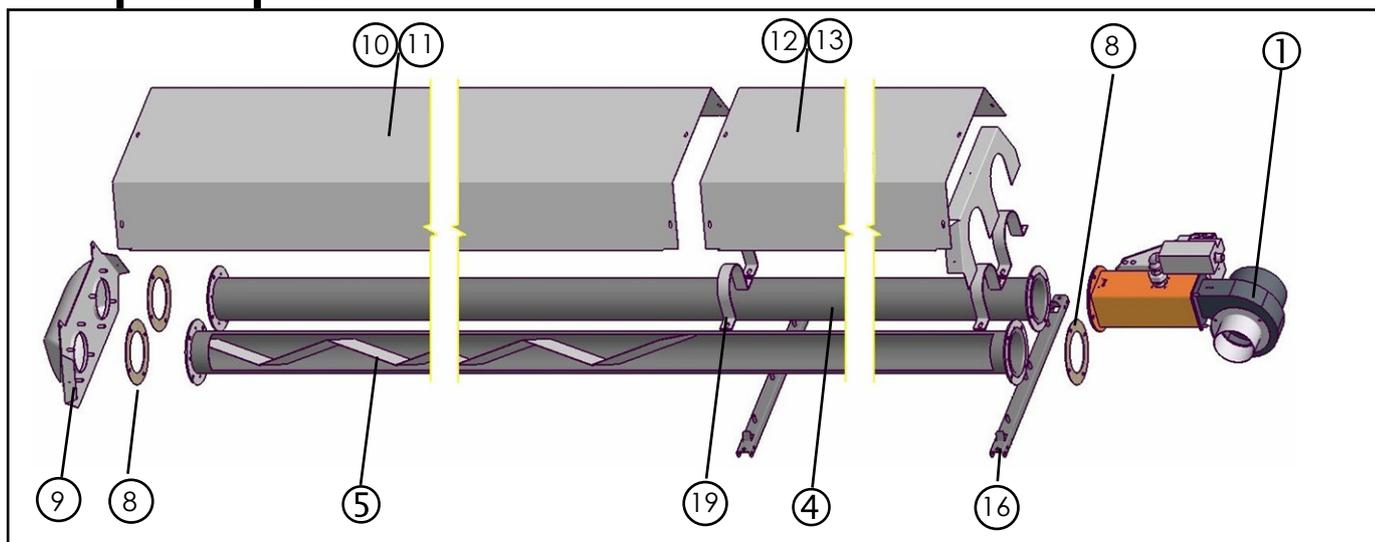


Fig. 66: Spare parts infra D / calor D 20U

Pos.	Part	Art.-No.
1	Burner kit infra D / calor D 15U Natural Gas H	126 9211 1
	Burner kit infra D / calor D 20U Natural Gas H	126 9221 1
	Burner kit infra D / calor D 30U Natural Gas H	126 9231 1
	Burner kit infra D / calor D 40U Natural Gas H	126 9241 1
	Burner kit infra D / calor D 50U Natural Gas H	126 9251 1
	Burner kit infra D / calor D 60U Natural Gas H	126 9261 1
2	Radiant tube L 3050 mm infra D / calor D [not in Fig. 66]	126 7020 0
3	Radiant tube L 3050 mm with turbulator infra D / calor D [not in Fig. 66]	126 7055 0
4	Radiant tube L 4540 mm infra D / calor D	126 4722 0
5	Radiant tube L 4540 mm infra D / calor D with turbulator	126 7056 0
6	Radiant tube L 5950 mm infra D / calor D [not in Fig. 66]	126 7199 0
7	Radiant tube L 5950 mm stainless steel with welded flanges [not in Fig. 66]	126 7220 0
8	Gasket between tubes and burner infra D / calor D	126 7048 0
9	Turnaround box	126 7015 0
10	Reflector infra D shape U [L 3000mm]	126 7011 0
11	Reflector calor D shape U [L 3000mm]	126 7062 0
12	Reflector short infra D 20U and 60U [L 1500 mm]	126 7221 0
13	Reflector short calor D 20U and 60U [L 1500 mm]	126 7234 0
14	Intermediate reflector infra D / calor D 60U L 1500mm [not in Fig. 66]	126 7224 0???
15	Mounting sheet for in intermediate reflector [not in Fig. 66]	126 7464 0
16	Suspension bracket infra D / calor D shape U 15- 40 kW	126 7012 0
17	Suspension bracket infra D / calor D shape U 50- 60 kW	126 7707 0
18	Suspension bracket bar 50-60 kW [not in Fig. 66]	126 7708 0
19	Tube bar	126 4529 5
20	Mounting set infra D / calor D 15U [not in Fig. 66]	126 7102 0
21	Mounting set infra D / calor D 20U [not in Fig. 66]	126 7129 0
22	Mounting set infra D / calor D 30U [not in Fig. 66]	126 7103 0
23	Mounting set infra D / calor D 40U [not in Fig. 66]	126 7116 0
24	Mounting set infra D / calor D 50U [not in Fig. 66]	126 7111 0
25	Mounting set infra D / calor D 60U [not in Fig. 66]	126 7222 0

Tab. 12: Spare parts infraSchwank D / calorSchwank D 15 -60U

## Spare parts infraSchwank D / calorSchwank D 15-60U

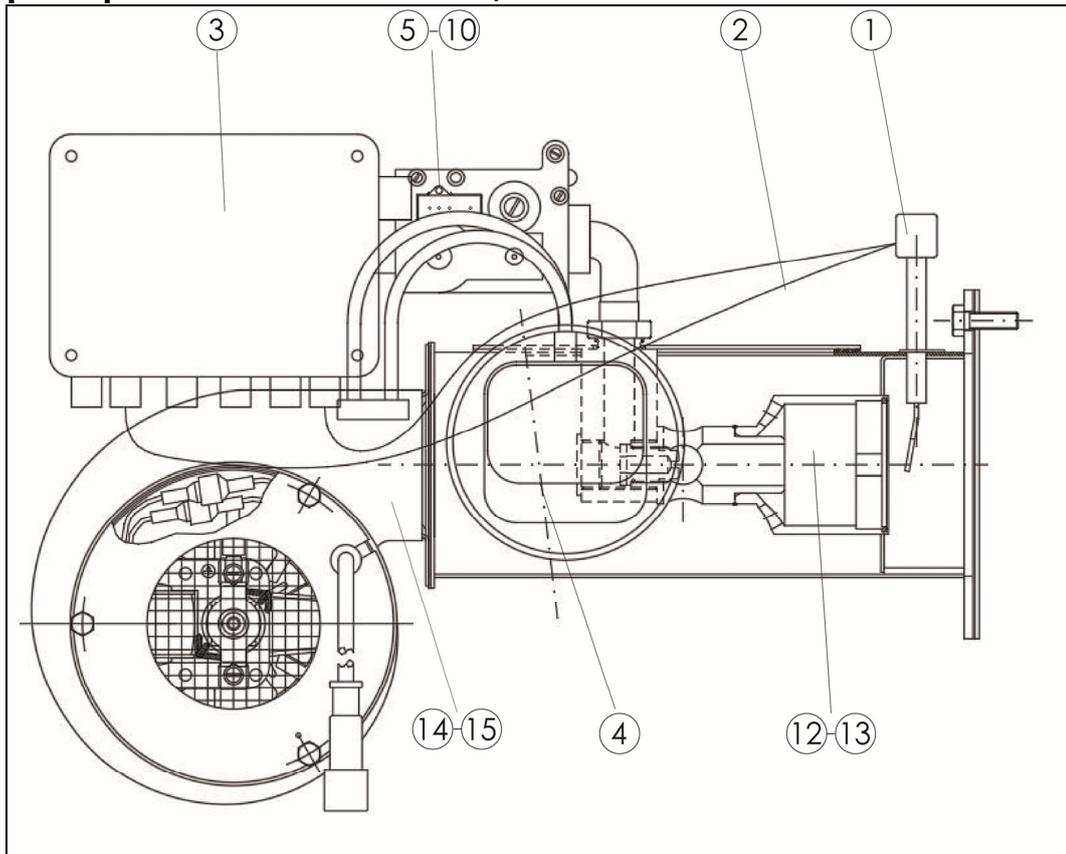


Fig. 67: Spare parts burner kit

## Spare parts burner kit infra D / calor D 15-60U

Pos.	Part	Art.-No.
1	Spark igniter with ionisation cable	127 0246 9
2	Ignition wiring with plug	126 7021 5
3	Spare part burner control unit IC 4000/1 for infraSchwank D / calorSchwank D	126 7496 5
4	Pressure switch DL1E with damping nozzle	192 0217 8
5	Spare part gas valve cpl. premounted – replacement <b>HONEYWELL for SIT</b> infra D / calor D 15-60U / 1-stage with cable valve – <i>in cardboard</i>	126 7532 1
6	Spare part gas valve cpl. premounted - replacement <b>HONEYWELL for SIT 2-stage / Natural gas</b> infra D / calor D 15-60U / with cable for valve and 2-stage coil – <i>in cardboard</i>	126 7536 1
7	Spare part gas valve cpl. premounted - replacement <b>HONEYWELL for SIT 2-stage / Propane</b> infra D / calor D 15-60U / with cable for valve and 2-stage coil – <i>in cardboard</i>	126 7536 2
8	Spare part <b>HONEYWELL for HONEYWELL 1-stage / modulating</b> VK 4105N 5016	192 0761 3
9	Spare part gas valve <b>HONEYWELL for HONEYWELL 2-stage / Natural gas</b> VK 4115Q 2004	192 0766 0
10	Spare part gas valve <b>HONEYWELL for HONEYWELL 2-stage / Propane</b> VK 4105Q 2010	192 0766 1
11	Connection cable modulating regulator	192 1144 5
12	Burner cup steel complete infra D / calor D 15-40U Natural gas, 50-60U Propane	126 7219 0
13	Burner cup steel complete infra D / calor D 50-60U Natural gas	126 7468 0
14	Fan complete with venturi infra D / calor D 15-40U with transport lock - <i>in cardboard</i>	126 7684 0
15	Fan complete with venturi infra D / calor D 50-60U	126 7053 0
16	Gas filter group ½" [for infra D / calor D 15-30U]	192 0756 0
17	Gas filter group ¾" [for infra D / calor D 40-60U]	192 0757 9
18	Spare part kit for gas filter ½"	192 0758 0
19	Spare part kit for gas filter ¾"	192 0759 0
20	Replacement kit faulty Modulation Box to IC 4000/1	126 7496 6

Tab. 13: Spare parts infraSchwank D / calorSchwank D 15 - 60U



The reducing nipple ¾" to ½" installed on site for heaters 40U to 60U has to be used again [position 5-7].

# 16 EC type examination certificate

CE 0085



CERT

## EU-Baumusterprüfbescheinigung

### EU type examination certificate

CE-0085BO0037

Produkt-Identnummer  
product identification no.

<b>Anwendungsbereich</b> <i>field of application</i>	EU-Gasgeräteverordnung (EU/2016/426) <i>EU Gas Appliances Regulation (EU/2016/426)</i>
<b>Zertifikathaber</b> <i>owner of certificate</i>	Schwank GmbH Bremerhavener Straße 43, D-50735 Köln
<b>Vertreiber</b> <i>distributor</i>	Schwank GmbH Bremerhavener Straße 43, D-50735 Köln
<b>Produktart</b> <i>product category</i>	Gaswärmeerzeuger: Dunkelstrahler (3311)
<b>Produktbezeichnung</b> <i>product description</i>	Infrarot-Dunkelstrahler mit Brenner mit Gebläse als Vollautomat, die zu Dunkelstrahlersystemen D oder F kombiniert werden können
<b>Modell</b> <i>model</i>	novoSchwank...; infra/calorSchwank D...
<b>Bestimmungsländer</b> <i>countries of destination</i>	AT, BE, BG, BY, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, RU, SE, SI, SK, TR, UA
<b>Prüfberichte</b> <i>test reports</i>	Baumusterprüfung: B 17/07/2409 vom 07.11.2017 (DBI)
<b>Prüfgrundlagen</b> <i>test basis</i>	EU/2016/426 A III B (09.03.2016) DVGW VP 118 (01.09.1999) DIN EN 777-1 (01.09.2009) DIN EN 777-3 (01.09.2009) DIN EN 416-1 (01.09.2009) DIN EN 416-2 (01.10.2006)
<b>Ablaufdatum / AZ</b> <i>date of expiry / file no.</i>	17.01.2028 / 17-0583-GEA

7028/04/A/DE

03.05.2019 Rie A-1/2

Datum, Bearbeiter, Blatt, Leiter der Zertifizierungsstelle  
*date, issued by, sheet, head of certification body*

DVGW CERT GmbH ist von der DAkkS nach DIN EN ISO/IEC 17065:2013 akkreditierte und von der Deutschen Bundesregierung benannte Stelle für die Zertifizierung von Gasgeräten gemäß EU-Verordnung EU/2016/426.

DVGW CERT GmbH is an accredited body by DAkkS according to DIN EN ISO/IEC 17065:2013 and notified by the government of the Federal Republic of Germany for certification of gas appliances under EU Regulation



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Gerätekat <sup>o</sup> rien appliance categories	Versorgungsdrücke supply pressures	Bestimmungsländer countries of destination	Bemerkungen remarks
I2E(R)	20/25 mbar	BE	
I2E+	20/25 mbar	BE	
I3+	28-30/37 mbar	BE, IT, PT	
I3+	50/67 mbar	BE, PT	
I3B/P	30 mbar	CY, IS, MT	
I3B/P	50 mbar	CY, IS, MT	
I3P	37 mbar	BE	
I12E+3+	20/25, 28-30/37 mbar	FR	
I12E+3+	20/25, 29/37 mbar	BE	
I12E3B/P	20, 37 mbar	PL	
I12ELL3B/P	20, 50 mbar	DE	
I12ELL3P	20, 50 mbar	DE	
I12Er3P	20/25, 50 mbar	FR	
I12H3B/P	20, 30 mbar	DK, FI, LU, NO, SE	
I12H3B/P	20, 50 mbar	AT, CH, CZ, GR, LU, RO	
I12H3B/P	25, 50 mbar	HU	
I12H3P	20, 30 mbar	EE, GR, LT, LV, NO, SK	
I12H3P	20, 37 mbar	ES, FR, GB, GR, HR, IE, IT, PT, SI, TR	
I12H3P	20, 50 mbar	CH, CZ, ES, FR, GB	
I12HS3B/P	25, 50 mbar	HU	
I12L3P	25, 50 mbar	NL	

Typ type	Technische Daten technical data	Bemerkungen remarks
novoSchwank 20S/... U/L; infraSchwank D 15/... U/L; calorSchwank D 15/... U/L	Wärmebelastung (Hi): 11,2...15,0 kW	Strahlungsfaktor (U/L): 55,7%/55,7% (infraSchwank) und 65,3%/67,2% (calorSchwank)
novoSchwank 25S/... U/L; infraSchwank D 20/... U/L; calorSchwank D 20/... U/L	Wärmebelastung (Hi): 14,3...19,0 kW	Strahlungsfaktor (U/L): 57,6%/56,9% (infraSchwank) und 66,8%/70,2% (calorSchwank)
novoSchwank 30S/... U/L; infraSchwank D 25/... U/L; calorSchwank D 25/... U/L	Wärmebelastung (Hi): 18,8...25,0 kW	
novoSchwank 35S/... U/L; infraSchwank D 30/... U/L; calorSchwank D 30/ U/L; calorSchwank D 30/... U ST	Wärmebelastung (Hi): 22,0...29,0 kW	Strahlungsfaktor (U/L): 59,3%/59,9% (infraSchwank) und 70,2%/69,8% (calorSchwank) bzw. 79,3 % (calorSchwank...ST)
novoSchwank 45S/... U/L; infraSchwank D 40/... U/L; calorSchwank D 40/... U/L	Wärmebelastung (Hi): 30,0...39,0 kW	Strahlungsfaktor (U/L): 57,8%/59,1% (infraSchwank) und 66,3%/72,7% (calorSchwank)
novoSchwank 55S/... U/L; infraSchwank D 50/... U/L; calorSchwank D 50/... U/L	Wärmebelastung (Hi): 38,0...49,0 kW	Strahlungsfaktor (U/L): 58,2%/60,2% (infraSchwank) und 70,8%/71,4% (calorSchwank)
novoSchwank 70S/... U/L; infraSchwank D 60/... U/L; calorSchwank D 60/... U/L	Wärmebelastung (Hi): 48,0...60,0 kW	Strahlungsfaktor (U/L): 57,6%/59,4% (infraSchwank) und 70,6%/70,2% (calorSchwank)

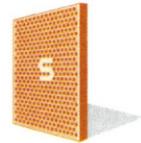
**Verwendungshinweise / Bemerkungen**

**hints of utilization / remarks**

Elektrische Daten: 230 VAC, 50 Hz  
 Bauformen ...U: Strahlrohr in U-Form; Bauform ...L: Strahlrohr in gestreckter oder gewinkelter Form  
 Ausführungen Leistungsregelung: .../1: einstufig, .../2: zweistufig, .../M: modulierend (nur Gas modulierend), .../M+:  
 modulierend (Gas und Luft modulierend)  
 Gerätearten: A3, B23, C13, C33 und C63  
 Gerätearten B23, C13 und C33: mit Abgassystem Z-7.2-1602, 0432-BPR-119933 (Fa. Muelink & Grol) bzw.  
 0432-CPD-219952, 0432-CPD-219983, 0432-CPD-219996 (Fa. Schröder).  
 Die verschiedenen Strahlertypen können zu einem Strahlersystem der Typen D und F nach DIN EN 777 kombiniert  
 werden. Die Abgasanlage kann mit einem Abgaswärmetauscher ausgeführt werden. Die Auslegung als  
 Dunkelstrahlersystem D und F mit ihren Zweigrohren, Abgassammelleitungen, Abgaskaminen und Abgasventilatoren  
 erfolgt durch die Schwank GmbH.  
 Zubehör: Flexible Schlauchleitungen nach DIN 3384; Typen RS 331L (NG-4602AR0643, Fa. Witzenmann), MW 22 U  
 (NG-4602BL0115, Fa. Senior Berghöfer) und WSO (NG-4602BL0002, Fa. AZ-Pokorny)  
 Zusätzlich geprüfte Gerätekat<sup>o</sup>rien, Anschlussdrücke und Bestimmungsländer: BY, RU, UA: I12H3P (20, 37 mbar);  
 BG: I12H3B/P (20, 30 mbar); NO, vorausgesetzt "Bio Methan" ist in Norwegen gleichwertig mit Gerätekat<sup>o</sup>rie I2H und  
 "Bio Propan" ist gleichwertig mit Gerätekat<sup>o</sup>rie I3B/P: "Bio Methan" (20 mbar) und "Bio Propan" (30 mbar)  
 Die CE-Kennzeichnung wird in den Nicht-EU-Staaten erst dann als Konformitätsnachweis akzeptiert, wenn diese Staaten  
 die EU-Gasgeräteverordnung EU/2016/426 in nationales Recht umgesetzt haben.  
 NOx-Klasse 3 (< 150 mg/kWh) nach DIN EN 419: Entwurf 2017

# 17 EC declaration of conformity

**Schwank**  
INNOVATIVE HEATING SOLUTIONS



## EC Declaration of Conformity for type examined heaters

We declare that the following heaters are in conformance with the basic security and health requirements according to EC directives due to their conception and design.

Changes or modifications of the heaters without our authorization terminate the validity of this declaration.

<b>Description:</b>	<b>Gas-fired Radiant Tube Heater</b>
<b>Model / Type:</b>	<b>infraSchwank D / calorSchwank D</b> <b>15 / 20 / 25 / 30 / 35 / 40 / 50 / 60</b> <b>80 LL / 100 LL / 120 LL</b> (existing of 2 heaters 40/50/60 L) <b>novoSchwank</b> <b>20S / 25S / 35S / 45S / 55S / 70S</b>
<b>Applied EC-Directives:</b>	- EC-Machinery Directive 2006/42/EC - EC-Gas Appliance Regulation EU/2016/426 - EC-Low Voltage Directive (LVD) 2014/35/EC - EC-Electromagnetic Compatibility Directive (EMC) 2014/30/EC
<b>EC-Type Examination Certificate:</b>	<b>CE-0085 BO 0037</b>
<b>Issued by:</b>	<b>DVGW Bonn / Germany</b>
<b>Basis of Harmonized Standards:</b>	<b>DIN EN 416-1, DIN EN 416-2, prEN 416</b> <b>DIN EN 777-1, DIN EN 777-3</b>

SCHWANK GMBH  
Cologne, 2018-10-15

  
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# 18 Product information related to Ecodesign Regulation No 2015/1188

Values	infraSchwank D											
	15/1 U	15/M+ U	20/1 U	20/M+ U	30/1 U	30/M+ U	40/1 U	40/M+ U	50/1 U	50/M+ U	60/1 U	60/M+ U
Nominal heat input [kW] @ NCV	15,0	15,0	19,0	19,0	29,0	29,0	39,0	39,0	49,0	49,0	60,0	60,0
Minimum heat input [kW] @ NCV	/	11,2	/	14,3	/	22,0	/	30,0	/	38,0	/	48,0
Minimum heat input as percentage of nominal heat input [%]	/	25%	/	25%	/	24%	/	23%	/	22%	/	20%
$\eta_{thermal}$ [%] @ GCV at nominal heat input	82,9%	82,9%	83,2%	83,2%	82,6%	82,6%	82,7%	82,7%	83,2%	83,2%	82,8%	82,8%
$\eta_{thermal}$ [%] @ GCV at minimal heat input	/	82,9%	/	83,2%	/	82,6%	/	82,7%	/	83,2%	/	82,8%
<b>Radiant factor <math>RF_{nom}</math> [%] @ NCV</b> at nominal heat input	<b>55,7%</b>	<b>55,7%</b>	<b>61,0%</b>	<b>57,6%</b>	<b>59,3%</b>	<b>59,3%</b>	<b>57,8%</b>	<b>57,8%</b>	<b>58,2%</b>	<b>58,2%</b>	<b>57,6%</b>	<b>57,6%</b>
<b>Radiant factor <math>RF_{min}</math> [%] @ NCV</b> at minimal heat input	/	<b>54,3%</b>	/	<b>56,2%</b>	/	<b>57,8%</b>	/	<b>56,4%</b>	/	<b>56,7%</b>	/	<b>56,2%</b>
Auxiliary electricity consumption $e_{lmax}$ [kW] at nominal heat input	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,09	0,09	0,09	0,09
Auxiliary electricity consumption $e_{lmax}$ [kW] at minimal heat input	/	0,10	/	0,10	/	0,10	/	0,10	/	0,09	/	0,09
Heat output control type	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating
Space heating emissions NOx @ GCV [mg/kWh]	122	122	122	122	122	122	122	122	122	122	122	122
<b>Seasonal energy efficiency [%]</b>	<b>77,0%</b>	<b>79,5%</b>	<b>80,5%</b>	<b>81,1%</b>	<b>79,5%</b>	<b>81,9%</b>	<b>79,0%</b>	<b>81,3%</b>	<b>79,9%</b>	<b>82,1%</b>	<b>79,3%</b>	<b>81,1%</b>

Tab 14: Characteristic values energy performance infraSchwank D shape U – fuel Natural gas / Propane

Values	calorSchwank D											
	15/1 U	15/M+ U	20/1 U	20/M+ U	30/1 U	30/M+ U	40/1 U	40/M+ U	50/1 U	50/M+ U	60/1 U	60/M+ U
Nominal heat input [kW] @ NCV	15,0	15,0	19,0	19,0	29,0	29,0	39,0	39,0	49,0	49,0	60,0	60,0
Minimum heat input [kW] @ NCV	/	11,2	/	14,3	/	22,0	/	30,0	/	38,0	/	48,0
Minimum heat input as percentage of nominal heat input [%]	/	25%	/	25%	/	24%	/	23%	/	22%	/	20%
$\eta_{thermal}$ [%] @ GCV at nominal heat input	82,9%	82,9%	82,3%	82,3%	82,3%	82,3%	81,6%	81,6%	82,2%	82,2%	82,2%	82,2%
$\eta_{thermal}$ [%] @ GCV at minimal heat input	/	82,9%	/	82,3%	/	82,3%	/	81,6%	/	82,2%	/	82,2%
<b>Radiant factor <math>RF_{nom}</math> [%] @ NCV</b> at nominal heat input	<b>65,3%</b>	<b>65,3%</b>	<b>66,8%</b>	<b>66,8%</b>	<b>70,2%</b>	<b>70,2%</b>	<b>66,3%</b>	<b>66,3%</b>	<b>70,8%</b>	<b>70,8%</b>	<b>70,6%</b>	<b>70,6%</b>
<b>Radiant factor <math>RF_{min}</math> [%] @ NCV</b> at minimal heat input	/	<b>63,7%</b>	/	<b>65,1%</b>	/	<b>68,5%</b>	/	<b>64,6%</b>	/	<b>69,0%</b>	/	<b>68,8%</b>
Auxiliary electricity consumption $e_{lmax}$ [kW] at nominal heat input	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,09	0,09	0,09	0,09
Auxiliary electricity consumption $e_{lmax}$ [kW] at minimal heat input	/	0,10	/	0,10	/	0,10	/	0,10	/	0,09	/	0,09
Heat output control type	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating	1-stage	modulating
Space heating emissions NOx @ GCV [mg/kWh]	122	122	124	124	122	122	128	128	132	132	135	135
<b>Seasonal energy efficiency [%]</b>	<b>82,0%</b>	<b>84,5%</b>	<b>82,5%</b>	<b>84,9%</b>	<b>84,5%</b>	<b>86,9%</b>	<b>82,2%</b>	<b>84,5%</b>	<b>85,2%</b>	<b>87,3%</b>	<b>85,1%</b>	<b>87,0%</b>

Tab.15: Characteristic values energy performance calorSchwank D shape U – fuel Natural gas / Propane